EFFECTS OF OUTDOOR EDUCATION PROGRAM ON LEADERSHIP DEVELOPMENT AMONG PHYSICAL EDUCATION STUDENTS AT THREE SELECTED UNIVERSITIES IN CHINA

By

YANG XIAOMING

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Doctor of Philosophy

March 2025

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Doctor of Philosophy

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YANG XIAOMING

March 2025

Chairman : Shamsulariffin bin Samsudin, PhD
Faculty : Educational Studies

This study investigates the impact of an Outdoor Education Program (OEP) on the leadership development of undergraduate Physical Education majors from three universities in Jiangxi Province, designated as OEP pilot institutions. Grounded in experiential learning theory, leadership identity development theory, and social cognitive theory, the research explores how Teacher's Leadership Competency, Social Support, and Personal Effectiveness and Locus of Control relate to leadership outcomes. Using a quasi-experimental design with pre-, post-, and delayed post-tests, data from 303 students were analyzed through T-tests, MANOVA, MANCOVA, and correlation analyses. The results reveal significant and lasting improvements in leadership—particularly in communication, strategy, and commitment—with water-based activities like dragon boating being the most impactful. Socio-demographic factors had no moderating effect, confirming the program's broad applicability. The study's uniqueness lies in its focus on delayed leadership effects, offering new evidence that OEP fosters not only immediate gains but also sustained growth. In

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conclusion, OEP should be embedded in physical education curricula, supported by ongoing reinforcement, and adapted with high-impact activities. This research contributes to theory by validating experiential approaches in leadership development and informs practice by guiding curriculum innovation and long-term talent cultivation in sports education.

Keywords: Leadership Development; Outdoor Education; Physical Education

SDG: GOAL 4: Quality Education

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Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

KESAN PROGRAM PENDIDIKAN LUAR TERHADAP PEMBANGUNAN KEPIMPINAN DALAM KALANGAN PELAJAR PENDIDIKAN JASMANI DI TIGA UNIVERSITI TERPILIH DI CHINA

Oleh

YANG XIAOMING

Mac 2025

Pengerusi : Shamsulariffin bin Samsudin, PhD
Fakulti : Pengajian Pendidikan

Kajian ini menyiasat kesan Program Pendidikan Luar (OEP) ke atas pembangunan kepimpinan jurusan dalam kalangan pelajar sarjana muda Pendidikan Jasmani di tiga universiti di Wilayah Jiangxi yang telah dipilih sebagai institusi perintis OEP. Berdasarkan teori pembelajaran pengalaman, teori pembangunan identiti kepimpinan, dan teori kognitif sosial, kajian ini meneroka hubungan antara kecekapan kepimpinan guru, sokongan sosial, dan keberkesanan peribadi serta lokus kawalan berkaitan dengan hasil kepimpinan. Menggunakan reka bentuk kuasi-eksperimen yang melibatkan ujian pra, pasca, dan pasca tertunda, data daripada 303 pelajar dianalisis melalui ujian-T, MANOVA, MANCOVA, dan analisis korelasi. Hasil kajian menunjukkan penambahbaikan yang ketara dan berterusan dalam aspek kepimpinan terutamanya dalam komunikasi, strategi dan komitmen dengan aktiviti berasaskan air seperti perlumbaan perahu naga memberikan kesan paling ketara. Faktor sosiodemografi tidak memberikan kesan moderasi, membuktikan bahawa program ini boleh diterapkan secara meluas. Keunikan kajian ini terletak pada tumpuannya

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terhadap kesan kepimpinan jangka panjang, memberikan bukti baharu bahawa OEP bukan sahaja eningkatkan keupayaan kepimpinan secara serta-merta tetapi juga menyumbang kepada pertumbuhan yang mampan. Oleh itu, OEP disarankan untuk dimasukkan dalam kurikulum pendidikan jasmani dengan sokongan pemantapan berterusan serta pengadaptasian aktiviti berimpak tinggi. Kajian ini menyumbang kepada teori dengan mengesahkan keberkesanan pendekatan pembelajaran pengalaman dalam pembangunan kepimpinan serta memberi panduan kepada amalan pendidikan dalam inovasi kurikulum dan pembangunan bakat jangka panjang dalam pendidikan sukan.

Kata kunci: Pembangunan Kepimpinan; Pendidikan Jasmani; Pendidikan Luar

SDG: MATLAMAT 4: Pendidikan Berkualiti

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LIST OF ABBREVIATIONS

CLAF	Cambridge Leadership Attributes Framework
ECUT	East China University of Technology
JNUST	Jiangxi Normal University of Science and Technology
NGO	Non-Governmental Organizations
NNU	Nanchang Normal University
OE	Outdoor Education
OEME	Outdoor Education Module Evaluation
OEP	Outdoor Education Program
PE	Physical Education
PELC	Personal Effectiveness and Locus of Control
SD	Standard Deviation
SS	Social Support
TLC	Teacher's Leadership Competency

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CHAPTER 1

INTRODUCTION

1.1 Background of the Study

The National Education Philosophy in China emphasizes intellectual, spiritual, emotional, and physical development, and is reinforced by the national curriculum (Niu, 2022). Aligned with Vision 2022 goals—such as building a Sports Power and nurturing compassionate citizens—it aims to cultivate knowledgeable, skilled, responsible, and healthy individuals (An et al., 2022; Hu, 2021). To achieve this, educational modules must integrate skills, knowledge, values, and practices for balanced development. Outdoor Education supports this goal through engaging, nature-based learning. Leveraging China's diverse geography, many programs have emerged, attracting wide participation and enriching learning experiences (Yang et al., 2021). However, challenges remain in promoting unity among China's 56 ethnic groups (Xi et al., 2022). While academics remain central, there is growing recognition of co-curricular activities in student development (Guo et al., 2023; Ab Ghani, 2020). Outdoor Education thus plays a vital role in enhancing social skills and supporting holistic growth (Harun, 2010).

Leadership has been a central focus in educational administration research since the late 20th century due to its significant influence on school effectiveness and student outcomes (Gumus et al., 2018). Studied across diverse contexts and theoretical frameworks, leadership is often examined through models such as transformational

leadership, which emphasizes vision, motivation, and change (Gardner et al., 2020). While leadership is sometimes viewed as a process, most theories highlight the individual's role, essential for understanding its nature and impact (Hughes, 2018; Dimopoulos, 2020). It is key to motivating followers, mobilizing resources, and achieving organizational goals, while also shaping performance, innovation, and adaptability (Nasir, 2022). As a strategic concept, leadership is central to organizational life and regarded as a vital social attribute (Rajab, 2021). At its core, leadership is the capacity to influence and guide others toward a shared vision.

The learning process in Outdoor Education includes related affective objectives, such as developing social skills like cooperation, leadership, tolerance, and understanding, as well as interpersonal skills such as resilience, self-confidence, efficiency, self-control, and personality (Samsudin et al., 2021). Most Outdoor Education activities are adventurous, extreme, and sub-limit sports, which are challenging and exciting, embracing nature and encouraging personal challenge (Zhang, 2011). Innovative teachers often use outdoor experiential learning to incorporate leadership skills into their teaching (McEwen et al., 2015). "Leadership" has recently gained prominence in organizational development and social science because a strong leader can coordinate the efforts of the entire team and ensure that everyone is contributing effectively (Huang, 2020). Thus, it is clear that Outdoor Education can enhance social and leadership skills through adventurous and experiential learning.

China culture and scholars regard leadership as a form of influence, particularly the ability to organize and persuade individuals to work toward a common objective (Xie, 2020). Outdoor activities such as camping, participation in associations, sports and

games include many areas of experience and skills. (Mohd & Norlena, 2014; Mazuki, 2016; Samsudin et al.,2021). The main goal of Outdoor Education Camp Program in universities generally focuses on developing students' resilience, teamwork, leadership, character development and their personal and social development (Samsudin et al.,2021). Additionally, it has been discovered that the outcomes of the Outdoor Education Program are associated with improved personal and social development, adventure opportunities, and environmental education (Wang et al..,2020). Overall, Outdoor Education Camp Programs at universities aim to enhance students' resilience, teamwork, leadership, and personal and social development through diverse activities, resulting in improved personal growth, adventure experiences, and environmental education.

In recent years, the scope of physical education has expanded beyond improving physical fitness to fostering essential life skills such as leadership, communication, and teamwork (Samsudin et al.,2021). As traditional Physical education approaches often fall short in developing these non-physical competencies, outdoor education has gained attention for its experiential and student-centered nature (Huang, 2020). Through physically and mentally challenging activities in natural settings, outdoor education offers a unique platform for promoting leadership development among university students, particularly those majoring in physical education (Samsudin et al.,2021).

Moreover, several researchers have argued that Outdoor Education interventions can significantly enhance leadership development (Cooley et al., 2016; Amanda et al., 2016; Anderson et al., 2020; Vigane & Dyrstad, 2022). This study aims to explore the factors influencing leadership among China university students and evaluate the

impact of Outdoor Education on their leadership growth. The findings are expected to provide a deeper understanding of the benefits of Outdoor Education Program for these students and encourage broader participation in such healthy and enriching activities.

1.2 Program Evaluation in Outdoor Education

A program consists of a collection of resources and activities, managed by a single team or individual, aimed at achieving common goals. It can range from a few activities within a single agency to a complex network operating across multiple sites (McDavid et al., 2018). Program evaluation refers to a systematic process of collecting, analyzing, and utilizing data to address questions about initiatives, policies, and programs—particularly regarding their effectiveness and efficiency (Mertens & Wilson, 2018). By systematically collecting and analyzing data, program evaluation helps assess and enhance effectiveness and efficiency, optimize resource allocation, provide actionable feedback, support decision-making, and promote transparency and accountability (Francová et al., 2022). Therefore, a program is not only a structured set of coordinated activities designed to achieve specific objectives but also one that requires systematic evaluation to improve performance and ensure responsible resource use.

Program evaluation is presented here as a valuable learning strategy for enhancing understanding of a program's underlying logic, ongoing activities, and outcomes (McDavid et al., 2018). From a program evaluation perspective, research focused on the delivery process is classified as formative evaluation, as it seeks to gather feedback to improve, refine, and continuously enhance implementation activities (Morris et al., 2021). The combined assessment of customer interest and performance helps to

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identify the strengths and weaknesses of individual service components. Defining which aspects to measure or evaluate is a critical step when applying this model of evaluation (Lüdecke, 2021). Liao's (2024) meta-analysis further demonstrates that programs grounded in robust theoretical and philosophical foundations produce significantly greater participant outcomes, underscoring the importance of well-structured program design. In summary, program evaluation—particularly formative evaluation—is essential for improving program quality by incorporating feedback and performance data, with strong theoretical foundations playing a key role in maximizing program effectiveness and participant impact.

Program evaluation is crucial in Outdoor Education for assessing program effectiveness, enhancing outcomes, and guiding future initiatives to ensure that programs achieve their intended goals and generate meaningful impact (Gurung et al., 2023). By integrating program evaluation into the core of Outdoor Education, organizations can continuously monitor and improve their programs to ensure alignment with educational and developmental objectives while remaining responsive to evolving needs and challenges (Francová, 2022). As an indispensable tool, program evaluation enables organizations to assess, refine, and direct their efforts toward greater effectiveness and long-term sustainability (Mertens & Wilson, 2018). In conclusion, program evaluation is essential for the continuous enhancement of Outdoor Education program, ensuring that they remain goal-oriented, adaptive, and impactful.

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1.3 Outdoor Education in China Education System

In the 21st century, the integration of Outdoor Education Program (OEP) into China's modern education system began, as noted by Lian (2022). Initially introduced as a co-curricular component within the Advanced Physical Education Program at the Faculty of Physical Education, Outdoor Education had become a formal course for Physical Education students by 2000 (He, 2015). This curriculum required students to engage in a range of outdoor activities conducted in natural settings, thereby exposing future Physical Education teachers to the distinctive and experiential learning concepts of Outdoor Education (Li, 2020).

In 2001, Outdoor Education (OE) was primarily implemented for students majoring in Physical Education at the Faculty of Physical Education in Jiangxi Province (Li, 2014). Introduced as a foundational course in Chinese universities for Physical Education majors, the program aims to enhance soft skills through physically challenging activities and group dynamics instruction, benefiting both faculty members and teacher candidates in the Teacher Training Program (Shang et al., 2018). Jiangxi Province, with its diverse natural landscapes—including mountains, rivers, and forests—offers abundant opportunities for Outdoor Education. This rich ecological environment not only enriches the Outdoor Education experience but also fosters the development of outdoor sports and recreational programs, making it an ideal region for promoting Outdoor Education initiatives. As a result, Jiangxi Province has been designated as a pilot region for Outdoor Education (Shang et al., 2018), with Jiangxi Science and Technology Normal University, East China University of Technology, and Nanchang Normal University among the first institutions to implement pilot programs.

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With the continuous development of Outdoor Education, the Outdoor Education Program (OEP) has expanded its focus beyond Sports Science and Physical Education students to include all university students through co-curricular offerings (Shang et al., 2018). In summary, the integration of Outdoor Education Programs into China's modern education system began in the 21st century, initially as co-curricular activities for Physical Education students, and has since evolved into formal courses accessible to all university students. Jiangxi Province, with its diverse natural landscapes and supportive environment for outdoor activities, has served as a pilot region for these initiatives.

1.4 Program Theory of Outdoor Education

Program theory is developed by researchers based on a program's goals, objectives, and implementation guidelines (Moullin et al., 2020). Cropper (2020) proposed a theory of programmatic logic that focuses on the inputs, outputs, and impacts of a program, while also accounting for contextual factors that influence each stage. Program theory is essential because it provides a structured framework for both implementing and evaluating program effectiveness. When a program is delivered as intended—with appropriate quality, intensity, and fidelity—its intended goals are more likely to be achieved (Moullin et al., 2020). Unlike approaches that simply evaluate the correlation between process and outcomes, program theory emphasizes the importance of aligning the delivery system with clearly defined results.

Without proper input, the output or process of the program will be affected, and the objectives outlined will be difficult to achieve (Moullin, 2020). Program outputs

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involve all the activities and strategies used to achieve the goals and objectives. This is where the process of delivering, teaching, instructing, guiding, or whatever system of delivery is used to channel all the knowledge, understanding, skills and values necessary to produce a quality student. In this process, all competencies are addressed, including technical, safety, and environmental skills, as well as soft skills like leadership and facilitation, which are applied to train students in an Outdoor Education Program (Chaka, 2020). The program theory's outcomes are divided into two categories: short-term outcomes and long-term outcomes. The short term outcomes include five objectives to be achieved at the end of the program: 1) mastering OE skills; 2) designing teaching and OE activities; 3) program implementation; and 4) ability to evaluate the effectiveness of program implementation. The long-term result is the translation of the Physical Education Program goals, which are at the heart of the OEP and are described in the syllabus to produce quality students and earnest beginner teachers (Jostad, 2013).

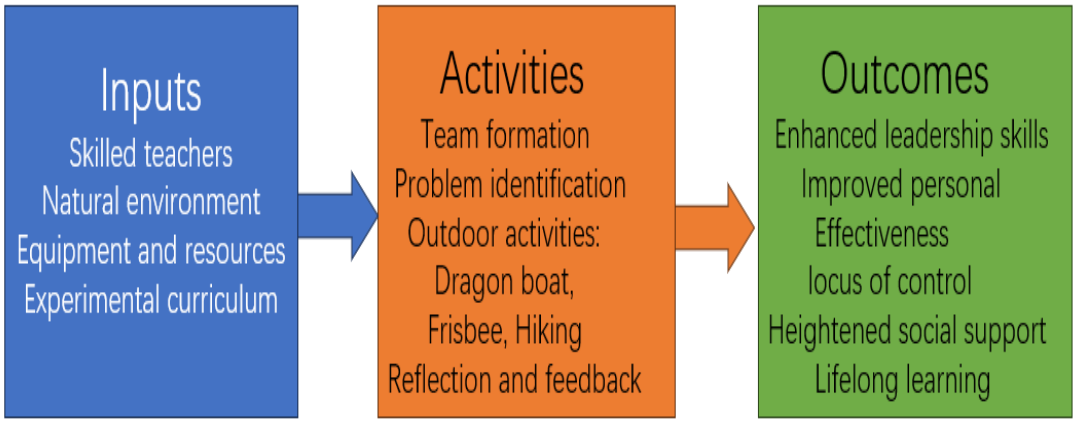

Figure 1.1: Program Theory of Outdoor Education

The concept of a Program Theory of Outdoor Education, as with many educational theories, does not typically trace back to a single author or a specific moment of

inception. Program Theory approach itself—particularly the idea of linking inputs, processes (activities), and outcomes (Moullin, 2020). In the context of Outdoor Education, these theories have been specifically adapted and tailored for this research to illustrate how specific outdoor activities can lead to desired educational outcomes. This customized Outdoor Education Program Theory is designed to directly align with the objectives and unique aspects of the study, ensuring that the activities, inputs, and outcomes are all relevant and effectively contribute to the overall educational goals of the research (Figure 1.1).

Figure 1.1 illustrates a logic model commonly employed in the design and evaluation of Outdoor Education Program. It outlines how specific inputs—such as skilled instructors, natural environments, essential equipment, and an experiential curriculum—are utilized to support various activities. These activities, including 15 outdoor pursuits such as dragon boat racing, frisbee, hiking, canoeing, and rock climbing, are designed to engage participants in hands-on learning experiences. Through these structured activities, the program aims to achieve key outcomes, including enhanced leadership skills, improved personal effectiveness and locus of control, increased Social Support, and the promotion of lifelong learning. This program theory provides a coherent framework for understanding how Outdoor Education Programs can effectively foster leadership development among physical education students in China by linking specific inputs and activities to targeted outcomes.

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1.5 Problem of Statement

Leadership development is widely acknowledged as a core outcome in educational contexts, particularly in physical education, where students are expected to demonstrate skills in communication, collaboration, strategy, and influence (Enoksen, 2014; Gardner et al., 2020). However, traditional PE curricula in China often emphasize physical skill development over structured opportunities to cultivate leadership. Outdoor Education Programs (OEP), characterized by experiential learning and physical challenges, present a compelling platform for nurturing such competencies (Mohd, 2014; Marzuki, 2016; Zhang, 2011).

Research has demonstrated the positive effects of outdoor recreation on psychological well-being, including improvements in self-esteem, stress management, and peer relationships (Mutz & Müller, 2016; Shellman & Hill, 2017). Yet, there remains a lack of in-depth analysis of how specific leadership practices—such as communication, commitment, strategy, influence, and proactivity—are fostered through outdoor interventions. Existing studies often generalize leadership development without adequately addressing key determinants such as Teacher's Leadership Competence (TLC), Social Support (SS), and Personal Effectiveness and Locus of Control (PELC), all of which are recognized as critical contributors to leadership capacity (LaMothe, 2021; Middleton, 2023; Rube et al., 2023).

Moreover, current literature provides inconclusive and inconsistent findings regarding whether Outdoor Education leads to measurable leadership improvements (Coker, 2022; Dağyar et al., 2022; Seufert et al., 2022). Some studies suggest limited gains due

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to a lack of structured reflection or integration with formal learning, especially among youth in transitional phases (Beauchamp, 2021; Robinson, 2019; Kwan, 2020). Others highlight the psychological gains of OE but fail to isolate or quantify leadership-specific outcomes (Atiyah, 2016; Rahman, 2017; Wood et al., 2023).

In the Chinese context, particularly within physical education, leadership development has been under-theorized and under-evaluated. While some university programs, such as those in Jiangxi Province, have piloted Outdoor Education interventions, there is still a lack of empirical evidence about their leadership outcomes and how these programs relate to variables like socio-demographic factors and activity types (Shang et al., 2018; Yang et al., 2021).

Additionally, the absence of a theoretical framework specific to leadership development in Outdoor Education further limits the consistency of research methodologies and evaluation (Ciulla, 2020; Gardner et al., 2020). This study addresses these gaps in theory, research, and practice by focusing on:

1. Leadership development (as opposed to general leadership or style);
2. The delayed effect of Outdoor Education (2 months post-intervention);
3. The mediating influence of TLC, SS, and PELC;
4. The relationship between activity popularity and leadership outcomes;
5. The integration of OEP into physical education pedagogy in higher education.

By doing so, this research situates itself at the intersection of experiential learning, leadership development, and physical education curriculum design, aiming to generate practical insights for future educator preparation and curriculum innovation.

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1.6 Research Questions

Based on literature review and field research, the following research questions are central to this study:

1. What is the level of leadership; TLC; SS; PELC towards before, after and delayed effect on OEP?
2. Is there any relationship between leadership with TLC; SS; PELC towards PE undergraduates' leadership towards before, after and delayed effect on OEP?
3. Do leadership, TLC; SS; PELC vary according to social demographic factors?
4. Do OEP affect PE undergraduates' leadership? How factors of TLC; SS; PELC affect PE undergraduates' leadership immediately after the OEP?
5. Do OEP impact the leadership of PE undergraduates two months after completing the programs? How factors of TLC; SS; PELC affect PE undergraduates' leadership two months after completing the programs?
6. How can the implementation of OEP modules be evaluated, and what is the relationship between the popularity and effectiveness of OE activities in influencing the leadership development of PE undergraduates?

1.7 Research Objectives

The primary objective of this paper is to examine the effects of Outdoor Education Programs on the leadership skills of physical education undergraduates from three Chinese universities. The specific objectives of this study are as follows:

1. To assess the levels of leadership, TLC; SS; PELC before, immediately after, and two months following participation in OEP.
2. To examine the relationship between leadership and TLC; SS; PELC among education undergraduates before, after, and two months following participation in OEP.
3. To determine the differences on leadership, TLC; SS; PELC towards social demographics factor.

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4. To determine the post effect of OEP on the leadership of PE undergraduates, considering factors such as TLC; SS; PELC

5. To evaluate the effect of OEP on the leadership of PE undergraduates two months after completing the programs, focusing on the influence of TLC; SS; PELC

6. To evaluate the implementation of OEP modules and investigate the relationship between the popularity and effectiveness of Outdoor Education activities in influencing the leadership development of PE undergraduates.

1.8 Significance of the Study

This research contributes to the existing body of knowledge by highlighting the positive relationship between leadership and factors such as communication, commitment, strategic planning, influence, and proactivity. It suggests that higher education institutions and organizations can enhance student outcomes by fostering higher levels of leadership among students (Syakur et al., 2020; Jamali et al., 2022; Mohamad & Farizan, 2023). This could be achieved through dedicated leadership development programs. Alternatively, a more subtle, integrative approach could be implemented to nurture and encourage leadership qualities in students.

Advancing Leadership Theory: This research aims to enrich theoretical frameworks of leadership development by analyzing the impact of an Outdoor Education Program (OEP) on key leadership skills such as decision-making, communication, and commitment. By evaluating these skills at multiple intervals—before, immediately after, and two months post-program—the study contributes to a deeper understanding of how experiential learning environments, particularly outdoor settings, influence leadership capabilities. This approach seeks to refine and expand existing leadership theories by incorporating experiential learning into the discourse, thereby addressing gaps identified in contemporary leadership research.

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Informing Curriculum Development: The findings of this study will offer valuable insights into the effectiveness of various components of Outdoor Education Program (OEP) in fostering leadership skills. By identifying the elements that most significantly influence leadership development, this research will provide evidence-based recommendations for the design and refinement of Outdoor Education curricula. Such contributions are essential for educators and curriculum developers aiming to enhance the effectiveness of leadership training within Physical Education programs, ensuring that curricula are both research-informed and responsive to students' needs.

Addressing Demographic Variations: Investigating the influence of demographic factors—such as gender, age, and socio-economic background—on leadership development through OEPs is a central focus of this study. Understanding how these variables interact with leadership training outcomes will yield insights into the development of inclusive and equitable educational environments. This research will support the tailoring of Outdoor Education programs to accommodate diverse student populations, thereby promoting more personalized and effective leadership training that meets the needs of all participants.

This study will evaluate the effectiveness and perceived relevance of various Outdoor Education Program modules, offering actionable insights for educators and policymakers. The findings will inform improvements in program implementation strategies, ensuring that Outdoor Education activities are both engaging and effective in cultivating leadership skills. By identifying best practices and areas requiring refinement, the research will support the advancement of educational practices and facilitate programmatic adjustments aligned with leadership development objectives.

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Providing Policy and Practice Recommendations: This research will generate practical recommendations for integrating Outdoor Education into Physical Education programs by considering the interplay among Teacher's Leadership Competency, Social Support, and Personal Effectiveness and Locus of Control. These recommendations will assist policymakers and educational leaders in optimizing program design and implementation, ensuring that leadership training is both impactful and aligned with curricular objectives. The study's findings will inform the development of policies that enhance program quality and contribute meaningfully to the broader discourse on educational leadership.

This research aims to investigate the impact of Outdoor Education Programs (OEP) on the leadership development of Physical Education (PE) undergraduates. Traditionally, PE curricula have focused on physical competencies; however, contemporary educational paradigms emphasize the cultivation of holistic skills, including leadership, teamwork, and communication. Integrating OEP into PE not only aligns with these modern educational objectives but also addresses the evolving demands of the sports industry, which increasingly values leadership and managerial capabilities alongside physical prowess. By empirically examining the effects of OEP on leadership development, this study contributes to a more comprehensive understanding of how experiential learning methodologies can be harnessed within PE to foster essential soft skills, thereby enriching the discipline and informing curriculum development.

The selection of Jiangxi Province as the research setting is both deliberate and pertinent. The province has been proactive in educational reforms, particularly in enhancing the quality of higher education. This commitment is evident through

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initiatives aimed at improving teaching quality and integrating experiential learning strategies. Moreover, Jiangxi's rich natural landscapes provide an ideal environment for implementing outdoor educational activities, offering practical contexts for Outdoor Education Program (OEP) integral to this study. By focusing on universities within Jiangxi, the research not only examines the efficacy of OEP in leadership development but also reflects broader educational and cultural trends in China.

In summary, this study is pivotal for advancing leadership theory, informing curriculum development, addressing demographic diversity, evaluating long-term impacts, enhancing educational practices, and providing practical recommendations. It offers a comprehensive examination of how Outdoor Education Programs influence leadership development, contributing significantly to education and leadership studies.

1.9 Limitations of the Study

Firstly, the study population is limited to second-year Physical Education students at three universities in Jiangxi Province due to the specific design of the Outdoor Education Program, which may not represent students from all universities. This sampling approach may introduce common method bias, particularly because the Ministry of Education has designated only three public universities in China as specialized institutions for Physical Education degree programs. Consequently, relying on this specific student sample limits the generalizability of the findings, and caution is warranted when interpreting the results.

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Secondly, due to time constraints, the researcher was only able to conduct follow-up data collection within a single academic semester. Although this is acknowledged as a limitation, it reflects broader challenges in assessing long-term effects—particularly the difficulty of defining an appropriate time interval for post-intervention evaluation (Caizzi et al., 2018). Additionally, the extended semester break meant that the final data collection point was restricted to two months after the conclusion of the Outdoor Education sessions.

Thirdly, while acknowledging that the researcher's presence during the Outdoor Education Program may have influenced the facilitation of activities, precautions were taken to minimize this impact. The researcher's involvement may also have affected participants' responses, particularly to socially desirable items. To reduce the halo effect—the tendency for current evaluations to influence subsequent ratings—the study did not include a designated post-test or delayed post-test assessment immediately following the intervention.

Fourthly, delayed changes in measurement sensitivity from pre- to post-testing may threaten the study's internal validity. Flannelly (2018) noted that any method of measuring the dependent variable—whether through observation, judgment, rating, or other techniques—is subject to the influence of the measurement tool itself and should be interpreted with caution. The act of measurement may influence the behavior of participants, resulting in reactive effects in which the evaluation process itself induces behavioral change (Flannelly, 2018; McLaren, 2015). Furthermore, although a back-translation procedure was employed, the translation of the questionnaire into Chinese may still pose a potential limitation due to possible item distortion.

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To address these limitations, future research should aim to include a more diverse sample from multiple universities to enhance generalizability. Extending the follow-up period and incorporating multiple assessment points will provide a clearer understanding of long-term impacts. To minimize researcher bias, the use of neutral facilitators and blind procedures is recommended. Ensuring measurement validity through the use of multiple methods and piloting instruments can enhance reliability. Additionally, employing professional translation services alongside rigorous back-translation procedures can improve the accuracy of translated instruments.

1.10 Delimitation of the research

This study is delimited to Outdoor Education (OE) within three selected universities offering the Physical Education (PE) degree program, as designated by the Ministry of Education. The instruments used to assess Leadership, Teacher's Leadership Competency, Personal Effectiveness and Locus of Control, and Social Support are based on the MLQ5 Questionnaire. The intervention in this study was conducted through a 15-day course. The study focuses solely on the responses of OE students regarding leadership, specifically those enrolled in the selected universities offering a bachelor's program in Physical Education. Furthermore, the study is confined to the responses of OE students from three public universities, focusing on the two-month delayed effect. In summary, these delimitations ensure that the study remains focused and manageable while providing valuable insights into the impact of Outdoor Education on leadership development within the defined parameters.

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1.11 Definition of Terms

1.11.1 Program Evaluation

Program evaluation, which may be done on a regular or as-needed basis to gauge a program's effectiveness, is a systematic study or process for gathering, evaluating, and applying data to answer questions regarding initiatives, policies, and programs (Mertens& Wilson, 2018). Program evaluation offers methodologies and instruments that organizations of various types can employ to acquire dependable, valid, and credible information for tackling diverse inquiries related to the effectiveness of public and nonprofit initiatives (McDavid et al., 2018).

1.11.2 Program Theory

A program's conceptual diagram shows how inputs lead to outputs through the execution process, detailing the activities and strategies used, and the short- and long-term results (Kamaludin, 2024). Program theory is a conceptual framework that outlines how a program is intended to achieve its goals. It details the relationships between resources, activities, outputs, and outcomes, explaining how program activities lead to desired changes (Jones et al., 2021).

1.11.3 Outdoor Education

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Outdoor Education is a pedagogical approach that utilizes natural environments for educational objectives, often involving small groups engaging in challenging activities to foster personal development, facilitated by an instructor or leader. (Wattchow, 2011).

Outdoor Education is a structured learning experience conducted in natural environments, aiming to promote personal growth, social skills, environmental awareness, and physical health through direct interaction with the outdoors (Gilbertson et al., 2022).

1.11.4 Outdoor Education Program (OEP)

The Outdoor Education Program (OEP) primarily focuses on promoting personal and social development (Becker, 2018). An Outdoor Education Program is a structured set of activities and experiences conducted in natural settings, designed to promote personal development, social skills, environmental awareness, and physical fitness, comprising a series of activities (Gilbertson et al.,2022). In this study, Outdoor Education Program is designed as a Physical Education course. The students enrolled in the Physical Education course were required to take part in various outdoor learning activities conducted in remote locations as part of the curriculum.

1.11.5 Leadership

Benmira (2021) stated that leadership is recognized as one of the most complex and multidimensional psychological phenomena, extensively studied over the years, and increasingly important in today's globalizing society. Leadership is crucial for

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inspiring followers and mobilizing resources to complete an organization's mission and a variety of perspectives can be used to examine leadership, including historical development, roles, conduct, tasks, necessary skills, effectiveness, and the worth and significance of leadership (Enoksen, 2014). In this study, leadership is categorized into five factors: Communication, Commitment, Strategy, Proactivity and Influence.

1.11.6 Delayed Post-Effect

Delayed post effects are those that were observed in the delayed post-test and serve as predictors of long-term outcomes (Ward, 2023). The delayed post-effect refers to the sustained or lingering impact or changes observed after a certain period following the completion of an intervention or treatment (Zhai et al., 2023). This term is often used in research to describe how outcomes continue to manifest or evolve over time, beyond the immediate post-intervention period (Zhai et al., 2023). In this study, it refers to the intervention effects observed within two months after the conclusion of the Outdoor Education Program.

1.11.7 Teacher's Leadership Competency

Teacher's leadership competency refers to the abilities and competencies that educators possess to guide, influence, and inspire students, colleagues, and the educational community towards achieving educational goals and fostering a positive learning environment （Hallinger, 2018）. In outdoor education, teacher's leadership competency can significantly impact the effectiveness of the program and the development of students' leadership abilities (Leithwood et al., 2020). Effective

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leadership competency in teachers can enhance the learning experience by providing better guidance and support during outdoor education.

1.11.8 Personal Effectiveness and Locus of Control

Personal effectiveness development focuses on key psychological and behavioral facets of human performance, showcasing an individual's efficiency across diverse domains (Richards & Neill, 2000). It involves cultivating personal effectiveness and locus of control to harness critical psychological and behavioral elements that indicate effectiveness in various contexts (Richards & Neill, 2000). Review of personal effectiveness and locus of control refers to making a positive personal impression and influence, adding values to working relationships and managing personal development.

1.11.9 Social Supports

Social Support encompasses the resources offered by others, including emotional support, tangible assistance, informational support, and companionship (Drageset, 2021). Having strong Social Support can positively impact mental health, physical health, and overall well-being (Drageset, 2021). Operationally, Social Support will be evaluated in this study using the Multidimensional Scale of Perceived Social Support, which covers support from close friends, family, the facilitators' camp, and significant others.

1.11.10 Socio-demographics Variable

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Socio-demographic variables in sociological surveys play a crucial role in categorizing and analyzing population segments, effectively revealing patterns and disparities that influence social phenomena and behaviors (Igwe et al., 2022). Socio-demographic variables include the individual characteristics of group members, such as skills, personality traits, and interpersonal compatibility (Răducu, 2022). In this study, these variables specifically refer to universities attended, previous experience, age, gender, and the number of Outdoor Education activities participated in over a year.

1.11.11 Activities Ranking

Activities Ranking can refer to the process of organizing or prioritizing activities based on their importance, preference, or effectiveness. The significance of Activities Ranking lies in its ability to aid individuals, organizations, or communities in effectively managing time, resources, and priorities to achieve higher efficiency and meet their needs (Kudlacek, 2020). Aligning activities with goals allows for a more focused pursuit of significant outcomes, thereby enhancing efficiency and effectiveness (Jiménez, 2022).

1.11.12 Intervention

In experimental research, an "intervention" refers to a deliberate measure or strategy introduced by the researcher to observe its impact on certain variables (O'Cathain et al.,2019). The purpose of an intervention is typically to alter a specific behavior, condition, or outcome, and its effectiveness is evaluated by comparing the results between the experimental group and the control group (Craig et al.,2008). Intervention

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can take various forms, including but not limited to educational programs, medical treatments, psychological therapies, and behavior change.

1.11.13 Physical Education Student

A Physical Education student is an individual enrolled in an academic program centered on physical education, sports science, or related disciplines (Sotos-Martinez et al., 2023). These students undergo rigorous coursework and hands-on training aimed at cultivating expertise in areas such as physical activity, sports management, fitness, and health promotion, and are often preparing for professional roles as teacher, educators, coaches, or fitness specialists in educational and sports settings (Ilyosovich, 2023).

1.12 Summary

The researcher begins this chapter by thoroughly introducing the background of the study and detailing the significance of Outdoor Education (OE) within the Chinese educational system, emphasizing its evolving role in university curricula. The chapter then explores the challenges faced by Physical Education students, highlighting the gaps in the current literature that this study seeks to fill. By addressing the research questions, objectives, significance, limitations, and delimitations, the researcher provides a clear roadmap for the study, ensuring its relevance and focus. Finally, the operational definitions of key variables are clarified, setting a precise foundation for the research methodology and analysis. In summary, this chapter establishes a comprehensive framework that underscores the importance of the study and its

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potential contributions to enhancing leadership development through Outdoor Education in China.

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CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Outdoor Education (OE) has gained increasing recognition as an effective approach to developing leadership competencies among university students (Vigane & Dyrstad, 2022). This literature review aims to provide a comprehensive synthesis of current research on OE and its impact on leadership development, with a particular focus on Physical Education (PE) undergraduates in Chinese higher education institutions. By examining existing studies, this review seeks to identify gaps in the literature and propose directions for future research. Prior research has established that leadership plays a critical role in the success of nations, organizations, and teams, particularly in fostering creativity, adaptability, and performance (Rüth & Netzer, 2020; Bhatti et al., 2021). The cultivation of leadership skills has become increasingly emphasized in university curricula, especially within sports-related academic programs (Vigane & Dyrstad, 2022). OEP are particularly relevant for fostering leadership among PE students in China, underscoring the need for continued empirical inquiry in this area.

Researchers and educators have identified Outdoor Education activities as effective methods for learning, teaching, and fostering social agency (Cooley, 2016; Kelly, 2019). Outdoor Education primarily aims for personal and social growth, with secondary objectives often emphasizing physical, recreational, educational, therapeutic, and environmental outcomes and it is also regarded as a cultural

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phenomenon (Taylor, 2019). Outdoor Education has increasingly gained recognition as an educational method and strategy, continuously driving its development (Gilbertson et al., 2022). In conclusion, Outdoor education is increasingly recognized as an effective strategy for personal and social growth, fostering social agency, and addressing various educational and cultural objectives.

This study aims to examine the impact of Outdoor Education (OE) interventions on leadership development among participants and to investigate the multiple factors influencing leadership among Physical Education (PE) students in China. The literature review seeks to offer researchers and practitioners in PE and OE a comprehensive synthesis of current research concerning OE and its implications for leadership development. By integrating existing findings and outlining directions for future inquiry, this review intends to contribute meaningfully to ongoing scholarly discourse on the role of OE in fostering leadership skills among PE students.

2.1.1 Definition of Outdoor Education

In order to promote lifelong learning, Priest (1986) emphasized Outdoor Education as an experiential learning process that can occur in both outdoor and indoor settings. Outdoor Education is a heterogeneous field that can be applied across academic disciplines and is primarily aimed at enhancing learning potential through hands-on experiences in natural environments (Hammerman et al., 2001). It is characterized as a sensory-rich, experiential approach to learning (Lund, 2004). Researchers note that Outdoor Education resists simple definition due to its integration with several emerging fields, including adventure education, environmental education, adventure-

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based learning, ecological education, and even classroom-based education (Gilbertson et al., 2006). Neill (2008) defines Outdoor Education as a pedagogical strategy that offers direct learning experiences through meaningful interaction among individuals, communities, and the natural environment.

Outdoor Education is a structured learning experience conducted in natural environments, designed to foster personal growth, social development, environmental awareness, and physical well-being through direct engagement with the outdoors (Avcı & Gümüş, 2020). It has also been described as a means of promoting environmental responsibility and stewardship. However, the variety of definitions and personal interpretations has made it increasingly challenging to establish a clear and consistent understanding of Outdoor Education (Gilbertson et al., 2022). Scholars contend that Outdoor Education should be defined flexibly, taking into account its dependence on socially constructed practices and acknowledging that definitions may evolve across different times, contexts, and cultures (Gilbertson et al., 2022; Samsudin, 2020). In conclusion, Outdoor Education represents a dynamic and multifaceted pedagogical framework that transcends fixed definitions by integrating diverse experiential learning strategies across both natural and constructed environments, with a focus on personal, social, and environmental development.

2.1.2 Scope of Outdoor Education

Outdoor Education encompasses a wide range of activities conducted in natural environments, emphasizing experiential learning, holistic development, environmental awareness, and health-related benefits (Thomas & Munge, 2017; Ewert,

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2020). It integrates outdoor experiences into formal and informal educational settings to foster personal growth, teamwork, and environmental stewardship (Potter, 2016). This field includes diverse practices such as hiking, camping, and adventure sports, which aim to enhance physical fitness, mental well-being, and environmental literacy (Ceylan, 2020). Outdoor Education is implemented globally across schools, universities, and community programs, contributing to both academic achievement and individual development (Thomas & Munge, 2017; Ewert, 2020). It offers varied opportunities for learning and self-discovery in natural settings, promoting deeper awareness of the self, others, and the environment (Gilbertson et al., 2022).

The scope of Outdoor Education is broad, integrating physical, emotional, social, and environmental dimensions of experiential learning (Gilbertson et al., 2022). It involves hands-on activities such as hiking and camping, which cultivate teamwork, personal development, and environmental responsibility. Widely adopted in educational and community contexts worldwide, Outdoor Education fosters a strong connection to nature, improves physical and mental health, and supports academic and social learning outcomes. Its inherent flexibility and relevance across cultures and educational systems make it a valuable framework for holistic education. As research advances, Outdoor Education continues to evolve, with increasing integration into curricula and a growing emphasis on health, sustainability, and well-being.

2.1.3 The Importance and Benefits of Outdoor Education in Current Pedagogy

Recent years have seen a significant rise in the demand for Outdoor Education, driven by a desire to improve physical fitness, cultivate social connections, and reconnect

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with nature (Samsudin et al., 2020). Outdoor Education has a bigger role in the cardiovascular index of the human body, which benefits athletes' respiratory systems (Yang et al.,2022). It is now recognized in the field as a technique as well as a subject that illustrates three interconnected areas: outdoor recreation, environmental education, personal growth, and social development (Samsudin et al., 2020). Due to its unique qualities, Outdoor Education is enjoyable and demanding while also being an immersive method of learning that draws many young kids to engage (Samsudin et al.,2021). In recent years, Outdoor Education has become more popular in China, which is helpful for students looking to improve their physical health, fitness and leadership (Yang et al.,2022). Outdoor Education is now a crucial pedagogical tool, enhancing physical fitness, social skills, and environmental awareness, with growing adoption in China improving students' health and leadership.

Outdoor Education Programs have gained attention as effective means of promoting leadership skills among university students (Enoksen, 2018). Outdoor Education primarily aims for personal and social growth, with secondary objectives often emphasizing physical, recreational, educational, therapeutic, and environmental outcomes and it is also regarded as a cultural phenomenon (Taylor, 2019). Researchers and educators have been found to mention Outdoor Education activities as an effective way of learning and teaching, and how to behave as a social agent of change (Kelly, 2019). The Outdoor Education Program provides participants with a one-of-a-kind opportunity to grow and learn in a nontraditional classroom setting (Yang et al.,2023). Outdoor Education Programs are valued in pedagogy for their unique, nontraditional approach to fostering leadership and holistic student growth.

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In conclusion, Outdoor Education is increasingly acknowledged within contemporary pedagogy for its vital role in fostering holistic development, enhancing experiential learning, and promoting environmental stewardship and overall well-being (Asfeldt, 2021). This study aims to examine the effects of Outdoor Education interventions on leadership development among university students in China and to investigate the multidisciplinary factors that influence leadership growth. By presenting a comprehensive synthesis of current research, this literature review seeks to offer meaningful insights for scholars and practitioners in both Physical Education and Outdoor Education, highlighting the essential contribution of Outdoor Education to leadership cultivation. This integration of existing knowledge is intended to guide future research and enrich the broader academic discourse on the significance of Outdoor Education in developing effective leadership within educational contexts.

2.2 Theoretical foundation of Outdoor Education

Theoretical frameworks, aims, and goals that promote participants' awareness of their assets, limitations, and potential for both intrapersonal and interpersonal growth are typically found in Outdoor Education Programs (Booth & Neill, 2017; Baum & Christiansen, 2024).

2.2.1 Program Evaluation

Program evaluation provides a means to recognize and improve the community, and the accuracy of an existing program concept could be validated by conducting a systematic investigation of the merit, worth, or significance of an object or effort

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(Coryn, et al., 2011). Program evaluation is practice-based, and it closely looks at one or more aspects of a program (Mason, 2020). In recent years, there has been a growing trend toward a better understanding of program evaluation and improving practice. (Nguyen, 2021; Papanastasiou et al., 2022). Program assessment can comprehend, confirm, or strengthen the effects of goods or services on consumers or clients; enhance delivery methods to make them more economical and efficient (Mertens, 2019). Program evaluation enhances program effectiveness by validating concepts, improving practices, and optimizing delivery methods, while also providing valuable insights for management, public relations, and community services.

Despite growing recognition of the importance and application of program evaluation, there remains no universally accepted framework to guide its implementation. Consequently, a clear conceptual understanding of program evaluation is essential to determine the appropriate assessment procedures, select a relevant evaluation model, and apply suitable standards for interpreting the results (Fabbri et al., 2021). Evaluation provides critical feedback on program operations and outcomes, informing stakeholders who may influence program improvement or make decisions regarding program continuation (Papanastasiou et al., 2022). The process of making informed decisions about future programs involves establishing evaluation criteria, assessing implementation effectiveness in meeting specific needs, analyzing the attainment of complex objectives, and comparing outcomes against associated costs and similar initiatives (Albukhitan, 2020). Although its relevance is increasingly acknowledged, the lack of a standardized framework highlights the urgent need for well-defined evaluation concepts to support consistent assessment and evidence-based decision-making.

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Evaluation is a fundamental component of the educational process, defined as a systematic effort to determine whether program objectives have been achieved and to collect data that assesses a program's overall effectiveness (Miranda et al., 2021). In evaluating an educational program, the evaluation plan must be carefully aligned with the program's overarching goals and should prioritize addressing key evaluative questions (Mattessich et al., 2022). The primary aim of program evaluation is to assess the extent to which educational needs, goals, and standards are being met (Mohan, 2023). It involves evaluating an organization's instructional methods, educational quality, and areas within the curriculum that may require improvement. Ideally, program evaluation should be designed at the program's inception and implemented concurrently with its delivery (Maiya & Aithal, 2023). Through this systematic approach, program evaluation determines the effectiveness of educational initiatives and identifies opportunities for continuous improvement.

After standardizing formative assessment feedback and establishing an effective summary appraisal, regular feedback is essential for maintaining program consistency, with monitoring serving as the final evaluation method aimed at quality control (Mohzana et al., 2024). After programs have been successfully implemented, monitoring crucial processes and outcome variables is a crucial activity to ensure that an effective program remains effective (Barkham et al., 2023). In short because efforts are made to find solutions, feedback monitoring also needs formative function and can be expected to identify problems when social or economic conditions change (Molas, 2021). Many different evaluation methods have been described, including those that use different models like the logic model as well as those that are objective-oriented, management-oriented, expert-oriented, naturalistic, and participant-oriented methods

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(Maroengsit, 2019). Furthermore, it has been suggested that program evaluation give both educational outcomes and processes equal weight (Mohan, 2023). Regular feedback and diverse evaluation methods are vital for maintaining program effectiveness, addressing changes, and balancing educational outcomes with processes.

