CHAPTER ONE

INTRODUCTION

1.1 Roots of Outdoor Education in Singapore

The roots of outdoor education in Singapore can be traced to the camping movements established in the early part of the 20th Century. The Boy Scouts Movement founded in 1910 by a UK trained Scout, Mr Frank Cooper Sanders, who became the first Chief Scout Commissioner is most probably the first "outdoor education" organisation that served the needs of the young people in the island country. Its formation is somewhat a remarkable feat considering the fact that it was merely two years after Lord Baden Powell had started the movement in UK. Following the formation of the Boys Scouts Movement in 1910, the Girls Guide (1917), Girls Brigade (1927), Boys Brigade (1930), and National Police Cadet Corps (1959), all of whom deliver outdoor education as a part of their manifesto, were established.

1.2 Outdoor Education Programmes in Singapore Schools

All school-based adventure programmes come under the jurisdiction of the Co-Curricular Activities Branch (CCAB) in the Ministry of Education (MOE) that has two units to regulate the outdoor programmes in schools - Uniformed Groups Unit and the Outdoor Education Unit.

The Uniformed Group Unit specifically monitors all the school uniformed groups' programmes, including the outdoor education programmes of the Scouts and

Guides Movement, Boys and Girls Brigade, National Cadets Corps, National Police Cadets Corps, Civil Defence Cadets Corps, Red Cross and St. John Ambulance Brigade. It manages a MOE Adventure Centre specially built for use by students from the National Police Cadets Corps.

The Outdoor Education Unit was set up in 1999 to formulate policies, plan and manage the provision of outdoor resources such as the MOE Adventure Centres, as well as provide advice to schools on all outdoor education-related matters. It also manages the specially allocated annual budget of 1.2 million dollars to send selected students from schools that have been allocated places to the five or nine days Outward Bound programmes in collaboration with the Outward Bound School in Singapore. This programme is offered at no cost to the schools and their students.

The Outward Bound School in Singapore, now renamed as Outward Bound Singapore (OBS) was founded in 1967 and managed by the Ministry of Defence from 1969 to 1990. It was not strictly speaking in the mainstream of outdoor education prior to 1991 as the main objective of the programme then was to prepare boys for national service in the military through regimental outdoor training. Since April 1991, when its operations were taken over by the People's Association under the umbrella of the Ministry of Community Development and Sports, it has realigned its objectives similar to that of the International Outward Bound Trust. Personal growth and team development for youths in Singapore is currently the mainstay of OBS programmes (Tan, 2005).

Other than the cost-free avenue of sending their students to OBS for adventure-based programmes which are limited in places due to the high demands from a large number of schools, another option for the schools is to organise their adventure-based residential programme at the adventure centres run by MOE.

Adventure-based camps organised by schools have been an integral part of the co-curricular component of the education system since the acquisition of the first MOE Campsite in St. John Island located off the Southern Coast of Singapore in the 1960s and the subsequent setting up of campsites with provision of adventure-based facilities.

Adventure-based outdoor education programmes such as adventure camps and expeditions are regarded by the government as a useful medium to develop important life skills and attributes. In his reply during the Parliamentary Debate on the Education Budget in March 2004, the Minister of State for Education stated that "rugged activities" such as sports, adventure camps, and expeditions "are naturally well-suited to develop qualities like perseverance, self-reliance, a sense of adventure, self-confidence and a "can-do", gung-ho spirit. All of them are important in the challenges that we are going to face in life" (Singapore Parliament Reports, 2004). Moreover, in his maiden National Day Rally speech as the new Prime Minister in August 2004, Mr Lee Hsien Loong highlighted the case of an independent school that has incorporated outdoor education programmes with its formal school curriculum.

"The school sent their entire cohort of Secondary 3 students to Outward Bound Singapore for 5 days, teachers as well as students conducted classes there. So you do the Outward Bound routine, you camp, you rough it out, you do the physical part, test out your character, experience the roughness and challenge each other and put their leadership skills to the test. The Education Ministry can't order this, the schools must want to do this" (Outward Bound-International, 2004, p. 18).

There is strong State support for the beneficial role that outdoor education plays in the personal and social developments for the young. This support for outdoor

education programmes in schools is evident in the measures taken by the Education Ministry policy to encourage all national schools to provide for all their students the opportunity to participate in at least three outdoor camping experiences in their school life; once when they are in primary school and twice in secondary school.

In recent years, in response to this policy, there has been an increase in schools organising adventure-based programmes using the four adventure centres run by the MOE. Typically, these programmes involved a two to three day adventure-based residential camp in the Centres.

1.3 MOE Adventure Centres

To-date, MOE has developed a total of six fully-equipped adventure centres for use by schools in Singapore. All these Adventure Centres, strategically located in all four geographical regions in the land-scarce island nation, have specially-built facilities to cater to the needs of schools for adventure-based programmes. Typically, these facilities include: team-building; initiative and problem-solving stations; a high tower for rock-climbing, abseiling and zip-line; both low and high elements challenge course; and ample space for camping and orienteering activities. In addition, two of these Centres which are located next to the seafront have equipment for water activities such as improvised rafting and kayaking.

1.4 Trends in Outdoor Education Programmes in Schools

At present, adventure-based education programmes delivered by schools in Singapore, as observed by the researcher in the MOE Adventure Centres, tend towards what has been coined by Ritzer (1993) as the “McDonaldisation phenomenon”. This

phenomenon describes the trend whereby "much of one's life experience is increasingly provided as a standard, dependable and safe product just like the McDonald's hamburger. It guarantees an adrenaline rush as a predictable outcome, thus losing the essence of adventure being of uncertainty in outcomes". (Loynes, 1997, p. 52) Additionally, similar to the trend in North American schools (Garvey, 1999), large numbers of students are increasingly being put through a multi-activity challenge programme in a relatively short span of time, usually between one to two days. This has often led to the programmes being activity-centred rather than learner-centred as is indicated by the lack of reviewing sessions and time allocated for the students to reflect, which are often passed over due to the "lack of time". Unless this trend is arrested early, local outdoor education programmes may face a decline in the quality of the experience and the meaning that experience has for our young.

Dewey (1938, p. 25) suggests that, "The belief that all genuine education comes about through experience does not mean that all experiences are genuinely or equally educative. Experience and education cannot be equated to each other. For some experience is mis-educative." This suggests that it is insufficient to provide an experience nor simply the activity of the experience alone. Rather, it is the provision of the quality of the experience that counts. The criteria for an experience to be educative are the continuity and interaction of the experience (Dewey, 1938). The implication is that reflection on learning from an initial experience is important for learning to be educative for future experiences. Hence, this trend of "never mind the quality feel the width" in outdoor education programme without the provision of opportunities for the students to reflect on their experience as is practiced by an increasing number of schools in Singapore may well lead a mis-educative experience.

1.5 Rationale and Aims of Study

A recurring message from recent reviews of outdoor education research was the urgent need for a greater understanding of the process of outdoor learning by young people (McKenzie, 2000; Rickinson, Dillon, Teamey, Morris, Choi, Sanders and Benefield, 2004). With the increase in outdoor adventure programmes conducted by schools in Singapore, the need to evaluate the impact of these processes on student learning outcomes seems increasingly urgent. Understanding the process that happened during an adventure experience and whether the outcomes are congruent with the sound pedagogy and philosophical foundation and practice of experiential education would help provide important information to enhance these programmes. As Sibthorp (2003, p. 145) pointed out, "without a more complete understanding of the processes behind adventure-based learning and the types of learning that are most applicable after programme completion, designing optimal programmes will remain an enigmatic hit and miss proposition".

Moreover, Ho (2003) observed that there is a lack of current research and evaluation on the effectiveness and benefits of these programmes for young Singaporeans. She attributed this acute shortfall in research on adventure-based education programmes for the young to the short history of the nation and the infancy stage of outdoor education in Singapore.

A more pressing issue, however, is the absence of studies on the processes behind the adventure education programmes. This knowledge gap in research on outdoor adventure education in Singapore needs to be addressed if this field is to develop understanding and perhaps credibility in its role of educating our young. Thus, the purpose of this study is to bridge such knowledge gaps by focusing on

examining the processes that influence the outcomes of an adventure-based education experience of students in Singapore.

Specifically, this study aims to examine the processes that influence the learning outcomes as measured by any change in the 'self-perception of life effectiveness' of 37 Secondary Two pupils in a 3-day adventure-based camp programme. This was carried out through an examination of the characteristics of the experience, such as the structure of the programme, type of activities, instructor affirmation, group dynamics and social support, on learning outcomes as measured by any change in 'self-perception of life effectiveness' skills of the students during the programme.

In addition, this study also attempts to measure the learning outcomes of Secondary students from an adventure camping programme conducted by a local school in Singapore. Research in this area is very lacking in Singapore. The two recent studies that focused on learning outcomes of Secondary students arising from a 5-day adventure camp programme were conducted by Outward Bound Singapore, an external organisation. There has not been any study on measurements of learning outcomes of Secondary School students in a multi-day residential adventure camping programmes conducted by Singapore schools to-date. Hence, it is vital for me, a MOE Outdoor Education administrator, to perform such a research and help shed some light in the learning outcomes of Secondary students from an adventure camp programme conducted by a local school.

1.6 Research Questions

This study was set out to achieve an understanding of the following research questions:

- ♣ Does a 3-day adventure-based residential programme have an effect on the participants' perceptions of personal effectiveness?
- ♣ Which are the process and programme factors that influence the learning outcomes of the participants during the programme?

1.7 Operational Definitions

I have adopted the following definitions for the purpose of this study.

Adventure education (Baldwin, Persing and Magnusson, 2004, p. 168) is defined as a form of experiential education characterised by:

(a) the planned use of adventuresome activities,

(b) a real-life activity or learning context,

(c) goal-directed challenges that must be solved individually and in groups,

(d) an outdoor or wilderness setting,

(e) cooperative small group living and activity participation,

(f) trained leaders/facilitators, and

(g) specific, pre-planned educational or developmental goals.

- ***Adventure-based learning*** is "a type of educational and/or therapeutic program in which adventure pursuits that are physically and/or psychologically demanding are used as a framework of safety and skills

development to promote interpersonal and intrapersonal growth" (Luckner & Nadler, 1992, p. 254).

- ***Life-effectiveness*** refers to the "psychological and behavioral aspects of human functioning which determine a person's proficiency in any given situation" (Neill, Marsh & Richards, 1997, p. 5).

- ***Review of Life Effectiveness and Locus of Control (ROPELOC)*** is a self-reporting instrument used to measure the 'perception of life effectiveness' and 'locus of control'. The ROPELOC instrument assumes that the general psychological and behavioural processes referred to in the definition of life effectiveness can be explained using the following fourteen dimensions (Richards, Ellis and Neill, 2002):

  (a) Active Involvement: Use action and energy to make things happen.

  (b) Cooperative Teamwork: Cooperation in team situations.

  (c) Coping with change: The ability to cope with change.

  (d) External Locus of Control: Accepting that external issues control or determine success

  (e) Internal Locus of Control: Taking internal responsibility for actions and success

  (f) Leadership Ability: Leadership capability.

  (g) Open Thinking: Openness and adaptability in thinking and ideas.

  (h) Quality Seeking: Put effort into achieving the best possible results.

  (i) Self Confidence: Confidence and belief in personal ability to be successful.

(j) Self Efficacy: Ability to handle things and find solutions in difficult situations.

(k) Social Effectiveness: Competence and effectiveness in communicating and operating in social situations.

(l) Stress Management: Self-control and calmness in stressful situations.

(m) Time Efficiency: Efficient planning and utilization of time.

(n) Overall Effectiveness: The overall effectiveness of a person in all aspects of life.

1.8 Background Information on Singapore

Singapore is an island state with a multi-ethnic society. Based on the 2000 Census The population of 4.24 million (Statistics Singapore, 2005) has a racial composition of 76.8% Chinese, 13.9% Malay, 7.9% Tamil and 1.4% other races.

Due to this multi-racial populace, the working language adopted nationwide is English. All local government schools adopt English as the first language of instruction. However, as most Singaporean students culturally speak their own native language/dialect at home, English is paradoxically not the first language of choice for them outside of school. As observed during the camp, the students from the same ethnic grouping tend to converse in their own native language when grouped together thus creating some difficulties for the researcher during the participant observation phase of the study. This happened despite the policy of the school to restrict the students to speaking English while in school, and during the camp as was specified in the programme booklet issued to the students.

CHAPTER TWO

REVIEW OF LITERATURE

2.1 Impact of Adventure-based Programmes on Young People

2.1.1 *Findings from Review of Research in Outdoor Education*

There have been numerous studies that indicate the positive impact of outdoor adventure programmes on young people especially in the affective, social, interpersonal, physical and behavioural domains. Ewert (1989, p. 57), for example, quoted several studies to show that the benefits of outdoor adventure pursuits are "centred around psychological, sociological, educational, and physical dimensions". Similarly, Hopkins and Putnam (1993) also cited several studies from various Outward Bound courses to provide empirical evidence of the positive effect on self-esteem and self-awareness of the participants of outdoor adventure programmes.

More recently, in a review of the research on outdoor learning conducted from 1993 to 2003, a team of researchers in the UK comprising Rickinson, Dillon, Teamey, Morris, Choi, Sanders, & Benefield (2004) reported several "meta-analyses" of the considerable amount of empirical evidences found in these studies. For instance, both the meta-analyses of Cason & Gillis (1994), and Hattie, Marsh, Neill, & Richards (1997), based on the findings of 43 and 96 studies respectively, have collectively "provided strong support for the beneficial impact of outdoor education programmes on young people" (Rickinson, et al., 2004, p. 26). This review concluded that outdoor adventure programmes could impact positively on young people by enhancing their attitudes, beliefs and self-perceptions (examples of outcomes include independence, confidence, self-esteem, self-efficacy and personal effectiveness) and the development

of their interpersonal and social skills such as social effectiveness, communications skills, group cohesion and teamwork.

However, it should be noted that researchers and reviewers have cautioned against exaggeration of the benefits of outdoor education programmes as changes in outcome measures such as self-concept and self-esteem are difficult to substantiate, and may possibly occur regardless of the participation in the programme (Davidson, 2001). Hopkins and Putnam (1993) are amongst some of the prominent outdoor educators to admit that there is little evidence of the effectiveness of outdoor education. This view is supported by Nicol and Higgins (2002) who argue that the claims of personal and social learning outcomes in outdoor adventure are disproportional to the evidence in support of them. They have advised that caution should be exercised over these claims. Neill & Richards (1998, p. 7) also acknowledged that "outdoor education programmes are not panaceas as evidenced by the fact that a number of evaluation studies reported negative outcomes".

Furthermore, Barratt and Greenaway (1995), in a review of research in outdoor programmes, also found that the impact of outdoor adventure programme is generally short-lived. Also, in their review of literature on adventure-based programmes and their impact on life-skills, Moote and Wodarski (1997) found that there have been few comprehensive, well-controlled studies concerning adventure-based programming.

Sibthorp and Arthur-Banning (2004, p. 44) posited that the moderate magnitude of effect sizes, which is a measure of "how much" difference there is between peoples' rating of themselves at two different points in time (Neill & Richards, 1998), found in recent meta-analyses of adventure programme outcome such as that of Cason & Gillis (1994) as well as Hattie et al. (1997) as quoted above are likely to "suffer from an inflationary bias created by the propensity to publish only

statistically significant findings". They believe that given such moderate effect sizes, it is important to ascertain which are the programmatic characteristics and perceptions that could make the programmes more developmentally significant to the participants.

