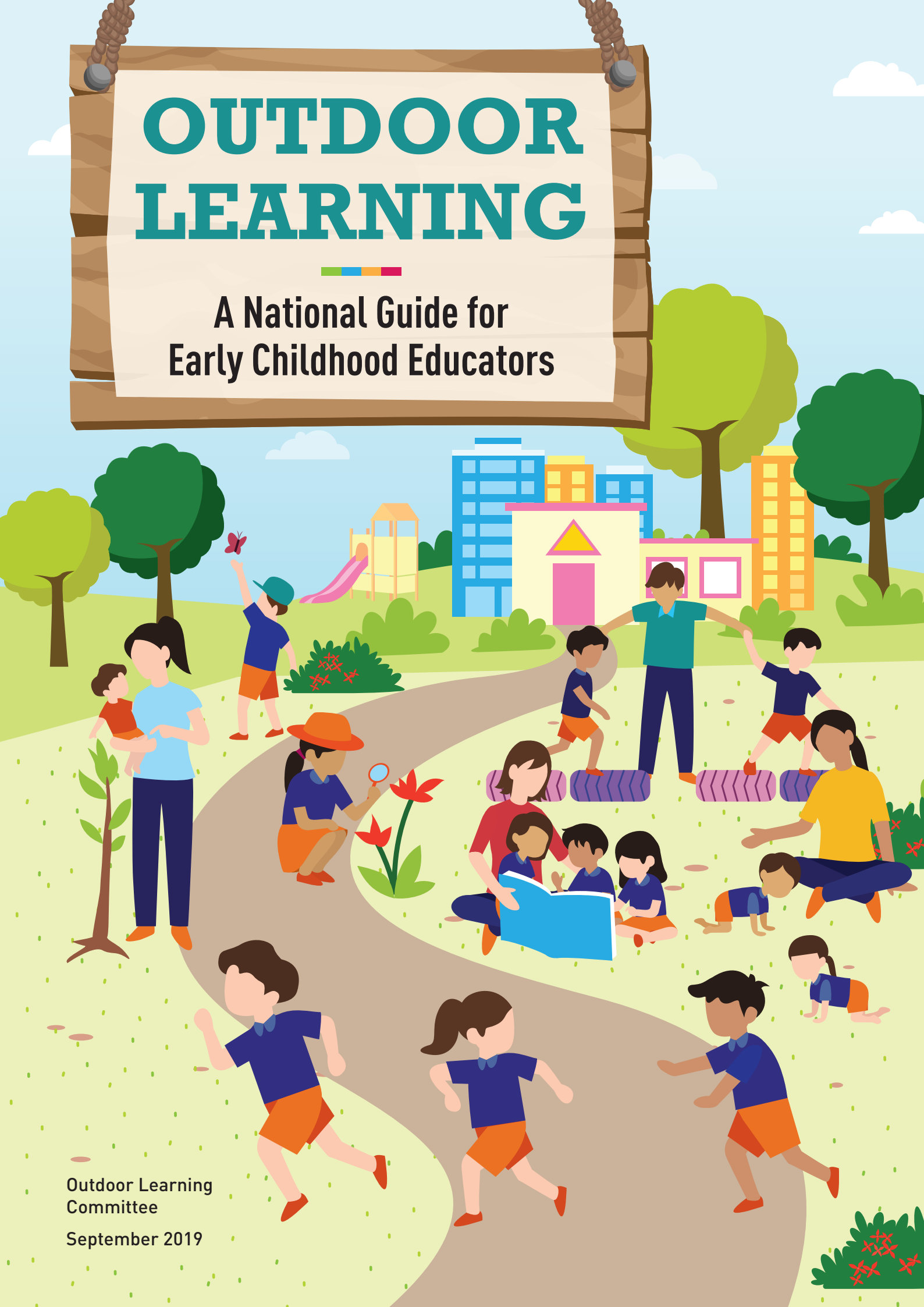


OUTDOOR LEARNING

A National Guide for
Early Childhood Educators



Outdoor Learning
Committee
September 2019

ACKNOWLEDGEMENTS



The Outdoor Learning Committee would like to express our sincere appreciation to:

Ministry of Education, Pre-school Education Branch and Physical, Sports & Outdoor Education Branch for developing the Guide.

Dr Helen Little from Macquarie University, consultant for the Outdoor Learning Committee, for her advice and guidance in developing the Guide.

We would like to acknowledge the following professionals from the Outdoor Learning Committee, for their important contributions and insights during the consultative process on the document:

Dr Sum Chee Wah
Early Childhood Development Agency

Dr Hanin Binte Hussain
National Institute of Education

Associate Professor Sirene Lim
Singapore University of Social Sciences

We are grateful to the following organisations, as well as the principals and teachers from various pre-school centres, for their support, feedback and suggestions:

Organisations

Early Childhood Development Agency
National Institute of Early Childhood Development
Health Promotion Board
Housing and Development Board
National Parks Board

Republic Polytechnic
Sport Singapore
Beary Fun Gym

Preschool centres

Carpe Diem MI Preschool Pte Ltd
Choa Chu Kang Bible Centre Kindergarten
Creative O Preschoolers' Bay
E-Bridge Pre-school Pte Ltd
Ichiban Montessori Preschool Pte Ltd
Living Sanctuary Kindergarten
MOE Kindergartens
My First Skool
MY World Preschool Ltd
NTUC First Campus
Sparkletots Preschool by PAP Community Foundation
Ramakrishna Mission Sarada Kindergarten
Skool4Kidz
The Caterpillar's Cove
Zion Kindergarten

We would also like to express our appreciation to the children, teachers and principals of the following preschool centres for their involvement in the case studies:

EtonHouse Pre-school @ Mountbatten 223
Little Preschool @ Whitesands
MOE Kindergarten @ Punggol Green
MY World @ Tenteram Peak
PCF Sparkletots Preschool @ Pioneer Blk 661B
St. James' Church Kindergarten (Leedon)



CONTENTS

	Introduction	04
1	Purpose of Outdoor Learning	05 - 09
	Our vision for outdoor learning	05
	The benefits of outdoor learning	06
	Learning opportunities in the outdoors	09
2	Guiding Principles for Outdoor Learning	10 - 13
	Applying the guiding principles from the Early Years Development Framework (EYDF)	11
	Applying the <i>iTeach</i> principles from the Nurturing Early Learners (NEL) Framework	12
3	Practical Considerations for Outdoor Learning	14 - 32
	Creating opportunities for purposeful play in the outdoors	14
	- Promoting children's autonomy and choice	15
	- Developing children's conceptual knowledge and skills	17
	Maximising the learning potential of outdoor spaces	19
	Taking safety precautions in the outdoors	25
	Educators' roles for outdoor learning	29
4	Getting Started on Outdoor Learning	33 - 51
	Making use of outdoor spaces	33
	Possible outdoor learning experiences	35
	Case studies	40
	Frequently Asked Questions	51
	References	59



Introduction

This guide does not introduce a new programme or approach to outdoor learning. It provides you with **guiding principles, key ideas and practical suggestions** to enrich and enhance children's learning and development in the outdoors. This serves to complement the *Early Years Development Framework (EYDF)* and *Nurturing Early Learners (NEL) Framework* in guiding your planning for outdoor learning experiences to support the holistic development of children from ages 2 months to 6 years.

The guide aims to:

- A** motivate and inspire you to take children outdoors to **play, explore and discover**;
- B** encourage you to use the **outdoor spaces in the immediate vicinity of your centre** as learning spaces to promote children's learning and holistic development; and
- C** provide suggestions on the **designing and facilitating of outdoor learning experiences** that are appropriate and meaningful for children.



For the purpose of this guide, outdoor learning refers to **outdoor experiences intentionally provided to support children's play, exploration and discovery in natural or urban outdoor spaces.**

Look out for these icons within the guide!



This icon points out interesting facts.



This icon presents thought-provoking questions for reflection.



