

Ecology and Task Structures in Adventure Education

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Many of the characteristics of effective physical education lessons have been discovered by sport pedagogy researchers by employing what has become known as the ecological or task structures perspective. The purpose of this study was to describe the task structures and ecology that existed in two consecutive 7-day summer adventure camps run by an agency outside the school setting. Participants included two novice adventure educators (AEs) and 31 elementary and middle school-aged children. Data were collected using a number of qualitative techniques and were analyzed using standard interpretive methods. Five task structure systems were identified. The instructional and managerial systems were similar to those previously found in classrooms and school physical education except that parental chaperones were used to enforce the management system. The social system was similar to those previously observed within sport education and adventure education units within school-based physical education in that it mainly served to support the instructional and managerial systems rather than compete with them as in more traditional models of teaching. The exploratory and atmospheric systems had not previously been identified, were extensions of the instructional and social systems, and appeared somewhat unique to adventure education. Implications for training AEs are discussed.

Keywords: Ecology, Task Structures, Adventure Education

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Adventure education has flourished during the last 15 years (Association for Challenge Course Technology [ACCT], 2004; Wurdinger & Steffen, 2003). Indeed, adventure education programs for children and youth both within school curricula and sponsored by various agencies outside public schools, such as Project Adventure (2007) and Outward Bound (2006), have become relatively common around the United States. An indication of the growing popularity of adventure education in the United States is the fact that it has been included within the benchmarks and content standards for school physical education produced by the National Association for Sport and Physical Education [NASPE] since the early 1990s (NASPE, 1991). A further indication is the significant increase in the number of challenge courses, climbing walls, and bouldering walls that have been constructed in schools during the last decade (Association for Challenge Course Technology, 2004; Wurdinger & Steffen, 2003). Moreover, interest in adventure education and the proliferation of adventure-based programs also appears to have grown considerably in other countries. In Britain, for example, outdoor and adventure activities have been a component of the National Curriculum for Physical Education (NCPE) since its inception (Department of Education and Science & the Welsh Office, 1992; Qualifications and Curriculum Authority, 2007).

That said, however, much of the adventure education research that has been done to date has tended to focus on the outcomes of adventure education programs without examining what may have been responsible for producing (or not producing) the reported outcomes. There is, then, as Brown (2006) notes, a need for more pedagogically oriented research of adventure education. Research should not only utilize methods commonly drawn from the positivistic paradigm (for example, the use of paper and pencil inventories to measure hypothesized outcomes); such work should also draw from the critical and interpretive paradigms, particularly in terms of data collection and analysis methods employed. This study offers an interpretive design to intentionally address previous research shortcomings.

Review of Literature

This review of relevant literature will briefly discuss the ecological task structures perspective, task structures in physical education, models of adventure education, and adventure education research.

The Ecological/Task Structures Perspective

Researchers of classroom ecology (Allen, 1986; Doyle, 1977, 1979, 1983, 1986; Doyle & Carter, 1984) view teaching as consisting of a series of tasks and have identified three important “task structure systems” that serve to steer and guide the processes that unfold during instruction. These are the instructional task system, the managerial task system, and the student social system (Allen; Doyle; Doyle & Carter).

Instructional Task System

The instructional task system focuses on student learning and consists of the various learning activities in which students engage. According to Doyle (1979), this system is filled with ambiguity and risk for students, the former resulting from the lack of clear understanding about the standards and types of performance that students are expected to produce for a given task; the latter being the product of the likelihood of failure in terms of reaching these expectations. Not surprisingly, therefore, students put much effort into reducing ambiguity and risk during task performance by asking the teacher questions about the tasks, particularly those with which they are unfamiliar. For this reason, students are likely to spend less time asking questions when presented with familiar tasks and, hence, spend more time engaged in them (Doyle, 1977; Doyle & Carter, 1984).

Managerial Task System

The effectiveness of the instructional task system can be undermined if the managerial task system is weak (Doyle & Carter, 1984). This system is created by establishing a set of rules, routines, and expectations, which serves to bring order and organization to a classroom and facilitates student engagement in instructional tasks (Doyle, 1986; Emmer, Evertson, & Anderson, 1980; Evertson & Anderson, 1979; Evertson & Emmer, 1982; Sanford, Emmer, & Clements, 1983).

