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A Literature Review of Outdoor Education Program on Mental Health and Well-Being

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Abstract: In the contemporary era, outdoor education programmes have become integral across various educational levels, with the Ministry of Education emphasizing physical health as a means to enhance learning outcomes. Mental health and well-being, however, also emerge as critical aspects linked to these programmes. This study aimed to explore the theories underpinning outdoor education programmes on mental health and well-being, also, drawing insights from selected past studies. Employing a qualitative approach, this literature review utilized Google Scholar as the primary data collection tool. The findings revealed that the most commonly applied theories in outdoor education programmes related to mental health and well-being include social constructivism learning theory, Kolb's experiential learning theory, the outward-bound educational process model, health promotion theory, and social cognitive theory. From the past studies, several main themes emerged. Outdoor education programmes significantly enhance social interactions, self-esteem, and emotional regulation, promoting physical health, which in turn supports mental well-being. Engagement with natural environments has therapeutic effects, reducing symptoms of anxiety and depression. Given these findings, outdoor education programmes should be integrated more extensively into educational curricula to leverage their benefits for mental health and well-being. Schools and educational policymakers should consider training educators in the application of these theories to maximize programme effectiveness. Future research should focus on longitudinal studies to further validate the long-term benefits of outdoor education on mental health and explore the mechanisms through which these benefits are achieved. In conclusion, outdoor education programmes have a multifaceted impact on mental health and well-being, supported by various educational and psychological theories. These programmes offer valuable opportunities for experiential learning, social interaction, and connection with nature, contributing to enhanced mental and physical health.

Keywords: Outdoor education program, mental health, well-being, literature review

1. Introduction

Outdoor education is widely recognised as an effective means of promoting holistic development and well-being across various life stages (Jackson et al., 2021). This educational approach requires students to actively engage in the learning process, emphasising experiential learning where knowledge is gained through direct experience and practice. This method, as advocated by Avci & Gumus (2020), highlights the lasting impact of knowledge acquired firsthand, making it a highly effective educational strategy. The essence of outdoor education lies in imparting knowledge through direct experiences and observations outside the traditional classroom setting, thereby enriching and enhancing the curriculum (Eaton, 1998). As a pedagogical approach focused on the outdoor environment (Gilbertson et al., 2006), it has garnered significant attention in light of pressing global and environmental issues such as climate change, drought, pollution, food scarcity, and the growing global population (Cilingir, 2016). Despite its recognised benefits, the integration and implementation of outdoor education programmes remain limited to a few countries, including Sweden, Malaysia, Norway, Germany, China, Hong Kong, and Scotland.

Lifelong learning is an intrinsic and fundamental aspect of human existence (Güdelhöfer, 2016). Society typically perceives formal learning as occurring within structured educational settings such as preschools, schools, and universities. Dewey (1963, p. 18) argues that these traditional educational institutions operate with a constrained curriculum focused on achieving specific learning objectives. This raises an important debate: should educational systems primarily aim to

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instruct children within these confines, potentially limiting their autonomy in thinking, or should they strive to cultivate skilled critical thinkers capable of identifying problems and devising innovative solutions? This question underscores the tension between fostering respect for established knowledge and nurturing independent, critical thought in students.

Past studies have reported an alarming increase in mental health problems among university students (Stowell et al., 2021; Saleh et al., 2017; Stallman, 2010). University students face numerous challenges related to academic achievement, cultural transitions, and financial burdens during their studies (Beiter et al., 2015). These issues contribute to elevated stress levels, making students more susceptible to mental health conditions such as depression and anxiety (Stowell et al., 2021; Beiter et al., 2015;). Consequently, depression, anxiety, suicidal ideation, and other mental health issues are becoming increasingly prevalent among college students (Lun et al., 2018; Hunter et al., 2010). The primary causes of these emotional disorders include academic pressures, social stress, financial difficulties, exam anxiety, uncertainty in degree selection, living independently for the first time, and poor time management (Frankham et al., 2020; Saleh et al., 2017).

In 2015, China had 2,852 universities with 37 million students (People's Republic of China Ministry of Education, 2016). Mental health issues, triggered by numerous factors, have become increasingly prevalent among Chinese college students. The spread of the new coronavirus significantly exacerbated the potential for mental health problems among college students (Sun et al., 2022; Hill et al., 2021; Loades et al., 2020). Even after mandatory isolation periods ended, university students continued to experience high levels of depressive disorders (Sun et al., 2023). Consequently, this study on the mental health of university students, particularly in the context of university study, is essential for a better understanding of this issue. Despite varied and sometimes inconclusive findings, there is a pressing need for systematic research to gather empirical evidence supporting the notion that outdoor education programmes have a lasting impact on students' mental health and well-being. Therefore, this study aims to address two research questions:

1) What are the related theories for outdoor education programmes on mental health and well-being?
2) What insights can be drawn from past studies?

