

WESTERN SYDNEY
UNIVERSITY



Building Capacity for Outdoor Education in NSW Secondary Schools

PHD OVERVIEW

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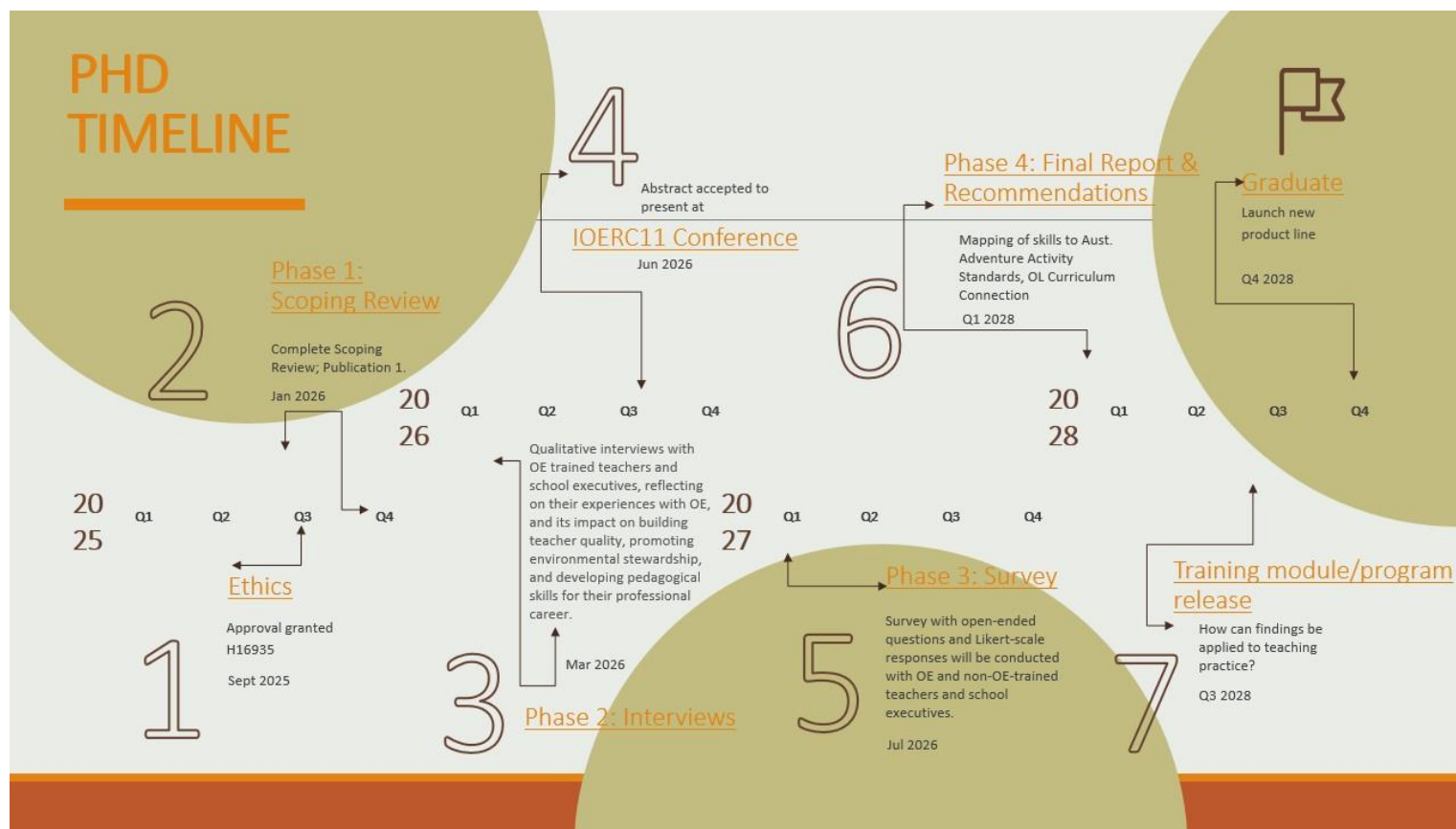
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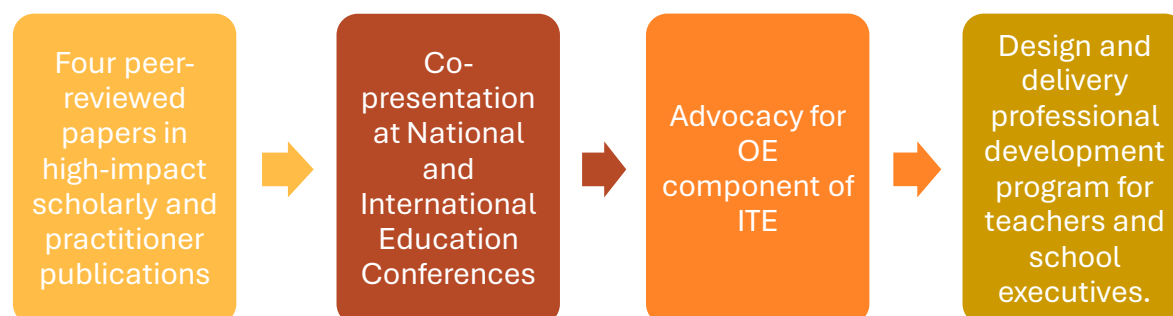
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Project Summary