The managerial task system is foundational and makes it possible for learning to occur (Miller & Hall, 2005). The instructional and managerial task systems are interrelated and collectively form what has been referred to as “the program of action” (Doyle, 1986, p. 403) or “primary vector” (Merritt, 1982, p. 228), because they provide the momentum, energy, and direction of a lesson (Hastie, 1997). If programs of action/primary vectors are weak, they can be pushed off course by a “secondary vector” (Doyle, 1986, p. 420), which is initiated by students in an effort to reduce the demands of tasks, weaken accountability, create more interesting tasks, or increase opportunity for socializing (Merritt, 1982).

Student Social System

The student social system was first described by Allen (1986), who noted that a major goal of pupils during schooling was to socialize with each

other. Teachers often negotiate the degree to which student socializing will be tolerated in a classroom in exchange for engaging in instructional tasks and learning. Teachers' managerial systems are partly constructed with the aim of holding the student social system in check (Allen).

Finally, a key concept within the ecology framework is that of accountability. Specifically, if students are not held accountable for performing tasks in either the managerial or instructional task systems, they will not take them seriously or perform them properly (Doyle, 1983).

Task Structures in Physical Education

Sport pedagogy researchers have made great strides in their efforts to discover the characteristics of effective physical education lessons by employing the ecological or task structures perspective (Curtner-Smith, Todorovich, Lacon, & Kerr, 1999; Griffin, Siedentop, & Tannehill, 1998; Hastie, 1995, 1997, 2000; Hastie & Siedentop, 1999; Jones, 1992; Tousignant & Siedentop, 1983). Most ecological studies of physical education have mirrored classroom research in that they have also revealed the existence of three main interrelated task systems; again the instructional task system, the managerial task system, and the student social system.

Tousignant and Siedentop (1983) were the first to describe some of the task systems present in conventional physical education. In addition to describing the kinds of tasks secondary school students completed within the instructional system and the specific rules, routines, and expectations observed in the managerial system, they identified a new system that they termed the transitional system with tasks aimed at setting up equipment or organizing students for a new phase of a lesson.

In addition, Tousignant and Siedentop (1983) noted that differences in task difficulty, task presentation, and accountability led to different degrees of student engagement within instructional tasks. Specifically, if tasks were too difficult—increasing risk—students tended to avoid them. If tasks were too easy, students would modify them to make them more interesting. When task presentation was explicit, students were more likely to engage in the manner expected by the teacher. Vague task presentation, however, promoted off-task behavior, and formal assessment based on minimal participation yielded a good deal of task modification. Evaluation based on effort produced slightly improved student performance, while evaluation based on performance led to high rates of good quality student engagement (Tousignant & Siedentop).

A number of studies have also focused on how physical education teachers construct their managerial systems. For example, Fink and Siedentop (1989) described how seven American elementary teachers established the rules, routines, and expectations that were the foundation of their instruction early in the year. Critical in this process were the provision of a

clear description of routines and allotting time for students to practice them. Similarly, Curtner-Smith et al. (1999) described the rules, routines, and expectations that a sample of 20 British teachers employed within their managerial systems prior to and following the implementation of the NCPE. Key to teacher success was the establishment of routines for starting, stopping, equipment set-up, gathering, and organizing. Additionally, it was expected that students would learn, give maximum effort, be on task, and be safe (Curtner-Smith et al., 1999).

Several researchers also have described the student social system as it exists in physical education (Hastie & Siedentop, 1999). For example, Placek (1983) discovered that both pre-service and in-service physical education teachers often placed high levels of importance on student enjoyment and participation and put less emphasis on student learning, a phenomenon that she termed “busy, happy, and good” (p. 46). This emphasis, then, served to promote the student social system. Additionally, Supaporn, Dodds, and Griffin (2003) concluded that when the teacher nurtured the student social system and placed little importance on the instructional and managerial task systems, students were not always busy and it was not certain when and if students were good.

Further, Hastie and Pickwell (1996) observed the “busy, happy, and good” syndrome during dance lessons taught within secondary physical education and noted that the teacher accepted lower levels of male participation in exchange for less student misbehavior. Again, these factors, in combination with low teacher monitoring, allowed the students’ social agenda to prevail. Embedded within some physical education ecologies, then, is a negotiating protocol in which teachers offer to reduce the standards within their instructional system if students will comply with their management system (Hastie & Siedentop, 1999).

In contrast to the findings of studies of more conventional models of physical education, research of sport education (Carlson & Hastie, 1997; Hastie, 2000) indicated that the student social system supported the instructional and managerial systems. Instead of competing with instructional tasks or falling foul of managerial protocols, socializing was encouraged and nurtured. For example, in both studies of sport education, student socializing led to the realization of some of the key goals of the model, including teamwork, cooperation, leadership, and the creation of a festive and authentic sporting atmosphere.