The use of meta-analyses which pool the findings about a research question from many different sources and analyse the overall effects of the outdoor adventure programmes has its critics as well. It has been criticised for mixing apples and oranges or combining studies with different measurement scales, designs, and methodologies (Thomas and Nelson, 2001). As such, Henderson (2004) maintained that meta-analyses are only as useful as the primary research studies that are used. As some of these primary studies are poorly designed, the findings from the meta-analyses of such studies may not be as clear as they are often made out to be. Caution should also be exercised, therefore, on the outcomes of the review of research on the impact of outdoor adventure education by Rickinson et al (2004) which is based predominantly on the findings from two meta-analyses by Cason & Gillis (1994), and Hattie, Marsh, Neill, & Richards (1997). These two meta-analyses were based on original studies from mainly Outward Bound programmes in USA and Australia, which may not be as relevant to the Singapore context where the type of outdoor education programmes, cultural and ethnic differences, could be the differential factors.

2.1.2 *Findings from Specific Studies*

A review of the literature on the impact of adventure programming from specific case studies revealed mixed results. For instance, Forgan and Jones (2002) found from a case study of a class of exceptional students (with learning difficulties) that participation in adventure activities conducted two to three times a week led to an improvement in their behaviour and self-concept as measured by the decreases in their

misbehaviour and increases in their problem-solving skills. However, this is a small-scale case study comprising the findings from four exceptional children with no control group used, hence, making it difficult to generalise the findings to a larger population of children from normal mainstream schools.

Another qualitative study using focus group interviews by Bobilya and Akey (2002) was conducted on 14 first year university students. It examined the students' perceptions of the impact of their participation in a one week adventure education programme using high and low rope challenge courses a year after the programme. The interviewees revealed that the rope challenge course had facilitated social integration and teamwork within the community; developed critical thinking skills, personal sense of competence and awareness; developed peer support for academic success and personal relationships within the faculty; as well as provided an alternative environment for learning and socialisation.

Similarly, Harris (2000) reported a statistically significant increase ($p \leq 0.05$) in the self-concept scores using the Rosenburgh Personal Opinions Scale instrument and a questionnaire investigating the experiences of 30 Secondary School pupils who had participated in a 5-day residential outdoor education programme in the UK. The increase in self-concept score remained statistically significant ($p \leq 0.05$) three months after the course in comparison with the self-concept scores of the control group of 30 students from the same year group and school who did not participate in the residential outdoor education programme. He therefore concluded that the result of this study supported the claims of the benefits of outdoor education programmes.

Furthermore, Davis-Berman and Berman (1994) found that the positive benefits in self-concepts directly following an adventure programme were not maintained at a four-month follow-up, but the self-concept's level surpassed that of

both the pre-test and post-test levels after one and two years. They posited that the self-concept benefits may take sometime after a change programme. However, it was not known whether other external factors have influenced the positive change in self-concepts following the change experience as no control group was used in this study.

Conversely, the quasi-experimental study by Kaly and Heesacker (2003) on the effect of a summer ship-based adventure programme on 256 participants ranging in age from 12 to 22 years showed no change in the self-esteem of the adolescents after the programme. Additionally, Meyer and Wenger (1998) found in a study of a team of sportswomen who participated in a ropes challenge course that the positive benefits such as goal-setting and group cohesion concepts derived from the course were short-lived. The team cohesion and unselfishness shown during the ropes course were soon abandoned by most of the participants as reported by the coach in the three months and nine months post-course follow-up studies.

Given the varied findings of past studies on the outcomes of adventure programming for young people, it therefore seems sensible to heed the advice of some outdoor educators to be cautious in exercising the claims of beneficial effects.

2.2 Measurement of Outdoor Adventure-Based Education Outcomes

As noted by Hattie, Marsh, Neill, and Richards (1997), most of the research done in adventure programming between 1950 to the late 1970s was mainly descriptive in nature with narrative accounts and case studies as the main focus. These descriptive studies which suggested that self-concept is enhanced through adventure training and development subsequently led to it becoming the most researched outcome factor in adventure education (Cason & Gillis, 1994; Hattie, et al., 1997). A parallel trend that followed this surge in outdoor education research on self-concept as

a measure of learning outcome is the increase in quantitative studies that employed the use of self-reporting instruments which are relatively easy to administer to large groups of participants. This has led to subsequent calls by a number of outdoor educators such Ewert (1988), Warren (1999), Allison & Pomeroy (2000), McKenzie (2000), Sibthorp (2003), etc., for more process-based studies on outdoor education programmes.

2.2.1 *Use of Self-Report Instruments to Measure Impact of Outdoor Adventure Programme on Personal Effectiveness*

Neill, Marsh and Richards (2003) asserted that while there are many studies of outdoor education programmes in the area of self-concept and self-esteem, few addressed the issues of how these programmes have impacted on personal 'life effectiveness'. 'Life effectiveness' as defined by Neill et al. (1997) is "the psychological and behavioural aspects of human functioning that determine a person's effectiveness or proficiency in any given situation. In simpler terms, 'life effectiveness' skills refer to how an individual acts, responds and thinks in a variety of situations. It is hypothesized that the greater the personal effectiveness, the more likely that the individual will achieve success in life" (Neill, et al., 2003).

Recently, a number of 'tools' specifically to measure the impact of outdoor learning programmes on personal effectiveness have been designed. These include the Life Effectiveness Questionnaire-Version H and I (LEQ-H, LEQ-I) by Neill, Marsh & Richards (2003); Characteristics of the Experience Scale (CES) by Sibthorp (2001); as well as the Review of Personal Effectiveness and Locus of Control (ROPELOC) Questionnaire by Richards, Ellis & Neill (2002). Of which, the LEQ-H and the

ROPELOC have been psychometrically tested with large sample sizes and claimed to have high internal reliability (Neill et al., 2003; Richards, et al., 2002).

The following are some examples of studies that yielded positive impact of adventure-based experience on personal effectiveness using these tools of measurement. For instance, using the Life Effectiveness Questionnaire-Version H (LEQ-H) instrument which measures the eight dimensions of 'achievement motivation', 'active initiative', 'emotional control', 'intellectual flexibility', 'self-confidence', 'social competence', 'task leadership', and 'time management'. Eagle, Gordon and Lewis (2002) conducted a study to determine the effects of a one-day adventure experience on personal effectiveness of 100 participants between the ages of 10 to 18. The adventure programme was conducted using the challenge ropes course. Personal effectiveness was determined using the LEQ-H instrument with pre- and post-test data collection. The findings concluded that the one-day intervention had a positive impact on the students' life effectiveness. However, Eagle et al. (2002) acknowledged that a limitation of this study is the lack of objective criteria to measure proposed change impacted by the intervention as the LEQ questionnaire is a self-report of self-perception. They suggested that future studies should incorporate other kind of measures in addition to self-reports.

Preliminary findings from a study by Christie (2001) of 469 Secondary Four students participating in a 5-day Outward Bound programme in the UK, using the LEQ questionnaire for pre-test and post-test analyses, pointed to an overall positive effect of the programme on the students' self-perception of life effectiveness. She therefore asserted that the programme appeared to have a statistically significant effect on the students' perceptions of their "self-confidence", "intellectual flexibility", and "social competence". In addition, she found from her study that interviews with the

students yielded more interesting and robust data as compared to the LEQ questionnaire employed.

Another study by McLeod and Craig (2004) evaluated the effectiveness of an experiential learning and outdoor education school programme on the life effectiveness skills of 169 middle-school boys, aged between 13 and 16 years, in Australia using the LEQ-H and Social Validation Questionnaire (SVQ) to measure the programme outcomes. The study concluded that the group of boys who participated in the outdoor education programme showed a statistically significant increase in their perception of overall life-effectiveness score when compared with the other two groups of boys who did not participate in the outdoor education programme, as measured by the LEQ and SVQ instruments. The researchers noted, however, that there was a statistically significant difference in pre-test mean scores of LEQ between the group of boys participating in the outdoor education programme versus the groups that did not. They raised the possibility that the group of boys who opted to participate in the outdoor education programme are more inclined to possess proficient life effectiveness skills due either to innate personality traits or previous exposure to similar programmes.

A recently concluded study by Tan (2005) on 800 Secondary Three students from two independent schools participating in a 5-day Outward Bound programme in Singapore, using the LEQ-I for pre- and post-test analyses also revealed a positive effect of the programme on the students' perception of their life-effectiveness. This was based on a statistically significant increase in the overall life-effectiveness mean scores and seven out of eight statistically significant findings of the LEQ-I dimensions ($p < 0.05$) measured three months after the course. The significant effects of the programme on the students' perception of their life effectiveness were still present for

the LEQ-I dimensions of “task leadership”, “emotional control”, “self-confidence”, and “active initiative” nine months after the course.

Similarly, the study conducted by Stenger (2001) on 120 middle school students in the United States (USA) using the LEQ-I to examine the changes in perceptions of life effectiveness after a 3-day adventure-based residential outdoor education programme also found a significant increase in the overall LEQ-I scores from pre-test to post-test which remained the same one month after the adventure-based programme.

Another study by Purdie and Neill (2002) on 177 high school students in Australia using their Review of Personal Effectiveness (ROPE) instrument, a revised measurement tool from the LEQ, found a modest gain in the overall life effectiveness of the participants after an outdoor education programme. However, as is the case with the studies by Tan (2005), and Stenger (2001), this study did not employ a control group. Hence, it is not known whether any change in the participants’ perception of their life effectiveness may be influenced by other external factors not related to the programme.

In contrast, Culhane (2004) found no significant improvement in both the perception of life-effectiveness and locus of control of 69 US students, aged between 10 and 11 years, after an eight-week adventure-based cooperative physical education intervention programme. The review of Personal Effectiveness and Locus of Control (ROPELOC) self-report instrument was used for the pre-test and post-test measurements in this study. A total of twelve lessons were delivered in the eight weeks for all the students who were instructed in three separate classes by the same physical educator.

Other findings in the same league include a study by Doherty (2003) on 53 students aged between 15 and 16 years old from a public school in Australia. This study also showed no significant increase in the students' perception of life-effectiveness as measured using the LEQ-I instrument before and after a one-day challenge course programme incorporating the high rope and initiative challenges.

Likewise, the findings by Ho (2003) on 189 Primary Five pupils in Singapore after a 3-day adventure-based residential experience showed no increase in the pupils' overall life effectiveness as measured by the LEQ-H instrument. Another group of 156 Singaporean Primary Five pupils not participating in the three-day adventure residential programme served as a control group. Noting that most of the studies on personal effectiveness that used the LEQ-H instrument were conducted on predominantly Caucasian and older age group students, she raised doubt as to its use as a reliable instrument for measuring the outcomes of outdoor educational programmes for Singaporean students due to probable cultural differences. She asserted that outdoor adventure programmes in various countries and regions make cultural assumptions about their participants from different ethnicities without acknowledging that there are differences in values such as attitudes towards risk and communicating of feelings among them. This view is supported by Purdie and Neill (2000) who found in a study that cultural differences create difficulties in experience for a group of Japanese students participating in an Australian-based outdoor education programme. They recommended that a closer examination of the cultural relevance of outdoor education activities and methods for people from other cultures should be conducted.

Ho (2003) also doubted the suitability of using the LEQ-H as a tool for measuring personal life effectiveness for younger participants such as pupils between

10 and 11 years of age in Singapore as they are likely to have difficulty interpreting the meaning of the language and words used in the questionnaire. This represents another gap in research on outdoor education as there are few studies, if any, on children who are non-native speakers of English participating in English language-based outdoor education programmes.

Perhaps the major criticism of the use of self-report instruments as measurement of the outcomes of outdoor education programmes such as the Rosenberg Self-Esteem Scales, LEQ, ROPELOC questionnaires, and the like lies in the four main potential problems identified by Hopkins (1998): socially desirable and fakeable responses, self-deception, semantic problems, and criterion inadequacy. The respondents using a self-report instrument may fake a socially desirable response if one affective state is socially desirable and the other is not. Self-deception occurs when the respondent's true opinion of himself or herself is erroneous. Semantic problems involve the wording used in the questionnaire. Terms like "mostly", "sometimes" and "frequently" are open to a wide range of interpretations. Additionally, criterion inadequacy is a common occurrence in self-reported affective measures as there are often no definitive criteria to check the measurement (Sibthorp, 2000). Hence, findings from studies that employed only the use of a self-reporting instrument as a methodology should be interpreted cautiously and critically.

2.2.2 *Factors that Influence the Outcomes of Adventure-Based Education Programmes*

In a review of the literature in outdoor education, McKenzie (2000) found that the age, gender, background and expectation of the participants may influence the outcome of the adventure education programme though some of the studies of the

effect of these factors are inconclusive. Likewise, Ewert & Sibthorp (2000) noted that variables such as age, gender, ethnicity, culture, level of experience, type of programmes and personality characteristics of the participant often contribute to the variety of outcomes in outdoor adventure programmes. It is known that these variables can influence important programme variables such as the group dynamics, duration, location, and types of activities. Unfortunately, studies in culture and ethnicity are lagging far behind other areas of inquiry in outdoor education (Roberts and Yerkes, 2000). Thus, there lies a vacuum in this area of research where there are cultural and ethnic differences in the perception of outdoor education between Asian and Western societies.

The length of an outdoor education programme appears to influence its outcomes as well. Hattie, et al (1997) found in their study that longer programmes have greater impact on the learning outcomes. Given the current trend to make outdoor educational programmes shorter all around the world, mainly due to financial consideration, this finding by Hattie, et al (1997 needs to be examined further.

Moreover, the processes behind many outdoor adventure education programmes remain poorly documented (Sibthorp & Arthur-Banning, 2004). For instance, the expectation of the participants and their perception of empowerment in an outdoor adventure programme are not well understood (Sibthorp, 2003). As Allison & Pomeroy (2000) suggest, more research is needed on understanding the programmatic processes of outdoor adventure education.

2.2.3 *Issues with process versus outcomes measure in research on outdoor education*

The use of quantitative methods to measure outcomes of adventure education programme such as the self-report questionnaire has been subjected to criticisms by many experiential education researchers. Bocarro and Richards (1998), Brown (2003), Ewert (1989, 1995), Lugg (2004), and Warner (1990, 1999); amongst other researchers, asserted that there has been too much emphasis placed on outcome-based research. Specifically, Beames (2004, p. 145) highlighted that "much of the research in outdoor education has focused on the participants' outcomes rather than the aspects of the experience that elicited those outcomes". Likewise, Sibthorp (2003, p. 145) lamented that, "despite a number of calls for more process-focused research, outcome-oriented studies continue to dominate the recent published literature". This is especially so where there is an over-reliance on paper and pen measurement and self-report questionnaires for research that attempt to measure attitudes such as self-concept, self-esteem and self-awareness (Ewert, 1989; Bocarro & Richards, 1998).

Allison & Pomeroy (2000) took the issue a step further in advocating that research that adopts an outcome-based approach does little to raise understanding of the experiences of the participants and the practice of outdoor education. They posited that rather than to ask "does it work?", researchers should focus their effort on finding the answer to questions such as "what processes are at work in this situation?" or "what are the participants' perspectives on the experiential education programmes?" (Allison & Pomeroy, 2000, p. 96). This view is in alignment with the observation of Warner (1984, p.41) that "it is paradoxical that an education movement which places so much emphasis on learning as a process focuses its research efforts on documenting products" and suggest that the more appropriate way to conduct research

in outdoor experiential education is to employ a constructivist epistemology if we subscribe to the belief that the field is based upon learner-centred practice.

Similarly, Klint (1999, p. 167) believed that "inquiry into the adventure experience needs to move into the next stage, from describing the product to understanding the process". She called for a move in research towards an understanding of how the adventure experience influences human perceptions and behaviour.

