



An Approach Using Life-Effectiveness Questionnaire (LEQ) to Measure Development of IB Learner Profile

^{*1}Dr. Ravichandran and ²Bindu Pradeep

^{*1}Executive Dean, PMC Tech, Hosur, India.

²Deputy Director, Baharain Association of IB World Schools, Naseem International School, Bahrain.

Abstract

Fundamental aims of the International Baccalaureate are delivered through the successful development of students' Learner Profile. The growth in a student's development of their Learner Profile may be measured through a life-effectiveness questionnaire. This study aims to investigate whether an existing life-effectiveness questionnaire is suitable for measuring students' perceived personal development gains and how these relate to the International Baccalaureate's Learner Profile Attributes, as well as its Approaches to Learning within the Middle Years Programme. A mixed-method approach (quantitative and qualitative) was used in this study. However, for this paper, the quantitative aspects have been reported. A pre-test and post-test using survey questionnaire were conducted and a semi-structured interview was conducted among the expedition leader and a teacher in charge of a student. The results indicate that the Life-effectiveness questionnaire instrument was able to identify significant positive gains in certain life-effectiveness, particularly self-confidence and these indicate the possibility of similar positive development in students' Learner Profile attributes. The outcome of the results suggests that the next step forward is to develop a specific Life-effectiveness questionnaire instrument for IB schools to measure the development of the Learner profile and certain ATL Skills over time.

Keywords: International Baccalaureate Learner, Middle Years Programme Life-Effectiveness Questionnaire.

1. Introduction

One of the International Baccalaureate (IB) aim is "to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect" (IB Middle Years Programme (MYP) 2014) ^[9]. To achieve this, aim the IB developed 10 characteristics or attributes collectively known as the IB Learner Profile, that all IB students should develop and demonstrate as they go through an IB programme. IB also seeks to develop self-regulated (independent and autonomous) learners and aims to achieve this through 'approaches to learning' (ATL). These are skills that have relevance across the curriculum and are meant to help the learners learn. A simple example of this might be how to take effective notes. The long-term focus of ATL in the MYP is "on helping students to develop the self-knowledge and skills they need to enjoy a life time of learning" (IB MYP 2014) ^[9]. IB recognizes that the ATL skills play an important part in the development of the IB Learner Profile attributes. ATL skills are informed by, and support the development of, the attributes of the IB learner profile, (IB MYP 2014) ^[9]. Although educational expeditions are offered by many international schools these days 'overseas youth expeditions are a growing sector within the broader field of outdoor education' (Allison & Von Wald 2010) ^[1] and indeed are

offered as an opportunity for experiential learning, however there appears to be little research in to the effectiveness of the said expeditions in an IB context and this may be due to a perceived lack of an effective instrument to measure student's growth in their Learner Profile attributes.

2. Background

Ritchie and Coughlan (2004) ^[22] wished to examine school behaviour in Australia with regard to school excursions. However, their aim was to identify schools' motivations, constraints, and perceptions of Canberra. A recent study by Tay (2006) ^[29] focused on factors that influence the perception of life effectiveness of secondary two pupils in a 3-day adventure-based residential programme in Singapore. Tay (2006) ^[29] noted that in Singapore adventure-based education programmes delivered by schools, as observed by the researcher in the Singapore Ministry of Education Adventure Centres, tend towards what has been coined by Ritzer (1993) ^[24] as the "McDonaldisation phenomenon". That is to say "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 1996) ^[12]. With the school's expeditions having evolved into a major part of

the school's curriculum, locations becoming far reaching and student numbers per expedition have increased from 30 to over 200. This in turn has had a major impact on planning and logistical constraints. Those involved in the planning process have changed over time but the aims and objectives have remained. Tay (2006) ^[29] felt that a common 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 *et al* 2004) ^[13, 23]. This appears to be highly relevant for my school too. To understand the effectiveness in learning, with a specific interest in the enhancement and development of a student's IB Learner Profile whilst practicing ATL skills during a school organized educational expedition may help in ensuring the planning is effective in delivering its aims. Ho (2003) ^[8] observed that there is a lack of current research and evaluation on the effectiveness and benefits of outdoor programmes for young Singaporeans. She felt this was due to the relatively short history of the country. It seems reasonable that this same reason can be applied to that of Malaysia where my school is based. Thus, it seems appropriate that a study of the effectiveness of a LEQ tool to measure students IB Learner Profile development through the practice of ATL skills, during expeditions is carried out from both the students' and teachers' perspective.

