Needle in a Haystack
What can half a million research papers tell us about how to run an effective outdoor program?

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Combining research expertise with Australia’s leading outdoor camp providers
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**Purpose:** To build on the Australian evidence for the benefits of structured outdoor and nature-based programs on the wellbeing of young people
What empirical evidence exists for benefits associated with key components of outdoor programs?
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- Previous reviews have reported on outcomes of camping programs (i.e. benefits to participants).
- This study focuses on key ingredients of good outdoor programs (i.e. mechanisms, processes and components).
ingredients (mechanisms)

• more energy
• improved concentration
• greater confidence
• enhanced wellbeing
• feel better

benefits (outcomes)
Key Ingredients of Effective Programs

30 documents (books, articles, reports, etc)
46 authors
over 30 years of publication history
60 identified components
Key Ingredients: from the Literature

- nature
- outdoors
- peers
- environment
- activity
- adventure
- challenge
- debriefing
- metaphor
- facilitation
- processing
- comfort zone
- framing
- challenge by choice
- experiential
- communication
- problem solving
- initiative
- responsibility
- empowerment
- disequilibrium
- wilderness
- exercise
- fresh air
- learning by doing
- self discovery
- achievement
- self efficacy
- self esteem
- leadership
- novelty
- risk
- natural consequences
- spirituality
- connectedness
- belonging
- sense of control
- group challenges
- self reliance
- decision making
- encounters with uncertainty
- positive stress
- experiencing success
- multi-sensorial
- immediacy
- action orientation
- simple living
- open space
- freedom from distraction
- solitude
- isomorphic framing
- guided discovery
- goal setting
- group dynamics
## Thematic Analysis of the Literature

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Activity</th>
<th>Nature</th>
<th>Guided experience</th>
<th>Social milieu</th>
</tr>
</thead>
<tbody>
<tr>
<td>sense of control</td>
<td>genuine responsibility</td>
<td>wilderness setting</td>
<td>active facilitation of learning</td>
<td>group dynamics</td>
</tr>
<tr>
<td>group challenges</td>
<td>experiential learning</td>
<td>primitive living skills</td>
<td>isomorphic framing</td>
<td>positive peer interactions</td>
</tr>
<tr>
<td>challenging tasks &amp; activities</td>
<td>skill development (technical, personal, interpersonal)</td>
<td>removal from modern comforts</td>
<td>staged progression; sequencing</td>
<td>small-group work; group development; social interaction</td>
</tr>
<tr>
<td>problem solving</td>
<td>experiencing success; mastery</td>
<td>real/natural consequences</td>
<td>facilitated reflection</td>
<td>relationship with staff/leaders</td>
</tr>
<tr>
<td>novelty</td>
<td>multi-sensorial</td>
<td>spirituality; connection with earth</td>
<td>strengths-based philosophy; humanistic</td>
<td>meaningful contribution</td>
</tr>
<tr>
<td>self-reliant journeying</td>
<td>physical, emotional, cognitive and psychological involvement</td>
<td>open space</td>
<td>use of metaphor</td>
<td>trained staff</td>
</tr>
<tr>
<td>decision making</td>
<td>immediacy</td>
<td>distancing from familiar cultural influence</td>
<td>processing; debriefing</td>
<td>autonomy</td>
</tr>
<tr>
<td>risk (actual vs perceived)</td>
<td>physical exercise; activity</td>
<td>unfamiliar environment</td>
<td>guided discovery</td>
<td>re-capitulation of family unit</td>
</tr>
<tr>
<td>confronting uncertainty</td>
<td>enjoyment; fun</td>
<td>freedom from distraction</td>
<td>goal setting (individual &amp; group); communal tasks</td>
<td>solo camping; solitude</td>
</tr>
<tr>
<td>adversity; disequilibrium</td>
<td>action orientation</td>
<td>nature</td>
<td></td>
<td>direct &amp; concrete feedback</td>
</tr>
<tr>
<td>rites of passage</td>
<td></td>
<td>simple living</td>
<td></td>
<td>group-living with peers</td>
</tr>
<tr>
<td>adventure activities</td>
<td></td>
<td>clean air &amp; fresh water</td>
<td></td>
<td>characteristics of leaders</td>
</tr>
<tr>
<td>positive stress</td>
<td></td>
<td>solitude in wilderness</td>
<td></td>
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</tbody>
</table>