In conclusion, program evaluation serves as a vital mechanism for assessing and improving the effectiveness of educational and organizational initiatives. Although its importance is increasingly acknowledged, the lack of a standardized framework underscores the need for a more comprehensive understanding of evaluation models and methodologies. By incorporating systematic data collection, ongoing feedback, and a variety of evaluative approaches, program evaluation helps ensure that educational objectives are achieved, program implementation is refined, and institutions remain responsive to shifting social and economic contexts. A persistent challenge lies in striking a balance between methodological rigor and the flexibility necessary to address the complexity and fluidity of real-world program environments.

2.2.2 Program Theory

Program theory describes the relationship between program activities and expected outcomes, as well as what happens during program implementation (Maden, 2017). Program theory remains underutilized in the systematic review process; it is often applied implicitly and in a fragmented manner, rather than being systematically employed to guide the understanding of how interventions produce varied effects on health outcomes (Alshurideh et al., 2020). Program theory is the fundamental understanding of a program, allowing for more systematic discussion of issues,

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formulation of research questions, comprehension of data, interpretation of evidence, formulation of thoughtful suggestions, preparation of reports, and formulation of research findings (Shultz，2020). Program theory provides a conceptual framework that elucidates the critical inputs and outputs of a program's execution, detailing how implementation should proceed through specified activities and strategies, while also addressing the role of participant involvement (Christie & Alkin, 2023). Program theory is essential for guiding and evaluating programs effectively, but it is often underused and applied inconsistently.

Program theory was marketed as a resource to help reviewers of intricate programs or treatments comprehend what functions, for whom, and under what circumstances (Maden, 2017). In the field of education, the syllabus or curriculum that serves as teaching guidelines is the primary basis for developing logic models or program theory (Mertens& Wilson, 2018). The theory of the Outdoor Education program is formed in the context of this study based on the syllabus for Bachelor of Education, Physical Education, which contains components of knowledge, skills, and values presented to students. Each component specifies the objectives to be met at the end of the program as well as the outcome or long-term impact in the form of program goals (Kerna, 2015). Program theory clarifies program functions and contexts, relying on the evaluator's understanding and using the curriculum to guide flexible strategies for the best student outcomes.

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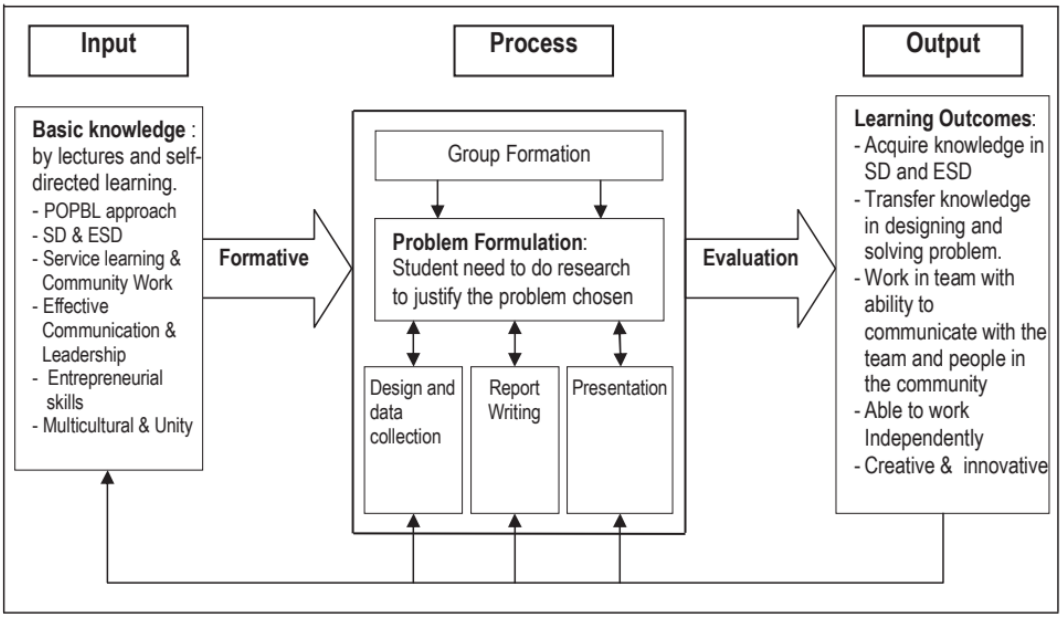

Figure 2.1: Program Theory
(Ruhizan M. Yasin and Saemah Rahman / Procedia Social and Behavioral Sciences 15 2011)

The Input, Process, and Output framework within Life Sciences education exemplifies an effective program evaluation model by systematically analyzing the resources and components required (Input), the methods and procedures employed (Process), and the outcomes and impacts achieved (Output)， as can be seen in Figure 2.1. The five main focuses are environment, community and family, mental health, physical and emotional as well as interaction and interpersonal communication (Yasin, & Rahman, 2011). Portfolio assessment evaluates students' effort, creativity, innovation, analytical skills, leadership, and teamwork, while communication skills are assessed through oral presentations, written reports, and reflective journals, with each lecturer provided a copy of the assessment rubric (Yasin, & Rahman, 2011).

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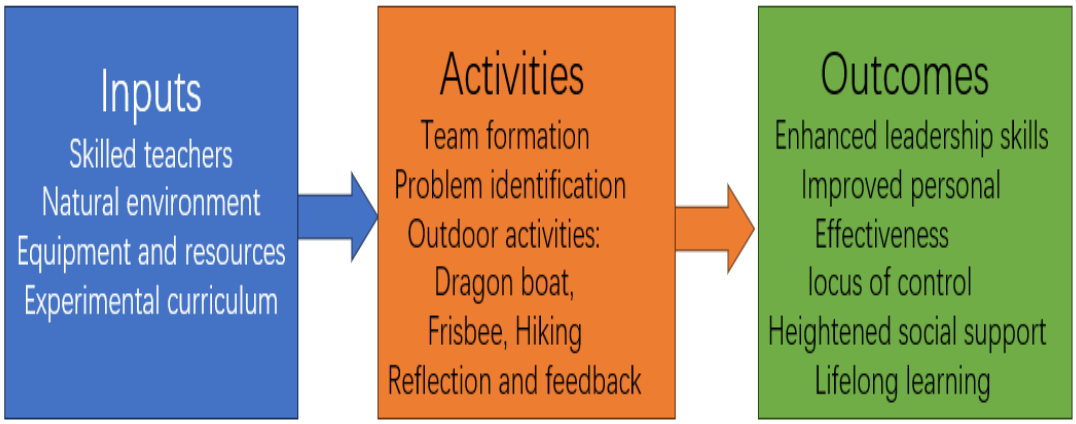

Figure 2.2: Outdoor Education Program Theory

Figure 2.2 illustrates how Outdoor Education, through a structured combination of inputs such as skilled teachers, natural environments, and experiential activities, leads to significant outcomes, particularly in enhancing leadership skills. Participants engage in challenging outdoor activities like dragon boat, frisbee, hiking, and so on, which are designed to enhanced leadership skills, improved personal effectiveness and locus of control, heightened Social Support and lifelong learning. Through these experiences and the accompanying reflection sessions, participants develop critical leadership abilities that are essential for their personal and professional growth. This program theory of Outdoor Education is specifically designed for the experimental framework of this study, based on prior research and the specific needs of this study. It aims to systematically test how the combination of targeted activities and structured inputs can effectively enhance leadership skills among participants.

Program theory elucidates the relationship between program activities and outcomes, guiding effective evaluation and implementation (Mertens& Wilson, 2018). Despite its importance, program theory is often underutilized and inconsistently applied. In the context of Outdoor Education Programs, program theory is informed by the syllabus

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to develop logic models and guide flexible strategies for achieving optimal results. The Input, Process, and Output framework exemplifies effective evaluation by systematically assessing resources, methods, and impacts. Additionally, portfolio assessments offer a comprehensive evaluation of students' skills, with communication abilities assessed through various formats and supported by a standardized rubric. Program theory is critical in program evaluation as it provides a conceptual framework that describes the relationship between input, process, and output. Furthermore, it outlines how a program is initiated and implemented to achieve desired outcomes.

2.2.3 Outdoor Education Philosophy

According to Ardoin (2020) Outdoor Education has frequently been regarded as a method of instruction and study that may be integrated into a variety of subject areas. Environmental education, personal and social development, and outdoor activities are now all viewed as integral parts of Outdoor Education, which is now recognized within the field of education as both a technique and a topic in and of itself (Ardoin, 2020). Explanations and conceptions started to expand as the field of Outdoor Education built and developed. The objectives of Outdoor Education include utilizing natural settings to facilitate a profound self-awareness and a better comprehension of societal dynamics among students (Gilbertson et al., 2022). Outdoor Education is now recognized as an educational method that enhances self-awareness and societal understanding, leading to the development of its distinct philosophy.

According to Priest (2018), the illustration is a sizable tree known as Outdoor Education. It has two large branches that emerge from the main trunk and then vanish under a dense canopy of foliage, as can be seen in Figure 2.3. Environmental education

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is one branch, while adventure education is another. The experiential learning method is represented by the four leaves of this tree. The three learning domains are also stored in the soil in this instance along with the six senses. These senses and domains guide the experiential learning process, analogous to storing processed learning inside roots, much like any other tree (Priest, 2018). A common goal among Outdoor Education ideologies is fostering a deeper appreciation of nature and one's relationship to it (Gilbertson et al., 2022), emphasizing personal development through interactions with others and responsible engagement with the natural environment (Rüth & Netzer, 2020). Priest (2018) goes a step further and claims that relationships—including interpersonal, intrapersonal, eco-systemic, and ecological interactions—as well as relationships with and among people and with oneself, as well as relationships between humans and the environment—are key to learning in Outdoor Education. At some point, the philosophy of Outdoor Education shifted towards a more 'middle-aged' and conservative stance, its vision influenced and reactive to sources of funding (Nicol, 2014).

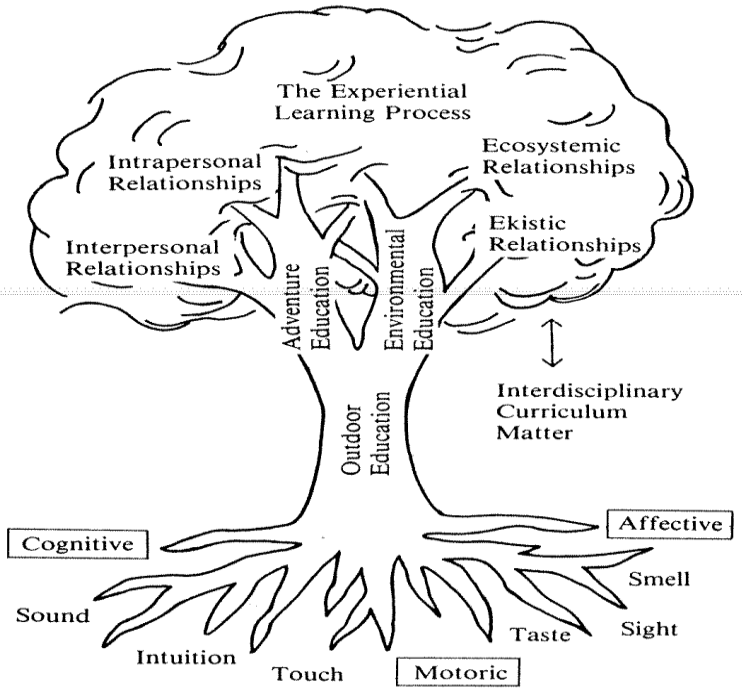

Figure 2.3: Outdoor Education Tree

Outdoor Education, when viewed through its philosophical lens, is a comprehensive approach aimed at deepening self-awareness and societal understanding through engagement with natural settings. It integrates environmental and adventure education, emphasizing experiential learning as a means for personal development. This philosophy underscores the importance of various relational dimensions—interpersonal, intrapersonal, eco-systemic, and ecological—in the learning process. Additionally, it has evolved to reflect external influences, particularly funding constraints, demonstrating its adaptability to changing financial and institutional contexts.

2.2.4 Pedagogy of Outdoor Education

Outdoor Education should produce holistic individuals through balanced mental, physical and mental development (Agostini et al., 2018). The aim of Outdoor Education aligns with the National Education Philosophy, striving to cultivate a well-rounded individual who is balanced in physical, emotional, spiritual, intellectual, and social dimensions (Remmen & Iversen, 2023).). Psychomotor domains in Outdoor Education can develop the physical fitness of the person to be healthy, fit, and competitive to surely have stable emotions and able to make wise decisions in their daily lives (Gilbertson et al., 2022). The objectives that need to be met by Outdoor Education Programs, including emotional, cognitive, spiritual, and social objectives, provide participants with a special opportunity to develop and learn in a nontraditional classroom (Povilaitis et al., 2019).

This is balanced against the learning outcomes involving three learning domains such as knowledge, skill, and value to the core physical, spiritual, intellectual, and

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emotional (Mahoney et al.，2021) Outdoor Education Programs conducted at Higher Education Institutions are also much influenced by previous education programs conducted earlier (Samsudin et al.,2021). All the details of the purpose of the program greatly suppress the theories and philosophies expressed by certain bodies. The objectives of Outdoor Education Programs are many and include teaching students how to survive outdoors, solve general problems, improve teamwork (Li, 2018), develop leadership abilities (Annesi, 2020), comprehend natural settings, and encourage spirituality. The Outdoor Education Programs will expose students to the elements that will foster mental and emotional education, cooperation, leadership, problem-solving in a critical situation, and a lot of concentration on personality (Mahoney et al.，2021). In preparing high-quality Physical Education teachers and producing responsible Outdoor Education leaders, the program has set five objectives to achieve; the goal of mastering teaching and learning skills, planning lessons, planning activities, conducting activities, and evaluating the effectiveness of implementation.

Learning prospect of Outdoor Education. Outdoor Education is a curriculum styling, where the learning process takes place outside of the classroom and encompasses environmental, conservation, challenging, camping, and natural therapies by engaging active interactions between facilitators, students, and learning materials (Leppain, 2000). The learning process in Outdoor Education should also be unique because it is rich in philosophy, metaphor, behavior, and verities of goals for participants (Davidson, 2001). The hands-on learning experience is processed through a guide implemented by the facilitator and encourages the formation of new ideas and knowledge (Beard & Wilson, 2002). This hands-on learning process has been evident in achieving self-

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directed goals, social goals, education, rehabilitation, and environment (Neill, 2003). Growing numbers of people are advocating for young people to participate in a variety of organized outdoor activities using instructional strategies that encourage healthy psychosocial development (McGowan, 2016; Chapman, 2017; Rose, 2018; Eigenschenk et al., 2019; Sprague et al., 2020). Based on the above research, it can be concluded that Outdoor Education is a distinctive curriculum that promotes self-directed and psychosocial development through experiential learning outside the classroom, leveraging active interactions with the natural environment.

According to Gilbertson (2022), Outdoor Education should integrate three key elements: personal and social growth, outdoor activities, and environmental education or research. The combination of these elements is essential to Outdoor Education, as it can maximize individuals' potential in alignment with the National Education Philosophy. The focus on personal and social development aims to enhance the holistic potential of both individuals and groups (Samsudin et al., 2021). Gilbertson (2022) suggests that a mix of risk, enjoyment, and the experience of both success and failure can encourage participation, advance self-awareness, and enrich educational opportunities. These factors collectively motivate students to strive for success while simultaneously enhancing their learning experiences (Bunting, 2006). Based on this perspective, it is recommended that emphasizing Outdoor Education activities could strengthen human-nature relationships, foster eco-centric environmental worldviews, and promote collaboration in environmental conservation efforts.

Characteristics of activity in Outdoor Education. The unique activities are a key component of the success of the Outdoor Education Program and are often

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implemented in nature, involving group work and learning processes based on learning methods (Agostini et al., 2018). Outdoor Education primarily takes place in natural settings, calls for the use of several senses, and presents chances for challenge, mastery, and success for participants (McGowan, 2016). Nature is a very important resource in implementing Outdoor Education Programs and the facilitators' help enables its objectives to succeed (Leirhaug, 2020). Outdoor Education, grounded in inquiry-based learning, is advocated for its ability to teach students to manage their emotions and navigate unfamiliar situations (Fang et al., 2022). The integration of nature, group work, direct experiences, risks, challenges, excitement, success, failure, active involvement, and guidance in Outdoor Education activities has been shown to effectively enrich the learning experience and foster holistic development (Povilaitis et al., 2019). Effective and good Outdoor Education Programs should examine each of these features in planning the implementation of the program (Samsudin et al.,2021). Based on the above research, effective Outdoor Education activities rely on integrating nature, sensory engagement, and experiential challenges, necessitating careful program design to enhance learning and holistic development.

2.2.5 Research methodologies in outdoor education studies

Research on Outdoor Education (OE) has grown considerably in recent decades; however, methodological rigor remains a key concern. Many existing studies in the OE field rely heavily on small sample sizes, short-term interventions, or lack appropriate control groups, which collectively reduce the generalizability and robustness of their findings (Gilbertson et al., 2022; Remmen & Iversen, 2023). Moreover, variability in program content, environmental contexts, and delivery

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methods further complicate cross-study comparisons and meta-analyses (Mahoney et al., 2021).

Recent reviews have emphasized that Outdoor Education studies often face challenges in isolating the specific effects of leadership development due to the multifaceted nature of program design and the lack of longitudinal follow-up (Povilaitis et al., 2019). The absence of standardized instruments and the predominance of self-reported outcomes also introduce potential bias and restrict the interpretation of long-term impact (Beames & Brown, 2021).

In response to these limitations, scholars have advocated for the adoption of mixed-methods approaches that combine quantitative and qualitative data to capture both the measurable and experiential aspects of Outdoor Education (Neill & Dias, 2020). Moreover, the inclusion of delayed post-tests, larger samples, and contextual variables such as Teacher Leadership competency, Social Support, and Personal Effectiveness and Locus of Control has been recommended to enhance validity and explanatory power.

This study addresses several of these methodological gaps by employing a quasi-experimental design with pre-, post-, and delayed post-tests over a two-month period. It also integrates mediating variables such as Teacher Leadership Competency (TLC), Social Support (SS), and Personal Effectiveness and Locus of Control (PELC), providing a more nuanced analysis of leadership development. By doing so, the study offers empirical evidence for the delayed effects of Outdoor Education and strengthens the methodological foundation for future OE research in physical education settings.

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In summary, while previous research in Outdoor Education has made valuable contributions, its methodological inconsistencies have limited the generalizability and theoretical advancement of the field. This study addresses those gaps by employing a more rigorous design that incorporates longitudinal measurement, mediating variables, and a structured theoretical framework. These methodological refinements not only enhance the credibility of the findings but also provide a replicable model for future research. As such, this study contributes both to the empirical evidence base and to the ongoing evolution of methodological standards in Outdoor Education research.

2.3 Leadership Development in Outdoor Education

2.3.1 Definition of Leadership

There are multiple ways to articulate the concept of leadership. According to Stogdill (1974), there are almost as many interpretations of leadership as there are people who have tried to define it, as mentioned in a review of leadership research. For more than a century, scholars and practitioners have been making efforts to provide a clear definition of leadership, but they have not been able to reach a unanimous agreement. Despite a general consensus on the essence of leadership, scholars and practitioners have faced challenges in precisely defining it, as its definition has continually evolved over the past century, shaped by factors such as current events, political contexts, and disciplinary perspectives.

In the 1950s, leadership definitions revolved around three key concepts: leadership as the actions performed by leaders within groups, leadership as a relationship that

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promotes shared goals through leader behaviour, and leadership effectiveness in affecting the overall effectiveness of the group. In the 1950s, leadership was defined by leader actions within groups, the relationship fostering shared goals, and the impact on group effectiveness (Malik & Azmat, 2019).

In the 1960s, despite widespread unrest, there was a general agreement among experts studying leadership. Seeman (1960) defined leadership as the actions taken by individuals to influence others into a common direction, with a focus on behaviour that guides people towards shared objectives. In the 1960s, leadership was broadly agreed upon as the actions of individuals influencing others towards shared objectives.

During the 1970s, the concept of group focus was replaced by the organizational behaviour approach, which defined leadership as the act of creating and maintaining groups or organizations in order to achieve their goals (Rost, 1991). According to Burns (1978), leadership is the process of mobilizing individuals with specific motives and values, as well as different economic, political, and other resources, within a competitive and conflicting environment, with the aim of achieving goals that are held independently or mutually by both leaders and followers.

In the 1980s, there was a significant increase in scholarly and popular literature focused on leadership, which brought it to the center of public and academic discussions. Definitions of leadership often convey the idea that it entails persuading followers to carry out the leader's desired actions. Characteristics. The leadership-as-excellence movement, inspired by the popular book in Search of Excellence (Peters & Waterman, 1982), reemphasized the importance of leader attributes. Consequently, the

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majority of individuals perceive leadership through the lens of trait-based characteristics.

From the 1990s to the 21st Century: Although there is ongoing debate regarding the differentiation between management and leadership, recent study highlights the significance of the leadership process, which is exerting influence over a group of individuals to accomplish a shared goal. Emerging approaches to leadership include authentic leadership, spiritual leadership, servant leadership, adaptive leadership, followership, and discursive leadership. The latter argues that leadership is formed by communication methods that are mutually agreed upon by the leader and the follower, rather than being determined by the leader's traits, talents, and behaviours (Fairhurst, 2007; Aritz, et al., 2017).

"Leadership, much like beauty, is challenging to define, yet easily recognizable when observed" (Bennis 1989). The concept of leadership is vague and lacks clarity. However, it is crucial to thoroughly comprehend the phenomenon under investigation. By employing accurate definitions and concise concepts, we can make significant advancements in the examination and application of leadership. There is a multitude of definitions about leadership, however it is challenging to identify a universally agreed definition among leadership theorists. Leadership is the aptitude employed to exert influence on subordinates within an organisation, motivating them to wholeheartedly pursue objectives that have been specifically identified for the collective benefit (Plsek & Wilson 2001).

Leadership is an art, requiring a good leader to discern when full or partial consensus is necessary and when decisive action is warranted (Pearce et al., 2008). It involves

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influencing others to grasp and align on what tasks are necessary and how to execute them, while also facilitating collective efforts toward achieving shared goals (Schyve, 2009). This definition underscores the critical role of leadership as a key management function that enhances efficiency and drives organizational success.

Upadhyay (2018) emphasizes that leadership is a critical success factor, arguing that effective leaders enhance system implementation by fostering a strong commitment among organizational members to the system's objectives and overall organizational goals. Leadership, as defined by Agha (2019), refers to the role typically held by senior-level officials within an organization who are responsible for overseeing, guiding, and nurturing the organization to fulfill its mission, vision, and objectives. Therefore, leadership involves guiding an organization toward its goals, with effective leaders driving success by cultivating strong commitment to these objectives.

Leadership entails the capacity to guide and influence others toward the achievement of defined objectives. Within the European Union context, leadership is closely associated with the promotion and implementation of core values, particularly in response to shifting geopolitical and social dynamics (Borgers & Kokkelmans, 2022). It is further characterized by the ability to establish direction, inspire others, and foster sustainable change through the strategic use of information and relationships. This is especially evident in educational institutions, where leadership plays a crucial role in aligning technological innovation with institutional objectives (Giovanni et al., 2024). Post-2020 conceptualizations of leadership emphasize value-driven guidance, adaptability to complex global changes, and the facilitation of sustainable transformation within organizational contexts, particularly in education.

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The ongoing scholarly debate concerning the definition of leadership underscores the inherent challenges in establishing a universally accepted understanding of the term. Influences such as globalization and generational shifts further complicate this endeavor, resulting in a wide array of interpretations. As a result, leadership is widely acknowledged as a complex and multidimensional construct, rendering the development of a single, universally applicable definition particularly difficult. Within the context of this study, leadership is conceptualized as “the art of motivating people to work toward a shared vision.” This definition is intentionally broad, allowing for relevance and applicability across diverse domains, including business, politics, public administration, the military, and education.

2.3.2 The Concept of Leadership

Rost (1993), provides a definition of leadership as "a relationship of influence between leaders and followers who aim to bring about tangible changes that align with their shared objectives." According to Northouse (2025), leadership is defined as the process by which an individual exerts influence over a group of individuals in order to accomplish a shared objective. The inquiry into the essence and meaning of leadership has been a subject of deliberation among philosophers and researchers dating back to the era of Plato and Socrates (Martin, 2006). Presently, leadership is the subject of extensive research spanning various disciplines including economics, sociology, psychology, and pedagogy (Martin, 2006). Leadership is broadly defined as the process of influencing others to achieve shared objectives, a concept deeply explored across various disciplines and historically debated by philosophers.

Leadership can be defined as a dynamic process in which individuals seek to influence others or support a person or group in achieving goals that exceed individual capacities

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(Yukl, 2013). As Nissinen (2001) suggests, leadership entails intentional interpersonal interactions within a specific group setting. These interactions aim to enhance performance, promote continuous improvement, address emerging challenges, and accomplish predefined objectives. The effectiveness of leadership behavior is contingent upon the leader's personal competencies and is shaped by contextual variables, including the operational environment, situational dynamics, and the nature of the objectives pursued (Dabke, 2016). Xu (2017) further emphasizes that effective leadership requires the adaptation of leadership styles to situational demands, highlighting the need for flexibility in approach to optimize goal attainment. In summary, leadership involves purposeful interaction and adaptive influence to facilitate collective achievement in response to changing circumstances.

Leadership is characterized as a dynamic process rather than an inherent trait or quality possessed by an individual. According to Ruben and Gigliotti (2017), it is an interactive event that unfolds between a leader and their followers, centered around the influence the leader exerts and the communication exchanged within this relationship. Influence, they argue, is indispensable to the essence of leadership; without it, true leadership cannot exist. In practical terms, leadership occurs within the context of a group, as highlighted by Goleman (2021). This emphasis on common goals imbues leadership with ethical significance, as noted by Goleman (2021). It underscores the ethical imperative for leaders to collaborate closely with their followers, ensuring that their collective efforts are directed toward achieving mutually beneficial outcomes.

In conclusion, the literature highlights leadership as a highly valued yet inherently complex phenomenon. It encompasses a range of components that inspire individuals

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to collaborate toward shared objectives across diverse sectors, including business, politics, the nonprofit sphere, and the military. Leadership is commonly conceptualized as a process by which an individual influences a group to achieve specific goals. It is manifested through observable behaviors and practices within groups, organizations, or institutions. Contemporary leadership research emphasizes the role of cognitive processes and behavioral strategies in enhancing individual performance and efficiency, thereby contributing to team development and organizational success.

2.3.3 Theoretical Foundation of Leadership

Leadership is a highly sought-after and valued attribute (Goleman, 2021). Since the first edition of Goleman's book, public fascination with the concept of leadership has grown significantly, with many individuals perceiving it as a means to enhance their personal, social, and professional lives (Goleman, 2021). In response, academic institutions nationwide have developed programs focused on leadership studies, and the topic has garnered substantial attention from researchers globally (Hickman, 2016). The volume of leadership research has surged, revealing a plethora of theoretical approaches that attempt to explain the complexities of the leadership process (Bryman, 2011; Day & Antonakis, 2012; Dinh et al., 2014; Hickman, 2016). Researchers have conceptualized leadership in various ways: some as a trait or behavior, while others adopt an information-processing or relational perspective. Leadership has been studied in various contexts, such as small groups, therapeutic settings, and huge enterprises, using both qualitative and quantitative methodologies.

Martin (2006) categorizes various leadership ideas into two groups: 'Early leadership theories' and 'Contemporary leadership theories'. The table provided is a concise

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description of the hypotheses and their corresponding characteristics that have been extracted.

Table 2.1: Leadership Theories

Early leadership theories	
Theory	**Description**
Trait and Great Menleadership	They were born as natural leaders with exceptional qualities that set them apart from others. Examining the exceptional qualities of current leaders, including their physical, intellectual, and interpersonal attributes.
Charismatic and Heroicleadership	Leaders that not only possess the ability to lead, but also elicit exceptionally fervent responses from their followers. They have the ability to initiate profound changes within their group, organizations, and societies.
Style theories ofleadership	The ways in which leaders express their influence, identifies particular kinds of behavior or leadership typologies. Main categories are authoritarian, democratic or laissez-faire style
Situational leadership	Take into account the leader, the followers and the situation. Explains leadership based on time, place and circumstances.
Contingency leadership	The leader's approach is perceived as either focused on accomplishing tasks or building relationships. Explores leadership by examining the distinctive style of the individual leader and its impact on the group's dynamics and reactions.
Transactional leadership	Frequently employed to elucidate the prevalent transactional aspect observed in the early leadership theories. The leader's primary focus is on task orientation, aiming to ensure group compliance using different strategies. The leader has minimal contact with the group, except when they deviate from the intended course.
Contemporary leadership theories	
Theory	**Description**
Transformational leadership	Theories that center on the growth of an individual's capabilities and their active involvement. Empowerment, inspirational motivation, trust, respect, and intellectual stimulation are essential elements.
Feminist leadership	Aims to transcend conventional correlations of feminine and masculine characteristics, principles, and attributes. This approach encompasses both the product and process aspects, while also challenging conventional ideas of power.
Authentic leadership	Leadership is viewed as the genuine expression of oneself that generates worth and significance, and possesses the ability to bring about transformative changes for both leaders and followers.
Servant leadership	An ethic of caring, which involves comprehending the needs of the group and recognizing the significance of serving others, has the ability to bring about transformative outcomes for the followers.

[Extracted from Martin et al. (2006)]

Martin (2006), emphasizes the importance of not dismissing any single leadership theory, as all theories collectively contribute to a broader understanding of leadership.

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Each theory offers unique and sometimes overlapping perspectives, enriching our comprehension of the leadership phenomenon. Martin (2006), posits that the evolution of leadership theories from early to contemporary models reflects a cumulative enhancement of our understanding of leadership, where each theory, irrespective of its temporal context, contributes unique and often intersecting perspectives that collectively deepen our comprehension of the leadership phenomenon.

Contrary to the Norwegian debates, the international outdoor leadership literature frequently relies on corporate management theory, focusing on leadership effectiveness and value orientations (Martin, 2006). Popular ideas employed to comprehend outdoor leadership encompass style theories, contingency leadership, situational leadership theory, and conditional outdoor leadership theory. Empirical studies often concentrate on fundamental outdoor leadership skills (Martin, 2006). Martin (2006) conducted a more detailed analysis of previous studies to determine eight essential skills for outdoor leadership: technical proficiency, safety and risk assessment, program administration, environmental conservation, teaching and facilitation, decision-making and judgment, fundamental knowledge, and self-awareness combined with professional conduct awareness.

2.3.4 Importance of Leadership Skills for PE Students

Leadership skills are essential for Physical Education (PE) students as they prepare for roles that involve guiding, motivating, and influencing others (Lubis & Fazira, 2022). Within PE contexts, effective leadership not only supports students' personal development but also enhances the collective experiences of their peers. Leadership

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training in PE fosters critical competencies in teamwork and cooperation. Eigenschenk (2019) emphasizes that Outdoor Education Programs with a leadership focus significantly improve participants' collaborative abilities. These skills are highly transferable to team sports and group-based PE activities, promoting a more cohesive and supportive learning environment.

The development of leadership skills also positively impacts students' self-concept and confidence (Casino et al., 2021). Lubis & Fazira (2022), found that leadership roles in Outdoor Education enhance students' self-awareness and self-esteem, which are crucial for PE students facing physical and psychological challenges. Effective communication is a cornerstone of leadership. Researcher highlighted that students involved in leadership activities within Outdoor Education Programs exhibit superior communication skills (McGowan, 2016). These skills are crucial for PE students, who must often convey instructions clearly and motivate others during physical activities. Leadership skills acquired in PE are not confined to the sports field but extend to other areas of life. Arthur (2017) noted that the leadership abilities honed through Outdoor Education and PE contribute to overall personal development, preparing students for diverse leadership roles in their future careers and communities.

In conclusion, integrating leadership training into physical education curricula is essential for the holistic development of PE students. The benefits, including enhanced teamwork, improved self-concept, superior communication skills, and the acquisition of lifelong competencies, underscore the importance of these skills in fostering well-rounded individuals.

2.3.5 The Role of Outdoor Education in Fostering Leadership

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Outdoor Education plays a critical role in cultivating leadership skills by offering experiential learning opportunities that challenge individuals and promote personal development (Eigenschenk et al., 2019). According to Eigenschenk (2019), such programs foster self-confidence by encouraging participants to overcome physical and psychological obstacles within a supportive group setting. Leadership is inherently tied to effective collaboration and communication (Van et al., 2021). Kourtesopoulou (2021) demonstrates that Outdoor Education enhances these competencies by engaging participants in task-based group activities that require cooperation and joint problem-solving—skills essential for leading diverse teams. Moreover, Martin (2024) emphasizes that outdoor learning environments improve decision-making and problem-solving capabilities through real-time, experience-driven challenges. Collectively, these findings affirm the value of Outdoor Education as a powerful medium for developing adaptive, communicative, and confident leaders.

Outdoor Education experiences enhance leaders' capacity to assess situations, anticipate outcomes, and make informed decisions, while simultaneously fostering empathy and emotional intelligence—key attributes for understanding and responding to the needs of team members (Fischer & Sitkin, 2023). Rose (2018) emphasizes that Outdoor Education cultivates empathy by encouraging mutual support and interdependence among participants, thereby strengthening emotional intelligence, a core component of effective leadership. Moreover, Outdoor Education offers authentic, real-time contexts in which individuals can practice leadership and engage in reflective learning. Vigane and Dyrstad (2022) underscore the importance of reflection in leadership development, noting that it enables individuals to analyze their actions, evaluate their impact, and implement improvements. Through the integration of

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experiential challenges, interpersonal engagement, and reflective practice, Outdoor Education serves as a dynamic platform for developing emotionally intelligent and decision-oriented leaders.

In conclusion, Outdoor Education plays a crucial role in leadership development by challenging individuals in supportive settings, which builds confidence and essential skills. It enhances teamwork, communication, decision-making, and emotional intelligence through practical experiences and reflection. These programs are pivotal for developing effective leadership by providing both theoretical insights and real-world applications, thereby fostering comprehensive personal and leadership growth.

2.3.6 The Role of Socio-demographics in Fostering Leadership

In sociological surveys, socio-demographic variables are vital for categorizing and analyzing population segments, allowing researchers to uncover patterns and disparities that shape social phenomena and behaviors (Igwe et al., 2022). Socio-demographic factors play a critical role in leadership development, as elements such as socioeconomic status, educational background, and gender directly influence an individual's ability to access key resources and opportunities (Răducu, 2022). For instance, higher socioeconomic status is typically associated with better educational and career opportunities, which provide a solid foundation for leadership development (Naz et al., 2021). Additionally, gender plays a pivotal role in the process of leadership development (Naz et al., 2021).

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Race, cultural background, and geographic factors also significantly impact the trajectory of leadership development (Mansour et al.,2022). Diverse racial and cultural backgrounds contribute valuable perspectives in a globalized management environment (Mansour et al.,2022). Geographic disparities shape leadership development by providing urban leaders with greater access to resources and diverse experiences, while rural leaders often develop unique strengths through their deep understanding of local needs (Quigley, 2020).

In summary, socio-demographic factors profoundly shape the pathways of leadership development by affecting access to resources, opportunities, and cultural contexts. The complex interplay of these factors determines the diversity and complexity of leadership formation. Therefore, it is essential to fully consider these structural factors when developing leaders to effectively address leadership challenges in diverse contexts.

2.3.7 The Role of Teacher's Leadership Competency in Fostering Leadership

Teacher‘s leadership competency refers to the skills and capacities that educators possess to effectively guide, influence, and inspire students, colleagues, and the broader educational community in pursuit of educational goals and the cultivation of a supportive learning environment (Hallinger, 2018). Within the context of Outdoor Education, this competency is pivotal in shaping program outcomes and facilitating the development of leadership qualities among students (Leithwood et al., 2020). By acting as both facilitators and role models, teachers can foster a collaborative and engaging learning atmosphere through intentional leadership practices, thereby promoting leadership development in their students (Tomlinson & Imbeau, 2023).

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Firstly, a teacher's leadership competency can significantly influence students' behavioral patterns (Thien et al., 2024). By demonstrating decision-making abilities, communication skills, and problem-solving techniques in daily instruction, teachers can set an example for students, inspiring them to emulate these behaviors and develop their own leadership skills (Thien et al., 2024). Secondly, teachers can enhance students' confidence and sense of responsibility by providing opportunities for them to take on roles in classroom activities, such as leading group discussions or managing projects, which further fosters the development of their leadership abilities (Martinez, 2022). Lastly, through personalized guidance and feedback, teachers can help students identify their strengths and areas for improvement, thereby facilitating their leadership development. The encouragement and support provided by teachers enable students to overcome challenges and strengthen their leadership awareness (Brown & Fields, 2023).

In summary, a teacher's leadership competency not only impacts students' academic performance but also plays a critical role in the development of their leadership skills. By leading by example, offering practical opportunities, and providing individualized guidance, teachers can effectively nurture students' leadership abilities, laying a solid foundation for their future leadership roles (Leithwood et al., 2020).

2.3.8 The Role of Social Supports in Fostering Leadership

Social support refers to the resources provided by others, including emotional encouragement, practical assistance, informational guidance, and companionship (Drageset, 2021). A strong Social Support network has been consistently linked to improved mental and physical health, as well as overall well-being (Drageset, 2021).

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In the context of leadership development, Social Support functions as a vital resource for personal growth and serves as a key enabler throughout a leader's career trajectory (Igalla et al., 2020). Emotional, informational, and tangible forms of support collectively enhance leaders' psychological resilience and emotional stability when confronting complex decisions and challenges. Such support lays a critical foundation for leadership cultivation by reinforcing self-confidence and strengthening social capital (Klebe et al., 2021).

Moreover, Social Support is instrumental in the construction of leadership networks and the accumulation of social capital (Klebe et al., 2021). By establishing and maintaining effective Social Support networks, leaders can access a broader range of resources and opportunities, thereby increasing their influence within their organizations and industries (Labrague, 2021). Key figures within these networks, such as mentors, peers, and supporters, provide valuable guidance, feedback, and advice, helping leaders to navigate potential risks and seize critical opportunities in their professional development, while also fostering continuous learning and personal growth (Labrague, 2021). Therefore, Social Support is not only a crucial driver of leadership development but also a key factor in enabling leaders to maintain a competitive edge in complex and dynamic environments.

In summary, Social Support profoundly impacts leadership development and maturation by providing emotional and practical assistance, expanding leaders' social networks, and accumulating social capital. In the process of leadership development, a robust Social Support system not only helps leaders to address challenges and pressures but also provides the ongoing motivation and resources necessary for

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sustained growth (López et al., 2022). Understanding and effectively leveraging Social Support is therefore essential for successful leadership development.

2.3.9 The Role of Personal Effectiveness and Locus of Control in Fostering Leadership

Personal effectiveness development emphasizes key psychological and behavioral aspects of human performance, highlighting an individual's efficiency across various domains by fostering personal effectiveness and locus of control to harness essential elements that signify effectiveness in different contexts (Richards & Neill, 2000). The review of personal effectiveness and locus of control involves creating a positive personal impression and influence, enhancing the value of professional relationships, and overseeing personal growth (Bhardwaj & Gupta, 2017).

In the process of leadership development, personal effectiveness is reflected not only in how leaders efficiently manage time, resources, and interpersonal relationships but also in how they engage in self-reflection and continuous learning to enhance their professional skills and adaptability (Qurrahtulain et al., 2022). Effective leaders typically exhibit a high level of personal effectiveness, enabling them to remain focused in complex environments, drive their teams towards strategic goals, and demonstrate exceptional decision-making and execution capabilities. The cultivation of personal effectiveness provides intrinsic motivation for sustained leadership growth, equipping leaders with greater resilience and innovation when facing challenges (Robert & Vandenberghe 2020).

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Locus of control, which refers to an individual's perception of control over the outcomes of their actions, also plays a crucial role in leadership development (Byantara et al., 2023). Leaders with an internal locus of control tend to believe that they can influence outcomes through their efforts and decisions, a belief that strengthens their sense of responsibility and proactivity, making them more confident and effective in their leadership roles (Zainun et al., 2021). Conversely, individuals with an external locus of control may be more inclined to attribute success or failure to external factors, which can undermine their leadership effectiveness (Zainun et al., 2021). In leadership development, cultivating an awareness of an internal locus of control can help leaders better manage knowledge, proactively face challenges, and adopt a more positive attitude toward uncertainty and change (Elsayed et al., 2020; Byantara et al., 2023).

In summary, personal effectiveness and locus of control are critical psychological and behavioral factors in leadership development. By enhancing personal effectiveness, leaders can utilize resources more efficiently, optimize decision-making, and achieve their goals; by strengthening an internal locus of control, leaders can take greater responsibility, improve their self-efficacy, and increase their leadership impact (Zainun et al., 2021; Xu et al., 2022). Therefore, understanding and developing these two dimensions is essential for shaping leaders who are both effective and enduringly influential.

2.4 Outcome of Outdoor Education on Leadership Development

Outdoor Education Programs, though rooted in ancient practices, began to receive formal academic attention in the 1950s (Laidlaw, 2000). Laidlaw (2000) documented

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the progression of research in this field, tracing its shift from early conceptual explorations to a growing emphasis on participant outcomes. Contemporary studies increasingly focus on the psychosocial dimensions of Outdoor Education, with particular attention to its role in leadership development. Research highlights several key outcomes, including enhanced teamwork, self-concept, leadership capabilities, and communication effectiveness (Margalit, 2014; McGowan, 2016; Rose, 2018; Eigenschenk et al., 2019). These findings underscore the alignment between Outdoor Education and core educational objectives, suggesting that the leadership competencies cultivated through such programs are integral to broader developmental and educational goals.

2.4.1 Cooperative Teamwork

Activities within Outdoor Education Programs must be deliberately designed and facilitated by educators who leverage natural environments and experiential learning to support educational outcomes (Martin et al., 2024). One key outcome of such programs is the development of cooperative teamwork (Purc-Stephenson, 2019). Teamwork has been defined as a high level of interpersonal acceptance, reciprocal support, and mutual trust among group members (Salas et al., 2020). Additionally, the willingness of individuals to remain engaged within a group has been identified as another indicator of effective teamwork (Rios & Mackey, 2020). These perspectives underscore why cohesion has become a central topic in multiple disciplines concerned with group dynamics, including sociology, social psychology, counseling psychology, educational psychology, and sports psychology (Kim & Lee, 2022). Research further suggests that groups are more cohesive when members demonstrate empathy, acceptance, self-disclosure, and trust (Salas et al., 2020). Outdoor Education promotes

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teamwork by fostering these interpersonal attributes, thereby reinforcing group cohesion through mutual trust and collective support.

Many adventure education initiatives seek to strengthen teamwork and cooperation while encouraging students to build their competencies (Anderson et al., 2020). Teamwork is dynamic, not permanent, and affected by intensity during the establishment, growth, maintenance, and dissolution of groups (Yoon & Kim, 2024). Meanwhile, another basis of teamwork is instrumental. Social connection, which keeps the group from disintegrating, is the affective dimension. As a result, if the affective dimension in a given group is loose, there will be inconsistency in the group climate, which could lead to the group's dissolution (Yoon & Kim, 2024). The Outdoor Education Program has a significant correlation with participants' cooperation (Martin et al., 2024). Outdoor Education Program enhance teamwork by fostering dynamic group interactions and social connections, which are critical to maintaining group cohesion and preventing dissolution.

2.4.2 Leadership Ability

According to Northouse (2025), leadership is the act of one person exerting influence over a group of persons in order to collectively accomplish a shared objective. In their 2009 book on leadership, Kuces and Posner provide a concise definition: "Leadership is the skill of inspiring individuals to collaborate towards a common vision" (Kuces & Posner, 2009). The effectiveness of a leader in leading is influenced by the operational environment, situational components, and the defined goals for actions. Leadership can be defined as a process that is motivated by an individual's desire to

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persuade or assist an individual or group in achieving objectives that they could not accomplish on their own (Yukl, 2013). Leadership studies can lead to a greater understanding of Outdoor Education, and starting a conversation on Outdoor Education will also benefit students (Fang et al., 2022). Leadership is the process of influencing and inspiring individuals to achieve shared goals, and understanding leadership can significantly enhance the effectiveness of Outdoor Education Program in benefiting students.

Adventure Education Program often strive to foster the growth of leadership abilities, including interpersonal skills (Anderson et al., 2020). According to Vigane & Dyrstad (2022), most adventure program have a significant influence on leadership competencies. Vigane also observed that the majority of leadership aspects exhibit substantial effects. The significant improvement in students' view of their outdoor leadership skills can be attributed to feedback received from both professors and the natural environment in practical situations (Vigane & Dyrstad, 2022). Listening to one's inner voice entails having a deep understanding of oneself in order to determine when to take action instead of passively allowing events to unfold, thereby living life according to one's own terms (Palmer, 2024). The aforementioned research demonstrates a robust correlation between leadership and Outdoor Education Program.

2.4.3 Self-confidence

One factor that aids in the educational process is self-assurance and self-confidence is just having faith in one's capacity to carry out specified tasks (Listiandi et al., 2021). As shown by a number of beneficial long-term effects of "growing confidence and

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self-development" (Prince, 2021) and other positive long-term results, self-confidence is a crucial enduring influence of outdoor adventure residential. Teamwork, life skills, intra-personal abilities, and taking on new chances and/or activities are all acknowledged as personal qualities that have been beneficial to people later in life. (Prince, 2021). There is a strong relationship between the Outdoor Education Program and the self-confidence of the participants (Harun & Salamuddin, 2010). The research findings indicate that the natural environment has the capacity to enhance self-confidence, facilitate problem-solving in the classroom, and inspire a desire for learning (Mirrahimi, 2011). Outdoor Education significantly boosts participants' self-confidence, problem-solving abilities, leading to lasting personal development.

The results align with the conclusions drawn by Learning Away (Kendall & Rodger, 2015), which emphasise confidence as a significant effect. Similarly, Crosbie (2014) highlights confidence as the primary long-term advantage of outdoor adventure residential program for individuals with disabilities. According to the study and processing of data, camping program as a kind of Outdoor Education treatment have a highly favourable impact on self-confidence (Listiandi et al., 2021). Personal characteristics associated with Outdoor Education activities positively impact self-confidence (Jidovtseff et al., 2021). Surprisingly, the variable "Self-Confidence" shown an increase from the pre-intervention to the post-intervention phase of Outdoor Education (Silva et al., 2022). Outdoor Education Program play a crucial role in significantly boosting participants' self-confidence, particularly through structured activities and natural environments, with these benefits enduring long-term, especially for individuals with disabilities.