This study aims to evaluate what teacher and school executive capabilities and competencies facilitate the successful uptake of the Duke of Edinburgh International Award Program (Duke of Ed) in NSW secondary schools. A four-phase exploratory sequential mixed-methods research (MMR) study will be conducted, where one stage informs the next (Creswell & Creswell, 2018).



Anticipated outcomes



Keywords

Outdoor learning; pedagogy; pro-environmental attitudes; secondary school; wellbeing.

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Introduction

Rationale

Outdoor education (OE) has two branches: a curriculum area with identifiable content; and a pedagogy involving an experiential approach to learning (Lugg & Quay, 2022). My PhD is concerned with the latter, specifically in identifying what aspects of pedagogy create the conditions for the successful implementation of OE in secondary schools. This has resulted from the introduction of a pilot program that was recently unveiled in 11 public secondary schools in south-western Sydney, which aims to promote opportunities for Year 9 school students to participate in the Duke of Edinburgh International Award Program (Duke of Ed). The Duke of Ed is an internationally recognised non-formal education framework supporting young people to meet new challenges, gain important life skills, and realise their potential (*Duke of Edinburgh's International Award – Australia*, 2025). The Duke of Ed is largely nature-based outdoor education-focused, relying on previously learnt skills and the unwavering commitment of teachers and school executives to implement the program within their school. However, the teacher and school executive capabilities and competencies required to drive successful uptake and facilitate student learning in OE are poorly understood. This scoping review aims to explore the necessary attributes and skills of teachers and school executives that facilitate effective OE experiences for secondary school students. This endeavour is particularly relevant as the integration of OE is increasingly recognised as beneficial in fostering 21st-century competencies, environmental stewardship, and overall student well-being (Becker, 2017; Mann et al., 2022a; Mann et al., 2021).

There are also several recent studies examining OE within the secondary education system in Australia (Ambrosy et al., 2025; Barber et al., 2025; Kokkonen et al., 2025)

unpacking the justification of why outdoor industry training/education is critical for the outdoor sector. However, these studies are concerned with the first 'face' of OE, as a distinct curriculum area embedded into school activities. The specific capabilities and competencies required by teachers and school executives to successfully implement an OE program in Australian secondary schools from the ground up is missing from the literature. Research illustrates the dual challenge OE teachers face in navigating pedagogical approaches and the associated perceived risks of outdoor learning (Ernst, 2014; Öztürk Samur et al., 2023). Safety in OE is paramount, but outside the scope of this study. It is essential to highlight that without integrated support systems such as conducive school policies and adequate resources, OE may struggle to flourish (Neville et al., 2022), emphasising the necessity of systemic competencies among school executives.

Research Objectives

This study aims to evaluate what teacher and school executive capabilities and competencies facilitate the successful uptake of the Duke of Edinburgh International Award Program (Duke of Ed) in NSW secondary schools. To investigate this, the following research objectives have been proposed:

- Examine the attributes and qualities learnt through tertiary-level outdoor education (OE) training that have been beneficial for their successful long-term career in education
- Investigate how OE can be embedded into ITE (initial teacher education) or in-service teacher professional development (PD) courses to enhance teacher competencies beneficial to facilitating nature-based OE in NSW secondary schools
- Build teacher capacity through ITE and PD to implement nature-based OE and deliver

the Duke of Ed program in NSW secondary schools.

Research Questions

The research questions that will inform this study, and linked to study objectives and methodology in Table 1 are:

1. What teacher and school executive capabilities and competencies are required to successfully facilitate and promote nature-based outdoor education experiences for school students?
2. What are the barriers and enablers for teachers and school executives of nature-based outdoor education in their context?
3. What are the capabilities and competencies of teachers and school executives who have implemented the Duke of Ed program in their school?
4. What are teachers' and school executives' perceptions and reflections of the impacts of prior tertiary-level OE training in developing teacher quality, pro-environmental attitudes, and enhancing their pedagogic skills?
5. What are teachers' and school executives' perceptions and reflections of their capability and competency to facilitate and promote nature-based outdoor education experiences for students in Australian secondary schools?