Models of Adventure Education

According to Miles and Priest (1990), the major objectives of adventure education are to facilitate student growth, learning, and realization of potential. In addition, for Ford and Blanchard (1993) a primary goal is to challenge participants. To achieve these objectives, adventure education has

often been organized in stages or sequences of activities within the adventure environment that are designed to encourage team building and group development (e.g., see Bisson 1997, 1998, 1999). Also, some have proposed various activities for each stage (e.g. Rohnke, 1989), which in turn have become commonly used in adventure education by AEs. Based on a combination of Bisson's and Rohnke's works, the AEs in this study utilized a sequence that consisted of eight stages of adventure (see Figure 1).

In the first stage of this model, students engaged in activities designed to help them get acquainted with each other. In the second stage, they participated in activities aimed at warming them up and helping them lose their inhibitions. During the third and fourth stages, students were asked to partake in activities that enhanced their communication and problem-solving skills, while in the fifth stage they engaged in trust-building activities. Finally, the sixth and seventh stages were devoted to the challenges of tackling low and high ropes course elements, and the eighth stage to outdoor pursuits.

For many in the field of adventure education (e.g., Neill, 2004), the distinction between outdoor pursuits courses and "real" adventure education programs is that in the former instructors merely teach activities (e.g., rock climbing, kayaking, canoeing, backpacking, winter camping, snowshoeing, trail biking, scuba diving, ropes and challenge courses), while in the latter AEs base their instruction on one of a number of different experiential learning models (see, for example, Dewey, 1938; Joplin, 1995; Priest & Gass, 1997) and teach through activities.

1. Acquaintance Activities
2. Warmups/Deinhibitizers
3. Communication Activities
4. Problem-Solving Activities
5. Trust-Building Activities
6. Low Ropes Course Elements
7. High Ropes Course Elements
8. Outdoor Pursuits

Figure 1. Eight stages of adventure, based on Bisson (1997, 1998, 1999) and Rohnke (1989).

For Brown (2006), “Adventure education is based on the experiential learning model, which combines direct experience with guided reflection and analysis under the supervision of a group instructor/facilitator/teacher” (p. 685). The experiential model most often used by AEs, is the four-stage model proposed by Kolb (1984). In this model (see Figure 2), participants move through the cycle of experiencing, observing/reflecting, forming concepts, and generalizing and applying concepts to new and different experiences. For example, participants may engage in a communication/problem-solving activity called “blind forms” in which they stand in a circle while blindfolded and, following the AE’s command, work together to make various shapes with a rope. Reflection on this activity might involve agreeing on a set of ideas that facilitate communication. These ideas could then be applied to other activities and situations outside the adventure education program such as personal or work relationships.

Adventure Education Research

While the amount of adventure education opportunities for young people has expanded, research of the pedagogy of adventure education is still very much in its infancy. To date, the streams of research that have been conducted in this area have revealed the therapeutic effects of adventure education programs on participants (e.g., Autry, 2001; Gass, 1993; Kelley & Coursey, 1997; Neill, 2003) as well as the positive impact of adventure experiences on participants’ feelings of self-efficacy, self-confidence,

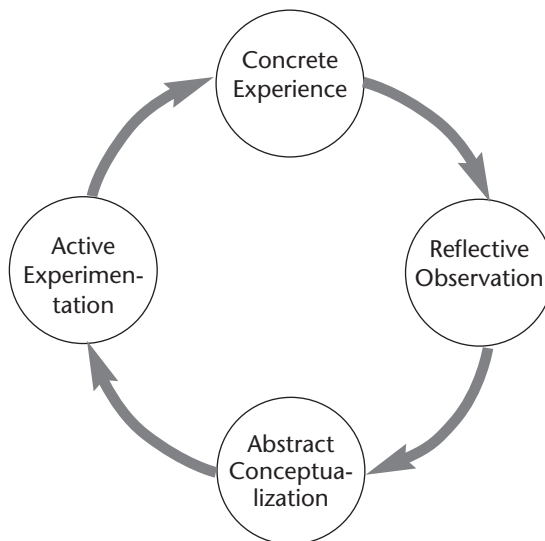


Figure 2. The experiential learning cycle (Kolb, 1984).

self-esteem, and self-worth (e.g. McKenzie, 2003; Paxton, 1999; Priest, 1996). Other streams have identified the physiological responses of participants engaged in adventure activities (e.g., Bunting, Tolson, Kuhn, Suarez, & Williams, 2000; Watts & Drobish, 1998), and the positive influence of hybrid adventure education and cooperative learning models in physical education settings on teachers' satisfaction and students' psychomotor and affective development (Dyson, 1996, 2001, 2002; Dyson, Griffin, & Hastie, 2004; Grenier, Dyson, & Yeaton, 2005).