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2.4.4 Self-efficacy

Self-efficacy refers to the conviction that an individual possesses the ability to carry out a particular action in order to get a specified outcome, or a state of situational self-assurance (Eller et al., 2018). The belief in one's own self-efficacy is positively associated with psychological well-being, health, confidence, and tenacity (Sabouripour et al., 2021). Self-efficacy is considered to be a result of participating in an Outdoor Education Program due to the presence of mastery experiences, vicarious learning, and verbal persuasions in wilderness encounters (Williams, 2020). Participants construct their knowledge by drawing on their own experiences and observing the successes and failures of others. (Williams, 2020). Verbal persuasions are crucial not only when seeking performance evaluations from others but also when instructors design activities (Derin et al., 2020). Participation in Outdoor Education Programs enhances self-efficacy by providing mastery experiences, vicarious learning, and verbal persuasions.

Teacher self-efficacy relates to a teacher's belief in their ability to effectively teach a specific skill, concept, or idea in the classroom (Hussain et al., 2022). The program enhanced the self-efficacy of physical education teacher education students in teaching OE, potentially enhancing their competence in delivering this topic in future physical education settings (Hovey & Foley 2020). Additionally, teaching skills in contexts that accurately reflect real-life situations where these skills will be applied, and implementing metacognitive monitoring interventions can also be effective in reducing this risk (Martinez, 2022). Outdoor educators must possess a precise understanding of how to assist participants in effectively applying their recently

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learned self-efficacy from adventure program to their daily lives (Hovey & Foley 2020). Outdoor Education Program are specifically created to provide numerous chances for developing self-efficacy through both planned and unplanned activities and events (Fang et al., 2022). Outdoor Education Program significantly boost self-efficacy in both participants and educators, enhancing confidence and teaching effectiveness through real-life learning experiences.

2.4.5 Locus of Control

Individuals that possess an internal locus of control (LOC) orientation are typically regarded as psychologically healthier, since they tend to have reduced levels of anxiety, hostility, and authoritarian behaviour (Okeke et al., 2021). The concept of self-efficacy is intimately linked to the locus of control (LOC), which assesses how individuals ascribe success or failure to their own actions (Halse, 2023). Locus of control refers to a person's propensity to accept responsibility for his decisions and results or to focus on other factors (Panwar & Gorsy, 2016). The idea of locus of control refers to how much a person thinks he or she has control over the circumstances that affect their lives (Samsudin et al.,2021). An internal locus of control (LOC) is closely linked to psychological well-being, self-efficacy, and the tendency to attribute outcomes to personal actions, reflecting an individual's belief in their control over life circumstances.

Further, participants in longer-duration adventure programs exhibited a more internalized locus of control (LOC) compared to those in shorter programs, indicating that extended involvement is associated with greater control over their development

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and environment (Smith & Thomas, 2023). According to Helsing (2023), constructive-development pedagogy enables students to accept responsibility for their behavior since they are provided first-hand experiences where they can learn from the results of their acts. These results further corroborate previous findings by Smith and Thomas (2021), which quantitatively demonstrated that adventure programs significantly enhance internality as measured by Locus of Control. Research suggests that an internal locus of control, associated with psychological well-being and self-efficacy, is significantly enhanced by longer-duration Outdoor Education Program and constructive-development pedagogy, which promote greater personal responsibility and control over outcomes.

2.4.6 Future Perspective

National education endeavors to cultivate individuals who are virtuous, physically healthy, knowledgeable, skilled, creative, and self-reliant, while instilling democratic values and a strong sense of civic responsibility (Listiandi et al., 2021). As digital learning continues to gain prominence in preparing students for future societal and professional demands, there is a growing counter-movement advocating for disconnection from technology and greater immersion in natural environments (Akour & Alenezi, 2022). Outdoor Education—also referred to as adventure education or experiential learning—encompasses a range of planned and facilitated outdoor activities designed to promote personal well-being, social development, and environmental sustainability (Prince & Cory, 2022). Research suggests that participants in outdoor soft adventure programs report moderate life satisfaction and strong optimism regarding their future (Prince & Cory, 2022). In light of evolving

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educational paradigms, Outdoor Education is increasingly recognized as a holistic alternative to digital learning, fostering physical health, social cohesion, and sustainable values while enhancing learners' confidence in navigating future challenges.

As outdoor education evolves, its role in leadership development is expected to grow, with organizations increasingly valuing experiential learning in natural environments. Future research will likely quantify the long-term effects of outdoor education on leadership skills, focusing on how nature-based experiences enhance critical thinking, resilience, and emotional intelligence. With the rise of remote work and a focus on holistic well-being, outdoor education may become central to leadership training, integrating digital tools while maintaining a strong connection to nature (Loynes et al., 2022). The future of outdoor education will also likely emphasize inclusivity, tailoring programs to underrepresented groups to promote equity in leadership. As global challenges intensify, outdoor education is positioned to shape leaders who are skilled, adaptive, and deeply connected to sustainability. Interdisciplinary collaboration will be key to refining these educational methods (Beames & Brown, 2023).

2.5 Outdoor Education Program in China

Outdoor Education Program refer to structured educational experiences conducted in natural environments, designed to foster personal and social development through direct engagement with the outdoors (Ewert, 2021). These programs utilize the natural setting as a learning space to promote physical, emotional, and intellectual growth, often through experiential learning methods (Gairns & Holmes, 2022). In China,

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Outdoor Education Program uses structured activities in nature to help students develop physically, emotionally, and socially.

2.5.1 Overview of Outdoor Education Program in China

Outdoor Education Programs in China have gained significant traction in recent years, reflecting an increasing recognition of their benefits for holistic development (Li & Zhang, 2023). These programs emphasize experiential learning within natural settings, aiming to foster physical, emotional, and cognitive growth among participants. The evolution of Outdoor Education in China has been shaped by both traditional cultural values and contemporary educational theories (Li & Zhang, 2023).

Many programs incorporate elements of Chinese culture and philosophy, such as respect for nature and community values, which are closely aligned with the goals of Outdoor Education (Yin, 2021). The Chinese government has increasingly supported Outdoor Education through policies and funding, recognizing its role in promoting physical health and environmental awareness (Li & Zhang, 2023). Activities range from hiking, camping, and orienteering to team-building exercises and environmental conservation projects, all designed to enhance various skills and knowledge areas (Li & Zhang, 2023). Outdoor Education Programs in China represent a growing field that successfully integrates traditional values with modern educational practices.

2.5.2 Policy Supporting Outdoor Education Program in China

In recent years, the Chinese government has increasingly recognized the importance of Outdoor Education, implementing a range of policies to support its development

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(State Council of the People's Republic of China, 2016). These policies aim to enhance physical fitness, environmental awareness, and holistic development. As can be seen in the following:

National Fitness Program: Initiated by the General Administration of Sport of China, this program encourages schools to incorporate more outdoor activities and physical education into their curricula. The goal is to improve the overall health and fitness levels of students nationwide (General Administration of Sport of China, 2020). Guidelines on Physical Education and Health Curriculum Reform: Issued by the Ministry of Education, these guidelines advocate for the inclusion of Outdoor Education in the physical education curriculum. They emphasize experiential learning and the development of life skills through outdoor activities (Ministry of Education of the People's Republic of China, 2021).

Youth Outdoor Activity Plan: Supported by the Communist Youth League of China, this plan promotes outdoor adventure programs and camps for young people. It focuses on building leadership, teamwork, and survival skills through structured outdoor experiences (Communist Youth League of China, 2021). Healthy China 2030 Plan: A comprehensive health initiative that strongly emphasizes outdoor physical activities as a means to improve public health. Schools are encouraged to implement regular Outdoor Education Programs as part of this national health strategy (State Council of the People's Republic of China, 2016).

These policies have led to significant advancements in Outdoor Education across China. Schools and universities have expanded their outdoor activity offerings, integrating nature-based learning and physical activities into their curricula. Additionally, these policies have fostered collaboration between educational

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institutions and environmental organizations, resulting in more comprehensive and impactful Outdoor Education Programs.

2.5.3 Challenges and Barrier to Implement Outdoor Education Program in China

Implementing Outdoor Education Programs in China faces several critical challenges. Firstly, inadequate policy support poses a significant barrier. Despite the recognition of Outdoor Education for its educational benefits, the absence of specific policy guidelines and sufficient financial support limits its development and implementation (Liu, 2023). Secondly, the rigidity within the educational system and curriculum presents another challenge. The traditional emphasis on classroom teaching and academic performance creates resistance and practical difficulties in integrating outdoor activities into the curriculum (Liu, 2023).

In addition, societal and parental concerns regarding safety risks pose significant constraints on the development of Outdoor Education. Public support and acceptance remain limited, largely due to perceived dangers such as potential accidents and inadequate emergency preparedness (Liu, 2023). Furthermore, deficiencies in teacher qualifications and leadership capacity undermine both the sustainability and effectiveness of Outdoor Education Programs. High-quality teacher training and consistent leadership support are therefore essential to ensuring the successful implementation and long-term impact of these initiatives (Liu, 2023).

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2.5.4 Global Perspective

Outdoor education has been internationally recognized as a valuable pedagogical approach in physical education, fostering leadership skills among students. Research indicates that participation in outdoor activities enhances competencies such as decision-making, communication, self-efficacy, cooperation, teamwork, active initiative, time management, responsibility, influence, self-confidence, planning, and organization. These programs provide experiential learning opportunities that traditional classroom settings may not offer, thereby contributing to the holistic development of students (Asfeldt et al., 2023; Vigane & Dyrstad, 2022). Studies have demonstrated that adventure programs significantly impact students' leadership competencies, yielding large effects in areas such as self-concept, assertiveness, achievement motivation, emotional stability, interpersonal skills, and flexibility (Anderson et al., 2020). Furthermore, outdoor education programs have been shown to enhance the self-efficacy of physical education teacher trainees, equipping them with skills to teach outdoor education effectively and confidently.

In China, the integration of outdoor education into physical education is gaining momentum, reflecting a shift towards more holistic educational practices. However, the development of outdoor education in China is still maturing, with institutions lacking a professional system. Challenges such as the legacy of exam-oriented education and limited institutional support have hindered its widespread adoption.

In summary, implementing Outdoor Education in China faces key challenges: inadequate policy support, rigidity within the educational system, societal safety

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concerns, and insufficient teacher training. The lack of clear guidelines and funding hampers development, while the focus on academic performance hinders the integration of outdoor activities. Public safety concerns and inadequate teacher training further undermine these programs. Addressing these issues requires policy reform, curriculum adaptation, safety measures, and enhanced educator training.

2.6 Implication for Physical Education Curriculum in Outdoor Education

Integrating Outdoor Education into the physical education curriculum significantly promotes comprehensive student development and fosters environmental consciousness by equipping students with practical teaching skills in Outdoor Education (North, 2020).

2.6.1 Outdoor Education in Physical Education Curriculum

When integrated into the physical education curriculum, Outdoor Education involves the structured incorporation of outdoor activities within a comprehensive pedagogical framework to support holistic student development. This approach extends beyond conventional classroom instruction by embedding experiential, hands-on learning in diverse natural settings such as parks, forests, and wilderness areas.

The central aim is to promote students' physical, mental, and social development through experiential learning in outdoor settings (North, 2020). Experiential learning, defined as the process of acquiring knowledge through direct, active engagement, enables students to participate in outdoor activities that foster personal growth and practical skill acquisition. This pedagogical approach stands in contrast to

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conventional education models that emphasize theoretical instruction and classroom-based learning (Opstoel et al., 2020). By integrating Outdoor Education into the physical education curriculum, educators can facilitate holistic student development through nature-based, experience-driven learning.

Participation in Outdoor Education not only improves students' physical fitness but also imparts valuable life skills (Samsudin, 2022). These activities foster teamwork as students collaborate to achieve common goals and develop leadership skills by assuming various roles within group activities (Gairns & Holmes, 2022). Additionally, Outdoor Education promotes environmental awareness, instilling a sense of responsibility for conservation and sustainability (Smallwood, 2022). Integrating Outdoor Education into physical education enhances personal growth, leadership, and engagement by making learning more relevant and enjoyable in dynamic outdoor settings (Opstoel, 2020; Samsudin, 2022). Overall, Outdoor Education improves physical fitness, fosters teamwork and leadership, promotes environmental responsibility, and enriches personal growth and engagement through experiential learning in natural settings.

Integrating Outdoor Education into physical education curricula offers a comprehensive framework for student development by embedding experiential learning within natural environments. This approach not only improves physical fitness but also fosters teamwork, cultivates leadership competencies, and promotes environmental awareness and responsibility. By transcending the limitations of traditional classroom-based instruction, Outdoor Education supports holistic development—encompassing physical, mental, and social dimensions—and enhances student engagement through meaningful, context-driven experiences. Unlike

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conventional models, this experiential pedagogy emphasizes hands-on learning that nurtures personal growth, strengthens leadership capacity, and deepens understanding of sustainability, thereby enriching the overall educational process.

2.6.2 Outdoor Education Curriculum Design

Curriculum design is the process of creating and organizing educational content and learning experiences to achieve specific educational goals and outcomes (Wang, 2021). At East China University of Technology, Jiangxi University of Science and Technology, and Nanchang Normal University, the curriculum design for the Outdoor Education program aims to integrate outdoor activities into structured learning environments to enhance the physical, mental, and social development of physical education majors, laying a solid foundation for their future careers as physical education teachers.

This curriculum design enhances traditional classroom-based instruction by integrating practical learning experiences in natural environments such as parks, rivers, and wilderness areas. It incorporates core elements of experiential learning, environmental education, and skill development to foster teamwork, leadership, and personal growth among physical education students (North, 2020). The curriculum is strategically aligned with institutional goals through the inclusion of clearly defined objectives, contextually relevant and safe outdoor activities, experiential learning opportunities, environmental content, targeted assessments, and pedagogical strategies that promote active participation and critical thinking, all within the framework of academic standards (Brown et al., 2020). Aimed at advancing academic achievement, socio-emotional development, leadership competence, and environmental

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responsibility, this curriculum represents a holistic model of student development that integrates cognitive, emotional, and ethical growth while encouraging meaningful engagement with both social and ecological systems (Wang et al., 2021).

In summary, the Outdoor Education curriculum integrates outdoor activities into structured learning to enhance physical, mental, and social development in physical education students. It complements traditional teaching with experiential learning in natural settings, promoting teamwork, leadership, and personal growth, while aligning with institutional goals and academic standards.

2.7 Methodology on Assessing Leadership Development

Assessing leadership development is a multifaceted process that involves a combination of quantitative and qualitative methods to evaluate the growth and effectiveness of leadership skills over time (McCauley & Palus, 2021). This process often includes a variety of assessment tools such as self-assessments, 360-degree feedback, performance metrics, surveys, and questionnaires. Below is an outline of key methodologies used in assessing leadership development, supported by relevant literature.

Self-Assessments and Reflective Practices: Self-assessments enable leaders to reflect on their leadership styles, strengths, and areas for improvement. Engaging in reflective practices allows for a deeper understanding of personal leadership experiences and helps in identifying developmental needs (Day, 2014). 360-Degree Feedback: This method involves gathering feedback from peers, subordinates, and supervisors to

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provide a comprehensive view of a leader's performance. It aids in identifying blind spots and areas for development that the leader may not be aware of (McCauley & Palus, 2021).

Developmental Readiness and Learning Agility: Assessing a leader's readiness for development and their ability to learn from experiences is crucial. This involves evaluating their openness to feedback, resilience, and willingness to take on challenging assignments (Hannah & Avolio, 2010). Leadership Identity Development: Understanding how leaders develop their leadership identity over time is essential for effective leadership development programs. This involves exploring the leader's self-concept and the social processes that influence their leadership journey (Komives et al., 2005). Surveys and Questionnaires are useful tools for gathering data on leadership competencies, styles, and effectiveness from a larger population. These tools can be tailored to specific contexts and can include both standardized instruments and custom-designed questions (Yukl, 2010).

These methodologies offer a robust framework for evaluating leadership development, ensuring leaders acquire the essential skills and insights needed for effective leadership. Notably, surveys and questionnaires are the most extensively utilized methods in this evaluation process (Yukl, 2010).

2.8 Outdoor Education as a Leadership Intervention

Outdoor Education intervention demonstrated growth in leadership and decision-making (Anderson et al., 2020). Outdoor Education offers a unique and transformative approach to leadership development, leveraging the natural environment as a powerful

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intervention tool (Vigane & Dyrstad, 2022). By stepping outside the traditional classroom or boardroom and into the wilderness, individuals are presented with a dynamic learning environment where they can cultivate essential leadership skills through experiential learning, teamwork, and reflection (Hattie, 2017). Several studies have found a significant positive relationship between leadership and Outdoor Education intervention (Priest, 2018; Cincera et al., 2020; Anser, 2021; Gilbertson et al., 2022). The students enrolled in the Leadership and Outdoor Education course are the best group to initiate this cooperation, and they will also have the opportunity to gain exposure to a new field directly relevant to their major (Gilbertson et al., 2022). From the above research, Outdoor Education is an effective tool for leadership development, enhancing decision-making and leadership skills through experiential learning in natural environments.

Outdoor Education sometimes involves organized participation in daring activities in natural environments to facilitate personal and social development (Neill, 2008). Outdoor Education Programs (OEP) generally encompass a set of principles, aims, and objectives that are commonly focused on helping participants gain insight into their own limitations, strengths, and personal assets (Bryant et al., 2021), while also imparting practical life skills that may be applied in various contexts (Priest, 2018). O'Brien found that Outdoor Education programs positively impact participant outcomes, including leadership, self-concept, and interpersonal factors (O'Brien, 2022). Outdoor Education Programs foster personal and social development by challenging participants in natural environments, enhancing their self-awareness, leadership, interpersonal skills, and practical life skills.

Outdoor Education as a leadership intervention, when combined, contributes to a state of constructive anxiety (Neill, 2008; McKenzie, 2003). Students are expected to deal

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with these situations by employing various coping strategies. OE educators work to help participants address challenges rather than avoid stress, and to respond actively by using cognitive, social, emotional, physical, and spiritual coping strategies (Avedissian & Alayan, 2021). Many OEPs' philosophies are consistent with the stress inoculation approach, which states that stress can improve people's ability to cope with daily pressures (Priest, 2018). Individuals can use OE to investigate the relationships between the use of various coping strategies and the consequences. Furthermore, studies that have measured changes in leadership have found positive, albeit mixed, results, but the findings remain inconsistent and continue to be debated by OE researchers.

Key components of Outdoor Education Program (OEP) that foster leadership development include the use of unfamiliar outdoor settings, participation in challenging nature-based activities, guided facilitation, and attention to group dynamics (Gilbertson et al., 2022). OE interventions typically involve disclosures intended to facilitate intrapersonal and interpersonal growth through structured, challenging activities in the external environment (Neill, 2008). Many OEPs are based on the philosophy that stress from being on the edge of one's physical and psychological boundaries can improve people's ability to deal with everyday stressors (Samsudin et al., 2021). This mindset aligns with the eustress notion, the stress inoculation model, and stress-related growth (Daniel, 2014). Eustress is defined by feelings of excitement, challenge, stimulation, optimism, and tension, while distress is characterized by feelings of uncertainty, threat, and difficulty. This illustrates the overall positive and negative mental states that correspond to eustress and distress, respectively, during OEP.

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Outdoor Education strives to create experiences of controlled exposure to eustress in order to avoid negative consequences that would distress participants and make their goals unattainable (Chalman, 2019). One of the most obvious criteria for an OEP is that it takes place in wilderness areas. Participants must respond to and adapt to a foreign environment that is more open, sometimes harsh, devoid of distractions, and solitary (Weiner et al., 2013). Individual tolerance levels for environmental stressors vary due to differing available resources, and activities like expeditions, high ropes courses, canoeing, caving, and rock climbing allow participants to fully engage with the objectives of the OEP (Avedissian & Alayan, 2021). Outdoor Education aims to provide controlled exposure to eustress in wilderness settings, where participants adapt to challenging environments through activities like expeditions and rock climbing, fostering engagement and avoiding distress that could hinder their goals.

The OE experiences are designed to support a greater level of personal development, as led by Priest (2018). Staff facilitators support participants in analyzing their experiences and deriving significance through structured introspection and relating the experience to their daily lives (Priest, 2018). This is accomplished through the facilitated debriefing of key experiences, reflections, and goal setting, as well as the use of metaphors throughout the program (Weiner et al., 2013). Exposure to a challenging foreign environment fosters a sense of reciprocity among group members, leading to mutual dependence as they collaborate toward shared goals (Kelly, 2019). Based on the research above, Outdoor Education promotes personal development through structured reflection and goal setting, while challenging environments foster group reciprocity and collaboration toward shared goals.

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In summary, Outdoor Education serves as a powerful catalyst for developing leadership skills by using nature as a setting for hands-on learning, collaboration, and self-reflection. Research consistently shows a strong link between Outdoor Education and leadership growth, emphasizing the importance of challenges and expert guidance in fostering personal and interpersonal development. By embracing stress adaptation and constructive challenges, these programs enable participants to unlock their potential and build strong team bonds, offering a comprehensive approach to leadership development.

2.9 Theoretical Framework

2.9.1 University of Minnesota Extension Leadership Model

University of Minnesota Extension Leadership Model is built as part of the University of Minnesota Extension Leadership Development Program. It is built on competencies identified as those that "leaders need to be effective in their communities" It was developed in 2002 (Figure 2.4).

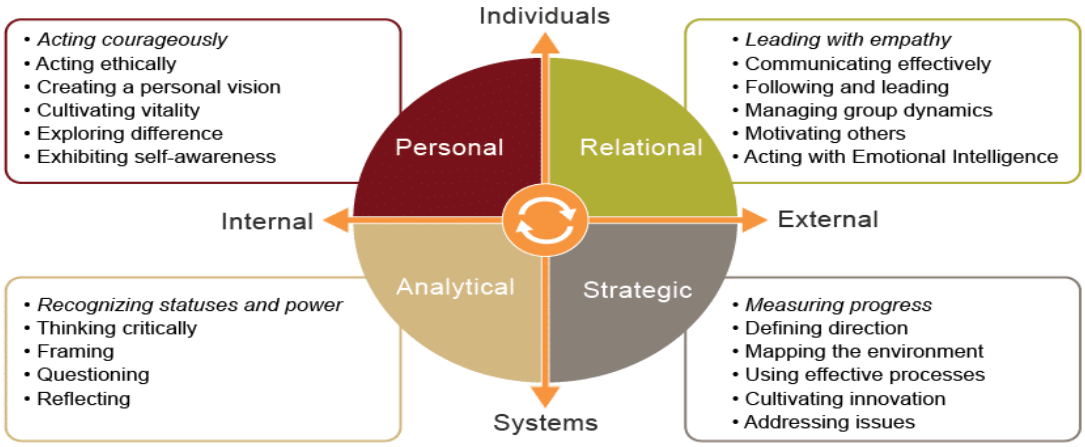

Figure 2.4: University of Minnesota Extension Leadership Model

A common trait among all leaders is their propensity for action. The Integral Leadership Model acknowledges this crucial aspect. Consequently, the University of Minnesota Extension's leadership development programs are designed to cultivate the competencies leaders need to be effective in their communities. A competency is defined as a combination of knowledge, skills, and abilities essential for achieving results. The core assumption of the model is that leadership transcends the individual leader, aiming to create public value and the common good. The model encompasses four essential leadership competency areas: Personal, Relational, Analytical, and Strategic.

Personal attributes are internally focused competencies that drive and sustain leaders in creating the common good. By bringing their best selves, leaders can offer their best to their work. There are six components of personal attributes:

1. **Acting Courageously:** This skill allows leaders to effectively engage with culturally and ethnically diverse environments, acknowledging that discomfort is crucial for deepening understanding of different cultures and races, both in others and themselves.

2. **Acting Ethically:** This competency improves leaders' capacity to embody and behave in accordance with ethical principles, especially in situations when there are differing viewpoints on what constitutes "correct" standards.

3. **Creating a Personal Vision:** This skill enables leaders to prioritize the long-term or overarching perspective, fostering dedication to purposeful living and leadership. It also assists in addressing the query, "What actions should I take to collaboratively bring about change?"

4. **Cultivating Vitality:** Based on the principles of positive psychology, this competency urges leaders to embrace strategies that foster flourishing. It promotes equilibrium, vitality, and satisfaction through purposeful constructive acts.

5. **Exploring Difference:** This skill encourages leaders to view diversity as an opportunity for active engagement and learning, while also promoting introspection to understand the factors shaping their perspectives on differences.

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6. **Exhibiting Self-Awareness:** This competency emphasizes the significance of leaders having self-awareness in order to effectively mold and enhance their leadership abilities.

Relational attributes acknowledge that effecting change requires collective effort. In response, leaders can cultivate skills to harness the wisdom and power of groups and communities. There are six competencies within relational attributes:

1. **Leading with empathy:** This ability demands leaders to use emotional intelligence to navigate complex cultural and racial situations with compassion and a person-centered approach, emphasizing the importance of incorporating diverse perspectives to enhance cultural literacy and understanding the benefits of diversity.

2. **Communicating effectively:** This skill improves leaders' capacity to effectively communicate and understand ideas with various audiences. It includes the practice of actively listening, effectively communicating through both spoken and unspoken means, and adjusting messages to fit various situations and goals.

3. **Following and leading:** This competency enhances the ability of leaders to provide better support to their followers and also enables them to become more effective followers themselves, thereby supporting leaders and making valuable contributions to collective endeavors.

4. **Managing group dynamics:** This skill allows leaders to identify and navigate the dynamics within groups that influence their characteristics, growth, and achievements. It entails actively fostering constructive group dynamics, handling disagreements, and resolving individual interests.

5. **Motivating others:** This ability entails leaders employing constructive techniques to inspire, cultivate, and include people, while finding their specific capabilities and engaging them in a meaningful manner.

6. **Acting with Emotional Intelligence:** This skill underscores the importance of emotional intelligence— the ability to understand and interact with others effectively— in leadership success, acknowledging that it can be developed through intentional and focused effort.

Strategic attributes are responsive to the context in which leaders operate. The better leaders understand the factors influencing their environment, the more effectively and thoughtfully they can respond. There are six competencies within Strategic attributes:

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1. **Measuring progress:** This skill emphasizes leaders' continuous evaluation of how cultural and ethnic diversity affects their work, using measurable outcomes. Leaders can leverage both quantitative and qualitative data to articulate the economic, social, and cultural impacts of diverse populations on communities.

2. **Defining direction:** This skill improves leaders' ability to direct a team in order to accomplish a specific objective. Additionally, it allows leaders to effectively communicate the problem to enable others to make well-informed decisions.

3. **Mapping the environment:** This skill enables leaders to acquire a more profound comprehension of the pivotal elements that impact their circumstances, including individuals, policies, procedures, and principles.

4. **Using effective processes:** This ability entails leaders discerning, choosing, and executing appropriate procedures to accomplish their goals in cooperation with others.

5. **Cultivating innovation:** This skill enables leaders to transcend the limitations of their present circumstances and generate or implement novel concepts. It enhances their capacity to engage in strategic risk-taking.

6. **Addressing issues:** This competency entails leaders' ability to identify, conceptualize, cultivate, and execute equitable and effective solutions to inquiries and obstacles.

Analytical attributes represent the mental competencies that leaders utilize to effectively perform their leadership roles. Leadership researcher Roger Schwarz suggests that "how you think is how you lead," highlighting the importance of these practices in broadening and deepening leaders' thinking. There are five competencies within Analytical attributes:

1. **Recognizing statuses and power:** This competency requires leaders to understand the interconnectedness of various identities, such as class, gender, sexual orientation, political status, and ability— a concept known as intersectionality. This understanding enhances complex thinking about identity and power dynamics, strengthening group cohesion.

2. **Thinking critically:** This skill improves leaders' capacity to methodically examine their own thinking, hence minimizing bias, distortion, and prejudice in their cognitive processes.

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3. **Framing:** This skill enables leaders to clearly and accurately identify and modify problems or circumstances in different ways in order to promote extensive relationships with others. It directs discussions and establishes the lens through which problems are perceived.

4. **Questioning:** This skill allows leaders to employ intentional, thought-provoking inquiries in a relevant and timely manner to accomplish their objectives.

5. **Reflecting:** This skill requires leaders to participate in critical evaluation of their participation, actions, and thinking in order to improve their effectiveness in community leadership roles.

The University of Minnesota Extension Leadership Model, integrating with outdoor sports, highlights four core competencies: Personal (self-management), Relational (teamwork), Strategic (contextual awareness), and Analytical (critical thinking). This model equips outdoor leaders with skills to enhance their effectiveness in diverse and dynamic natural environments.

2.9.2 Cambridge Leadership Attributes Framework

The Cambridge Leadership Attributes Framework (CLAF) is a model developed by the Cambridge Judge Business School in collaboration with leading global organizations in 2014 (Figure 2.5). It provides a comprehensive set of leadership attributes that are considered essential for effective leadership in a variety of contexts. It's important to note that while the CLAF offers valuable insights into leadership attributes, it is one of many frameworks available, and different models may emphasize different aspects of leadership. By using the CLAF, individuals can assess their current leadership capabilities, identify areas for improvement, and create a personalized development plan. Organizations can also leverage the framework to assess and develop leadership talent within their ranks.

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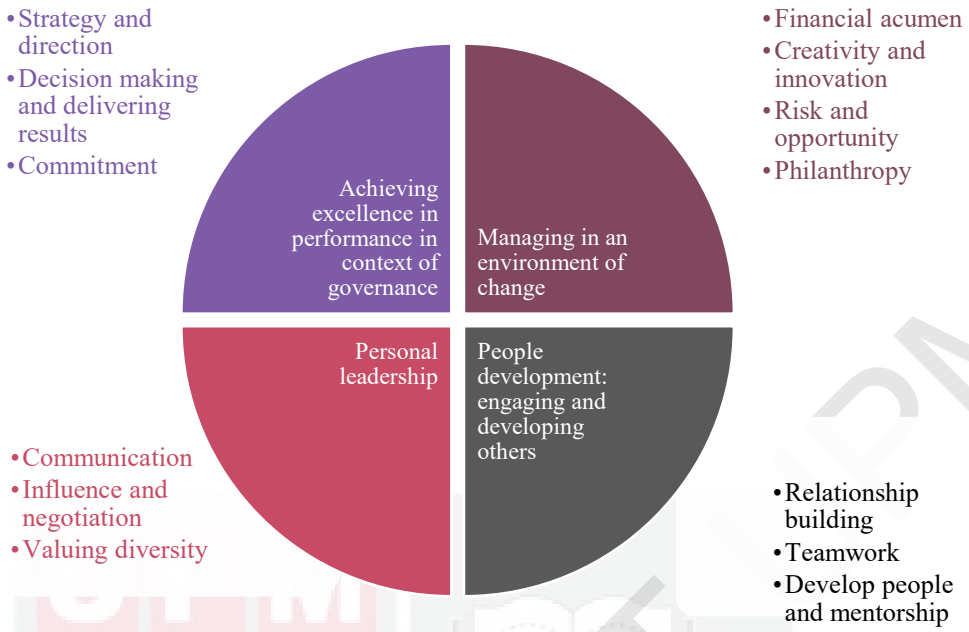

Figure 2.5: Cambridge Leadership Attributes Framework (2014)

There are four parts in this model: Cluster A Achieving Excellence in Performance in context of Governance; Cluster B Managing in an Environment of Change; Cluster C: Personal leadership; Cluster D: People Development - Engaging and Developing Others.

Cluster A: Strategy and Direction: Develop a distinct and persuasive vision of exceptional performance for the institution in the future, taking into account several potential future situations. Motivates others to effectively execute the vision and strategy and offers clear understanding of the connection between organizational objectives, framework, and achievements. Decision-making and Delivering Results: Promote individuals and teams to set high standards for themselves and others, by actively including all internal and external stakeholders, by acknowledging potential and accomplishments, and by fostering the right use of judgment and accountability. Commitment: Fosters A culture characterized by transparency, candor, equity, and

moral uprightness, where efforts and accomplishments are duly recognized and there is a strong belief in the institution's ability to thrive.

Cluster B: Financial Acumen: Possesses knowledge of the economic factors that impact University operations. Possesses a highly developed understanding of financial matters and their impact on strategy, institutional plans, and stakeholders. Creativity and Innovation: Promotes innovative thinking among coworkers, cultivates a receptive mindset towards novel problem-solving approaches, and offers enhanced prospects for entrepreneurship. Risk and Opportunity: Ensures the institution and its culture are open to new opportunities which advance the University's mission and has structure in place so that these opportunities are effectively realized in practice. Philanthropy: Offers personal assistance to development initiatives and advocates for the themes and messages of the collaborative University's development efforts.

Cluster C: Communication: Strategically communicates to accomplish specific institutional objectives, while also possessing the ability to bring together disparate individuals or groups towards a shared purpose; Encourages others to see the importance of exceptional communication. Influence and Negotiation: Establishes strategic alliances and leverages them to garner backing for initiatives and objectives that advance the University's interests. Promotes the utilization of a variety of suitable influencing and bargaining strategies among others. Valuing Diversity: Formulates inclusive strategies that prioritize the well-being and fair treatment of employees and other stakeholders, irrespective of their color, gender, handicap, age, belief, or other relevant variables, in alignment with principles of openness and inclusivity.

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Cluster D: Relationship Building: Fosters an environment characterized by trust and transparency, where individuals are treated with empathy and are encouraged to express themselves freely, confident that their opinions will be acknowledged and respected without any bias. Teamwork: Promotes a collaborative culture that emphasizes teamwork and values cooperation across different areas, resulting in the removal of obstacles and the encouragement of teams to fully utilize each other's expertise and knowledge. Developing people and mentorship: Promotes and fosters a learning-oriented environment by implementing various activities, assessments, and feedback mechanisms at the individual, team, and institutional levels to facilitate ongoing growth and improvement of the organization.

The CLAF recognizes that effective leadership is not solely based on traits but also on the interplay between personal attributes, relational attributes, and result attributes. The framework is designed to provide a holistic perspective on leadership and guide individuals in developing their leadership skills. The framework serves as a valuable tool for individuals and organizations to evaluate leadership capabilities, identify areas for improvement, and design personalized development plans. By using the CLAF, individuals can gain insights into their strengths and weaknesses as leaders, enhance their leadership skills, and drive positive organizational change.

2.9.3 An adapted version Integrating Taxonomy of Managerial Behaviour of leadership framework

Outdoor leadership necessitates a diverse set of abilities, encompassing technical, organizational, self-management, discernment, and interpersonal skills (Åge Vigane & Dyrstad, 2022). Outdoor leadership courses often categorize outdoor leadership

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talents into two main types: hard skills and soft skills. Hard skills refer to specific technical competencies, such as proficiency in rope handling for rock climbing, expertise in lead climbing on ice, proficiency in white water kayaking, and the ability to do kayak rescues. Additionally, non-technical skills like as decision-making, judgement, and group relations in the field are frequently evaluated (Martin, 2017; Priest & Gass, 2018). When it comes to hard or soft talents, most theories on leadership suggest that leadership is an intricate connection between the leader and the specific circumstances in which the leader is involved (Martin, 2017; Priest & Gass, 2018). An adapted version of the Integrating Taxonomy of Managerial Behavior framework provides a robust explanation of this viewpoint (Figure 2.6).

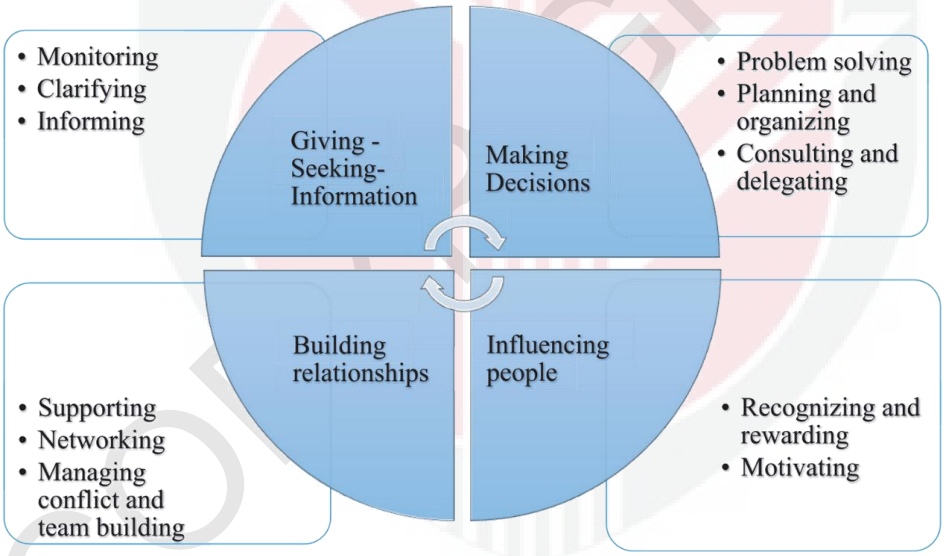

Figure 2.6: An adapted version of Integrating Taxonomy of Managerial Behaviour of Leadership Framework
(Yukl, 2013)

An adapted version of Integrating Taxonomy of Managerial Behaviour of leadership framework by Yukl (2013) describes four categories of leadership behaviour: giving-seeking information; making decisions; influencing people and building relationships.

In a pedagogical context, these leadership behaviors are essential for teaching students how to effectively facilitate learning in outdoor environments, providing them with the necessary skills and knowledge to create meaningful and impactful educational experiences in nature.

First, the giving-seeking information category includes components that relate directly to communication skills, as highlighted by Sibthorp (2007). These components encompass teaching and facilitation abilities, as discussed by Martin (2017), and are also interconnected with instructional and facilitation skills, as well as effective communication, as emphasized by Priest & Gass (2018).

Second, the making decisions category is ubiquitous in management, leadership, as well as outdoor leadership literature. An important consideration for outdoor leaders when making decisions is their judgement, which is developed by sincere reflection on past experiences. Leaders require sound judgement for both social and physical problem-solving and decision-making, as indicated by multiple studies (Enoksen & Lynch, 2018). This category is essential for leaders to effectively handle risks and uncertainties that are naturally present in outdoor contexts. It necessitates finding a middle ground between being cautious and taking action, as highlighted by Smith (2017). Furthermore, the ability to make effective decisions is crucial for leaders to ensure the safety and well-being of their team members, as emphasized by Priest and Gass (2018).

Third, a pedagogical leader needs the ability to influence people effectively. This involves not only having a flexible leadership style, as highlighted by Priest & Gass

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(2018), but also being self-aware of personal conduct and professional ethics, as emphasized by Martin (2017) and Priest & Gass (2018). These skills enable a leader to build trust, foster collaboration, and inspire others to achieve common goals. Additionally, effective influence involves understanding and leveraging individual and group dynamics, as well as being adept at communication and interpersonal skills, as noted by Martin (2017)

Fourth, building relationships encompasses supporting, networking, managing conflict, and teambuilding, all essential skills for effectively interacting with individuals in small groups. Faarlund (2003) underscores the value of small groups and agency in cultivating favorable relationships, whilst Sibthorp (2007) accentuates the importance of verbal feedback from peers and leaders, as well as the promotion of care, conflict resolution, and team cohesion. Yukl's four categories, depicted in Figure 2.6, are expanded upon as leadership behaviors, which encompass task-oriented behaviors and relations-oriented behaviors (Yukl, 2013).

Outdoor leadership requires both technical skills (like climbing and kayaking) and interpersonal skills (like decision-making and communication). Yukl's framework identifies four key behaviors for leaders: gathering information, making decisions, influencing others, and building relationships. These skills help leaders manage risks, teach effectively, and foster teamwork in outdoor settings.

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2.9.4 Other leadership frameworks that can complement the study's findings

Integrating additional leadership frameworks can enrich the findings of study by providing diverse perspectives on leadership development within outdoor education settings. Here are three frameworks:

Servant-Leadership Competencies: This framework emphasizes the development of soft skills essential for effective leadership in outdoor education settings. It focuses on serving others, fostering community, and promoting shared decision-making, aligning well with the collaborative nature of outdoor programs.

Youth Sport Trust Leadership Framework: This framework is designed to provide all young people with access to leadership opportunities through sports. It focuses on developing skills and behaviors that prepare them to be active contributors to society, both during and beyond their educational journey.

National Outdoor Leadership School (NOLS) Leadership Model: NOLS utilizes a comprehensive leadership curriculum that includes roles such as designated leadership, active followership, peer leadership, and self-leadership. It also emphasizes seven skills: expedition behavior, vision and action, communication, judgment and decision-making, self-awareness, tolerance for adversity, and competence.

By incorporating these frameworks into study, researcher can offer a more holistic analysis of leadership development in outdoor education, enhancing the applicability and impact of findings across various educational contexts.

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Despite extensive research on the benefits of outdoor education, there is a paucity of studies examining its specific impact on leadership development among physical education students in Jiangxi Province. This theoretical gap suggests a limited understanding of how regional cultural and educational contexts influence the efficacy of outdoor education programs. By investigating this relationship, our study aims to contribute to the theoretical discourse by contextualizing leadership development within specific socio-cultural settings. This contribution is significant, as it provides nuanced insights that can inform tailored educational strategies, thereby enhancing the effectiveness of physical education curricula in similar contexts.

2.10 Conceptual Research Framework

In the preceding sections, we have critically examined existing literature on outdoor education and leadership development within physical education, both globally and within the Chinese context. This analysis has highlighted key themes, methodologies, and identified gaps in current research. Building upon these insights, we now transition to the conceptual framework that underpins this study. This framework synthesizes the reviewed literature and theoretical perspectives, guiding the research design and analysis. The conceptual framework of this study is grounded in the three theoretical frameworks and the findings from previous research, specifically to address the study's research questions. Previous studies have demonstrated that Outdoor Education Programs can enhance leadership skills among students, including decision-making, communication, self-efficacy, cooperation, group work skills, active initiative and time management, responsibility, influence, self-confidence, planning, organization, and proactivity (Martin, 2017; Priest & Gass, 2018). This study's conceptual

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framework was constructed based on these theoretical insights and empirical findings to thoroughly investigate the research questions.

The University of Minnesota Extension Leadership Model, this theory provides a systematic leadership development framework for the conceptual framework, which is concretized into course design and activity content. It also assesses students' leadership development in various aspects through the practical application of theoretical capabilities, ensuring project effectiveness through various influencing factors such as Teachers' Leadership Competency and Social Support.

Cambridge Leadership Attributes Framework offers a detailed framework of specific leadership competencies that can enhance the course design and activities described in conceptual framework. can be directly applied to enhance the design, implementation, and evaluation of the Outdoor Education Program in conceptual framework, ensuring a comprehensive and effective approach to leadership development.

And an adapted version of Integrating Taxonomy of Managerial Behaviour of leadership framework. This theoretical framework provides a systematic approach to evaluating and optimizing leadership behaviors and teaching effectiveness in Outdoor Education Programs, ensuring that students gain meaningful learning experiences in real outdoor environments.

Above three theories framework to be used as a foundation for the research conceptual framework. The conceptual framework consists of leadership as the dependent variable with five factors of communication, commitment, strategy, influence, proactivity as the dependent variables. There are four influence factors: Teacher's

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Leadership Competency, Social Support, Personal Effectiveness and Locus of Control, Social demographics. The independent variables include module implementation, the popularity and effectiveness of activities, and a 15-days course duration. The Outdoor Education Program consists of 15 distinct activities. The conceptual research framework is illustrated in Figure 2.7 below.

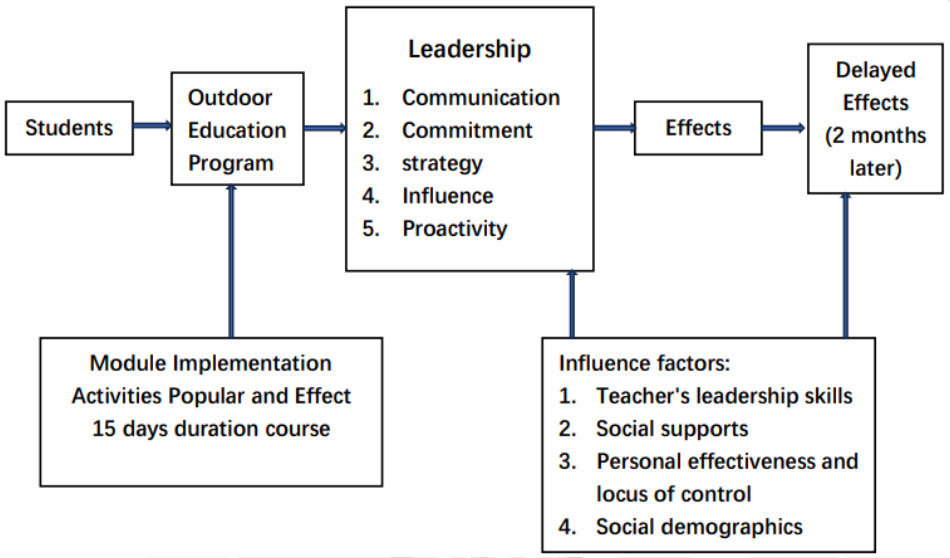

Figure 2.7: Conceptual Research Framework

2.11 Summary

The literature reviewed in this chapter presents Outdoor Education as a dynamic and evolving educational field that encompasses philosophical, pedagogical, and developmental dimensions. While existing research highlights the potential of Outdoor Education to promote leadership, personal growth, and environmental awareness, much of it remains fragmented and idealized. Despite growing scholarly attention, a lack of rigorous empirical inquiry and cohesive theoretical frameworks limits the extent to which Outdoor Education can be systematically evaluated and integrated into formal educational settings, particularly within Physical Education programs in China.

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Theoretically, Outdoor Education is rooted in experiential learning philosophies (Priest, 2018; Gilbertson et al., 2022), which advocate for transformative learning through direct engagement with nature. However, existing literature often relies on conceptual metaphors—such as the "Outdoor Education Tree"—without fully articulating how these philosophical elements translate into measurable educational constructs. Moreover, although pedagogical models emphasize holistic development (Mahoney et al., 2021; Agostini et al., 2018), there remains a gap in linking these models with leadership-specific theories, particularly in higher education contexts. This study advances the theoretical foundation of Outdoor Education by integrating a structured leadership evaluation framework—incorporating variables such as Teacher Leadership Competency (TLC), Social Support (SS), and Personal Effectiveness and Locus of Control (PELC)—into an Outdoor Education setting. By doing so, it bridges the divide between Outdoor Education philosophy and leadership development theory, contributing a novel, context-specific theoretical model to the field.