Literature Review

Outdoor Education as a response to mental health crisis

Outdoor Education (OE) is not new or revolutionary; however, its needs are increasingly important in the school curriculum. Research suggests that being outdoors and in contact with nature is becoming less common in adolescents, leading to more sedentary behaviour and rising screen time (Mitra et al., 2020). Mental health and wellbeing have

declined, and student disengagement and school refusal have increased (*Australian Government Response to Senate Standing Committee Recommendations*, 2024). The latest data from the *National Study of Mental Health and Wellbeing*. (2020-2022) reports almost four in ten (38.8%) young people aged 16-24 with a mental disorder lasting more than 12 months. These statistics are alarming and require a radical rethink of our approach to educating young people.

As we look to the future, jobs will require individuals who can create value through their creativity, critical thinking and collaborative spirit (OECD, 2024). As artificial intelligence (AI) infiltrates every aspect of society, we need to make rapid changes to the way we educate young people to equip them for this ever-changing landscape. In 2023, the OECD conducted a worldwide survey measuring 10–15-year-old students' social and emotional skills. The results show that students' social and emotional skills – or 21st century skills (Chernyshenko et al., 2018; Kennedy & Sundberg, 2020) are linked to better life outcomes, including academic success, greater life satisfaction, healthier behaviours, less test and class anxiety, and more ambitious career plans. This corresponds to a need for teaching activities and learning experiences that simultaneously improve students' learning, wellbeing and health (Bølling et al., 2023). The outdoor learning environment has grown in popularity and repeatedly shown in schools to be a potent vehicle to amplify 21st century competencies (Berg et al., 2021; Ellinger, 2023; Mann et al., 2023; Mann et al., 2022a; Mann, 2022b).

Several recent studies examining OE within the secondary education system in Australia (Ambrosy et al., 2025; Barber et al., 2025; Kokkonen et al., 2025) are based on the advocacy and research conducted by Gray and Martin (2012) and Gray (2018) which led to the introduction of the Outdoor Learning curriculum connection in the Australian Curriculum (ACARA, 2023). ACARA (2023) has provided guidance on how this curriculum connection can

be mapped to content in some subject areas and year/stage levels. However, regular classroom teachers who have been trained through initial teacher education (ITE) pathways at Australian universities anecdotally lack the capabilities and competencies to successfully facilitate the uptake of the Duke of Ed, or any OL. To amplify the impact of this curriculum connection, further research is required to demonstrate how teachers and school executives can understand and implement OE programs, particularly in public secondary schools.

The NSW Department of Education has partnered with the Office of Sport to deliver the Duke of Edinburgh International Award (Duke of Ed) Program within 11 schools in the south-western Sydney metropolitan area. This has resulted from the Cole et al. (2020) study that focused on the attribution of the effects of the Duke of Ed program. Results from this study indicated substantial learning attribution of the contribution of Duke of Ed to the development of participants' effectiveness (Cole et al., 2020). Cole et al. (2020) study suggested that further research, particularly taking a longer view, was required to understand and articulate the attribution effects of Duke of Ed participation fully. This study did not scrutinise school Principals or teachers or evaluate any barriers or enablers of OE within this milieu.

Teaching, pedagogy and OE

Teaching is a complex phenomenon with many different contextual and personal factors interacting simultaneously. Research supports the assertion that active engagement in outdoor environments enhances pedagogical understanding and practices (Leigh et al., 2024; Becker et al., 2017). An inquiry-based, experiential pedagogic 'toolbox' is developed through OE training in Initial Teacher Education (ITE) and specialised tertiary OE courses. Anecdotal evidence demonstrates that OE-trained teachers are more likely to champion OE

practices and experiences for students to supplement curriculum-based teaching and learning in their current educational context than teachers who are not OE trained. However, this pedagogical 'toolbox' appears to have scant targeted research to understand individual and contextual factors that shape its development.

Shulman (1987) was a highly influential figure who proposed seven categories of teaching knowledge, of which three 'core' categories have emerged as most widely researched: content knowledge (CK; knowledge of the subject), pedagogical content knowledge (PCK; knowledge about teaching and learning a specific subject) and general pedagogical knowledge (GPK; knowledge not specific to a certain subject) (Leijen et al., 2022). General pedagogic knowledge (GPK) is required for teaching, regardless of the subject or context. Pedagogic knowledge is described by Guerriero (2017) as 'the specialised knowledge of teachers for creating effective teaching and learning environments for all students independent of subject matter' (p. 9). Shulman (2005) also discussed signature pedagogies, where novices are instructed in three fundamental dimensions of their professional work – to think, to perform, and to act with integrity. This signature pedagogical approach resulting from tertiary OE training has been termed outdoor fieldwork (OFW) (Munge & Thomas, 2021).