As informative and useful as much of this work has been, however, and as Brown (2006) has pointed out, researchers have paid little attention to the teaching-learning processes involved in adventure education. Instead, they have tended to focus on the outcomes of adventure education programs without examining what may have been responsible for producing (or not producing) these outcomes. The pre-post studies mentioned above have come under some criticism, particularly when mainstream sport pedagogy research began in earnest in the 1970s (Locke, 1977). There is, then, as Brown (2006) notes, a need for more pedagogically oriented research of adventure education, as we have also argued (Zmudy, Curtner-Smith, & Steffen, in progress).

With the exception of Hastie (1995), sport pedagogy researchers have not used this ecological/task structure perspective to guide studies of instruction in adventure education. Hastie (1995) found that student involvement in instructional tasks was high even though students were not held accountable through formal grading. This was because ambiguity and risk were easily manipulated by the students so they could work at a level congruent with their ability. Further, student socializing served to promote greater participation in the instructional tasks. Moreover, social tasks were clearly explained by teachers so students were able to clearly identify the ways in which the social and instructional tasks were linked within what Hastie (1995) referred to as "a large social experience" (p. 91). This meant that there was no need for students to communicate with each other in a clandestine manner in order to avoid being detected by the teacher or to be concerned that socializing would inhibit their ability to do well in the unit.

Method

As part of a larger study of adventure education, the purpose of this particular study was to describe the task structures and ecology that existed in two consecutive 7-day summer adventure camps.

Methodological/Theoretical Framework

By utilizing the ecological/task structures perspective as our guiding theoretical framework, and as has been done in research on physical education teaching effectiveness (Curtner-Smith, Todorovich, Lacon, & Kerr, 1999;

Griffin, Siedentop, & Tannehill, 1998; Hastie, 1995, 1997, 2000; Hastie & Siedentop, 1999; Jones, 1992; Tousignant & Siedentop, 1983), our aim was to expand the research of the various interactions that take place during adventure education instruction so that in the future we may be able to lend our efforts toward developing best practices for teaching in adventure education.

Participants

Two adventure educators (AEs) who are licensed physical education teachers were the participants in this study. Names were changed to ensure participant anonymity. Joel, 23, possesses a master's degree and was finishing his first year working at a high school. Nancy, 24, also possesses a master's degree and was finishing her first year of teaching at an elementary school. Joel and Nancy both were novice AEs and had one year's and four year's intermittent experience, respectively, of teaching adventure education within their respective schools and at camps run by outside agencies. Novice AEs were intentionally chosen so that we could, in our research efforts, begin a line of ecological research themed toward identifying effective teaching practices on a continuum from novice to expert; and further so we could in the future use this continuum to make recommendations toward becoming an expert AE.

Thirty-one elementary and middle school-aged children also participated in the study. Five boys and ten girls aged from 9 to 14 years attended the first camp. Nine boys and seven girls aged from 10 to 14 years attended the second camp. The socio-economic status (SES) of most of the students was middle class. Two of the students were of Asian/Pacific Islander descent, while 29 were Caucasian. The AEs, students, and their parents consented to participation in the study in line with the authors' institutional review board policies on human subjects. Student participants in this age range were selected as subjects for the study so that we could offer readers who work in both formal K-12 school settings (e.g. in physical education) as well as nonformal settings useful information regarding teaching adventure education.

Setting

The two consecutive week-long adventure camps were conducted in the American Midwest in a town of approximately 54,000. Students arrived at 8 a.m., were taught one activity by Nancy and Joel from 8:30 to noon, and had a lunch break from 12 to 12:30 p.m. They took part in a second activity from 12:30 to 4 p.m. and were provided with an afternoon snack before being collected by their guardians or parents at 5 p.m. Both camps took place during the month of June in 2006.