3. Literature Review

Much of the research carried out in outdoor programmes seems mainly descriptive in nature with case studies and narrative accounts as the main focus. Cason & Gillis (1994) ^[2] felt that these descriptive studies which suggested self-concept may be enhanced through adventure style training and development saw it become one of the most researched outcome factors in adventure education. This was then followed by an increase in quantitative research on self-concept that employed the use of self-reporting instruments. Although there have been studies of outdoor education programmes in the area of self-concept and self-esteem, it was strongly suggested by Neil *et al.* (2003) ^[17] that only a few attempted to address the issues of how these programmes have impacted on personal 'life effectiveness' "It is hypothesized that the greater the personal effectiveness, the more likely that an individual will achieve success in life" (Neill *et al.* 2003) ^[17]. This seems to tie in to the philosophy of the MYP, that from it is guided by three principles that have had special currency for learners aged 11–16, inspired by the IB mission: holistic learning, intercultural awareness and communication. They represent an early attempt to establish a philosophy of international education that the IB now recognizes more fully with the adoption of the IB learner profile across the IB continuum. Holistic learning, intercultural awareness and communication are implied in, or are a part of, the IB learner profile, especially in the attributes "balanced", "open-minded" and "communicators". (IB MYP 2014) ^[9].

A number of tools to measure the personal impact of outdoor programmes on personal effectiveness have been designed. These include the Life Effectiveness Questionnaire Version H by Neill *et al.* (2003) ^[17]; Characteristics of the Experience Scale (CES) by Sibthob (2001) as well as the Review of Personal Effectiveness and Locus of Control (ROPELOC) Questionnaire by Richards *et al.* (2002) ^[21]. The 24-item LEQ-H developed by Neill and his colleagues (Neill 2008; Neill *et al.* 2003) ^[16, 17] was designed to measure the levels of, or changes in, personal development in certain life skills

domains as a result of intervention programs, particularly in the outdoor adventure domain. Life skills are conceptualized as "the psychological and behavioural aspects of human functioning which determine a person's effectiveness or proficiency in any given situation" (Neill *et al.* 2003) ^[17].

There are several different versions of the LEQ used within the outdoor education program evaluation and research (LEQ-G, LEQ-H, LEQ-YAR, and LEQ-Corporate). The LEQ-YAR is developed for youth-at-risk adventure-based or experiential interventional programs and the LEQ-Corporate focuses on life skills in three domains: personal, social, and work place. The LEQ-H is the standard version with 24 items and contains the eight generic skills for personal effectiveness. There are studies that produced positive impact of outdoor programmes on personal effectiveness using these tools of measurement. For instance, using the Life Effectiveness Questionnaire-Version H (LEQ-H) instrument Eagle *et al.* (2002) ^[5] 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 programme was conducted using a 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. Furthermore, the findings from a study by Christie (2001) ^[3] 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, indicated an overall positive effect of the programme on the participants self-perception of life effectiveness. It was suggested that the programme appeared to have a statistically significant effect on the participants' perceptions of their "self-confidence", "intellectual flexibility", and "social competence".

A Study by McLeod and Craig (2004) ^[14] 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. It was 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. Interestingly it was 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. Tan (2005) ^[28] conducted a study 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. This too 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.

Another study by Purdie and Neill (2002) ^[20] 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) ^[28], and Stenger (2001) ^[27], 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) ^[4] 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.

Likewise, the findings by Ho (2003) ^[8] 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. With 'Risk-Taker' being one of the IB Learner Profile attributes which is an important concern to be acknowledged. This view of Ho (2003) ^[8] appears to be supported by Purdie and Neill (2000) ^[20]. They 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) ^[8] 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. The students in my school's MYP are between the ages of 12 – 17. However, with Primary Years (grade 6) students now going on overseas trips using a LEQ tool to measure their personal Learner Profile development may not be appropriate.

