

Nature-based learning in Christian schools: Essential element or optional extra?

Beverly J. Christian

Head of Discipline (Education), Discipline of Education, Avondale College of Higher Education, Cooranbong, NSW

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Abstract

When children commence school, they face thirteen or more years of formal education, most of it within four walls. Outside of school, many children are growing up in a world that offers decreasing opportunities to connect with nature. Advances in technology, changing social structures and urbanisation are factors that limit the time children spend in the natural world. In the face of these changes, the voice of educators advocating for a return to nature-based learning is growing. These champions of nature-based learning cite physical, cognitive, social-emotional, spiritual, and sustainability benefits as their rationale. This article explores the relationship between nature-based learning and the aims of Christian education, with specific reference to student wellbeing, spirituality and stewardship.

Introduction

Nature-based learning, once assumed a part of every child's life, is being eroded by changes in society. Whether informally through outdoor play in parks and bush areas, or formally, through structured activities in organisations such as Scouts, Pathfinders and Girl Guides, children used to have regular contact with the natural world. This can no longer be assumed. Therefore nature-based learning is appearing on the agenda in the educational arena. The term nature-based learning has potential for multiple meanings. For the purpose of this discussion, a broad meaning has been adopted. Nature-based learning is any learning; formal or informal, inside or outside, short or long term, in which students have direct interaction with the natural environment, or elements of it. It involves students using their senses to explore, interpret and make discoveries relating to the natural environment,

themselves, God and others. It embraces everything from outdoor play in natural settings for very young learners, to science observations and experiments, gardening and field trips at all levels of education. Also included are outdoor education activities such as camping, hiking, backpacking and orienteering. Using this definition, the following discussion explores three aims of Christian education, and working on the premise that it is better to do what we have reasons for than merely to have reasons for what we do, explores whether nature-based learning is foundational to the aims of Christian education and is therefore an essential element, or if it is simply an optional extra.

Rationale for discussion on Nature-based learning

Our world is one of changing relationships between people and the natural environment. (Chawla, 2012; Kellert, 2005). The industrial revolution heralded a change in the order of life that had been established for centuries. People began to congregate around factories and urban life was born. Today's society is facing a new revolution, just as impactful on children, that is centred on technology. This revolution touches every level of life, and impacts how we use our time. In 2008, Rushkoff coined the term *Screenagers* for adolescents whose lives are dominated by technological devices. Around the same time, Louv (2008) introduced the term *Nature Deficient Disorder* to describe a condition found in children and adolescents who live in nature deprived environments, whether through choice or necessity. Both these terms are indicative of trends in society that are changing how many children live. One significant change is the decrease in 'connectivity' with the natural world.

Urbanisation contributes to the shrinking of green space available for recreation as families migrate towards the world's cities (Louv, 2012; Sobel, 2008). Although this trend is strongest in developing countries, the western world is also

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impacted. Social structures are changing, families are increasingly diverse, and the social life of children and adolescents is characterised by an emphasis on structured activities, both in and out of school time, resulting in less unregulated time in nature. Additionally, when leisure time is offered, the default play mode for many children is to reach for a technological device, and parents comply, preferring the perceived safety of the family home over backyard bush areas (Louv, 2008).

Schools have also been impacted by technology with strong advocates for a technology driven education crowding out the ‘back to nature’ supporters. Technology has much to offer educators, although Sobel (2008) suggests that in terms of awe and wonder, “our children are getting their first glimpse of God by going into cyberspace rather than up onto the mountaintop” (p. 111). However, nature documentaries and virtual field trips do offer opportunities to explore inside the leaves of plants or take a virtual dive on a coral reef, experiences that would otherwise be impossible for many students. Technology also assists us in capturing, preserving and learning about the natural world. Technology, whether supporting, or as a virtual substitute for nature-based learning has a place in education, but it also has limitations. There is evidence that technology restricts sensory input (Aitken, Hunt, Roy & Sajfar, 2012). Therefore, relying exclusively on virtual nature experiences restricts the full learning potential of students. These contrasting findings lend support to Louv’s (2012) concept of the *Hybrid Mind*, a multitasking mind that uses “computers to maximise our ability to process intellectual data, and natural environments to ignite our senses and accelerate our ability to learn and feel” (Louv, 2016, p. 23). This article supports this notion that nature-based learning and technology are not mutually exclusive, but can co-exist within learning plans.