The adventure coordinator from the local university organized the camps and, consequently, much of the instruction took place on his university campus, which has appropriate facilities. Nancy and Joel designed

the camps' curriculum. Their first objective was that students learn to participate in several outdoor pursuits, including canoeing, camping, swimming, hiking, indoor rock climbing, and caving. Their second objective was to promote personal and social growth and a sense of affiliation among the students. Finally, while participating on a ropes course consisting of standard low and high elements, the aim was to move the students through the eight stages of adventure, which were based on Bisson's (1997, 1998, 1999) and Rohnke's (1989) works.

Data Collection

Data collection was guided by the constructs within the ecological/task structures perspective (Allen, 1986; Doyle, 1977, 1979, 1983, 1986; Doyle & Carter, 1984). Due to the nature of tracking ecological processes in the classroom, qualitative methodology is implicit to the use of the ecological/task structures perspective as a guiding theoretical framework. A wide variety of techniques were used to collect data to help provide ample opportunity for cross-checking to ensure accuracy of results. The key data collection technique employed was nonparticipant observation. AEs and students were observed during all facets of the camps and extensive field notes were taken. Participant observation was also utilized occasionally when it appeared advantageous to take part in the activities or to aid the AEs for short time periods. Field notes about what transpired on these occasions were typed as soon after the observation as possible.

The AEs were asked to keep an electronic journal about salient observations; for example, how student socializing affected the learning environment (Carlson & Hastie, 1997; Hastie, 1995; Hastie, 2000). Further, all written curricular documents (e.g., plans and evaluation materials) were examined. In addition, AEs were asked to complete two critical incident report forms per day. These forms were similar to that designed by O'Sullivan and Tsangaridou (1992). The first required the AEs to describe anything of general significance that had occurred during the day, while the second required them to note significant issues either within their instruction and management or concerned with the social interactions of their students.

Two hour-long, formal, semistructured interviews (Patton, 1990) were conducted with each of the AEs. All four interviews were tape-recorded and transcribed. In addition, each week the AEs also completed one stimulated recall interview. Again, these were tape-recorded and transcribed. During these interviews AEs observed 30-minute segments of their teaching that had been videotaped. The protocol allowed for the AEs to pause videotape whenever they wished to comment on task structures and ecology. On 20 occasions, the AEs were required to "think aloud" while planning. This enabled their thoughts about their instruction and management to be tape-recorded and transcribed.

Two types of interviews were also conducted with the students. First, whenever possible, they were informally interviewed during the course of camp activities or during periods of transition between activities. Field notes were typed as soon after the conclusion of these interviews as possible. Second, 60-minute focus group interviews were conducted with groups of three to six students. During these interviews, students were asked about the various tasks they completed, the AEs' managerial and leadership styles, and the opportunities they had for socializing. These interviews were also tape-recorded and transcribed.

Data Analysis

Constructs from the task ecological/task structures framework also guided the data analysis process. Based on these constructs, analytic induction was used to code and categorize so as to inform about the instructional approaches, managerial protocols, social interactions, and other systems that emerged from the adventure camps. Specifically, the data from each data collection technique were coded line by line, using analytic induction and constant comparison (Goetz & LeCompte, 1984). This process generated a set of 318 codes. The frequency for each code was recorded across the entire data set and for data generated by the different data collection techniques. The codes were then collapsed into themes. These themes were then used to reconstruct the "story" of what took place during the adventure camps.

In congruence with Goetz and LeCompte (1984), credibility and trustworthiness were established by seeking negative and discrepant cases, cross-checking the accuracy of results from the various data collection techniques, and by extending invitations to Joel and Nancy to review and provide feedback on the analysis at regular intervals.

Results and Discussion

As in previous research of the classroom and school-based physical education, three main task systems were identified. These were the instructional, managerial, and student social systems. In addition, two systems unique to adventure education were uncovered and were labeled by the researchers as the exploratory and atmospheric systems.

Instructional System

Joel and Nancy set up a fairly traditional instructional system in that their main mode of instruction was direct. In Mosston and Ashworth's (2001) terms, they primarily employed reproductive teaching styles, particularly the practice style, in which they made most of the decisions. Typically, Joel and Nancy presented a task in a fair amount of detail, the students responded, and the two AEs provided both technical and motivational

feedback. As illustrated in the following field note extract, these two forms of feedback were the major mode by which the AEs held the students accountable for performing tasks.

As we are entering the cave, Joel and Nancy tell the children to stay together with the group, to know the whereabouts of their partner at all times, to respect the bats in the cave by not touching them and by not shining lights on them for more than a couple of seconds at a time, and to maintain several points of contact with the ground as it is uneven and the rocks are slippery. Nancy gives a demonstration of how to move with three points of contact touching the ground. Nancy then explains, "I was making sure that everyone was going to be safe going down the rope and stuff, and getting into a position that they felt comfortable and stable, that they weren't going to go falling into the cave or anything like that."