From a practical standpoint, many existing studies on Outdoor Education rely heavily on qualitative methods or anecdotal observations, which limit their applicability in diverse and institutionalized educational environments (Povilaitis et al., 2019; Remmen & Iversen, 2023). This study addresses such limitations by employing a quasi-experimental design with pre-, post-, and delayed post-tests, offering a more robust approach to assessing the impact of Outdoor Education on leadership skills among Physical Education undergraduates. Furthermore, the study provides insight into the specific types of outdoor activities—such as dragon boating—that are most effective in fostering leadership development. The incorporation of program theory and module evaluation aligned with China's educational goals ensures that the

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research findings are not only academically valuable but also directly applicable to curriculum development and policy planning in higher education institutions.

In summary, this study fills critical gaps in the current Outdoor Education literature by offering both theoretical refinement and empirical validation. It contributes a comprehensive framework that connects Outdoor Education philosophy and pedagogy with measurable leadership outcomes, while also demonstrating how such programs can be effectively implemented and evaluated in practice. Through this dual contribution, the study enhances the credibility and relevance of Outdoor Education within the academic discourse and supports its sustainable integration into Physical Education curricula in Chinese universities.

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CHAPTER 3

METHODOLOGY

3.1 Introduction

This research aims to examine the effects of Outdoor Education Program on the leadership development of Physical Education undergraduates at Chinese universities. The study specifically investigates how communication, commitment, strategy, influence, and proactivity—along with factors such as Teachers' Leadership Competency, Personal Effectiveness and Locus of Control, and Social Support—contribute to the leadership growth of these students. Furthermore, the research explores the sequence of activities in Outdoor Education Program and their correlation with leadership development among Physical Education students.

3.2 The Design of Research

A research design serves as a blueprint that guides a researcher's data collection procedures and data analysis techniques in response to the research questions (Sekaran & Bougie, 2016). It is crucial that the chosen design aligns with the stated purpose and meets the criteria of validity and reliability in research (Duckett, 2021). The primary aim of this study was to assess the impact of the Outdoor Education Program (OEP) on the development of leadership qualities among undergraduate students following the implementation of teaching and learning process. Additionally, the study explored the effects of external factors such as teacher leadership competency, the

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demographics of respondents, Social Support, Personal Effectiveness and Locus of Control, examining their connections and contributions to the formation. The research design plays a critical role in determining the outcomes of an investigation by employing a systematic and specific data processing procedure (Duckett, 2021).

A well-structured research design provides a detailed methodology for conducting a study, encompassing variable measurements, sample selection, data collection procedures, analysis methods, hypothesis testing, and decision-making processes (Tomaszewski et al., 2020). This study utilizes a program evaluation approach involving a 15-day course intervention, where Outdoor Education Program serves as the independent variable, and leadership development is the dependent variable, with various covariates included. The primary instrument employed is a survey questionnaire designed to assess the leadership effectiveness of Physical Education undergraduates at Chinese universities participating in Outdoor Education Program.

Quasi-experimental methods are frequently used to assess opinions, attitudes, and behaviors (Kim & Lee, 2020). Quasi-experiments can often be implemented with minimal, or even no, intervention in the ongoing delivery of treatment services, and they tend to be more agreeable to a wide variety of stakeholders (Samsudin et al., 2021). This study employed a quasi-experimental design using a single-group pre-test, post-test, and delayed post-test method. Due to the specific nature of the program evaluation, a control group was not used, making this approach particularly effective for assessing the targeted intervention. Participants were able to reflect on what they should expect and what their expectations were using the retrospective method (Samsudin et al., 2021). The delayed post-test was administered two months after the completion of the

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Outdoor Education Programs to assess the retention of learned skills and knowledge over a sufficient period to test the durability of the effects without allowing other factors to influence the results (Samsudin, 2022). For two reasons, the follow-up administration period was set at two months after the post-test. Firstly, a two-month period marks the first interval in Priest's studies where long-term gains were identified; yet it is also the point in Picot's (2024) study where these gains dissipated, with findings indicating that scores had returned to baseline after this delay. Secondly, due to the semester break, the earliest feasible time to evaluate participants after completing the training was two months later.

Figure 3.1 illustrates the study's quasi-experimental design, depicting the details of the participants. In quasi-experimental studies, control groups are sometimes omitted due to practical or ethical constraints. For instance, it may be impractical to withhold a potentially beneficial intervention from a control group, especially in educational or clinical settings where all participants are entitled to the best available support (Gustafsson et al., 2012). Additionally, logistical challenges such as limited resources, time, or participant availability can make the implementation of a control group difficult (Cook, 2007). This quasi-experiment is a required course for students in the Physical Education Program, and students from other non-Physical Education majors do not take this course. Additionally, this course is conducted intensively over 15 days at the end of the semester, with no students from the same major used as a control group.

Furthermore, in some cases, the study design might focus on longitudinal or pre-post comparisons within a single group to measure changes over time, thus eliminating the

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need for a separate control group (Creswell, 2017). This approach can still yield valuable insights, particularly when the aim is to observe the direct impact of an intervention or program on the same set of participants. During the quasi-experiment, pre-test and post-test data are compared to determine if there are significant differences, aligning with the requirements of a quasi-experimental design. Lastly, a delayed test is used to compare results over time with the post-test to ascertain whether there are sustained differences. By leveraging robust statistical techniques and ensuring a comprehensive baseline measurement, researchers can mitigate some of the biases introduced by the absence of a control group (Pack et al., 2006).

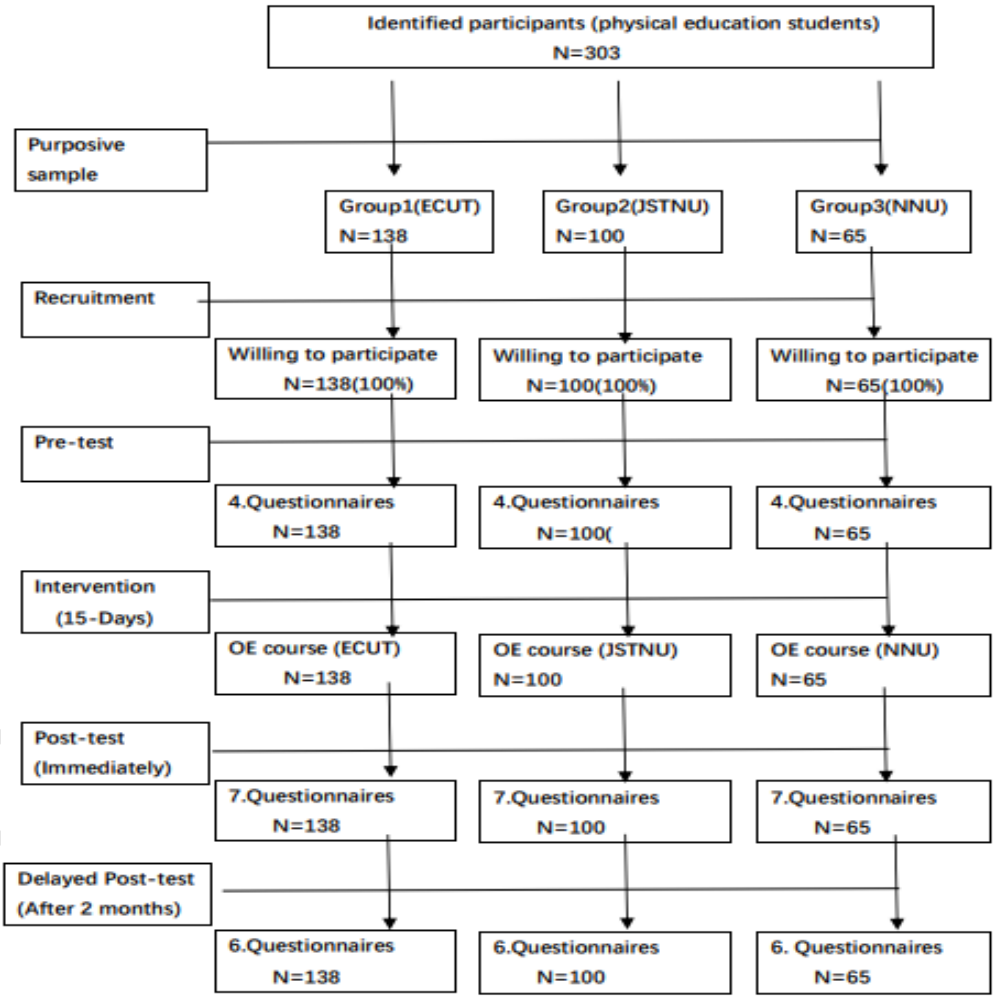

Figure 3.1: The Study's Quasi-Experimental Design with the Participants

3.3 Population and Sampling

The Physical Education major requires students to systematically master the basic theories of educational psychological science, sports biological science, sports social science, and sports technology disciplines (Siedentop, 2022). Additionally, students must comprehensively grasp the basic theories, techniques, and skills of PE, ensuring they are well-rounded and specialized for careers in teaching PE, after-school sports training, sports department management, and scientific research upon graduation (Du, 2018). The Chinese undergraduate Physical Education program, spanning four years and culminating in a degree in education, emphasizes a thorough grounding in the foundational theories of educational psychology, sports biology, outdoor education, and sports technology (Wang, 2017).

This study focused solely on the Physical Education undergraduate program from universities that conducted Outdoor Education Programs for their students. Jiangxi Province in southeastern China is renowned for its rich history, cultural heritage, and diverse natural beauty, featuring mountains, rivers, lakes, and lush forests (China Daily, 2024). Jiangxi Province, recognized as a pilot province for Outdoor Education in China, has also made significant strides in the field of physical education (Sheng et al., 2020). As part of its educational framework, Jiangxi integrates Outdoor Education with Physical Education, promoting a holistic approach to student development. This initiative aligns with Jiangxi's broader educational and economic strategies, which include the establishment of an open economy pilot zone aimed at fostering high-quality development and innovation through structural reforms and integration with national projects like the Belt and Road Initiative and the Yangtze River Economic

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Belt (China Daily, 2024). Jiangxi's robust Physical Education program, emphasizing Outdoor Education, provide students with comprehensive skills in educational psychology, sports social science, and sports technology, effectively preparing graduates for careers in teaching, training, management, and research (CGTN, 2020).

The study targeted universities in Jiangxi Province as the research population, utilizing a purposive sampling method to select participants. Purposive sampling is a non-probability sampling method in which researchers use their judgment to select participants who can best provide the necessary data for their study (Campbell et al., 2020). This method involves selecting specific individuals who have characteristics or experiences relevant to the research question. There are various types of purposive sampling, including homogeneous sampling, maximum variation sampling, typical cases, deviant cases, critical cases, and expert sampling, each serving different research needs (Palinkas et al., 2015). Homogeneous sampling was used in this study.

This approach allowed the researchers to specifically choose institutions that met predefined criteria relevant to the study's objectives. By focusing on a specific geographical and educational context, the research aimed to obtain in-depth insights and more relevant data, ensuring that the findings would be applicable to similar educational settings within the province. In Jiangxi Province, the Outdoor Education Programs offered by East China University of Technology, Jiangxi Science and Technology Normal University, and Nanchang Normal University are exemplary in meeting educational standards and promoting outdoor education. The three selected universities in Jiangxi Province were chosen because they are officially designated pilot institutions for Outdoor Education under national educational reform initiatives.

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Their inclusion reflects a purposeful sampling strategy, as they have systematically implemented Outdoor Education programs within Physical Education curricula. Although geographically concentrated, these universities represent diverse types of higher education institutions—teacher training, science and technology, and comprehensive universities—which increases the representativeness of the sample. Moreover, Jiangxi's active engagement in education reform and its suitability for outdoor learning environments enhance the contextual relevance of the study. Therefore, while regional, the findings provide meaningful implications for similar institutions across China and contribute to the broader discourse on integrating Outdoor Education into formal higher education.

These three universities have successfully implemented comprehensive outdoor education curricula, fostering students' physical, mental, and social development through well-structured programs. These institutions, all located within the same region, benefit from a high degree of interconnectivity and resource sharing, enhancing the effectiveness and cohesiveness of their outdoor education initiatives. This geographical and academic synergy makes them ideal subjects for research, as they collectively represent a concentrated effort to advance outdoor education within the province.

The Outdoor Education courses at all three universities are offered during the first semester of the sophomore year. Teachers from these institutions frequently collaborate on designing Outdoor Education Programs and selecting locations. These programs share several common features: First, each university implements similar projects that provide hands-on experiences in adventure-based learning, environmental

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education, and team building, actively engaging students and promoting physical health, environmental stewardship, and leadership skills. Second, the universities employ consistent, student-centered teaching models that emphasize experiential learning, reflective practices, and collaboration, ensuring students across these institutions receive comparable educational experiences and enhancing program quality. Third, the teaching methods used in these programs include a blend of direct instruction, guided discovery, and inquiry-based learning. Teachers at all three universities use similar techniques, such as group discussions, field trips, and practical workshops, fostering a cohesive and flexible learning environment that benefits students.

By maintaining these shared features, East China University of Technology, Jiangxi Science and Technology Normal University, and Nanchang Normal University ensure that their outdoor education programs are not only effective individually but also collectively reinforce the educational standards and goals of Jiangxi Province. This alignment makes them ideal subjects for research, as they provide a comprehensive view of successful outdoor education implementation within a regional context. Their efforts set a benchmark for other institutions and contribute significantly to the advancement of outdoor education practices.

According to this, the researcher ultimately selected 303 students, including 138 from East China University of Technology, 100 from Jiangxi University of Science and Technology, and 65 from Nanchang Normal University, based on the requirements of the study. Basis for sampling: At the end of the semester, these three universities offered a 15-day Outdoor Education course, worth 1.5 credits, conducted at the Meiling Outdoor Education Center in Nanchang, Jiangxi Province. Students were

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tested before taking the programs for the pre-test and immediately after the programs for the post-test using the same questionnaire. However, the arrangement of questions in the post-test questionnaire differed from that of the pre-test questionnaire. Two months after the completion of their program, a delayed post-test was conducted to examine the delayed effect, using the same questionnaire as the post-test, although the arrangement of questions differed from that of the post-test questionnaire.

The sample consisted of 303 second-year Physical Education undergraduates from three universities in Jiangxi Province, which were designated as pilot institutions for Outdoor Education implementation. The selection was based on purposive sampling, focusing on students who were officially enrolled in the Outdoor Education Program as part of their academic curriculum. This specific group was chosen because they had direct exposure to the intervention and represented a relevant population for assessing leadership development in this context. Potential sampling biases, such as selection bias and program exposure bias, were addressed by ensuring all participants had the same level of exposure to the intervention, and by standardizing the delivery of the Outdoor Education Program across the three sites. Although the sample is limited to one province and a specific academic level, it provides a consistent and contextually relevant basis for measuring the impact of the program. Regard the time intervals, the post-test was conducted immediately after the completion of the 15-day Outdoor Education Program to assess short-term gains. The delayed post-test was administered two months later to examine the sustainability of the observed effects. The two-month interval was selected based on both practical considerations (academic calendar and semester breaks) and theoretical reasoning, as it allows sufficient time to observe whether leadership-related behavioral changes are retained beyond the immediate program effects. This design aligns with previous research on delayed effects in experiential learning contexts

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While the study was conducted within three universities in Jiangxi Province, the generalization of the findings is supported by the fact that these institutions reflect structural and curricular features common to many public universities in China—particularly in Physical Education teacher training. The Outdoor Education program evaluated in this study aligns with national educational goals and is guided by standardized curricular principles, enhancing its relevance beyond the regional context. Although generalization should be made with caution, the theoretical framework, evaluation approach, and observed leadership development outcomes offer valuable insights that can inform the design and implementation of Outdoor Education programs in similar educational settings across China.

3.4 Measurement and Instrumentation

To gather data for this study, the researcher used self-report instruments adapted from previous leadership studies. Respondents were required to complete assessments across five dimensions. However, changes in measurement ability from pre-testing to post-testing can threaten the internal validity of the study. As Flannelly (2018) explains, the dependent variable can be measured through various methods, including observation, judgment, rating, or assessment by human researchers or study assistants. Notably, administering the pre-test may influence the outcomes of the subsequent test, as the measurement process itself can alter what is being measured. This reactive effect occurs when the testing process changes behavior rather than simply recording it. Therefore, researchers should consider using non-reactive measures whenever possible.

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3.4.1 Demographic Respondents

The demographic questionnaire was designed to verify inclusion criteria, describe the sample, and measure personal characteristics targeted for this population (Villarreal-Zegarra et al., 2019). The questionnaire encompassed several items, including age, gender, phone number, email, duration of participation in the Outdoor Education Program, university affiliation, type of experience, and the frequency of participation per year (Lanca et al., 2022). Descriptive statistics were utilized to analyze all variables within the sample. For categorical, nominal, and ordinal-scaled variables, frequency distributions and percentages were calculated to provide a detailed description of their characteristics.

3.4.2 Leadership Assessment Questionnaire

The Leadership Assessment Questionnaire was used to measure leadership for this study, and it was originally developed by Mohamad Nizam Bin Asmuni and Noor Hamzani Farizan in 2023 (Mohamad & Farizan, 2023). The Leadership Assessment Questionnaire is a 53-item self-report scale, with items rated on a five-point Likert scale (Yamashita, 2022). In this questionnaire, participants are instructed to select the rating that best reflects their feelings and experiences related to the program in question. The total mean score of the questionnaire ranges from 1 to 5, with higher scores signifying stronger leadership capabilities. This scoring system allows for a nuanced assessment of individual leadership traits, providing valuable insights into the effectiveness of leadership development programs. The factor analysis revealed five factors that align with the theoretical framework, as detailed in the following sections:

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Factor 1: Communication

Effective communication is pivotal in achieving specific institutional goals and in bringing together diverse individuals or groups towards a shared objective. It involves fostering an environment where outstanding communication is valued and encouraged. According to Johnson (2018), effective communication enhances a leader's ability to engage coherently with various audiences and to incorporate their feedback. This skill encompasses listening, both verbal and nonverbal communication, and adapting messages to suit different contexts and objectives. Research has highlighted that communication is a key factor in leadership success, particularly through effective adaptation (Johnson, 2018). In this questionnaire, participants are asked to rate their perceptions of the 12 items provided, with the aim of assessing the impact and effectiveness of communication within the context of leadership.

Factor 2: Commitment

Commitment is essential in establishing a culture of openness, honesty, fairness, and integrity, where motivation and achievement are recognized and rewarded, and confidence in the institution's success is high (Nangoli et al., 2020). Effective leaders are instrumental in fostering a strong sense of commitment among organizational members toward the system's objectives and overall goals. This commitment encompasses not only dedication to specific tasks but also a profound sense of loyalty and investment in the organization's success. Leaders who emphasize commitment create an environment where individuals feel valued, supported, and empowered to contribute their utmost efforts toward achieving collective goals (Nangoli et al., 2020). In this section, participants are tasked with selecting the most appropriate rating based on their perceptions of the 11 provided items, aiming to evaluate the extent and effectiveness of commitment within the organizational context.

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Factor 3: Strategy

Effective strategy development encourages the generation of new ideas from colleagues, promotes a positive attitude towards innovative problem-solving approaches, and creates enhanced opportunities for entrepreneurship (Larsen, 2022). It involves crafting strategies that uphold the value of all employees and stakeholders, irrespective of race, gender, disability, age, beliefs, or other factors, thereby aligning with principles of openness and inclusiveness. The Strategy instrument comprises six key scales: measuring progress, defining direction, mapping the environment, utilizing effective processes, cultivating innovation, and addressing issues (Martinez, 2022). Each of these scales contributes to a comprehensive approach to strategic management and organizational growth. In this section, participants are required to select the most appropriate rating based on their perceptions of the 10 items provided, with the objective of assessing the effectiveness and impact of strategic practices within the organizational context.

Factor 4: Influence

Influence can be classified into positive and negative categories, with positive influence significantly contributing to the advancement of various initiatives (Wang, 2022). This distinction is especially relevant within Outdoor Education Programs, where the effects of positive influence are particularly noticeable. Positive influence in these programs promotes personal growth, imparts essential skills, and develops leadership capabilities among participants (Cordova, 2024). The assessment of activities in Outdoor Education Programs is designed to support individuals who require reliable care. This assessment systematically collects feedback on program

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operations and outcomes, aiming to enhance the quality of the program for those who have the potential to influence its improvement or determine its feasibility. Participants are required to provide ratings based on their perceptions of the 11 items presented in this section. The objective is to evaluate the effectiveness and impact of the program activities, thereby ensuring that the program meets its goals and contributes positively to the participants' development.

Factor 5: Proactivity

Proactivity plays a pivotal role in establishing and nurturing a culture of trust and in paving the way for a promising future through anticipatory initiatives. It involves treating individuals with compassion and ensuring they feel empowered to express their opinions, confident that their voices will be heard and valued within the organizational environment (Parker, 2019). Proactivity is not merely a work ethic but a fundamental aspect of effective leadership (Hu, 2018). In the context of Outdoor Education Programs, proactivity serves as a powerful tool for promoting several critical aspects. It enhances teamwork, leadership, and adaptability among participants, while simultaneously fostering a strong sense of responsibility toward the environment and their peers. By encouraging proactive behavior, these programs cultivate a more engaged and responsive group of individuals, ready to tackle challenges and contribute positively to their surroundings. In this section, participants are required to select the most accurate rating based on their assessments of the 9 items provided. The purpose is to gauge the effectiveness and impact of proactivity within the program, thereby ensuring that it supports and advances the key objectives of the Outdoor Education initiative.

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In this study, the Leadership Assessment Questionnaire plays a crucial role by offering a comprehensive evaluation of leadership traits across five dimensions. This 53-item self-report scale enables a detailed analysis of leadership effectiveness and aligns with theoretical frameworks through factor analysis (Yamashita, 2022). It facilitates the identification of strengths and areas for improvement in leadership development programs, providing actionable insights for enhancing organizational effectiveness. Additionally, the questionnaire supports evidence-based decision-making by offering empirical data to refine leadership practices and strategic initiatives. Overall, it contributes significantly to both theoretical validation and practical application in leadership research.

3.4.3 Assessment of Teacher Leadership Competency

The assessment of leadership competency for Outdoor Education teachers, originally developed by Mohamad Nizam Bin Asmuni and Noor Hamzani Farizan in 2023 (Mohamad & Farizan, 2023), was employed as a covariate in this study to measure leadership. Several key factors were considered when assessing the leadership competency of Outdoor Education teacher. These factors include Competency of Leadership Skills, Risk Management Skills Competency, Safety and First Aid Skills Competency, and Environmental Skills Competency, encompassing a total of 53 items.

Competency of Leadership Skills refers to the ability to effectively guide and influence individuals or teams toward achieving organizational goals. This competency encompasses several critical skills such as strategic thinking, communication, decision-making, and interpersonal interactions. Effective leadership skills are integral

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for enhancing performance, fostering a positive organizational culture, and navigating complex challenges. Research indicates that leaders with high competency in these areas are more likely to drive organizational success and adapt effectively to dynamic environments (Yukl, 2020). Additionally, recent studies emphasize the importance of these competencies in modern organizational settings, highlighting their role in improving both individual and team performance (Northouse, 2025; Kelly, 2023). Participants are required to provide ratings based on their perceptions of the 22 items presented in this section.

Risk Management Skills Competency refers to the ability to identify, assess, and mitigate risks to ensure organizational stability and success. When combined with leadership, this competency involves not only managing potential threats but also guiding teams through uncertainty with strategic foresight and effective communication. Effective leaders with strong risk management skills are adept at making informed decisions, preparing for contingencies, and fostering a culture of proactive risk assessment (Rahim et al., 2023). They leverage these skills to enhance organizational resilience, navigate challenges, and maintain operational continuity. This integration of risk management into leadership practices is essential for achieving long-term success and ensuring that organizations can adapt to changing environments (Abdalla et al., 2021). Participants are required to provide ratings based on their perceptions of the 14 items presented in this section.

Safety and First Aid Skills Competency involves the ability to manage safety protocols and provide first aid in emergency situations. When integrated with leadership, this competency highlights a leader's role in ensuring the safety and well-being of their

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team, fostering a secure working environment, and preparing for emergencies. Effective leaders with strong safety and first aid skills are not only capable of responding to incidents but also of instilling a culture of safety and preparedness within their organization (Padmore, 2022; Payne, 2023). They use these skills to enhance team confidence, improve safety practices, and ensure compliance with health and safety regulations. This combination of competencies is crucial for creating a supportive and safe organizational environment, contributing to overall effectiveness and resilience (Brauer, 2022). Participants are required to provide ratings based on their perceptions of the 11 items presented in this section.

Environmental Skills Competency involves the ability to understand, manage, and promote practices that support environmental sustainability. When integrated with leadership, this competency highlights a leader's role in driving environmental stewardship, fostering sustainability initiatives, and guiding teams toward eco-friendly practices. Leaders with strong environmental skills are adept at implementing sustainable practices, addressing environmental challenges, and motivating their teams to adopt environmentally responsible behaviors (He & Kim, 2021). They leverage these skills to enhance organizational sustainability, improve operational efficiency, and align organizational goals with environmental responsibility. This combination of competencies is critical for organizations aiming to achieve long-term environmental and social sustainability goals (Iqbal & Ahmad, 2021). Participants are required to provide ratings based on their perceptions of the 6 items presented in this section.

In the study, the Leadership Competency Assessment questionnaire for Outdoor Education teachers is utilized to evaluate key leadership qualities within the program.

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Leadership Skills measure the ability to guide and influence teams effectively, crucial for achieving organizational goals and adapting to changes (Yukl, 2020; Northouse, 2025; Kelly, 2023). Risk Management Skills assess the ability to navigate uncertainties and maintain organizational stability (Rahim et al., 2023; Abdalla et al., 2021). Safety and First Aid Skills ensure preparedness and a secure environment (Padmore, 2022; Payne, 2023; Brauer, 2022). Environmental Skills highlight the importance of sustainability practices and responsible behavior (He & Kim, 2021; Iqbal & Ahmad, 2021). These competencies are integral to understanding how Outdoor Education Programs impact leadership development among Physical Education students.

3.4.4 Personal Effectiveness and Locus of Control

The Personal Effectiveness and Locus of Control Instrument, as described by Richards and Neill in 2000, consists of 12 scales and 41 items (Table 3.1) that assess various aspects of personal effectiveness and locus of control (Richards & Neill, 2000). It was employed as a covariate in this study to measure leadership. These scales include Personal Abilities and Social Abilities. Personal Abilities: such as self-confidence, self-efficacy, stress management, and open thinking, which measure an individual's beliefs and abilities related to personal functioning. Social Abilities: such as social effectiveness, cooperative teamwork, and leadership ability, which assess an individual's skills and effectiveness in social interactions and group settings.

Organizational Skills: This category includes scales like time management, quality seeking, and coping with change, which measure an individual's abilities to organize and manage tasks, adapt to change, and seek high-quality outcomes. Energy Scale

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(Active Involvement): This scale reflects an individual's level of engagement and overall effectiveness in various aspects of life. It captures their active involvement and commitment to achieving desired outcomes (Richards & Neill, 2000).

The instrument also incorporates a control scale, which helps determine whether changes observed in the other scales are a result of program effects or simply due to retesting on the same instrument. In addition to the scales related to personal effectiveness, the instrument includes two locus of control scales. These scales assess an individual's tendency to take responsibility for their actions and successes (internal locus of control) or attribute outcomes to external factors or circumstances (external locus of control). The Personal Effectiveness and Locus of Control Instrument provides a comprehensive assessment of various dimensions of personal effectiveness and locus of control, allowing researchers and practitioners to evaluate and understand an individual's capabilities, beliefs, and perceived control over their actions and outcomes.

Thus, reliable results can be obtained with minimal interference in program delivery. In addition to the core instrument, the evaluation of personal effectiveness and locus of control includes several summary questionnaires designed to collect input from program coordinators, teachers/instructors/group leaders, and client staff. These instruments aim to capture each stakeholder’s expectations regarding the intended outcomes of the program and their perceptions of its actual effects (Neill & Richards, 2018). This multi-perspective approach allows for a more comprehensive assessment of the program’s impact on participants’ personal effectiveness. The measures of personal effectiveness and locus of control have been developed for use with a wide range of participants. They feature simplified language, require minimal

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administration time, and can be completed easily by selecting numerical responses for each item (Mallikarjuna, 2021). The tools are also designed for rapid scoring and interpretation.

Table 3.1: Factors and Descriptions of Scale in Personal Effectiveness and Locus of Control

No	Factors	Description
1	Active Involvement	Use action and energy to make things happen
2	Cooperative Teamwork	Cooperation in team situations.
3	Leadership Ability	Leadership capability
4	Open thinking	Openness and adaptability in thinking and
5	Quality seeking	Put effort into achieving the best possible
6	Self-Confidence	Confidence and belief in personal ability to be
7	Self-Efficacy	Ability to handle things and find solutions in
8	Social Effectiveness	Competence in operating in socialsituations
9	Stress Management	Self-control and calmness in stressful
10	Time Efficiency	Efficient planning and utilization of time
11	Coping with change	The ability to cope with change
12	Overall effectiveness	The overall effectiveness of a person in all

The Personal Effectiveness and Locus of Control Instrument is used in this study to measure leadership among physical education students by assessing personal and social abilities, organizational skills, and locus of control. It evaluates self-confidence, teamwork, time management, and responsibility, providing a comprehensive understanding of students' leadership capabilities and perceived control. This tool helps examine the impact of the program on physical education students' leadership development, ensuring reliable results with minimal interference.

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3.4.5 Social Support

The Multidimensional Scale of Perceived Social Support (MSPSS) is a well-established psychometric instrument designed to assess an individual's perception of Social Support from multiple sources. This scale, comprising 4 factors and 16 items, was developed by Zimet, Dahlem, and Farley in 1988 (Zimet et al., 1988). The MSPSS has gained widespread application in both research and clinical contexts due to its robust psychometric properties and its ability to provide nuanced insights into the perceived Social Support experienced by individuals. The MSPSS has been utilized in various research studies to examine the relationship between perceived Social Support and various outcomes, including mental health, well-being, coping abilities, and adjustment to life stressors. It is a valuable tool for assessing an individual's perceived Social Support across different domains of their social network (Dambi, 2018). It was employed as a covariate in this study to measure leadership.

Perceived Social Support is brief research to design to measure perceptions of support from three sources family, friends and a significant other with 12 items (Zimet, 1988). However, in the present study, researchers have added one new source containing four new items based on past literature reviews on the important dimensions of the OEP. Thescale comprised of a total 16 items. Factor 1 were designed to measure support from significant to others; factor 2 were organized to measure support; from family; factor 3 were planned to assess support from friends. Also, Factor4 were designed to measure support from facilitators.

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Table 3.2: Factors and Descriptions of Social Support Factors Description

Factor 1	Significant to others
Factor 2	Family
Factor 3	Friends
Factor 4	Facilitator

The Multidimensional Scale of Perceived Social Support (MSPSS) is used in this study to measure the perceived Social Support of individuals, crucial for assessing leadership. The MSPSS, with its 16 items and 4 factors, evaluates support from significant others, family, friends, and facilitators. Understanding perceived Social Support 's impact on leadership helps highlight the importance of supportive social networks in developing effective leadership skills in Outdoor Education Programs.

3.4.6 Outdoor Education Program Module Evaluation

Outdoor Education Program Module evaluation is used to evaluate Outdoor Education Program for this study and it was originally designed by Mohamad Nizam Bin Asmuni and Noor Hamzani Farizan in 2023 (Mohamad & Farizan, 2023). The evaluation of an Outdoor Education Program module is essential to assess its effectiveness and make improvements for future implementation (Mertens& Wilson, 2018). By systematically analyzing various aspects such as instructional materials, learning environments, teacher performance, and risk management protocols, researchers can identify strengths and areas for improvement. This process contributes to ensuring that the program meets its educational objectives and adapts to changing needs and contexts (Mohamad & Farizan, 2023). This module consists of 5 sections and 23 items, including Printed and audio-visual materials, Learning environment, Teacher, Risk management, Whole module.

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Printed and Audio-Visual Materials. This section examines the types and quality of instructional materials used within the module, including both printed resources and multimedia content. Printed materials, such as textbooks, handouts, equipment and manuals, are essential for providing foundational knowledge and course frameworks. Multimedia content, including video lectures, audio files, and interactive tools, enhances learning by engaging multiple senses. Studies have shown that high-quality multimedia resources can significantly improve learning outcomes by supporting deeper understanding and retention (Mayer, 2024; Gilbertson et al., 2022).

Learning Environment. This segment assesses both physical and virtual learning environments, focusing on outdoor environment, layout, space design, and the accessibility of resources and technology. Physical environments include factors such as activities arrangements, lighting, and equipment. Virtual environments, such as online learning platforms, are evaluated for usability, stability, and interactivity. Effective learning environments, whether physical or digital, play a critical role in enhancing student engagement and learning efficiency (Hattie et al., 2022).

This portion evaluates the role and effectiveness of the Teacher, including their qualifications, teaching strategies, and interaction with students. Effective teaching involves employing pedagogical approaches that engage and motivate students. Key aspects include teacher feedback, communication skills, and management. Research underscores that the effectiveness of teachers is closely tied to their professional development and continuous improvement in teaching practices (Popova et al., 2022).

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In Risk Management section addresses strategies for identifying, assessing, and mitigating risks associated with the module's implementation. Risks may include health and safety issues, technological failures, and other disruptions. Effective risk management involves comprehensive risk assessment, preventive measures, and contingency plans (Gilbertson et al., 2022). Recent guidelines highlight the importance of proactive risk management in maintaining the integrity and continuity of educational programs (Gilbertson et al., 2022).

The whole module section integrates insights from the preceding sections to evaluate the overall effectiveness and coherence of the module (Biggs & Tang, 2021). This includes assessing how well different components of the module work together, the overall impact on learning outcomes, and alignment with educational goals. In Outdoor Education assessment, there is an emphasis on the importance of adopting a holistic approach to module design and evaluation to ensure alignment and continuous improvement (Biggs & Tang, 2021).

Module implementation evaluation focuses on the process of delivering the Outdoor Education Program module. It aims to identify areas of improvement and ensure the smooth execution of the module. Some key considerations for module implementation evaluation: Timeline and Logistics; Instructor Preparation; Resource Utilization: Adaptability and Flexibility; Stakeholder Feedback. Their input can provide valuable insights into the strengths, weaknesses, and opportunities for improvement in the module implementation process (Mertens& Wilson, 2018). By conducting thorough evaluations of both the Outdoor Education Program module and its implementation, teachers can make informed decisions and enhancements to optimize the learning experience and achieve desired outcomes.

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3.5 Instrument Reliability

Reliability refers to the internal and external stability and validity of an instrument in measuring a certain concept and it reflects the consistency of the instrument in assessing the variables (Sürücü, 2020). Thomas, Nelson and Silverman (2011) asserted that the Cronbach Alpha method, which is known to be a highly popular method, is used to examine the reliability of a research instrument. There are a number of steps that must be taken, including selecting a research concept, organizing the instrument's words, and conducting pilot testing, in order to obtain a reliable instrument for the study. The preparation of the research instrument included the following stages: initially, conducting a preliminary study of related questionnaires and materials, followed by translating the questionnaires into Chinese; next, seeking advice from panel experts; finally, conducting a pilot study of the questionnaires.

3.5.1 Translation of Questionnaires

In this study, the questionnaire was originally in English and later translated into Chinese before being tailored to the study's context. The translation process involved a back-to-back translation method, conducted by a three-person panel proficient in both English and Chinese (Fahd et al., 2020). This panel of English teachers from East China University of Technology included Associate Professor Yang Caiyu as the forward translator and Associate Professor Ai Guoping as the backward translator.

The translation process adhered to a rigorous methodology. Initially, each member of the panel independently translated the questionnaire from English to Chinese. Following this, the translations were compared and discussed to resolve any discrepancies, ensuring accuracy and consistency. Subsequently, a consensus version

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was developed through mutual agreement among the panel members. This consensus version underwent iterative review and refinement to guarantee that the translated questionnaire accurately captured the intended meaning and cultural nuances while maintaining linguistic clarity. Finally, a pilot test of the translated questionnaire was conducted to evaluate its comprehensibility and suitability for the target population, with any required revisions implemented based on received feedback.

3.5.2 Expert Panels – Content Validity

The validity of an instrument provides evidence supporting the interpretation of a concept or construct being assessed, ensuring alignment with the intended purpose of the evaluation (Clark, 2019). Instrument validity depends on multiple factors, including content validity, response processes, test structure, relationships with other variables, and the test's overall impact. The validity of ideas refers to how accurately the instrument elicits responses that represent the concept being measured (Sürücü, 2020). The validity of instruments is essential in determining the degree to which items measure the underlying construct, establishing how effectively they reflect the intended concept, and ensuring the reliability and accuracy of the assessment (Sürücü, 2020).

The content validation of the translated questionnaire involved critical reviews and the assessment of the Content Validity Index (CVI). Expert panels conducted a thorough review of the draft questionnaire to confirm the content of the translated items. Their feedback and suggestions aided in refining the questions to ensure cultural appropriateness for the target population. Subsequently, CVI approaches, including item-level (I-CVI) and scale-level (S-CVI/Ave) indices, were employed to validate the tool's content (Jamin et al., 2022; Yaghmale, 2003).

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To assess the CVI, the researcher assembled a team of professionals (Table 3.3) with backgrounds relevant to the study's topics. This team included lecturers and experienced outdoor educators, each with over six years of expertise in their respective fields. Each expert independently reviewed the translated questionnaire and rated the content based on criteria such as relevance, clarity, simplicity, and ambiguity (Jamin et al., 2022). These four criteria were rated using a 4-point scoring system, as presented in Table 3.4. Each item's content validity (I-CVI) was calculated by dividing the number of experts rating the item as 3 or 4 by the total number of panel experts. The I-CVI represented the proportion of agreement on the relevance, clarity, simplicity, and ambiguity of each item, ranging from 0 to 1. As suggested by previous research (Jamin et al., 2022), for expert panels consisting of more than five members, an I-CVI score below 0.78 should be considered for revision or deletion. The scale-level CVI (S-CVI) represented the average proportion of items on the scale rated 3 or 4 by the experts. The S-CVI/Ave value was considered excellent if it exceeded 0.90.

Table 3.3: List of Panel of Experts

NO	Name	Institution	Professional ranks
1	Dr Xu Yixiong	Nanchang Normal University	Assoc. Prof
2	Dr KanYuanmin	Nanchang Normal University	Lecturer
3	Kuang Weihong	Jiangxi Science and Technology Normal University	Assoc. Prof
4	Dr Teng Ye	East China University of Technology	Lecturer
5	Wu Hongyu	East China University of Technology	Professor
6	Xie Mengning	East China University of Technology	Professor

Table 3.4: Criteria of Content Validity for Scoring Method

Criteria	1	2	3	4
Relevant	Not relevant	Item need some revision	Relevant but need minor revision	Very relevant
Clarity	Not clear	Item need some revision	Clear but need minor revision	Very clear
Simplicity	Not simple	Item need some revision	Simple but need minor revision	Very simple
Ambiguity	Doubtful	Item need some revision	No doubt but need minor revision	Very clear

(Source: Yaghmale, 2003)

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Annotation: 4 represents full score with 1 point; 3 represents score with 0.75 point; 2 represents score with 0.5 point and 1 represents score with 0 point.

Changes, corrections, and amendments to the initially translated questionnaire were made based on suggestions and comments from the expert panel. They provided feedback on the clarity, consistency, suitability, and content of the items, resulting in modifications including revisions, rephrasing, deletions, or relocation of items to more appropriate domains. The CVI assessment involved five expert panel members. The I-CVI was computed for all items in each domain (Leadership Scale, Teacher's Leadership Competency Assessment, Personal Effectiveness and Locus of Control, Social Support, Outdoor Education Module Evaluation), respectively, using the four parameters: relevance, clarity, simplicity, and ambiguity.

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Table 3.5: Content Validity Index of Each Item for Relevance, Clarity, Simplicity and Ambiguity (Leadership Assessment Questionnaire)

Items	CVI				Interpretation
	Relevant	Clarity	Simplicity	Ambiguity	
Communication1	1	0.75	1	1	Need revision
2	1	1	1	1	Appropriate
3	1	1	1	1	Appropriate
4	1	1	0.75	1	Need revision
5	1	1	1	1	Appropriate
6	1	1	1	1	Appropriate
7	1	1	1	1	Appropriate
8	0.85	1	1	1	Appropriate
9	1	1	1	0.75	Need revision
10	1	1	1	1	Appropriate
11	1	1	0.83	1	Appropriate
12	1	1	1	1	Appropriate
Commitment 1	1	1	1	1	Appropriate
2	1	1	1	1	Appropriate
3	0.85	1	1	1	Appropriate
4	1	1	1	1	Appropriate
5	1	1	1	1	Appropriate
6	1	1	1	1	Appropriate
7	1	0.85	1	1	Appropriate
8	1	1	1	1	Appropriate
9	1	1	1	1	Appropriate
10	1	1	1	1	Appropriate
11	1	1	1	1	Appropriate
Strategy 1	1	1	1	1	Appropriate
2	1	1	1	1	Appropriate
3	1	1	1	1	Appropriate
4	1	1	0.75	1	Need revision
5	1	1	1	1	Appropriate
6	1	1	1	1	Appropriate
7	1	1	1	1	Appropriate
8	1	1	1	1	Appropriate
9	1	1	1	1	Appropriate
10	1	1	1	1	Appropriate
Proactive 1	1	1	1	1	Appropriate
2	1	1	1	0.75	Need revision
3	1	1	1	1	Appropriate
4	1	1	1	1	Appropriate
5	0.85	1	1	1	Appropriate
6	1	0.85	1	1	Appropriate
7	1	1	1	1	Appropriate
8	1	1	1	1	Appropriate
9	1	1	1	1	Appropriate
Influence 1	1	1	1	1	Appropriate
2	1	1	1	1	Appropriate
3	0.65	1	1	1	Need revision
4	1	1	1	1	Appropriate
5	1	1	1	1	Appropriate
6	1	1	1	1	Appropriate
7	1	1	0.75	1	Need revision
8	1	1	1	1	Appropriate
9	1	1	1	1	Appropriate
10	0.85	1	1	1	Appropriate
11	1	1	1	1	Appropriate
Mean CVI	0.98	0.99	0.98	0.99	

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Table 3.6: Content Validity Index of Each Item for Relevance, Clarity, Simplicity and Ambiguity (Outdoor Education Teacher's Leadership Competency Assessment Questionnaire)

Items	CVI				Interpretation
	Relevant	Clarity	Simplicity	Ambiguity	
leadership skill 1	1	1	1	1	Appropriate
2	0.85	1	1	1	Appropriate
3	1	1	1	1	Appropriate
4	1	1	1	1	Appropriate
5	1	1	1	1	Appropriate
6	1	1	1	1	Appropriate
7	1	1	1	1	Appropriate
8	1	1	1	1	Appropriate
9	1	1	1	0.67	Need revision
10	1	1	1	1	Appropriate
11	1	0.75	1	1	Need revision
12	1	1	1	1	Appropriate
13	1	1	1	1	Appropriate
14	1	1	1	1	Appropriate
15	1	1	1	1	Appropriate
16	1	1	1	1	Appropriate
17	1	1	1	1	Appropriate
18	1	1	1	1	Appropriate
19	1	1	1	1	Appropriate
20	1	1	1	1	Appropriate
21	1	1	1	1	Appropriate
22	1	1	1	1	Appropriate
Risk management 1	1	1	0.75	1	Need revision
2	1	1	1	1	Appropriate
3	1	1	1	1	Appropriate
4	1	1	1	1	Appropriate
5	1	1	1	1	Appropriate
6	1	1	1	1	Appropriate
7	1	1	1	1	Appropriate
8	1	1	1	0.75	Need revision
9	1	1	1	1	Appropriate
10	1	1	1	1	Appropriate
11	1	1	1	1	Appropriate
12	1	1	1	1	Appropriate
13	1	1	1	1	Appropriate
14	0.80	1	1	1	Appropriate
Safety and first aid1	1	1	1	1	Appropriate
2	1	1	1	1	Appropriate
3	1	1	1	1	Appropriate
4	1	1	1	1	Appropriate
5	1	1	1	1	Appropriate
6	1	1	1	1	Appropriate
7	1	1	1	1	Appropriate
8	1	1	1	1	Appropriate
9	1	1	1	1	Appropriate
10	1	1	1	1	Appropriate
11	1	1	1	1	Appropriate
Environmental 1	0.65	1	1	1	Need revision
2	1	1	1	1	Appropriate
3	1	1	1	0.75	Need revision
4	1	1	1	1	Appropriate
5	1	1	1	1	Appropriate
6	1	1	1	1	Appropriate
Mean CVI	0.98	0.99	0.99	0.98	

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Table 3.7: Content Validity Index of Each Item for Relevance, Clarity, Simplicity and Ambiguity (Social Support questionnaire)

Items	CVI				Interpretation
	Relevant	Clarity	Simplicity	Ambiguity	
1	1	1	1	1	Appropriate
2	1	1	1	1	Appropriate
3	1	1	1	1	Appropriate
4	0.75	1	1	1	Appropriate
5	1	1	1	1	Appropriate
6	1	1	1	1	Appropriate
7	1	1	1	1	Appropriate
8	1	1	1	1	Appropriate
9	1	1	1	1	Appropriate
10	1	1	0.75	1	Appropriate
11	1	1	1	1	Appropriate
12	1	1	1	1	Appropriate
13	0.75	1	1	1	Appropriate
14	1	1	1	0.75	Appropriate
15	1	1	1	1	Appropriate
16	1	1	1	1	Appropriate
Mean CVI	0.97	1	0.99	0.99	

Table 3.8: Content Validity Index of Each Item for Relevance, Clarity, Simplicity and Ambiguity (Personal Effectiveness and Locus of Control Questionnaire)

Items	CVI				Interpretation
	Relevant	Clarity	Simplicity	Ambiguity	
1	1	1	1	1	Appropriate
2	1	1	1	1	Appropriate
3	1	1	1	1	Appropriate
4	1	1	1	1	Appropriate
5	1	1	1	1	Appropriate
6	0.75	1	1	1	Appropriate
7	1	1	1	1	Appropriate
8	1	1	1	1	Appropriate
9	1	1	1	0.75	Need revision
10	1	1	1	1	Appropriate
11	1	1	1	1	Appropriate
12	1	0.75	0.75	1	Appropriate
13	1	1	1	1	Appropriate
14	1	1	1	1	Appropriate
15	1	1	1	1	Appropriate
16	1	1	1	1	Appropriate
17	1	1	1	1	Appropriate
18	1	1	1	1	Appropriate
19	1	1	1	1	Appropriate
20	1	1	1	1	Appropriate
21	1	1	1	1	Appropriate
22	0.75	1	1	1	Appropriate
23	1	1	1	0.75	Appropriate
24	1	1	1	1	Appropriate
25	1	1	1	1	Appropriate
26	1	1	1	1	Appropriate
27	1	1	1	1	Appropriate

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Table 3.8: Continued

28	1	1	1	1	Appropriate
29	1	1	1	1	Appropriate
30	1	1	1	1	Appropriate
31	1	0.75	0.75	1	Appropriate
32	1	1	1	1	Appropriate
33	0.75	1	1	1	Appropriate
34	1	1	1	1	Appropriate
35	1	1	1	0.75	Appropriate
36	1	1	1	1	Appropriate
37	1	1	1	1	Appropriate
38	1	1	1	1	Appropriate
39	1	1	1	1	Appropriate
40	1	1	1	1	Appropriate
41	1	1	1	1	Appropriate
Mean CVI	0.98	0.99	0.99	0.98	

Table 3.9: Content Validity Index of Each Item for Relevance, Clarity, Simplicity and Ambiguity Outdoor Education Module Evaluation

Items	**CVI**				**Interpretation**
	Relevant	**Clarity**	**Simplicity**	**Ambiguity**	
Evaluation 1	1	1	1	1	Appropriate
2	1	1	1	0.85	Appropriate
3	1	1	1	1	Appropriate
4	0.85	1	1	1	Appropriate
5	1	1	1	1	Appropriate
6	1	1	1	1	Appropriate
7	1	1	0.75	1	Need revision
8	1	1	1	1	Appropriate
9	1	0.85	1	0.75	Need revision
10	1	1	1	1	Appropriate
11	1	1	1	1	Appropriate
12	1	1	1	1	Appropriate
13	1	1	1	1	Appropriate
14	0.85	1	1	1	Appropriate
15	1	1	1	1	Appropriate
16	1	1	1	1	Appropriate
17	1	1	0.85	1	Appropriate
18	1	1	1	1	Appropriate
19	1	0.85	1	1	Appropriate
20	1	1	1	1	Appropriate
21	1	1	1	1	Appropriate
22	1	1	1	1	Appropriate
Mean CVI	0.97	0.97	0.97	0.97	

Table 3.10 provides a meticulous exposition of scale-level content validity. Across all domains, the attributes of content validity exhibit a commendable level of robustness, reflecting a high degree of acceptance. Each item within the questionnaire surpasses

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the stringent criterion of 90% relevance, clarity, simplicity, and absence of ambiguity, as endorsed by Jamin (2022). This substantiates the thoroughness and efficacy of the assessment, affirming the instrument's quality and appropriateness with confidence.