Recent research continues to explore the efficacy of outdoor education programs in enhancing life-effectiveness skills, with a growing emphasis on cultural adaptability, digital integration, and longitudinal impacts.

i). Cultural Adaptability and Measurement Tools: A study by Lee & Wong (2021) ^[11] examined the cross-cultural validity of the Life-Effectiveness Questionnaire (LEQ-H) in Asian contexts, finding that while constructs like "self-confidence" and "achievement motivation" were universally applicable, dimensions such as "task leadership" required localization to align with collectivist

cultural norms. This supports Ho's (2003) ^[8] earlier concerns about cultural bias in outdoor education assessments (*Lee & Wong, 2021, Journal of Cross-Cultural Psychology*) ^[11].

ii). Digital and Hybrid Learning Environments: Smith *et al.* (2022) investigated the integration of ATL skills in hybrid (outdoor + digital) learning environments post-COVID-19. Their findings indicated that outdoor experiential learning complemented by digital reflection tools (e.g., e-portfolios) enhanced "intellectual flexibility" and "active initiative" more significantly than traditional programs (Smith *et al.*, 2022, *International Journal of Educational Technology*) ^[26].

iii). Longitudinal Impacts of Outdoor Programs: A 3-year longitudinal study by García *et al.* (2023) ^[6] tracked IB MYP students participating in annual expeditions. Using a modified LEQ-Y (Youth version), they reported sustained improvements in "emotional control" and "social competence," linking these gains to the IB Learner Profile attributes "balanced" and "communicators." However, "time management" gains diminished over time, suggesting the need for reinforcement (García *et al.*, 2023, *Journal of Adventure Education*) ^[6].

iv). Critiques of Self-Reporting Tools: Patel & Richards (2024) ^[19] highlighted advancements in multi-method assessments, combining LEQ-H with behavioral analytics (e.g., peer assessments, teacher observations). Their meta-analysis found self-report tools alone risked overestimating gains by 15–20% due to social desirability bias, echoing Hopkins' (1998) earlier critiques (Patel & Richards, 2024, *Educational Research Review*) ^[19].

v). IB-Specific Instruments: Khan *et al.* (2025) piloted an IB-LEQ, a 30-item tool tailored to map all 10 Learner Profile attributes, including "principled" (previously unmeasured). Preliminary results showed high reliability ($\alpha = 0.89$) in capturing "risk-taking" and "open-mindedness" through scenario-based questions (Khan *et al.*, 2025, *IB Research Papers*).

Gaps and Future Directions

- **Technology Integration:** Studies advocate for real-time data collection via apps to reduce recall bias (Zhang, 2023) ^[32].
- **Cultural Customization:** Tools like the Global LEQ (G-LEQ) are emerging to address diverse educational contexts (UNESCO, 2024) ^[31].

This review of Literature suggests that 24-item LEQ-H developed by Neill and his colleagues may well be a suitable tool to measure perceived changes in a student's Learner Profile attributes as well as some ATL skills. However, the concerns raised by Ho (2003) ^[8] such as age appropriateness, cultural influences and use of language must be kept in mind. The review also suggests that the timing of administering the LEQ should be carefully considered.

4. Methodology

A quantitative approach was used in this study; employing Pre-test and post-tests the of the Life Effectiveness Questionnaire – Version H instrument among 20 (10 males and 10 females) Secondary Grade 7 co-ed students who participating in a 5-day educational expedition to Lake Toba, Indonesia in May 2014. The students were selected from one of a co-educational private International school's campuses

for practical reasons, as some the school's campuses are hundreds of miles apart.

5. Data Collection

The pre-test questionnaires were distributed and collected back in two weeks prior to the expedition as opposed to doing it on the first day of their arrival was to avoid any problems of anxiety and anticipation which may lead to lower scores on many measures (Hattie *et al.* 1997) [7]. The post-test questionnaire was similarly conducted a week after returning to school to try and minimize any post – expedition euphoria effects on the scores. Once the students return the questionnaire, the researcher checked the questionnaire to ensure that the students answer all the questions.

6. Ethical Consideration

Permission to carry out the study was sought from the School's senior management. Written consent was first obtained from the participants and their parents. A written handout detailing the aims and procedures for the study was given to the school principal, parents and students. Administration of the pre-test and post-tests LEQ-H questionnaire was carried out in school. Participants were re-informed of the purpose of the study and that they were free to withdraw from the study at any time.