Another problem with outcomes-based research highlighted by Henderson (2004), is that researchers are often unable to describe the process or implementation associated with the positive outcomes found. Henderson maintained that changes in behaviours or attitudes do not occur just because experiential education is used and knowing the extent of the positive outcomes will be useful only if researchers can explain why the changes occurred so outdoor educators can improve their practice to reach those same outcomes. Furthermore, Brookes (2003a, 2003b) challenged the concept of "character building" in the Neo-Hanian (NH) approaches to outdoor adventure education (OAE). He highlighted that character traits are "supposed to manifest themselves consistently in diverse situations: trustworthiness on the mountains implies trustworthiness at work" and argued against the notion that character traits such as honesty, trust, and compassion can be developed in an individual in a NH OAE programme (Brookes 2003a, p. 49). He reiterated that the trait-behaviour shown by the individuals and their trait changes observed in an OAE situation are not strong predictors of future behaviour in situations other than in the OAE. He concluded that OAE programmes may provide situations that elicit certain desirable behaviours but do not build character (Brookes, 2003a).

The call by Klint (1999) and Allison & Pomeroy (2000), among others, for more research on processes in outdoor education programmes seems more compelling given the conclusion drawn by McKenzie (2000) from a review of literature that although there are many process-based publications that have surfaced recently, these remain largely ungrounded in research.

Ewert (1995) as well as Roberts and Yerkes (2000) believed that a balance is needed, with research devoted to both outcomes and process. In fact, Robert and Yerkes (2000) emphasised that embracing and accepting both qualitative and quantitative methodologies in experiential education research is essential. Ewert (1995) stressed that if we fail to address "why" and "how" the experience works; i.e. the process, we will lose the ability to predict whether the same outcome can be derived in a different situation or with different participants. At the same time, he believed that not addressing the impact and effect of the experience on the individual would ultimately do a disservice to the profession. Priest (1999, p. 309) has also argued that more research is needed to demonstrate effectiveness and establish credibility as they "can prove how and why adventure programmes works." He also claimed that there are increasing numbers of outdoor adventure programmes in various organisations that are being terminated around the world due to funding cutback. According to him, this stemmed from the inability of these organisations to back up their claims of the benefits of their programmes.

My personal position is that research to raise the understanding of the process of the experiences of our young is more important to fulfil their needs. However, in the context of Singapore, both processes and outcomes measurement in outdoor education are necessary as research in both areas is lacking.

An extensive literature search for local studies on outdoor adventure education programmes for young people confirmed the findings by Ho (2003) that there is an acute shortage of research in this area. To-date, there have only been five studies completed on adventure-based education programmes for students in Singapore; all unpublished except for a recent one by Wang, Ang, Miang and Khalid (2004) which examined the motivational factors that influence the participation of Secondary school students in a 5-day Outward Bound course. While the latter study represents a step forward for research on the increasing phenomenon of adventure programming in Singapore schools, more could be done to look into the processes that shaped the experiences of the students.

As Harris (2000, p. 9) highlighted, "in an educational setting it is becoming increasingly important to be able to identify the precise nature of the outcomes expected from a particular programme and also prove that these expected outcomes have been achieved." This is particularly relevant to the education scene in Singapore where schools and institutions are regularly assessed on their best practices matched with the outcome measures of their programmes.

With an increase in the variety of curricular programmes that schools are implementing and the decrease in the allocated budget for such programmes due to the current national economic drive in Singapore to maximise outputs with minimal resources, outdoor education programmes in schools are facing stiff competition for the allocation of funds. Outcomes measurement is increasingly required by administrators and fund providers to justify that the outdoor education programmes are good investments; they are not wasting limited resources in their support of programmes which they may not see as effective. Without concrete evidence of the value of outdoor education programmes on personal and social development as is the

main emphasis in Singapore, outdoor educators may find it increasingly difficult to convince decision-makers and budget-holders of the importance of such programmes over the less expensive educational programmes. However, it has to be acknowledged that there are other valid rationales for the role outdoor education can play such as education for sustainability, promotion of an active and healthy lifestyle through outdoor pursuits and citizenry, to name a few.

At the same time, I believe that there is a far more important need for us to understand the processes that work in outdoor education programmes in order to improve our practice in Singapore. Many of the process factors including the structure, duration and pedagogy of outdoor education programmes; characteristics, interests and preference of the learners; as well as nature and novelty of the outdoor learning setting remain a mystery to the practice of outdoor education. Without a better understanding of these process factors through engaging in local studies that could take into account the multi-ethnicity and multi-cultural compositions of the Singapore student population, we will not be able to achieve excellence and best practice in our delivery of outdoor education for our young.

As Miles & Huberman (1994, p. 40) suggested, we "have to face the fact that numbers and words are both needed if we are to understand the world". Hence, this study adopted a two-pronged approach - both qualitative and quantitative methods – in order to provide a more holistic reading of the experience of the participants. However, as numerous studies emphasise the importance of, and under researched nature of the processes that characterise these experience, this will be the main focus of this present study of the 3-day adventure-based camping programme.

CHAPTER THREE

METHODOLOGY

3.1 Epistemological and Ontological Position

Allison and Pomeroy (2000) encouraged experiential education researchers to consider both their epistemological and ontological preferences and opinions. They stressed the need to consider "the foundations upon which our research is based: our beliefs about reality and our beliefs about knowledge within that reality" (Allison & Pomeroy, 2000, p. 92).

Epistemology refers to the nature of knowledge. It attempts to search for the answers to "what is the relationship between the knower or would-be knower and what can be known?" (Guba and Lincoln, 1994, p. 108). This involves questioning the sources of knowledge, the assumptions upon which it is based (Allison & Pomeroy, 2000). Ontology or metaphysics is the nature of reality. It attempts to find out what is there that can be known of the world (Guba and Lincoln, 1994) and involves considering the filters through which we see and experience it (Allison & Pomeroy, 2000).

The epistemological position I adopted in this study is grounded in the constructivist paradigm. Constructivism is the construction of knowledge "about which there is relative consensus among those competent to interpret the substance of the construction" (Guba & Lincoln, 1994, p. 113). There are no objective realities as seen from the constructivists' point of view (Seyfried, 2002). Constructivists believe that what is taken to be objective knowledge and truth is the result of perspective (Schwandt, 1994). Knowledge is created in interaction among the researcher and participants. This means that the construction of knowledge during the study is subject

to continuous revision as it is acknowledged that multiple knowledges can co-exist and findings are read as significant when the accounts of the reality of the individuals converge. That is, the findings of the study are the result of a joint construction between the participants and the researcher.

Similarly, the ontological position adopted in this study is that of constructivism. Constructivists acknowledge that "realities are apprehensible in the form of multiple, intangible mental constructions, socially and experientially based, local and specific in nature, and dependent for their form and content on the individual persons or groups holding the constructions" (Guba & Lincoln, 1994, p. 110). Constructivism assumes that conflicting social realities are the products of the human intellects which may change as their constructors become more informed. Hence, objective reality can never be captured. The role of the researcher, as in this study, is to portray the lived reality of the participants' lives.

3.2 Delimitations

The scope of the study was delineated as follows:

37 Secondary Two co-ed students who were part of a whole cohort of 154 Secondary Two Express Stream students from a public school in Singapore participating in a three-day adventure-based programme at the MOE Jalan Bahtera Adventure Centre (JBAC) were studied.

The research designs were:

- Pre-test and post-tests measures of outcomes, employing the Review of Personal Effectiveness and Locus of Control (ROPELOC) instrument designed by Richard and Neill (2002) to measure the participants' perception of personal life effectiveness. Fourteen dimensions of personal life effectiveness

as differentiated by the ROPELOC instrument were measured with three questions per dimension.

- Written survey of the participants' experience one month after the camp.
- Participant observations during the camp.
- Group interviews with the participants.
- Interview with a teacher instructor on the last day of the camp.
- Email interview with Camp Commandant four months after the camp.

3.3 Participants

The participants selected were 37 Secondary Two students (19 males and 18 females) from a co-educational public school. They were part of the cohort of 149 Secondary Two students from the Express Stream (students who will take four years to complete their GCE "O" Levels Certification instead of the five years period for "Normal Stream" students) who attended the 3-day adventure-based residential programme conducted by their school at the Ministry of Education Jalan Bahtera Adventure Centre (JBAC) from 21 to 23 March 2005. Their age ranged between 13 and 15 years old. The cohort of 149 participants was divided into eight groups with each group having 18 or 19 members and a fair mixture of students from all the five classes of Secondary Two Express students. Due consideration was also given by the Camp Commandant in the allocation to ensure a homogeneous gender and racial composition in each group. Two groups, one with 18 students and the other with 19 students, totalling 37 students, were selected for the study. This sample population selected presented a good representation of the typical students in Singapore as the majority of the local schools are public 'co-ed' schools.

3.4 Aims of Programme

The aims of the programme as determined by the organising committee of the camp and stated in the programme booklet issued to all the participants were:

- To promote communal living and sharing;
- To allow opportunities to develop teamwork and group integrity;
- To develop personal qualities such as self-discipline, determination, courage and responsibility; and
- To increase students' appreciation of their present situation.

The programme for the 3-day adventure-based camp was planned based upon these aims. This included the conduct of 'ice-breakers', trust and team-building activities, initiative and problem-solving games stations, low- and high-elements challenge courses, zipline, rock climbing, abseiling, kayaking, camp cooking and a campfire (see Appendix I). This programme is a close representation of the typical 3-day adventure programme organised by most Singapore schools conducting a residential camp in the MOE JBAC, with few variations.

3.5 Programme Structure

This programme, however, is atypical in that it is delivered by the teachers in the school rather than through the engagement of an external adventure-based programme service provider. This is in contrast to the current trend for most schools in Singapore faced with limited number of trained staff in this field. A total of twelve teachers including the Camp Commandant were involved in the conduct of the programme during the camp. All are qualified trainers under the MOE Certification Scheme for the conduct of adventure-based challenge programmes in the MOE Adventure Centres.

Another novel arrangement is the employment of 18 Secondary Three student leaders known as Peer Leaders. They were specially selected and trained to lead the eight groups of participants during the camp. Two Peer Leaders were assigned to lead each group. The tasks of the Peer Leaders include conducting the ice-breakers, initiative and problem-solving activities (low rope elements), planning and organising the camp fire and getting the participants ready for each activity. All the other adventure-based challenge activities were conducted by the teacher instructors.

3.6 Procedures

Permission to carry out the study was sought with the MOE and the Principal of the selected school. A written handout detailing the aims and procedures for the study was given to the Principal, Camp Commandant and staff involved in the camp. In addition, the Camp Commandant briefed the staff on the procedures to adopt for the administration of the pre-test and post-tests ROPELOC questionnaire which were administered in the school by the staff on my behalf. Likewise, the participants were also informed of the purpose of the study and that they were free to withdraw from the study at any time. The rationale for using this approach and the ROPELOC questionnaire will be covered in the next section (Para 3.7).

3.7 Data Collection

Both qualitative and quantitative methods were employed in the collection of data for this study before, during and after the 3-day adventure-based camping programme. Qualitative methods were used to gain a better understanding of the meanings and purposes attached by the participants to the programme implemented as well as to determine what and how they learned from their experience of these activities. The quantitative method was used as a measurement of the perceived outcomes of the adventure-based camping programme. The ROPELOC instrument was selected over the more commonly used LEQ instrument as it measures the perception of Internal and External Locus of Control in addition to all the other dimensions measured with the latter instrument. The outcomes measures measured using the ROPELOC instrument were compared with the findings obtained from the group interviews and written survey. Mixed methods were used with the intended purpose of determining, if any, the processes which led to the learning outcomes of the camp.

The qualitative component consisted of semi-structured group interviews with the participants and an individual interview with the teacher instructor and participant observations during the residential camp. The electronic mail interview with the Camp Commandant was conducted four months after the camp. The quantitative component consisted of a pre-test and two post-tests of the ROPELOC questionnaire that focused on the perception of personal effectiveness. The participants completed the ROPELOC questionnaire in three stages - two weeks prior to, a week and one month after the completion of their adventure-based camping programme.

The purpose of conducting the pre-test questionnaire a week prior to the camp programme rather than to do it on the first day of the programme was to avoid problems of anxiety and anticipation which may lead to depressed scores on many

measures (Hattie, et al., 1997). Similarly, the two post-test questionnaires were conducted one week and a month after the programme to minimise any post-course euphoria effect on the scores. The second post-test was conducted one month after the camp to check the retention rate of the scores when compared to that of the first post-test.

Such sequence of conducting the tests; i.e. one week prior, one week after, and one month after the camp programme, was also mainly due to the constraints faced by the packed programme schedule of the school and also because I was overseas-based and had the initial intention of completing the study in five months. Similarly, no trial test on the use of the ROPELOC instrument was conducted on a group of local students prior to the actual test due to insufficient time. My trip back to Singapore to conduct the study was only ten days.

Though it may not sit well with the constructivist approach adopted for this study, the ROPELOC was deliberately chosen to gauge its usefulness and effectiveness in measuring the participants' learning outcomes in comparison with the other qualitative methods used.

All 37 participants completed the ROPELOC questionnaire for pre-test and post-test 1. For post-test 2, only 35 ROPELOC questionnaires were completed - one student was absent during the period of the test and another had incomplete data which nullified his returned response. In addition, the participants were requested to fill in a short survey comprising six open-ended questions related to their camp experience which was administered together with the post-test 2 ROPELOC questionnaire. All except one of the participant submitted the written survey. The purpose of this survey was to seek further inputs and clarifications on the earlier data that were collected and analysed during the group interviews.

The Constant Comparative method was used for data analysis (Maykut & Morehouse, 1994). The transcribed texts from the interviews, field observations and written survey were coded. For instance, the first page of the field observation was coded "PO/1" and the third page of the first group interview was coded "GI/1-3". The next step was to adopt a process referred to by Lincoln and Guba (1994) as unitising the data which is to identify the chunks or 'units' of meaning in the data. This meant culling for meaning from the words and actions of the participants in the study by cutting apart the units of meaning that have been identified in the data. The guideline adopted for the data analysis was that each unit of meaning identified in the data must stand by itself, which meant that it must be understandable without additional information. Next, similar units of meaning were grouped thematically into categories that in turn were assigned titles to represent their common themes. The approach adopted was to look at the recurring words, phrases, and topics in the data to identify emerging themes in the data. Subsequently, the main themes represented within the data can be identified through the process of constant comparison between emerging themes and refinement of the categories (Davidson, 2001). This process was done together with the assistance of a colleague who provided the cross-checking of the grouping of data into categories and themes.

3.7.1 *Interviews*

(A) Semi-Structured Group Interviews

The purpose of using the group interview method for the participants was to enable the learning experience of the participants to be recorded first hand. A semi-structured group interview format was employed with the student participants. This was to facilitate a more conversational feel to the session but still provided a structure to the interview. More importantly, semi-structured interviews "allow people to

answer more on their own terms than the structured interview permits" (May, 1993, p. 93). Fontana and Frey (1994, p. 364) posited that group interview in formal or informal settings "is an option that deserves consideration because it can provide another level of data gathering or a perspective on the research problem not available with individual interviews". In addition, group interviews are more practical given the constraints of a tight programme schedule during the 3-day adventure-based camp. However, the potential influence of the group on individual perceptions and the subsequent statements they may make is a potential limitation of this method.

Two interview sessions were held during the camp for each group of students participating in the study. The sessions were held in the evenings during the first two days. In total, four interview sessions (two sessions per group) were conducted during the camp.

The interview questions were designed along three sequential themes of: what was learned, how it was learned, and how the learning can be applied (See Appendix IV). All the interview sessions with the students were tape-recorded and transcribed. Investigator triangulation (Thomas and Nelson, 2001) was employed through the use of a second coder to recode the data and verify the classification of the themes from the interview sessions with the students. No trial was conducted on the interview due to the lack of time in sourcing for Singaporean students to do the research. I was based in UK and did not have sufficient time to get to Singapore to conduct a pilot test prior to the camp.