Table 3.10: Scale Content Validity (S-CVI/Ave) of All Domains

Questionnaire	Relevant	Clarity	Simplicity	Ambiguity
Leadership	0.98	0.99	0.98	0.99
Teacher's leadership	0.98	0.99	0.99	0.98
Social Support	1	1	1	1
P-E-L-C	1	2	0.99	0.99
Module evaluation	0.97	0.97	0.97	0.97

3.5.3 Pilot Study

The pilot study was administered to participants of the Outdoor Education Program course, who were students from the Department of Physical Education, Faculty of Physical Education, East China University of Technology. A total of 30 respondents aged between 20 and 22 years were selected. This pilot study was conducted in May 2023 while the participants were attending a 7-day Outdoor Education Program in Jiangxi Province, at Nanchang Mei Mountain. These students were chosen as a sample for the pilot study based on the following criteria: the foundation of the Outdoor Education Program, which emphasizes personal and social development through outdoor-based learning; the standardized, coordinated, and supervised Outdoor Education curriculum implemented by the university and faculty; and the similarity in leadership and other characteristics between these students and those in the main study, such as the comparable age range of 20 to 22 years.

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This pilot study aims to evaluate the instrument's internal consistency, the accuracy of each item and instruction, as well as the usefulness of the test format's organizational structure. The students were instructed not to feel obliged to answer all questions. They were also encouraged to ask questions and to indicate when they were confused or simply curious. Additionally, they were asked to mark the items they were unsure of or particularly interested in. The analysis of the data was used to make several minor changes to the items, such as rearranging their order. Furthermore, a number of items were reworded and streamlined in response to the feedback and suggestions obtained from the pilot study.

With regard to the internal consistency of the instrument, Creswell (2017) noted that a Cronbach's alpha coefficient of 0.7 is generally considered an acceptable level of reliability, with lower thresholds occasionally accepted in the literature. Hair (2013) also supported the view that in studies with small sample sizes, a Cronbach's alpha of 0.6 can be deemed acceptable. In fact, for subscale measures, Nagpal (2010) suggested a cutoff value of 0.6 due to the difficulty of achieving higher alpha levels with a small number of items. Table 3.11 presents the Cronbach's alpha values of all instruments, including $\alpha = 0.901$ for the Leadership Assessment, with five sub-indicators all exceeding 0.8 except for Communication. The Teacher's Leadership Competency Assessment recorded $\alpha = 0.874$, with four sub-indicators all near 0.8. Social Support yielded $\alpha = 0.916$, Personal Effectiveness and Locus of Control had $\alpha = 0.721$, and the Outdoor Education Module Evaluation recorded $\alpha = 0.868$. The internal consistency established through Cronbach's alpha in the present study is satisfactory, with all α values exceeding 0.70. Therefore, the reliability of all the questionnaires is considered very good, as demonstrated below.

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Table 3.11: Result of Reliability of Pilot Study

Instrument	α
Leadership assessment questionnaire	**0.901**
1.Communication	0.761
2.Commitment	0.869
3.Strategy	0.892
4.Proactive	0.887
5.Influence	0.877
Teacher's leadership competency assessment questionnaire	**0.874**
1.Competency of leadership skill	0.786
2.Risk Management Skills Competency	0.891
3.Safety and First Aid Skills Competence	0.877
4.Environmental Skills Competency.	0.743
Social Support questionnaire	**0.916**
Personal Effectiveness and Locus of Control questionnaire	**0.721**
Outdoor Education module evaluation questionnaire	**0.868**

3.6 Data Collection Procedure

Before conducting the teaching experiment, the researchers obtained permission from the Heads of Departments responsible for delivering Outdoor Education (OE) courses, including the Department of Physical Education at East China University of Technology, Nanchang Normal University, and Jiangxi Science and Technology Normal University. Upon receiving approval, the researchers coordinated with lecturers implementing the OE courses to discuss specific arrangements for the leadership intervention. These discussions involved determining the implementation timeline, locations, and methods for collecting questionnaires. Such arrangements ensured that data collection was carried out in a reasonable, compliant, and valid manner.

3.6.1 Researcher's Participation

The quasi-experimental teaching intervention commenced in January 2024, encompassing a total of 15 days course and incorporating 15 distinct Outdoor

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Education projects. The pre-test for the study was systematically administered in December 2023. Upon the completion of the course in January 2024, a post-test was conducted to assess the immediate effects of the intervention. To ensure the precision and reliability of the data, the questionnaires were integrated into course assignments. In March 2024, following the winter break and the beginning of the new academic semester, a delayed post-test was administered to evaluate the sustained impact of the intervention.

When conducting a quasi-experimental teaching intervention with Physical Education (PE) students, the researcher must emphasize ethical compliance, a robust research design, and effective participant engagement. Ensuring accurate and systematic data collection, along with consistent intervention delivery, is essential for maintaining reliability (Smith & Jones, 2021). Meticulous observation and documentation of the process, combined with appropriate statistical analysis and clear communication with stakeholders, uphold the integrity of the study (Brown et al., 2022). The researcher's active involvement not only facilitated the precise execution of research procedures but also provided deep insights into participants' leadership processes within the Outdoor Education context, enhancing data quality and understanding of participants' experiences through relationship-building and a supportive environment (Williams, 2023). Successful quasi-experimental PE interventions require ethical compliance, robust design, and active researcher involvement to ensure data quality and effective participant engagement.

Prior to the commencement of data collection, ethical approval for this study was obtained from the university's ethics review committee. Participants received clear,

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written information outlining the study's objectives, procedures, potential risks, and their rights. Written consent was obtained, and participation was entirely voluntary, with assurances that withdrawal could occur at any time without negative consequences. As the Outdoor Education activities were integrated into their regular academic curriculum, the intervention did not involve any additional physical or psychological risks. To uphold participant confidentiality, all personal identifiers were removed and replaced with coded labels, and the data were securely stored in encrypted digital files. Only the primary researcher and an authorized third-party analyst had access to the raw data. The study adhered to fundamental ethical principles, including respect for autonomy, harm minimization, and fairness. Results were reported only in aggregated form, ensuring that no individuals or institutions could be identified. These measures ensured that the entire research process adhered strictly to ethical standards and academic integrity.

3.6.2 Administering Pre-Test

The pre-test was conducted on campus before the students departed for the Outdoor Education Program to establish baseline measurements (Babbie, 2012). The issuers of the questionnaires explained the purpose of the study to the students to address any potential concerns. Next, participants were asked to write an identity number on their questionnaire sheets for identification purposes. Following this, participants were required to complete the questionnaires and provide demographic information. The pre-test administration typically took approximately 15 minutes to complete. Once finished, the participants returned the questionnaires to the issuers.

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3.6.3 Administering Post-Test

The post-test was immediately administered upon completion of the Outdoor Education Program. Conducting the immediate post-test at the camp aimed to minimize potential influences from unknown variables (Samsudin et al., 2021), thereby ensuring a more accurate representation of the treatment effects (Weiner et al., 2013). Blaine (2022) emphasizes the importance of avoiding post-group euphoria, which could potentially bias respondents' answers due to the positive feelings associated with completing the program.

Participants were arranged in an examination-style setting to prevent communication among them and minimize the possibility of external influences. This arrangement aimed to reduce the social desirability bias in responses relative to their peers. Just before the test administration, students received a brief reminder about the study's significance.

Moreover, for the post-test questionnaire, the researcher prepared separate sets for each section, although the questions remained identical to those in the pre-test questionnaire. All participants were instructed to provide accurate and truthful responses. Subsequently, the researcher collected and stored each questionnaire for future reference.

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3.6.4 Administering Delayed Post-Test

Delayed post-tests are research instruments administered two or more months after instruction and initial testing to assess the retention of leadership perceptions (Yasim, 2016). In this study, the delayed post-test was administered two months after the conclusion of the course. This procedure took place in the morning, utilizing classroom settings across multiple campuses. Similar protocols were followed, with the researcher collecting all responses and securely storing them for future reference. This two-month delay aligns with recommendations from other studies, which suggest longer time intervals, typically ranging from a few weeks to several months.

The decision to implement a two-month delay for assessments was influenced by two primary factors. First, Priest's 1998 studies demonstrated that significant long-term improvements were observed within this period, although gains typically diminished after two months (Samsudin, 2021). Second, due to the extended semester break, the earliest feasible opportunity to evaluate participants post-camp was two months later (Miller, 2021). The two-month delay for assessments was chosen based on evidence of sustained improvements during this timeframe and the need to align with the academic calendar.

3.6.5 Outdoor Education Activities

Outdoor Education activities are experiential learning experiences conducted in natural or outdoor settings. These activities aim to promote personal development, enhance practical skills, foster environmental awareness, and encourage teamwork and

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leadership (Cincera et al., 2020). They can take place in various outdoor environments, such as forests, mountains, rivers, beaches, and open fields. Outdoor Education activities offer participants the opportunity to connect with nature, challenge themselves, and develop a deeper understanding of the natural world (Gilbertson & Bates, 2022). The experiment conducted by the researcher took place within an Outdoor Education course. This course is required for college students majoring in physical education and is offered across three universities, each granting 1.5 credits. It was conducted over 15 days, during which 15 activities were intensively carried out.

The selection of these activities is based on the levels of risk involved, ranging from low to high-risk activities. These activities are also relatively common in Outdoor Education programs in Jiangxi Province, categorized into three types of venues: land-based, water-based, and air-based. The Outdoor Education instructors from the three universities collaborated and discussed for over two years, ultimately agreeing on the following 15 Outdoor Education activities. This decision was made with consideration for the syllabus requirements and the actual needs of the students.

Table 3.12: List of Outdoor Education Activities

No	Activity	Level of Risk	Category of Activity
1	Swimming	High	Water-based
2	Camping	Moderate	Land-based
3	Rock-climb	High	Air-based
4	Hiking	Moderate	Land-based
5	Mountaineering	High	Land-based
6	Cycling	Moderate	Land-based
7	Marathon	High	Land-based
8	Orienteering	Moderate	Land-based
9	Ski	High	Land-based
10	Cross power grid	Low	Land-based
11	Dragon boat	Moderate	Water-based
12	Broken bridge	Moderate	Air-based
13	Frisbee	Low	Land-based
14	Kayaking	Moderate	Water-based
15	Rafting	High	Water-based

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Specific explanations and clarifications are as follows:

1. Swimming: Swimming is a popular and beneficial Outdoor Education activity that involves moving through water using synchronized arm and leg movements. It is not only an enjoyable recreational activity but also an essential life skill and an excellent way to maintain physical fitness.

2. Camping: Camping is spending the night in a tent or other temporary structure in the middle of the forest. Participants gain competence in outdoor survival skills, cooperation, and independence while taking personal responsibility for their well-being in unspoiled environments.

3. Rock-climb: Climbing artificial climbing walls or natural rock formations tests a person's physical and mental limits. It imparts confidence, problem-solving skills, and trust.

4. Hiking: Hiking means going on excursions and traveling across various landscapes while carrying supplies in backpacks. This activity helps develop physical endurance, navigation skills, and a greater appreciation for the environment.

5. Mountaineering: Climbing mountains and attaining high altitudes is the focus of the thrilling and challenging outdoor learning experience that is mountaineering. Physical ability, technical know-how, and experience in steep terrain are required for this daring endeavor.

6. Cycling: Riding a bike in a variety of settings, such as on highways, trails, and bike paths, is an enjoyable and flexible outdoor learning activity. It promotes physical health, environmental awareness, and the exploration of unspoiled areas.

7. Marathon: Marathons are organized events that take place in various parts of the world and attract individuals of all ages and fitness levels. This activity promotes mental toughness, physical health, and goal setting while also creating a sense of accomplishment and group unity.

8. Orienteering: Orienteering is a sport where competitors use maps and compasses to navigate an outdoor course and locate predetermined spots in the terrain. This exercise improves spatial awareness and map reading skills.

9. Ski: It is an exhilarating Outdoor Educational activity that takes place in mountainous, snow-covered settings all winter long. With skis strapped to their feet, participants move elegantly through the snow while partaking in both leisure and competitive activities.

10. Cross power grid: It is a very popular activity in China's Outdoor Education, which involves traversing simulated mesh obstacles with electricity in a teamwork situation. It mainly tests the ability of teamwork.

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11. Dragon boat: Dragon boat racing offers unique opportunities for teamwork, improving physical skills, and learning about the cultural significance of this traditional water sport.

12. Broken bridge: The broken bridge activity, which requires participants to navigate a perilous structure dangling at high heights, is widely accepted in Outdoor Education across China. This task evaluates individual bravery as well as the dynamics of teamwork.

13. Frisbee: This adaptable flying disc is used for a variety of recreational activities as well as sports like ultimate, encouraging fair play and sportsmanship. In sports, these discs are thrown and caught, and the game is called ultimate frisbee, or just ultimate.

14. Kayaking: Using collaboration and paddling tactics, kayakers navigate rivers, lakes, and other waterways. Paddling a canoe or kayak fosters a profound respect for aquatic environments and fauna.

15. Rafting: Rafting is a well-loved outdoor pursuit where individuals maneuver through river currents or rapids aboard inflatable rafts. Effective teamwork is essential for successfully navigating challenges such as swift currents and whirlpools. This activity not only offers an exciting adventure but also cultivates teamwork, communication, and leadership abilities among participants.

3.6.6 Control of Self-Report Bias

To mitigate potential biases associated with self-reported measures—such as social desirability and overestimation—several procedural safeguards were employed. First, participants were informed that the data collected would be used solely for academic purposes and treated with strict confidentiality to reduce response pressure and conformity bias. Second, all questionnaires were completed anonymously, minimizing the risk of identity-related response distortions. Third, the instruments used in this study were adapted from widely validated and psychometrically sound scales, enhancing the reliability and accuracy of the responses. Finally, to further ensure the robustness of the findings, delayed post-test data were collected to validate the consistency of observed changes over time. While self-report remains a common

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method in educational research, the study acknowledges its limitations and recommends the incorporation of observational or multi-source assessment approaches in future investigations to strengthen the validity of outcomes.

3.7 Date Analysis

IBM Statistical Package for the Social Sciences (IBM SPSS) Version 26 was used for all statistical analysis in this study, with a significance threshold of $p<0.05$. The study issues were addressed by means of this data analysis.

To test the study hypothesis in phase one, the researcher used descriptive analysis to summarize the key characteristics of the study's data, including mean, mode, median, percentage, frequency, and cross-tabulation.

In phase two, the researcher employed inferential statistics to analyze the data. The statistical methods used included the Pearson correlation coefficient, T-test, percentage calculations, Multivariate Analysis of Variance (MANOVA), and Multivariate Analysis of Covariance (MANCOVA). Specifically, for MANOVA, the primary purpose is to test for significant differences among two or more groups on multiple dependent variables. It examines the joint effects of independent variables on multiple dependent variables without including covariates in the analysis. In contrast, MANCOVA aims to examine the relationship between one or more independent variables and multiple dependent variables while controlling for the influence of one or more continuous covariates. It allows researchers to investigate the joint effects of independent variables and covariates on multiple dependent variables.

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Table 3.13: Analytical Methodologies for Data Interpretation

No	Research Questions	Date Analysis method
Phase1	Student's personal demographic background	Descriptive statistic using mean and percentage
Phase 2RQ1	What is the level of leadership; Teacher's leadership skills; Social Support; Personal Effectiveness and Locus of Control towards before, after and delayed effect on Outdoor Education Program?	Descriptive statistic using mean and percentage
RQ 2	Is there any relationship between leadership with Teacher's Leadership Competency, Personal Effectiveness and Locus of Control and Social Support towards Physical Education undergraduates' leadership towards before, after and delayed effect on Outdoor Education Program?	Inferential analysis using Pearson correlation coefficient
RQ 3	Do leadership, teacher's leadership competency, Social Support, Personal Effectiveness and Locus of Control vary according to social demographic factors?	Inferential analysis using MANOVA
RQ 4	Do Outdoor Education Program affect Physical Education undergraduates' leadership? How factors of Teacher's Leadership Competency, student's Personal Effectiveness and Locus of Control and social supports a Physical Education undergraduates' leadership immediately after the Outdoor Education Program?	Inferential analysis using Paired Sample t-test, MANOVA and MANCOVA.
RQ 5	Do Outdoor Education Programs impact the leadership of physical education undergraduates two months after completing the programs? How factors of Teacher's Leadership Competency, student's Personal Effectiveness and Locus of Control and Social Support affect Physical Education undergraduates' leadership two months after completing the programs?	Inferential analysis using Paired Sample t-test, MANOVA and MANCOVA.
RQ 6	How can the implementation of Outdoor Education Program modules be evaluated, and what is the relationship between the popularity and effectiveness of Outdoor Education activities in influencing the leadership development of Physical Education undergraduates?	Descriptive statistic using mean and percentage, Inferential analysis using Pearson correlation coefficient

3.8 Exploratory Date Analysis

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Exploratory Data Analysis (EDA) is a critical step in the data analysis process that involves both visual and statistical exploration of a dataset to gain insights, identify patterns, detect anomalies, and understand the underlying structure of the data. EDA plays a key role in formulating hypotheses and guiding further analysis (Pallant, 2010). Many statistical techniques assume that the scores on the dependent variables are normally distributed. To verify this assumption, a series of studies were conducted. In order to assess the potential for errors arising from data entry or discrepancies in responses, we examined normality using skewness and kurtosis, and employed internal consistency procedures to thoroughly scrutinize the data.

3.8.1 Skewness and Kurtosis of the Leadership, Teacher's Leadership Competency, Social Support, Personal Effectiveness and Locus of Control, Outdoor Education module evaluation.

To assess skewness and kurtosis, the researcher first screened the data for any missing values. Normality was then evaluated using the skewness and kurtosis statistics generated by SPSS. Following the recommendation of Kline (2011), the acceptable range for skewness and kurtosis scores typically falls between -3 and +3.

The pre-test, post-test, and delayed-test distributions of all scores were found to be significantly normal, indicating that the skewness and kurtosis metrics for the variables fall within an acceptable range (Table 3.14).

Table 3.14: The Distributions of Skewness and Kurtosis of Study

Instrument	pre-test		post-test		delayed post-test	
	Skewness	Kurtosis	Skewness	Kurtosis	Skewness	Kurtosis
Leadership	-0.154	-1.38	-0.358	0.444	-0.278	0.36
Teacher's leadership competency	0	0	0.708	0.108	0.752	0.756
Social Support	-0.143	-0.279	-0.491	-0.803	-0.123	-0.975

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Personal Effectiveness and Locus of Control	-0.305	0.205	0.093	-0.041	-0.171	-0.153
Outdoor Education module evaluation	0	0	0.062	-0.242	0	0

The normality of the variables was assessed using a normal probability plot, where each observed score was plotted against the expected value of a normal distribution. The resulting plot displayed a straight line from the bottom-left to the top-right, indicating a normal distribution. Additionally, to identify and manage outliers, extreme cases were detected and removed from the analysis.

3.8.2 Internal Consistency of the Leadership, Teacher's Leadership Competency, Social Support, Personal Effectiveness and Locus of Control, Outdoor Education Module Evaluation

The Cronbach's alpha coefficients for the Leadership, Teacher's leadership competency, Social Support, Personal Effectiveness and Locus of Control, Outdoor Education module evaluation are reported in the following table. Further, the test was based on the three phases of test: 1) pre-test, 2) post-test and 3) delayed post-test.

Table 3.15: Internal Consistency of the Instruments

Instrument	pre-test		post-test		delayed post-test	
	N	α	N	α	N	α
Leadership	303	0.80	303	0.85	303	0.91
Teacher's leadership competency	0	0	303	0.89	303	0.90
Social Support	303	0.85	303	0.86	303	0.83
Personal Effectiveness and Locus of Control	303	0.92	303	0.93	303	0.89
Outdoor Education module evaluation	0	0	303	0.92	0	0

According to Table 3.15, the value of alpha coefficient for the variables used in the study is consistent with the pre-test, post-test and delayed test. Based on the test, we can see all the instruments used in this study will have good reliability.

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3.9 Summary

In summary, this study employed a quasi-experimental design to examine the impact of Outdoor Education Program on the leadership development of 303 Physical Education undergraduates from three pilot universities in Jiangxi Province, China. The 15-day intervention was evaluated through pre-test, post-test, and delayed post-test assessments. Using a program evaluation framework, leadership was the main dependent variable, while Teacher's Leadership Competency, Personal Effectiveness and Locus of Control, and Social Support were treated as covariates. Validated instruments were translated into Chinese and confirmed for reliability through expert-reviewed content validity and a pilot study, with Cronbach's alpha values exceeding 0.70. Data analysis was conducted using SPSS 26, applying descriptive statistics, Pearson correlation, t-tests, MANOVA, and MANCOVA to test research hypotheses. Exploratory data analysis ensured normality, and the consistency of instruments across three time points confirmed measurement reliability. Detailed discussions on the findings from descriptive and inferential analyses will be presented in Chapter 4 for further elucidation.

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CHAPTER 4

RESULTS AND DISCUSSION

4.1 Results

Leadership plays a pivotal role in shaping the success of organizations and individuals in today's dynamic and competitive world (Usman, 2020). This chapter presents the overall results of the study that address the stated research questions. The data of the study were gathered through three data collection phases: (1) Pre-test: the demographic information of the respondents; Leadership Assessment Questionnaire; Social Support Questionnaire; Personal Effectiveness and Locus of Control Questionnaire. (2) Post-test: Leadership Assessment Questionnaire; Outdoor Education Teacher Leadership Competency Assessment Questionnaire; Social Support Questionnaire; Personal Effectiveness and Locus of Control Questionnaire; Activity Ranking; Outdoor Education Module Evaluation. (3) Delayed Post-test: Leadership Assessment Questionnaire; Outdoor Education Teacher Leadership Competency Assessment Questionnaire; Social Support Questionnaire; Personal Effectiveness and Locus of Control Questionnaire; Activity Ranking. This chapter is divided into two major sections: the first presents the descriptive statistics of the respondents, and the second section discusses the results of inferential statistical analyses aimed at addressing the research questions. In order to display the outcomes of the data analysis and highlight crucial conclusions, several tables and figures are included.

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4.1.1 Socio Demographic and Academic Background of the PE Students

The participants in this study consisted of 303 undergraduate students pursuing a Bachelor's degree in Physical Education from East China University of Technology, Jiangxi Science and Technology Normal University, and Nanchang Normal University. No respondents were excluded during the exploratory data analysis process, resulting in a final sample size of 303 students, all of whom were in their sophomore year.

Table 4.1 presents the socio-demographic characteristics of students who participated in the Outdoor Education Program (OEP). The average age of students across the three universities was 19.5 years (SD = 0.56). A total of 245 male students (80.86%) and 58 female students (19.14%) participated in the program. The average duration of the OEP was a semester, with 30 credit hours completed over 15 days. The following Table 4.1 provides details on the socio-demographic variables of the respondents, including age group, gender, major, and grade level.

Table 4.1: Socio-demographic Distribution of the PE Students

Items		Number	Means	Major/Grade	Frequency	Percentage
Age		303	19.5	--	303	100%
Gender	Male	245	--	--	245	80.86%
	Female	58	--	--	58	19.14%
Major		303	--	Physical education	303	100%
Grade		303	--	Sophomore	303	100%

The academic background of students plays a pivotal role in evaluating the effects of Outdoor Education (Ferriz, 2020). A consistent academic background leads to fewer errors within the same experiment. Academic background includes factors such as the university attended, the syllabus followed, participation in Outdoor Education

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activities, and the frequency of participation during the students' first year of university. According to Table 4.2, there are 138 students (45.5%) from East China University of Technology (ECUT), 100 students (33.1%) from Jiangxi Science and Technology Normal University (JSTNU), and 65 students (21.4%) from Nanchang Normal University (NNU). The same syllabus was used across all three universities, each featuring 15 days and 15 activities. The majority of students participated in Outdoor Education activities during their first year of university. Specifically, 262 students (86.5%) participated 1-3 times, 35 students (10.6%) participated 4-6 times, and 6 students (2.9%) participated 7-10 times.

Table 4.2: The Academic Background of PE Students

Items	Option	Frequency	Percentage
University	ECUT	138	45.5%
	JSTNU	100	33.1%
	NNU	65	21.4%
Course duration Syllabus of 3 universities	ECUT	15 days	100%
	JSTNU	15 days	100%
	NNU	15 days	100%
Take part in Outdoor Education activities	Yes	303	100%
	No	0	0%
Frequency of Participation in a year	1-3 in a year	262	86.5%
	4-6 in a year	35	10.6%
	6-more in a year	6	2.9%

In this study, the participants were 303 sophomore students majoring in Physical Education from East China University of Technology, Jiangxi Science and Technology Normal University, and Nanchang Normal University, including 245 males and 58 females. All students participated in Outdoor Education activities. Variables such as major, grade, and course schedule were consistent across all participants and, therefore, will not be included in the socio-demographic analysis. However, university, gender, age, and the frequency of participation in Outdoor

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Education activities during the year were considered as socio-demographic research indicators.

Outdoor Education stands as a dynamic and integral component of contemporary pedagogy, transcending traditional classroom boundaries to provide a holistic and immersive learning experience (Barber, 2021). This research aims to contribute to the ongoing discourse surrounding the leadership and implementation of Outdoor Education Programs. To address the research questions, the researcher utilized inferential statistics. This statistical approach involves drawing inferences about certain unknown characteristics of a population based on the collected data. Inferential statistics refers to the process of drawing inferences or conclusions based on a set of observations. These observations were described by descriptive statistics and are believed to provide greater insight into the research problems (Sutanapong et al., 2015). The subsequent section is divided into three primary sub-sections, each comprehensively presenting an individual analysis of the research questions.

4.1.2 Research Objective 1: Assess the levels of leadership, TLC; SS; PELC before, immediately after, and two months following participation in OEP

In pursuit of the research inquiries outlined in this study, the investigators conducted a thorough investigation encompassing all variables and exploring the factors associated with each. The aim of this analysis was to illuminate the real-world phenomena or conditions of the variables using statistical measures, including means and standard deviations. Table 4.3 presents the descriptive analysis for pre-test, post-test, and delayed post-test results concerning Leadership assessment, Teacher's Leadership Competency, Social Support, and Personal Effectiveness and Locus of

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Control in relation to the Outdoor Education Program among PE students at the universities mentioned above.

Regarding the Leadership assessment variable, five factors were identified as contributing to the overall leadership of students. The overall mean for leadership indicated that prior to the program, students' leadership level was 3.50 (SD = 0.68). However, after the program, the mean increased to 4.27 (SD = 0.61), and for the delayed post-test, the mean showed a further rise to 4.26 (SD = 0.59). Based on the mean distribution, a positive enhancement in leadership was observed post-Outdoor Education Program (OEP), and this improvement persisted two months after the program.

In assessing Teacher's Leadership Competency, five factors were considered. The overall mean for teacher's leadership competency indicated a baseline of 3.21 (SD = 0.41) before the program. However, after the program, the mean demonstrated an increase to 4.31 (SD = 0.61), and for the delayed post-test, the mean showed a further rise to 4.30 (SD = 0.59). The mean distribution suggested a positive enhancement in Teacher Leadership Competency following the Outdoor Education Program, and this improvement persisted two months after the program. Students acknowledged that the Teacher's Leadership Competency had a positive influence on leadership levels both immediately after the program and even at the two-month follow-up. This finding suggests a heightened influence both immediately post- OEP and at the two-month follow-up. In essence, it indicates a sustained increase in Teacher's Leadership Competency among the respondents even after the program concludes. This underscores the capacity of OEP to enhance their enthusiasm for leadership.

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Social Support, it comprised four factors: influence on others, family, friends, and facilitators. The comprehensive outcomes for Social Support revealed a mean of 3.38 (SD = 0.53) before the treatment, a mean of 4.23 (SD = 0.53) after the treatment, and a mean of 4.21(SD = 0.51) after the two-month delayed test. In the case of this factor, there was a positive increase observed after the program, but at the two-month follow-up, a decrease in this factor was identified.

In assessing Personal Effectiveness and Locus of Control, a total of 12 factors were employed to gauge the overall effectiveness in these areas. The overall mean for Personal Effectiveness and Locus of Control indicated a baseline of 3.54 (SD = 0.57) before the program, which increased to 4.22 (SD = 0.61) after the program and further elevated to 4.32 (SD = 0.59) after the two-month period. This implies that the Outdoor Education Program (OEP) concurrently enhances individual effectiveness even two months' post-program completion.

Table 4.3: Mean Distribution of the Test for Leadership, Teacher's Leadership Competency, Personal Effectiveness and Locus of Control and Social Support (Pre, Post and Delay)

Variables	N	Pre		Post		Delay	
		Mean	SD	Mean	SD	Mean	SD
Leadership	303	3.50	0.68	4.27	0.61	4.26	0.59
communication		3.64	0.74	4.27	0.61	4.29	0.56
commitment		3.48	0.62	4.26	0.61	4.28	0.58
strategy		3.48	0.66	4.27	0.62	4.29	0.58
proactive		3.49	0.62	4.27	0.61	4.17	0.63
influence		3.40	0.73	4.26	0.61	4.24	0.61
Teacher's leadership	303	3.21	0.41	4.31	0.61	4.30	0.59
leadership skill		3.41	0.31	4.29	0.62	4.30	0.61
Risk Management		3.36	0.38	4.32	0.61	4.33	0.61
Safety and First Aid		3.17	0.44	4.30	0.61	4.28	0.60
Environmental Skills		3.15	0.35	4.32	0.61	4.31	0.55
Personal effectiveness and locus of control	303	3.54	0.57	4.22	0.61	4.32	0.59
Social support	303	3.38	0.53	4.23	0.53	4.21	0.51

The results demonstrated significant and sustained improvements across most areas. For Leadership Assessment, five factors contributed to students' overall leadership.

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The leadership levels increased immediately after the program and remained high two months later, indicating a positive and lasting enhancement in leadership post-OEP. For Teacher's Leadership Competency, evaluated through five factors, also saw a significant increase immediately after the program, which was sustained two months later. This suggests a substantial and lasting improvement in Teacher's Leadership Competency, positively influencing students' leadership levels both immediately and two months' post-program. For Personal Effectiveness and Locus of Control, assessed using twelve factors, showed significant increases immediately after the program and further improvement two months later. These findings imply that the OEP effectively enhances Personal Effectiveness and Locus of Control, with sustained improvements. Social Support, evaluated through four factors (influence on others, family, friends, and facilitators), increased significantly immediately after the program but showed a slight decline two months later. While Social Support showed a positive increase post-program, maintaining these improvements may require ongoing support mechanisms.

In sum, the OEP had a significant and sustained impact on leadership development, teacher-related leadership perception, and personal effectiveness. Social support also improved, though to a lesser degree over time. These outcomes collectively underscore the value of well-structured Outdoor Education interventions, not only for skill development but also for shaping long-term behavioral and attitudinal outcomes. The findings correspond closely with the theoretical frameworks outlined in Chapter 2, reinforcing the applicability of experiential learning, leadership identity development, and social-cognitive theory in Outdoor Education contexts.

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4.1.3 Research Objective 2: Examine the relationship between leadership and TLC; SS; PELC among education undergraduates before, after, and two months following participation in OEP

To examine the correlation between the variables under investigation, the researchers employed Pearson correlation coefficient analysis. The selection of this analytical method is based on the fulfillment of assumptions necessary for conducting this specific type of analysis using the collected data. Table 4.4 provides a comprehensive analysis of the interplay between Teacher's Leadership Competence, Personal Effectiveness and Locus of Control, Social Support, and Leadership factors throughout the various phases of the Outdoor Education Program (OEP) for Physical Education (PE) students in Chinese universities. In the preliminary assessment before the project started, there was no significant correlation between overall Leadership and the three covariates, nor was there a significant correlation between the internal variables of Leadership and the three covariates. However, Social Support showed a significant correlation, with a correlation coefficient R>0.2**.

However, the analysis conducted after the project's conclusion revealed significant relationships between the overall Leadership variables and the covariates. The five sub-variables within Leadership showed significant associations with the covariates, **$p < 0.01$. This indicates a more complex interaction among Teacher Leadership, Personal Effectiveness and Locus of Control, Social Support, and the Leadership context within the Outdoor Education project. After the project's conclusion, the emphasis was on the role of Outdoor Education in promoting a more robust and interconnected set of variables, thereby fostering the potential for student Leadership.

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Two months after the program ended, there were generally weak to moderate positive correlations between the various Leadership dimensions and the assessed variables, including Teacher's Leadership Competence, Personal Effectiveness and Locus of Control, and Social Support. Notably, significant positive relationships (**p < 0.05) were observed between Strategy, Proactivity, and Influence with Teacher's Leadership Competence, as well as between Proactivity and Social Support. This suggests that specific Leadership aspects, such as Strategy, Proactivity, and Influence, have more substantial interactions with Teacher's Leadership Competence and Social Support, highlighting the importance of these elements in the context of the Outdoor Education Program's long-term effects.

Table 4.4: The Relationship Between the Factors in Leadership with Teacher's Leadership Competence, Personal Effectiveness and Locus of Control and Social Supports for Pre, Post and Delay Test Among PE Students

Variables	Pre-test		
	Teacher's leadership competence	**Personal effectiveness and locus of control**	**Social supports**
Leadership	0.072	0.094	0.135
Communication	0.040	0.115	0.020
Commitment	0.150	0.064	0.219**
Strategy	0.009	0.092	0.203**
Proactive	0.105	0.103	0.236**
Influence	0.134	0.099	0.224**
Variables	**Post-test**		
	Teacher's leadership competence	**Personal effectiveness and locus of control**	**Social supports**
Leadership	0.344**	0.374**	0.15*
Communication	0.02	0.73**	0.02
Commitment	0.33**	0.14	0.59**
Strategy	0.36**	0.15*	0.091
Proactive	0.29**	0.21**	0.50**
Influence	0.72**	0.64**	0.105
Variables	**Delayed Post-test**		
	Teacher's leadership competence	**Personal effectiveness and locus of control**	**Social supports**
Leadership	0.087	0.091	0.042
Communication	0.01	0.084	0.024
Commitment	0.077	0.087	0.05
Strategy	0.105*	0.099	0.042
Proactive	0.105*	0.099	0.13 *
Influence	0.105*	0.099	0.092

R ranges from 0 to 1, 0 = no correlation, 1 = perfect correlation, *p < 0.05; **p < 0.01

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Table 4.5 presents a correlation analysis between Teacher Leadership Competence, Personal Effectiveness and Locus of Control, and Social Support with Leadership for the periods before, after, and two months following the Outdoor Education Program (OEP) among Physical Education (PE) students.

Pre-test Phase: Leadership shows a weak positive correlation with TLC (0.093), a weak positive correlation with PELC (0.132), and a moderate positive correlation with SS (0.238**). TLC has a moderate positive correlation with PELC (0.315**) and a moderate positive correlation with SS (0.279**). PELC is moderately correlated with SS (0.438**). Post-test Phase: Leadership shows a very weak positive correlation with TLC (0.086), a weak positive correlation with PELC (0.86*), and a moderate positive correlation with SS (0.48**). TLC has a weak positive correlation with PELC (0.314) and a very weak positive correlation with SS (0.042*). PELC shows a very weak positive correlation with SS (0.20). Delayed Post-test Phase: Leadership shows a moderate positive correlation with TLC (0.46**), a moderate positive correlation with PELC (0.47**), and a very weak positive correlation with SS (0.049). TLC has a weak positive correlation with PELC (0.105*) and a very weak positive correlation with SS (0.19*). PELC shows a very weak positive correlation with SS (0.015).

Table 4.5: The Relationship Between Leadership with Teacher's Leadership Competence (TLC), Personal Effectiveness and Locus of Control (PELC) and Social Supports (SS) for Pre, Post and Delay Test Among PE Students

Variables	**Pre-test**			
	Leadership	**TLC**	**PELC**	**SS**
Leadership	1	0.093	0.132*	0.238**
TLC	0.093	1	0.315**	0.279**
PELC	0.132*	0.315**	1	0.48**
SS	0.238**	0.279**	0.48**	1
Variables	**Post-test**			
	Leadership	**TLC**	**PELC**	**SS**
Leadership	1	0.086	0.86*	0.48*
TLC	0.086	1	0.31	0.20
PELC	0.86*	0.31	1	0.042
SS	0.48*	0.20	0.042	1

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Table 4.5: Continued

Variables	Delayed Post-test			
	Leadership	**TLC**	**PELC**	**SS**
Leadership	1	0.46**	0.47**	0.049
TLC	0.46**	1	0.105*	0.19*
PELC	0.47**	0.105*	1	0.015
SS	0.049	0.19*	0.015	1

R ranges from 0 to 1, 0 = no correlation, 1 = perfect correlation, *p < 0.05; **p < 0.01

The correlations between leadership and covariables (TLC, PELC, and SS) generally increase after the implementation of the Outdoor Education Program (OEP). This indicates that the OEP has a positive impact on strengthening these relationships. The post-test phase shows the highest correlations, indicating immediate positive effects of the OEP. Although the correlations decrease slightly in the delayed post-test phase, they remain higher than in the pre-test phase, suggesting that the OEP's effects on these relationships are sustained over time. The overall trend indicates that the OEP enhances the interconnectedness of leadership with teacher's leadership competence, Personal Effectiveness and Locus of Control, and Social Support, fostering a robust environment for leadership development among PE students. This analysis demonstrates the significant and sustained impact of the Outdoor Education Program on improving the relationships between leadership and the key variables, highlighting the program's effectiveness in fostering leadership qualities.

The results reveal that the OEP strengthened the relationships between leadership and the covariates (TLC, PELC, and SS), with the most pronounced effects observed immediately after program completion. Although slight declines were noted after two months, the correlations remained stronger than pre-program levels, indicating durable gains. Notably, the roles of “proactivity” and “influence” emerged as critical bridges between leadership and both instructional and social domains. These outcomes

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validate the theoretical claims made in Chapter 2 regarding the transformative potential of Outdoor Education in fostering leadership through structured challenge, reflection, and social engagement.

4.1.4 Research Objective 3: Determine the differences on leadership, TLC; SS; PELC towards social demographics factor

To ensure the consistency of data obtained from the three different universities, it is essential to examine whether Socio-Demographic factors influence the effects of Leadership, Teacher's Leadership Competency, Social Support, Personal Effectiveness and Locus of Control. In this study, an analysis of respondents' Socio-Demographic Characteristics was conducted, focusing primarily on four key aspects: Gender, University, Age, and the Frequency of Outdoor Sports Participation throughout the year. This comprehensive analysis supports the consolidation of the collected data by ensuring that variations attributable to Socio-Demographic Differences are properly addressed (Chen et al., 2020). The significance of this examination lies in its capacity to validate the robustness of the study's findings across diverse university settings, thereby reinforcing the overall conclusions regarding the effectiveness of Leadership and related variables within the context of the Outdoor Education Program (Smith & Doe, 2022; Johnson, 2023).

Table 4.6 presents the MANOVA results analyzing Leadership among PE students across various Socio-Demographic Factors before and after the Outdoor Education Program (OEP). The pre-test results show no significant differences in Leadership based on Gender, University, Age, or Frequency of OEP Participation, with *p*-values all greater than .05. Similarly, the post-test results indicate no significant changes in

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Leadership across these factors, suggesting that the OEP had a consistent impact regardless of Socio-Demographic Variations. The Eta Square values indicate small effect sizes for all variables in both pre- and post-test analyses. These findings suggest that Socio-Demographic Factors do not significantly influence Leadership outcomes in the context of the OEP, indicating the Program's broad applicability and effectiveness across diverse student groups.

Table 4.6: Analysis of MANOVA Towards Leadership Between Socio-Demographic Factors Pre and Post OEP Among PE Students

Variables	Leadership Pre-test			Leadership Post-test		
	F	P	Eta Square	F	P	Eta Square
Gender	0.836	0.644	0.0131	0.707	0.910	0.014
Universities	0.673	0.820	0.0421	1.361	0.756	0.044
Age	0.260	0.998	0.074	1.357	0.083	0.035
Frequency	1.236	0.240	0.038	0.899	0.650	0.028

*p < 0.05; **p < 0.01

Table 4.7 presents the results of the MANOVA analysis conducted to assess variations in Socio-Demographic Factors among undergraduate students majoring in Physical Education, with a focus on Teacher's Leadership Competency, both before and after engaging in the Outdoor Education Program (OEP). The Socio-Demographic Variables examined include Gender, University, Age, and the Frequency of OEP Participation per year. Notably, there were no statistically significant differences in mean pre-test scores for any of the Socio-Demographic Factors ($p > .05$), indicating that none of these factors impacted Teacher's Leadership Competency outcomes in the Outdoor Education Program. Similarly, for the remaining Socio-Demographic Variables, there were no statistically significant differences observed in the post-test scores, suggesting that these factors did not significantly influence Teacher' s Leadership Competency outcomes following the OEP.

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Table 4.7: Analysis of MANOVA Towards Teacher's Leadership Competency Between Socio-Demographic Factors Pre and Post OEP Among PE Students

Variables	Teacher's leadership competency Pre-test			Teacher's leadership competency Post-test		
	F	P	Eta Square	F	P	Eta Square
Gender	0.047	0.795	0.000	0.550	0.981	0.065
Universities	1.171	0.312	0.009	1.485	0.056	0.031
Age	0.215	0.806	0.002	0.723	0.872	0.084
Frequency	0.016	0.997	0.000	0.814	0.761	0.084

Table 4.8 presents the results of the MANOVA analysis conducted to assess variations in Socio-Demographic Factors among undergraduate students majoring in Physical Education, with a focus on Social Support, both before and after engaging in the Outdoor Education Program (OEP). The pre-test examination evaluated the impact of various Socio-Demographic Variables in the OEP on the levels of perceived Social Support among students. The results indicated no statistically significant differences in the levels of Social Support across the variables tested. Specifically, the *F*-values and *p*-values reported suggest a negligible effect size (Eta Squared), demonstrating minimal variation attributable to these Socio-Demographic Factors in the pre-engagement phase of the OEP. Similarly, the post-test analysis, conducted after the students' engagement with the OEP, continued to show no significant impact. The statistical measures maintained insignificant differences, reinforcing the findings observed in the pre-test phase. Despite slight variations in the Eta Squared values, which slightly increased post-intervention, these changes were not substantial enough to indicate meaningful Socio-Demographic impacts. This research contributes to the body of knowledge by confirming that in the context of Outdoor Education, certain expected demographic predictors do not significantly alter Social Support outcomes.