This icon shows how the principles from the EYDF and NEL Framework may be put into practice.

1

Purpose of Outdoor Learning

Our vision for outdoor learning

The Outdoors – Our Classroom, Our Playground

We envision outdoor learning to be:

- an integral part of children's everyday life;
- fun and enjoyable; and
- both a stimulus for and an extension of what children learn indoors.

The outdoors offers rich sensorial experiences to support children's growth and development. Children should enjoy **regular, frequent and meaningful opportunities** to play, explore and learn in natural environments or urban outdoor spaces — be it in a playground, neighbourhood park, community garden, a grass patch or any open space in the immediate vicinity of your centre. Outdoor learning can also take place on field trips to the reservoir or nature reserve.

By growing up with frequent and regular opportunities to enjoy the outdoors, children begin their journey to becoming healthy youths and adults with active lifestyles and start to develop emotional connectedness to their environment and community. **Educators, family, and other members of the community have a role to play** in achieving this vision by demonstrating a positive attitude and participating in outdoor activities.¹



The benefits of outdoor learning

The benefits of outdoor learning on children's holistic development and learning, health and well-being, and environmental awareness and rootedness to the community are well-supported by a substantial body of research evidence.²

Holistic development and learning

- **Stimulate brain development and enhance cognitive functions** — Outdoor experiences offer unique possibilities for the development of cognitive functions like creativity, imagination, critical thinking, reflection, problem-solving, interpersonal skills, communication skills, concentration and empathy.^{3,4,5,6}
- **Fulfil children's basic needs for freedom, adventure, experimentation, risk-taking and just being children** — Outdoor environments are open and less structured, providing opportunities for children to explore, and challenges to overcome.^{3,7}
- **Enhance children's self-esteem and confidence** — Outdoor activities allow for more child-initiated activities where children make their own choices and decisions.⁸ There is evidence that enjoyment and autonomy of choice contribute to improved learning and the application of that learning.⁹
- **Improve emotional regulation and interpersonal skills** — As children play and learn in the outdoors, they have numerous opportunities to interact with their peers, and engage in authentic scenarios of negotiation and conflict resolution.^{6,10,11,12,13}
- **Develop conceptual knowledge and skills** — The constantly changing, rich and sensorial outdoor environment encourages children's spontaneous exploration and discovery. It provides a real and authentic context for children's learning in areas like mathematics, language and literacy, and the scientific process such as observation, prediction, and inference.^{3,6,14,15}



Did you know?

Adults also benefit from going outdoors. According to Ms Annette Sim, a physiotherapist at Singapore General Hospital:

- Exercising outdoors in the natural environments **fosters positive moods and helps to reduce stress.**
- Being active outdoors **facilitates physical activity and social interaction.**

Source: *The Straits Times*, 13 November 2013 (Refer to the Healthhub website for more information on the benefits of exercising outdoors for adults.)



The outdoors offers opportunities for social interactions.



Physical activities in the outdoors can promote children's overall health and well-being.



Did you know?

A 2008 study¹⁸ that compared the vision of 6- and 7-year-old Chinese children in Singapore and Australia found that:

- 29% of children in Singapore were short-sighted compared to 3% of children in Australia.
- Children in Australia and Singapore spent a similar amount of time reading, watching TV and playing computer games.
- On a daily basis, children in Australia spent an average of 2 hours outdoors, which was about 90 minutes more than children in Singapore.

Health and well-being

- **Promote overall health and well-being** — Physically active children are likely to have healthier weight, better bone density through improved strength and greater exposure to sunlight and vitamin D, better fundamental movement skills, improved respiratory health, better immune systems, and reduced risk of developing myopia.^{16,17,18}
- **Set the foundation for lifelong engagement in physical activity**¹⁹ — Outdoor activities are important to counteract the potential negative implications from over-exposure to sedentary activities. According to the World Health Organisation (WHO) recommendations, children, including those with disabilities, should be encouraged to participate in a variety of enjoyable and safe physical activities that support their natural development.^{20, 21}
- **Decrease stress and improve children's mental and emotional well-being** — Outdoor experiences in natural outdoor environments have a calming effect and positively influence children's mental health, level of attention and focus. This could also positively affect children with attention-deficit/hyperactivity disorder.^{6,12,13,22,23,24}

Environmental awareness and rootedness in the community

- **Promote a sense of wonder and curiosity** — The outdoors provides a rich base of experiences that allows children to have first-hand exploration of the world and experience natural phenomena. They develop a sense of wonder and curiosity about elements of nature (e.g. weather, flora and fauna, sand, water), and become inspired and motivated to explore, discover, inquire, critically think, and reflect about the real world.⁶



Did you know?

The extent to which children benefit from outdoor learning largely depends on the intentionality and quality of the outdoor experiences.

Simply being outdoors is not sufficient to shape children's positive attitudes and behaviours towards the environment, or develop their understanding of how things work in nature. Key knowledge, skills and dispositions are learned when they are explicitly included in the learning objectives of activities and facilitated accordingly. It is also key for adults to role model positive attitudes and behaviours, such as care and responsibility for the environment, a sense of wonder and curiosity about the environment, and most importantly, joy in being outdoors and interacting with nature.



During a walk in the park, stimuli present in the environment, e.g. reflections on the water surface, and caterpillars may prompt children's curiosity and invite further exploration.

- **Develop a sense of responsibility, care, appreciation and love of nature** — Regular outdoor experiences help children understand the importance of conservation and sustainability. The emotional bond to nature forms the foundation for children's subsequent understanding of environmental issues and positive attitudes toward the environment.^{19, 25}



Children develop environmental awareness as they participate in recycling activities.



As the children take a walk in the park, they notice terrapins in the pond and learn more about them.



- **Strengthen children's connection and rootedness to the community** — Activities such as neighbourhood and nature walks provide opportunities for children to explore and become more familiar with their immediate environment, as they see the people living, places changing and things happening in their neighbourhood.^{19, 25, 26, 27}



Children can find out more about the people and places around them during a neighbourhood walk.

Learning opportunities in the outdoors

The nature of the outdoors engages children in ways that are not possible indoors. Outdoor open spaces and the unlimited resources and stimuli available (e.g. natural sounds and materials) provide numerous opportunities for children to explore, discover and learn *in, about* and *through* the outdoors.

These three aspects of outdoor learning provide a useful frame for us to understand the variety and range of experiences that children could have in the outdoors. In reality, **the three aspects are neither distinct nor mutually exclusive but intertwined to fulfil different purposes that are important for children's growth and development.**



Educators can provide opportunities for children to learn in, about, and through the outdoors.

It is important that we ensure children experience a wide variety of outdoor learning activities that allows for:

Learning *in* the outdoors

Bringing children to the outdoors, and using it as a physical setting to carry out the activities

Learning *about* the outdoors

Getting children to explore and find out more about the outdoor environments (e.g. about the elements of nature and the people and places in the community or neighbourhood)

Learning *through* the outdoors

Taking advantage of the unique characteristics of the outdoors to support children's holistic development



How can you tap the unique characteristics and opportunities available in your immediate outdoor environment to enhance children's learning experiences?