(B) Interview with a Teacher Instructor and the Camp Commandant

As explained by both the Principal and Head of Department in-charge of the Co-Curricular Activities (CCA) of the school, it was the teachers who have expressed their desire to run the camp themselves rather than to engage an external agency that is the norm in the majority of the adventure-based camps organised by schools in Singapore. Hence, an interview was scheduled for a member of the instructing staff as well as the Camp Commandant to establish their motives in running the camp (See Appendix VI).

The original plan was to interview three staff of varying degrees of experience in conducting school camps. However, only one could be interviewed eventually due to their very busy schedule during the camp. The staff selected for this interview has the most experience in running the camp as she was the only one who has been conducting the yearly camp for the school since such a programme was organised six years ago. A semi-structured personal interview was held during the last day of the camp (23 March 2004) with her. Due to time constraints and the busy schedule of the Camp Commandant, the scheduled personal interview with her could not be carried out during the camp. It was held subsequently *via* electronic mail.

Both the teachers interviewed were given a copy of the transcribed text to review and amend. Follow-up clarifications were also established through the use of electronic mail.

3.7.2 *Participant Observation*

Participant observation is used in this study. It refers "to research that involves social interaction between the researcher and the informants" (Taylor & Boglan, 1998, p. 24). The purpose of employing participant observations was to allow the researcher to build and broaden theoretical insights into the ongoing process of data collection. Data and insights from the observations during the day were intended to lend more

focus to the group interview sessions that were held later in the evenings. The observation data also provided an additional data source for triangulation with the self-report instrument and interview results (Garst, Scheider and Baker, 2001). The field notes focused on the participant interactions during the activities and reviewing sessions; points at which the teacher as instructor intervened in events, and the subsequent action and behaviour of the participants after the interventions.

The main criticisms that are levelled against observational research are in the area of validity and reliability (Adler and Adler, 1994). This method is more susceptible to bias as the observer is forced to rely on his/her perception and subjective interpretation of the situations during the observation. A way to alleviate observer bias is to adopt a more structured approach to participant observation as suggested by Bell (1999) which will also help an inexperienced researcher who is not familiar with the techniques involved in unstructured observation. The structured approach I adopted was to draw up and follow a checklist of the things to be observed.

For this study, 'structured' observations were done using the students' interview questions as a guide. Critical incidents were recorded to serve as a cross-reference for the interviews with the students.

3.7.3 *Self-report Questionnaire on Life Effectiveness – ROPELOC Instrument*

The ROPELOC measurement instrument used for the study was designed by Richards and Neill in 2000 and has been subjected to psychometric testing to validate it (Richard, Ellis, and Neill, 2002). The ROPELOC Questionnaire has 14 scales: personal abilities and beliefs (Self-Confidence, Self-Efficacy, Stress Management, and Open Thinking), social abilities (Social Effectiveness, Cooperative Teamwork and Leadership Ability), organisational skills (Time Management, Quality Seeking and

Coping With Change), an "energy" scale known as Active Involvement, an Overall Effectiveness scale which is a measure of overall effectiveness in all aspects of life, and the Internal and External Locus of Control scales to measure the tendency to take responsibility for self-actions and successes. In addition, the instrument has an inbuilt Control Scale that helps to determine whether changes reported in the other scales are due to programme effects or due to retesting effect on the same instrument (Richards, et al., 2002). The ROPELOC questionnaire is a 45-item scale based on an 8-point Likert scale, ranging from 1 (False, this statement does not describe me at all; it is not like me at all) to 8 (True, this statement describes me very well; it is very much like me). Each of the scales is measured with three items (questions) including the Control Scale.

Richards, et al. (2002) reported in two trial studies conducted with 1,250 and 1,475 students respectively that the ROPELOC instrument has good internal reliabilities based on the Cronbach's alpha test ranging from 0.79 to 0.93 and 0.71 to 0.90. Cronbach's alpha is a test of a model or survey's internal consistency which indicates how well a set of items or variables measures a single unidimensional latent construct. It is a measure of the coefficient of reliability or consistency. The findings also revealed a strong and well-defined factor structure as shown with the exploratory and confirmatory factor analyses they conducted. The Factor Structure and reliabilities were also consistent over age and gender.

For this study, the ROPELOC self-report questionnaire was used as part of the process of measuring the outcome of the adventure-based camp programme as it is easy to implement and appears to provide a reasonable proxy to the measure of life effectiveness. The data obtained from the ROPELOC instrument in terms of measures

of life effectiveness were compared for fit and correlations with the data collected from the participants during the interviews and observation sessions.

3.7.4 *Post-Course Survey of Students*

A short written survey was conducted jointly with the second post-test ROPELOC questionnaire administered one month after the completion of the camp to find out from the participants their experience of the camp. It was also used to establish the link between the causes of any change in perception of the students' personal effectiveness one month after the programme to their camp experiences. Simultaneously, it was used to eliminate the other factors not linked to the camp experience that may contribute to any change in the participants' perception of their life effectiveness from the period they have completed the camp till the second post-test.

The participants' anonymity were maintained whenever their quotations are provided either from the interviews or post-course survey in the "Findings" Chapter.

3.8 Limitations of this Study

One limitation of this study was my lack of control of the programme design and scheduling. The daily programme schedule was tight causing the interviews with the participants to be carried out late in the evenings. This limited each interview session to only 45 minutes which was too short for a large group of 18 or 19 participants.

The design and nature of the study with its relatively small sample size also means that from the quantitative research perspective, this may limit the ability to generalise the findings to the general population. Moreover, no control group was

used for the quantitative method employed. This limited the value of the findings from the ROPELOC instrument used.

In addition, factors such as the difference in personalities and facilitation styles of the Secondary Three peer leaders and teacher instructors conducting the programmes, topped with the ethnic differences of the participants, may have an effect on the learning experiences of the latter.

The limitations of self-reporting instruments have been discussed earlier. It should also be noted that self-reporting behaviour intentions of the participants during interviews is not the same as future behaviours (Sibthorp, 2003). Thus, any change in the participants' perception of their personal effectiveness arising from the camp whether recorded through the ROPELOC questionnaire or the group interviews may not translate into concrete behavioural change back in the home and school environment. Moreover, the ROPELOC instrument does not take into account cultural and ethnic differences. This limits the findings of the ROPLOC instrument as all the students in this study were from non-native English background and may have difficulty in accurately interpreting and understanding the questions used; unlike the situation in the group interviews where the students were able to give their responses in a mixture of languages understood by me whenever they could not express themselves in English.

Lastly, as an "outsider" to the group of students that I was researching, there were what Miles and Huberman (1994) termed as 'researcher effects' in which the researcher is likely to create particular social behaviour in the participants that would not have normally occurred in the absence of the former. Such 'researcher effects' can lead to "errors" in data collection and cannot be ignored (Thomas & Nelson,

2001). Hence, all the above factors have to be taken into account when interpreting the data collected from this study.

3.9 Use of Triangulation

In order to minimise the bias of the researcher in this study, triangulation of data and methods was used in an attempt to establish trustworthiness as suggested by Lincoln and Guba (1994). Credibility, which is the qualitative equivalent of internal validity, is built through the use of multiple methods including interviews, questionnaire survey and constant observations during the programme. Dependability and confirmability, which are the qualitative equivalent of reliability, were achieved through the use of a second inter-rater to confirm the categorisation of the themes in the data from the group interviews and field observations, and cross checking of the accuracy of the transcript by the teacher interviewees.

The use of the four types of triangulation, namely: data, methods, investigator, and theory triangulation (Thomas & Nelson, 2001), was an attempt to overcome the other limitations of this study. Different sources and methods of data collection (data and methods triangulation), use of an inter-rater to interpret the data findings (investigator triangulation), as well as analysis of the situation using different competing theories (theories triangulation) were employed to limit the potential "errors" in the research findings.

3.10 Reflexivity

In using the qualitative methods of observation and interviews, it was important to recognise the relationships between the participants and myself, and the influences that we exert upon each other. In addition as suggested by Humberstone

(1997, p. 7) that the researcher in outdoor education should "not only be interested in the actions, views and beliefs of teachers/instructors/providers and their pupils/students/staff, but also expect their own actions and beliefs to be open to scrutiny". Hammersley and Atkinson (1997, p. 15) added that the researcher must work with whatever knowledge he/she has while "recognising that it may be erroneous and subject it to systemic inquiry". They regarded it as usual that a research report should include a reflexive account of the activities, dilemmas and tensions encountered during the research.

Delamont (2002) suggest that the concept of reflexivity should be deployed at all stages of the study from design to writing it up. During this study, I have attempted to do so but also to "narrow the distance" between myself and the participants by participating in the activities together with the students whenever possible during the camp, whilst compromising my field observations as little as possible. In fact, my participation in the kayaking module as a "participant" and as an assistant instructor in the abseiling module for the group has enabled me to observe at close quarters the interactions and exchanges between the participants which would not have been possible if I were to observe at arm's length. Whilst observance of the "objectivity" of my role as a researcher is imperative, it was fundamental to my interpretation of the events that occurred that I 'shared' some of these experiences.

CHAPTER FOUR

FINDINGS

4.1 Data Organisation

Data obtained from both the qualitative and quantitative methods used were grouped under the categories of "the effects of participation in the camp", "how the learning occurred", "the learning transfers", and "factors that affect the learning".

4.1.1 *Effects of Participation in the Camp*

(A) Data Analysis from Participants' Observation, Interviews and Written Survey

Based upon the data gathered from the field observations, group interviews and written survey of the students, interviews with the teacher instructor and Camp Commandant, it was found that the camp had positive effects on the students in the following areas:

- Acquisition of technical skills;
- Gain in life skills; and
- Gain in self-awareness.

a. Acquisition of New Skills

Group interviews conducted during the camp and written survey of the students after the camp indicated that all the students had acquired new technical skills in at least one of the following activities: learning how to belay, paddling a kayak, climbing walls, and starting a fire for outdoor cooking. During the group interviews, all the students reported that they have learned new skills such as learning how to

manoeuvre the kayak during the kayaking lessons. Many of the students also found outdoor cooking challenging and wall climbing useful in developing their technical skills. These students felt that the experience from these activities had increased their sense of competence.

b. Gain in Life Skills

The adventure-based camp appeared to have a positive effect on the personal and social developments of the participants as indicated in the statements made by them in the group interviews held during the camp and the written survey conducted one month after the camp. Values cited by the participants as their positive outcomes include learning to:

- trust and support of each other;
- cooperate and work as a team;
- take responsibility;
- be independent, patient, self-disciplined, self-confident, courageous, and determined;
- overcomes challenges such as the fear of height;
- manage time efficiently; as well as
- appreciate others (peers, student leader, teacher, etc).

As expected, the camp experiences such as kayaking, rock-climbing and completing the high elements challenge course were cited as having the effect of building trust and support amongst the participants.

***Andrew*:** "*It (camp experience) made me overcome most of my fear to become someone braver. I also learn to work well with people I never work with before.*"

Alison: "*I learnt to trust other people and I learnt that I can do whatever I want to if I do it with an open mind."*

Typically, all the participants felt that activities such as the outdoor cooking challenge, group initiative games, and the high element challenge course presented opportunities for team building. They realised that team work and cooperation are critical to the success in accomplishing the challenge set in these activities.

Beatrice: "*It (starting a fire for outdoor cooking) involves teamwork, patience and sincerity with each other."*

Cindy: "*It's useful because I learn to make a fire and can cook food when there is no one cooking at home. I learn to work as a team.*"

Bernard: "*I learn how to work as a team to find objects to start the fire.*"

Doreen: "*We all need to cooperate and show teamwork to complete the task.*"

The camp provided the opportunity for the students to take responsibility for themselves, as observed by the teacher interviewee.

"The activities in the camp have provided the means for the students to develop responsibility. For example, during the last two days, I have seen some students developed from a "don't care" attitude to take self-responsibility in doing messing duties additionally. I could also see a difference in their attitude between the 1st and 2nd day of the camp. They have better time management and are more focused in their tasks. They listen more attentively to instructions."

The major challenge frequently cited by the participants during the interviews and written survey (62%) in the high element challenge course, rock-climbing and abseiling activities conducted was overcoming the fear of heights.

Christopher: *"It (high element challenge course) is challenging and exciting. I get to overcome my fear."*

Daniel: "*It (rock-climbing) is very challenging and I overcome my fear of height. When you reached the top, then you feel that it was quite fun actually.*"

The benefits of overcoming this fear of height were translated into an increase in the perception their value of courage and/or determination.

Edward: "*Learn that if I don't give up, I can succeed. That I am brave*."

Frank: "*I can conquer my fears if I want to and nothing is impossible. It is my will that will help me to achieve a certain goal."*

Elizabeth: "*It (the camp experience) makes me more determined and not to give up easily*."

The students have also learned to make more efficient use of their time.

Fiona: *"I learnt to use my time better after the camp."*

The students learned to appreciate their group mates, peer leaders and teachers.

Germaine: "*They are all considerate and caring especially my peer leaders and my group mates.*"

Helen: *"All of them (teachers) are quite good. Very different from what I think initially."*

George: *"I learnt that my friends and teachers are quite supportive and they are kind."*

Overall, the 3-day adventure-based camp had increased the students' perception of themselves.

Irene: "*I know that I am capable of doing things.*"

Howard: "*I learnt that if I want to do it I will be able to do it."*

Ivan: "*I learn that I can do something well if I try my best. I also learn that I can work well if I want to.*"

c. Gain in Self-awareness

Self-awareness differs from self-esteem in that it promotes the sense of self but in relation to other people and the values of society (Nicol and Higgins, 2002). As observed by the researcher and teachers, participants showed an increase in self-awareness from the camp. The group interviews and written survey indicated that all of them were able to identify their personal strengths and weaknesses from their camp experience. Some of the reflective statements made by the students are indicative of this increase in self-awareness.

John: "*I must not think low of others.*"

Janice: "*This camp helps me to be independent and not to always rely on others. It also helps me to put my trust on my friends and to appreciate what I have and not take things for granted.*"

d. Negative Effect of the Camp

However, the adventure-based residential experience does not result in positive outcomes for all the participants as shown in this statement made by a female participant:

"I learned that I am not really capable of doing anything that I do."

Not all the camp experiences were enjoyable. Some students expressed their homesickness during the group interviews. Reasons quoted by the participants who felt that the camp experience could have been more beneficial include; too much time spent waiting for their turn to attempt the activities for the high rope challenge, hectic and tiring programme with little time for rest.

A key finding from the group interviews revealed the lack of supervision by the teacher instructors in ensuring the active participation of all the participants. The group interview conducted at the end of the first day of camp revealed that two students were left out of participation in the high challenge course activities for the whole day. When interviewed, the two students reported that they would have participated in the activities if prompted, though they did not volunteer to be the first few to attempt the elements in the challenge course.

B) Analysis of Data from the ROPELOC Questionnaire

The pre-test ROPELOC questionnaire was administered one week before the commencement of the camp while the post-test 1 questionnaire was administered a week after the camp, followed by the post-test 2 questionnaire administered one month after the camp. The analysis of the data collected from the pre-test and post-

tests ROPELOC questionnaire was carried out with the aid of the statistical tool, the Statistical Package for the Social Sciences (SPSS) for Windows (version 13.0).

Two dependent paired sample t-tests were carried out using the SPSS. The independent variable in each of these two tests was the pre-test versus post-test. The dependent variables were the sub-scale ratings for the 14 dimensions of the completed ROPELOC questionnaire (Listed on page 9).