2. Literature Review

2.1 Outdoor Education

The definition of outdoor education varies depending on individual perspectives. However, for the purpose of this study, we will adopt the definition proposed by Sharp in the 1930s. Recognised as one of the early advocates of camping education and a prominent author in the field of outdoor education, Sharp provided a clear and precise definition: “all of that learning encompassed in the curriculum in any subject matter area and at any grade level which can best be learned outside the classroom” (Rillo, 1985, p. 7). Sharp's definition implies that outdoor education is not an independent subject but rather comprises elements from various areas of the curriculum that are best taught outside the conventional classroom setting. His renowned statement further elucidates this concept: “When it comes to learning, that which ought and can best be learned through experience dealing directly with native materials and life situations outside of the school should there be learned” (Rillo, 1985, p. 7). This perspective emphasises the importance of experiential learning in natural settings, advocating for educational experiences that utilise real-world materials and situations to enhance the learning process.

As outdoor education evolved during the first half of the 20th century, numerous organisations emerged to promote this educational approach among educators. A notable figure in this movement was Julian Smith, who initiated the National Outdoor Education Project in 1955. Smith articulated a clear connection between outdoor education and the academic programme, stating: "Outdoor education is learning 'in' and 'for' the outdoors. Through adventures and experiences in the outdoors, it allows for further development and enhancement of the curriculum" (Hammerman, 1980, p. 33). Over time, the definitions of outdoor education expanded to encompass a variety of programmes. Donaldson & Donaldson (1958, p. 63) described outdoor education as "education in, about, and for the out of doors". Priest (1986, p. 13) further defined it as "an experiential process of learning by doing, which takes place primarily through exposure to the outdoors". Hammerman et al. (2001, p. 5) succinctly stated that outdoor education is "education that takes place in the outdoors". The term "outdoor recreation" is frequently used to refer to activities such as canoeing, hiking, and camping. However, others perceive outdoor education as an extension of the traditional indoor school or university curriculum, offering more immediate, personalised learning opportunities. Outdoor education programmes can be categorised into those focused on the curriculum, behaviour, leisure, conservation, and camping/survival.

Outdoor education, in its most comprehensive sense, refers to education centred on the outdoors, offering individuals opportunities to acquire the necessary knowledge, skills, and positive attitudes to engage meaningfully with the world around them. The concept of outdoor education suggests that the outdoors and the biological, physical, social, and cultural aspects of our natural surroundings are its core themes. The interrelationships between humans and nature constitute the entire subject matter of outdoor education (Ford, 1986). Specifically, the interactions between people and the natural resources they rely on are primary topics within outdoor education (Miles, 1987). Furthermore, the socio-cultural dimensions of outdoor education include understanding social movements, historical events, and societal issues that influence or determine the use of natural resources (Ford, 1986). Outdoor education can take place in any outdoor setting, from school grounds in urban or rural areas to remote wilderness locations. Educators may teach various subjects

such as English, history, geography, mathematics, moral and religious studies, sports science, and more, but the learning occurs in an outdoor context. This can happen during activities like walking around the block, visiting the supermarket, conducting pollution-based projects, or engaging in outdoor activities like playing on a playground, visiting a zoo or national park, or participating in school trips. Additionally, other organisations may organise activities such as abseiling, rock climbing, kayaking, canoeing, rescue training, and team-oriented camps.

In all these settings, individuals can connect, socialise, and gain first-hand experiences, close interaction with subject matter, and socialisation (Ford, 1986; Hammerman, 1994). According to Ford (1986, p. 1), the word "for" in outdoor education implies that its goal is to "implement the cognitive, psycho-motor, and affective domains of learning for the betterment of the ecosystem overall." Outdoor education fosters understanding, utilising, and appreciating natural resources for sustainability. Outdoor education activities or programmes can occur at all levels of formal education, including schools, colleges, universities, and beyond. These programmes may consist of short and long field trips or activities outside of school, such as WAB's Miao Liang camp in Beijing, which exposes students to the knowledge of balancing nature with human activity. OE can be a lifelong endeavour, beneficial for individuals of any generation and from all walks of life (Miles, 1987). There are endless opportunities to deepen one's understanding of the outdoors, as no one can fully know everything about the environment. Educated and well-informed individuals can significantly impact societal issues related to natural resources, making outdoor education programmes valuable for people of all ages. Outdoor education utilises the outdoors exclusively for educational purposes, involving small groups engaging in adventurous activities for personal growth under the guidance of a leader or instructor. It is seen as an approach to education and learning that can be integrated into various curricular subjects. Within the profession, outdoor education is also viewed as an approach and a subject encompassing three interconnected areas: outdoor activities, personal and social development, and environmental education (Samsudin, 2020). Outdoor education provides lifelong learning experiences and values that influence relationships with the natural world, oneself, and others.

2.2 Mental Health

There has not been a prevailing definition of mental health. Maxwell et al. (2015) elucidate that the term mental health has long been used as a substitute for mental illness. However, today, mental illness and mental health are recognised as distinct concepts. Two key perspectives in the literature differentiate between mental health and mental illness. According to the continuum principle, mental health and mental illness are seen as opposite ends of a spectrum. Thus, there are varying degrees of health and illness between these two poles, with most individuals positioned somewhere in the middle. In contrast, the categorical approach views mental health and illness as a dichotomy. Individuals exhibiting signs of mental illness fall into the latter category and are classified accordingly, while those who do not show such signs are considered mentally healthy (Scheid & Brown, 2010). The conceptualisations and applications of mental health are fundamentally dependent on the models and theoretical frameworks from which they originate.