The students appeared to be very comfortable with this form of direct instruction and, during focus group interviews, noted that Joel and Nancy "picked a lot of good activities" and were "strong leaders" because they ... talked us through [tasks] and set up things and helped us do things." Key reasons for their comfort, then, appeared to be the lack of ambiguity in the tasks they were asked to perform and the fact that there was no risk of formal failure in terms of performing the tasks.

As portrayed in the following field note passages, the students were also comfortable when the two AEs occasionally slipped into reciprocal teaching and required them to provide feedback, or employed the guided discovery teaching style:

The AEs have gathered the students in a circle and are telling them exactly how to put on their harnesses for the high ropes course. The group is asked to wait until the AEs provide a demonstration and to not proceed on their own. Once each student has on a harness, the students are asked to raise two hands in the air. Each student is allowed to put down a hand after another student checks his/her harness for proper safety. Each student's harness is, therefore, checked twice.

While preparing for canoeing, Joel is using a series of questions to teach the children about the boats and paddles. For example, he asks, "How do you think you should hold the paddle for a power stroke?" The children are paying close attention. The pace of the lesson is moderate, and ample time is given for the students to answer.

In addition to increasing the amount of on-task behavior by explaining tasks in detail and providing a good deal of technical feedback, the AEs also appeared to decrease the amount of task avoidance and modification by pitching tasks at the correct level of difficulty or employing a modified version of Mosston and Ashworth's (2001) inclusion style, in which they accepted a range of specified performances for one task. For example, when heading to the cave, it was reported that:

The kids were very eager to get to the cave and wasted no time at all moving up the steep hill on a muddy trail, and the trail was very slippery. Some students moved with careful footing, some used a rope tied to a tree by Joel for assistance, and some simply crawled up on their hands and knees!

In general, the students made few attempts to deflect the path of the primary vector, which was mostly robust and aimed at teaching the various outdoor pursuits. There were times, however, when the AEs' presentation of tasks was vague or confusing, the amount of feedback they supplied was negligible, and, consequently, the students' performance of tasks was "weak." For example, during a trust-building activity called the "zipper line," the following problems were observed:

The students go about the task half-heartedly at best. Joel demonstrates but is forced to slow down because the students are not moving their arms quickly enough. Joel does not really say anything about this problem. Consequently, the students who follow are also forced to slow down and the trust aspect is not as rich as was intended.

Moreover, there were times when the AEs clearly lowered the standards within the instructional system in exchange for compliance with the management system. For example, the AEs decided not to require the students to take part in "compass activities" because "some students that didn't like [them] would've made it really hard on us" (Joel, formal interview).

Management System

Both Joel and Nancy were well aware of the necessity of establishing a strong management system, which involved "laying down some basic ground rules," and "explaining [their] expectations" (Nancy, formal interview). Key rules and expectations, which the AEs relayed to the students during group discussions at the beginning of the camps, were:

1. Be respectful of others and don't make fun of people.
2. Let the AEs know when you have to go to the bathroom.
3. Be safe.
4. Listen and be attentive to directions.

(Joel and Nancy, think-aloud planning; Nancy, electronic journal).

In addition, the AEs set about establishing a number of major routines. These were "meeting everyday at 8 a.m. at the ropes course classroom to store personal gear (e.g., lunches, jackets), transitioning into activity quickly by using a buddy system, and not wasting time when the AEs give the call to gather the group for instruction" (Joel and Nancy, written plans).

Initially, the AEs reinforced their rules, routines, and expectations much as they would have done in a school setting. This they did by reminding students of rules and expectations when they were broken or not met, and practicing, rehearsing, or re-teaching routines. As the camps evolved, however, the parent/guardian chaperones who attended with many of the students increasingly took over the role of enforcing and reinforcing the managerial system to the extent that Joel and Nancy "had less responsibility in the management department" (Joel, stimulated recall interview).

Generally, the parental takeover was fairly successful, in that the chaperones tended to deal with their charges quickly and quietly when the management system was threatened. Consequently, although the AEs were "not sure what to expect" (Nancy, informal interview), for the most part, they "really enjoyed having [the chaperones] around for extra support" (Nancy, critical incident report). In addition, the AEs recognized that, due to the presence of the chaperones, "The students were much better listeners and on task so [the camps were] an easier and more enjoyable experience because [they were] able to do more teaching and leading, rather than more disciplinary stuff" (Nancy, critical incident report).