Voss et al. (2011) expanded GPK to include knowledge about instruction and the psychological aspects of learning. This is knowledge that transcends PCK, with a validated instrument developed to measure pedagogic and psychological knowledge (PPK) (Voss et al., 2011). Since then, instruments have been developed to measure certain aspects of PPK, such as teacher agency (Leijen et al. 2022), based on Biesta et al. (2015) ecological model of teacher agency. Current approaches to developing teacher professionalism in Australia also highlight the importance of teacher agency as a key factor (Mohammad Nezhad & and Stolz;

Molla & Nolan, 2020). Teacher agency is defined by Priestley et al. (2015) as an 'emergent phenomenon...that is achieved by individuals, through the interplay of personal capacities and the resources, affordances and constraints of the environment by means of which individuals act' (p. 19). This ecological definition emphasises the temporal process of agency development depending on both individual characteristics and context (Emirbayer & Mische, 1998; Priestley et al., 2015). Within the ecological model exists three interconnected constitutive components; iterational, projective, and practical-evaluative (Leijen et al., 2020; Priestley et al., 2015). Despite many facets of the ecological model of agency applying to outdoor educators including a focus on the learning context, the construct of teacher agency doesn't fit what we hypothesise as characteristics of teachers who have been trained in the dynamic outdoor environment.

There is also the third iteration of the OECD Teaching and Learning International Survey (TALIS), relating to professional characteristics and pedagogical practices at institutional and individual levels (Ainley & Carstens, 2018). This data creates an international benchmark that can monitor and assess the role of teachers in ensuring quality education towards Goal 4, Target 4.c of the United Nations Sustainable Development Goals (SDG's) (Ainley & Carstens, 2018).

Teacher characteristics developed through ITE do not change, but they may influence other professional development characteristics, as well as teachers' professional and instructional practices (Ainley & Carstens, 2018).

Biesta et al. (2015) reported that many teachers are faced in the school with a plethora of competing and vague ideas such as personalisation, choice, learning, subjects, etc.; are regularly left confused about their role, and hence tend to think more about short-

term obligations and less about the long-term purposes of education. This can be contrasted to the longer, often seen as more risky or challenging, approach to outdoor education. There is a colloquial (possibly misquoted) saying in OE 'things go well slowly and go bad quickly'. This phrase highlights the need for stringent planning when embarking on any OE venture, and the very real consequences that can occur because of any number of unmanageable factors. Anecdotally, classroom teachers thrive on the sense of having control of at least their environment.

The OFW approach in tertiary settings is discussed by Munge et al. (2018), highlighting the role of OFW as an important experiential learning strategy in Higher Education (HE). Munge et al. (2018) discuss OE teachers in schools spending time at night, on weekends and in holiday periods planning OE activities or running the programs themselves to avoid clashes with timetabling. Munge & Thomas (2021) postulate that running OE programs in schools can become all-consuming for educators, often to the detriment of other tasks that may aid career progression or work-life balance. Dallat et al. (2018) discuss the real risks of OFW from an Australian OE incident database, highlighting that diligence is required at all levels of an organisation to ensure that safety practices eliminate or reduce the risks to student safety while participating in OFW.

Outdoor Education Qualifications

In Australia, tertiary OE qualifications are specific and targeted, generally focusing on each activity, such as rock climbing or bushwalking. Students learn and demonstrate their competency against nationally accredited standards. This involves a minimum of one year equivalent of tertiary study in Outdoor Education, plus studies in Outdoor Education

pedagogy, and satisfactory completion of a teaching practicum (Outdoor Education Australia, 2025)

This may take the form of (Outdoor Education Australia, 2025):

An undergraduate degree in Outdoor Education.

An undergraduate degree in another discipline (such as Psychology, Physical Education, Science, Arts, Aboriginal Studies, History, etc), but with a major field of study of Outdoor Education within the program

A qualified teacher that holds a VET based qualification in Outdoor Recreation at a minimum of Certificate IV level, supplemented by additional studies in Outdoor Education philosophy and pedagogy, and satisfactory completion of a teaching practicum.

A recent study by Polley et al. (2025) discusses characteristics of OE trained university graduates, presenting their justification of why outdoor industry training/education is critical for the outdoor sector, which is to mitigate risk. Kokkonen et al. (2025) argue that an optional outdoor education curriculum for Years 7-10 (Stage 4 and 5) in Australia is required to support teachers. Additionally, Polley et al. (2025) discuss how the practices and recommended outdoor leader capabilities that have been developed through the Australian Adventure Activity Standards (AAAS) are benchmarked against outdoor leadership units of competence in the Sport, Fitness and Recreation Training Package (SF RTP) (Release 6.0, Department of Employment and Workplace Relations, 2024).