In this article, the discipline has progressively advanced through the accumulation of knowledge from various fields within the social sciences, arts and humanities, and education. Outdoor education is rooted in the sports science paradigm, focusing on university students' well-being, mental health, and health behaviours. It often emphasises the concepts of mental health (Scheid & Brown, 2010). Previous research on mental health and well-being in this context has traditionally been conducted from an outdoor education programme perspective. This research aims to understand and identify the mental illnesses contributing to psychiatric symptoms among students and to offer outdoor education as a means to treat and alleviate these mental health issues.

By evaluating the impacts of social and cultural contexts on mental health, perspectives within the field of social science complement outdoor education programmes (Horwitz, 2010). In this study, trainers, educators, and teachers expose university students to outdoor education programmes and examine how social circumstances affect their mental health. They also explore how social structures shape the understanding and responses to mental health (Compton & Shim, 2015). Healthcare anthropologists, for instance, are attuned to the cultural norms and behaviours related to mental health that exist both within and between cultures (Foster, 1975). Moreover, researchers in sociology and anthropology, as well as those in economics, family and cultural studies, and educational studies, have made significant contributions to the development of mental health research.

The present definition of mental health encompasses two common elements despite the diverse contextual and disciplinary approaches. Firstly, mental health is examined from a biopsychosocial perspective, integrating social, psychological, and biological factors. Secondly, mental health is understood as more than merely the absence of mental illness (Galderisi et al., 2015; Bhugra et al., 2013). The World Health Organization defines mental health as "a state of well-being in which every individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community". This definition has made significant contributions to both research and practice within the discipline by broadening the concept of mental health beyond the mere absence of mental illness and incorporating a range of positive attributes (Galderisi et al., 2015).

2.3 Well-Being

The benefit-oriented psychological approach has significantly grown in popularity and visibility over the past 20 years, focusing on the foundations of happiness and well-being (Warren & Donaldson, 2017). Within the domain of positive psychology, two distinct kinds of well-being can be differentiated from a theoretical standpoint: subjective well-being and psychological well-being. However, this distinction has been debated and challenged due to discoveries demonstrating substantial conceptual and, in certain instances, physiological overlaps (Kashdan et al., 2008). Moreover, with a broader range of notions, conceptions, and measurement tools available (Dodge et al., 2012), it has become increasingly uncertain what is meant by monitoring well-being.

In this context, the term well-being has been increasingly integrated into the study of outdoor education to account for the positive aspects of mental health and well-being among university students, beyond merely the absence of negative factors. While there is no universally accepted definition of well-being, two perspectives have dominated discussions in past studies: subjective well-being and psychological well-being. Diener (2012) defines subjective well-being in line with hedonic views, which emphasise pleasure, and describes it as the "feelings of people and feelings the people are living based on a required and satisfying life."

Incorporating these perspectives, outdoor education research aims to understand and enhance the well-being of students by exploring both subjective well-being and psychological well-being. This holistic approach recognises the multifaceted nature of well-being, encompassing both the emotional experiences associated with hedonic pleasure and the broader psychological dimensions that contribute to a fulfilling and meaningful life. Subjective well-being is closely associated with the concept of happiness and is typically defined as an individual's overall experience of a high degree of positive affect, a low degree of negative affect, and elevated levels of life satisfaction (Deci & Ryan, 2008). In contrast, psychological well-being is rooted in Aristotelian concepts of eudaimonia, or the realisation of one's true self, with the primary objective of life being the pursuit of one's full potential (Ryff et al., 2004).

Psychological well-being is a form of positive mental functioning and comprises six main dimensions: 1) Purpose in Life: Individuals experience their lives with purpose, meaning, and direction; 2) Autonomy: Individuals believe and feel they are living in accordance with their personal principles; 3) Personal Growth: This dimension reflects how individuals utilise their potential and talents for personal development; 4) Environmental Mastery: This pertains to how individuals handle their personal issues and manage their environment; 5) Positive Relationships: This involves the degree of closeness and positive interactions individuals experience with loved ones; and 6) Self-Acceptance: This is their understanding of their own shortcomings and their willingness to accept them (Ryff, 1989).

These dimensions collectively contribute to a holistic understanding of psychological well-being, emphasising not just the absence of mental illness but the presence of positive mental functioning and the fulfilment of one's potential. Integrating both subjective well-being and psychological well-being into the study of outdoor education can provide a comprehensive framework for assessing and enhancing the well-being of university students, acknowledging the importance of both hedonic pleasure and eudaimonic fulfilment.

3. Methodology

This study employed a qualitative research approach for its literature review. Google Scholar was used to search for relevant past studies using keywords such as "outdoor education," "well-being," and "mental health." Initially, a total of 106 articles were downloaded and reviewed. However, after qualitative appraisal, only 27 articles were deemed relevant to the context of this study. The theories identified from these articles are reported below, and the insights derived are presented in the findings.