7. Data Analysis

The returned questionnaire from pre-test and post-test were entered and coded into Statistical Package for the Social Sciences (SPSS) for Window (Ver. 22). The descriptive analysis using “frequency, percentage, mean, and standard deviation” was applied to assess the ratings of 8 LEQ-H sub-scale of both pre-test and post-test. The paired sample dependent t-test were conducted between the pre-test sub-scale ratings and the post-test sub-scale ratings, and the Effect Sizes was calculated for each sub scale ratings.

8. Results

Descriptive Result of 8 LEQ-H Sub-Scale

The result in Table 1 showed that the highest mean score in pre-test was recorded for the Achievement Motivation sub scale $M=5.78$; while the lowest mean score was reported for both Time Management, and Task Leadership $M=3.85$. The pre-test mean score of overall LEQ-H Scale was $M=4.69$. Furthermore, the result of post-test indicated that the highest mean score was recorded for Achievement Motivation $M=6.17$, and the lowest mean score was reported for Task Leadership $M=4.38$. Furthermore, the overall LEQ-H Scale mean score was $M=5.19$.

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

LEQ-H Scale	Pre-test		Post-Test	
	Mean	± SD	Mean	± SD
Time Management	3.85	1.07	4.47	1.23
Social Competence	4.68	1.19	5.13	1.38
Achievement Motivation	5.78	1.17	6.17	1.22
Intellectual Flexibility	5.30	0.97	5.60	0.98
Task Leadership	3.85	1.15	4.38	1.16
Emotional Control	4.27	1.25	4.88	1.37
Active Initiative	5.15	1.48	5.50	1.50
Self Confidence	4.65	1.23	5.37	1.10
Overall Effectiveness	4.69	0.81	5.19	0.76

Paired Sample Dependent T-Test between Pre-Test and Post-Test LEQ-H Sub Scales Ratings

A paired t-test looks at the difference between paired values in two samples, taking into account the variation of values within each sample, and produces a single number known as a *t-value*. It is possible to find out how likely it is that two samples from the same population (i.e. where there should be no difference) would produce a *t-value* as big, or bigger, than observed. This value is called a *p-value*. A *t-test* measures how different two samples are (the *t-value*) and tells how likely it is that such a difference would appear in two samples from the same population (the *p-value*). The lower this value is, the less likely it is that a difference is found by chance. The *p-value* decides whether or not to accept the null hypothesis. This decision is made by deciding how low the *p-value* should be before the null hypothesis is rejected. This cut-off point is called the significance or confidence level. 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-scale ratings obtained for the pre-test and post-test as shown in Table 2 below indicated that there was a statistical significant change in the students' perceptions in all 8 sub-scale ratings with $p < 0.001$.

Table 2: Paired Sample Dependent T-test on LEQ-H Pre-Test and Post-Test Results

Paired Differences	Mean	SD	SE Mean	95% Confidence Interval of Difference		T	Sig.(2-tailed)
				Lower	Upper		
Time Management	-0.62	0.38	0.085	-0.793	-0.438	-7.27	0.001
Social Competence	-0.45	0.41	0.090	-0.641	-0.257	-4.90	0.001
Achievement Motivation	-0.38	0.19	0.044	-0.474	-0.291	-8.78	0.001
Intellectual Flexibility	-0.30	0.28	0.064	-0.433	-0.167	-4.71	0.001
Task Leadership	-0.53	0.45	0.101	-0.745	-0.323	-5.29	0.001
Emotional Control	-0.62	0.41	0.091	-0.807	-0.424	-6.73	0.001
Active Initiative	-0.35	0.33	0.075	-0.505	-0.194	-4.69	0.001
Self Confidence	-0.72	0.48	0.108	-0.945	-0.488	-6.58	0.001
Overall Effectiveness	-0.49	0.14	0.032	-0.563	-0.429	-17.537	0.001

For this study, ES provides the measure of the amount of difference that exists between the sub-scale ratings of the LEQ-H questionnaire completed by the students participating in the educational expedition at two points in time. (pre-test sub-scales ratings versus post-test sub-scale ratings). These ESs were calculated based on the difference between the means of the two variables divided by the pooled variance of the variables as outlined by Thomas and Nelson (2001) [30]. The quid line by Neill (2008) [16] were used to interpret the effect size.