The results for the 14 sub-scale ratings of the ROPELOC instrument obtained for the paired sample dependent t-test between the pre-test and post-test 1 were compared to that obtained from the analysis of their Effect Sizes for all the 37 participants. Similarly, the results obtained from the paired sample dependent t-test between the pre-test sub-scale ratings and post-test 2 sub-scale ratings were compared to the Effect Sizes obtained. However, as only 35 completed ROPELOC questionnaires were returned for post-test 2, the analysis for this set of tests was based on the 35 completed returns.

The mean (M) and standard deviation (SD) values of the 14 ROPELOC sub-scale ratings for the pre-test and post-tests are shown in Table 1.

Table 1 : The Means and Standard Deviations of the Pre-Test and Post-Test ROPELOC Dimensions

	Pre-Test		Post-Test 1		Post-Test 2	
ROPELOC Scale	M	± SD	M	± SD	M	± SD
Active Involvement	6.49	1.48	6.42	1.34	6.50	1.22
Coping with Change	5.68	1.34	6.00	1.26	5.96	1.32
Cooperative Teamwork	6.27	1.54	6.28	1.37	6.34	1.59
External Locus of Control	3.61	1.53	3.84	1.33	3.86	1.54
Internal Locus of Control	6.50	1.36	6.41	1.24	6.43	1.26
Leadership Ability	5.27	2.05	5.68	1.67	5.63	1.70
Open Thinking	6.20	1.17	6.21	1.21	6.19	1.21
Quality Seeking	6.59	1.28	6.59	1.19	6.41	1.29
Self Confidence	6.14	1.32	6.29	1.16	6.28	1.35
Self Efficacy	5.31	1.73	5.69	1.43	5.83	1.49
Social Effectiveness	5.55	1.47	5.82	1.28	5.90	1.33
Stress Management	5.34	1.58	6.02	1.05	5.83	1.36
Time Efficiency	5.23	1.81	5.77	1.27	5.63	1.68
Overall Effectiveness	5.55	1.43	5.93	1.23	5.99	1.39

Note: N = 37 returns for Pre-Test and Post-Test 1, N = 35 returns for Post-Test 2

a. Paired Sample Dependent T-Test between Post-Test 1 and Pre-Test ROPELOC Sub Scales Ratings

With the confidence interval of difference between the post-test means and pre-test means set at 95 % (p = 0.05), the paired sample dependent t-tests analysis for the sub-scales ratings obtained for pre-test and post-test 1 as shown in Table 2 below indicated that there was a statistical significant change in the students' perception of their self-efficacy (p = 0.04), stress management (p = 0.003) , time efficiency (p = 0.02), and coping with change (p = 0.03). The students' perception of their "overall effectiveness" was marginally significant at p = 0.05. The camp appeared to have no effect on the students' perception of their "cooperating teamwork (p = 0.96)", "quality seeking (p = 1)", and "open thinking (p = 0.96)". In addition, it has no effect in the ROPELOC dimensions of "active involvement (p = 0.72)", "external locus of control (p = 0.35)", "internal locus of control (p = 0.66)", "self confidence (p = 0.25)", little but not significant effect on "leadership ability (p = 0.07)", and "social effectiveness (p = 0.08)".

Table 2 : Paired Sample Dependent T-test on ROPELOC Pre-Test and Post-Test 1 Results

Paired Differences	Mean	SD	SE Mean	95% Confidence Interval of Difference		T	Sig. (2-tailed)
				Lower	Upper		
Active Involvement	0.06	1.06	0.18	-0.291	0.417	0.36	0.720
Cooperating Teamwork	-0.01	1.01	0.17	-0.347	0.329	-0.05	0.957
Coping with Change	-0.32	0.87	0.14	-0.613	-0.036	-2.28	0.029
External LOC	-0.23	1.44	0.24	-0.705	0.255	-0.95	0.348
Internal LOC	0.08	1.11	0.18	-0.290	0.452	0.44	0.660
Leadership Ability	-0.41	1.36	0.22	-0.869	0.040	-1.85	0.073
Open Thinking	-0.01	0.99	0.16	-0.339	0.321	-0.06	0.956
Quality Seeking	0.00	0.97	0.16	-0.323	0.323	0.00	1.000
Self Confidence	-0.15	0.79	0.13	-0.416	0.110	-1.18	0.245
Self Efficacy	-0.39	1.10	0.18	-0.755	-0.020	-2.14	0.039
Social Effectiveness	-0.27	0.90	0.15	-0.569	0.028	-1.84	0.075
Stress Management	-0.68	1.31	0.22	-1.112	-0.239	-3.14	0.003
Time Efficiency	-0.54	1.35	0.22	-0.992	-0.090	-2.43	0.020
Overall Effectiveness	-0.38	1.14	0.19	-0.759	0.002	-2.02	0.051

Note: N= 37 returns for Pre-Test and Post-Test 1 ROPELOC Questionnaire returns. Degree of Freedom df = 36

SD = Standard Deviation SE = Standard Error

b. Paired Sample Dependent T-Test between Post-Test 2 and Pre-Test ROPELOC Sub Scale Ratings

The paired sample dependent t-test analysis for the sub-scale ratings as shown in Table 3 below indicated the difference in results obtained for pre-test and post-test 2 which was conducted one month after the camp. The results showed that the positive effect on the students' perception of their "self-efficacy" measured one week after the camp ($p = 0.04$) remain statistically significant one month later ($p= 0.04$). However, the students' perception of "coping with change" ($p = 0.20$), "stress management" ($p = 0.12$), and "time efficiency" ($p = 0.12$) sub-scale ratings which were statistically significant when measured at post test 1 were found not statistically significant when measured at post-test 2. This suggests that the positive effects of the adventure-based residential experience on their perception of these dimensions may be short-lived.

Nevertheless, similar to the findings at post-test 1, the result of the students' perception in the dimension of "overall effectiveness" at post-test 2 remained marginally significant at $p = 0.05$. The results of the other dimensions were also similar to the findings at post-test 1 in that the changes were not statistically significant: "active involvement" ($p = 0.88$), "cooperative teamwork" ($p = 0.85$), "external locus of control" ($p = 0.24$), "internal locus of control" ($p = 0.46$), "leadership ability" ($p = 0.08$), "open thinking" ($p = 0.81$), "quality seeking" ($p = 0.34$), "self confidence" ($p = 0.49$), and "social effectiveness" ($p = 0.15$).

Table 3 : Dependent T-Test on ROPELOC Pre-Test and Post-Test 2 Results

Paired Differences	Mean	SD	SE Mean	95% Confidence Interval of Difference		T	Sig. (2-tailed)
				Lower	Upper		
Active Involvement	-0.03	1.08	0.18	-0.399	-0.342	-0.16	0.877
Coping with Change	-0.24	1.07	0.18	-0.604	0.128	-1.32	0.195
Cooperating Teamwork	0.04	1.15	0.19	-0.356	0.433	0.20	0.846
External LOC	-0.30	1.45	0.25	-0.794	0.204	-1.20	0.237
Internal LOC	0.10	0.75	0.13	-0.162	0.352	0.75	0.456
Leadership Ability	-0.41	1.32	0.22	-0.862	-0.043	-1.84	0.075
Open Thinking	0.05	1.14	0.19	-0.345	0.441	0.25	0.807
Quality Seeking	0.20	1.22	0.21	-0.220	0.620	0.97	0.341
Self Confidence	-0.10	0.89	0.15	-0.411	0.202	-0.70	0.492
Self Efficacy	-0.50	1.38	0.23	-0.968	-0.023	-2.13	0.040
Social Effectiveness	-0.28	1.12	0.19	-0.659	0.107	-1.46	0.152
Stress Management	-0.42	1.80	0.30	-1.038	0.200	-1.38	0.178
Time Efficiency	-0.43	1.57	0.26	-0.967	0.110	-1.62	0.115
Overall Effectiveness	-0.48	1.32	0.22	-0.902	0.007	-2.00	0.053

Note: N = 35 returns for Post-Test 2 ROPELOC Questionnaire. Degree of Freedom df = 34

c. Use of Effect Size as a Measurement of Treatment Effects

Field and Hole (2003) argued that just because a test statistic is significant does not necessarily mean that the effect it measures is meaningful or important. In fact, a statistically significant finding on its own has been seen as an unacceptable index of effect more recently because of its dependence on the sample sizes (Cohen & Manion, 2000). The suggested solution is to measure the size of the effect that is to be tested. This type of measurement is known as Effect Size (ES). Effect Size is a set of statistics which describes the "amount of the total variance in the dependent variable that is predictable from knowledge of the levels of the independent variable" (Tabachnick & Fidell, 1996, p. 53). Simply put, it indicates the relative magnitude of the differences between the means (Pallant, 2001). The use of ES is another way to estimate the degree to which the treatment influenced the outcome.

Cohen (1988) suggested as a guide that an ES of 0.1 is a small effect, 0.3 a medium effect and 0.5 or higher a large effect. An ES with negative value indicates a reduction in the measured score or in the case of this study; the treatment (camp programme) has caused a negative effect on the measured score. Hedges (1981) found that the ESs are positively biased in small samples, though in cases where the sample size exceeds twenty, the bias is 20% or less.

For this study, ES provides the measure of the amount of difference that existed between the sub-scales ratings of the ROPELOC Questionnaire completed by the participants at two different points of time (pre-test sub-scales ratings versus post-test 1 sub-scales ratings, and pre-test sub-scales ratings versus post-test 2 sub-scales ratings). The ESs for both the pre-test and post-test 1 sub-scales ratings were calculated based on the differences between the means of the two variables divided by the pooled variance of the variables as outlined by Thomas and Nelson (2001).

Table 4 : ROPELOC Results on Effect Size Analysis

ROPELOC Scale	Effect Size Pre-Test/Post-Test 1	Effect Size Pre-Test/Post-Test 2
Active Involvement	-0.04	0.01
Coping with Change	0.25	0.21
Cooperative Teamwork	0.01	0.05
External Locus of Control	0.16	0.16
Internal Locus of Control	-0.06	-0.04
Leadership Ability	0.22	0.19
Open Thinking	0.01	-0.01
Quality Seeking	0	-0.14
Self Confidence	0.12	0.11
Self Efficacy	0.24	0.32
Social Effectiveness	0.20	0.25
Stress Management	*0.50	*0.33
Time Efficiency	0.35	0.23
Overall Effectiveness	0.28	0.31

* = Largest Effect Size

d. Effect Sizes obtained from Post-Test 1 (one week post camp) and Pre-Test Data Analysis

As shown in Table 4 above, the ESs obtained from the pre-test and post-test 1 data analysis indicated:

- Negative effect in 2 ROPELOC sub-scales ratings of "internal locus of control" (ES = -0.06) and "active involvement" (ES = -0.04);
- Little or no effect on 3 ROPELOC sub-scales ratings of "cooperative teamwork" (ES = 0.01), "open thinking" (ES = 0.01), "quality seeking" (ES = 0);
- Small to moderate effect on 5 ROPELOC sub-scales ratings of "self-confidence" (ES = 0.12), "self-efficacy" (ES = 0.24), "time efficiency" (ES = 0.35), "coping with change" (ES = 0.25), and "overall effectiveness" (ES = 0.28); and
- Large effect on 1 ROPELOC sub-scales rating of "stress management" (ES = 0.5).

The negative effect sizes obtained for the sub-scales ratings of the "internal locus of control" and "active involvement" indicate that the students' perception of their personal life effectiveness in these two dimensions have decreased a week after the camp.

There was little or no change of the students' perception of their life effectiveness in the dimensions of "cooperative teamwork", "open thinking", and "quality seeking", and small to moderate increase in "self-confidence", "self-efficacy", "time efficiency", "coping with change", and "overall effectiveness" were registered.

The little or no change effect of the students' perception of their cooperative team work based on the quantitative ROPELOC findings appeared to differ from the findings in the written survey in which 67% of the students have indicated that they have learned to co-operate and worked as a team.

The large effect size obtained for the ROPELOC sub-scales ratings of "stress management" indicate that the camp has a large positive effect on the students' perception in this dimension.

An interesting find from the pre-test and post-test 1 data analysis of the Effect Size is in the dimension of leadership ability which revealed an ES of 0.22; a moderate increase in effect. This increase in the participants' perception of their leadership ability appeared to be in contradiction to the data gathered from the participants during the group interviews and supported by field observation by the researcher during the camp. All except two participants have stated that there were very few opportunities for the development of leadership potential during the camp as only one group leader was appointed to lead the group for the entire duration of the camp. Despite the lack of leadership opportunity, the participants perceived the camp as being beneficial to the development of their leadership ability based upon the analysis of the ROEPLOC questionnaire. However, this ROPELOC finding needs to be interpreted cautiously as other external factors not related to the camp could have influenced the results of the post-test 1 which was conducted a week after it.

e. Effect Sizes Obtained From Post-Test 2 (one month post camp) and Pre-Test Data Analysis

Analysis of the Effect Sizes of the post-test 2 and pre-test ROPELOC ratings for the 14 dimensions showed few changes from the results obtained for the Effect

Sizes in the post-test 1 and pre-test ROPELOC ratings. As shown in Table 4, the ESs obtained from the pre-test and post-test 2 data analysis indicated:

- Negative effect in 3 ROPELOC sub-scales ratings of "internal locus of control" (ES = -0.04), "open thinking" (ES = -0.01), and "quality seeking" (ES = -0.14);
- Little or no effect on 2 ROPELOC sub-scales ratings of "active involvement"(ES = 0.01) and "cooperative teamwork" (ES = 0.05); and
- Small to moderate effect on 9 ROPELOC sub-scales ratings of "coping with change" (ES = 0.21), "self efficacy" (ES = 0.32), "external locus of control" (ES = 0.16), "leadership ability" (ES = 0.19), "self confidence" (ES = 0.11), "social effectiveness" (ES = 0.25), "stress management" (ES = 0.33), "time efficiency" (ES = 0.23), and "overall effectiveness" (ES = 0.31).

One month after the experience, the adventure-based camp appeared to have negative effect on the participants' perception of their "internal locus of control", "open thinking", and "quality seeking" when compared to pre-test level. Negligible effect sizes were found for the students' perception of their life effectiveness in the dimensions of "active involvement" and "cooperative teamwork", while small positive effect sizes were obtained for the dimensions of "coping with change"; "external locus of control", "leadership ability", "self confidence", "social effectiveness" and "time efficiency". Moderate effect sizes were found for "self efficacy", "stress management" and "overall effectiveness".

These findings from the post-test 2 which were conducted one month after the camp need to be interpreted cautiously as it is not known whether the effects change was a direct result of the camp experience. This is so as other factors may have influenced the cause of the changes as well.

Table 5 : ROPELOC Combined Results on Effect Size & Paired Sample t-test

ROPELOC Sub-Scale	Effect Size (t-test sig.) Pre-Test/Post-Test 1	Effect Size (t-test sig.) Pre-Test/Post-Test 2
Coping with Change	0.25 ($p < 0.03$)	0.21 (NS)
Self Efficacy	0.24 ($p < 0.04$)	0.32 ($p < 0.04$)
Stress Management	0.50 ($p < 0.003$)	0.33 (NS)
Time Efficiency	0.35 ($p < 0.02$)	0.23 (NS)
Overall Effectiveness	0.28 ($p = 0.05$)	0.31 ($p = 0.05$)

Note: NS = Not significant at $p < 0.05$

Combining the findings of the effect sizes with the paired sample dependent t-test results obtained for the ROPELOC sub-scales ratings of the pre- and post-test 1 that are statistical significant (see Table 5 above) indicated that the 3-day adventure based residential experience had positive effects on the participants' perception of their personal effectiveness in the dimensions of "self-efficacy" (ES = 0.24, $p < 0.04$), "stress management" (ES = 0.5, $p < 0.003$), "time efficiency" (ES = 0.35, $p < 0.02$), and "coping with change" (ES = 0.25, $p < 0.03$). Similarly, combining the findings of the effect sizes with the significant findings of the paired sample dependent t-test results obtained from the ROPELOC sub-scales ratings of the pre-test and post-test 2 (see Table 5 above) indicated that only one dimension of personal life effectiveness: the "self-efficacy" (ES = 0.32, $p = 0.04$), remained to have statistically significant and positive effect on the students' perception of it one month after the camp.