The AAAS requires employers of adventure activities to ensure that participants are led by competent individuals who:

conform with the providers' risk management systems

have current, verified and documented skills, knowledge, experience

only assume roles within their skills, knowledge, experience

provide an appropriate level of supervision for the activity context

are fit to fulfil their duties (e.g. managed for health, fatigue, medications)

comply with appropriate activity-specific recommendations of activity leader to participant ratios.

(Australian Adventure Activity Standards, 2024)

Polley et al. (2024) have provided five recommendations for how academics might assess the seven higher education (HE) OE threshold concepts based on study, to support communication of graduate capabilities to employers, students, graduates, and other outdoor education stakeholders.

An e-Delphi study by Down et al. (2025) explored the concept of success in OE in Australia. Results from this study indicate the following (Down et al., 2025):

- High level of consensus regarding the need for support of the school for OE, particularly from school leadership
 - This was related to the relationship between an employee feeling supported in the workplace and their corresponding perception of success
- High level of consensus around maintaining a safe environment for students, in terms of physical, mental and psychological safety
 - Particularly in terms of the duty of care between student-teacher-school, and the potential for harm in comparison to other curriculum areas

- High level of consensus regarding the level of passion of teachers involved in driving OE
- Medium consensus regarding the lack of willingness of staff to give up extra time

OE and the Outdoor learning curriculum connection

The goal of education outlined in the 2019 Alice Springs (Mparntwe) Education Declaration (Australian Government Department of Education, Skills and Employment, 2019) is for all young Australians to become confident and creative individuals, successful lifelong learners, and active and informed members of the community. The Australian Curriculum Assessment and Reporting Authority (ACARA) is the body responsible for setting the expectations for what all young Australians should be taught, regardless of their background or where they live (ACARA, 2023). Currently all Australian schools are required to teach based on the 9th Version of the Australian Curriculum, which is described by ACARA (2023) as three-dimensional; it includes learning areas, general capabilities, and cross-curriculum priorities. This sets out the essential knowledge, understanding and skills all Australian students need so they will be able to learn, contribute and shape their world now and in the future (ACARA, 2023). It is important to note that although the Australian Curriculum is dictated by a federal body, each state and territory implements its own syllabus.

With Outdoor Learning embedded in the Australian Curriculum, it is vital to shape how this curriculum connection will unfold in the upcoming years to provide enhanced wellbeing for students, and not be overly restrictive or difficult for teachers and school leaders to implement. The health and wellbeing element of this curriculum connection is

stated as follows (ACARA, 2023):

‘Experiences in natural environments promote personal growth and development, and health and wellbeing. Students experience the deep personal impact of immersion in nature, including how connection to Country/Place by First Nations Australians is a critical element of their identity. This includes the role of natural environments in providing a balance to modern, technologically intense living and in supporting physical, social, emotional, mental, and spiritual wellbeing. Students are given unique opportunities to reflect on their own and with others, about themselves, their relationship with others and their place in the world.’

Outdoor learning in this context also relates to:

teaching and learning self-reliance, interdependence and leadership

developing an adventurous spirit

managing personal risks to participate in safe and sustainable experiences in nature

learning the value of lifelong outdoor recreation for enjoyment, health and wellbeing