Summary

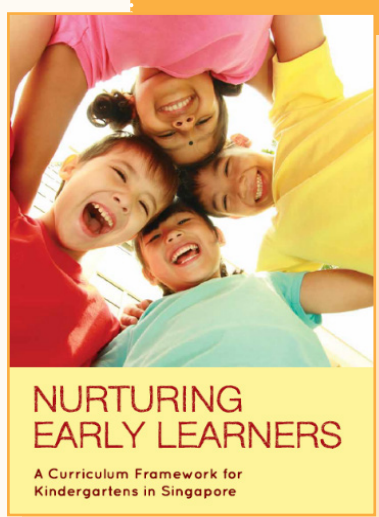
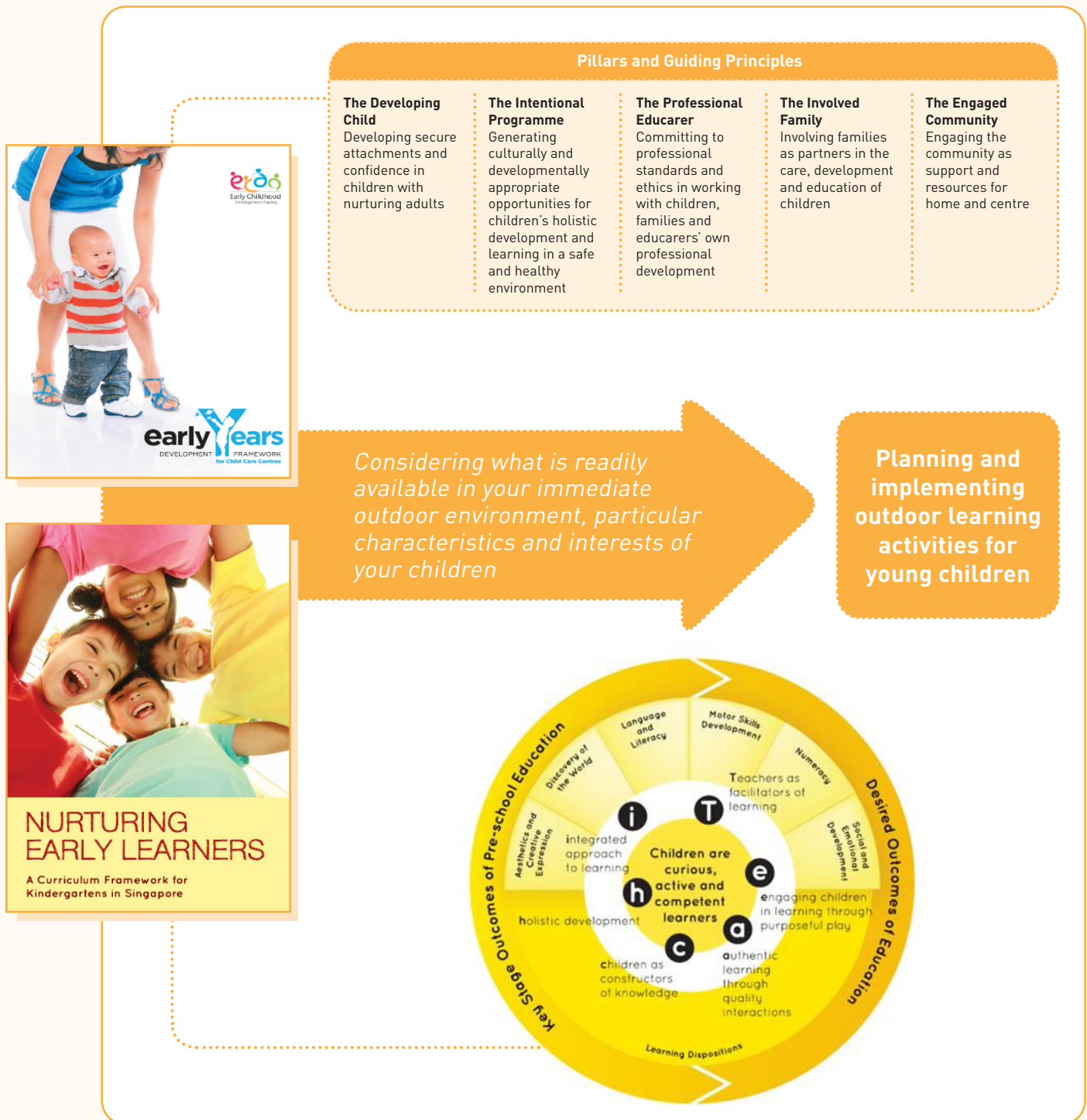
We envision outdoor learning to be an integral part of our children's lives. As outdoor learning brings about numerous benefits in terms of children's holistic development, health and well-being, and environmental awareness and rootedness in their community, it is important for educators, families and the community to play an active role in promoting outdoor learning for our children. As educators, you are key in ensuring a variety of activities for children to learn in, about, and through the outdoors.



2

Guiding Principles for Outdoor Learning

Promoting outdoor learning is not about creating a new programme. Outdoor learning experiences for children should be intentionally planned as part of your centre’s existing programme or curriculum, taking reference from the existing principles outlined in the *Early Years Development Framework (EYDF)* and *Nurturing Early Learners (NEL) Framework*.



▲ Figure 1 Guiding principles for planning and implementing outdoor learning activities

Applying the guiding principles from the Early Years Development Framework (EYDF)

The overarching principles from the EYDF are useful in guiding the planning and provision of outdoor experiences for pre-school children from ages 2 months to 3 years.

The Developing Child

Children who are securely attached are more confident and ready to explore new environments. You can help to establish this secure attachment by **creating a warm, dependable and responsive relationship with children, so that they are better equipped to explore the outdoor environment.** Exploring the outdoors is also an important aspect of developing children's self-awareness and self-help skills.

The Intentional Programme

Ensuring that children have access and opportunities to explore a variety of outdoor spaces and environments, which are well-stocked with both man-made and natural materials, is important for their growth, development and learning. **Children should engage in a variety of outdoor experiences which are culturally and developmentally appropriate** to facilitate play and exploratory behaviours for learning and development.

The Professional Educator

With the shared understanding that the outdoors is important for children's growth and development, you should keep abreast of the latest developments in the area and the associated pedagogical practices. Observation, documentation and reflection of the children's outdoor experiences should also be constantly carried out. In this way, you are **constantly thinking about and reflecting on your practice**, which will benefit how you engage the children in meaningful outdoor experiences.

The Involved Family

Inculcating a positive attitude towards the outdoors requires the involvement of the many stakeholders in the child's life, especially his or her family. You can **engage the family to share tips and ideas on appropriate and meaningful outdoor experiences for children**, and encourage families to **participate frequently in outdoor activities.** In this way, the outdoors may become an integral part of children's everyday experiences.

The Engaged Community

There are rich and plentiful resources to enhance children's outdoor experiences, many of which are freely available. You can **tap upon the spaces, resource persons and community resources available** to guide your planning and implementation of children's outdoor learning activities.



A child exploring the outdoor environment with the educator.

Applying the *iTeach* principles from the Nurturing Early Learners (NEL) Framework

When planning outdoor learning activities for children ages 4 to 6 years, you can consider how the *iTeach* principles may be applied to outdoor learning experiences.

Integrated approach to learning

When you intentionally plan for children to spend time in the outdoors, children can make meaningful connections between their indoor and outdoor experiences. There are many opportunities for authentic learning in the outdoors, whether planned or incidental. These could **be meaningfully connected to the existing themes/topics/projects/concepts children are exploring or skills they are developing**. They could also **provide the stimulus for new topics/projects**. In this way, there can be continuity in children's learning and experiences from the indoors to the outdoors and vice versa.

Teachers as facilitators of learning

In planning outdoor activities, you should consider how children develop and learn as well as their interests, abilities and needs. In understanding the children's prior experiences and attitudes towards the outdoors, you can better plan and use teaching strategies to engage them in outdoor learning experiences. To optimise learning, you can **build in small steps to familiarise the children with the outdoors** and the immediate environment around them, **before extending to exploration in greater depth**.

Engaging children in learning through purposeful play

The outdoors provides many opportunities for purposeful play and children should be given ample opportunities to engage in varied and extended play in the outdoor environment. You can increase the opportunities for outdoor learning by **intentionally creating the space and time for children to engage in purposeful outdoor play**. At the same time, you can also place open-ended materials and resources in the outdoors for children to explore in a variety of ways.

A uthentic learning through quality interactions

Children can explore numerous new objects, man-made and natural environments, and interact with people, plants and animals when they are in the outdoors. Such **new experiences and stimuli provide starting points for shared and sustained conversations**, which are key to quality interactions between you and your children, as well as between children. In addition, such shared experiences and conversations provide a strong foundation for children to develop their social skills, environmental awareness and sense of belonging to the community.