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Table 4.8: Analysis of MANOVA Towards Social Support Between Socio-Demographic Factors Pre and Post OEP Among PE Students

Variables	Social support Pre-test			Social support Post-test		
	F	P	Eta Square	F	P	Eta Square
Gender	0.694	0.730	0.023	1.454	0.134	0.061
Universities	0.497	0.235	0.011	0.432	0.958	0.019
Age	0.513	0.880	0.017	0.824	0.635	0.036
Frequency	0.909	0.525	0.030	1.210	0.271	0.052

Table 4.9 presents the results of the MANOVA analysis conducted to assess variations in Socio-Demographic Factors among undergraduate students majoring in Physical Education, with a focus on Personal Effectiveness and Locus of Control, both before and after engaging in the Outdoor Education Program (OEP). The results showed no statistically significant differences in mean pre-test scores across these factors, with all p-values exceeding .05, indicating that these variables did not affect Personal Effectiveness and Locus of Control Outcomes in the Outdoor Education Program. Similarly, post-test scores revealed no significant differences for these Socio-Demographic Factors, suggesting that they did not substantially influence Personal Effectiveness and Locus of Control Outcomes after the OEP.

Table 4.9: Analysis of MANOVA Towards Personal Effectiveness and Locus of Control Between Socio-Demographic Factors Pre and Post OEP Among PE Students

Variables	Personal effectiveness and locus of control Pre-test			Personal effectiveness and locus of control Post-test		
	F	P	Eta Square	F	P	Eta Square
Gender	0.033	0.856	0.000	0.754	0.471	0.006
Universities	1.471	0.232	0.001	1.261	0.321	0.000
Age	0.514	0.598	0.004	0.243	0.866	0.003
Frequency	0.311	0.993	0.000	0.309	0.650	0.001

The analysis across various dimensions of the Outdoor Education Program (OEP) indicates that Socio-Demographic Factors—such as Gender, University Affiliation, Age, and Frequency of Participation—do not significantly influence outcomes related

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to Leadership, Social Support, Personal Effectiveness and Locus of Control. Both pre-test and post-test evaluations reveal that these variables do not substantially impact the effectiveness of the OEP. Thus, the study suggests that Socio-Demographic Differences among Physical Education undergraduates do not significantly affect their experiences and Outcomes in the context of the OEP.

Across all variables—Leadership, Teacher's Leadership Competency, Social Support, Personal Effectiveness and Locus of Control—the results consistently demonstrate that Socio-Demographic Characteristics do not significantly influence outcomes in the context of the Outdoor Education Program (OEP). This suggests that the program offers an equitable platform for Leadership Development and Personal Growth among Physical Education undergraduates. By showing minimal variation across subgroups, the study confirms the adaptability and inclusiveness of Outdoor Education interventions in higher education settings, as well as their alignment with inclusive Leadership Development theories outlined in Chapter 2.

4.1.5 Research Objective 4: Determine the post effect of OEP on the leadership of PE undergraduates, considering factors such as TLC; SS; PELC

To examine the effectiveness of the Outdoor Education Program (OEP) in improving leadership among Physical Education undergraduates, this section analyzes changes in leadership scores and their associated variables—Teacher's Leadership Competency (TLC), Personal Effectiveness and Locus of Control (PELC), and Social Support (SS)—from pre- to post-intervention. Paired Sample T-tests and MANCOVA were employed to assess statistical significance and identify key influencing factors. It is noteworthy that, although the same questionnaire was utilized for both assessments, the arrangement of items varied between the pre-test and post-test sets. The pre-test

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was administered before the students participated in the planned Outdoor Education course, while the post-test took place immediately before the conclusion of the course.

Table 4.10 provides insights into the noteworthy differences in mean scores between the pre-test and post-test phases of the OEP concerning leadership and the associated variables influencing leadership. The outcomes in the table underscore the statistically significant variations observed in leadership scores and related factors following the completion of the Outdoor Education Program.

The analysis results indicate a significant disparity in leadership scores before and after the Outdoor Education Program (OEP). The mean score for overall leadership increased from 3.501 (SD = 0.327) to 4.265 (SD = 0.159), demonstrating a statistically significant difference [T=39.72, p<0.01]. Specifically, the following factors showed substantial improvements: Communication: The mean score increased from 3.635 (SD = 0.487) to 4.266 (SD = 0.216) [T = 20.91, p < 0.01]. Commitment: The mean score rose from 3.479 (SD = 0.419) to 4.257 (SD = 0.223) [T = 29.74, p < 0.01]. Strategy: The mean score improved from 3.484 (SD = 0.457) to 4.269 (SD = 0.225) [T= 28.35, p < 0.01]. Proactivity: The mean score advanced from 3.488 (SD = 0.370) to 4.272 (SD = 0.214) [T = 30.99, p < 0.01]. Influence: The mean score increased from 3.404 (SD = 0.519) to 4.264 (SD = 0.271) [T= 27.59, p < 0.01].

In summary, the OEP significantly enhanced all aspects of leadership. This improvement is evidenced by the notable increase in mean scores across the five factors of leadership. These results underscore the effectiveness of the OEP in fostering leadership qualities, particularly in enhancing communication, commitment, strategy, proactivity, and influence among participants. This suggests that experiential

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learning through outdoor education can be a potent method for developing essential leadership skills.

Table 4.10: Paired Sample T-test Analysis of Variances in Leadership Among PE Students Pre and Post OEP

Variables		N	Mean	SD	T	p
Leadership	Pre-test Pro-test	303	3.501 4,265	0.327 0.159	39.65	< 0.01**
Communication	Pre-test Pro-test	303	3.635 4.266	0.487 0.216	20.91	< 0.01**
Commitment	Pre-test Pro-test	303	3.479 4.257	0.419 0.223	29.74	<0.01**
Strategy	Pre-test Pro-test	303	3.484 4.269	0.457 0.0.225	28.35	<0.01**
Proactive	Pre-test Pro-test	303	3.488 4.272	0.370 0.214	30.99	<0.01**
Influence	Pre-test Pro-test	303	3.404 4.264	0.519 0.271	27.59	<0.01**

*p < 0.05; **p < 0.01

Table 4.11 presents the outcomes of the MANCOVA analysis investigating the leadership level among Physical Education (PE) students post-Outdoor Education Program (OEP), with the pre-test serving as either a control or covariate. The results indicate a substantial impact of the pre-test on the overall leadership factor, as evidenced by Wilk's Lambda Intercept [F= 221.24; p < 0.01, eta squared = 0.209]. This suggests that the pre-test exerted a profound influence on the leadership outcomes.

The results from Table 4.11 further reveal that pre-test scores significantly influenced or affected the scores of most factors in the post-test. Specifically, over half of the factors demonstrated either significant or highly significant impact effects. This suggests that the pre-test had a considerable influence on the outcomes of the post-test across multiple factors.

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Table 4.11: Analysis of MANCOVA for the Level of Leadership After OEP Among PE Students Considering Controlled Pre-Test Scores

Pre-test Effect	Multivariate Analysis	F	P	Eta Square
Intercept	Wilks' Lambda	221.24	0.00**	0.209
Communication	Wilks' Lambda	6.978	0.00**	0.394
Commitment	Wilks' Lambda	5.236	0.00**	0.418
Strategy	Wilks' Lambda	6.116	0.00**	0.805
Proactive	Wilks' Lambda	5.465	0.00**	0.515
Influence	Wilks' Lambda	8.134	0.00**	0.278
Pre-test Effect	**Dependent Variables**	**F**	**P**	**Eta Square**
	Post-test Communication	1.574	0.211	0.072
	Post-test Commitment	0.120	0.729	0.120
Pre-test Communication	Post-test Strategy	25.919	0.000**	0.189
	Post-test Proactive	3.949	0.048*	0.273
	Post-test Influence	0.131	0.718	0.006
	Post-test Communication	0.298	0.585	0.014
	Post-test Commitment	3.902	0.049*	0.187
Pre-test Commitment	Post-test Strategy	12.722	0.000**	0.058
	Post-test Proactive	6.543	0.011**	0.045
	Post-test Influence	0.255	0.614	0.012
	Post-test Communication	1.610	0.206	0.073
	Post-test Commitment	7.266	0.007**	0.349
Pre-test Strategy	Post-test Strategy	11.374	0.001**	.0522
	Post-test Proactive	13.665	0.000**	0.10.45
	Post-test Influence	0.786	0.376	0.036
	Post-test Communication	1.787	0.182	0.81
	Post-test Commitment	3.254	0.072	0.156
Pre-test Proactive	Post-test Strategy	12.750	0.000**	0.585
	Post-test Proactive	9.778	0.002**	0.676
	Post-test Influence	1.662	0.198	0.077
	Post-test Communication	0.085	0.771	0.04
	Post-test Commitment	7.631	0.006**	0.366
Pre-test Influence	Post-test Strategy	14.496	0.000**	0.65
	Post-test Proactive	17.818	0.000**	0.232
	Post-test Influence	0.911	0.341	0.042

*p < 0.05; **p < 0.01

In Table 4.12, the outcomes of the Paired Sample *t*-test analysis are presented, focusing on key influence factors examined in this study, namely Teacher's Leadership Competence, Personal Effectiveness and Locus of Control, and Social Support. The results indicate significant differences in mean scores before and after the Outdoor Education Program (OEP) for Teacher's Leadership Competence [$t = 40.01$, $p = .00$], Personal Effectiveness and Locus of Control [$t = 43.69$, $p = .00$], and Social Support [$t = 52.67$, $p = .00$]. These findings suggest that the observed changes in the variables under investigation are not only statistically significant but also reflect improvements,

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with more positive mean scores obtained after the completion of the OEP. This indicates a positive impact of the program on Teacher's Leadership Competence, Personal Effectiveness and Locus of Control, as well as Social Support, highlighting the program's efficacy in fostering positive changes in these crucial influence factors.

Table 4.12: Analysis of Differences Pre and Post OEP On Teacher's Leadership Competence, Personal Effectiveness and Locus of Control and Social Supports Among PE Students

Variables		N	Mean	SD	T	P
Teacher' leadership competence	Pre-test	303	3.276	0.378	40.01	0.00**
	Post-test		4.307	0.232		
Personal effectiveness and locus of control	Pre-test	303	3.540	0.301	43.69	0.00**
	Post-test		4.216	0.117		
Social supports	Pre-test	303	3.376	0.196	52.67	0.00**
	Post-test		4.230	0.202		

*p < 0.05; **p < 0.01

To examine the impact of influencing factors on dependent variables, a post-test MANCOVA analysis was employed to ascertain the influence of various factors on the studied variables' mean scores. The factors under scrutiny encompassed Teacher's Leadership Competency, Students' Personal Effectiveness and Locus of Control, and Social Support. Table 4.13 presents the results of a MANCOVA analysis aimed at examining the impact of various factors on Leadership changes following an Outdoor Education Program (OEP). The analysis considered Teacher's Leadership Competency, Personal Effectiveness and Locus of Control, and Social Support, while controlling for post-test results as a covariate. The findings, as evidenced by Wilks' Lambda, indicate that the Intercept [F = 12.67; p < .01, eta squared = 0.177], suggests that the post-test exerted a profound influence on Leadership. Teacher's Leadership Competency significantly influenced Leadership post-OEP [F = 1.169; p < .05, eta squared = 0.191]. Similarly, Personal Effectiveness and Locus of Control were found to have a significant influence on Leadership following the OEP [F = 3.007; p < .05,

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eta squared = 0.481]. Additionally, Social Support demonstrated no significant impact on Leadership after the OEP [F = 0.481; p > .05, eta squared = 0.008].

In Table 4.13, a MANCOVA analysis was conducted to evaluate changes in Leadership influenced by Teacher's Leadership Competency, Personal Effectiveness and Locus of Control, and Social Support. The results indicate that Teacher's Leadership Competency and Personal Effectiveness and Locus of Control had significant impacts on Leadership outcomes, while Social Support showed minimal influence. The inclusion of post-test scores as a control variable enhanced the precision of the analysis, enabling a more accurate evaluation of the key factors driving Leadership changes. These findings underscore the substantial contributions of Teacher's Leadership Competency and Personal Effectiveness and Locus of Control to Leadership Development, in contrast to the limited role of Social Support.

Table 4.13: Analysis of MANCOVA to Determine Changes in Leadership Influenced by Teacher's Leadership Competency, Personal Effectiveness and Locus of Control and Social Supports Between Factors Leadership Considering Controlled Post-Test Scores

Post-test Effect	**Multivariate**	**F**	**P**	**Eta Square**
Intercept	Wilks' Lambda	12.67	0.00**	0.177
Teacher's leadership competency	Wilks' Lambda	1.169	0.025*	0.191
Personal effectiveness and locus of control	Wilks' Lambda	3.007	0.012*	0.481
Social supports	Wilks' Lambda	0.4881	0.79	0.008
Post-test Effect	**Dependent Variables (Post-test)**	**F**	**P**	**Eta Square**
Teacher's leadership competency	Communication	4.501	0.936	0.069
	Commitment	5.345	0.090	0.100
	Strategy	5,343	0.134	0.083
	Proactive	4.567	0.836	0.108
	Influence	9.353	0.088	0.088
Personal effectiveness and locus of control	Communication	5.533	0.004**	0.236
	Commitment	4.501	0.447	0.010
	Strategy	4.563	0.130	0.008
	Proactive	7.678	0.249	0.00
	Influence	4.534	0.588	0.10
Social supports	Communication	4.501	0.256	0.004
	Commitment	5.556	0.882	0.00
	Strategy	9.344	0.793	0.00
	Proactive	5.674	0.330	0.003
	Influence	8.445	0.594	0.001

*p < 0.05; **p < 0.01

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This analysis confirms the Outdoor Education Program's substantial positive impact on student Leadership. Paired comparisons show significant post-program improvements in Leadership and its contributing factors, while MANCOVA results identify Teacher Leadership and Personal Effectiveness and Locus of Control as the primary drivers of Leadership growth. Although Social Support improved overall, its direct influence on Leadership was limited. These findings reinforce the program's theoretical foundation and validate its utility in fostering durable, self-regulated Leadership Development among Physical Education undergraduates.

4.1.6 Research Objective 5: Evaluate the effect of OEP on the leadership of PE undergraduates two months after completing the programs, focusing on the influence of TLC; SS; PELC

To assess whether the effects of the Outdoor Education Program (OEP) on Leadership persist over time, this section evaluates differences in Leadership and related variables—Teacher's Leadership Competency (TLC), Personal Effectiveness and Locus of Control (PELC), and Social Support (SS)—between the post-test and the delayed post-test, conducted two months after program completion. Paired Sample *t*-tests and MANCOVA analyses were utilized to determine statistical significance and identify sustained effects.

Table 4.14 displays the disparities between post-test and delayed post-test results of the OEP for the overall leadership variable and its constituent factors, namely Communication, Commitment, Strategy, Proactivity, and Influence. The outcomes derived from the analysis suggest that there were no significant differences in the means between the post-test and delayed post-test data from the OEP. Specifically, the mean for the post-test was 4.266 (SD= 0.159), and the mean for the delayed post-test

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was 4.255 (SD= 0.104). The calculated t-value [t = 1.389, p > 0.05], indicating that the observed differences were not statistically significant.

The analysis of leadership variables revealed significant differences between post and delayed measures, except for the influence factor [t = 1.31, p > 0.05]. In the case of the Communication, Commitment, Strategy, and Proactive factor, with a P-value of less than 0.05, the mean for the post-test in the program exhibited significant disparities compared to the delayed post-test results.

In summary, among the leadership factors assessed, only the Influence factor did not exhibit a significant difference after the two-month duration of the program, while the remaining four factors showed significant changes during this period. It's important to note that the mean scores obtained for both the post-test and delayed post-test did not demonstrate substantial differences, indicating a relatively stable trend in the measured leadership variables over the two-month interval of program implementation.

Table 4.14: Analysis of Differences Post-Test and Delayed Post-Test of OEP on Leadership Factor

Variables		N	Mean	SD	T	P
Leadership	Post-test	303	4.266	0.159	1.389	0.166
	Delay-test		4.255	0.104		
Communication	Post-test	303	4.266	0.216	2.11	0.036*
	Delay-test		4.290	0.165		
Commitment	Post-test	303	4.257	0.224	2.69	0.007**
	Delay-test		4.281	0.189		
Strategy	Post-test	303	4.269	0.225	2.13	0.034*
	Delay-test		4.294	0.191		
Proactive	Post-test	303	4.272	0.214	1.82	0.235
	Delay-test		4.172	0.211		
Influence	Post-test	303	4.264	0.271	1.31	0.189
	Delay-test		4.238	0.268		

*p < 0.05; **p < 0.01

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Referring to Table 4.15, the overall findings from the Multivariate Wilks' Lambda test indicate a significant impact of the Outdoor Education Program (OEP) on leadership variables after a two-month completion of the program, while controlling for post-test results as a covariate. The results reveal a noteworthy difference in the overall mean scores for the delay-test of the program [F = 84.45, p < 0.01, eta squared = 0.590]. When examining each factor, the delay-test mean scores exerted a significant influence on all post-test results. Notably, the Communication factor [F= 12.306; p < 0.01, eta squared = 0.174], Commitment factor [F= 15.618; p< 0.01, eta squared = 0.210], Strategy factor [F =26.312; p < 0.01, eta squared= 0.310], proactive factor [F= 11.258; p < 0.01, eta squared = 0.161]. and Influence factor [F= 4.463; p < 0.01, eta squared = 0.071] all exhibited significant effects on the post-test results after controlling for mean scores.

Table 4.15: Analysis of MANOVA for Level of Leadership Between Subjects After Two-Month of OEP Among PE Students

Post-test Effect	**Multivariate Analysia**	**F**	**P**	**Eta Square**
Intercept	Wilks' Lambda	84.45	0.000**	0.590
Communication	Wilks' Lambda	12.306	0.000**	0.174
Commitment	Wilks' Lambda	15.618	0.000**	0.210
Strategy	Wilks' Lambda	26.312	0.000**	0.310
Proactive	Wilks' Lambda	11.258	0.000**	0.161
Influence	Wilks' Lambda	4.463	0.001**	0.071
Post-test Effect	**Dependent Variables**	**F**	**P**	**Eta Square**
	Delay-test Communication	1.412	0.234	0.005
	Delay-test Commitment	11.513	0.001**	0.037
Post-test Communication	Delay-test Strategy	0.232	0.630	0.001
	Delay-test t Proactive	0.110	0.741	0.000
	Delay-test Influence	47.706	0.000**	0.138
	Delay-test Communication	2.770	0.097	0.009
	Delay-test Commitment	6.544	0.011*	0.022
Post-test Commitment	Delay-test Strategy	8.750	0.003**	0.029
	Delay-test Proactive	42.802	0.000**	0.126
	Delay-test Influence	3.753	0.054*	0.012
	Delay-test Communication	0.557	0.456	0.002
	Delay-test t Commitment	9.424	0.002**	0.031
Post-test Strategy	Delay-test Strategy	102.873	0.000**	0.257
	Delay-test Proactive	1.021	0.313	0.003
	Delay-test Influence	13.249	0.000**	0.043
	Delay-test Communication	0.268	0.605	0.001
	Delay-test Commitment	49.618	0.000**	0.143
Post-test Proactive	Delay-test Strategy	1.431	0.036*	0.015
	Delay-test Proactive	2.039	0.157	0.007
	Delay-test Influence	3.264	0.072	0.011
	Delay-test Communication	9.667	0.003**	0.028
	Delay-test Commitment	1.690	0.195	0.006
Post-test Influence	Delay-test Strategy	8.282	0.004**	0.027
	Delay-test Proactive	5.279	0.022*	0.017
	Delay-test Influence	0.817	0.367	0.003

*p < 0.05; **p < 0.01

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Table 4.15 also further reveal that post-test scores significantly influenced or affected all the scores for most of the leadership factors in the delay-test. This suggests that the post-test had a considerable influence on the outcomes of the delayed post-test across multiple factors.

Table 4.16 presents the outcomes of the Paired Sample *t*-test analysis for the independent variables considered in this study, namely Teacher's Leadership Competence, Personal Effectiveness and Locus of Control, and Social Support. The examination of these variables revealed no significant differences between the mean scores of the post-test and delayed post-test for Teacher's Leadership Competence [$t = 0.228$, $p > .05$], as well as Social Support [$t = 1.745$, $p > .05$].

Table 4.16: Results of Paired Sample T-test Between Post and Delayed Post-Test of the Program Towards Teacher's Leadership Competence, Personal Effectiveness and Locus of Control and Social Supports

Variables		N	Mean	SD	T	P
Teacher's leadership competence	Post-test	303	4.307	0.232	0.228	0.820
	Delayed Post-test		4.304	0.218		
Personal effectiveness and locus of control	Post-test	303	4.216	0.117	13.448	0.000**
	Delayed Post-test		4.319	0.114		
Social supports	Post-test	303	4.230	0.202	1.745	0.082
	Delayed Post-test		4.205	0.179		

*p < 0.05; **p < 0.01

However, a significant difference was observed in the variables of Personal Effectiveness and Locus of Control [$t = 13.448$, $p < .01$]. The findings indicate more favorable changes in the mean scores for Personal Effectiveness and Locus of Control. This suggests that significant differences were identified in the study, with Personal Effectiveness and Locus of Control showing notably improved mean scores. This finding may suggest that, two months after the intervention, individuals' Personal Effectiveness and Locus of Control over events have significantly diminished

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compared to the post-test conducted immediately after the program, but no impact was observed on Teacher's Leadership Competence and Social Support.

To assess the impact of influencing factors on dependent variables in terms of delayed post-test mean scores on Physical Education students' Leadership, a MANCOVA analysis was conducted, considering Teacher's Leadership Competency, Personal Effectiveness and Locus of Control, and Social Support as the examined influencing factors. Delayed post-test results were incorporated as a covariate for statistical validity. Referring to Table 4.17, the overall findings from the Multivariate Wilks' Lambda test do not indicate a significant impact of the OEP on Leadership variables after a two-month completion of the program, while controlling for delayed post-test results as a covariate. The Intercept results reveal a noteworthy difference in the overall mean scores for the delayed post-test of the program [$F = 58.789$, $p < .01$, eta squared = 0.458].

However, Teacher's Leadership Competency did not show an influence on Leadership in the delayed post-test for the OEP [$F = 1.523$, $p > .05$, eta squared = 0.025]. Personal Effectiveness and Locus of Control did not show a significant impact on Leadership after the OEP [$F = 0.877$, $p > .05$, eta squared = 0.015], and Social Support did not significantly influence Leadership post-OEP [$F = 0.480$, $p > .05$, eta squared = 0.008]. These findings suggest that these variables did not have a significant impact on Leadership.

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Table 4.17: Analysis of MANCOVA to Determine Changes in Leadership After Two-Months Influenced by Teacher's Leadership Competency, Personal Effectiveness and Locus of Control and Social Supports Between Leadership Factors

Delayed post-test	Multivariate Analysis	F	P	Eta Square
Intercept	Wilks' Lambda	58.789	0.000**	0.458
Teacher's leadership competency	Wilks' Lambda	1.523	0.182	0.025
Personal effectiveness and locus control	Wilks' Lambda	0.877	0.497	0.015
Social supports	Wilks' Lambda	0.480	0.791	0.008
Delayed post-test	**Dependent Variables (Delayed post-test)**	**F**	**P**	**Eta Square**
Teacher's leadership competency	Communication	2.131	0.145	0.007
	Commitment	1.891	0.170	0.006
	Strategy	1.728	0.190	0.003
	Proactive	0.035	0.851	0.000
	Influence	0.050	0.824	0.000
Personal effectiveness and locus of control	Communication	0.010	0.921	0.000
	Commitment	1.419	0.234	0.005
	Strategy	0.771	0380	0.003
	Proactive	0.0630	0.801	0.000
	Influence	2.612	0.107	0.009
Social supports	Communication	0.148	0.701	0.000
	Commitment	0.000	0.989	0.000
	Strategy	0.015	0902	0.000
	Proactive	0.959	0.163	0.007
	Influence	0.321	0.571	0.001

*p < 0.05; **p < 0.01

Table 4.17 also further reveals that delayed post-test scores did not significantly influence or affect most of leadership factors in the delayed post-test. This suggests that the delayed post-test of Teacher's Leadership Competency, Personal Effectiveness and Locus of Control and Social Support did not have a considerable influence on the outcomes of the delayed post-test across leadership factors.

Overall, the Leadership Competencies developed through the OEP remained relatively stable two months after program completion, with no significant decline in total scores and only modest variations in subdimensions. While Personal Effectiveness and Locus of Control continued to improve, neither this variable nor Teacher's Leadership Competency and Social Support demonstrated significant predictive power for delayed Leadership. These findings imply that while the OEP delivers durable short-term

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outcomes, long-term reinforcement strategies may be necessary to maintain or further develop Leadership capacities among PE undergraduates.

4.1.7 Research Objective 6: Evaluate the implementation of OEP modules and investigate the relationship between the popularity and effectiveness of Outdoor Education activities in influencing the leadership development of PE undergraduates

Quantitative data were gathered from 303 Physical Education students enrolled in three different universities. The objectives were to evaluate the rationality of the course design and module implementation, as well as to explore their viewpoints and insights regarding the prioritization of activities that they perceive to have an impact on their Leadership upon completing all the activities. The survey aimed to capture the viewpoints of these students and delve into their perceptions regarding the significance of various activities in shaping their Leadership experiences. The 303 students were tasked with selecting and sequencing 15 activities based on their perception of the degree of influence on their Leadership.

The successful execution of Outdoor Education Program implementation necessitates a comprehensive and strategic approach (Green, 2020). This involves meticulously planning and orchestrating a range of activities and curricular elements within an outdoor setting. The implementation of such programs aims to provide participants with a high level of Leadership, enriching experiences, fostering personal growth, team collaboration, and a deeper connection with the environment. The objective was to evaluate the rationality of the Outdoor Education Program Module Implementation and the overall module.

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Outdoor Education module evaluation variable, it was found that five factors make up the overall Outdoor Education module. Table 4.18 reveals that the overall mean Outdoor Education module evaluation was 4.195 (SD=0.26), Variance =0.015, Maximum value=5. Based on the analysis data, it appears that the Outdoor Education Program had a beneficial impact. This suggests that the program has contributed positively to the outcomes or objectives being measured. But the mean score of risk management is only 3.755 (SD=0.241), This indicates that there are aspects within risk management that require enhancement and further development.

Table 4.18: Mean Distribution and Percentage of The Post-Test for Outdoor Education Module Evaluation

Variables	N	Mean	SD	Variance	Maximum value
ALL	303	4.195	0.123	0.015	5
Printed and audio-visual materials		4.531	0.333	0.111	5
Learning environment		4.327	0.269	0.073	5
Teacher		4.239	0.342	0.117	5
Risk management		3.755	0.241	0.058	5
Whole module		4.138	0.241	0.058	5

The researchers utilized Pearson Correlation Coefficient analysis to assess the correlation between the variables under scrutiny. This method was chosen due to its ability to meet the requisite assumptions essential for conducting such analysis with the gathered data. Table 4.19 shows the analysis of the relationship between the Outdoor Education Module Evaluation and post-test Leadership, Teacher's Leadership Competence, Personal Effectiveness and Locus of Control, and Social Support among PE students post-OEP. Derived from the table, the correlation coefficient ('R') values among the factors during the post-test ranged from 0.016 to 0.070. This indicates a generally weak to very weak correlation between the variables under investigation. Further analysis is warranted to better understand the relationships between these factors.

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Table 4.19: The Relationship Between Outdoor Education Module Evaluation and Post-Test Leadership, Teacher's Leadership Competence, Personal Effectiveness and Locus of Control and Social Supports Among PE Students

Variables	OEME	Leadership	TLC	PELC	SS
OEME	1	0.016	0.070	0.034	0.044
Leadership	0.016	1	0.086	0.86**	0.48*
TLC	0.070	0.086	1	0.311	0.20
PELC	0.034	0.86**	0.311	1	0.042
SS	0.044	0.48*	0.200	0.042	1

*p < 0.05; **p < 0.01

Upon completing all activities, individuals reflected on the perceived impact these experiences had on their Leadership Development. Specifically, they were asked to organize these activities based on their perceived impact, ranging from those considered less influential to those deemed most significant. This inquiry was conducted within the context of their Outdoor Education Program experiences. Figure 4.1 analyzes the correlation between the popularity of various activities and their impact on Leadership Development. The results indicate that some activities, such as Dragon Boat, are not only widely popular but also highly effective in enhancing Leadership Skills. In contrast, other activities, like Swimming, although popular, are perceived to have a lesser impact on Leadership Development. Conversely, activities like Hiking, despite being less popular, are valued for their significant contribution to Leadership Growth. This detailed analysis emphasizes the importance of considering both participant preferences and the actual effectiveness of activities in Leadership Training Programs. While the popularity of activities and their effectiveness in fostering Leadership Development are not always perfectly aligned, there is a noticeable correlation between the two.

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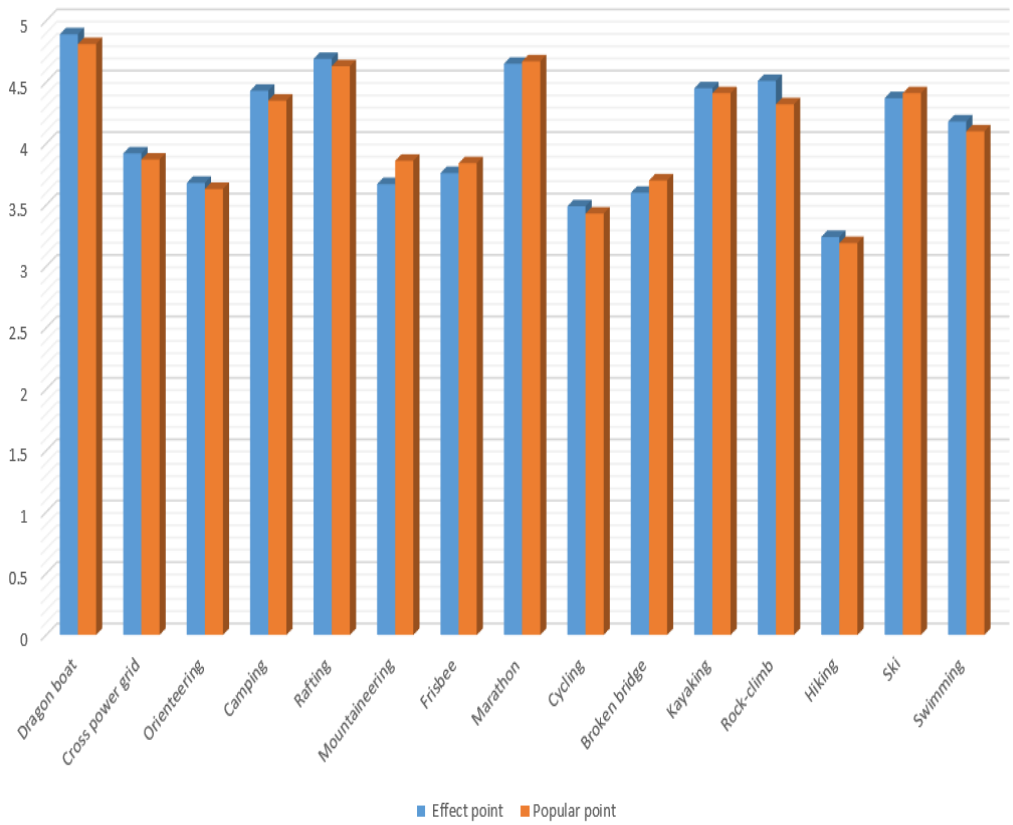

Figure 4.1: The Popularity of Each Activity and Its Impact on Leadership Scores

Table 4.20 displays a list of activities that contribute to the development of leadership and the popularity level among students, with the selection based on the frequency of participation in these activities. The data provides insights into the correlation between engagement in specific activities and the potential impact on leadership formation.

This analysis aims to identify patterns suggesting that certain activities are more conducive to the cultivation of leadership qualities and the popularity of Outdoor Education correlates with its potential to promote leadership skills, offering valuable information for educators and program planners.

The mean effect values for Dragon Boat, Rafting, Swimming, and Kayaking all exceeded 4.1, suggesting that these activities have the most significant influence on

the development of student leadership. However, activities such as Broken Bridge, Cross Power Grid, and Marathon—primarily individual pursuits—appear to have minimal impact on leadership development, as indicated by the data. Regarding popularity, Dragon Boat, Rafting, Kayaking, Swimming, and Skiing scored above 4.1, demonstrating that these activities are highly favored among students majoring in physical education. In contrast, activities such as Broken Bridge, Cross Power Grid, Rock Climbing, and Hiking, which are relatively more challenging and less enjoyable, received average scores below 4.0, indicating a moderate level of popularity among students for these Outdoor Education activities.

Table 4.20: Effect and Popularity of Activities and Their Correlation That Impact Students' Leadership

Activities	Number	Function	Mean	SD	R
Dragon boat	303	Effect	4.89	0.308	0.678**
		Popularity	4.81	0.411	
Cross power grid	303	Effect	3.92	0.798	0.058
		Popularity	3.87	0.799	
Orienteering	303	Effect	3.68	0.647	0.899**
		Popularity	3.63	0.642	
Camping	303	Effect	4.43	0.636	0.126*
		Popularity	4.35	0.684	
Rafting	303	Effect	4.69	0.541	0.882**
		Popularity	4.63	0.582	
Mountaineering	303	Effect	3.67	0.839	0.05
		Popularity	3.86	0.847	
Frisbee	303	Effect	3.76	0.717	0.818**
		Popularity	3.84	0.683	
Marathon	303	Effect	4.65	0.477	0.617**
		Popularity	4.67	0.470	
Cycling	303	Effect	3.49	0.675	0.416**
		Popularity	3.43	0.677	
Broken bridge	303	Effect	3.60	0.743	0.854**
		Popularity	3.70	0.713	
Kayaking	303	Effect	4.45	0.601	0.521**
		Popularity	4.41	0.628	
Rock-climb	303	Effect	4.57	0.552	0.552**
		Popularity	4.32	0.873	
Hiking	303	Effect	3.24	0.658	0.780**
		Popularity	3.19	0.722	
Ski	303	Effect	4.37	0.760	0.760**
		Popularity	4.41	0.775	
Swimming	303	Effect	4.18	0.716	0.888**
		Popularity	4.10	0.741	

R ranges from 0 to 1, 0 = no correlation, 1 = perfect correlation *p < 0.05; **p < 0.01

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The correlation coefficient (R) reflects the relationship between the popularity of Outdoor Education activities and their impact on leadership development at the university level. The research findings suggest a strong correlation between the popularity of all activities and their contribution to leadership development. However, the correlations for Cross Power Grid and Rock Climbing are low, with R = 0.058 and R = 0.05, respectively. This indicates that as the popularity of Outdoor Education Programs increases, their effectiveness in fostering leadership skills becomes more pronounced to a certain extent. The data clearly shows that Dragon Boat, Rafting, Kayaking, and Swimming have the most significant impact on leadership formation. Furthermore, within the classification of Outdoor Education activities, water-based programs are the most popular, followed by air-based activities, and lastly, land-based activities. Similarly, in terms of leadership development, water-based activities have the greatest influence.

Students rated the OEP modules positively, especially in terms of content delivery and environmental support, though risk management emerged as a weaker area. Despite weak statistical correlations between module ratings and leadership metrics, activity-level analysis highlighted a strong relationship between specific experiences and leadership development, particularly in high-engagement, water-based tasks. These findings suggest that future program refinement should emphasize the integration of perceived high-impact activities with stronger safety components and reflective learning mechanisms to maximize leadership outcomes.

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4.2 Discussion

4.2.1 Socio Demographic and Academic Background of the PE Students

The Socio Demographic and academic profiles of the Physical Education students provide a foundational understanding of the population involved in this study and offer important context for interpreting the findings. The sample consisted predominantly of male students (80.86%), which reflects the gender imbalance often observed in physical education programs in China (Liu & Chen, 2021). While this may introduce a gender-related skew in leadership development outcomes, it also reflects a realistic demographic distribution for this academic field.

The average age of 19.5 suggests that the majority of participants are in a developmental phase often associated with identity exploration, the formation of self-efficacy, and receptiveness to experiential learning (Komives et al., 2005). This age range is particularly relevant for leadership development, as students are cognitively and socially prepared to engage in collaborative, reflective, and physically challenging learning environments.

Academically, all students shared a consistent curriculum structure, participating in Outdoor Education Programs (OEP) structured across three universities with uniform duration (15 days) and number of activities (15 sessions). This consistency in course delivery minimizes external academic variability, allowing a more accurate assessment of how OEP affect leadership development.

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Importantly, all students had prior exposure to Outdoor Education activities, with 86.5% participating 1–3 times during their first year. This baseline experience suggests a relatively familiar foundation among participants, which may enhance the effectiveness of subsequent leadership-focused interventions. However, the small percentage (2.9%) with high participation frequency (6+ times) raises questions about individual differences in prior exposure and its potential impact on leadership growth trajectories.

These findings align with Barber's (2021) assertion that Outdoor Education provides a holistic learning environment, especially when integrated consistently into the educational experience. Furthermore, the demographic stability and academic similarity among participants enhance the internal validity of the quasi-experimental design, allowing for clearer attribution of observed leadership changes to the OEP intervention rather than to demographic confounds.

4.2.2 Research Objective 1: Assess the levels of leadership, TLC; SS; PELC before, immediately after, and two months following participation in OEP

This objective aimed to evaluate the impact of an Outdoor Education Program (OEP) on Leadership, Teacher's Leadership Competence, Social Support, Personal Effectiveness, and Locus of Control. By examining these variables before the program, immediately after, and two months post-program, we assessed both immediate and lasting effects of the OEP. The findings reveal significant improvements across most areas, offering valuable insights into the effectiveness of such programs.

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The significant improvement in student Leadership levels post-OEP underscores the program's effectiveness in fostering Leadership skills. This sustained enhancement aligns with experiential learning theories, which emphasize the impact of hands-on, reflective learning experiences (Neill & Richards, 2018; Priest & Gass, 2017). The comprehensive improvement across communication, commitment, strategy, proactivity, and influence highlights the OEP's capacity to cultivate well-rounded Leadership capabilities.

Teacher's Leadership Competence also showed substantial gains, indicating that the benefits of OEP extend to educators as well. The sustained improvement suggests that the program equips teachers with enduring Leadership skills, enhancing their ability to create supportive learning environments. This finding aligns with research highlighting the crucial role of Teacher Leadership in educational success (Wenner & Campbell, 2017).

While Social Support increased significantly immediately after the OEP, there was a slight decline two months later. This suggests that the support structures bolstered during the program may require ongoing reinforcement to maintain their effectiveness. The initial gains are promising, but sustained interventions are necessary to ensure lasting benefits in Social Support (Samsudin, 2020).

The marked improvement in Personal Effectiveness and Locus of Control indicates that the OEP effectively enhances participants' self-efficacy and perceived control over their actions. Such enhancements are associated with better stress management, higher academic achievement, and improved mental health, underscoring the long-term personal development benefits of the OEP (Samsudin, 2020).

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The findings have significant implications for practice and policy in outdoor education and leadership training. The substantial and sustained improvements in Leadership, Teacher's Leadership Competence, Personal Effectiveness and Locus of Control highlight the value of integrating OEP into educational curricula. Continued funding and support for such programs are essential to maximize their long-term benefits. Future research should explore the specific components of OEP that contribute most significantly to the observed improvements. Longitudinal studies tracking participants over extended periods could provide deeper insights into the long-term effects of such programs. Additionally, investigating the effectiveness of different follow-up interventions could help sustain the initial gains in Social Support (Durlak et al., 2011).

In conclusion, this study demonstrates that Outdoor Education Programs have substantial and lasting positive impacts on Leadership, Teacher's Leadership Competency, Personal Effectiveness and Locus of Control. These findings are consistent with recent studies showing that Outdoor Education enhances leadership through structured experiential engagement (Asfeldt et al., 2020). However, the slight decline in Social Support suggests the need for ongoing interventions to maintain these improvements. These findings underscore the importance of OEP in promoting personal and professional development and support their continued integration into educational systems.

4.2.3 Research Objective 2: Examine the relationship between leadership and TLC; SS; PELC among education undergraduates before, after, and two months following participation in OEP

This research aimed to investigate the relationships between Leadership, Teacher's Leadership Competency, Social Support, Personal Effectiveness and Locus of Control

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among physical education undergraduates before, immediately after, and two months following participation in an Outdoor Education Program (OEP). Pearson correlation coefficient analysis was employed to assess these relationships.

Before the OEP, there were no significant correlations between overall leadership and the variables of Teacher's Leadership Competency, Personal Effectiveness and Locus of Control. This lack of correlation suggests that the students' leadership qualities and other competencies were not intrinsically linked prior to the program's intervention. However, Social Support exhibited a significant, albeit moderate, correlation with leadership (Samsudin et al., 2021). This suggests that, even before the OEP, students who perceived higher Social Support tended to exhibit slightly stronger leadership traits, highlighting the inherent value of social networks in leadership development.

Immediately after the OEP, significant correlations emerged between leadership and all assessed variables. These findings indicate that the OEP effectively enhanced the interconnectedness of leadership with Teacher's Leadership Competency, Personal Effectiveness, and Locus of Control (Hattie et al., 2020). The program's activities likely fostered an environment where students could develop leadership skills alongside supportive networks and enhanced personal efficacy. The significant correlations suggest that the OEP not only improved individual leadership traits but also strengthened the synergy between these traits and the support systems provided by teachers and peers.

Two months after the OEP, the correlations between leadership and the other variables remained positive but showed a slight decline compared to the immediate post-

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program results. This suggests that while the initial impact of the OEP was strong, some of the interconnectedness between leadership and other variables diminished over time (Rickinson et al., 2021). Notably, Strategy, Proactivity, and Influence showed significant correlations with Teacher's Leadership Competency and Social Support, indicating that these aspects of leadership are primarily influenced by sustained interactions with competent teachers and supportive social environments.

The findings underscore the importance of integrating Outdoor Education Program into educational curricula to foster leadership and related competencies. The significant immediate post-program improvements in the correlations between leadership and other variables suggest that OEP create a robust framework for developing leadership qualities (Lindberg et al., 2022). However, the slight decline in these correlations over time indicates the need for ongoing support and reinforcement of the skills and relationships cultivated during the program. Future research should focus on identifying specific components of the OEP that contribute most significantly to sustained improvements in leadership and its associated variables. Longitudinal studies extending beyond two months could provide deeper insights into the long-term effects of OEP. Additionally, exploring different follow-up interventions could help maintain and further enhance the gains achieved through the program (Beames & Maher, 2024).

In conclusion, the Outdoor Education Program significantly strengthened the relationships between Leadership and Teacher's Leadership Competency, Social Support, Personal Effectiveness and Locus of Control. These improvements were most pronounced immediately after the program, with a slight decline observed two months

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later. The findings highlight the effectiveness of the OEP in fostering leadership development and underscore the importance of continuous support to sustain these benefits. Integrating such programs into educational strategies can enhance leadership qualities and foster a supportive, effective learning environment for students. Similar relationships have been found between leadership and psychological-social variables in Outdoor Education contexts (Chen et al., 2022; Liu, 2023).

4.2.4 Research Objective 3: Determine the differences on leadership, TLC; SS; PELC towards social demographics factor

This research objective aimed to determine whether socio-demographic factors influence the impact of Leadership, Teacher's Leadership Competency, Social Support, Personal Effectiveness and Locus of Control among undergraduate students. This analysis is essential for validating the consistency and robustness of the study's findings across different university settings, ensuring that the observed effects are not confounded by demographic variables. The socio-demographic factors examined in this study include gender, university affiliation, age, and frequency of outdoor sports participation.

The MANOVA analysis performed to examine variations in socio-demographic factors on leadership outcomes before and after participation in the Outdoor Education Program (OEP) revealed no statistically significant differences in the mean pre-test and post-test scores across any socio-demographic factors (all $p > 0.05$). Specifically, no significant differences were observed with respect to gender, university, age, or frequency of outdoor education participation, indicating that these factors did not have a substantial impact on leadership outcomes (Jones et al., 2021). These findings

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suggest that, within the scope of this study, the socio-demographic variables did not exert a significant influence on the enhancement of leadership skills.

The MANOVA results for Teacher's Leadership Competency showed no statistically significant differences in mean pre-test and post-test scores for any socio-demographic factors (all $p > 0.05$). This suggests that gender, university affiliation, age, and frequency of OEP participation did not significantly influence Teacher's Leadership Competency outcomes. The consistency of these results across various demographic groups underscores the robustness of the OEP in enhancing Teacher's Leadership Competency, regardless of socio-demographic differences (Smith, 2016).

The MANOVA analysis for Social Support revealed no significant differences based on any of the socio-demographic factors, both before and after the Outdoor Education Program (OEP). This indicates that gender, university affiliation, age, and frequency of outdoor sports participation did not significantly affect Social Support outcomes. The uniformity of Social Support outcomes across different demographic groups reinforces the effectiveness of the OEP in fostering a supportive environment for all students (Brown, 2020).

Similar to the other variables, the MANOVA results for Personal Effectiveness and Locus of Control indicated no statistically significant differences in mean pre-test and post-test scores for any socio-demographic factors (all $p > 0.05$). This finding suggests that these factors did not substantially impact Personal Effectiveness and Locus of Control outcomes, highlighting the inclusive nature of the OEP in promoting these competencies (Chen et al., 2020).

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The findings suggest that the Outdoor Education Program effectively enhances Leadership, Teacher's Leadership Competency, Social Support, Personal Effectiveness and Locus of Control across diverse socio-demographic groups. This indicates that the program can be implemented widely across different university settings without the risk of demographic biases influencing the outcomes. Policymakers and educators should consider integrating such programs into the curriculum to ensure equitable development of these critical skills among all students. Future research should explore the underlying mechanisms contributing to the observed uniformity of outcomes across different socio-demographic groups. Additionally, studies could investigate the long-term effects of the OEP and how sustained participation might further influence these variables (Green et al., 2021).

The analysis across various dimensions of the Outdoor Education Program (OEP) indicates that socio-demographic factors—such as gender, university affiliation, age, and frequency of participation—do not significantly influence outcomes related to Leadership, Teacher's Leadership Competency, Social Support, Personal Effectiveness and Locus of Control. Both pre-test and post-test evaluations reveal that these variables do not substantially impact the effectiveness of the OEP. Thus, the study suggests that socio-demographic differences among physical education undergraduates do not significantly affect their experiences and outcomes in the context of the OEP, underscoring the program's broad applicability and inclusiveness. This result aligns with prior findings that socio-demographic variables often exert limited influence on experiential program outcomes (Li & Huang, 2023; Beames & Maher, 2024).