developing a deeper appreciation for Country and Place, and understanding of the

importance of traditional custodians and caretakers of Country

developing ecological literacy

understanding nature through direct experience, and developing deeper human–

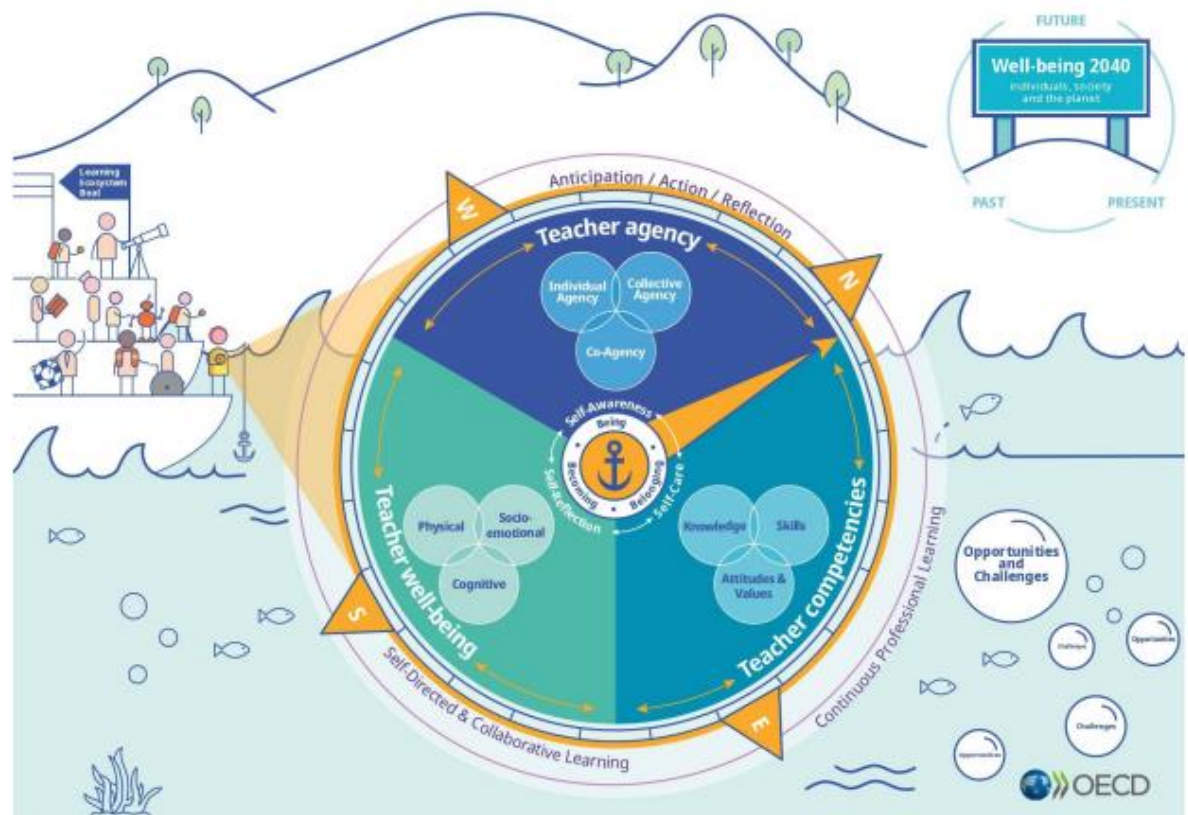
nature relationships

providing opportunities to learn safe practices and develop movement competence in

outdoor environments

(ACARA, 2023).

Figure 2. Teaching Compass Visual



OECD Teaching Compass (2025)

Research Approach

Firstly, I will discuss recent systematic reviews of OE and related fields to examine recommendations that have been established for future research in this field. Research methods will then be explained, including decisions for selecting a mixed methods approach. This is followed by an explanation of, and rationale for, the selection of data collection tools and analysis. The section concludes with a discussion of ethical considerations and project feasibility.

A pragmatic four-stage sequential mixed-methods research (MMR) study will be conducted, where one stage informs the next (Creswell & Creswell, 2018). Rather than taking a singularly quantitative or qualitative approach, an MMR design has been selected for its

ability to provide a comprehensive understanding of the research questions. This design enables a robust and comprehensive exploration of the capabilities and competencies required by teachers and school executives to successfully implement the Duke of Ed program in NSW secondary schools, with an emphasis on nature-based OE.

The study will be conducted with teachers and school executives at 11 secondary public schools in the south-western Sydney metropolitan area. The following NSW Department of Education schools are implementing the Duke of Edinburgh Program in the pilot study, which is a partnership between NSW Department of Education and Office of Sport NSW: Airs High School, Ajuga School, Bossley Park High School, Campbelltown Performing Arts High School, Elderslie High School, Elizabeth Macarthur High School, Fairvale High School, Hurlstone Agricultural High School, James Meehan High School, Macquarie Fields High School and Moss Vale High School.

Phase 1 - Scoping review:

Teachers' Competency and Capability in Outdoor Education: A Scoping Review

This scoping review aims to identify and map the existing literature on the necessary attributes and skills of teachers and school executives that facilitate and promote effective outdoor education experiences for secondary school students.

Methods: The review will follow the JBI methodology for scoping reviews and adhere to the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR). A comprehensive search was conducted in ProQuest and EBSCO (CINAHL) Online databases extracting peer-reviewed and grey literature using concise search terms registered with Open Science Framework (OSF) <https://osf.io/tgyrj/>, date limited from January 2010 to present. Data will be charted and summarised descriptively, with the results presented in narrative and visual formats.

Phase 2 – Semi structured interviews:

Learning for life: The impact of prior OE training on teaching capability and competency

For the last forty years, outdoor learning and outdoor education have been investigated extensively around the globe. Against this backdrop, studies have been lacking regarding what teacher capabilities and competencies emanate from involvement in initial teacher education (ITE), which included opportunities to undertake tertiary-level outdoor education classes. This phase of the study aims to glean valuable insights into teachers' and school executives perceived ability to facilitate and promote OE in their educational setting because of their ITE in OE. By exploring their reflections, the study can illustrate the dual challenge OE teachers face in navigating pedagogical approaches and the associated perceived risks of outdoor learning (Ernst, 2014; Öztürk Samur et al., 2023). In short, the objective is to analyse how teachers perceive OE training as an enhancement to their pedagogic repertoire, leading to their ability to engage students, promote environmental stewardship, and make real-life connections to learning.