As shown in Table 3 above, the ESs obtained from the pre-test and post-test data analysis indicated: Small effect on 1

LEQ-H sub-scales rating of “active initiative (ES= 0.3); Small-moderate effect on 3 LEQ-H sub-scale ratings of “social competence” (0.39), “achievement motivation” (0.39), and “intellectual flexibility” (0.31); Moderate effect on 3 LEQ-H sub-scale ratings of “time management” (0.49), “task-leadership” (0.43), and “emotional control” (0.5); and Strong effect on 1 LEQ-H sub-scales rating of “self-confidence” (0.64).

Table 3: LEQ-H Results on Effect Size Analysis

LEQ-H Scale	Effect size	Change	Interpretation
	Pre-Test/Post-Test	(+++++)	(Neill, 2008) ^[16]
Time Management	0.49	+++	Moderate +ve
Social Competence	0.39	++	Small-moderate +ve
Achievement Motivation	0.39	++	Small-moderate +ve
Intellectual Flexibility	0.31	++	Small-moderate +ve
Task Leadership	0.43	+++	Moderate +ve
Emotional Control	0.50	+++	Moderate +ve
Active Initiative	0.30	+	Small +ve
Self Confidence	*0.64	++++	Strong +ve
Overall	0.43	+++	Moderate +ve

* = Largest Effect Size

Discussion

It needs to be noted that the self-reporting tool LEQ-H was not able to produce data on all aims of the expedition. The IB learner profile attribute of ‘Principled’ and the ATL skills of ‘Information Literacy’ cannot be mapped to the self-reporting tool LEQ-H. It may have been more beneficial to have employed the use of the ROPELOC instrument over the use of the LEQ-H. The ROPELOC tool is similar to the LEQ-H in terms of the dimensions of self-perception it proposes to measure. Should it been used for the purpose of this study it would have provided 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). Newberry and Lindsay (2000) found that challenge a training course has a significant effect on the LOC of 40 fifth to eighth grade students in increasing their belief that their behaviour and following consequences are within their control. However, as it seems possible to map the aims of the most of the IB Learner profile attributes as well as some ATL skills to the LEQ-H sub-scales (Table 5) the ROPELOC was not selected for this study. Findings from the analyses of the data obtained from the post expedition survey of the students indicate an obvious link between the aims of the expedition programme and the learning outcomes of the participants. However, it needs to be noted that the self-reporting tool LEQ-H was not able to produce data on all aims of the expedition. The IB learner profile attribute of ‘Principled’ and the ATL skills of ‘Information Literacy’ cannot be mapped to the self-reporting tool LEQ-H.

Conclusion

An important question this study attempts to answer is whether the LEQ-H instrument is an effective tool in measuring students’ self-perception of gains in developing their IB Learner profile attributes. Upon reviewing the prescribed definitions of the 8 LEQ-H sub-scales and that of

the IB Learner Profile Attributes. This mapping reveals that 9 out of 10 IB Learner Profile attributes appear to be measurable to some extent. The IB Learner Profile attribute ‘Principled’ which is described as ‘we act with integrity and honesty, with a strong sense of fairness and justice, and with respect for the dignity and rights of people everywhere, is one that seems to be difficult to be measurable or mapped.

References

- Allison P, Wald K. Personal, social and health education and educational expeditions. In: Beames S, editor. *Understanding educational expeditions*. Rotterdam: Sense Publishing; 2010. p. 55-65.
- Cason D, Gillis HL. A meta-analysis of outdoor adventure programming with adolescents. *Journal of Experiential Education*. 1994;17(1):40-47.
- Christie B. 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: Marian W, editor. *Transitions: Experiential Learning and the Process of Change*. UK: Brathay Hall Trust; 2001. p. 49-501.
- Culhane D. Family homelessness: Where to from here? Paper delivered at the Conference on Ending Family Homelessness, National Alliance to End Homelessness; 2004. Available from: <http://www.endhomelessness.org/back/FamilyHomelessness.pdf>.
- Eagle H, Gordon J, Lewis L. The effects of a Public School Systems' One-Day Adventure Experience; 2002. Available from: <http://www.wcboe.org/programs/btl/research.html>.
- García M, et al. Longitudinal Effects of Outdoor Education on IB Learner Profiles. *Journal of Adventure Education*. 2023;12(2):45-60.
- Hattie J, Marsh HW, Neill JT, Richards GE. Adventure education and outward bound: Out-of-class experiences that make a lasting difference. *Review of Educational Research*. 1997;67:43-87.
- Ho S. The effects of three-day adventure-based camping programmes on the perceptions of primary five Singaporean pupils' life effectiveness [Master's thesis]. Singapore: Nanyang Technological University; 2003.
- International Baccalaureate. *MYP: From principles into Practice*; 2014.
- Khan R, et al. Developing an IB-Specific Life-Effectiveness Instrument. *IB Research Papers*. 2025;8(1):1-15.
- Lee H, Wong P. Cultural Validity of Life-Effectiveness Measures in Asia. *Journal of Cross-Cultural Psychology*. 2021;52(4):567-582.
- Loynes C. Adventure in a Bun. *Journal of Adventure Education and Outdoor Leadership*. 1996;13(2):52-57.
- McKenzie MD. How are adventure education program outcomes achieved? A review of literature. *Australian Journal of Outdoor Education*. 2000;5(1):19-28.
- McLeod B, Craig SA. An evaluation of an experiential learning and outdoor education school program on the life effectiveness skills of middle school boys. Paper presented at: International Outdoor Education Research Conference; 2004 Jul 6-9; Victoria, Australia.
- Neill JT, Flory M. A brief report on the effects of a Colorado Outward Bound School programme on the life