- **Guided experience**
  - active facilitation of learning
  - isomorphic framing
  - staged progression; sequencing
  - facilitated reflection
  - strengths-based philosophy; humanistic
  - use of metaphor
  - processing; debriefing
  - guided discovery
  - goal setting (individual & group); communal tasks

- **Social milieu**
  - group dynamics
  - positive peer interactions
  - small-group work; group development; social interaction
  - relationship with staff/leaders
  - meaningful contribution
  - trained staff
  - autonomy
  - re-capitulation of family unit
  - solo camping; solitude
  - direct & concrete feedback
  - group-living with peers
  - characteristics of leaders
ChANGeS

- Challenge
- Activity
- Nature
- Guided experiences
- Social milieu

What empirical evidence exists for benefits associated with key components of outdoor programs?
In spite of the insights available through this rich literature, to date it remains largely unknown and relatively inaccessible to the outdoors sector.
• **PsycINFO**
  nearly 4 million bibliographic records centered on psychology and the behavioural and social sciences

• **MEDLINE**
  more than 22 million references to journal articles in life sciences with a concentration on biomedicine

• **CINAHL**
  more than 4.5 million records covering 50 nursing specialties, allied health, speech and language pathology, nutrition, general health and medicine and more

• **ERIC**
  more than one million records relating to educational literature and resources
**Challenge**: Mastery Learning, Problem Solving, Responsibility, Self Determination, Agency, Uncertainty, Choice Behaviour, Personal Autonomy, Decision Making

**Activity**: Experiential Learning, Discovery Teaching, Problem-Based Learning, Discovery Learning, Physical Exercise

**Nature**: Behavioural Ecology, Environmental Psychology, Wilderness Experience, Nature, Wilderness, Outdoor Education

**Guided experience**: Debriefing, Journal Writing, Feedback, Leadership, Metaphor, Discovery, Scaffolding, Goal-Setting, Teacher Guidance, Reflection

**Social milieu**: Cooperative Learning, Group Decision Making, Peer Group, Social Facilitation, Collaboration, Small Group Instruction, Social Environment
768,474 initial papers

- English language
- empirical paper
- quantitative data
- large sample
- relevance
- recent
- high quality
- focus on processes
- benefits in educational, psychosocial, mental health/wellbeing
Challenge

Describes experiences where participants are extended and have their abilities and personal resources stretched in demanding and stimulating ways

- adventure, uncertainty, unknown, novelty
- risk (perceived vs actual)
- social, emotional, cognitive, physical challenge
- self awareness; learning personal boundaries
- identity formation
- emotion regulation; frustration tolerance
- problem solving; perspective taking
- choice & decision making
- achievement; success; self esteem; agency
Challenge: Positive Stress & Performance


STUDY
- meta-analysis of 82 studies from over 100 samples
- applicable to management in work settings with a focus on overall job performance

FINDINGS
- challenge stressors tend to result in **positive emotions and attitudes** (incl. motivation, effort, persistence)
- challenge stressors had a positive effect on **performance**

RELEVANCE
Individuals experiencing *eustress* describe the experience as being totally focused in a mindful state of challenge, a healthy state of aroused attention on the task, exhilaration, and being fully present.
Challenge: Problem-Based Learning


REVIEW
• review PBL research from the past 30 years, including several meta-analyses and literature reviews

FINDINGS
• most consistent finding is the superiority of PBL-trained learners in life-long learning
• significant enhancement of students’ understanding, application of concepts, reasoning and problem-solving skills, as well as long-term retention of knowledge & self-directed learning

RELEVANCE
Students encounter the problem before learning (vs formal education where students are expected to master content before they encounter a problem and attempt to apply knowledge)
The approach embeds students’ learning processes in real-life problems.
Captures the action-orientation and experiential nature of outdoor programs. Participants are actively engaged in a vibrant learning environment and experience mental, emotional, and behavioural immersion.

- experiential learning; learning through doing
- physical exercise
- biochemical changes
- exposure; time, duration, intensity
- multi-sensorial
- active participation and involvement; engagement
Activity: Physical Activity & Youth Mental Health


**STUDY**
- meta-analysis of 73 studies and over 20,000 participants, examining the relationship between physical activity and children’s mental health (age 3-18 years)

**FINDINGS**
- overall, physical activity has a moderate effect on alleviating children’s negative mental health outcomes including reducing depression, anxiety, psychological distress, and emotional disturbance
- physical activity also significantly enhances children’s self-esteem and their self-concept
- these findings are consistent across multiple studies in both children and adults