Teachers can engage children in quality interactions by participating in their outdoor experiences.

C hildren as constructors of knowledge

In the outdoors, children experience a wide range of phenomena and have the opportunity to interact with and explore different objects and environments from their everyday lives. These **interactions ignite children's innate curiosity and inspire them to question and find out more about themselves and the world around them**. The variety of stimuli in the outdoors and open-ended nature of the outdoors also enable children to exercise their autonomy and choice, with more opportunities for child-initiated conversations and activities.



Children can explore different stimuli in the outdoors and engage in conversations about the world around them.

H olistic development of children

The outdoors is invaluable in the holistic development of children, providing rich opportunities for children's development in the learning areas and learning dispositions. You can facilitate children's holistic development through meaningful outdoor experiences that **enable children to develop knowledge, skills and dispositions across different learning areas**, as well as **recognise and display learning dispositions**.



Think about the existing outdoor experiences provided at your centre. Which guiding principle(s) from the EYDF or NEL Framework do they fulfil? How is/are the principle(s) being applied?

Summary

As educators, you could take reference from the principles outlined in the EYDF and NEL Framework to intentionally plan and conduct outdoor learning activities for the children as part of your centre's existing programme or curriculum.



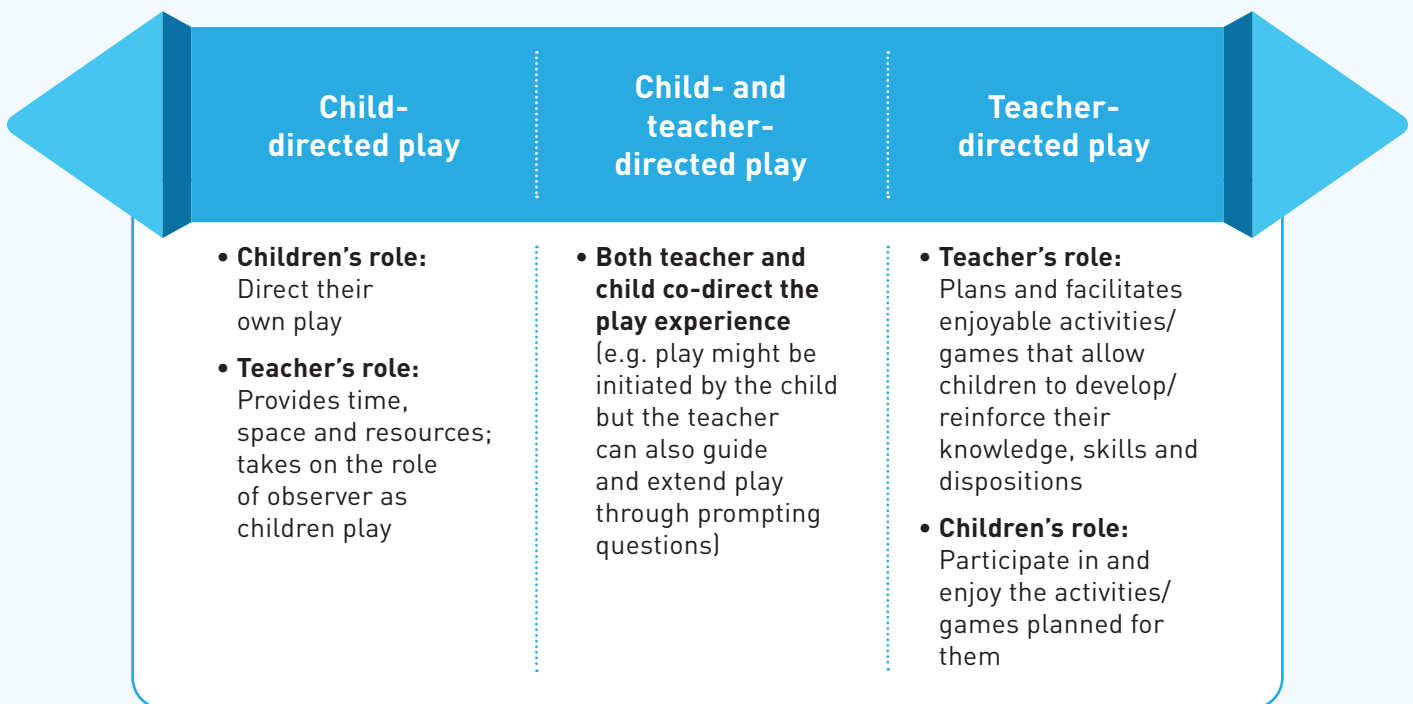
3

Practical Considerations for Outdoor Learning

In facilitating outdoor learning experiences, it is important to consider how to create opportunities for purposeful play, maximise the potential of immediate outdoor spaces near your centre, as well as take precautions for children's and your own safety.

Creating opportunities for purposeful play in the outdoors

Purposeful play in the outdoors can range from being spontaneous and child-directed with free choice by children, to being planned and teacher-directed with instructions provided by the teacher.



▲ Figure 2 Continuum of purposeful play

The continuum of purposeful play (Figure 2) allows for different types of outdoor learning experiences.

- Child-directed play is beneficial in promoting **children's autonomy and choice**, social and emotional development, as well as creativity and imagination.^{28, 29}
- Play that includes teacher involvement can effectively support children's **development of conceptual knowledge and skills**.³⁰

Promoting children's autonomy and choice



The outdoors can meet children's needs for freedom, adventure, risk-taking, creativity and imagination.

What does it mean?

Children's autonomy and choice, that is, their thinking and ideas, are key to building their confidence and positive attitudes towards learning. The open-ended nature of the outdoors offers an excellent context for a variety of play experiences, and in particular, child-directed play, with ample opportunities for:

- Freedom
- Adventure
- Risk-taking
- Creativity
- Imagination

The degree of children's autonomy and choice in their play and learning experiences varies, depending on the nature of the activity along the continuum of purposeful play as shown in Figure 2.



Did you know?

Teachers tend to be more restrictive with children's behaviour and levels of noise in an indoor learning environment. In contrast, there is relative freedom afforded by the outdoors, which leads to the children being naturally more engaged in play, exploration and discovery.¹⁰ This could enable the teachers to focus more on interacting with the children instead of supervising and managing their behaviour.



How do you balance children's needs for adventure and risk-taking with your concerns about their safety?



Children can freely and actively explore the nearby park.

What does it look like?

To promote children's autonomy and choice, you can use the following guiding questions as you plan and implement outdoor learning activities:

Stage of planning/ implementation

Possible guiding questions to promote children's autonomy and choice

Before
implementing
the outdoor
activity

- What open-ended activities do the available outdoor spaces support?
- How might the activities encourage children's need for freedom, adventure, risk-taking, and creativity and imagination?
- How should the space be set up to encourage children's free and active exploration? How can I provide open-ended resources and materials to facilitate a range of outdoor experiences and encourage freedom of choice?
- What is my involvement during children's play and exploration? How can I calibrate my involvement to encourage children's autonomy and choice?
- What are some things I would want to look out for when observing and documenting children's learning in the outdoors?

During
the outdoor
activity

- What are the children wondering about, or trying to do? How can I spontaneously respond to the children's interests and needs?
- When, and how, should I comment on, participate in or ask questions about children's play and exploration? Would my involvement be meaningful and appropriate in promoting children's autonomy and choice?
- What should I document about children's play and exploration? How can I find out more about their thinking?

After
the outdoor
activity

- What questions did the children ask? What were their interests and needs when they were outdoors? How can I further extend their interests and ideas?
- How can sufficient opportunities be provided for children to pursue their interests and demonstrate their thoughts and ideas? What went well? What didn't?
- How can I better incorporate children's ideas and thinking in future activities?