Methods: This phase of the study will focus on qualitative interviews with OE trained teachers and school executives, reflecting on their experiences with OE, and its impact on building teacher quality, promoting environmental stewardship, and developing pedagogical skills for their professional career.

Phase 3 – Survey

Lifelong learning: OE and it's impacts on Teaching quality

This stage of the study aims to highlight perceptions of teachers regarding their ability to promote and facilitate OE in their context. It will draw upon existing studies that

emphasise OE teachers' beliefs in their role as key facilitators of outdoor learning experiences. A quantitative comparative analysis of teachers and school executives with and without tertiary-level OE training will aim to identify any differences in pedagogic skills, teaching quality, environmental attitudes, and willingness to facilitate and promote nature-based OE experiences for students in Australian secondary schools.

Methods: A survey with open-ended questions and Likert-scale responses will be conducted with OE and non-OE-trained teachers and school executives. Survey items will be finalised following the scoping review. An ethics amendment will be requested following this.

Phase 4 – Final Report & Recommendations

Balancing risk and reward: a framework to implement OE in NSW secondary schools

Data and findings from previous stages of the study will be integrated at this stage to provide the quantitative rigour and qualitative nuance to inform recommendations. During this stage, an analysis of key Australian Educational Policy documents will be conducted to assess the current climate, seeking solutions to how change can be made in practice. The final paper will address the barriers secondary school teachers and executive face when attempting to implement OE stemming from their previous training, school policies, risk perceptions, and infrastructural support. Additionally, key strategies will be mapped to Australian Adventure Activity Standards (AAAS), OL Curriculum connection, Outdoor Leadership in Sport, Fitness and Recreation Training Package (SF RTP). By synthesising findings from the previous three stages of the study, this phase will unveil strategies in policy and practice to overcoming these challenges. Importantly, this research will aim to inform policy adjustments in NSW secondary schools to better support teachers and school executive in delivering effective OE programs.

Together, these four phases will create the backdrop for a robust and rigorous investigation of OE teacher capabilities and competencies in Australia.

Table 1: Link between research questions, study objectives, methods, and outputs

Phase	Research question	Research objectives	Quantitative methods	Qualitative methods	Output/s
1	What teacher and school executive capabilities and competencies are required to successfully facilitate and promote nature-based outdoor education experiences for students?	The scoping review aims to identify and map the existing literature on the necessary attributes and skills of teachers and school executives that facilitate and promote effective outdoor education experiences for secondary school students.	Scoping Review of teacher and school executive capabilities and competencies required to facilitate and promote nature-based OE experiences for students (2010-2025)		Journal article; conference presentation
2	What are the barriers and enablers for teachers and school executives of nature-based outdoor education in their context? What are the capabilities and competencies of teachers and school executives who have implemented the Duke of Ed program in their school?	To determine the impacts of prior OE training on teachers' and school executives' capability and competency, and their capacity to facilitate and promote nature-based/place-based OE experiences		Individual interviews with teachers and school executives participating in the Duke of Ed pilot program.	Journal article; conference presentation
3	What are teachers' and school executives' perceptions and reflections of the impacts of prior OE training on developing teacher quality, pro-environmental attitudes, and enhancing their pedagogic skills? What are teachers' and school executives' perceptions and reflections of their capability and competency to facilitate and promote nature-based/place-based outdoor education experiences for students in Australian secondary schools?	To determine how teachers view their capacity and competency to facilitate and promote nature-based/place-based outdoor education experiences for students in Australian secondary schools.	Survey – mix of open-ended and Likert scale responses related to teacher quality, pro-environmental attitudes, and pedagogic skills. OE & non-OE trained teachers & school executive		Journal article, conference presentation

4	How can the research findings be applied to policy and practice for NSW public secondary schools?		Mapping of skills to Australian Adventure Activity Standards (AAAS), OL Curriculum connection, Outdoor Leadership in Sport, Fitness and Recreation Training Package (SF RTP)	Training module/ program for teachers/school executives; Journal article, conference presentation
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Creating a rigorous study

In OE research, there has been significant debate regarding the validity and reliability of many published studies, plus the danger of an instrument being used that is inappropriate for the research objectives of a project and/or the participant (Scrutton & Beames, 2015). Sibthorp (2000) explored selecting, testing and using appropriate instruments in OE research and developed an evaluation tool, although their take on comparing outcomes is 'like comparing rainfall and snowfall: meaningless' (p. 100). The use of both qualitative and quantitative methods ensures that nuanced individual experiences featured in interviews and open-ended survey responses are complemented by broader patterns and trends captured through scoping reviews and quantitative survey data. This integration is essential to fully understand the complex interplay of teacher competencies, systemic barriers, and contextual enablers.