The trend for children in and outside of schools to spend less time interacting with nature has attracted the attention of educators worldwide and consequently they are asking whether schools have a responsibility to include nature-based learning in what some consider an already overcrowded curriculum. This global attention to the ‘nature connection’ makes a discussion about the place of nature-based learning in Christian education both important and timely.

Exploring the nexus between three aims of Christian education and nature-based learning

Christian education has several identified aims. Three aims on which the literature concurs are:

1. To provide a holistic education that enhances wellbeing;

2. To develop spirituality and a redeeming relationship with God in the lives of students; and
3. To encourage lives of service.

While these aims may not represent every goal of Christian education, they are central and therefore form the focus of this discussion.

Aim One: Holistic education that enhances wellbeing

Christian educators view students as being created in the image of God (Cairney, Cowling & Jensen, 2011; Roy, 2008), with physical, cognitive, social emotional and spiritual capacities. One aim of Christian education is to provide holistic education that fosters the development of the whole child and the restoration of God’s image in the life of each student (Roy, 2008). Luke 2:52 reminds us that Jesus’ development included the cognitive, physical, social-emotional and spiritual domains. The importance of a holistic approach to Christian education is well supported by Christian educators (Knight, 2006; Roy, 2008; Skrzypaszek, 2012; White, 2000), and parallels the concepts of wellbeing and flourishing that currently have a high profile in education globally (Chawla, 2015; Seligman, 2012). In this sense, Christian education aims to not only prepare students for a future with God, but to live a fulfilled life in the present.

From a worldwide education perspective, an overarching goal of the movement to reconnect children with nature is to enhance their wellbeing (Chawla, 2015; Knight, 2013; Warden, 2015). Scandinavia has led the Forest School movement, and other countries, including Australia, are embracing this group interest, especially in the early childhood sector. These schools set aside regular time each week for pre-school and primary students to be immersed in nearby forest, woods or natural areas. Activities range from free play to lessons in nature study, construction, fire lighting, and campfire cooking (Warden, 2015). At the upper end of a child’s education, there is a trend for high schools to operate outdoor education and wellbeing programs, and in school planning, environmental architects are also discovering the wellbeing benefits of natural spaces and are increasingly incorporating them in their designs (Chawler, 2012; Kellert, 2005). Educators in Australia are listening to the evidence from research and gradually implementing a range of nature-based initiatives in their schools (Lloyd & Gray, 2014).

Table 1 contains a compilation of research-based findings that outline some of the physical, social-emotional and cognitive benefits of various nature-based learning activities. While these studies are representative only and not all results

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can be generalised to other populations, the results give an indication of the evidence-based benefits that connecting with nature has on the holistic development of children. This nurturing of the whole child and enhancement of wellbeing impacts the

emotions, engagement, relationships and sense of accomplishment (Seligman, 2012), and fits well with the first identified aim of Christian education; holistic education that enhances well-being.

Table 1: Literature summary of benefits of Nature-based learning

Benefits	Researchers/authors	Type of nature-based learning
Physical benefits		
Develops gross motor skills	Fjortoft (2001); Wilson (2012)	Nature play
Builds physical agility and coordination	Chawla (2012); Knight (2013)	Nature play
Promotes healthy sight development	Erickson & Ernst (2011)	Nature play
Lowers heart rates, blood pressure and stress levels	Chawla (2012)	Walking in nature
Benefits overall health	Debenham (2014)	Playing in nature
Social emotional benefits		
Develops responsibility and social skills	Katcher & Teumer (2006); Knight (2013)	Caring for animals
Builds empathy	Katcher & Teumer (2006)	Caring for animals
Inspires a sense of belonging and self-worth	Melson & Fine (2006); Warden (2007)	Interaction with animals
Fosters social skills including cooperation	Barlow (2015); Cutter-MacKenzie (2009); Knight (2013); Robinson & Zajicek (2005)	Gardening
Improves attitude and school pride	Blair (2009)	Gardening
Assists self-control and moderates impulsiveness	Faber Taylor, Kuo & Sullivan (2002)	Views of the natural world
Heightens resilience to upsets of everyday life	Wells & Evans (2003)	Views of the natural world
Builds a sense of agency and leadership skills	Barlow (2015); Knight (2013)	Outdoor education
Raises confidence	Knight (2013)	Nature play
Cognitive benefits		
Enhances concentration and ability to stay on task	Faber Taylor & Kuo, (2008); Knight (2013)	Walking, playing in nature
Promotes creativity	Wilson (2012)	Nature play
Promotes cognitive development	Wilson (2012)	Nature play
Inspires the mind	Hanscom (2016)	Outdoor play
Awakes aesthetic awareness	Taylor (2009)	Nature-based learning