4. Results

4.1 Theories for Outdoor Education Programmes on Mental Health and Well-Being

After reviewing 27 articles, four theories emerged for outdoor education programmes on mental health and well-being. The theories are social constructivism learning theory, Kolb’s experiential learning theory, health promotion theory and social cognitive theory. The curriculum's theoretical foundation is primarily rooted in constructivism (Piaget, 1979; Vygotsky, 1978), social learning theory (Bandura, 1977), David Kolb’s model of experiential education, health promotion theory, and social cognitive theory. The environment within outdoor education programmes, which necessitates hands-on activities with nature, allows individuals to construct their personal understanding from their interactions with other groups, aligning with constructivist principles. Health promotion theory is organised around three fundamental domains: individual characteristics and experiences, cognitions and feelings associated with behaviour, and behavioural outcomes. This theory emphasises individual behaviour motivated by a desire to enhance one's well-being and achieve optimal health potential. It posits that each individual possesses unique attributes, practices, experiences, and knowledge that influence subsequent actions. Recognising these individual needs and characteristics through outdoor education can significantly aid teachers and instructors in promoting well-being and health. Furthermore, the application of appropriate behaviour training by staff, trainers, educators, and teachers to university students is grounded in social learning theory. Outdoor education, through the exploration of nature, offers individuals hands-on experiences and insights into the

environment. Allowing individuals to safely interact and communicate with others in outdoor settings fosters confidence, motivation, and strengthens human connections. Thus, integrating these theoretical foundations within outdoor education programmes provides a comprehensive framework for enhancing individual learning and well-being.

Several theories and models of learning elucidate the experiences of individuals in outdoor education programmes. David Kolb's model of experiential education is the initial and most frequently referenced, originally redesigned from Dewey's (1938) model of experiential learning (Belton, 2010; Priest & Gass, 2005). This theory is considered a developmental and acquisition learning model because it encompasses the following attributes: a developmental process, interchange in acquiring knowledge, attitudes, and behaviours, and results from an individual's distinct experiences. Thus, this evolving acquisition theory provides a beneficial theoretical underpinning to understand how people explain and exchange their experiences and knowledge derived from the learning process itself (Passarelli & Kolb, 2011). Most thinkers and philosophers agree that for learning to occur, ideas and thoughts must be inseparable from experience, as they must be connected to the individual's life (Beaudin & Quick, 1995; Boud et al., 1985).

The sharing of knowledge and experience is crucial in the learning acquisition process, as confirmed by philosophers Brown, Dewey, and Lewin (Brown, 2007). When individuals engage in the sharing process, they must actively participate to develop relationships and exercise a new identity in a protected and secure learning environment (Mead et al., 2001). Kolb's experiential learning model emphasises adult learners. Building on the foundations laid by Piaget and Dewey, Kolb highlights the critical and demanding relationship between adult learning and socialisation. He asserts that learning in informal contexts often involves group engagement with other learners. The most frequently cited model is David Kolb's model of experiential education, which was initially developed from Dewey's 1938 model of experiential learning (Priest & Gass, 2005).

Kolb (1984) posits that experiential learning is the process of constructing knowledge through experience, which he describes as a cyclical process. This principled circle begins and ends with a concrete experience. Soares (2010) notes that these experiences can take various forms, such as activities in an outdoor education camp. Individuals undergo the learning cycle starting with an emotional engagement with the environment, known as the concrete experience, followed by reflective observation, where they gain insights from the experience. This is succeeded by abstract conceptualisation, where they develop representational understandings, and finally behavioural application, or active experimentation. The cycle then leads to new experiences, repeating in a spiral form. Kolb (1984) explains that these four stages—concrete experience, reflective observation, abstract conceptualisation, and active experimentation—must occur in sequence and repeat in a cyclical and spiral manner. Adopting this theory presents both positive and negative consequences, with the positive outcomes outweighing the negatives. The two primary negative consequences are related to finance and time. Designing a differentiated and meaningful lesson requires significant time and resources. Teachers need to be very focused and clear about the lesson's aims and objectives, and prepared for diverse outcomes. Meticulous planning is time-consuming, and implementing the experiential learning approach in the classroom also demands substantial time and commitment. If teachers fail in planning and implementing the lesson effectively, it can lead to delays in the teaching and learning process. Additionally, the financial constraint is notable, as experiential learning often requires significant resources to provide students with a variety of hands-on learning experiences. Despite these challenges, the benefits of experiential learning in enhancing student engagement and knowledge construction make it a valuable educational approach.

Health promotion theory is widely utilised in health promotion as it addresses both the factors influencing health behaviours and the strategies for fostering change. This notion, based on the understanding of the relationship between an individual's environment and personal characteristics, was founded by Pender et al. (2015). Early psychological studies often focused on how environmental changes impact behaviour by making certain actions more or less desirable in specific circumstances. Health promotion theory recognises the influence of personal factors on individuals' health behaviours. In the context of this study on outdoor education, students' development towards awareness in terms of enhancing their well-being and mental health is driven by their own strengths and needs. Engaging in outdoor education programmes or activities ensures that students reflect on their experiences, which facilitates their emotional well-being and helps them cope with anxiety and stress through the insights gained. Self-awareness is crucial for students to identify areas for improvement and set goals to enhance their well-being and mental health. Educating students on the importance of adopting health-promoting behaviours is essential for preserving their well-being and mental health, and this can be effectively achieved through exposure to outdoor education. Participation in outdoor education offers various benefits for students' well-being and mental health, such as reducing stress, fostering a positive mindset and mood, and promoting relaxation, all of which contribute to overall mental health and well-being.