The phased sequencing enhances the methodological robustness by allowing findings from one phase to inform the design and focus of subsequent phases. For example, the Phase 1 scoping review establishes a foundational understanding of competencies and capabilities, which then informs the development of interview guides and survey tools in Phases 2 and 3. This iterative refinement ensures that data collection instruments are both theoretically grounded and empirically informed.

Each phase is designed to minimise participant burden and maximise ethical rigour. The scoping review does not involve human participants, thereby reducing ethical complexity in

Phase 1. Phases 2 and 3 involve voluntary participation, with clear informed consent protocols and safeguards for confidentiality. The methodology also ensures that participants' voices are accurately and respectfully represented in the final analysis.

Proposed Data Analysis

Phase 1: Scoping Review

The extracted data will be presented graphically to support visual analysis and accompanied by a narrative summary. The draft frame for results presentation is identified in Table 2. Content analysis will be used to identify, group, and categorise terminology to address all research questions. Methodology of studies will be analysed to determine the methodological rigour and validity of quantitative instruments employed in included studies. Coding will be conducted by two reviewers. These parameters are subject to change, with reasons for any changes detailed in the review.

Phase 2: Interviews

Purposive sampling (Creswell & Plano Clark, 2018) will ensure diversity in school type, location, and a mix of teachers and leadership roles. Reflexive thematic analysis (Braun & Clarke, 2023) will be employed:

1. Transcription of interviews
2. Coding of meaning units
3. Identification of initial themes
4. Theme refinement, definition, and naming

A coding framework will be developed based on both deductive and inductive themes.

Phase 3: Surveys

Purposive sampling (Creswell & Plano Clark, 2018) will be used to recruit the experiment

group (OE-trained teachers/school executives) and control group (non-OE-trained educators).

- Matching will occur post-hoc using demographic variables (i.e. OE trained/non-OE trained) to create comparable experimental and control subgroups.
- Descriptive statistics (mean, median, SD, frequency) will be used to profile participants.
- Exploratory and confirmatory factor analysis may be employed to validate constructs related to teacher traits and environmental attitudes.
- Inferential statistics (e.g., independent samples t-tests, ANOVAs, MANOVAs) will compare experiment and control groups on key outcome measures.
- Regression analyses (e.g., multiple or logistic regression) will test predictive relationships between OE training and outcomes like teacher quality traits, pedagogical practices, or environmental beliefs.

Response bias will be minimised through anonymity of survey entries. Additionally, the same survey will be sent to all teachers whether they have OE training or not.

Confounding variables (e.g. years of experience, school SES) will be controlled for through:

- Matching strategies during analysis
- Inclusion of covariates in regression models

Phase 4 – Final Report & recommendations

The research design will allow qualitative and quantitative data to be analysed in parallel and then triangulated (Crotty, 1998). A comparison of themes from interviews with patterns from survey data will deepen insights and highlight consistencies or contradictions. A joint display matrix may be used to present integrated findings visually.

Anticipated Impacts

Peer-reviewed Journals

Four high-impact peer-reviewed articles will be submitted to national and international journals focusing on:

- Teacher education and professional development
- Outdoor education and experiential learning
- Educational leadership and school reform
- Environmental education and sustainability

Target Journals: Examples include Australian Journal of Education, Teaching and Teacher Education, Journal of Outdoor and Environmental Education, and Environmental Education Research.

Conference Presentations

Findings will be presented at national and international conferences relevant to:

- Teacher education (e.g., AARE – Australian Association for Research in Education, ACHPER - Australian Council for Health, Physical Education and Recreation)
- Outdoor learning (e.g., NOEC – National Outdoor Education Conference, IOERC – International Outdoor Education Research Conference)
- School leadership and wellbeing (e.g., ACEL – Australian Council for Educational Leaders)

Professional Development and Training Resources

1. Development of a Training Framework

A structured professional development module will be designed to help build capacity among teachers and school leaders to effectively deliver OE and the Duke of Ed program.

2. Practical Toolkits and Guides: Accessible, evidence-based resources will be created to support schools in embedding OE into their curriculum and co-curricular programs.

Engagement with Stakeholders and Policymakers

1. Briefing Papers and Policy Recommendations

- A set of concise, evidence-based recommendations will be developed for the NSW Department of Education, school principals, ITE providers, and relevant educational agencies.

2. Direct Consultation

- Findings will be shared with stakeholders such as:
 - i. NSW Education Standards Authority (NESA)
 - ii. Duke of Edinburgh Award NSW/International
 - iii. Universities and ITE program coordinators

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Picture 1: PhD TIMELINE

PHD TIMELINE