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Aim Two: Developing spirituality and a redeeming relationship with God

It is not only the physical, social-emotional and cognitive domains that are characteristic of holistic education. Several educators also note wellbeing in a spiritual sense (Kessler, 2002; Warden, 2007; Wilson, 2012), however, few elaborate on these benefits, describing them in broad terms such as experiences “larger and more meaningful than day-to-day existence” (Kessler, 2000, p.29), or feelings of transcendence, connectivity and a deep sense of respect. For Christian educators, however, there is a more precise perspective on spirituality. The spiritual component of holistic education for Christian educators moves beyond the transcendent to faith development and spiritual growth with a focus on grace and a relationship with God. The twin aims of redemption and restoration are evident in the literature on Christian education (Cairney, Cowling & Jensen, 2011; Knight, 2006; Skrzypaszek, 2012; Roy, 2008; Starling, Cook, & O’Doherty, 2016; White, 2000). Strategies to achieve these twin aims are varied. Most Christian schools have a Bible based curriculum, and foster belonging to a faith community. Nature-based learning is another strategy that can be considered. Barrett (2012) posits that from birth, children have sense-making brains; that is, they observe pattern and purpose in nature and presume a designer. Children continuously learn through their senses, but Louv (2012) suggests that a child’s ability to sense a higher power is heightened when the senses are fully engaged, as when immersed in nature. Therefore connection with nature, whether it be a grand panorama after a long mountain ascent or the incredible softness of a chicken’s golden down, has potential to enrich a child’s relationship with God by creating moments of awe and wonder (Christian, 2010; National Institute for Christian Education, 2015; Stankard, 2003).

Nature-based learning has historically complemented faith development in some Christian communities where nature is recognised as God’s second book (Bailey, 2009; Goodwin, 2009; White, 2000). The Bible indicates that aspects of God’s character can be revealed through his creation. It opens with the context of God as Creator (Genesis 1-3) and Old Testament writers, in particular, David, make several references that link the wonders of creation to a Creator God (Psalm 8:3-4; 24:1-2; 95:4-5; 19:1; 124:4-5), a theme which is carried on through the New Testament (Matthew 6:26; Romans 1:20; Revelation 4:11; 10:6).

Exploring the design, beauty, adaptability, purpose and diversity of the natural world provides opportunities for students to ponder the origins

of life within a biblical context and explore facets of God’s character. A giraffe’s neck, for example, leaves us in awe of the design that allows this stately creature to drink without its vertebrae exploding (Greisen, n.d.). The order evident in the Fibonacci patterns of sunflower seeds, pinecones and some cactus plants is paralleled in design by the fractal spirals of the nautilus shell, red cabbage and tree fern. The beauty of the peacock’s feathers display chance defying design that produces their iridescent colours (Sarfati, 2008). The adaptability of animals to flourish in extreme habitats, and the diversity of living organisms all bear testament to a God who is a designer par excellence, and who values both beauty and diversity. Not only is design evident in individual plant or animal species, but it manifests in the interconnectedness of living things and the symbiotic relationships that exist in nature. Fungi, for example, grow on rotting logs and assist the breaking down of plant matter into soil. Galapagos finches feed on parasites found on marine iguanas, and both flora and fauna respond to the turning of the seasons. Exploring the natural world first hand prompts children to ponder the origins of life from a first-hand perspective and potentially opens their eyes to God’s character.