Social cognitive theory, extensively applied in outdoor education, addresses how individuals make meaning through the interaction between their environment and themselves (Bandura, 1995). Introduced by Albert Bandura (1989), this theory outlines the fundamental factors of interaction between individuals and their environment and explains how behavioural changes develop over time. It elucidates the complex and nuanced relationship between individuals and their surroundings. Social cognitive theory plays a vital role in facilitating university students' engagement in outdoor education to enhance their well-being and mental health. Bandura (1995) emphasises the importance of understanding the interactions between people, their environments, and the activation of cognitive processes in shaping and determining

behaviour. This theory underscores the significance of these interactions in fostering improvements in students' well-being and mental health through outdoor education activities.

Therefore, social cognitive theory emphasises the exploration of self-efficacy among students (Bandura, 1995). Self-efficacy refers to students' beliefs in their ability to effectively perform and complete assigned tasks. Specifically, in the context of outdoor education, students who participate in outdoor settings are given opportunities to enhance their sense of self-efficacy through experiential learning. This experiential learning allows students to confront and solve challenges, which can indirectly improve their mental health. When students engage in outdoor education programmes such as camping, team-building, or hiking, they encounter challenges that require resilience and problem-solving. Successfully overcoming these challenges can significantly boost their self-efficacy, leading to improved mental stability, health, and well-being. Moreover, students will likely impact their own behaviour through observational learning (Bandura, 1995). Engaging in outdoor education programmes enables them to acquire and adopt new behaviours from their environment. Outdoor education settings provide university students with opportunities to learn from educators, other individuals, and qualified trainers who can serve as role models. Students observing others' confident behaviour, motivation, and competencies can apply these observations to their own lives, thereby improving self-confidence and reducing stress and anxiety. The experiences gained from observational learning can encourage students to challenge themselves, take risks in new activities, and develop resilience, ultimately enhancing their well-being and mental health.

Social cognitive theory underscores the importance of mastery experiences, which involve successfully completing challenging tasks. In this study, engaging in outdoor education allows students to participate in activities that motivate them to push beyond their limitations. Such activities include camping, kayaking, jungle trekking, and rock climbing. Overcoming these challenges fosters a sense of competence and accomplishment, positively influencing students' mental health and well-being (Bandura, 1995). Outdoor education programmes that provide mastery experiences help students develop a positive mindset and bolster their overall perseverance and strength, contributing to enhanced mental health and well-being. Bandura (1995) also highlights the necessity of social support in forming well-being and mental health. Outdoor education programmes offer students opportunities to engage in activities that showcase cooperation, collaboration, teamwork, and peer support. Participating in outdoor education with peers in a supportive social environment can reduce feelings of loneliness, improve self-esteem, and provide emotional support. Through these activities, students can communicate, bond with their peers, and foster a sense of social connectedness and belonging. This rich experience of learning significantly improves students' well-being and mental health.

4.2 Insights Drawn from Past Studies

Past studies have demonstrated that outdoor education programmes positively impact students' academic performance and enhance their memory retention (Avci & Gumus, 2020). Outdoor education should be considered a necessity rather than an alternative in education, requiring proper planning for effective implementation (Selanik, 2016). Additionally, it is crucial to foster nature consciousness and environmental awareness from early stages of education to dispel the notion that learning can only occur within the confines of a classroom (Avci & Gumus, 2020). Education should encompass all aspects of human life, allowing the acquisition of knowledge that can be applied in everyday situations.

In a study by Avci & Gumus (2020), two groups of primary school students who participated in outdoor education activities showed improved academic performance and retention levels. Similarly, Cilinger (2016) reported that postgraduate students benefitted from outdoor education activities conducted over nine months using a phenomenological research approach. However, the findings indicated that cultural perspectives influenced students' views on outdoor education. Cilinger (2016) revealed that outdoor education was employed as an experiential learning approach to explore the social and personal development of postgraduate students. These studies underscore the importance of integrating outdoor education into the curriculum to enhance students' overall learning experiences and development.

Yang et al. (2019) investigated the effect of a health education programme on mental health and self-efficacy among Chinese tertiary students, involving 532 participants. The intervention aimed to assess the effects on well-being, self-efficacy, and self-regulation. Compared to the control group, participants in the intervention group reported a significantly higher frequency of consistent breakfast consumption and substantial physical activity levels. They also showed reduced intake of sugary beverages, screen time, and a lower propensity for Internet addiction. Furthermore, intervention students exhibited improved self-regulation ratings ($p = 0.040$), though their gains in self-efficacy and subjective well-being were similar to those in the control group. This study suggests that health education can encourage Chinese college students to adopt healthier habits.