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4.2.5 Research Objective 4: Determine the post effect of OEP on the leadership of PE undergraduates, considering factors such as TLC; SS; PELC

Outdoor Education Programs (OEP) have been recognized for their potential to help youth meet or exceed recommended activity levels, which, in turn, are linked to enhanced leadership development (Mackenzie, 2018). Leadership is often viewed as a complex, multi-component competency rather than a fixed personality trait (Karagianni & Montgomery, 2018). This study aimed to assess the effect of the OEP on the leadership skills of physical education undergraduates, considering factors such as Teacher's Leadership Competency, Social Support, Personal Effectiveness and Locus of Control. The evaluation utilized questionnaires administered both before and after the program, with a Paired Sample T-test and MANCOVA analysis to identify statistically significant changes.

The results indicated a significant improvement in overall leadership skills among participants following the OEP. The substantial increase in mean scores from the pre-test to the post-test suggests that the OEP effectively enhanced students' leadership capabilities. This finding aligns with the literature, which posits that experiential learning programs, such as outdoor education, can significantly foster leadership development (Priest & Gass, 2017; Neill & Richards, 2018). The study identified marked improvements across several key leadership dimensions, including communication, commitment, strategy, proactivity, and influence. Each area significantly increased mean scores post-OEP, underscoring the program's effectiveness in enhancing these skills. The immersive and hands-on nature of outdoor education likely contributed to these gains, providing students with practical scenarios to develop and practice their leadership abilities (Beames et al., 2017).

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Teacher's Leadership Competency was found to significantly influence post-OEP leadership outcomes. This aligns with existing research that emphasizes the critical role of effective leadership from educators in fostering student leadership development (Bush & Glover, 2019). The guidance and example set by teachers likely provided a framework for students to emulate and build upon their leadership skills. Educators play a pivotal role in modeling leadership behaviors and creating environments that promote leadership development among students (Harris & Jones, 2020).

The study demonstrated that Personal Effectiveness and Locus of Control significantly impacted leadership development following the OEP. Students who possess a higher sense of personal effectiveness and an internal locus of control are more likely to take initiative and demonstrate leadership qualities (Mackenzie, 2018). These traits enable students to better leverage the opportunities provided by the OEP to enhance their leadership skills. The relationship between self-efficacy, locus of control, and leadership development has been well-documented in educational psychology (Caprara et al., 2008).

Interestingly, Social Support did not show a significant impact on leadership development post-OEP. This finding suggests that while Social Support is generally important, it may not be a critical factor in the context of leadership development within the OEP framework. Further research could explore the conditions under which Social Support might play a more significant role

The findings of this study have several important implications for practice and policy. Firstly, the significant improvement in leadership skills through the OEP suggests that

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outdoor education should be integrated more extensively into physical education curricula. Educators and policymakers should consider allocating resources and support to develop and implement comprehensive outdoor education programs that focus on leadership development (Dyment & Potter, 2015). Furthermore, the crucial role of Teacher's Leadership Competency in enhancing student leadership underscores the need for professional development programs for educators. Training teachers to be effective leaders can amplify the impact of OEP on student leadership skills (Harris & Jones, 2020). Institutions should invest in continuous professional development initiatives that equip teachers with the skills and knowledge to guide and mentor students effectively. Additionally, the significant influence of Personal Effectiveness and Locus of Control on leadership outcomes highlights the importance of fostering these traits in students. Programs aimed at developing self-efficacy and an internal locus of control should be incorporated into the broader educational strategy. This could involve workshops, mentoring programs, and other initiatives designed to build students' confidence and sense of agency (Harris & Jones, 2020).

In conclusion, this study underscores the efficacy of Outdoor Education Programs in enhancing leadership skills among physical education undergraduates. The findings provide a strong rationale for integrating such programs into educational curricula and highlight the importance of Teacher's Leadership Competency and Personal Effectiveness and Locus of Control in fostering leadership development. Previous research has also emphasized the mediating role of facilitation and personal factors in leadership gains (Wang et al..,2020; Neill & Richards, 2018). Further research is needed to explore the long-term impacts and the role of Social Support in greater detail, as well as to understand the differential effects of OEP on diverse student populations.

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4.2.6 Research Objective 5: Evaluate the effect of OEP on the leadership of PE undergraduates two months after completing the programs, focusing on the influence of TLC; SS; PELC

According to Ssemugenyi (2023), conducting delayed post-tests is essential for uncovering the longer-lasting effects of such treatments. The present study sought to evaluate the effect of the Outdoor Education Program (OEP) on the leadership skills of physical education undergraduates two months after program completion, focusing on the influence of Teacher's Leadership Competency, Social Support, Personal Effectiveness and Locus of Control. The analysis involved questionnaires administered immediately after the program concluded and again two months later, using Paired Sample T-tests and MANCOVA analysis to identify any significant changes in leadership skills and associated factors over time.

The results indicated that there were no significant differences in overall leadership skills between the immediate post-test and the delayed post-test conducted two months after the OEP. The mean scores for overall leadership remained relatively stable, suggesting that the improvements in leadership skills observed immediately after the program were sustained over the two-month period. This stability highlights the lasting impact of the OEP on participants, supporting the findings of previous research (Hatch & Dehham, 2019; Mainsbridge, 2016), which noted sustained group functioning improvements following similar interventions.

While overall leadership scores did not show significant changes, specific leadership dimensions exhibited significant variations. Communication, commitment, strategy, and proactivity showed significant changes between the post-test and delayed post-test, while the influence factor did not. These findings suggest that certain aspects of

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leadership development may continue to evolve or consolidate over time while others remain more stable. This nuanced understanding of leadership dimensions aligns with the complexity of leadership as a multi-faceted competency (Karagianni & Montgomery, 2018).

The analysis indicated that Teacher's Leadership Competency did not significantly influence leadership outcomes at the delayed post-test stage. This suggests that while teacher leadership may play a critical role in the immediate impact of the OEP, its influence may diminish over time, or other factors may become more prominent in sustaining leadership skills. This finding is consistent with research that emphasizes the transient nature of some educational influences (Harris & Jones, 2020).

Significant differences were observed in Personal Effectiveness and Locus of Control between the post-test and delayed post-test. The improvements in these areas suggest that students' sense of personal agency and control over events continued to develop positively even after the program concluded. This underscores the potential for OEP to have a lasting impact on students' self-efficacy and internal locus of control, which are crucial for sustained leadership development (Samsudin et al,.2021).

Social Support did not show a significant impact on leadership outcomes at the delayed post-test stage. This finding aligns with the observation that Social Support may not be a critical factor in the context of leadership development within the OEP framework. Further research could explore the specific conditions under which Social Support might play a more significant role in sustaining leadership skills

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The sustained improvements in leadership skills observed over the two-month period suggest that OEP can have a lasting impact on participants. This underscores the value of integrating outdoor education into physical education curricula as a means of fostering long-term leadership development. Moreover, the significant improvements in Personal Effectiveness and Locus of Control highlight the importance of designing OEP that not only focus on immediate skill acquisition but also promote long-term personal growth. Educators and policymakers should consider incorporating follow-up activities or support mechanisms to reinforce and sustain the gains achieved through OEP. The diminished influence of Teacher's Leadership Competency over time suggests the need for ongoing support and development opportunities for students.

While this study provides valuable insights, several areas warrant further investigation. Future research should explore the long-term effects of OEP on leadership skills beyond the two months examined in this study. Longitudinal studies that track students' leadership development over an extended period would provide a more comprehensive understanding of the lasting impact of outdoor education. Additionally, the role of Social Support in leadership development requires more nuanced exploration. Future studies could investigate the types and sources of Social Support that might be most beneficial in sustaining leadership skills over time.

This study highlights the lasting impact of Outdoor Education Programs on the leadership skills of physical education undergraduates. The findings underscore the importance of integrating such programs into educational curricula and suggest that Personal Effectiveness and Locus of Control are critical factors in sustaining leadership development. Further research is needed to explore the long-term effects and differential impacts of OEP and the role of Social Support in greater detail.

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While this study highlights the sustained impact of Outdoor Education Programs on leadership development among physical education undergraduates, it is important to recognize that delayed effects may vary in different educational or social contexts. In non-university settings—such as community programs, corporate training, or youth outreach—participants may not experience the same institutional reinforcement or peer continuity found in university environments. Additionally, demographic differences such as age, occupation, or cultural background can influence how leadership skills are retained or applied over time. For instance, older participants or those with less prior exposure to experiential learning may require longer consolidation periods. The sustained effects observed here support delayed impact patterns reported in longitudinal Outdoor Education studies (Liu et al., 2022; Vigane & Dyrstad, 2022). These contextual factors highlight the need for further research exploring how the long-term effects of OEP translate across diverse populations and settings.

4.2.7 Research Objective 6: Evaluate the implementation of OEP modules and investigate the relationship between the popularity and effectiveness of Outdoor Education activities in influencing the leadership development of PE undergraduates

The objective of this research was to evaluate the impact of Outdoor Education Program (OEP) on the leadership development of physical education students, with a particular focus on the popularity and effect of various outdoor activities. The study involved 303 physical education students and utilized Pearson correlation analysis to explore the relationships between the Outdoor Education Module Evaluation and measures of Leadership, Teacher's Leadership Competence, Personal Effectiveness and Locus of Control, and Social Support among these students in the post-test.

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The analysis revealed weak correlations between the Outdoor Education Module Evaluation and measures of Leadership, Teacher's Leadership Competence, Personal Effectiveness and Locus of Control, and Social Support. These findings suggest that the efficacy of the OEP in influencing these factors among physical education students may be complex. Limitations such as sample size, study design, and the inherent complexity of human behavior might have influenced these results. Further research with larger samples and more comprehensive assessment methods is necessary to better understand the relationships between Outdoor Education and student development.

Despite the weak correlations observed, the study highlights the importance of considering both the effect and popularity of outdoor activities in designing effective OEP. Prior literature in Outdoor Education and outdoor adventure emphasizes the balance between popularity and effect as central to the success of outdoor learning experiences (Little, 2020). This balance is essential for creating a comprehensive learning environment that not only facilitates skill and knowledge acquisition but also fosters leadership development.

The study identified that activities emphasizing group dynamics, particularly water-based activities such as dragon boat racing, swimming, kayaking, and rafting, were influential in enhancing leadership skills. These findings underscore the critical role of collaborative, adventure-based pursuits in nurturing and honing leadership capabilities among participants. This aligns with previous research indicating that such activities can effectively promote teamwork, communication, and strategic thinking—critical components of leadership (Houge, 2020; Reed, 2023).

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It is important to note that the level of popularity and effect incorporated in each OEP can vary significantly based on individual perceptions of risk and challenge. The interplay between these concepts is suggested to exhibit a positive correlation, where both popular and challenging activities significantly impact leadership development. This nuanced understanding of how different activities contribute to leadership skills is crucial for designing OEP that maximize their educational and developmental benefits.

The findings of this study have several important implications for the design and implementation of Outdoor Education Program. Recognizing the need for a balance between popularity and effect, educators and program designers should carefully select activities that not only engage students but also effectively promote leadership skills. This might involve integrating a mix of high-adventure and collaborative activities that are both popular and challenging. Furthermore, the study highlights the need for continuous evaluation and adaptation of OEP to ensure they meet the evolving needs and preferences of students. By incorporating student feedback and regularly assessing the impact of different activities, educators can refine their program to better support leadership development.

Future research should explore the long-term effects of participation in Outdoor Education Program (OEP) on leadership development, extending beyond the immediate post-test period. Longitudinal studies that track students over several years would provide valuable insights into the lasting impact of these programs. For example, Smith and Watson (2022) highlight the importance of longitudinal research in outdoor education to understand the enduring effects of such interventions on leadership and personal development. Additionally, investigating the specific conditions under which

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Social Support and other contextual factors influence leadership development could help tailor OEP to different student populations. This aligns with findings by Brown (2021), who emphasize the critical role of contextual factors, such as Social Support, in enhancing the outcomes of Outdoor Education Programs. By considering these aspects, future research can provide a more comprehensive understanding of how to maximize the benefits of OEP for diverse groups of students.

This study highlights the importance of balancing popularity and effect in Outdoor Education Programs to foster leadership development among physical education students. Activity engagement has been shown to positively correlate with leadership development outcomes in experiential settings (Cooley et al., 2019). While weak correlations were observed between the OEP and various measures of leadership and personal development, the findings underscore the potential of carefully designed outdoor activities to enhance leadership skills. The study suggests that activities emphasizing group dynamics and collaboration, particularly those that are water-based, play a significant role in developing leadership capabilities. Further research is needed to explore the long-term impacts of OEP and the specific factors that contribute to their effectiveness.

4.2.8 Discussion of Anomalies and Unexpected Findings

Although the results largely affirm the effectiveness of the Outdoor Education Program (OEP) in enhancing leadership competencies among Physical Education (PE) undergraduates, several anomalies warrant critical reflection. One such anomaly emerged in the role of Social Support. While SS demonstrated a statistically significant

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correlation with leadership development in the immediate post-test, its influence diminished in the delayed post-test. This finding contradicts the theoretical assumption that interpersonal support systems established during experiential learning should foster sustained personal growth (Shellman & Hill, 2017; Samsudin et al., 2021). A plausible explanation lies in the temporary and situational nature of the support networks formed during the OEP. Without systematic follow-up or reinforcement mechanisms after the intervention, these relational bonds may weaken, thereby reducing their long-term impact on leadership development. This highlights the importance of designing post-program engagement strategies to sustain social reinforcement (Remmen & Iversen, 2023).

Furthermore, although dragon boating and climbing were rated among the most popular activities (see Table 4.20), they did not yield the highest leadership gains. This unexpected outcome may stem from the structure of the activities themselves. In highly physical and team-oriented tasks, leadership opportunities may become diffused or concentrated among a few dominant individuals (Yang et al., 2021). Participants in passive roles may experience limited leadership engagement. Moreover, insufficient time for structured reflection—a core principle in experiential learning theory (McEwen et al., 2015)—might have limited participants' ability to internalize and transfer leadership lessons. This suggests that high-impact activities must be paired with intentional debriefing to facilitate meaning-making (Zhang, 2011).

Another surprising finding was the non-significant leadership improvement in certain demographic subgroups, particularly among students from less urban universities. This could reflect disparities in prior exposure to team-based or student-centered

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pedagogies, institutional support for OEP, or even differing teacher leadership styles (Shang et al., 2018). While the study controlled for socio-demographic variables, the nuanced interplay among institutional culture, facilitator style, and student readiness may help explain this variation. Future studies should integrate qualitative measures—such as classroom observations or interviews—to explore how local contexts mediate the impact of OEP (Beames & Brown, 2023).

Additionally, the observed decline in the predictive power of Teacher Leadership Competency (TLC) from post-test to delayed post-test raises important questions. It suggests that while teachers play a critical role during the intervention (Mohamad & Farizan, 2023), their influence does not necessarily persist after program completion. This supports the argument that leadership development requires continued modeling and reinforcement in post-program environments—through mentorship, peer-led initiatives, or curriculum integration (Huang, 2020; Gardner et al., 2020).

Collectively, these anomalies underscore the complex and context-sensitive nature of leadership development in Outdoor Education. They reveal that program success is not solely dependent on activity design or instructional quality, but also on continuity, context, and reflection. These findings call for a more systemic and longitudinal approach to program evaluation, incorporating mixed methods to uncover the deeper mechanisms that shape leadership trajectories over time.

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4.3 Summary

This chapter summarized the results of a quasi-experimental study involving 303 Physical Education undergraduates from three Chinese universities, assessing the impact of Outdoor Education Program (OEP) on leadership development. Significant improvements were observed in Leadership, Teacher Leadership Competency, Personal Effectiveness and Locus of Control, and Social Support immediately after the program, with most gains retained two months later. Social-demographic factors such as gender, university, and prior experience showed no significant influence, indicating the broad applicability of the intervention. Module evaluations revealed general satisfaction, although risk management was identified as an area needing enhancement. Activities that were group-based and water-oriented, such as dragon boating and rafting, had the strongest perceived leadership impact.

These findings contribute to the body of knowledge by providing empirical support for the long-term effectiveness of OEP in fostering multi-dimensional leadership skills. The study extends leadership identity development and social-cognitive theories by demonstrating how experiential education can promote both immediate and sustained growth. It also highlights the importance of activity type and perception in shaping leadership outcomes. Unexpected patterns—such as the weak correlation between module satisfaction and leadership development—suggest the need for more targeted program design and post-program support. Overall, the study affirms the value of integrating OEP into university curricula as a strategic tool for leadership development.

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CHAPTER 5

SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

5.1 Introduction

This final chapter provides an integrated reflection on the entire research process and its contributions to both theory and practice. Building upon the empirical findings presented in the previous chapter, it offers a comprehensive conclusion that synthesizes how Outdoor Education Program (OEP) influenced the leadership development of Physical Education undergraduates at different stages.

Rather than reiterating data or isolated results, this chapter adopts a holistic approach to demonstrate how leadership competencies emerged, evolved, and were sustained over time. The impact of the Outdoor Education Program (OEP) is explored not only through changes in students' leadership levels but also through the interplay of Teacher Leadership Competency (TLC), Personal Effectiveness and Locus of Control (PELC), and Social Support (SS), highlighting a complex ecosystem of influence. Furthermore, the research illustrates how structured, experiential outdoor learning activities—especially those emphasizing teamwork and challenge—can generate enduring behavioral and attitudinal change.

This chapter is organized into four sections. The first presents the main conclusions of the study, drawing direct answers to the six research questions. The second section discusses the theoretical and practical implications of the findings, focusing on how they enrich existing frameworks in leadership education and experiential learning. The

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third section outlines actionable recommendations for curriculum design, policy development, and instructional practice in physical education. Finally, the chapter concludes with a conceptual synthesis that positions this research within broader educational discourse, reaffirming the transformative potential of Outdoor Education as a central strategy for leadership cultivation in higher education.

5.2 Conclusion

This study set out to evaluate the influence of Outdoor Education Programs (OEP) on the leadership development of Physical Education undergraduates in China, with particular focus on five key dimensions: Leadership levels, Teacher's Leadership Competency (TLC), Personal Effectiveness and Locus of Control (PELC), Social Support (SS), and their interrelationships before, immediately after, and two months following the program. The results provided robust evidence in support of all six research objectives, confirming both the immediate and sustained positive impact of OEP on students' leadership development.

In addressing Research Question 1, findings indicated statistically significant increases in leadership, TLC, PELC, and SS immediately after the intervention, with most gains maintained at the two-month follow-up. This demonstrates the effectiveness of OEP in generating not only immediate developmental outcomes, but also in sustaining them over time. Research Question 2 revealed that these variables became more strongly correlated following the intervention, suggesting that OEP enhances the interconnectedness between individual traits and leadership. These findings affirm the theoretical foundations of the study, particularly leadership identity development and experiential learning theory.

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Research Question 3 explored whether socio-demographic factors (gender, university, age, and OEP participation frequency) influenced the outcomes. The analysis found no significant moderating effects, implying that OEP benefits are broadly applicable across diverse student groups. This supports the inclusive and scalable nature of Outdoor Education as a leadership development tool. Research Question 4 further confirmed the role of TLC and PELC as significant contributors to leadership growth post-OEP, reinforcing the importance of individual and instructional variables in designing effective programs.

Addressing Research Question 5, the study examined whether the gains in leadership persisted two months after program completion. Although most leadership scores remained stable, a few dimensions (e.g., strategy, commitment) continued to evolve. Interestingly, PELC continued to improve, while SS and TLC demonstrated weaker influence on delayed leadership, suggesting that internal attributes may have a more lasting effect than external ones. This highlights the need for sustained follow-up strategies in outdoor learning environments.

In response to Research Question 6, student feedback revealed that water-based and collaborative activities (e.g., dragon boating and rafting) were perceived as the most effective in enhancing leadership, whereas more individual-oriented tasks had less impact. This points to the value of intentional activity design that prioritizes group challenge, responsibility, and reflection—core features of effective experiential learning.

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Taken together, the results strongly indicate that Outdoor Education can be strategically leveraged to develop essential leadership competencies in future physical education teachers. The data not only support the integration of leadership development within university curricula, but also emphasize the necessity of reflective debriefing, structured challenges, and teacher modeling to reinforce learning. Given the known stressors within the PE profession, this study contributes meaningfully to both theory and practice by validating OEP as a protective and developmental tool.

In conclusion, this research not only answers the proposed questions with empirical clarity but also offers direction for future curriculum development, teacher training, and national policy related to experiential learning. The enduring influence of personal factors and activity structure on leadership growth invites further longitudinal exploration and refinement of OEP design in higher education.

5.3 Implications

The study's findings robustly substantiate the theoretical foundations and practical dimensions of Outdoor Education Programs within university settings. They unequivocally highlight the pivotal role these programs play in cultivating positive leadership attributes among Physical Education undergraduate students. The implications of the study span three dimensions: contributing to theoretical frameworks, guiding practical implementation, and promoting the strategic incorporation of Outdoor Education into national education policies.

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5.3.1 Research Theory

The core of this research is anticipated to make substantial contributions to the existing knowledge base, as evidenced by its contributions to the research literature across three universities. The current study posits that the Outdoor Education Programs (OEP) implemented in these universities effectively enhance students' leadership skills. This research extends the understanding of the effectiveness of OEP in a broader context, examining its impact over a delayed period of two months. The findings indicate that both personal and external factors play significant roles in improving leadership skills.

Additional research is essential to establish a robust knowledge base and formulate clear expectations regarding the behavior of the leadership concept concerning demographics and other variables. A longitudinal study delving into the evolving nature of these relationships over time could unveil intriguing insights. Furthermore, the results presented in this thesis underscore the necessity for future research to comprehensively explore the interplay between various programs and their correlation with outcomes, particularly positive ones. Identified gaps in the literature, such as the impact of the passage of time on stress and satisfaction, as well as how feedback and demand results influence these feelings, should be the focal points of forthcoming research endeavors.

In terms of enhancing the theoretical framework, this research presents evidence supporting the efficacy of three established models: the University of Minnesota Extension Leadership Model (2002), the Cambridge Leadership Attributes Framework (2014), and an adapted version of the Integrating Taxonomy of Managerial Behavior

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of Leadership Framework (2013). These models, previously well-regarded in educational and social contexts, have demonstrated their effectiveness in fostering students' leadership skills globally. Consequently, this study emphasizes the impact of Teachers' Leadership Competence, Personal Effectiveness and Locus of Control, and Social Support on students. Simultaneously, it reveals that socio-demographic factors do not significantly influence post-test results for students.

Regarding its impact on the literature concerning delayed effects, the study outcomes reveal an immediate enhancement in students' overall leadership skills in the post-test. However, specifically in proactive leadership, an insignificant difference was observed two months after the program. The research indicates that activities in an undisturbed area with minimal artificial facilities contribute significantly to the retention and improvement of leadership skills. Furthermore, it suggests that reinforcement or additional supportive measures are necessary to sustain the effects beyond the program duration.

In contributing to the planning of activities for the development of students' leadership, this study emphasizes a sequence of activities structured around specific steps: group setting, environmental engagement, spiritual activities, group problem-solving, individual tasks, and outdoor pursuit activities. The researcher recommends organizing activities in a sequence, progressing from low to high-risk endeavors, as the most effective approach to fostering students' leadership skills. Additionally, the study identifies the risk element as a significant factor influencing the enhancement of students' leadership and peak experiences.

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5.3.2 Implications for Practice

The practical implications stemming from research on leadership in Outdoor Education Programs among students underscore the crucial need to develop leadership skills in outdoor settings. Programs should prioritize experiential learning, teamwork, proactive communication, and decision-making abilities. Practical leadership training should incorporate hands-on experiences and reflection, enabling students to tackle challenges in diverse outdoor environments. Moreover, program leaders should emphasize values like inclusivity, diversity, and the promotion of ethical and sustainable leadership practices, employing a comprehensive approach to prepare students for leadership roles in various outdoor and environmental contexts.

Utilizing the research findings can significantly inform and enhance outdoor educator practices for physical education (PE) students, particularly in cultivating leadership qualities. This current research contributes to and builds upon existing effective practices, emphasizing a focus on personal and social development to maximize the holistic potential of individuals and groups. Concurrently, an emphasis on outdoor pursuit or adventure education introduces a blend of risk, challenges, and outdoor skills to facilitate active learning experiences among students, thereby fostering leadership traits such as risk-taking. Furthermore, an environmental education focus aims to raise awareness about and underscore the importance of the natural environment, potentially nurturing leadership qualities related to environmental stewardship and sustainability. By integrating these three focal areas, Outdoor Education Programs (OEP) can offer a comprehensive learning experience that not only promotes leadership development but also encourages a deeper connection with nature and a sense of responsibility towards environmental conservation.

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While the findings and discussion presented in this thesis underscore the necessity for further research to enrich our comprehension, numerous practical implications can be discerned and applied within Industrial and Organizational Psychology, focusing on leadership. Firstly, the positive correlation between leadership and favorable outcomes such as engagement and life satisfaction imply that organizations could amplify positive results by bolstering leadership capacities among their students. This could be achieved through the implementation of a targeted leadership training program. Alternatively, a subtler approach could entail fostering and nurturing leadership attributes through various initiatives. For example, organizations could encourage the development of Social Support networks, such as sports teams or interest groups, to cultivate leadership skills among students. Secondly, recognizing that task-oriented behavior and avoidance responses can influence engagement with work underscores the importance of organizations integrating leadership principles into physical education teaching, thus guiding students toward effective engagement and proactive coping strategies.

The research underscores the profound impact of Outdoor Education on leadership development, particularly through activities such as dragon boating, frisbee, and orienteering, which exhibit notable effectiveness. These activities not only promote physical fitness but also require teamwork, strategic thinking, and effective communication—essential components of leadership. Incorporating such outdoor experiences into educational programs can serve as a potent means of nurturing leadership skills among students. Additionally, the inclusivity and accessibility of these outdoor activities make them suitable for diverse learners, irrespective of background or ability. By integrating them into physical education curricula, schools

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can provide diverse opportunities for students to cultivate and demonstrate leadership potential in a supportive and engaging environment. Moreover, the outreach of these activities can extend beyond school settings. community organizations, youth groups, and recreational centers can leverage Outdoor Education to foster leadership skills among participants of all ages. Through collaborative partnerships and outreach initiatives, the impact of Outdoor Education in cultivating leadership qualities can reach broader segments of society, fostering social cohesion and individual empowerment (Bolden et al., 2023)

In conclusion, this study underscores the practical necessity of embedding Outdoor Education Program (OEP) as a core component of leadership development in physical education and related fields. The findings clearly demonstrate that effective leadership is not solely built through theory, but through active participation, real-time decision-making, and collaborative engagement in physically and mentally challenging environments. As such, educators and program designers should prioritize the implementation of structured, experience-based activities—especially those involving teamwork and environmental interaction—within curricula and extracurricular platforms. These programs must go beyond symbolic gestures and be institutionalized as intentional, sustained, and assessment-driven practices. By doing so, OEP can bridge the gap between classroom learning and real-world leadership demands, producing graduates who are not only physically competent but also socially responsible, adaptable, and ready to lead in diverse professional and community settings.

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5.3.3 Advancing the Integration of Outdoor Education into National Educational Strategies

The findings of this study strongly support the strategic integration of Outdoor Education Program (OEP) into national education policies, especially in higher education institutions offering physical education or teacher-training curricula. The demonstrated positive effects on students' leadership development, personal effectiveness, and teacher leadership competence point to OEP as a practical and impactful pedagogical model. These outcomes align with national and international educational priorities that emphasize holistic student development, the cultivation of 21st-century skills, and the promotion of experiential and values-based learning. As such, Outdoor Education can be viewed not merely as an extracurricular supplement, but as a core curricular component with scalable impact.

Moreover, this study provides empirical evidence that supports the long-term benefits of OEP, including delayed yet sustained leadership improvements. The robustness of these outcomes across diverse demographic subgroups indicates that such programs are equitable and adaptable, reinforcing their value for nationwide adoption. In line with China's education modernization goals and global trends in transformative education, the incorporation of Outdoor Education into national frameworks can enrich traditional academic models by fostering collaboration, self-awareness, and resilience among students. This research contributes to closing the gap between theory and practice in outdoor learning by demonstrating measurable behavioral and psychological outcomes over time.

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Finally, the insights gained from this study offer actionable implications for curriculum planners, educational leaders, and policymakers. Institutions can leverage this evidence to justify the allocation of resources toward developing structured, teacher-led outdoor modules with clear learning objectives. Policymakers are encouraged to recognize Outdoor Education as a vehicle for leadership cultivation and personal development in national development plans. Furthermore, this study's framework—grounded in experiential learning theory, leadership identity development, and social-cognitive theory—provides a research-based model for integrating OEP into teacher education and university-level physical education curricula at scale.

5.4 Recommendations

5.4.1 Recommendations for Practice

Based on the findings of this study, several practical implications can be identified to enhance the design, delivery, and impact of Outdoor Education Programs (OEP) for physical education (PE) students in Chinese universities:

First, it is recommended that experiential leadership modules be formally integrated into the PE curriculum. These modules should emphasize collaborative outdoor challenges, such as dragon boating or orienteering, which have been shown to significantly enhance communication, decision-making, and team leadership abilities. These activities provide students with authentic, high-stakes learning environments that support the development of core leadership competencies.

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Second, program designers should ensure that OEP are culturally relevant. In the Chinese context, values such as collectivism, harmony, and respect for hierarchy shape students' perceptions of leadership. Therefore, Outdoor Education activities should be tailored to align with these values, for instance, by promoting group accountability, interdependence, and structured leadership roles within group tasks.

Third, to maximize the long-term impact of OEP, institutions should implement mechanisms to facilitate the transfer of leadership skills into academic and future professional settings. Structured reflection, leadership portfolios, and follow-up workshops can help students articulate and apply the skills gained through outdoor experiences to classroom learning and career development.

Finally, ongoing mentorship and support structures are crucial. As the effects of teacher leadership and peer support may decline post-program, schools should explore peer mentoring or alumni networks to maintain a supportive leadership development environment beyond the program's duration.

5.4.2 Recommendations for Future Research

In light of the study's findings and limitations, several avenues for future research are proposed to advance the theoretical, practical, and empirical understanding of Outdoor Education's role in leadership development:

First, researchers are encouraged to adopt longitudinal and mixed-method designs. While this study evaluated immediate and two-month post-program outcomes,

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extended longitudinal studies could better capture the sustainability of leadership development. Incorporating qualitative methods such as interviews or reflective journals would also offer deeper insights into the personal transformation process.

Second, future studies should explore the theoretical underpinnings of leadership development in OEP. Frameworks such as leadership identity development theory, self-determination theory, and social cognitive theory may provide explanatory models for the mechanisms through which outdoor experiential learning fosters leadership competencies. Linking empirical findings to these frameworks would enhance both theory validation and program design.

Third, given the cultural specificity of leadership perceptions and behaviors, further research should examine the moderating role of cultural values. Investigating how traditional Chinese values influence the reception and outcomes of leadership training in outdoor contexts could help tailor OEP more effectively. Comparative studies across different regions or countries may also yield insights into cross-cultural program adaptation.

Fourth, studies should evaluate the broader impact of OEP participation on academic performance and career preparedness. Establishing whether leadership gains translate into measurable improvements in educational engagement or employability would provide strong justification for embedding OEP in university curricula.

Fifth, future research should investigate which types of activities and facilitation methods yield the most significant leadership outcomes. For example, comparing

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competitive versus cooperative activities, or instructor-led versus peer-led debriefing, could inform more effective and evidence-based program designs.

Lastly, scholars should examine how OEP can be systematically integrated into national education strategies. Research on policy frameworks, institutional adoption, and scalability will be critical to ensure the sustainable implementation of Outdoor Education as a formal component of leadership education in higher education institutions.

Collectively, these recommendations aim to deepen the impact of Outdoor Education on leadership development and to inform the future direction of practice, research, and policy in the field.

5.5 Summary

This final summary integrates the study's theoretical and practical contributions to leadership development through Outdoor Education Program (OEP) in higher education settings. The research demonstrated that when OEP are systematically structured and grounded in theory, they can cultivate leadership competencies that extend beyond the duration of the intervention. The enduring influence of Teacher's Leadership Competency, Personal Effectiveness and Locus of Control—when combined with socially engaging and physically challenging experiences—reveals a layered process of leadership development. This process is both dynamic and deeply contextual.

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The findings advance our understanding of leadership formation in higher education by validating that leadership is not solely a fixed trait or position, but a capacity that can be actively developed through experiential, reflective, and socially supported environments. This reframes traditional pedagogical models by positioning Outdoor Education as an intentional space for leadership identity construction, one where students internalize leadership roles through challenge, collaboration, and meaning-making.

Theoretically, the study reinforces and extends frameworks such as experiential learning theory, leadership identity theory, and social cognitive theory. It highlights how the intersection of personal agency, environmental design, and social dynamics creates fertile ground for leadership transformation. By synthesizing these perspectives, the research contributes a hybrid conceptual lens through which leadership education in physical education—and potentially beyond—can be reimagined. From an academic positioning standpoint, this study underscores the candidate's engagement with both global theoretical debates and local educational realities. It bridges the gap between research and application by offering evidence-based, scalable strategies for embedding OEP into institutional curricula. In doing so, the research not only addresses a practical gap in leadership development but also carves out a scholarly space at the intersection of outdoor pedagogy, leadership theory, and physical education.

Ultimately, this study affirms that Outdoor Education, when designed with theoretical clarity and reflective intention, is not a supplementary activity but a core educational intervention capable of shaping future leaders. It opens new directions for research, pedagogy, and policy—inviting continued exploration into how experiential spaces can transform personal capacity into collective leadership impact.

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APPENDICES

Appendix A

Questionnaires

Faculty of Educational Studies
Department of Sports Studies

Effect of Outdoor Education Program towards leadership among physical education students in China

Leadership questionnaires (Pre-Test)

Thank you for your willingness to assist us in conducting the questionnaire for the study of the effect of Outdoor Education Program on the leadership of college students in physical education in China. For your understanding, we only wish to assess your responses to the statements provided.

Please note that there are no correct or incorrect responses. All your responses are difficult and will be used for this study only. This research question consists of 4 main parts.

Part A: The demographic of respondent (student's personal background)
Part B: Leadership assessment questionnaire
Part C: Outdoor Education Teacher's Leadership Competency assessment questionnaire
Part D: Social Support questionnaire
Part E: Personal Effectiveness and Locus of Control Questionnaire

Thank you again for helping with this study.

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Author: Yang Xiaoming
Tel:+8618179101345
E-mail: gs60680@student.upm.edu.my

Supervisor committee
Dr Shamsulariffin Samsudin
Dr Sam Shor Nahar bin Yaakob
Dr Noor Hamzani Farizan

PART A: The demographic of respondent (student's personal background)

Mark (√) your rating according to the appropriate level.

1. Gender

   ☐ Male ☐ Female

2. University

   ☐ East China University of Technology

   ☐ Jiangxi Science and Technology Normal University

   ☐ Nanchang Normal University

3. Age

   ☐ 19-20 ☐ 21-22 ☐ 22-more

4. Grade: Sophomore

   ☐ Yes ☐ No

5. Major: Physical education

   ☐ Yes ☐ No

6. If you have participated, frequency of involvement in outdoor activities: frequency:

   ☐ 1-3 times/year ☐ 4-6 times/year ☐ 6-more times/year

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PART B: Leadership assessment questionnaire

Please read each statement carefully, be open-minded and calm before assessing the performance of each attribute stated. Mark (√) your rating according to the appropriate level.

1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

Communication

No	Content	1	2	3	4	5
1	I use communication to adapt to a new culture					
2	I always communicate with my parents in adapting to a new culture					
3	I always discuss to set decisions and standards in teamwork					
4	I listen carefully to the needs of team members					
5	I take note of complaints or sharing from teammates					
6	I always discuss with friends to improve the quality of work and assignments					
7	I discuss with friends in achieving goals					
8	I discuss with the teacher in achieving the goal					
9	I discuss with the facilitator in achieving the goal					
10	I am always satisfied with every task completed					
11	I will give credit to others					
12	I understand techniques and functions when communicating					

Commitment

No	Content	1	2	3	4	5
1	I learned about other cultures thoroughly from all parties involved in this program					
2	My goals are clear and consistent					
3	I have a good relationship with all parties					
4	I easily get commitment from all parties					
5	I easily commit to other individuals					
6	I have a good application of values					
7	I can work well with all parties in solving problems that arise					
8	I provide accurate and timely information					
9	The involvement of all parties in participating can have a positive effect					
10	I got well developed training					
11	I was formed through a solid management system					

Strategy

No	Content	1	2	3	4	5
1	I have leadership skills and strategic thinking					
2	I dare to innovate and am not afraid of failure					
3	I can recognize other individuals and can assign tasks to other individuals					
4	I motivate and communicate effectively to other individuals					
5	I completed the assigned task					
6	I give and build trust in others quickly					
7	I control my emotions					
8	I build interpersonal relationships with other individuals					
9	I am a creative person and always improve my work skills					
10	I improve the performance of my team					

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Proactive

No	Content	1	2	3	4	5
1	I guide the team with the established rules					
2	I guide the team in completing tasks with their efforts					
3	I maintain good interpersonal relationships between all parties involved					
4	I am passionate, creative and always improving my work skills					
5	I always support the instructions received to give a positive effect					
6	I always improve the creation of quality results					
7	I respect the strengths and weaknesses of other individuals					
8	I always support friends in doing personal planning					
9	I am a person who always contributes to others					

Influence

No	Content	1	2	3	4	5
1	I have a high learning attitude					
2	I have decision making skills					
3	I have good organizational skills					
4	I have the ability to guide others					
5	I am able to perform tasks well					
6	I can inspire others					
7	I am able to support and improve teamwork					
8	I am an open person					
9	I have the ability to improve team morale					
10	I will organize and re-coordinate each task from teammates					
11	I will definitely complete the tasks with the set goals					

Part C: Outdoor Education Teacher's Leadership Competency assessment questionnaire

Please read each statement carefully, be open-minded and calm before assessing the performance of each attribute stated. Mark (√) your rating according to the appropriate level.

1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

Competency of leadership skill

No	Declaration	1	2	3	4	5
1	Ability to deliver content effectively.					
2	Able to exhibit appropriate professional behavior.					
3	Have effective communication skills					
4	Have strong physical fitness to deliver/ lead activities					
5	Able to address customer complaints/ effectively based on the client's charter.					
6	Master problem -solving skills					
7	Ability to anticipate problems					
8	Ability to manage stress					
9	Able to give a sense of leadership					
10	Demonstrate situational / flexible leadership					
11	Make yourself a role model through demonstrated leadership					
12	Have conflict resolution skills					
13	Ability to achievable goals by groups and individuals					
14	Have appropriate judgment skills/ maturity					

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15	Know the limitations of Outdoor Education Programs					
16	Master the skills to obtain feedback.					
17	Able to convey the professional philosophy of Outdoor Education effectively.					
18	Be aware of a leadership ethic that respects appropriate action					
19	Ability to remember names					
20	Ability to generate new idea					
21	Able to use various forms of appropriate supervision					
22	Ability to deal with groups effectively in crisis situations.					

Risk Management Skills Competency

No	Declaration	1	2	3	4	5
1	Know clearly the legal aspects in the Outdoor Education Program.					
2	Know clearly about program procedures and policies.					
3	Knowledgeable in applying the principles of risk management.					
4	Know the emergency support network when any incident occurs					
5	Provide a comprehensive risk management plan for all activities					
6	Recognize the importance of safety instructions before activities are carried out.					
7	Recognize the importance of safety instructions before activities are carried out.					
8	Know and always be warned of subjective dangers					
9	Know risk management after an accident					
10	Understand the importance of documenting everything related to an accident					
11	Ability to describe the difference between detected risk and actual risk					
12	Ability to describe the difference between detected risk and actual risk.					
13	Ability to design effective search techniques.					
14	Practicing the principle of always thinking "one step forward".					

Safety and First Aid Skills Competence

No	Declaration	1	2	3	4	5
1	Know the basics of anatomy and physiology of the human body					
2	Find out the difference between starting aids in the city and starting aids in the forest.					
3	Ability to assess the level of health of participants before starting the activity.					
4	Proficient in body temperature control techniques.					
5	Ability to assemble complete and functional starting aids					
6	Ability to prevent emergency situations.					
7	Ability to act according to a standard emergency plan.					
8	Ability to use any (improvisation) emergency procedures in the field when desperate.					
9	Ability to apply principles of Survival.					
10	Ability to handle treatment for common injuries in the forest.					
11	Ability to identify and use splint techniques to treat fractures/fractures.					

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Environmental Skills Competency

No	Declaration	1	2	3	4	5
1	Understanding of environmental ethics.					
2	Know the geographical elements that make up the local area where the Outdoor Education Program is conducted.					
3	Ability to teach the perfect method of garbage and dirt disposal (sanitation) to program participants.					
4	Ability to manage solid waste disposal effectively.					
5	Able to implement actions with minimal impact on nature throughout the program.					
6	Ability to interpret some basic weather signs.					

Part D: Social Support questionnaire

The following are 16 statements to evaluate the social assistance themselves before take part in the Outdoor Education Program. Please read each statement carefully, be open-minded and calm before assessing the PERFORMANCE of each attribute stated. Mark (√) your rating according to the appropriate level.

1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

No	Declaration	1	2	3	4	5
1.	I have a special person when I need it					
2.	I have a special person to share my joys and sorrows					
3.	My family is always trying to help me					
4.	I got the support and motivation (emotion) I needed from my family					
5.	I have a special person who can Calm me down					
6.	My friends are always trying to help me					
7.	If something goes wrong or I make a mistake, I can hope/rely on my friends					
8.	I can share my troubles with my family					
9.	I have friends who can share my joys and sorrows					
10.	There is a special individual in my life who cares about my feelings					
11.	My family is willing to help me make my decision					
12.	I can share all my troubles with my friends					
13.	Facilitators are well prepared and well organized					
14.	Facilitators communicate concepts and skills well					
15.	The facilitator can control my emotions					
16.	The host encouraged and helped me find a solution					

Part E: Personal Effectiveness and Locus of Control Questionnaire

Here are 41 statements to evaluate your personal effectiveness and locus of control before take part in the Outdoor Education Program. Please read each statement carefully, be open-minded and calm before assessing the PERFORMANCE of each attribute stated. Mark (√) your rating according to the appropriate level.

1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

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No	Declaration	1	2	3	4	5
1.	Restore a friend's mood					
2.	Forming teamwork and organizational ability is the key to success group					
3.	Assist the team leader to develop teamwork and organizational ability in the group					
4.	Internally, it contributes to the formation of teamwork					
5.	Take advantage of colleagues' skills and strengths when performing team tasks					
6.	Improve skills and teamwork in appointed committees					
7.	Provide effective information/reports to friends					
8.	Provide effective information/reports to counselors and lecturers					
9.	Provide information/reports creatively and rationally to improve quality group					
10.	Always observe rules and procedures in group organizations					
11.	Identify potential conflicts between management and the group					
12	Identify and try to solve problems in the group					
13.	Create a group work culture according to academic values					
14	Obtain quality results consistently at all times					
15	Encourage friends to meet high quality standards					
16	Constantly motivate leaders to achieve high quality standards in management					
17	Set realistic goals for yourself and your group					
18.	Achieve work goals through friends without external help					
19.	Team members make the greatest contribution to the realization of program planning					
20.	Persuade leaders to change direction and If the attitude is not appropriate					
21.	Obtain internal and external support in formulating group strategy and mission					
22	Provide ideas when doing something					
23.	Perform tasks with high performance and consistency					
24.	Looking for new ideas in the routine responsibilities of tasks					
25	Talk to friends to reduce stress levels in your team					
26	By reducing pressure made a careful plan					
27.	Execute unusual and less stressful plans during the team phase					
28.	Listen to feedback when identifying opportunities to improve self-performance					
29.	Always look for opportunities to develop yourself according to the requirements of the plan					
30.	Demonstrate excellent performance record with the help of comprehensive feedback					
31.	Make a clear plan to achieve the set goals In a program					
32.	Always reduce complex problems and always plan strategies for the future					
33.	Always thinking about the results and Planning for long-term goals					
34.	Create and outline a clear vision for the future achievements of the Group					
35.	Use practical and accurate methods when performing operations					
36.	Carefully analyze the actions needed for the future of the group					
37.	A new method of determining unskilled things in design					
38	Use facts to see results in action					
39.	Use sufficient information to support the results of the actions performed					
40.	Use various tools/materials to find information to make decisions					
41.	Always make consistent decisions for the whole organization					

Faculty of Educational Studies
Department of Sports Studies

Effect of Outdoor Education Program towards leadership among physical education students in China

Leadership questionnaires (Post Test)

Thank you for your willingness to assist us in conducting the questionnaire for the study of the effect of Outdoor Education Program on the leadership of college students in physical education in China. For your understanding, we only wish to assess your responses to the statements provided.

There are no correct or incorrect responses. All your responses are difficult and will be used for this study only. This research question consists of 7 main parts.

Part A: The demographic of respondent (student's personal background)
Part B: Leadership assessment questionnaire
Part C: Outdoor Education Teacher's Leadership Competency assessment questionnaire
Part D: Social Support questionnaire
Part E: Personal Effectiveness and Locus of Control Questionnaire
Part F: Activity Ranking
Part G: Outdoor Education module evaluation

Thank you again for helping with this study.

Author: Yang Xiaoming
Tel:+8618179101345
E-mail: gs60680@student.upm.edu.my

Supervisor committee
Dr Shamsulariffin Samsudin
Dr Sam Shor Nahar bin Yaakob
Dr Noor Hamzani Farizan

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PART A: The demographic of respondent (student's personal background)

Mark (√) your rating according to the appropriate level.

1. Gender

   ☐ Male ☐ Female

2. University

   ☐ East China University of Technology

   ☐ Jiangxi Science and Technology Normal University

   ☐ Nanchang Normal University

3. Age

   ☐ 19-20 ☐ 21-22 ☐ 22-more

4. Grade: Sophomore

   ☐ Yes ☐ No

5. Major: Physical education

   ☐ Yes ☐ No

6. If you have participated, frequency of involvement in outdoor activities: frequency:

   ☐ 1-3 times/year ☐ 4-6 times/year ☐ 6-more times/year

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PART B: Leadership assessment questionnaire

Please read each statement carefully, be open-minded and calm before assessing the performance of each attribute stated. Mark (√) your rating according to the appropriate level.