On the downside, at times the presence of the chaperones appeared to undermine the AEs' authority and both lamented that "the kids don't really listen to us. They always look to the parents for guidance on what to do" (Joel, informal interview). Moreover, because the chaperones were regarded by the students as the enforcers of the managerial system and the AEs became used to abdicating managerial issues, on the occasions when parents/guardians were not present the system was severely weakened. Key problems that ensued included students "talking while [the AEs] were talking," "messing with each other," (Joel, critical incident report), and "testing the AEs" (Nancy, stimulated recall interview).

Social System

To a large extent, the student social system in operation was embedded within Joel and Nancy's interpretation of adventure education and so

served to facilitate the instructional and managerial systems rather than compete with them. For example, the AEs' goals of promoting personal and social growth and developing a sense of affiliation among students could not be achieved without encouraging students to socialize. In addition, several of the stages of adventure (Bisson 1997, 1998, 1999; Rohnke, 1989) also required the students to socialize or work together in groups (e.g., warm-up activities, communication activities, trust-building activities). Finally, achieving a high standard of performance in many of the outdoor pursuits required a good deal of communication among the students. As illustrated by the following formal interview extracts, Joel and Nancy recognized that the student social system had a mainly positive impact on their instruction and management:

I think the activities in themselves prevent having to do a lot of disciplinary action because they're something new and fun for the kids to do and they don't get to do them a lot, and they get really excited about doing them. So I think the kids know that they kind of need to be on their best behavior. (Nancy)

At the ropes course, the social aspect was one of the most important things. The students spent a good deal of time in the morning playing games designed to allow the kids to get to know one another better and differently and to talk to each other extensively. (Joel)

In line with previous literature (Allen, 1986; Carlson & Hastie, 1997; Hastie, 1995, 2000; Hastie & Siedentop, 1999; Placek, 1983; Supaporn, Dodds, and Griffin, 2003), socializing was also a top priority for the students whose reasons for attending the camps included "having fun" and "meeting new friends" (Indigo, age 10, focus group interview). Unfortunately, and as alluded to in the previous two sections, this drive to socialize did occasionally clash with the instructional and managerial systems, usually in the form of interruptions or "not listening" (Joel, informal interview) closely when tasks were being presented.

In addition, there were times when Joel and Nancy sacrificed instructional goals and allowed students to socialize in exchange for compliance with managerial goals or because of a change in their priorities. For example, Joel explained how he "bargained" with the students: "I'll say, 'Let's do this for a little while,' and then we'll do something that I think they might have more fun doing" (Joel, formal interview). Similarly, Nancy recalled that "Canoeing didn't get done ... because the kids were having a good time swimming. And as long they're happy and having a good time here, that's all we really cared about" (Nancy, informal interview).

Exploratory and Atmospheric Systems

Two other task systems were identified as a result of the inductive analysis during the course of the study. The exploratory and atmospheric systems were both embedded in and extensions of the instructional and social systems. These new systems appeared to be unique to the adventure setting as their manifestations did not fit within research findings from either classrooms (Allen, 1986; Doyle, 1977, 1979, 1983, 1986; Doyle & Carter, 1984) or physical education settings (Curtner-Smith, Todorovich, Lacon, & Kerr, 1999; Griffin, Siedentop, & Tannehill, 1998; Hastie, 1995, 1997, 2000; Hastie & Siedentop, 1999; Jones, 1992; Tousignant & Siedentop, 1983).

The exploratory system involved the students morphing an activity (as opposed to a task within an activity) presented to them by the instructors into “an adventure” in which some aspect of the environment was explored with tremendous enthusiasm. Importantly, these adventures were compatible with the management system and the AEs supported and encouraged them once they began. Moreover, although the activities that evolved in this system paralleled the instructional system, they were not part of it because they fell outside the boundaries of the tasks planned and presented by the AEs and were, thus, spontaneous and unanticipated. Additionally, the goals of these activities were usually unclear, though they generally served to enhance the cohesiveness of the student group.

For example, when Joel and Nancy led the campers to a small river island while canoeing, they instructed them to stay in a designated area near the boats. The campers, however, could not curb their curiosity and were soon exploring the island with a great deal of enthusiasm. For instance, and as described in the field notes, Alice (age 11) was overheard saying “Look at this! The water is warm! There’s a pool over here!” Similarly, Isaac (age 10) shouted “Let’s go into the middle of the island” while Rob (age 12) asked “Who wants to go to the other side?” The campers eventually took off in several of their own “exploration teams.” Subsequently, they named the island “Adventure Island.”