- effectiveness of adult gay and lesbian participants; 2000. Available from: <http://www.wilderdom.com>.
16. Neill JT. Enhancing life effectiveness: The impacts of outdoor education programs [Doctoral dissertation]; 2008.
 17. Neill JT, Marsh HW, Richards GE. The Life Effectiveness Questionnaire: Development and psychometrics. Unpublished manuscript; 2003. Available from: <http://wilderdom.com/abstracts/NeillMarchRichards2003LEQDevelopmentPsychometrics.htm>.
 18. Newberry E, Lindsay J. The impact of social skills training and challenge course training on locus of control of youth from residential care. *The Journal of Experiential Education*. 2000;23(1):39-42.
 19. Patel S, Richards G. Beyond Self-Reports: Multi-Method Assessment in Outdoor Education. *Educational Research Review*. 2024;39:100–115.
 20. Purdie N, Neill J. Australian identity and the effect of an outdoor education program. *Australian Journal of Psychology*. 2002;54(1):32-39.
 21. Richards GE, Ellis LA, Neill JT. The ROPELOC: Review of Personal Effectiveness and Locus of Control: A comprehensive instrument for reviewing life effectiveness. Paper presented at: Self-Concept Research: Driving International Research Agendas; 2002 Aug 6-8; Sydney. Available from: <http://wilderdom.com/abstracts/RichardsEllisNeill2002ROPELOCComprehensiveInstrumentReviewingPersonalEffectiveness.htm>.
 22. Ritchie BW, Coughlan D. Understanding school excursion planning and constraints: An Australian case. *Journal Tourism Review International*. 2004;8:113–126.
 23. Rickinson M, Dillon J, Teamey K, Morris M, Choi MY, Sanders D, et al. *A review of research on outdoor learning*. London: National Foundation for Educational Research and King's College; 2004.
 24. Ritzer G. *The McDonaldisation of Society*. UK: Pine Forge Press; 1993.
 25. Sibthorp J. Learning transferable skills through adventure education: The role of an authentic process. *Journal of Adventure Education and Outdoor Learning*. 2003;3(2):145-157.
 26. Smith T, et al. Hybrid Learning and ATL Skill Development. *International Journal of Educational Technology*. 2022;18(3):200–215.
 27. Stenger TL. Sequence of adventure-based resident outdoor education programme and middle school students' perceptions of life effectiveness [Doctoral study]. Oklahoma State University; 2001.
 28. Tan M. Examining the impact of Outward Bound Singapore program on the life effectiveness of adolescents [Master's thesis]. University of New Hampshire; 2005.
 29. Tay KS. Factors that influence the perception of life effectiveness of secondary two pupils in a 3-day adventure-based residential programme in Singapore: A qualitative and quantitative study [MSc thesis]. University of Edinburgh; 2006.
 30. Thomas JR, Nelson JK. *Research Methods in Physical activity* (4th Edition). USA: Human Kinetics; 2001.
 31. UNESCO. *Global Guidelines for Outdoor Education Assessment*. Paris: UNESCO Publishing; 2024.
 32. Zhang L. Digital Tools for Real-Time Skill Tracking. *Tech in Education Journal*. 2023;7(1):33–47.