How can you empower children to explore the outdoors freely and actively so that they can build their confidence and be motivated in self-directed learning?

Developing children's conceptual knowledge and skills

What does it mean?

Concepts and skills are best learnt and understood through first-hand experience. Children are natural explorers and experimenters, and the outdoors provides rich opportunities for such active learning. Infants, toddlers, and older pre-schoolers can move about to discover elements of nature (e.g. wind, sand, water) and notice natural phenomena (e.g. weather changes, light and shadow, rain and sunlight, growth and decay) in the outdoor environment. Teachers can, through the careful selection of space and materials, support children's natural inclinations to explore and learn in, about and through the outdoor environment.³⁰

Frequent and regular experiences in the outdoors will offer children many opportunities to try out new ideas and activities, or revisit activities which they have previously gone through. When children revisit activities, they can reinforce their existing conceptual understanding, or practise certain target skills. When they try out new activities, these new experiences provide opportunities for children to learn new knowledge, skills and dispositions, which can be incorporated into their existing patterns of thinking. This helps them in connecting to new learning and extending their learning to promote further concept and skill development.



Children's conceptual knowledge and skills (e.g. patterning) can be developed using natural materials in the outdoors.

What does it look like?

To develop children's conceptual knowledge and skills, you can use the following guiding questions as you plan and implement outdoor learning activities:

Stage of planning/ implementation

Possible guiding questions to develop children's conceptual knowledge and skills

Before
implementing
the outdoor
activity

- What are the children's prior knowledge, skills and interests?
- What are the learning objectives to be achieved through these activities?
- How can the outdoors support children in achieving the learning objectives?
- What are some things I would want to look out for when observing and documenting children's learning in the outdoors?

During
the outdoor
activity

- What are the children doing and what are they interested in?
- How can I find out more about their thinking and learning?
- How should I facilitate, extend or deepen children's learning?

After
the outdoor
activity

- How do I know if the activities have met the intended learning objectives?
- What concept and skill have the children learned and developed?
- What can I do next to extend and/or deepen children's learning in the subsequent indoor and/or outdoor experiences?



Children's conceptual knowledge and skills (e.g. comparison of leaf characteristics) can be developed using natural materials in the outdoors.



Consider children's developmental milestones and the learning outcomes and goals in the EYDF and NEL Framework. How can you make use of learning experiences in, about, and through the outdoors to help children meet these developmental milestones, learning goals and outcomes?



Large spaces support activities like riding tricycles.

Maximising the learning potential of outdoor spaces

What does it mean?

Outdoor spaces can influence the range and variety of outdoor activities provided. The quality of children's experiences depends on how you optimise what is available in your centre's immediate outdoor vicinity to maximise the learning potential of existing outdoor spaces. In making use of the outdoor spaces available in our immediate environment, you may consider the following:

- **Use of differently-sized spaces** to accommodate different numbers of children and different types of activities.
- **Design and set up of spaces** to cater to children of different abilities and needs, including children with additional needs.
- **Flexible use of space, including communal and public outdoor spaces such as playgrounds, gardens and shared open spaces** by adding mobile, open-ended or temporary materials, equipment or fixtures to fulfil different needs and purposes.³¹



Cosy spaces are good for activities involving a small group of children.



Teachers can use flexible and open-ended equipment in open spaces.



Large blocks in open spaces enable children to create bigger and more varied structures.



Communal or shared spaces can be used if spaces within the centre are limited.



Teachers can use mobile easels to allow for outdoor art activities.



Walls can be enhanced to provide spaces for children's creative expression.

- **Including children’s voices and ideas in the use of outdoor spaces** to promote a sense of ownership in the outdoors.



Teachers can set up resources for children’s easy access and facilitate children’s choice and decision making.



Children can decorate different parts of the garden (e.g. by adding mosaic pieces to the planters).



Teachers can provide spaces for children to create and document their own learning.



Children can customise the equipment they are playing with (e.g. by adding webbing to help the younger children climb on the tyres).

What does it look like?

The use of different spaces should take into consideration the different interests, learning styles, readiness and needs of children.⁷ When planning the use of spaces available in your immediate outdoor environment, you could consider including spaces for promoting:

- **Imagination:** This could include spaces with natural and other open-ended materials for children to use as part of their pretend play.



- **Movement:** This could include large open spaces which allow for more unrestricted movement (e.g. running, jumping, sliding) and playgrounds for children to engage in active and noisy play. Mobile equipment could also be used to create flexible structures which could be easily changed to encourage variety in children’s play, or to target particular movement skills e.g. coordination and balancing.





Teachers can make use of open spaces for children's unrestricted movement.

- **Exploration:** This could include outdoor spaces with stimuli such as natural or recycled materials intentionally provided to encourage exploration and discovery (e.g. sand pit, gardens, muddy ground, sound walls). For very young children, teachers can provide the stimuli in a more manageable environment (e.g. in tubs).



Teachers can provide a variety of plants for children's exploration.



The outdoors is a much less restrictive environment for children to explore different sounds.

- **Socialisation:** This could include both open spaces for large group activities and spaces which allow for small group and social interactions.



Certain outdoor spaces promote new sensorial experiences, which can lead to conversations among the children.

- **Resting and reflection:** This could include quiet/hidden spaces which offer privacy and allow children to have personal time and space to simply connect with the outdoor environment. As children rest and reflect in the outdoors, they become more attuned to the environment as they feel the wind blowing on their faces and hands, observe the sky and clouds, and listen to the sounds of people and vehicles passing by.



- **Creativity and expression:** These are spaces which children could call their own. They are given opportunities to express themselves and create artefacts or artwork, either individually or with friends.



The children played tic-tac-toe on the concrete ground.



The children created sculptures out of clay for this corner in the garden.

Taking safety precautions in the outdoors

What does it mean?

Outdoor learning provides a natural context for children to practise elements of risk-taking and problem-solving to take place. Risks pose challenges and uncertainties. However, they are also an essential part of children's growth and learning. Therefore, the goal is not to eliminate all risks from our children's lives, but to manage them with a perspective that considers the spectrum of hazards.³²

What does it look like?

You need to take a variety of safety precautions to ensure children have beneficial and positive outdoor experiences. There are safety considerations which we need to bear in mind when planning and implementing outdoor activities for our children. You can consider using the **People, Equipment, Environment and Process** or **PEEP** model³³ to identify issues, concerns, existing and potential hazards, as well as the mitigating measures required to carry out the outdoor activities.

Some of the key areas under **PEEP** include:

People The people who are present during the outdoor activity and their roles.

Key considerations

Possible safety precautions

Can I meet the required staff to child ratio for the outdoor activity to ensure children are well supervised?

- Deploy sufficient number of adults (e.g. other colleagues, parents) with the right skills and disposition to supervise the children outdoors (e.g. adults who have first-aid training).
- Adopt a staggered schedule when planning outdoor experiences for several classes. For example, instead of bringing the entire level of children out for a neighbourhood walk at the same time, consider arranging different time slots for the outdoor activity to take place for a smaller number of classes.

Are the adults involved familiar with safety measures to manage different situations?

- Brief adults involved on safety procedures before conducting outdoor activities.
- Conduct training for adults involved to ensure that they are confident and competent to manage emergency situations.

Are the children and adults involved suitably attired for the outdoor activity?

- Advise adults and children to wear suitable attire (e.g. light clothing, covered shoes, hat).
- Check for attire that may pose safety threats (e.g. dangling lanyards, loose shoes, sharp objects in pockets).

What do I know about the children's prior outdoor experiences?

- Find out how comfortable the children are in going outdoors and the frequency of their outdoor experiences outside of school hours.
- Provide a variety of activities that caters to children's different levels of readiness towards outdoor learning.

Environment The space where the outdoor activity is conducted.

Key considerations

Possible safety precautions

Are you and the adults involved familiar with the outdoor space?