1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

Communication

No	Content	1	2	3	4	5
1	I use communication to adapt to a new culture					
2	I always communicate with my parents in adapting to a new culture					
3	I always discuss to set decisions and standards in teamwork					
4	I discuss with the teacher in achieving the goal					
5	I take note of complaints or sharing from teammates					
6	I always discuss with friends to improve the quality of work and assignments					
7	I discuss with friends in achieving goals					
8	I listen carefully to the needs of team members					
9	I discuss with the facilitator in achieving the goal					
10	I am always satisfied with every task completed					
11	I will give credit to others					
12	I understand techniques and functions when communicating					

Commitment

No	Content	1	2	3	4	5
1	I learned about other cultures thoroughly from all parties involved in this program					
2	My goals are clear and consistent					
3	I have a good relationship with all parties					
4	I provide accurate and timely information					
5	I easily commit to other individuals					
6	I have a good application of values					
7	I can work well with all parties in solving problems that arise					
8	I easily get commitment from all parties					
9	The involvement of all parties can have a positive effect					
10	I got well developed training					
11	I was formed through a solid management system					

Strategy

No	Content	1	2	3	4	5
1	I have leadership skills and strategic thinking					
2	I dare to innovate and am not afraid of failure					
3	I can recognize other individuals and can assign tasks to other individuals					
4	I build interpersonal relationships with other individuals					
5	I completed the assigned task					
6	I give and build trust in others quickly					
7	I control my emotions					
8	I motivate and communicate effectively to other individuals					
9	I am a creative person and always improve my work skills					
10	I improve the performance of my team					

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Proactive

No	Content	1	2	3	4	5
1	I guide the team with the established rules					
2	I guide the team in completing tasks with their efforts					
3	I maintain good interpersonal relationships between all parties involved					
4	I always support friends in doing personal planning					
5	I always support the instructions received to give a positive effect					
6	I always improve the creation of quality results					
7	I respect the strengths and weaknesses of other individuals					
8	I am passionate, creative and always improving my work skills					
9	I am a person who always contributes to others					

Influence

No	Content	1	2	3	4	5
1	I have a high learning attitude					
2	I have decision making skills					
3	I have good organizational skills					
4	I am an open person					
5	I am able to perform tasks well					
6	I can inspire others					
7	I am able to support and improve teamwork					
8	I have the ability to guide others					
9	I have the ability to improve team morale					
10	I will organize and re-coordinate each task from teammates					
11	I will definitely complete the tasks with the set goals					

Part C: Outdoor Education Teacher's Leadership Competency assessment questionnaire

Please read each statement carefully, be open-minded and calm before assessing the performance of each attribute stated. Mark (√) your rating according to the appropriate level.

1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

Competency of leadership skill

NoOOPO	Declaration	1	2	3	4	5
1	Ability to deliver content effectively.					
2	Able to exhibit appropriate professional behavior.					
3	Have effective communication skills					
4	Ability to manage stress					
5	Able to address customer complaints/ effectively based on the client's charter.					
6	Master problem -solving skills					
7	Ability to anticipate problems					
8	Have strong physical fitness to deliver/ lead activities					
9	Able to give a sense of leadership					
10	Demonstrate situational / flexible leadership					
11	Make yourself a role model through demonstrated leadership					
12	Have conflict resolution skills					

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13	Ability to achievable goals by groups and individuals					
14	Have appropriate judgment skills/ maturity					
15	Know the limitations of Outdoor Education Programs					
16	Master the skills to obtain feedback.					
17	Able to convey the professional philosophy of Outdoor Education effectively.					
18	Be aware of a leadership ethic that respects appropriate action					
19	Ability to remember names					
20	Ability to generate new idea					
21	Able to use various forms of appropriate supervision					
22	Ability to deal with groups effectively in crisis situations.					

Risk Management Skills Competency

No	Declaration	1	2	3	4	5
1	Know clearly the legal aspects in the Outdoor Education Program.					
2	Know clearly about program procedures and policies.					
3	Knowledgeable in applying the principles of risk management.					
4	Know the risk management after an accident					
5	Provide a comprehensive risk management plan for all activities					
6	Recognize the importance of safety instructions before activities are carried out.					
7	Know and always be warned of subjective dangers					
8	Know the emergency support network when any incident occurs					
9	Understand the importance of documenting everything related to an accident					
10	Ability to describe the difference between detected risk and actual risk					
11	Ability to design effective search techniques.					
12	Practicing the principle of always thinking "one step forward".					

Safety and First Aid Skills Competence

No	Declaration	1	2	3	4	5
1	Know the basics of anatomy and physiology of the human body					
2	Find out the difference between starting aids in the city and starting aids in the forest.					
3	Ability to assess the level of health of participants before starting the activity.					
4	Ability to use any (improvisation) emergency procedures in the field when desperate.					
5	Ability to assemble complete and functional starting aids					
6	Ability to prevent emergency situations.					
7	Ability to act according to a standard emergency plan.					
8	Proficient in body temperature control techniques.					
9	Ability to apply principles of Survival.					
10	Ability to handle treatment for common injuries in the forest.					
11	Ability to identify and use splint techniques to treat fractures/fractures.					

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Environmental Skills Competency

No	Declaration	1	2	3	4	5
1	Understanding of environmental ethics.					
2	Know the geographical elements that make up the local area where the Outdoor Education Program is conducted.					
3	Ability to teach the perfect method of garbage and dirt disposal (sanitation) to program participants.					
4	Ability to manage solid waste disposal effectively.					
5	Able to implement actions with minimal impact on nature throughout the program.					
6	Ability to interpret some basic weather signs.					

Part D: Social Support questionnaire

The following are 16 statements to evaluate the social assistance themselves take part in the Outdoor Education Program. Please read each statement carefully, be open-minded and calm before assessing the PERFORMANCE of each attribute stated. Mark (√) your rating according to the appropriate level.

1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

No	Declaration	1	2	3	4	5
1.	I have a special person when I need it					
2.	I have a special person to share my joys and sorrows					
3.	My family is always trying to help me					
4.	I can share my troubles with my family					
5.	I have a special person who can calm me down					
6.	My friends are always trying to help me					
7.	If something goes wrong or I make a mistake, I can hope/rely on my friends					
8.	I got the support and motivation (emotion) I needed from my family					
9.	I have friends who can share my joys and sorrows					
10.	There is a special individual in my life who cares about my feelings					
11.	My family is willing to help me make my decision					
12.	I can share all my troubles with my friends					
13.	Facilitators are well prepared and well organized					
14.	Facilitators communicate concepts and skills well					
15.	The facilitator can control my emotions					
16.	The host encouraged and helped me find a solution					

Part E: Personal Effectiveness and Locus of Control Questionnaire

Here are 41 statements to evaluate your personal effectiveness and locus of control take part in the Outdoor Education Program. Please read each statement carefully, be open-minded and calm before assessing the PERFORMANCE of each attribute stated. Mark (√) your rating according to the appropriate level.

1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

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No	Declaration	1	2	3	4	5
1.	Restore a friend's mood					
2.	Forming teamwork and organizational ability is the key to success group					
3.	Assist the team leader to develop teamwork and organizational ability in the group					
4.	Provide effective information/reports to counsellor and lecturers					
5.	Take advantage of colleagues' skills and strengths when performing team tasks					
6.	Improve skills and teamwork in appointed committees					
7.	Provide effective information/reports to friends					
8.	Internally, it contributes to the formation of teamwork					
9.	Provide information/reports creatively and rationally to improve quality group					
10.	Always observe rules and procedures in group organizations					
11.	Identify potential conflicts between management and the group					
12	Identify and try to solve problems in the group					
13.	Create a group work culture according to academic values					
14	Obtain quality results consistently at all times					
15	Encourage friends to meet high quality standards					
16	Constantly motivate leaders to achieve high quality standards in management					
17	Set realistic goals for yourself and your group					
18.	Achieve work goals through friends without external help					
19.	Team members make the greatest contribution to the realization of program planning					
20.	Persuade leaders to change direction and If the attitude is not appropriate					
21.	Obtain internal and external support in formulating group strategy and mission					
22	Provide ideas when doing something					
23.	Perform tasks with high performance and consistency					
24.	Looking for new ideas in the routine responsibilities of tasks					
25	Talk to friends to reduce stress levels in your team					
26	By reducing pressure made a careful plan					
27	Execute unusual and less stressful plans during the team phase					
28	Listen to feedback when identifying opportunities to improve self-performance					
29	Always look for opportunities to develop yourself according to the requirements of the plan					
30	Demonstrate excellent performance record with the help of comprehensive feedback					
31	Make a clear plan to achieve the set goals In a program					
32.	Always reduce complex problems and always plan strategies for the future					
33.	Always thinking about the results and Planning for long-term goals					
34.	Create and outline a clear vision for the future achievements of the Group					
35.	Use practical and accurate methods when performing operations					
36.	Carefully analyze the actions needed for the future of the group					
37.	A new method of determining unskilled things in design					
38	Use facts to see results in action					
39.	Use sufficient information to support the results of the actions performed					
40.	Use various tools/materials to find information to make decisions					
41	Always make consistent decisions for the whole organization					

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Part F: Activity Ranking

If you think this Outdoor Education has a positive effect on your leadership. Mark (√) your rating according to the appropriate level. from less to the most stimulating of your leadership. The following 15 activities are included in the 15 days courses, which are commonly promoted in universities in Jiangxi Province and including in the Outdoor Education course, have a certain degree of popularity.

1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

Outdoor Education activities have a positive effect on your leadership

No	Declaration	1	2	3	4	5
1.	Dragon boat					
2.	Cross power grid					
3.	Orienteering					
4.	Camping					
5.	Rafting					
6.	Mountaineering					
7.	Frisbee					
8.	Marathon					
9.	Cycling					
10.	Broken bridge					
11.	Kayaking					
12.	Rock-climb					
13.	Hiking					
14.	Ski					
15.	Swimming					

Outdoor Education activity is popular in university

No	Declaration	1	2	3	4	5
1.	Dragon boat					
2.	Cross power grid					
3.	Orienteering					
4.	Camping					
5.	Rafting					
6.	Mountaineering					
7.	Frisbee					
8.	Marathon					
9.	Cycling					
10.	Broken bridge					
11.	Kayaking					
12.	Rock-climb					
13.	Hiking					
14.	Ski					
15.	Swimming					

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Part G: Outdoor Education module evaluation

At the end of the semester, students are requested to fill out this questionnaire upon completion of all Outdoor Education courses. Please read each statement carefully, be open-minded and calm before assessing the PERFORMANCE of each attribute stated. Mark (√) your rating according to the appropriate level.

1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

Position					
Printed and audio-visual materials	1	2	3	4	5
Notes for students are ready and useful					
Clearly defined safety procedures					
Learning environment	1	2	3	4	5
Course expectations, training requirements, safety and objectives are clearly stated at the beginning of the course					
Comfortable course venue					
Adequate equipment has been provided for skills training					
Teacher	1	2	3	4	5
Follow the activity guidelines					
An appearance of professional enthusiasm					
Be prepared, knowledgeable and organized					
Engage participants, encourage participation, and answer questions					
Manage a positive learning environment and encourage participants to express their thoughts, opinions and concerns before, during and after practical meetings					
Use various facilitator techniques to encourage participants' learning (demonstration, simulation, hands-on, question and answer)					
Risk management	1	2	3	4	5
Exemption and exemption forms, risk assumptions, and emergency contact and consent forms are prepared at the beginning of the course, read by the coordinator and collected					
Participants were assigned an emergency telephone number to contact					
Briefing at the event site and identifying the risks and hazards, rules and procedures to be followed in the event of an accident during the training					
This challenging activity provides an opportunity to improve participants' safety skills					
Mentors are able to manage, communicate and provide appropriate protection to ensure the safety of participants throughout the course.					
Whole module	1	2	3	4	5
Activity location suitable module					
Active sessions are effectively utilized					
Efficient time management					
The tutor cooperated very well					
Mentors contribute to participants' knowledge and skills					
The instructor successfully achieved the curriculum objectives					
Modules will be recommended to others					

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Faculty of Educational Studies
Department of Sports Studies

Effect of Outdoor Education Program towards leadership among physical education students in China

Leadership questionnaires (Delay-Test)

Thank you for your willingness to assist us in conducting the questionnaire for the study of the effect of Outdoor Education Program on the leadership of college students in physical education in China. For your understanding, we only wish to assess your responses to the statements provided.

There are no correct or incorrect responses. All your responses are difficult and will be used for this study only. This research question consists of 6 main parts.

Part A: The demographic of respondent (student's personal background)
Part B: Leadership assessment questionnaire
Part C: Outdoor Education Teacher's Leadership Competency assessment questionnaire
Part D: Social Support questionnaire
Part E: Personal Effectiveness and Locus of Control Questionnaire

Thank you again for helping with this study.

Author: Yang Xiaoming
Tel:+8618179101345
E-mail: gs60680@student.upm.edu.my

Supervisor committee
Dr Shamsulariffin Samsudin
Dr Sam Shor Nahar bin Yaakob
Dr Noor Hamzani Farizan

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PART A: The demographic of respondent (student's personal background)

Mark (√) your rating according to the appropriate level.

1. Gender

   ☐ Male ☐ Female

2. University

   ☐ East China University of Technology

   ☐ Jiangxi Science and Technology Normal University

   ☐ Nanchang Normal University

3. Age

   ☐ 19-20 ☐ 21-22 ☐ 22-more

4. Grade: Sophomore

   ☐ Yes ☐ No

5. Major: Physical education

   ☐ Yes ☐ No

6. If you have participated, frequency of involvement in outdoor activities: frequency:

   ☐ 1-3 times/year ☐ 4-6 times/year ☐ 6-more times/year

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PART B: Leadership assessment questionnaire

Please read each statement carefully, be open-minded and calm before assessing the performance of each attribute stated. Mark (√) your rating according to the appropriate level.

1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

Communication

No	Content	1	2	3	4	5
1	I use communication to adapt to a new culture					
2	I always communicate with my parents in adapting to a new culture					
3	I always discuss with friends to improve the quality of work and assignments					
4	I listen carefully to the needs of team members					
5	I take note of complaints or sharing from teammates					
6	I always discuss to set decisions and standards in teamwork					
7	I discuss with friends in achieving goals					
8	I discuss with the teacher in achieving the goal					
9	I discuss with the facilitator in achieving the goal					
10	I am always satisfied with every task completed					
11	I will give credit to others					
12	I understand techniques and functions when communicating					

Commitment

No	Content	1	2	3	4	5
1	I learned about other cultures thoroughly from all parties involved in this program					
2	My goals are clear and consistent					
3	I have a good application of values					
4	I easily get commitment from all parties					
5	I easily commit to other individuals					
6	I have a good relationship with all parties					
7	I can work well with all parties in solving problems that arise					
8	I provide accurate and timely information					
9	The involvement of all parties can have a positive effect					
10	I got well developed training					
11	I was formed through a solid management system					

Strategy

No	Content	1	2	3	4	5
1	I have leadership skills and strategic thinking					
2	I dare to innovate and am not afraid of failure					
3	I give and build trust in others quickly					
4	I motivate and communicate effectively to other individuals					
5	I completed the assigned task					
6	I can recognize other individuals and can assign tasks to other individuals					
7	I control my emotions					
8	I build interpersonal relationships with other individuals					
9	I am a creative person and always improve my work skills					
10	I improve the performance of my team					

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Proactive

No	Content	1	2	3	4	5
1	I guide the team with the established rules					
2	I guide the team in completing tasks with their efforts					
3	I always improve the creation of quality results					
4	I am passionate, creative and always improving my work skills					
5	I always support the instructions received to give a positive effect					
6	I maintain good interpersonal relationships between all parties involved					
7	I respect the strengths and weaknesses of other individuals					
8	I always support friends in doing personal planning					
9	I am a person who always contributes to others					

Influence

No	Content	1	2	3	4	5
1	I have a high learning attitude					
2	I have decision making skills					
3	I can inspire others					
4	I have the ability to guide others					
5	I am able to perform tasks well					
6	I have good organizational skills					
7	I am able to support and improve teamwork					
8	I am an open person					
9	I have the ability to improve team morale					
10	I will organize and re-coordinate each task from teammates					
11	I will definitely complete the tasks with the set goals					

Part C: Outdoor Education Teacher's Leadership Competency assessment questionnaire

Please read each statement carefully, be open-minded and calm before assessing the performance of each attribute stated. Mark (√) your rating according to the appropriate level.

1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

Competency of leadership skill

No	Declaration	1	2	3	4	5
1	Ability to deliver content effectively.					
2	Able to exhibit appropriate professional behavior.					
3	Master problem -solving skills					
4	Have strong physical fitness to deliver/ lead activities					
5	Able to address customer complaints/ effectively based on the client's charter.					
6	Have effective communication skills					
7	Ability to anticipate problems					
8	Ability to manage stress					
9	Able to give a sense of leadership					
10	Demonstrate situational / flexible leadership					
11	Make yourself a role model through demonstrated leadership					

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12	Have conflict resolution skills					
13	Ability to achievable goals by groups and individuals					
14	Have appropriate judgment skills/ maturity					
15	Know the limitations of Outdoor Education Programs					
16	Master the skills to obtain feedback.					
17	Able to convey the professional philosophy of Outdoor Education effectively.					
18	Be aware of a leadership ethic that respects appropriate action					
19	Ability to remember names					
20	Ability to generate new idea					
21	Able to use various forms of appropriate supervision					
22	Ability to deal with groups effectively in crisis situations.					

Risk Management Skills Competency

No	Declaration	1	2	3	4	5
1	Know clearly the legal aspects in the Outdoor Education Program.					
2	Know clearly about program procedures and policies.					
3	Recognize the importance of safety instructions before activities are carried out.					
4	Know the emergency support network when any incident occurs					
5	Provide a comprehensive risk management plan for all activities					
6	Recognize the importance of safety instructions before activities are carried out. Knowledgeable in applying the principles of risk management.					
7	Recognize the importance of safety instructions before activities are carried out.					
8	Know and always be warned of subjective dangers					
9	Know risk management after an accident					
10	Understand the importance of documenting everything related to an accident					
11	Ability to describe the difference between detected risk and actual risk					
12	Ability to describe the difference between detected risk and actual risk.					
13	Ability to design effective search techniques.					
14	Practicing the principle of always thinking "one step forward".					

Safety and First Aid Skills Competence

No	Declaration	1	2	3	4	5
1	Know the basics of anatomy and physiology of the human body					
2	Find out the difference between starting aids in the city and starting aids in the forest.					
3	Ability to prevent emergency situations.					
4	Proficient in body temperature control techniques.					
5	Ability to assemble complete and functional starting aids					
6	Ability to assess the level of health of participants before starting the activity.					
7	Ability to act according to a standard emergency plan.					
8	Ability to use any (improvisation) emergency procedures in the field when desperate.					
9	Ability to apply principles of Survival.					
10	Ability to handle treatment for common injuries in the forest.					
11	Ability to identify and use splint techniques to treat fractures/fractures.					

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Environmental Skills Competency

No	Declaration	1	2	3	4	5
1	Understanding of environmental ethics.					
2	Know the geographical elements that make up the local area where the Outdoor Education Program is conducted.					
3	Ability to interpret some basic weather signs.					
4	Ability to manage solid waste disposal effectively.					
5	Able to implement actions with minimal impact on nature throughout the program.					
6	Ability to teach the perfect method of garbage and dirt disposal (sanitation) to program participants.					

Part D: Social Support questionnaire

The following are 16 statements to evaluate the social assistance themselves take part in the Outdoor Education Program. Please read each statement carefully, be open-minded and calm before assessing the PERFORMANCE of each attribute stated. Mark (√) your rating according to the appropriate level.

1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

No	Declaration	1	2	3	4	5
1.	I have a special person when I need it					
2.	I have a special person to share my joys and sorrows					
3.	My friends are always trying to help me					
4.	I got the support and motivation (emotion) I needed from my family					
5.	I have a special person who can calm me down					
6.	My family is always trying to help me					
7.	If something goes wrong or I make a mistake, I can hope/rely on my friends					
8.	I can share my troubles with my family					
9.	I have friends who can share my joys and sorrows					
10.	There is a special individual in my life who cares about my feelings					
11.	My family is willing to help me make my decision					
12.	I can share all my troubles with my friends					
13.	Facilitators are well prepared and well organized					
14.	Facilitators communicate concepts and skills well					
15.	The facilitator can control my emotions					
16.	The host encouraged and helped me find a solution					

Part E: Personal Effectiveness and Locus of Control Questionnaire

Here are 41 statements to evaluate your Personal Effectiveness and Locus of Control take part in the Outdoor Education Program. Please read each statement carefully, be open-minded and calm before assessing the PERFORMANCE of each attribute stated. Mark (√) your rating according to the appropriate level.

1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

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No	Declaration	1	2	3	4	5
1.	Restore a friend's mood					
2.	Forming teamwork and organizational ability is the key to success group					
3.	Improve skills and teamwork in appointed committees					
4.	Internally, it contributes to the formation of teamwork					
5.	Take advantage of colleagues' skills and strengths when performing team tasks					
6.	Assist the team leader to develop teamwork and organizational ability in the group					
7.	Provide effective information/reports to friends					
8.	Provide effective information/reports to counselors and lecturers					
9.	Provide information/reports creatively and rationally to improve quality group					
10.	Always observe rules and procedures in group organizations					
11.	Identify potential conflicts between management and the group					
12	Identify and try to solve problems in the group					
13.	Create a group work culture according to academic values					
14	Obtain quality results consistently at all times					
15	Encourage friends to meet high quality standards					
16	Constantly motivate leaders to achieve high quality standards in management					
17	Set realistic goals for yourself and your group					
18.	Achieve work goals through friends without external help					
19.	Team members make the greatest contribution to the realization of program planning					
20.	Persuade leaders to change direction and If the attitude is not appropriate					
21.	Obtain internal and external support in formulating group strategy and mission					
22	Provide ideas when doing something					
23.	Perform tasks with high performance and consistency					
24.	Looking for new ideas in the routine responsibilities of tasks					
25	Talk to friends to reduce stress levels in your team					
26	By reducing pressure made a careful plan					
27	Execute unusual and less stressful plans during the team phase					
28	Listen to feedback when identifying opportunities to improve self-performance					
29	Always look for opportunities to develop yourself according to the requirements of the plan					
30	Demonstrate excellent performance record with the help of comprehensive feedback					
31	Make a clear plan to achieve the set goals In a program					
32.	Always reduce complex problems and always plan strategies for the future					
33.	Always thinking about the results and Planning for long-term goals					
34.	Create and outline a clear vision for the future achievements of the Group					
35.	Use practical and accurate methods when performing operations					
36.	Carefully analyze the actions needed for the future of the group					
37.	A new method of determining unskilled things in design					
38	Use facts to see results in action					
39.	Use sufficient information to support the results of the actions performed					
40.	Use various tools/materials to find information to make decisions					
41	Always make consistent decisions for the whole organization					

Appendix B

JKEUPM Ethical Clearance

Ref. no: UPM/TNCPI/RMC/JKEUPM/1.4.18.2 (JKEUPM)
Date:15 November 2023

Dear Prof./Dr./Mr./Ms.,

APPLICATION FOR JKEUPM ETHICAL CLEARANCE: APPROVED

With reference to the above, I am pleased to inform you that your application for ethical clearance for the research project entitled **'EFFECT OF OUTDOOR EDUCATION PROGRAM TOWARDS LEADERSHIP AMONG PHYSICAL EDUCATION STUDENTS IN CHINA'** has been approved.

The approval is **valid from 15 NOVEMBER 2023 until 15 NOVEMBER 2024.**

Please note that the official letter of approval will be issued as soon as possible. However, the ethical clearance is considered effective from the date of this email, and you may now proceed with your research.

Kindly remind the ethical approval is required in the case of amendments/ changes to the study documents/ study sites/ study team.

Researchers should also complete a Study Final Report upon study completion. The form can be obtained from the Ethics Committee for Research Involving Human Subjects (JKEUPM) website (http://www.tncpi.upm.edu.my/faildokumen).

If you have any enquiries, please contact at number 03-97691244/1602.

Note: Please use this reference number for any transaction:- **JKEUPM-2023-625**

Thank you.

Yours faithfully,

Prof. Dr. Normala Ibrahim
Chair
Ethics Committee for Research Involving Human Subjects
Universiti Putra Malaysia

Appendix C

Experts in content validity

No	Name	Institution	Professional ranks
1	Dr Xu Yixiong	Nanchang Normal University	Assoc. Prof
2	Dr KanYuanmin	Nanchang Normal University	lecturer
3	Kuang Weihong	Jiangxi Science and Technology Normal University	Assoc. Prof
4	Dr Teng Ye	East China University of Technology	Lecturer
5	Wu Hongyu	East China University of Technology	Professor
6	Xie Mengning	East China University of Technology	Professor

1

2

南昌師範學院 体育学院
NANCHANG NORMAL UNIVERSITY

联系电话
0791-83815535

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康渊铭

发布时间：2019-10-08 责任编辑： 点击次数：0

康渊铭，中共党员，毕业于江西师范大学，硕士，主讲《体育舞蹈》《体育与健康—广场舞》等课程。

3

匡卫红 江西科技师范大学体育学院副教授

教育经历：

1968.9-1990.7 毕业于江西师范大学，研究方向：体育教育，获学士学位

2000.9-2003.1 上海体育学院，研究方向：运动人体科学，获硕士学位

工作经历：

1991,7调入江西科技师范大学体育学院，一直担任专业理论课程教学，主要讲授课程：运动解剖学、运动生理学、运动训练学（Ⅰ、Ⅱ）

主要论文：

[1]关于职校体育教学中的健康体质教育[J].职教论坛，2012,(20)．第一作者
[2]女大学生体重正常度与体质健康的关系[J].大江周刊,2012,(12) 第一作者
[3]江西省南北部地区成人体质状况比较[J]．军事体育学报，2017年10月第36卷第4期，第一作者

[4]江西省与上海市成年人体质状况及其影响因素的对比研究,山西青年，2017年12月,第一作者

课题：

[1]江西省与上海市成年人体质状况及其影响因素的对比研究，校2016年自然科学课题，主持，已结题

[2]南昌市青少年身体活动的“家校社”联动治理研究，2018年江西省体育局科研课题，主持，在研

[3]基于社会生态学的江西省青少年体力活动促进模式研究，2018年省社科“十三五”规划项目，项目第一参与者

4

滕野个人简历

发布人：体育学院 发布时间：2019-05-06 动态浏览次数：1423

姓名	滕野	
职称	讲师	
职务		
Email		
Tel		

滕野（1989.5-），男，满族，吉林长春人，中共党员，博士研究生，主要研究方向为体育经济学和羽毛球理论与实践，2019年至今东华理工大学体育学院教师，羽毛球国家一级裁判、羽毛球国家二级运动员。长期从事体育专业理论和技能教学与研究工作。近2年出版独著一本，国家发明专利一项，主持市厅级课题2项。

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吴红雨个人简介

发布人：邵建才 发布时间：2014-04-15 动态浏览次数：3890

姓名	吴红雨
职称	教授
职务	
Email	
Tel	

吴红雨，女，中共党员，硕士，教授，一级社会体育指导员。2016年3月-2017年3月 澳大利亚天主教大学访学。1992年7月至今 东华理工大学从事体育教育工作，进行了《大学体育》、体育教育本科专业《健美操》，《体育科研方法》、《学校体育学》等课程的教学。
近年来主编参编教材三部，专著一部，公开发表专业学术论文10余篇，EI检索一篇；主持及参研课题十余项；主持校、省级精品网络在线课程一门，科研获获奖十余项，曾荣获校"优秀共产党员"、"三育人先进个人"、省"优秀教练员"等多项荣誉。

6

颉梦宁个人简介

发布人：邵建才 发布时间：2016-07-01 动态浏览次数：3830

姓名	颉梦宁
职称	教授
职务	大学体育教学部主任
Email	xiemengning@126.com
Tel	

个人简介：

颉梦宁（1973.1—），男，汉族，甘肃陇西人，中共党员，硕士学位，教授，硕士研究生导师。现任东华理工大学体育学院大学体育教学部主任兼党支部书记。本科毕业于西安体育学院体育教育专业，硕士毕业于上海体育大学运动人体科学专业。国内普通高校访问学者（师从上海体育学院虞定海教授）、国家级社会体育指导员（武术、舞龙舞狮）、舞龙舞狮国家级教练员及裁判员、武术国家一级裁判。从事武术、运动解剖学、游泳、大学体育等课程的教学及大学体育教学部日常管理、支部党建等工作。主要研究领域为民族传统体育、体育教育、高校体育教学改革与校园健康促进实践。

研究成果：

本人为全国本科毕业论文（设计）抽检评审专家库专家、全国研究生教育评估监测专家库专家，主要研究方向为体育理论、体育史、高校体育教育教学改革及校园健康促进。近年来主持、参与市厅级、省部级科研、教研课题二十余项；公开发表相关学术论文三十余篇，其中核心期刊六篇、SCI检索两篇、ISTP检索两篇；专业相关实用新型专利五个；主编、参编教材四部；出版专著一部；主持校级教学成果二等奖一项、参与、主持校级教学成果一等奖各一项；建设一门双语慕课《太极之从零开始（双语版）》获校级精品在线开放课程、省级精品在线开放课程、省级高校育人共享计划立项课程，并于2022年优质慕课成功"出海"印尼，建设另一门专业课程《运动解剖学》获省级一流本科课程（线上），建设第三门双语慕课《健身气功六段64式（双语版）》多平台上线运行，并于2023年优质慕

Appendix D

Syllabus and Teaching Calendar for Outdoor Education Program

Outdoor Education Syllabus
English name: Outdoor Education
Course code: TY2205ZB
Degree programs：Non-degree programs:
Credit hours / credit hours: 30 / 1.5
Applicable major: Physical Education

1. Introduction to the course

"Outdoor Education" is a professional backbone course for physical education major students, which is a skill course mainly based on action skills and teaching skills learning. Course with "health first" as the guiding ideology, with Outdoor Education theory knowledge, physical practice as the main means, with comprehensive development of students 'physical quality, competitive consciousness, cooperation spirit as the goal, improve students' sports literacy, cultivate students' education teaching ability, innovative spirit and professional independent development ability, competent for middle school and related sports institutions of Outdoor Education teaching, competition training guidance and research talents.

According to the Standard of Middle School Education Professional Demonstration (secondary) and the responsibilities and requirements of the students in physical education, understand the importance of Outdoor Education in school physical education, and care for students; pay attention to the ability of Outdoor Education teaching, extracurricular sports activities, extracurricular training and competition activities, to meet the graduation requirement of "one practice three societies", to ensure that the students of physical education can quickly adapt to the reform of basic physical education curriculum and improve their teaching quality.

2. Course teaching objectives

(i) Course objectives

Through Outdoor Education and teaching, students can have a comprehensive and systematic grasp of the basic theoretical knowledge of Outdoor Education, master the technology and skills of the main items of physical and Outdoor Education, understand the basic knowledge and basic technology of Outdoor Education, and master the method of making sports teaching documents. Can be competent for middle school Outdoor Education, teaching, training, management, site design and other work. And have the ability of Outdoor Education scientific research work. Pay attention to the cultivation of students' leadership, to provide support and help for the future work and life.

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1. Moral education goals

i. Cultivate students to firm ideals and beliefs, and establish a correct world outlook, outlook on life and values.

ii. Cultivate students' national consciousness and national consciousness, with good ideological and moral character, social ethics and professional ethics.

iii. Cultivate students' sense of responsibility and mission.

2. Knowledge goals

i. familiar with students can skilled through Outdoor Education theory teaching, understand the history of the development, present situation and trend of Outdoor Education, can explain the related Outdoor Education site planning and design and use method, can outline Outdoor Education training common means, familiar with commonly used rules and choose the appropriate method, solve the problem of event arrangement and ranking decision. Master and use more than 50 commands;

ii. Master the first aid knowledge and skills of Outdoor Education, emergency knowledge and skills, and safety prevention ability.

iii. Ability to correctly use Outdoor Education terms to explain the movement essentials of 15 outdoor sports shoes, and standardized and skilled demonstration movements, and ability to reasonably use demonstration surface and common teaching methods for outdoor sports teaching.

3. Ability goals

i. Ability to acquire knowledge: master scientific learning methods, constantly expand the scope of knowledge, enhance the ability of independent thinking, and update the knowledge structure;

ii. Ability to apply knowledge: use the basic theories and viewpoints of Outdoor Education, and cultivate students' Outdoor Education and teaching ability through observation, analysis, synthesis and induction;

iii. Innovation ability: learn to apply the basic theories and methods of Outdoor Education to preliminary the teaching ability of Outdoor Education

4. Quality goals

i. Professional quality: cultivate students to be rigorous and realistic, the scientific attitude of pursuing truth, hard work, dedication style and professional team spirit;

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ii. Humanistic accomplishment: including cultural accomplishment, aesthetic taste and artistic accomplishment.

iii. Physical and mental health: physical and mental health development

iv. Collaboration and communication: unity, cooperation and leadership ability

Support of course objectives for graduation requirements

Graduation requirements	index point	program objective
Course Objectives 1	3. Discipline Literacy (H)	3.1 [professional] summarizes the history of Outdoor Education discipline development, present situation and trend, overview of sports discipline basic thought and knowledge system, master the basic knowledge, basic skills and basic methods, explain the movement skills form rules and the principle of different sports, sports technical specification, sports ability to achieve professional basic skills standard.
Curriculum objective 2	4. Teaching ability (M)	4.2 [Teaching Skills] In educational practice, according to the physical and mental development of college students and the cognitive characteristics of physical education, the teaching knowledge and information technology are used to conduct teaching plan, classroom teaching and academic evaluation, so as to obtain teaching experience and have the preliminary ability of Outdoor Education teaching. Stimulate the leadership of the students majoring in physical education, and lay a good foundation for the physical education teaching work in the future.

3. Course teaching content and requirements

Knowledge single field 1: Outdoor Education theory teaching

knowledge point:

Familiar with the concept and connotation of Outdoor Education, the content of Outdoor Education, and the classification of Outdoor Education.

Master the characteristics of Outdoor Education, the development of Outdoor Education overview. Master the main rules and judgment rules of Outdoor Education.

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Key points and difficulties:

1. Classification of Outdoor Education
2. Combination of theory and practice, mastery of rules and methods and cultivation of ability, specific work of writing and arrangement of Outdoor Education competition rules and working methods of judgment.

Learning Target:

1. Clear, the hard work spirit of Outdoor Education.
2. Understand the concept and connotation of Outdoor Education, the content of Outdoor Education, and the classification of Outdoor Education.
3. Understand the characteristics of Outdoor Education and the development situation of Outdoor Education.
4. Master the main rules and judgment rules of Outdoor Education.
5. Application, Outdoor Education theory.

Knowledge field 2: Outdoor Education technology teaching and training

Knowledge Unit 1: Water project

Knowledge point: swimming, dragon boat, canoeing, rafting

Key points and difficulties:

Key points: the application of teaching and training of water events in practice, and the first aid method of water events.

Difficult points: the application of the teaching and training of water sports in practice. learning target:

Understand the technical characteristics of water events, master the practical application of water events, the first aid knowledge of water events.

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Knowledge Unit 2: Land project

Knowledge points: Marathon, mountain climbing, camping, rock climbing, hiking, crossing the power grid, orienteering, skiing, Frisbee

Key points and difficulties:

Teaching focuses on mastering the application of teaching and training of land projects in practice, and related sports injury management.

Teaching difficulties It is difficult to master the skills of land projects in a short time, and it should be practiced often after class.

Learning Target:

1. Understand the origin and development of land projects, and improve students' technical level through land projects and special physical fitness exercises.

2. Understand the technology of land projects, master the practical application of land projects, and master the sports injury treatment of land projects.

Knowledge Unit 3: Air project

Knowledge point: rock climbing, high-altitude broken bridge

Key points and difficulties:

The teaching focuses on mastering the application of the teaching and training of air projects in practice to prevent the possible dangers in the teaching.

Air project is the most difficult and challenging project in Outdoor Education, which we should pay special attention to in practice.

Learning Target:

1. Understand the origin, evolution and technological development of aerial projects, and master the basic theoretical knowledge of aerial projects.

2. Master the action stage division of air projects, master the teaching and training methods and means of air projects; initially have the teaching ability of air projects and the guidance ability of extracurricular training.

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Knowledge field 3: Outdoor Education assessment

Knowledge point: the centralized assessment of the three projects

Key points and difficulties: the mastery of the three projects is both difficult and key.
Learning Target:

1. Understand the origin, evolution and technological development of Outdoor Education, master the basic theoretical knowledge of the basic quality of Outdoor Education, and clarify the concept of the basic quality of Outdoor Education.

2. Master the action stage division of the basic quality of Outdoor Education, master the teaching and training methods and means of the basic quality; initially have the teaching ability of the basic quality of Outdoor Education and the guidance ability of extracurricular training.

3. Master the application of the basic quality of Outdoor Education, and improve students' physical fitness level through the study and practice of the basic quality and special physical quality of Outdoor Education.

4. Teaching requirements

i. In theoretical teaching, teaching, discussion, question & A, and homework assignments are mainly used to expand and deepen the depth and breadth of theoretical knowledge, and to enable students to complete teaching design and group evaluation in class, so as to cultivate students' spirit of solidarity and mutual assistance. Students should consult and watch relevant teaching and training video materials after class to improve the understanding of Outdoor Education and sports skills.

ii. Practice course mainly adopts intuitive demonstration method, language interpretation method, complete and decomposition method, practice method such as representation practice method, circular practice method, game method; combining classroom learning with after-school tutoring and teaching and training to cultivate students' Outdoor Education teaching and training ability, competition organization and teaching ability. By comprehensively using situational teaching method and simulation teaching method, students are organized to learn Outdoor Education knowledge and skills through the form of simulation teaching and competition environment, so as to improve students' fun of learning, their adaptability to teaching and competition, and their adjudication ability.

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5. Curriculum assessment

i) Content and scoring method of practice assessment

The assessment adopts two forms of peacetime results and practical examination. Examination scoring method: the average number of technical evaluation and standard scores of each project, accounting for 80% of the total score. Normal grades account for 20% of the total score. The course assessment supports the course objectives.

The supporting relationship of course assessment for course objectives is shown in the following table.

Program objective	Content of examination	Evaluation mode
Familiar with the relevant theoretical knowledge of Outdoor Education, understand the origin, development and change, current situation and characteristics of Outdoor Education; master and apply the basic knowledge and skills of Outdoor Education, understand the main points of action and attack and defense meaning of Outdoor Education; cultivate students 'correct competitive consciousness, tenacious will quality and good cooperation spirit; cultivate college students' leadership; have strong social adaptability. Establish the concept of lifelong sports and health consciousness, and form a scientific and stable sports values.	Skills assessment	Examine
Master the basic skills of Outdoor Education, understand the basic skills and related techniques; master the basic and important basic skills; apply the basic skills in each class.	Theoretical knowledge of the Outdoor Education item	Examine

ii) Technical evaluation and other performance evaluation criteria

Evaluation and scoring rules of Outdoor Education

Fraction	Standard
60-69	Can complete the complete technical action, the main technical action link is correct. Basically have the special technology demonstration capability. Although the sports performance did not reach about 60 points, but it reached the minimum standard, and the technology has made significant progress. can communicate with students under the requirements of teachers, cooperate with the work of students and teachers, and provide necessary conditions for classroom teaching.
70-79	Complete the complete technical action, the main technical action link performance is good. Have a relatively good special technology demonstration ability. The sports performance reaches the standard and above the level, and the technology has made certain progress. cooperate with the work of the students and the teachers, remind the students of the deficiencies in the learning process, and provide convenient conditions for classroom teaching.
80-89	More skilled to complete the complete technical movements, movements coherent, coordination. Have a good special technology and special practice demonstration ability. Good performance in sports. I can take the initiative to help teachers and students to sort out the site, borrow equipment, take the initiative to help students to correct the wrong action, discuss some and deficiencies in learning, and students improve together.

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90-100	Proficient in completing complete technical movements, accurate, coherent, coordinated, full of sense of rhythm, showing a certain technical style. Have a strong special technology and special practice and demonstration ability. Higher athletic performance. Actively and on time to help teachers and students to sort out the venue, borrow and return equipment, take the initiative to remind teachers and students of the risk factors in class, learning to help students to correct wrong actions, share learning experience, and students improve together.

6.Main teaching resources

(i) Teaching materials

【a】 Outdoor Education, Zhang Hanjin, Higher Education Press, June 2019.

【b】The Outdoor Education Handbook by Alan Ewert and Jim Sibthorp:

(ii) Reference book

【a】Leadership in Education: A Journey into Outdoor Learning by Simon Beames, Mike Brown, and Elizabeth L.Burdick:

【b】Outdoor Education and Adventure: Connecting Theory and Practice by Ken Gilbert and Tony Priest

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Outdoor Education Program Calendar

College: Physical Education, Professional: Physical Education 2023—2024 First semester

No	Date	Outdoor Education content	Hours	Teaching methods	Teaching method	Give an assignment	Place of class	Time answer questions
1	6th January	Swimming: 1. Swimming knowledge theory teaching 2. Swimming and water game	2	Theory teaching and practice	Physical demonstration	Preview the content for the next lesson	natatorium	Every evening from 8 to 9 PM in the meeting room. Every evening from 8 to 9 PM in the meeting room.
2	7th January	Camp: 1 . Camping knowledge, theoretical teaching 2 . Meiling camping base for camping	10	Theory teaching and practice	Physical demonstration	Preview the content for the next lesson	Meiling Camping Base	
3	8th January	Rock climbing: 1. Rock-climbing knowledge and theory teaching 2. School rock climbing base to practice rock climbing	2	Theory teaching and practice	Physical demonstration	Preview the content for the next lesson	School rock climbing base	
4	9th January	Hiking: 1 . Hiking knowledge and theory teaching 2 . Walking in Meiling Mountain Area	5	Theory teaching and practice	Physical demonstration	Preview the content for the next lesson	Meiling mountain area	
5	10th January	Mountain-climbing: 1. Teaching of mountaineering knowledge and theory 2. Mountaineering in Meiling Mountain Area	6	Theory teaching and practice	Physical demonstration	Preview the content for the next lesson	Meiling mountain area	
6	11th January	Rafting: 1. Rafting knowledge and theory teaching 2. Meiling rafting base rafting	3	Theory teaching and practice	Physical demonstration	Preview the content for the next lesson	Meiling rafting	
7	12th January	Kayaking 1. Kaking knowledge theory teaching 2. Qianhu dragon boat base to carry out canoeing teaching	4	Theory teaching and practice	Physical demonstration	Preview the content for the next lesson	Dragon Boat Base	
8	13th January	Orienteering: 1. Directional cross-country knowledge and theory teaching 2. School orienteering base orienteering	5	Theory teaching and practice	Physical demonstration	Preview the content for the next lesson	School orienteering base	
9	14th January	Dragon boat: 1. Dragon-boat knowledge and theory teaching 2. Front Lake dragon boat base for dragon boat study	3	Theory teaching and practice	Physical demonstration	Preview the content for the next lesson	Front Lake Dragon Boat Base	

10	15th January	Through the grid: 1. Knowledge and theory teaching of through the power grid 2. The school quality development base carries out the teaching through the power grid	4	Theory teaching and practice	Physical demonstration	Preview the content for the next lesson	School quality development base	
11	16th January	Broken bridge at high altitude 1. Theoretical knowledge teaching of high-altitude broken bridge 2. School quality development base to carry out high-altitude broken bridge	4	Theory teaching and practice	Physical demonstration	Preview the content for the next lesson	School quality development base	
12	17th January	Frisbe 1. Knowledge and theory teaching of frisbee 2. The school frisbee base conducts frisbee teaching	4	Theory teaching and practice	Physical demonstration	Preview the content for the next lesson	School Frisbee Base	
13	18th January	Marathon: 1. Teaching of marathon knowledge and theory 2. Marathon is held in Meiling Marathon Base	5	Theory teaching and practice	Physical demonstration	Preview the content for the next lesson	Front Lake Dragon Boat Base	
14	19th January	Bike mountain cycling: 1. Knowledge and theory teaching of bicycle and mountain cycling 2. Meiling Mountain area to carry out 20 kilometers of bicycle cycling Ski: 1. Knowledge and theory teaching of skiing 2. The Meiling Ski Base carries out double-board skiing practice	5	Theory teaching and practice	Physical demonstration	Preview the content for the next lesson	Meiling mountain area. Meiling skiing	
15	20th January	Conduct a course summary and complete the post-experiment questionnaire.	4	Questionnaire	Questionnaire			

Speaker: Yang Xiaoming, Zhu Jie, Zhou Guoqing

Note:

1. This calendar is made in quadruplicate, one for the Academic Affairs Office, one for the department, one for the teaching and Research Office, and one for retention.
2. 2, the teaching content refers to the lecture, experiment, exercises, practice and other specific content, the examination course can include an examination.
3. Teaching methods refer to: exercises, classroom discussion, experiments, listening, et al.

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BIODATA OF STUDENT

Yang Xiaoming as born in Jiangxi Province in China, on 6 August 1987. Currently, he is pursuing his Doctoral Degree in Physical Education at the Universiti Putra Malaysia. He graduated with a bachelor's degree in Physical Education from Jiangxi Normal University in 2009, achieving outstanding academic performance. In the same year of graduation, he successfully enrolled in the master's program at the School of Physical Education of Southwest University, majoring in Sports Education and Training. His focus was on the theoretical guidance and practical application of Outdoor Education. He completed his master's degree in 2012. Following his master's studies, he joined the School of Physical Education at East China University and assumed the role of a physical education teacher. He primarily taught Outdoor Education and Gymnastics courses. Over the years, he has nurtured a large number of talents in the field of physical education, with many of them actively contributing to secondary school physical education and sports-related companies. Notably, he has played a significant role in cultivating professionals specifically engaged in Outdoor Education, contributing to the development of Outdoor Education in Jiangxi Province. During his doctoral studies, he published three papers focusing on Outdoor Education, providing a theoretical foundation that has significantly guided the development of Outdoor Education.

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Yang, X., Samsudin, S., Wang, Y., Yuan, Y., Kamalden, T. F. T., & Yaakob, S. S. N. B. (2023). Application of Target Detection Method Based on Convolutional Neural Network in Sustainable Outdoor Education. Sustainability, 15(3), 2542. SSCI.

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