It must be noted, however that other internal and external factors not attributable to the camp effects may have influenced the findings of the post-test since it was conducted one month after the camp without the use of a control group. Hence, caution should be exercised over the interpretation and generalisation of the findings.

4.2 How the Learning Occurred

The interviews with the students and post-camp written survey revealed that they learned through the role modelling of their Secondary Three Peer Leaders assigned to lead them as well as the teacher instructors. A female student commented on her observation of the peer leaders:

"I learn that to be a leader, you need to be matured enough to handle things easily."

The findings suggest that the students learned through the experiential process of engaging in the activities, reflecting on their experience, and subsequently transferring their insight into the new experience. Methods employed by the teacher instructors for students to reflect on their experiences included the use of open-ended questions to guide them during the activities and short review sessions scheduled at the end of each programme segment though not all the teacher instructors engaged in this process faithfully. The students were also encouraged to complete their daily reflection log found in the programme booklet issued to them whenever there was time left after each programme segment.

4.3 The Learning Transfers

The students perceived the effect of living simply through sleeping on a hard wooden floor, sharing the limited communal toilets and shower facilities and eating simple meals as having taught them to appreciate their luxurious lifestyle at home. For some of the participants, it has taught them self-reliance and independence. As put forward by one female student:

"*This camp helps me to be independent and not always rely on others. It also helps me put my trust on my friends and to appreciate what I have and not take things for granted*."

When asked during the group interviews whether the learning experience from the camp could be transferred to their school and daily life, all the students believed that it could be. One male student made the following remark when describing his experiences of overcoming the challenge of his fear of heights:

"*Don't give up when I am stuck with mathematical problems.*"

Another male participant used the metaphor of his attempt on one of the Challenge Course elements named the "Centipede" to describe his experience in overcoming his fear of height and the transfer of the learning from his experience of the activity to his real life situation.

"*Learnt to overcome the fear of height and I learnt that in life, (one) must be stable because the 'Centipede' is like life, full of instability*."

(Note: The 'Centipede' is made up of a series of swinging vertical wooden poles joined together by short chains up to 10 metres in height. The square poles which are 4 inches wide have climbing tiles bolted onto their four faces.)

The significant effect of the camp in developing the students' perception of a more efficient use of time (time efficiency) as indicated in the ROPELOC test conducted one week after the camp is supported by the findings from the qualitative data analysis. Most of the students viewed the camp as being beneficial in teaching them how to manage their time wisely.

Kathy: "*I learned to be more disciplined and cooperative and be more efficient in using my time wisely.*"

Some of the positive effects of the camp experience on the changes in the students' perception in their life effectiveness appeared to have been transferred into concrete behaviour in the school as noticed by the Camp Commandant when interviewed four months after the course.

"*Yes. In terms of behaviour most of them seems better when they return to school. The students are better behaved especially those students whom I have direct contact with during the camp. They are generally more polite too. They will say hello to those teacher instructors even though they do not teach them. When they meet the teachers who were involved in the camp, they try to behave well. Quite a lot of them are also more determined and confident when it comes to certain matters.*

Recently the Sec 2 cohort were involved in the mass signing display at the Marina Bay for the National Day Parade and they displayed good discipline, spirits were high and without prompting, they sang the school song really loudly and proudly so I guess something during the camp have impacted them."

4.4 Factors which Affect the Learning Outcomes of the Participants

The findings from this study suggest that the adventure-based residential programme does have beneficial learning outcomes for the majority of the participants. However, some aspects of the camp programme were perceived by the

participants as not conducive to their learning. Hence, the next question that comes to mind is what are the factors that affect the outcomes for these participants?

Based upon the qualitative data analysed, both human and programmatic factors have a combined influence on the learning outcomes of the students.

Human factors that impacted the learning outcomes of the participants include:

- social support
- learning environment
- staff/facilitator deployment

Programmatic factors that impacted the learning outcomes of the participants include:

- the challenge present in the activities
- programme scheduling and
- time allotted for the activities

4.4.1 *Social Support*

All the participants placed a premium value on the social support such as the encouragement and support from their group members, peer leaders, and the teacher instructors over the type of activities that they have completed for their positive learning outcomes. The participants' overall enjoyment of the camp experience was attributed to the supportive environment which was created by their peers, peer leaders and- teacher instructors. Making new friends in their groups was the top contributing factor followed by support from the peer leaders which make their camp experience an enjoyable process.

4.4.2 *Learning environment*

The environment created during the camp was perceived by the students as conducive and supportive to their learning. The Challenge by Choice philosophy was widely adopted in the camp and the students were given the choice to opt out of an activity which was exercised by only a few of them.

4.4.3 *Staff/Facilitator Deployment*

The deployment of the teacher instructors and Secondary 3 students as peer leaders for the camp are cited as having both positive and negative impact on the learning outcomes of the participants.

The participants value the deployment of the teaching staff as instructors for the camp. They experienced a different side to the teachers. Generally, they found the teachers to be active, caring and encouraging, fun, friendly, and helpful. A female student summed up the difference in the teaching methods used by the teacher instructors in the camp as follows:

"*They are good and teach us things better in that way.*"

Similarly, the Secondary 3 peer leaders were seen as encouraging, helpful, sporting and supportive. The peer leaders were also looked upon as good role models. One male student commented:

"I learnt that to be a leader, you need to be matured enough to handle things easily."

However, the deployment of the student peer leaders to conduct the General Stations activities comprising the team initiative, problem-solving activities and low ropes elements such as the Spider Web, Tension Traverse, "Hole-In-One", and Nitro

Crossing had negative impact on the learning outcomes for the participants. The students viewed these activities as unproductive and the least useful to their learning. They were discouraged by their unsuccessful attempts in most of these activities and attributed it to the unrealistic time-frame given to complete them. The repeated failures to complete most of these team-building activities affected the morale of the group on the first day of the camp and could have explained the minute change in the score of their perceived effectiveness in the area of "cooperative teamwork" as measured by the ROPELOC instrument after the camp. More importantly, I observed that the lack of understanding of group dynamics as well as inadequate reviewing skills by the student peer leaders had resulted in the inability to optimise learning potential for these activities.

4.4.4 *Challenge*

A common theme that emerged from the qualitative data analysis is the notion of challenge and novelty present in the activities that were relished by the students. The students viewed the challenge element as more important to their learning and enjoyment than the type of activity. In particular, the outdoor cooking exercise where each group was given three matches to start a fire using dead wood or leaves that they find to boil a mess tin of water within a 30-minute timeframe was cited by the vast majority of the participants as the most challenging activity. Most of them valued this activity higher than all the other "adrenaline-filled" activities conducted such as the zipline, abseiling and rock-climbing. This suggested that it is the challenge factor present in the activity that is highly sought after by the participants; not the "thrill" factor.

4.4.5 *Programme Schedule and Time Allotted for Activities*

Feedback from the participants indicated a hectic programme schedule (see Appendix I). This is confirmed by the participant observations o the researcher.

The activity distribution amongst the groups and the time allotted to each activity were such that not all students in the group could participate in every activity. For instance, each activity module was given only approximately two and a quarter hours to complete; an impossible feat for all the 17 to 19 participants in each group to attempt the activities scheduled. As a result, students who missed an activity module such as rock-climbing due to the lack of time were then given priority to do the next activity module (e.g. abseiling). This created the sense of disappointment and dissatisfaction in some students, who had indicated their interest in participating in that particular activity but were unable to do so.

On the same note, participants also expressed their disappointment with the long waiting time spent in the high elements challenge activities including abseiling, zipline, rock-climbing and high rope courses. There were two reasons to this cause: (a) the high instructor-student ratio of 1 to 17 or 19, and (b) the limited time allotted for the completion of each activity.

4.5 Do the Aims of the Programme Matched Up to the Learning Outcomes of the Participants?

The aims of the adventure-based residential programme as determined by the school are to promote communal living and sharing; allow opportunities to develop teamwork and group integrity; develop personal qualities such as self-discipline, determination, courage and responsibility; and increase students' appreciation of their present situation. As confirmed by the teacher interviewee and the Camp

Commandant, these aims have been reviewed annually by the organising committee of the camp programme. They have, however, remained unchanged for the past six years as they continue to be deemed relevant to the needs of each subsequent batch of Secondary Two students attending the programme; including the present group.

Findings from the analyses of the data obtained from the group interviews and the post-camp survey of the students indicate an obvious link between the aims of the programme and the learning outcomes of the participants. On the basis of the comments of the students, there is strong indication that the programme is effective in achieving these aims. However, in light of the findings that not all the students experienced positive learning outcomes in the camp, due consideration should be given to change the programme design.

CHAPTER FIVE

DISCUSSION

5.1 Effects of Participation on Learning Outcomes

Qualitative findings through interviews and field observation supported the quantitative findings that the 3-day adventure-based residential programme had significant effect in enhancing the students' perception in some areas of life-effectiveness such as "self efficacy", "stress management", "coping with change", "time efficiency", and "overall effectiveness" based upon the dependent t-test analysis measured one week after the camp.

The large positive and significant effect of the camp experience on the students' perception of their "stress management" (ES = 0.5, $p<0.003$) may be attributed to the supportive and "pressure-free" environment during the camp from the responses provided during the interviews and post-course survey. Compared to the highly stressful environment in local schools caused by societal demand for academic excellence, the adventure-based camp, which was held during the school term provided a welcome break for the students. The satisfaction and enjoyment obtained from participation in the various challenging and fun activities such as kayaking, outdoor cooking and high challenge course, may have added to the increased perception of stress management by the students.

As found in the group interviews and written survey, the students believed that the camp has developed their efficiency in time management. This may be the result of the tight schedule during the camp where strict adherence to punctuality was required. Time efficiency is essential in order to ensure that the activities were carried

out on time. This aspect of the camp discipline was reinforced regularly by the peer leaders and teachers during the programme, resulting in the increase of the students' competency in time management. Such qualitative finding is supported by the ROPELOC finding which also indicated a positive effect on the participants' perception of "time efficiency" (ES = 0.35). The finding of studies using either the LEQ or ROPELOC self-reporting instruments by Doherty (2003), Eagle, Gordon, & Lewis (2000), Ho (2003), Neill and Flory (2000), Stenger (2001) and Terry (2002) also found similar increase in their participants' perception of Time Management (LEQ) or Time Efficiency (ROPELOC) after participation in an adventure-based programme.

The significant effect in the students' perception of their ability to "cope with change" (ES = 0.25) has a correlation to the increase in their perception of "stress management", as coping with change often requires the use of strategies - cognitive, emotional and physical, to adapt to the stress placed upon the individuals' physiological and psychological systems. Factors such as group support, personal affirmation by group members; peer leaders; and teacher instructors, and the supportive learning environment during the camp are likely causes of the increase in coping strategies of the participants as gathered during the group interviews and written survey.

The programme appeared to have a significant effect on the students' perception of their "self-efficacy" as measured in both post-tests using the ROPELOC questionnaire. This finding support the claim by (Sibthorp 2003, p. 87) that:

> "*Self-efficacy has repeatedly proven to be an accurate and superior estimate of performance on specific tasks (e.g. Bandura, 1977; Rabinowitz, Melamed,*

Weiberg, Tal, & Ribak, 1992; Vongjaturapat, 1993), and is a theoretically sound outcome for adventure education assessment".

The increase in the students' perception in "self efficacy", which measures the ability to handle things and find solutions in difficult situations, could be attributed to their successes at overcoming most of the challenges present in the adventure-based activities.

The ROPELOC instrument is similar to the LEQ in terms of the dimensions of self-perception it proposed to measure. In addition, it provides a measure of the Locus of Control (LOC) which rates the perception of the participants' belief in taking responsibility for success (internal LOC) or that external issues determine their success (external LOC). In terms of the LOC, the "no significant" findings from this study differs from that by Newberry and Lindsay (2000), who found that challenge course training has a significant effect on the LOC of 40 fifth to eighth grade students in increasing their belief that their behaviour and ensuing consequences are within their control.

Measurement of the effect sizes of the ROPELOC dimensions of life effectiveness one week (post-test 1) and one month (post-test 2) after the camp showed small to moderate increases in most of the ROPELOC dimensions. The small to moderate increase in effect sizes in the students' perception of their life effectiveness in this programme is also consistent with the study by Neill (1999) that compared data from school-based adventure programmes with other types of adventure-based programmes and concluded that the positive changes in the participants' perception of life effectiveness as measured by the LEQ instrument in the former were much smaller. The participants' age, programme length, and adolescent developmental influences are possible reasons cited for the difference.

In this study, however, the positive changes in the students' perception of their life effectiveness appeared to be short-lived except for the dimension of "self-efficacy" based on the results of the dependent t-test analysis on the ROPELOC ratings completed one month after the camp. As the post-test 1 measurement was carried out a week after the camp, the possibility of the post camp euphoria effect on the statistically significant findings in some of the ROPELOC dimensions during this test cannot be discounted.

5.2 Factors Influencing Students' Learning

5.2.1 *Challenge in Adventure-Based Programmes*

The qualitative, and to some extent the quantitative findings of the present study seems to support the view that the challenges present in some adventure-based residential programmes and the ability to overcome these challenges successfully are influential factors to the personal growth and development of the students. This study supported the findings of Conrad & Hedin (1981), Dyson (1995) and Rubens (1999) that a combination of challenge, mastery, and success can lead to personal growth in adventure education programmes. Adventure-based programmes often require the use of mental, emotional and physical domains in order to overcome the challenges present in such programmes, and according to Kimball and Bacon (1993) will maximise the learning of the participants and lead to a more holistic growth.

5.2.2 *Social Support*

The participants viewed making new friends as an important factor of their enjoyment of the camp experience. As observed during the camp, the group members attempted to make connections with each other quickly after the initial phase of ice-

breaking activities led by the Secondary 3 peer leaders. This need to make connections with one another and the peer leaders is probably due to the need to gain a sense of security as the participants often have fears when they begin an outdoor experience (Mittens, 1995). The commonly cited fear of height seems to be allayed by personal affirmation by their peers, Secondary 3 peer leaders and teachers.

Besides the benefits of acquiring the skills of social interaction (making friendships), Mortlock (1984) believed that adventure education programmes can benefit young people in learning the skills by experiencing life away from parents/home (learning to become independent) and enjoying a complete change, rest and relaxation (recreation). Feedback from participants indicated this to be the case for this camp programme.

5.2.3 *Deployment of Staff/Facilitators*

In my seven years of experience as a trainer in the MOE Adventure Centres, the programming schedule of this adventure-based education camp bore close resemblance to the typical programme structure for most schools conducting a 2 to 3 days residential camp in these Centres. Such programmes are often activity-overloaded with little time allocated for debriefing and reflection. Without the provision of time and space for reflection by the students, the activities may lose much of their intended learning outcomes as observed during this study.

Initiative or problem-solving challenge elements such as the “Nitro Crossing”, “Spider Web”, “Hole-in-One”, “All Aboard”, “Low Wall” and “Tension Traverse” are commonly used to develop team cohesion, cooperation, support and trust in adventure programming. The conduct of such activities, known as “General Stations” (GS) activities at the MOE Adventure Centres, are often carried out by student leaders

"trained" without the close supervision of a trained instructor. The assumption held is that such GS activities are generally safe to execute and hence do not require the assistance of a trained instructor. Implicit in this practice is also the assumption that the participants will be able to derive the learning values of their experiences themselves since the student leaders conducting these GS activities are often not trained to facilitate the learning process effectively.