Similarly, Ye et al. (2016) analysed the relationships between various mental health issues and health risk behaviours among Chinese college students, involving 2,422 participants. The study identified common forms of inactivity, including Internet addiction, lack of sleep, poor food intake, smoking, and alcohol consumption. These behaviours were strongly associated with increased tendencies towards anxiety and depression. The findings indicated a high incidence of health-risk behaviours among Chinese college students and highlighted a strong correlation between the clustering of these behaviours and higher chances of anxiety and depression. This underscores the importance of addressing health-risk behaviours to improve mental health outcomes in this population.

Xu et al. (2017) employed social cognitive theory to predict physical activity and healthy nutrition practices in a cross-sectional study of 687 undergraduate students in Chongqing, China. The study identified physical inactivity and

unhealthy nutrition behaviours as prevalent issues among undergraduate students. By applying social cognitive theory, the study provided several implications for reducing TV viewing, enhancing daily physical activities, increasing fruit and vegetable consumption, and reducing sugar-sweetened beverage intake among undergraduate students.

Hidayatullah & Sutresna (2019) investigated the influence of outdoor education on male and female students' self-control using an experimental research design at a university in Indonesia. The treatment group participated in outdoor education activities such as slacklining, hiking, and climbing. The results indicated that outdoor education positively influenced students' self-control, with students reporting better anxiety management through hiking experiences. This finding is supported by Mazuki et al. (2014), who highlighted that outdoor education fosters various aspects of individuals, including physical, academic, social, and psychological well-being.

Gustafsson et al. (2011) examined the effects of an outdoor educational programme on the mental health of school children and found that boys performed better than girls. They argued that gender issues should be addressed when planning and implementing such outdoor programmes in schools. Zhao (2016) investigated primary school teachers' experiences and views on outdoor education. Ten Chinese teachers were interviewed for this study, sharing their understanding of outdoor education and its attributes. Despite efforts by the Ministry of Education, the teachers noted that education in China remains largely focused on traditional teaching methods. They conducted outdoor education activities in schoolyards and other locations outside the classroom. The teachers identified several benefits of outdoor education, including the activation of students' multi-senses, improved emotional well-being, and enhanced physical and mental health. However, they also highlighted several challenges, such as a lack of teacher and pedagogical training, insufficient financial support, teacher attitudes, and practical issues like weather, large class sizes, and limited space.

Solomonian et al. (2022) underscored the importance of outdoor education in promoting physical and emotional well-being in children. Their systematic literature review of twenty articles revealed findings on cognitive outcomes, defined as psychological, affective, and social outcomes. However, only ten studies specifically reported on the physical activity outcomes. Deschamps et al. (2022) conducted a survey to investigate the impact of outdoor education on the well-being of primary school teachers in Canada. A total of 381 teachers participated in the study, with 164 having used outdoor education and 217 having not. The study found a weak positive correlation (rho = 0.18) between teacher subjective well-being and the frequency of outdoor education practice. Nonetheless, the study concluded that school-based outdoor education is positively associated with teacher subjective well-being and can be beneficial for both teachers and students. The findings highlighted that teachers significantly influence student learning, and the effectiveness of knowledge transfer to students partly depends on teachers' well-being. Past research on the impacts of outdoor education on teacher well-being is limited (Hascher & Waber, 2021), though there is evidence linking student well-being, socioemotional skills, and motivation to teacher well-being (Siekkinen et al., 2013; Zinsser et al., 2013).

The correlation between outdoor experiences and well-being is well-documented. Reviews have demonstrated the beneficial effects of outdoor activities on adults' mental and physical health and overall well-being (Twohig-Bennett & Jones, 2018; Seymour, 2016) as well as on children's mental and physical health and well-being (Frumkin et al., 2017; Chawla, 2015).

These benefits extend to students who participate in outdoor education programmes and activities. Harvey et al. (2020) found that an annual outdoor education curriculum for students aged 8 to 11 significantly improved their mental health and well-being. Similarly, Kuo et al. (2019) and Remmen & Iversen (2022) reported that outdoor education positively affects students' physical, mental, and social well-being in their recent analyses. Mann et al. (2022) conducted a narrative analysis of global evidence on the benefits of nature-specific outdoor learning for social and personal growth, well-being, and academic advancement. The study included various learning environments such as outdoor education, school gardens, field trips, and regular school courses taught in natural settings. The research features were summarised and analysed using risk-of-bias instruments to evaluate the trustworthiness of the findings, which were generally reasonable but varied widely. The commonly reported advantages of learning in natural outdoor environments included improved student engagement and autonomy in learning, instances of knowledge gain, enhancement in interpersonal and cooperative skills, and increased self-worth. These findings underscore the multifaceted benefits of integrating natural settings into educational practices, highlighting their potential to foster holistic development in students.

5. Discussion

First of all, for research question, the integration of various theoretical frameworks in outdoor education programs offers a multifaceted approach to enhancing mental health and well-being. By examining the principles of social constructivism learning theory, Kolb's experiential learning theory, health promotion theory, and social cognitive theory, it becomes evident that these theories collectively provide a robust foundation for understanding and improving the outcomes of outdoor education. Rooted in the works of Piaget (1979) and Vygotsky (1978), social constructivism emphasises the importance of individuals constructing knowledge through interactions with their environment and others. Outdoor education, by its very nature, involves direct engagement with nature and peers, which aligns well with constructivist principles. This hands-on interaction facilitates personal understanding and cognitive development, as individuals are required to navigate and make sense of their surroundings actively. The constructivist approach in outdoor education encourages learners to build on their previous knowledge and experiences, enhancing their learning process through social interactions and environmental challenges (Piaget, 1979; Vygotsky, 1978).