Within the Christian faith, nature-based learning has traditionally been used to confirm the creative powers of God, but there is also a side to nature that displays a breach in the relationship between God and humanity; an ugliness that mars creation. Rather than ignore or dismiss this anomaly, a wonderful opportunity exists to acknowledge the impact of sin and to explore its remedy. Jennings (2013) claims that the natural world operates on the law of God’s unselfish love, stating, “God’s nature of love is seen in creation because all nature, all life is built, designed, constructed to operate on the template of God’s love” (p. 24). Although we cannot be certain what changes occurred in the natural world after the fall, the cycle of death and this law of unselfish giving can be observed in the flower that withers so fruit can grow, in the caterpillar that gives up its life in order that a new life can materialise, in falling leaves that nourish the soil and provide fertile ground from which new seedlings emerge. As students observe the cycles and seasons of life, as their senses are awakened in the natural world, they begin to develop a greater sense of who God is and how his law of unselfish love operates. They will start to understand his redemptive love and restorative power in their lives. Nature-based learning therefore plays an important role in the spiritual growth of children. Learning to love the creation of God may be instrumental in learning to love the God of creation.

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Aim Three: Service through responsible stewardship

A third aim of Christian education found in the literature is to encourage lives of service (Knight, 2015; Rice, 2008; Smith, 2013; White, 2000). Jesus exemplified this in his life. Mark 10:45 clearly states that Jesus came to serve others. The concept of service is a guarding, guiding and giving action that rises out of a love response to a creating and redeeming God. It guards by respecting and standing up for the rights of others, guides by demonstrating love in action, and gives generously of both time and talents with no expectations for a return. Serving others is one way of worshipping God in everyday life. It is how individuals demonstrate their values, and show others what God is like. Set in an environmental context, service to the earth is stewardship. Stewardship means taking care of God's creation, and is evident in sustainable practice (Goodwin, 2009). In Genesis 2:15 we find God inviting humanity to enter a partnership with him in caring for the earth and everything in it. Stewardship through care for the environment is one aspect of service that connects children with nature.

There is an increasing body of literature on sustainability education (Ashton, 2013; Abbate, 2009; Fitcher, 2013; Hauk et al., 2015; Lloyd & Gray, 2014; Wolfe, 2013). One idea becoming prominent is that society is in danger of creating environmental orphans, that is, children who have second hand knowledge about the environment but little or no firsthand experience, and therefore no 'real' connection with it. This can be illustrated, for example, by the attitude taken to the logging of rainforests. This topic aims to educate children about sustainability of forestry practices and explore environmental values, but if they have never entered the awe-inspiring world of a rainforest, never gazed up into the canopy or explored the 'heartbeat' that emanates from the litter on the forest floor, never seen the rainbow feathers of a lorikeet catch the morning light or heard the amphibious symphony that breaks the deep silence, they will find it difficult to connect; to feel that tug that calls them to be responsible stewards of God's creation. Therefore, in the long term, it may be more useful to connect them with the tree outside their classroom, or the bush at the end of the oval, than to focus on distant unexperienced places (Sobel, 2008). Research also supports the belief that adults who are environmentally pro-active all experienced ongoing interaction with the natural environment in their childhood (Chawler, 2012; Lloyd & Gray, 2014; Place, 2016). Hauk et al (2015) agree, positing that awakening the senses in nature contributes to a sense of agency as stewards of the natural world, highlighting the importance of experiential nature-

based learning. While we cannot assume that students will value our earth simply because they live on it, there is evidence that students who have regular encounters with the natural world will form a connection that motivates them to be good stewards of God's creation.

Exploring these three aims of Christian education, builds a strong case for Christian education to engage in nature-based learning and strengthen students' connections to the natural world. Achieving this may be challenging.

The challenge for schools

Professor Tonia Gray has been championing the cause of nature-based learning in Australia by lobbying the Australian Curriculum and Reporting Authority (ACARA) to include Outdoor Education as a subject in its own right and pointing out the benefits of doing so (Gray & Martin, 2012; Lloyd & Gray, 2014). Barlow (2015) explores why more schools are not adopting outdoor education programs, despite the documented benefits. He cites budget constrictions, limited understanding of Outdoor Education across education generally, and a focus on academic achievement, especially national testing programs. Other factors may include the risks involved, lack of resources including qualified staff, and in the case of outdoor learning that involves animals or gardening, added responsibility to the many expectations already resting on teachers. Others look at an already crowded curriculum with its emphasis on national testing and decide by default that there is no room for nature-based learning (Remington & Legge, 2016). These concerns are real but not insurmountable. Sobel (2008) suggests a way forward for schools, stating, "The problem with lots of nature education, or really, with lots of any kind of education, is that it gets too big, or too abstract, too fast. If we could just abide by the turtle's guiding wisdom that slow and steady wins the race, we'd be doing much better on those international tests of science and math aptitude" (p. 46). Keeping the challenges and benefits of nature-based learning in mind, this article poses three questions that may encourage discussion at a school level. It also suggests some possible starting points.