Gubitz and Kutcher (1999) argue that an integral part of adventure-based education is the debriefing, processing, or reflection phase that follows each significant event. Without reviewing the experiences of the participants as is observed in this study, the activities became just another "boring game" as quoted by the students. It is therefore not a surprise that feedback from the participants in the interviews indicated that the GS activities conducted were the least enjoyable and should be discarded.

Another omission in consideration of the use of student leaders as facilitators for such activities is that, similar to the "higher challenge activities", these activities do carry another potential harmful risk - the emotional risk. As noted by Allison (2003), and Ringer and Gillis (1995), emotional risk in adventure-based challenge courses has received little attention and may be more of a concern from the students' perspective. Mortlock (1984, p. 32) argued, "the first consideration of the teacher is to ensure that his pupils are as free as possible from physical and psychological harm during the activity". The Secondary 3 student leaders, given their relative young age and inexperience, are less likely to be able to identify any potential psychological harm present in the activity and take the necessary measures to prevent it.

5.2.3 *Programme Scheduling*

The hectic programme scheduling in this 3-day adventure-based camp reflects the increasing trend of schools in Singapore adopting what is termed by Rubens (1999) as a "narrow view of adventure" as opposed to a "broad view of adventure" when planning a residential camp programme. This narrow view of adventure is based on the concepts of a relatively short timescale of the experience, high thrill challenges with little or no effort involved and no responsibility devolved to students (Rubens, 1997). Examples of such activities in this study include the zipline and abseiling. In contrast, a broad view of adventure usually involves a longer timescale of experience, many challenges varied in nature, some or much effort involved and responsibilities devolved to students (Rubens, 1997). An example of the broad approach in adventure programming would be a journey or expedition. Though a fine line exists between the definitions of these two approaches to adventure programming, it is nevertheless worthwhile for outdoor educators to consider the appropriate balance to adopt notwithstanding the often relatively short time-frame allocated to such programmes. The findings from this study supported the argument of Rubens (1997) for a broad approach to adventure programming. The students indicated that they preferred the more demanding activities such as outdoor cooking and kayaking in the sea as opposed to the more adrenaline-filled challenge rope course activities such as the zipline and challenge pole.

In terms of the programme scheduling, it seems that the combination of the large number of 149 participants and relatively small number of 12 instructing staff involved in the running of the camp has led to less than optimal learning outcomes for the students based on the findings gathered in this study. With an average staff-student ratio of 1: 19 for most of the activities, participation in the programme became a "pick

and choose" exercise for the participants since they were unable to participate in all the activities planned given the allotted time limit of 2 hours per activity slot.

5.2.5 *Programme Duration*

In light of the less than optimal learning experiences perceived by the participants in the delivery of some aspects of the programme, the issue of whether the length of the camp was appropriate does merit serious consideration. Factors which have affected the learning outcomes of the participants include constraints in manpower resources such as the limited number of trained staff available, and the large number of students participating in the camp. Given the relatively fixed number of trained staff available in the school, the option of lengthening the duration of the camp should be considered. Furthermore, research findings have generally suggested that the longer the programme; the more beneficial it is to the personal growth and development of the participants (Hattie, et al., 1997). Moreover, Higgins and Nicol (2002, p. 3) conclude from a brief review of primary sources that "research evidence suggests that the optimum minimum time for residential is four days though longer is generally better" in the context of a residential sail training programme.

5.3 Use of ROPLOC instrument

The findings from the ROPELOC measurements proved to be inconclusive as only four and one out of the fourteen dimensions of the participants' perception of their personal effectiveness were significant when measured during Post-test 1 and Post-test 2 respectively. Another limitation to the reliability and validity of the ROPELOC results found in this study is the lack of a control group.

This study also revealed some differences in findings between the ROPELOC measurements and those from the interviews, survey and participant observation. For instance, the increase in self-confidence and cooperative teamwork which was frequently cited by the participants during the interviews differed from that of the ROPELOC findings which indicated no effect change in these two values. There are also other learning outcomes such as the determination to overcome challenges and an improved self-discipline, which were ascribed by the participants, which could not be ascertained with the ROPELOC measurements. Moreover, the measurements of effect size alone could not explain any changes that occurred in the students' perception of their life effectiveness. In this aspect, the interviews and written survey conducted have served a better purpose in finding out the cause of the changes in the students' perception of their life effectiveness. Hence, when there are differences in the data between the ROPELOC measurement and the group interviews and participant observation, the latter was used.

CHAPTER SIX

CONCLUSION

Findings from the various methods employed in this study indicated that the 3-day adventure-based residential programme does bring about positive behaviour and attitude changes in most of the students including an increase in their sense of competence, self-awareness, self-efficacy, self-discipline, independence, stress management, time management and determination. However, it is not known whether these changes have long lasting effects or whether they will be translated into concrete behaviour in the long term.

The contributing factors that characterised the positive experience of the students in an adventure-based camp are making new friends, support and positive affirmation of the student peer leaders and the teacher instructors, conducive learning environment of the camp, and overcoming the challenge element present in the activities. In the students' perception of a successful and enjoyable camp experience, being able to make new friends and receiving positive affirmation from the peer leaders and instructors were rated higher than the type of activity conducted.

On the other hand, it must be noted that the adventure-based residential programme does not bring about positive outcomes for all the students. The factors that have a dampening effect on the learning experience of the students were a hectic and activity-focussed programme with little time allotted for conducting, reviewing and reflection of the activities, poor delivery of the crucial initial stage of team-building activities (problem-solving activities and low rope elements) by the student leaders, as well as the lack of facilitation skills of the student leaders. Hence, caution

should be exercised when making claims of positive learning outcomes for all students in such a programme.

6.1 Implications of Findings from this Study for Policy and Practice in School-Based Outdoor Education Programmes

The following recommendations are based on the empirical findings of the present study, the broad literature review, and interpretation based on my professional experience in the delivery of outdoor education in the last 17 years.

6.1.1 Use of trained teachers as instructors for adventure-based camping programmes

The use of the trained teachers as instructors for the adventure-based residential programme has benefits in fostering better relationships between staff and students. Such improvement in relationships can last for a considerably length of time as shown by the written testimony of the Camp Commandant. She reported the observation by all the teacher instructors on the improved behaviours of the students after the camp. The students continued to be better behaved and polite to all the teacher instructors four months after it even though they were not taught in school by some of them.

The use of teacher instructors also allows for the learning process to be tailored to the needs of the students as they are in a better position to assess the individual learning preference of the students compared to the use of external service providers. This practice of using teacher instructors should be encouraged.

6.1.2 Use of student peer leaders

The deployment of the Secondary Three student leaders to assist in the conduct of an adventure-based programme as facilitators provides a good learning opportunity for the participants to role-model them. However, the use of upper secondary student leaders to conduct team initiatives, problem-solving games and low ropes challenge activities needs to be evaluated carefully in light of the potential negative effects on the learning outcomes of the participants arising from the relative inexperience and lack of facilitation skills of these student leaders. Adequate training of the student leaders on how to conduct and facilitate the intended learning outcomes of these programmes is essential if they are to be deployed.

As time is a constraint in most adventure-based camps conducted by schools in Singapore where typically a large number of between 250 to 400 students are put through a 3-day camp programme with limited facilities, consideration should be given to the use of the facilitators to belay the participants especially in a high element challenge course (Cross, 2003). For instance, the use of student peer leaders as facilitators to belay the participants in the high element challenge course during this camp could not only free up half a day needed to teach the belay skills to the entire cohort of participants, but also allow more participants the opportunity to attempt the activities as the student peer leaders are more efficient in belaying. The trade-off in losing the educational value of working as a group to belay their fellow participants is justifiable so as to allow more students to participate in the activity in this situation.

6.1.3 Duration, design, instructor-to-student ratio and programme sequencing

Schools intending to conduct an adventure-based outdoor education programme should consider the duration, design, sequencing of the programme and the instructor-to-student ratio to optimize the learning outcomes of their students. Schools with a large number of participants and a limited number of trained staff (large student-to-staff ratio) should consider a longer programme such as a 4- to 5-day residential camp experience.

6.2 Considerations for Future Studies

This study has attempted to address a few of the gaps in the process factors such as the structure and length in a Singapore adventure-based residential programme which influenced the learning outcomes of secondary school students. However, it is neither perfect nor all encompassing. Moreover, it could not be generalized due to its lack of a control sample. As such, there is a need for more studies to look into these as well as other aspects of outdoor residential education.

6.2.1 More studies on processes of outdoor educational programmes are needed

Future studies that examine the programme, participants, and place factors as identified by Rickinson et al. (2004) in adventure-based residential programmes for the young will be needed to assist schools and policy-makers to make informed decisions on the structure, pedagogy and duration of their outdoor education programmes that would be useful to meet and enhance specific learning outcomes.

Specifically, future studies might look into the following:

- Sequencing of the adventure-based education programmes and their influence on learning outcomes;
- Duration of adventure-based education programmes which will optimize the learning experiences of young people;
- Types of adventure-based education programmes (e.g. journey-based *versus* centre-based) and their impact on the learning experiences of young people;
- Short- and long-term impact of adventure-based education programmes on the values of young people;
- Pedagogy – methods of delivery, facilitation styles of the instructors/teachers;
- Characteristics of the participants including the gender, age, ethnicity, motivation, as well as interests factors and their influence on the learning process of young people; and
- Place – the role of adventure-based education in developing a connection with the place and in environmental and sustainability education.

6.2.2 Role of outdoor education for environmental sustainability and education in Singapore

Another important role of outdoor education which is definitely worth examining is the environmental sustainability and education that has been acknowledged by an increasing number of outdoor educators around the world. A commonly adopted definition of outdoor education in the UK which is also increasingly being adopted internationally suggests that it comprises aspects

of *outdoor adventure activities*, *personal and social development* and *environmental education* (Higgins and Loynes, 1997).

Cooper (1994, 1998), Higgins (1996a, 1996b, 2002), Higgins & Loynes (2002), Nicol (2002a, 2002b, 2003), and Martin (2004) amongst others educators have supported the case for a central responsibility of outdoor education in developing a sense of value for the natural environment and encouraging sustainable practices. Moreover, the review on research in outdoor adventure education by Barrattt and Greenaway (1995, p. 31) has indicated that "many young people demonstrate a concern for environmental issues which deserves to be addressed through youth work, including outdoor adventure."

In Singapore, the emphasis in outdoor adventure education tends to focus on personal and social development of the students with little coverage on educating for sustainability. The absence of environmental education in this camp programme studied, which is typical of that in most schools in Singapore, may send the strong message to the students that environmental education is not important.

It is therefore essential for local schools which have traditionally focused on the use of outdoor adventure programmes for personal and social development to now play a more direct and focused role in developing environmental awareness and sustainability among our young. Future studies on the values of integrating outdoor environmental education with adventure-based programmes can serve to bridge the vacuity in this field.

REFERENCES

Adler, P.A., & Adler, P. (1994). Observational techniques. In N.K. Denzin & Y.S. Lincoln (Eds.), *Handbook of Qualitative Research* (pp. 377-390). London: SAGE Publications.

Allison, P. (2003). Key principles: Trust, risk, and learning. In S. Wurdinger & J. Steffen (Eds.), *Developing Challenge Course Programs for Schools (pp. 17 - 29).*USA: Kendall/Hunt Publishing Co.

Allison, P., & Pomeroy, E. (2000). How shall we know? Epistemological concerns in research in experiential education. *Journal of Experiential Education*, *23(2),* 91-98.

Baldwin, C., Persing, J., & Magnuson, D. (2004). The role of theory, research, and evaluation in adventure education. *Journal of Experiential Education*, *26(3),* 167-183.

Barratt, J., & Greenaway, R. (1995). *Why adventure? The role & value of outdoor adventure in young people's personal and social development.* UK: Foundation for Outdoor Adventure.

Bell., J. (1999*). Doing your research project.* USA: Open University Press.

Beames, S. (2004). Critical elements of an expedition experience. *Journal of Adventure Education and Outdoor Learning*, *4(2)*, 145-20.

Bobilya, A.J., & Akey, L.D. (2002). An evaluation of adventure education components in a residential learning community. *Journal of Experiential Education*, *25(2),* 296-304.

Bocarro, J., & Richards, G. (1998). Experiential research at-risk: The challenge of shifting traditional research paradigms. *Journal of Experiential Education*, *21(2)*, 102-107.

Brookes, A. (2003a). A critique of Neo-Hahnian outdoor education theory. Part One: Challenges to the concept of "character building". *Journal of Adventure Education and Outdoor Learning*, *3(1)*, 49-62.

Brookes, A. (2003b). A critique of Neo-Hahnian outdoor education theory. Part Two: The fundamental attribution error in contemporary outdoor education discourse. *Journal of Adventure Education and Outdoor Learning*, *3(2)*, 119-132.

Brown, M. (2003). So what? A different way to conduct outdoor education research to build alternate knowledge(s). *Proceedings of the 13th National Outdoor Education Conference,* Westminster School, Marion, Australia, April 14th-16th, 2003, 76-85.

Cason, D., & Gillis, H.L. (1994). A meta-analysis of outdoor adventure programming with adolescents. *Journal of Experiential Education, 17(1)*, 40-47.

Cohen, L. (1988). *Statistical power analysis for behavioral sciences (2nd Ed.)*. London: Lawrence Erlbaum.

Cohen, L., Manion, L., & Morrison, K. (2000). *Research methods in education (5th Edition)*. London: RoutledgeFalmer.

Cooper, G. (1994). The role of outdoor education in education for the 21st century. *Journal of Adventure Education and Outdoor Leadership*, *11(2)*, 9-12.

Cooper, G. (1998). *Outdoors with young people. A leader's guide to outdoor activities, the environment & sustainability.* UK: Russell House Publishing.

Conrad, D., & Hedin, D. (1981). National assessment of experiential education: summary and implications. *Journal of Experiential Education,* 6-20.

Christie, B. (2001). Poster Presentation: Raising achievement through Outward Bound! A study of the effect of an outdoor education programme on students' self perception and the role of outdoor education in mainstream education. In W. Marian (Ed.), *Transitions: Experiential Learning and the Process of Change. An Account of*

the Youth Conference held at Brathay (3rd, Ambleside, Cumbria, England, September 17-19, 2001) (pp. 49-501, UK: Brathay Hall Trust.

Crompton, J.L., & Sellar, C. (1981). Do outdoor education experiences contribute to positive development in the affective domain? *Journal of Environmental Education, 12(4)*, 21-29.

Cross, R. (2002). The effects of an adventure education program on perceptions of alienation and personal control among at-risk adolescents. *Journal of Experiential Education, 25(1)*, 247-254.

Cross, R (2003). Teaching high elements. In S. Wurdinger & J. Steffen (Eds.) *Developing Challenge Course Programs for Schools.* (pp. 169-178). Dubuque: Kendall/Hunt Publishing Co.

Culhane, J.D. (2004). The effects of a fifth-grade adventure-based cooperative physical education program on life effectiveness and locus of control. Unpublished dissertational study, USA: University of Northern Colorado.

Davidson, L. (2001). Qualitative research and making meaning from adventure: A case study of boys' experiences of outdoor education at school. *Journal of Adventure Education and Outdoor Learning*, *1(2)*, 11-20.

Davis-Berman, J., & Berman, D.S. (1994). Two-year follow up report for the wilderness therapy program. *Journal of Experiential Education, 17(1)*, 48-50.

Delamont, S. (2002). *Fieldwork in Educational Settings. Methods, pitfalls and perspectives*. London: Routledge.

Dewey, J. (1938). *Experience and education*. USA: Simon & Schuster New York.