Kolb's model of experiential learning is particularly relevant to outdoor education, emphasising learning through concrete experiences, reflective observation, abstract conceptualisation, and active experimentation. This cyclical process, as described by Kolb (1984), begins with direct engagement in activities that elicit emotional responses and insights. For instance, outdoor activities such as hiking or camping provide concrete experiences that are followed by reflective observation, allowing learners to analyse their experiences and derive abstract concepts. These concepts are then tested through active experimentation in new situations, creating a continuous learning cycle (Kolb, 1984). Despite its effectiveness, Kolb's model faces practical challenges, particularly regarding the time and financial resources required for planning and executing experiential learning activities. Teachers must invest significant effort into designing lessons that are both meaningful and diverse, which can be time-consuming and costly. Nevertheless, the benefits of this approach, including increased student engagement and deeper understanding, justify the investment (Priest & Gass, 2005; Passarelli & Kolb, 2021).

Health promotion theory, as developed by Pender et al. (2015), emphasises the role of individual characteristics, cognitions, and behaviors in achieving optimal health. This theory is highly applicable to outdoor education, as it addresses the personal attributes and experiences that influence behavior and well-being. Outdoor education programs can be designed to cater to individual needs and promote behaviors that enhance health, such as stress reduction and emotional well-being. By engaging in outdoor activities, students can reflect on their experiences, gain insights into their behavior, and develop healthier lifestyles (Pender et al., 2015).

Social cognitive theory, proposed by Bandura (1989), focuses on the interplay between individuals and their environment in shaping behavior. This theory underscores the importance of self-efficacy, observational learning, and social support in behavior change. In the context of outdoor education, students develop self-efficacy by overcoming challenges and observing positive behaviors in others. Activities such as team-building exercises and nature exploration provide opportunities for students to build confidence, learn from peers and instructors, and develop resilience. These experiences contribute significantly to mental health and well-being by fostering a sense of accomplishment and social connectedness (Bandura, 1989; Bandura, 1995). Integrating these theoretical frameworks within outdoor education programs creates a comprehensive approach to enhancing mental health and well-being. By combining the principles of constructivism, experiential learning, health promotion, and social cognitive theory, outdoor education can provide meaningful and effective learning experiences. These programs not only promote cognitive and emotional development but also encourage healthy behaviors and social interactions, ultimately leading to improved mental health and well-being.

Following that, for research question ii, the findings from various studies underscore the significant positive impact of outdoor education programmes on students' academic performance, memory retention, and overall well-being. This discussion synthesises these findings to emphasise the importance of outdoor education as a critical component of the educational curriculum. Research by Avci & Gumus (2020) demonstrates that outdoor education can significantly enhance students' academic performance and memory retention. Their study involving primary school students showed that those who participated in outdoor activities performed better academically and retained information more effectively than their peers who did not engage in such activities. This suggests that outdoor education fosters a more engaging and memorable learning experience, likely due to the hands-on, experiential nature of the activities that reinforce learning through practical application (Avci & Gumus, 2020).

Integrating outdoor education from an early age is crucial in fostering nature consciousness and environmental awareness. Avci & Gumus (2020) argue that dispelling the notion that learning is confined to traditional classrooms can lead to a more holistic understanding of education. This approach not only broadens the learning environment but also instils a sense of responsibility towards nature and environmental stewardship in students. Selanik (2016) supports this by advocating for the necessity of proper planning and implementation of outdoor education to maximise its benefits (Selanik, 2016). Cilinger (2016) highlights the cultural influences on students' perceptions of outdoor education. Through a phenomenological research approach, Cilinger found that outdoor education serves as an effective experiential learning approach, enhancing social and personal development among postgraduate students. This underscores the importance of considering cultural contexts when implementing outdoor education programmes to ensure they are tailored to the needs and expectations of different student groups (Cilinger, 2016).

Yang et al. (2019) and Ye et al. (2016) provide insights into the impact of health education on students' well-being and health behaviours. Yang et al. (2019) found that health education programmes significantly improved self-regulation and health behaviours among Chinese tertiary students, leading to healthier lifestyle choices such as regular breakfast consumption and reduced screen time. Ye et al. (2016) identified a strong correlation between unhealthy behaviours like internet addiction and poor mental health outcomes, emphasising the need for interventions to promote healthy habits (Yang et al., 2019; Ye et al., 2016). Xu et al. (2017) applied social cognitive theory to address physical inactivity and unhealthy nutrition among undergraduate students. Their study revealed that promoting daily physical activities and healthy eating habits can significantly improve students' well-being. This aligns with the principles of social cognitive theory, which emphasises the role of environmental and cognitive factors in behaviour change (Xu et al., 2017).