The following extracts from field notes about two different caving sessions provide further illustrations of the exploratory system in operation:

The children rushed into the cave as fast as they could. The group began moving through the different spaces in the cave. Nancy asked them to slow down and wait but they were off and running, energetically exploring as many places as they could find.

The campers set out on the trail with their caving gear under a cloudy and changing sky. By the time the group reached the cave entrance at the top of the bluff, severe lightning and heavy rains forced the group to turn back and

move to lower ground. On the way back down the trail, as the main group was waiting for the stragglers to catch up, many campers began making a water/mud slide on the hiking trail.

The overarching goal of the atmospheric system was to provide support for and help sustain the main three task systems (i.e., instructional, managerial, and social). It was broadly focused on the affective domain (Rink, 1993) and consisted of tasks used by the AEs to purposefully create a “warm and inviting climate” (Joel, formal interview), “make the kids feel as comfortable as possible,” “make sure everyone feels part of the group,” (Nancy, informal interview), and nurture students’ personal and social development. Again, the tasks designed within the ropes course sessions based on the eight-stage model derived from the works of Bisson (1997, 1998, 1999) and Rohnke (1989) played a major role in this system.

Both Joel and Nancy recognized the importance of establishing a strong atmospheric system because it aided management in terms of promoting “mutual respect” (Joel, formal interview), “better behavior” (Nancy, formal interview), and “making it easier to work with [each other]” (Joel, formal interview). Similarly, during formal interviews Joel noted that making the “experience as fun as I can,” and Nancy explained that creating a “friendly” atmosphere would aid in achieving both their “educational” (i.e., instructional) and personal and social objectives.

Interestingly, and as illustrated in their focus group interviews, the campers also seemed to recognize the importance of the atmospheric system. Jerry (age 12), for example, noted that the AEs pressed students “to be respectful to [their] teammates or camp-mates,” Janice (age 11) recognized the emphasis on “how to make new friends and stuff like that,” and Gerald (age 14) explained the AEs “wanted us to learn how to respect other people and how to, like, support and help other people.”

Summary and Conclusions

This study uncovered the five task structure systems that made up the ecology of two adventure camps for children and youth. The instructional and managerial systems were very similar to those previously described by classroom (e.g., Doyle, 1977, 1979, 1983, 1986; Doyle & Carter, 1984) and sport pedagogy researchers (e.g., Tousignant & Siedentop, 1983), while the exploratory and atmospheric systems had not previously been identified and appeared somewhat unique to adventure education.

Moreover, the social system was similar to those observed within sport education (Carlson & Hastie, 1997; Hastie, 2000) and adventure education (Hastie, 1995) within school-based physical education in that it mainly served to support the instructional and managerial systems rather than

compete with them as in more traditional models of teaching. However, the fact that there was at least some tension between the social and instructional systems during task presentation within the present study is an important departure from Hastie's (1995) conclusion that student socializing was not problematic in the adventure education setting. Perhaps AE training could include purposeful instruction on how to promote both the exploratory system, when appropriate, and the atmospheric system, without compromising the structure and intent of the management system.

Another key difference from Hastie's (1995) school-based study is that the responsibility for enforcing the management system was gradually taken on by parental chaperones, which was both advantageous and difficult for the AEs. Because this is a structure that AEs operating outside the school context are likely to encounter with increasing frequency given current concerns regarding liability, it would seem sensible that those training AEs talk to their charges about how to form good working relationships with parents. Perhaps the focus of these discussions should be on the need for AEs to retain overall responsibility for management and to provide clear guidelines as to what is expected of chaperones.

There are, of course, other implications for AE training from this and similar studies. First, having some understanding of the ecological framework, in general, and the ecologies of different types and interpretations of adventure education, in particular, would surely help neophyte AEs learn their trade. Specific guidance on how to construct a foundational managerial system within the adventure setting would also be of use, as would practical advice on how to provide students, particularly those of a nervous disposition, with instructional tasks that are low risk and unambiguous. Those responsible for AE preparation might also do well to focus on pedagogies that enable AEs to ensure that the student social system contributes to, rather than detracts from, their instruction and management. Finally, teaching AEs methods by which they can nurture the exploratory and atmospheric systems could also lead to their increased effectiveness.

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