Doherty, C. (2003). The effects of a public school system's one day adventure experience. Unpublished 4th year teacher education project, NSW, Australia: University of Newcastle.

Dyson, B.P. (1995). Students' voices in two alternative elementary physical education programs. *Journal of Teaching in Physical Education, 14,* 394-407.

Eagle, H., Gordon, J., Lewis, L. (2000). *The effects of a Public School Systems' One-Day Adventure Experience.* http://www.wcboe.org/programs/btl/research.html.

Ewert, A. (1995). Research in experiential education: An overview. In K. Warren, M. Sakofs and J.S. Hunt. (Eds.), *The theory of experiential education.* (pp. 351–356). Dubuque, Iowa: Kendall Hunt.

Ewert, A. (1989). *Outdoor adventure pursuits: Foundations, models, and theories.* USA: Publishing Horizons.

Ewert, A & Sibthorp, J. (2000). Multivariate analysis in experiential education: Exploring the possibilities. *Journal of Experiential Education, 23(2)*, 108-116.

Field, A., & Hole, G. (2003). *How to design and report experiments*. London: SAGE Publications Ltd.

Fontana, A., & Frey, J.H. (1994). Interviewing. The art of science. In N.K. Denzin & Y.S. Lincoln (Eds.), *Handbook of Qualitative Research.* (pp. 361-376). London: SAGE Publications.

Forgan, J.W., & Jones, C.D. (2002). How experiential adventure activities can improve students' social skills. *Teaching exceptional children, 34 (3)*, 52-58.

Garst, B., Scheider, I., & Baker, D. (2001). Outdoor adventure program participation impacts on adolescent self-perception. *Journal of Experiential Education*, 24(1), 41-49.

Garvey, D. (1999). Do one day adventure programming activities, such as challenge courses, provide long lasting learning? Yes. In Wurdinger, S.D. & Potter, T.G. (Eds).

Controversial issues in adventure education: A critical examination. (pp. 89-95). Dubuque, Iowa: Kendall Hunt.

Golden-Biddle, K., & Locke, K.D. (1997). *Composing qualitative research.* USA: SAGE Publications.

Guba, E.G, & Lincoln, Y.S. (1994). Competing paradigms in qualitative research. In N.K. Denzin & Y.S. Lincoln (Eds.), *Handbook of Qualitative Research.* (pp. 105-117). London: SAGE Publications.

Hammersley, M., & Atkinson, P. (1997*). Ethnography: Principles in practice*. USA: Routledge.

Harris, I. (2000). The development of the "self-concept" of Secondary School pupils through short term residential outdoor education experience. *Horizons, 7/8*, 9-11.

Hattie, J., Marsh, H.W., Neill, J.T., & Richards, G.E. (1997). Adventure education and Outward Bound: Out-of-class experiences that make a lasting difference. *Review of Educational Research, 67(1),* 43-87.

Hazelworth, M.S., & Wilson, B.E. (1990). The effects of an outdoor adventure camp experience on self-concept. *Journal of Environmental Education, 21*, 33-37.

Hedges, L.V. (1981). Distribution theory of Glass's estimator of effect size and related estimators. *Journal of Educational Statistics, 7*, 107-128.

Henderson, K.A. (2004). Got research in experiential education? Theory and evidence. *Journal of Experiential Education*, *26(3),* 184-189.

Higgins, P. (1996a). Connection and consequence in outdoor education. *Journal of Adventure Education and Outdoor Leadership*, *13(2)*, 34-39.

Higgins, P. (1996b). Outdoor education for sustainability: making connections. *Journal of Adventure Education and Outdoor Leadership*, *13(3)*, 4-11.

Higgins, P. (2002). Why educate out of doors? In R. Nicol and P. Higgins (Eds), *Outdoor Education: Authentic learning in the context of Landscapes (Volume 2)* (pp. 19-26). Sweden: Comenius Action 2.1 European In-Service Training Courses.

Higgins, P., & Loynes, C. (1997). On the nature of outdoor education. In P. Higgins, C. Loynes & N. Crowther. (Eds.), *A guide to outdoor educators in Scotland,* pp. 6-8. UK: Adventure Education Reeds Ltd.

Higgins, P., & Loynes, C. (2002). What is outdoor education? In R. Nicol and P. Higgins (Eds), *Outdoor Education: Authentic learning in the context of Landscapes (Volume 2)* (pp. 15-18). Sweden: Comenius Action 2.1 European In-Service Training Courses.

Higgins, P., & Nicol, R. (2002). Outdoor learning in theory and practice. . In R. Nicol and P. Higgins (Eds), *Outdoor Education: Authentic learning in the context of Landscapes (Volume 2)* (pp. 3-14). Sweden: Comenius Action 2.1 European In-Service Training Courses.

Ho, S. (2003). *The effects of three-day adventure-based camping programmes on the perceptions of primary five Singaporean pupils' life effectiveness.* Unpublished Master thesis, Nanyang Technological University, Singapore.

Hopkins, D., & Putnam, R. (1993). *Personal growth through adventure education*. UK: David Fulton Publishers.

Hopkins, D.K. (1998). *Educational and psychological measurement and evaluation* (8th edition). USA: Allyn and Bacon.

Humberstone, B. (1997). Perspectives on research in outdoor education values and ethics. *Journal of Adventure Education and Outdoor Leadership*, *14(1)*, 7-9.

Kaly, P.W., & Heesacker, M. (2003). Effects of a ship-based adventure program on adolescent self-esteem and ego-identity development. *Journal of Experiential Education, 26(2),* 97-104.

Kimball, R.O., & Bacon, S.B. (1993). The wilderness challenge model. In M.A. Gass (Ed.), *Adventure therapy: Therapeutic applications of adventure programming* (pp. 11-41). Dubuque, USA: Kendall/Hunt Publishing.

Klint, K.A. (1999). New directions for inquiry into self-concept and adventure experiences. In J.C Miles and S. Priest. (Eds.), *Adventure Programming.* (pp. 163-168). USA: Human Kinetics.

Lincoln, Y.S., & Guba, E.G. (1994). *Naturalistic inquiry*. USA: SAGE Publications.

Loynes, C. (1996). Adventure in a Bun. *Journal of Adventure Education and Outdoor Leadership, 13(2*), 52-57.

Loynes, C. (1998). Outdoor education is dead, Long live outdoor education. *In the Proceedings of the First Australian Outdoor Recreation Conference.* (pp. 1 to 6). Sydney: ORCA.

Lugg, A. (2004). Outdoor adventure in Australia outdoor education: Is it a case of roast for Christmas dinner? *Australian Journal of Outdoor Education*, *8(1),* 4-11.

Luckner, J.L., & Nadler, R.S. (1997). *Processing the experience: Strategies to enhance and generalise learning.* USA: Kendall Hunt.

Martin, P. (2004). Outdoor adventure in promoting relationships with nature. *Australian Journal of Outdoor Education*, *8(1),* 20-35.

May, T. (1993). *Social research: Issues, methods and process*. USA: Open University Press.

Maykut, P., & Morehouse, R. (1994*). Beginning qualitative research: a philosophical guide*. London: Falmer Press.

McKenzie, M.D. (2000). How are adventure education program outcomes achieved? A review of literature. *Australian Journal of Outdoor Education*, *5(1),* 19-28.

McLeod, B., & Craig, S.A. (2004). An evaluation of an experiential learning and outdoor education school program on the life effectiveness skills of middle school boys. Paper presented at the International Outdoor Education Research Conference, La Trobe University Bendigo, Victoria, Australia, July 6-9, 2004.

Meyer, B.B., & Wenger, M.S. (1998). Athletes and adventure education: An empirical investigation. *International Journal of Sport Psychology*, 29, 243-266.

Miles, M.B., & Huberman, A.M. (1994). *Qualitative Data Analysis*. Second Edition. USA: SAGE Publications.

Mittens, D. (1995). Building the group: Using personal affirming to create healthy group process. *Journal of Experiential Educatio*n, *18 (2*), 82-90.

Moote, G.T., & Wodarski, J.S. (1997). The acquisition of life skills through adventure-based activities and programs: A review of the literature. *Adolescence*, *32*, 143-167.

Mortlock, C. (1984). *The adventure alternative.* Milnthorpe, UK: Cicerone Press.

Neill, J. T. (1999). *The melting pot of outdoor education effects: Testing the flavours of program type, duration, and participant age.* Paper presented to the 11th National Outdoor Education Conference, Perth, Australia, Jan 11-15.

Neill, J.T., & Flory, M. (2000). A pilot study of the short-term and long term effects of the women's wilderness Institute "Girlz in the Wood" courses on adolescents' personal effectiveness and self-esteem. USA: The Women's Wilderness Institute.

Neill, J.T., & Richards, G.E. (1998). Does outdoor education really work? A summary of recent meta-analyses. *Australian Journal of Outdoor Education*, *3(1)*, 2-8.

Neill, J.T., Marsh, H.W., & Richards, G.E. (1997). *The life effectiveness questionnaire development and psychometrics.* University of Western Sydney Australia: Department of Education.

Newberry, E.H., & Lindsay, J.F. (2000). The impact of social skills training and challenge course training on locus of control from residential care. *Journal of Experiential Educatio*n, *23 (1*), 39-41.

Nicol, R. (2002a). Outdoor education: Research topic or universal value? Part one. *Journal of Adventure Education and Outdoor Learning, 2(1),* 29-41.

Nicol, R. (2002b). Outdoor education: Research topic or universal value? Part two. *Journal of Adventure Education and Outdoor Learning, 2(2),* 85-99.

Nicol, R. (2003). Outdoor education: Research topic or universal value? Part three. *Journal of Adventure Education and Outdoor Learning, 3(1),* 11-28.

Nicol, R., & Higgins, P. (2002). A framework for evaluation of outdoor education programmes. In R. Nicol and P. Higgins (Eds.), *Outdoor Education: Authentic learning in the context of Landscapes (Volume 2)* (pp. 29-36). Sweden: Comenius Action 2.1 European IN-Service Training Courses.

Outward Bound International (2004). Outward Bound Singapore receives Prime Minister acknowledgement. Retrieved July 15, 2005, from http://www.outward bound.org/docs/newsletter/2004-12.pdf.

Pallant, J. (2001). SPSS Survival Manual: A step by step guide to data analysis using SPSS. UK: Open University Press.

Priest, S. (1999). Research in adventure programming. In J.C Miles and S. Priest. (Eds.), *Adventure Programming.* (pp. 309-320). USA: Human Kinetics.

Purdie, N., & Neill, J. (2000). Japanese students Down-Under: Is Australian outdoor education relevant to other cultures? *Australian Journal of Outdoor Education*, 4(1), 48-57.

Purdie, N., & Neill, J. (2002). Australian identity and the effect of an outdoor education program. *Australian Journal of Psychology, 54(1),* 32-39.

Richards, G.E., Ellis, L., & Neill, J.T. (2002). *The ROPELOC: Review of Personal Effectiveness and Locus of Control: A comprehensive instrument for reviewing life effectiveness. Self-Concept research*. Proceedings of the 2nd International Biennial Conference. Australia: University of Western Sydney, Aug 6-8, 2002. Driving International Research Agendas.

Rickinson, M., Dillon, J., Teamey, K., Morris, M., Choi, M.Y., Sanders, D., & Benefield, P. (2004). *A review of research in Outdoor Learning*. UK: National Foundation for Educational Research and King's College London.

Ringer, T.M., & Gillis, H.L. (1995). Managing psychological depth in adventure programming. *Journal of Experiential Education, 18*(1), 41-51.

Ritzer, G. (1993). *The McDonalisation of Socie*ty. UK: Pine Forge Press.

Roberts, N.S., & Yerkes, R. (2000). Experiential education research: Where do we go from here? *Journal of Experiential Education, 23(2)*, 61-63.

Rubens, D. (1999). Effort or performance. Keys to motivational learners in the outdoors. *Horizons, 4,* 26-28.

Seyfried, C. (2002). A "Construed" link between outdoor education and constructivist pedagogy. In R. Nicol and P. Higgins (Eds), Outdoor Education: Authentic learning

in the context of Landscapes (Volume 2) (pp. 15-17). Sweden: Comenius Action 2.1 European In-Service Training Courses.

Sibthorp, J. (2000). Measuring weather...and adventure education: Exploring the instruments of adventure education research. *Journal of Experiential Education, 23(2),* 32-50.

Sibthorp, J. (2001). Development and validation of the characteristics of experience scale for use in adventure based programming. Proceedings of the 1999 Symposium on Leisure Research (p.60). Ashburn, VA: National Recreation and Park Association.

Sibthorp, J. (2003). Learning transferable skills through adventure education: The role of an authentic process. *Journal of Adventure Education and Outdoor Learning, 3(2*), 145-157.

Sibthorp, J. (2003). An empirical look at Walsh and Golins' adventure education process model: relationships between antecedent factors, perceptions of characteristics of an adventure experience, and changes in self-efficacy. *Journal of Leisure Research, 35(1*), 80-106.

Sibthorp, J. & Arthur-Banning, S. (2004). Developing life effectiveness through adventure education: The roles of participant expectations, perceptions of empowerment, and learning relevance. *Journal of Experiential Education*, *27(1)*, 32-50.

Singapore Parliament Reports (2004). *Singapore Parliamentary Debate on Education Budget 2004 on 18 March 2004*. Retrieved on 19 January, 2005 from http://www.parliament.gov.sg/parlweb/get_highlighted_content.jsp?docID=63404&hlLevel=Terms&links=BUDGET,CHAN,SOO,SEN&hlWords=%20%20&hlTitle=&queryOption=1&ref=http://www.parliament.gov.sg:80/reports/public/hansard/section/20040318/20040318_S0003.html#1

Statistics Singapore (2005). Singapore Population Census 2000. Retrieved 18 June 2005, from http://www.singstat.gov.sg/keystats/c2000/handbook.pdf.

Stenger, T.L. (2001). Sequence of adventure-based resident outdoor education programme and middle school students' perceptions of life effectiveness. Unpublished doctoral study. Oklahoma State University, USA.

Schwandt, T.A. (1994). Constructivist, Interpretivist approaches to human inquiry. In N.K. Denzin & Y.S. Lincoln (Eds.), *Handbook of Qualitative Research.* (pp. 118-135). London: SAGE Publications.

Tabachnick, B.G., & Fidell, L.S. (1996). *Using multivariate statistics (3rd Edition)*. USA: Harper Collins.

Tan, M (2005). Examining the impact of Outward Bound Singapore program on the life effectiveness of adolescents. Unpublished Master thesis, University of New Hampshire, USA.

Taylor, S.J., & Boglan, R. (1998). *Introduction to qualitative research methods*. USA: John Wiley & Sons.

Terry, L. (2002). A Quantitative and Qualitative Analysis on the effects of an Adventure course: An intervention with female adolescents. *Unpublished undergraduate thesis*, Scripps College, Claremont, USA.

Thomas, J.R., & Nelson, J.K. (2001). *Research Methods in Physical activity (4th Edition).* USA: Human Kinetics.

Wang, J., Ang, R., Teo-Koh, S.M., & Khalid, A. (2004). Motivational predictors of young adolescents' participation in an outdoor adventure course. A self-determinant theory approach. *Journal of Adventure Education & Outdoor Learning, 4(1)*, 57-64.

Warner, A. (1984). How to creatively evaluate programs. *Journal of Experiential Education*, 7(2), 38-43.

Warner, A. (1990). Program evaluation: Past, present and future. In J.C. Miles & S. Priest (Eds.). *Adventure Education*. (pp. 309-320). USA: Venture Publishing.

Warner, A. (1999). Improving program quality through evaluation. In J.C. Miles & S. Priest (Eds.). *Adventure Programming*. (pp. 299-308). USA: Venture Publishing.

APPENDICES