- Conduct a recce of the outdoor space with other adults involved.
- Find out about the space location, its accessibility, shady areas and potential issues with other users or owners of the space.
- Find a suitable sheltered area in case of changing weather conditions during the outdoor activity.

Is the outdoor space safe for children to freely explore on their own and with their peers?

- Scan the environment before using it.
- Plan and set space boundaries for children to play and explore in.
- Ensure that children are within the sight of adults present at all times.
- Anticipate any risky behaviour that the children could engage in.

Are there potential hazards in the outdoor space? How can I manage the possible risks?

- Check that the outdoor space is free from hazards (e.g. potholes, sharp edges, poisonous plants and insects, broken tiles, slippery floor).
- Maintain a good distance away from nearby buildings, killer litter zones, main pedestrian or cycling thoroughfares, roads, and stairway landings to avoid accidents.

Is the outdoor space suitable for the children?

- Check signage on the use and rules (if any) for the use of the space to ascertain the suitability for the children.
- Check that the space is accessible to and allows the participation of all children in the targeted group.

Equipment

The items that are required to ensure children's safety and well-being during the outdoor activity and those that are available to facilitate children's play and exploration.

Key considerations

Possible safety precautions

What should I bring when going outdoors with the children?

- Bring along a first-aid kit and other essentials (e.g. a mobile phone, emergency contact numbers, camera, umbrella, and rain coat).
- Review the first-aid kit to ensure no items are expired.
- Remind children to bring their water bottle along.

Is the equipment at the outdoor space adequate and appropriate?

- Recce the outdoor space (e.g. playgrounds) and check signage on the instructions and rules for using the equipment to ascertain the suitability for the children.

Is the equipment in good working condition?

- Scan all the equipment available to ensure no broken parts and sharp edges before allowing children to use them.
- Check and ensure there are no equipment with hot surfaces (e.g. metal slides) before allowing children to use them.

Process

The necessary steps to be taken for conducting outdoor activities.

Key considerations

Possible safety precautions

Is there a set of standard operating procedures (SOP) or guidelines for outdoor activities in the centre?

- Work with your centre leader or key personnel to develop the SOP for outdoor activities, including developing a procedure for conducting a benefit-risk assessment.

Is a benefit-risk assessment conducted before carrying out the outdoor activity?

- Go through the procedure of evaluating the benefits and risks involved in conducting the outdoor activity in the selected space.
- Involve key adults in the evaluation of benefits and risks of the outdoor activity.

Are parents aware of the types of outdoor experiences planned and provided by your centre?

- Make use of suitable platforms such as your centre's orientation day, newsletter, centre handbook, and parents' briefing to help parents understand the importance of outdoor learning and the types of outdoor activities provided by your centre for the children.

How can I prepare the children for the outdoor activity?

- Brief children about the location and nature of the outdoor activity.
- Involve the children in suggesting a set of rules and things to note when in the outdoors.

Educators' roles for outdoor learning

When planning and implementing outdoor activities for children, you would need to assume the following roles:

- **Planner**
- **Observer and assessor**
- **Collaborator and Communicator**
- **Facilitator**
- **Reflective practitioner**

These roles can come together in various ways, depending on your centre's practices. In addition, there are also the considerations of promoting purposeful play, maximising the learning potential of the outdoor spaces, and taking safety precautions. The figure below shows how you could fulfil your roles as educators while paying attention to the considerations mentioned above:

PLAN

In planning for outdoor experiences, we could use **BREAD**[^] (Benefits-Risks-Evaluation-Action-Decision) as a practical approach to conduct a **benefit-risk assessment**.

- Benefits**
 - ▶ Consider the learning potential and objectives, and in particular, how you can create opportunities for purposeful play to promote children's autonomy and choice, and support their concept and skill development through outdoor activities (refer to pages 14-18).
 - ▶ Determine how you can tap nearby outdoor spaces, and maximise their potential to help meet the objectives (refer to pages 19-24).

- Risks**
 - ▶ Conduct a recce of the outdoor space. Use the **PEEP** (People, Equipment, Environment and Process) model to identify the hazards and anticipate potential issues before and during the outdoor activity (refer to pages 25-28).

- Evaluation**
 - ▶ Evaluate the likelihood and severity of risks and weigh them against the benefits.
 - **If the benefits outweigh the risks, the outdoor activity should be allowed to continue.** Consider how risks of low to mild severity might be mitigated to a more acceptable level. For example, if the risks on the field are assessed to be hazardous to the children and may result in injuries (e.g. tripping over roots growing above ground), then that specific area could be cordoned off and children briefed to avoid that area when playing and exploring in the field.
 - **If the risks identified outweigh the benefits, despite mitigating measures, the activity should not be allowed to continue.**

[^] *BREAD was developed by participants of the Outdoor Learning Training of Trainers Workshop in July 2019.*

- Action**
- ▶ List possible ways to mitigate the risks and maximise benefits/opportunities.
 - ▶ State who will be following up with the mitigating measures or actions.
 - ▶ Record when the actions have been followed up.
- Decision**
- ▶ Decide on the activities which can be feasibly and safely carried out in the outdoor spaces available.
 - ▶ Organise the equipment, materials and other preparation as required for the outdoor activity.

Facilitate

- ▶ During the outdoor activity, observe the children's play to note their questions and interests, and respond to them meaningfully and appropriately.
- ▶ Capitalise on teachable moments to promote children's autonomy and choice (refer to the possible guiding questions on page 16).
- ▶ Provide guidance and support children's concept and skill development (refer to the possible guiding questions on page 18).
- ▶ Model positive behaviours and attitudes for children (e.g. show respect for the environment and sense of curiosity about natural phenomena).
- ▶ Encourage children to talk about and think back on their outdoor experiences and suggest ways on how they can approach their outdoor experiences differently.
- ▶ Provide connections between children's outdoor and indoor experiences to enhance and extend their learning.

Observe and assess

- ▶ Use various methods such as observation and engaging children in conversations to collect information about children's behaviour, thoughts, and ideas during outdoor activities.
- ▶ Document children's interests, activities and learning in the outdoors (e.g. through taking photographs/videos, collecting their artwork or completed activity sheets).
- ▶ Analyse and interpret the information collected to better understand the children and inform subsequent planning of outdoor learning experiences.



Take photographs to document children's activity and play for further analysis.



Children's recording of their outdoor experiences can also be a useful source of information to monitor and assess children's learning.

Reflect

- ▶ Based on the children's experiences, identify what went well and what did not.
- ▶ Determine success factors and think of ways to enhance these factors.
- ▶ Consider the challenges encountered and think of ways to overcome them.
- ▶ Based on the successes and challenges, modify the outdoor activities accordingly.

Collaborate and communicate

As educators are not solely responsible for ensuring outdoor learning becomes an integral part of children's lives, it is important to create buy-in from parents and tap the resources in the community to enrich children's outdoor learning experiences. To do this, you can:

- ▶ Communicate the benefits of outdoor learning to parents (refer to pages 6-8).
- ▶ Let parents know what outdoor experiences the children have enjoyed (e.g. by showing documentation of children's experiences and works from their outdoor activities) and how to extend their learning during out-of-school time.
- ▶ Inform parents early on the types of outdoor experiences that your centre plans and conducts as part of its curriculum and programme.
- ▶ Share resources to promote outdoor learning with the parents (e.g. outdoor events, places to explore).
- ▶ Work closely with parents in planning and facilitating outdoor activities for the children.
- ▶ Find out more about the resources available in the community through organisations and agencies such as National Parks Board (NParks), community clubs, local residents' communities, and Town Councils.
- ▶ Tap upon places and resources in the community (e.g. neighbourhood parks, supermarkets, hawker centres to raise awareness of the learning potentials available in these places).