1. *How can we adapt our school's learning environment to make it more nature-friendly?*

This could include construction of outdoor learning areas or nature corridors, planting greenery outside classroom windows, introducing pot plants into classrooms, growing vegetables, planting a butterfly attracting garden, or adopting a short term classroom pet.

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2. *How can we use existing curriculum documents to maximum the advantages of Nature-based learning?* One example is Primary Connections (Australian Academy of Science, 2011), a Science program that is compatible with the Australian curriculum. It contains units, (e.g. *Plants in Action, Friends or Foes, Watch it Grow and Staying Alive*), that connect children with nature in direct ways. Teachers could maximise nature-based learning in these units and also adapt them so students are challenged to think about God's creative, redeeming and restoring power. Teachers could also be encouraged to explore ways of authentically integrating nature-based learning with their teaching fields and with their school's biblical studies curriculum. Helpful resources include outdoor education opportunities mapped to the Australian Curriculum (<http://www.toec.com.au/australian-curriculum/>) and *Outdoor Education Australia's* Outdoor Education Curriculum guidelines for Health & PE, Geography and Science (<http://outdooreducationaustralia.org.au/education/oe-curriculum-guidelines-for-hpe-geog-and-sc/#toggle-id-7>).
3. *What could a nature-based program look like in our school?* The key here is to think big but start small. Natural play areas or dedicated times for nature activities are a good starting place for young children. School camps or days with a nature/outdoor focus are a good inclusion at the primary and junior high level. Outdoor education activities for high school students can extend from art or cooking days in the bush to extreme sports including abseiling and white water kayaking. As many outdoor education activities require qualifications and specialist resources, they should be thought through carefully, and rigorous risk management procedures applied. One holistic program that includes a strong outdoor education component is the *Invictus Wellbeing Program*, developed by Joshua Brown of Macquarie College (<http://theinvictuswellbeingprogram.com/>). Gilson College is another school that has developed a Year Nine *Learning 4 Life* program that features outdoor education as one of its components.

Like any curriculum offering, the inclusion of nature-based learning in a school program takes time and commitment, but it is worthy of consideration, as it aligns with the philosophy on which Christian schools operate.

Conclusion

This article has explored the nexus between

nature-based learning and three aims of Christian education in respect to student wellbeing, spirituality and stewardship. The literature is clear in identifying holistic development and wellbeing as an aim of Christian education and an outcome of nature-based learning. It includes physical, cognitive and social-emotional benefits such as resilience, independence, confidence, creativity and community building. Furthermore, as part of holistic Christian education, nature-based learning fosters spiritual development by allowing children to encounter God's creation through their senses, and connect with God to develop a greater sense of both his character and his redemptive actions. Lastly, nature-based learning helps develop a connection with, and appreciation for the natural world which fosters a sense of service and stewardship, and ultimately the development of global citizens who are informed, responsible and active in caring for the natural environment. Polis asks in *The Wisdom of Nature* (n.d.), "Must we always teach our children with books? Let them look at the stars and the mountains above. Let them look at the waters and the trees and flowers on Earth. Then they will begin to think, and to think is the beginning of a real education" (p. 45). The challenge of a paradigm shift to expand nature-based learning in Christian schools is real, but it is also clear that nature-based learning is more than an optional extra. Nature-based learning can play a role in achieving the aims of Christian education in a practical and engaging way. When it comes to implementing nature-based learning in schools, the real challenge, as previously stated, is to have Christian educators who are inspired to do what they have reasons for doing. The aims of Christian education provide the reasons. Nature-based learning provides an additional way forward.

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“the real challenge ... is to have Christian educators who are inspired to do what they have reasons for doing.”