Hidayatullah & Sutresna (2019) investigated the effects of outdoor education on self-control and anxiety management among university students. Their findings showed that activities like hiking and climbing helped students develop better self-control and manage anxiety effectively. This is supported by Mazuki et al. (2014), who noted the

broad benefits of outdoor education on physical, academic, social, and psychological well-being (Hidayatullah & Sutresna, 2019; Mazuki et al., 2014).

Gustafsson et al. (2011) found that boys benefitted more than girls from outdoor education programmes, suggesting the need to address gender-specific issues in programme planning. Meanwhile, Zhao (2016) highlighted the challenges faced by primary school teachers in implementing outdoor education, such as lack of training and resources, but also noted its benefits for students' sensory activation and emotional well-being (Gustafsson et al., 2011; Zhao, 2016). Solomonian et al. (2022) and Deschamps et al. (2022) underscore the broad benefits of outdoor education for physical and emotional well-being. Solomonian's review emphasised cognitive and social outcomes, while Deschamps' survey linked outdoor education to improved teacher well-being, which in turn positively influences student learning (Solomonian et al., 2022; Deschamps et al., 2022). The cumulative evidence from these studies strongly supports the integration of outdoor education into the curriculum. The multifaceted benefits, including enhanced academic performance, improved mental and physical health, and greater environmental awareness, make outdoor education an essential component of holistic student development.

The integration of various theoretical frameworks in outdoor education programmes provides a multifaceted approach to enhancing mental health, well-being, academic performance, and memory retention. By examining the principles of social constructivism learning theory, Kolb's experiential learning theory, health promotion theory, and social cognitive theory, it is evident that these theories collectively offer a robust foundation for understanding and improving the outcomes of outdoor education. Social constructivism, rooted in the works of Piaget (1979) and Vygotsky (1978), emphasizes the importance of constructing knowledge through interactions with the environment and peers. Outdoor education, by its very nature, aligns with constructivist principles by engaging students directly with nature and their peers. This hands-on interaction fosters personal understanding and cognitive development, encouraging learners to build on their previous knowledge and experiences (Piaget, 1979; Vygotsky, 1978). Kolb's experiential learning theory, which emphasizes learning through concrete experiences, reflective observation, abstract conceptualisation, and active experimentation, is particularly relevant to outdoor education. The cyclical nature of this learning process ensures that students continuously engage with and learn from their environment, leading to a deeper understanding and retention of knowledge (Kolb, 1984). Despite the practical challenges of implementing experiential learning, such as time and financial constraints, the benefits of increased student engagement and deeper understanding justify the investment (Priest & Gass, 2005; Passarelli & Kolb, 2021). Health promotion theory, developed by Pender et al. (2015), highlights the role of individual characteristics, cognitions, and behaviours in achieving optimal health. This theory is highly applicable to outdoor education, as it addresses the personal attributes and experiences that influence behaviour and well-being. Outdoor education programmes designed to cater to individual needs can promote behaviours that enhance health, such as stress reduction and emotional well-being (Pender et al., 2015). Social cognitive theory, proposed by Bandura (1989), focuses on the interplay between individuals and their environment in shaping behaviour. In the context of outdoor education, this theory underscores the importance of self-efficacy, observational learning, and social support in behaviour change. By providing opportunities for students to overcome challenges and observe positive behaviours, outdoor education fosters a sense of accomplishment and social connectedness, which are crucial for mental health and well-being (Bandura, 1989; Bandura, 1995).

6. Conclusion

In conclusion, to maximise the benefits of outdoor education, it is essential to incorporate these theoretical frameworks comprehensively into the curriculum. To implement outdoor education effectively, several strategies should be considered. Firstly, integrating outdoor education into the standard curriculum rather than treating it as an extracurricular activity ensures that all students benefit from experiential learning opportunities. Educators also need proper training in outdoor education techniques and theoretical frameworks, which should include practical skills for organising and conducting outdoor activities and understanding the underlying principles that make these activities effective. Additionally, adequate financial and logistical support is necessary for the successful implementation of outdoor education programmes. Schools should allocate resources for outdoor equipment, transportation, and other necessary materials to ensure a safe and enriching experience for students. Programmes should be designed with cultural sensitivity in mind, recognising the diverse backgrounds and perspectives of students, to ensure that outdoor education is accessible and meaningful for all participants. Engaging parents and the community in outdoor education initiatives can enhance their effectiveness, providing additional resources and support while reinforcing the importance of outdoor education at home. Finally, continuous evaluation and feedback mechanisms should be in place to assess the effectiveness of outdoor education programmes, considering academic performance, mental health, and overall well-being to ensure that the programmes meet their intended goals. The cumulative evidence strongly supports the integration of outdoor education into the curriculum. The multifaceted benefits, including enhanced academic performance, improved mental and physical health, and greater environmental awareness, make outdoor education an essential component of holistic student development. By applying the principles of social constructivism, experiential learning, health promotion, and social cognitive theory, educators can create meaningful and effective outdoor education programmes that promote cognitive and emotional development, encourage healthy behaviours, and foster social interactions. These programmes ultimately lead to improved mental health and well-being, making outdoor education a necessity in modern educational practices.

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Conflict of Interest
The authors declare no conflicts of interest.

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