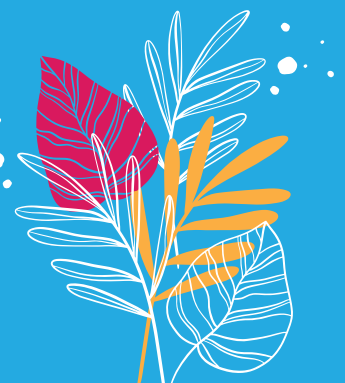
The whole centre should come together to plan and implement outdoor learning. How can you work together with your colleagues to exchange ideas? How can you get parents on board to support outdoor learning?

Summary

When it comes to planning and implementing outdoor activities, it is important to keep in mind:

- a) creating opportunities for purposeful play to promote children's autonomy and choice, and developing their conceptual knowledge and skills;
- b) maximising the learning potential of outdoor spaces; and
- c) taking safety precautions.

These considerations need to be taken into account as you fulfil your roles as educators in planning, facilitating, observing, assessing, reflecting on, collaborating on and communicating about children's outdoor learning experiences.



4

Getting Started on Outdoor Learning

Making use of outdoor spaces

There are a variety of spaces that you can make use of in your immediate environment to provide your children with enriching and meaningful outdoor learning activities. Here are some that most typical pre-school centres in Singapore would have access to:

Outdoor playgrounds



Community spaces



Neighbourhood green spaces



Parks and park connectors



Immediate external spaces



Possible outdoor learning experiences

There are many possibilities to how you can use your immediate outdoor spaces to provide opportunities for children to play, explore and learn. Here are some activity ideas to get you started in designing meaningful and enjoyable outdoor experiences for children to learn in, about, and through the outdoors.

Exploration with natural materials

You may provide a variety of natural materials for children to explore. Through exploration, children enhance their sensorial development, develop their sense of curiosity and interest in nature, and learn more about the materials and their properties.



Children can explore a variety of natural materials such as mud and leaves in the outdoors.



Children are using pool noodles as water hoses to "water" the plants.

Dramatic/imaginary play

There are boundless possibilities in the outdoors that can engage children in dramatic or imaginary play. Children can make use of playground structures, open-ended materials, natural materials and other outdoor stimuli to construct scenes and negotiate story lines as they play in the outdoors.

Active physical play

The outdoors provides ample space for very young children to engage freely in active physical play to develop their fine and gross motor skills. For older children, besides making use of available open spaces for active physical play, you can also add open-ended resources and flexible structures which can be set up and kept away easily. These activities provide opportunities for children to develop and practise locomotor and non-locomotor skills, as well as exercise risk assessment, all of which contribute to building self-confidence and a positive self-concept.



Children can engage in active physical play using various equipment which can be easily set up and kept away.



Babies can engage in active play in the outdoors.



Children can set up their own obstacle using open-ended materials.



Children can build their confidence through risky outdoor play.

Art activities

You can give children opportunities to explore using different art and natural materials in the outdoors. The unique stimuli present in the outdoors, such as the sunlight, shadows, and shades of colour in flora and fauna, or even the open space available, will enhance children's creative experiences.



Children can paint with natural materials like sticks and leaves.



Children can explore painting with ice.



Teachers can make use of pavements and external walls for messy and large-scale art exploration.

Learning centre activities

Children may be brought outdoors for a variety of learning centre activities, that are normally conducted indoors. For example, construction materials may be brought outdoors to make use of the larger space to enhance children's play and to promote their creativity. You could also include natural resources available in the outdoors to enhance children's learning through outdoor play.



Children can engage in large-scale construction activities in the outdoors.



Children can make use of natural materials for numeracy activities in the outdoors.

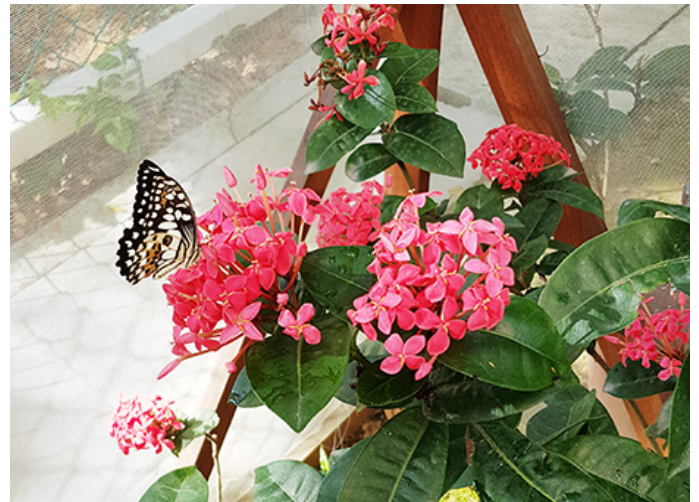


Gardening

All children can be given opportunities to participate in planting, harvesting, or simply observing the plants they have grown, be it in a garden plot or in individual pots. Gardening experiences allow children to better understand where their food comes from, especially if they grow edible plants and herbs which they are familiar with. Gardening also presents many opportunities for children to come into close contact with small insects and birds. The overall multisensory experience gives children meaningful opportunities to learn through doing and develops their sense of responsibility and affinity for the world around them.



Children can develop a sense of responsibility and care for the environment as they take care of plants in the garden.



The garden presents many opportunities for children to observe plants and insects up close.

Investigative activities

The outdoors is full of stimuli for children to observe, wonder, and find out more about. You can conduct activities for children to find out more and learn about the natural environment, or people and places in the community.



Children can engage in outdoor investigations.

Outdoor storytelling

You can engage children in language and literacy experiences by conducting story-telling outdoors, complete with props. Stories can be intentionally selected to make full use of the outdoor setting. For example, think about how listening to a story like “Walking through the Jungle” in the outdoors can enhance children’s experience as they see birds flying in the sky, hear the sound of rustling leaves and chirping birds, and feel the breeze blowing on their face. You can also consider ‘messy’ activities to complement what children read, such as water play after reading the book, “Mrs Wishy Washy”.



Storytelling experiences can be enriched by tapping the unique characteristics of the outdoors.

Nature/neighbourhood walks

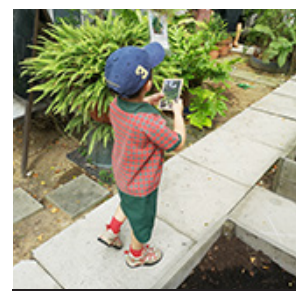
You can bring children on regular nature/neighbourhood walks. During these walks, children get up close and personal with nature and become familiar with their immediate surroundings. They have the opportunity to experience the natural elements and discover the places and features in the outdoor environment. You can also find ways to stimulate their sense of wonder and curiosity, as well as extend their engagement during these walks. For example, you could design a scavenger hunt that encourages the children to observe their surroundings carefully and record their findings to be shared with the peers.



Children can experience natural elements like rain during a walk in the outdoors.



Children can use view finders to focus their observations of the surroundings in the neighbourhood.



Children can engage in scavenger hunts in the garden.

Case Studies

How do pre-school centres in Singapore carry out outdoor learning? Read on to find out more about some centres' experiences in using the outdoors to enhance children's learning.

Case study 1: "Gloop" by EtonHouse Pre-school @ Mountbatten 223

EtonHouse Pre-school @ Mountbatten 223 has a daily schedule for all children to go outdoors. For the toddler classes, teachers make use of their centre's open space and available natural materials to encourage children to use their senses to explore and to make sense of the world around them. One particular activity saw the children engaged in sustained exploration of "gloop", a mixture of flour and water.

- **How did the idea for the "gloop" activity come about?**

The teacher observed the children playing with water, which was their theme for exploration at that point in time. The children were observing and learning about water through their five senses. The teacher noticed that the children were adding found items such as twigs and leaves into the water. **Based on what she observed of the children's interests**, the teacher provided flour in the next session. The children decided to mix the flour and water together and were actively mixing and squeezing the mixture, as they explored the new texture.

The professional educator



The educator observes the children, takes note of their interest and extends their learning experience.



Children created and explored "gloop".