**RELEVANCE**
The mental health of young people is enhanced through physical exercise and activity, both in terms of reducing mental health difficulties and enhancing positive mental health.
Activity: Physical Activity & Academic Achievement


**STUDY**
- review of high quality studies covering over 2000 students across 14 schools
- focus on links between physical activity and academic performance

**FINDINGS**
- increased opportunities for physical activity at school can enhance children’s academic performance
- the rate of learning is enhanced in physically active students
- in one study: although students spent 30 minutes a week less on maths classes, the physical activity program had large positive effects (ES = 0.75) on students’ scores in maths compared to controls

**RELEVANCE**
Improvements in attention, learning and self-esteem may follow from engagement in physical activity
Nature

Refers not only to the physical setting, but also highlights a range of influential factors related to the natural environment.

- open space
- nature, outdoors
- belonging to something bigger
- spirituality, harmony
- natural light
- connectedness
- freedom from distraction
- aesthetics
- fresh air
- primal congruent sensory stimulation
- natural consequences
Nature: Time in Nature & Thinking Skills


**STUDY**

- study of 60 university students to investigate whether forest experience had a positive impact on cognitive function (ability to process ideas & thoughts; thinking, reasoning, remembering)
- compared 50 min walk through a pine forest vs. city streets
- subjects completed cognitive and mood tests before and after walks
Instruction:
Join the numbers and letters in alternating order (i.e. is 1-A – 2-B – 3-C)
- timed
- errors
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FINDINGS
• improvements in mood among the forest vs. built urban walkers
• only after the forest walks did participants show significant improvements in post-walk cognition

RELEVANCE
Engaging in activities within natural settings is favourable to cognitive restoration. In nature there is less energy expended in efforts to filter out irrelevant stimuli.
Nature: Views of Nature & Stress


STUDY
- investigated the stress-reducing effects of indoor plants in a hospital waiting room (real plants vs pictures of plants vs no plants)
- 457 patients (14 to 88 years)

FINDINGS
- both real indoor plants and posters of plants were equally effective in reducing stress in patients, compared to a control condition

RELEVANCE
Exposure to elements of nature turns out to be an effective and inexpensive means to reduce negative psychological feelings in individuals.
Guided experience

Relates to the critical role that facilitators and group leaders play in influencing program outcomes through their input in guiding participant experiences.

- facilitated reflection
- goal setting
- discovery
- imagination, creativity, role play
- use of metaphor
- practise
- program sequencing
- processing & debriefing
- active engagement
- scaffolding
Guided experience: Discovery-Based Instruction & Learning


**STUDY**
- meta-analysis of 56 studies examining discovery-based learning compared to direct instruction or other methods

**FINDINGS**
- enhanced-discovery methods (‘guided discovery’) led to greater learning (e.g. better test scores, knowledge acquisition, competence) than did comparison methods of instruction
- this was found across maths, computer skills, science, physical/motor activities, and verbal and social skills

**RELEVANCE**
Guided discovery – where learners take responsibility for exploration of content and instructors provide feedback, scaffolding and explanations – generally facilitates deeper learning than other methods such as explicit instruction or unguided discovery
Social milieu

Relates to the social and cultural environment, settings and surroundings in which participants are immersed during a program. Participants both influence and are influenced by the social context.

- connection to self, peers, family, community
- practising new ways of relating to others
- direct and immediate social feedback
- establishing meaningful relationships
- companionship
- social skill development
- cooperation
- group dynamics
- conflict management
- social modelling
Social milieu: Cooperative Learning


REVIEW
• review & commentary on over **1,200 studies** conducted over **11 decades** on the relative merits of cooperative (small-group) learning, competitive, and individualistic approaches

FINDINGS
• compared with competitive and individualistic efforts, cooperative experiences promote:
  - more frequent insight into and use of higher level **cognitive and moral reasoning** strategies
  - greater long-term **retention**
  - higher **intrinsic motivation** and expectations for success
  - more **creative thinking**
  - greater **transfer of learning**
  - stronger **personal social support**
  - formation of **enduring interpersonal relationships**
  - greater **psychological health**

RELEVANCE
Cooperative learning can be encouraged through small group work involving interdependence, individual accountability and personal responsibility, combined with shared group goals.
What empirical evidence exists for benefits associated with key components of outdoor programs?

ChANGeS

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- Guided experiences ✓
- Social milieu ✓

Murdoch Childrens Research Institute
• Challenge
• Activity
• Nature
• Guided experiences
• Social milieu
The weight of evidence in favour of the potential benefits of well-structured outdoor programs is compelling.
next steps ...
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