- **How did the children's play change over time?**

The children were exploring "gloop" numerous times over the next couple of weeks. As the class had outdoor activities scheduled on a daily basis, the children were provided with opportunities to play with the "gloop" repeatedly. **The ample opportunities provided for children to engage in repeated play with the same materials enabled them to deepen their play.** For example, when they initially played with it, the children were hesitant and apprehensive, given the unfamiliar texture. Over the next few sessions, the children were seen attempting to play with the "gloop" in new and innovative ways, e.g. dropping it from a height, and adding other natural materials to the mixture.

The intentional programme



The programme is intentionally planned to facilitate children's play and exploration.



A little girl searching for natural materials to add to the “gloop”.

- **How did the outdoors enhance the children’s experiences?**

As most of these activities were carried out in the outdoors, the teachers and children were **free of the usual constraints of an indoor environment**. Children were more fully immersed in the activity and the teacher did not have to worry about them creating a mess. The outdoors also **provided more opportunities for extended play**. For example, the children would often look for natural materials available in the garden to add to the “gloop”. They would then play with the new mixture in different ways.

- **How was this experience further extended in the classroom?**

As the children added natural materials to the “gloop” mixture, they started to get interested in these materials. The children collected the materials that they wanted to study and brought them back to the classroom to continue with their investigation.



The children investigated natural materials they picked from the outdoors back in the classroom.

The children’s interest in “gloop” also grew over time and they wanted to explore creating artwork with it. Hence, the teacher continued to provide a small portion of “gloop” for the children to work with in the classroom. Using the “gloop” and natural materials, the children exercised their imagination and created artwork using unconventional materials.



Children extended their exploration by creating artwork with “gloop”.

Case study 2: “Kampung Cinta” by St. James’ Church Kindergarten (Leedon)

In St. James’ Church Kindergarten (Leedon), the outdoor space is frequently used as an avenue for children to exercise their autonomy and express their ideas. The Kindergarten 1 (K1) and Kindergarten 2 (K2) children worked together to create “Kampung Cinta” in the outdoor space, and the Nursery 1 (N1) teachers saw its potential for the N1 children, who were interested in learning about household chores.

• How was “Kampung Cinta” created?

“Kampung Cinta” was created after the K1 children visited Kampung Lorong Buangkok and wanted to share about the “kampung” with the K2 children. The teachers worked with the K2 children to set up the “kampung” in their outdoor space. “Kampung Cinta” was the result of the children’s own ideas, which the teachers incorporated as they worked with the children to set up different structures in the space for all children to play in.



“Kampung Cinta” had different elements such as the kampung house, washing area, water well, and kitchen.

The engaged community



“Kampung Cinta,” created by a group of children, became a feature to enrich the experiences of all children in the common outdoor space.

• Why did the teachers think of making use of “Kampung Cinta” to engage the N1 children in learning about household chores?

Children are intrinsically motivated to mimic adults in activities such as doing household chores. The “kampung” provided an authentic context for children to engage in activities like cooking, washing and drying clothes, which are traditionally carried out in the outdoors. In an outdoor setting, children could engage freely in soap and water play as they washed the clothes, and subsequently, hung them out to dry in the sun. This also provided them with meaningful opportunities to experience natural elements in the outdoors like wind and sun.



The children were engaged in washing and drying clothes outdoors.

- **What were some challenges the teachers faced in facilitating play at “Kampung Cinta”?**

The teachers constantly had to **balance between managing practical concerns and maximising the time available for children’s play**. For example, while the children were engaged in washing clothes, they would often get carried away and wet their socks and shoes. Teachers had to consider the trade-offs between the time required for children to take off and put on their shoes, and children’s engagement and enjoyment in these activities. As the centre runs a 3-hour programme, time is limited. The teachers eventually decided to maximise the time children could spend outdoors, as they saw first-hand how the children developed their independence and engaged in social interactions, which convinced them that it was time well-spent.

- **What learning points did the teachers glean in making use of “Kampung Cinta”?**

As space in the kindergarten is limited, it is very important to ensure open-endedness and flexibility in the outdoor space, such that it can cater to children of different ages and support a wide range of activities. In the case of “Kampung Cinta”, not only did the older children exercise autonomy and choice as they created it, they also engaged in dramatic play and gardening activities within the space. The N1 children made use of the space for hands-on activities as they learnt about household chores. The space was also enjoyed by the children in other levels, and there were numerous opportunities for mixed-age play.



Children of different ages could play together in the same outdoor space.

Case study 3: “Cloud Stories” by MY World @ Tenteram Peak

In MY World @ Tenteram Peak, the children often go on nature walks near the centre. During these nature walks, teachers encourage the children to look out for different natural phenomena. At one of the nature walks, the Nursery 1 (N1) children’s attention was drawn to the clouds in the sky and they were encouraged to lie down to observe the clouds.

- **How did the idea for the activity come about?**

The teacher wanted to read the book, “Little Cloud” by Eric Carle to the children and to bring them outdoors to observe first-hand the clouds in the sky. She saw this as an excellent opportunity for the children to simply enjoy nature and take time to observe the shapes of clouds and how they change. Through this experience, the teacher planned to help children develop their observation skills, exercise what they had observed.



Children observed the clouds and how they changed in size and shape.



Children listened to the story, "Little Cloud".

- **How were the children kept engaged during the activity?**

The teacher was an active participant in the activity. As she lay down next to the children, she pointed out the clouds she saw and talked about what she imagined them to be. This modelled the process for the children and encouraged them to do like-wise. After reading the book, "Little Cloud", the children were asked to compare the clouds in the story with those they saw in the sky. This sustained their engagement and kept them focused on observing the clouds and comparing them with those they saw in the book.

Paint and cotton balls were also brought out so that children could paint the clouds they saw. This motivated them to talk about what they saw and to describe what they were painting.

The intentional programme



The children were engaged in the outdoor learning experience as the teacher drew on the unique characteristics of the outdoors to pique children's imagination and support their learning.



As the children painted, they shared about what they painted. They said things like, "I am painting a unicorn", "I paint circles".

- **How was the space set up?**

There was minimum set up required as all that was needed was an open space which allowed the children to see the clouds clearly. However, to ensure the children were comfortable when observing the clouds, a relatively shady spot had to be identified so that the sun would not shine directly on the children. Several mats were also brought along so children could lie down comfortably and take time to observe the cloud changes taking place.

For the painting activity, the children were asked to sit down on mats so that it would be easier to clean up. Simple art materials such as blue and white paint, cotton balls and little pieces of cardboard and paper for children to paint on were brought along and simply laid down on the ground for the children to use.

- **Were there plans to extend this activity? If so, how?**

It was observed that many children were talking excitedly about what they painted. Hence, the teacher put up their work in the classroom so that they could **revisit their artwork and use them as a stimulus** to talk about what they observed or raise questions about clouds. If the children continue to show interest, they could be guided to engage in further investigative activities on clouds.

Have you wondered how the outdoor spaces in your centre could stimulate children's thinking and inquiry?



- **If a similar activity was carried out again, what are some areas which could have been done differently?**

The activity can be extended in different ways by **using children's artwork to motivate subsequent learning**. For example, the teacher can compile the children's paintings to create a book about clouds, which they can then use to revisit their experiences back in the classroom. Alternatively, the children can take photographs of the clouds that they see outdoors, and use these photographs to tell a story about clouds. These photographs can be compiled to create a storybook which can be placed in the reading corner.

Case study 4: "Mixing Colours" by Little Preschool @ Whitesands

At Little Preschool @ Whitesands, there is an outdoor "Mess and Make" activity scheduled every Friday. At the beginning of each week, teachers and children come together to plan what they would like to do during the outdoor session. During one of the "Mess and Make" days, the Mother Tongue Language teacher provided bottles of coloured paint, plastic sheets and white paper for the Nursery 2 (N2) children to explore mixing colours freely with their hands and body.



Children were given the space and time to explore mixing colours freely with their hands and body in the outdoors.

- **Wouldn't the mess from the activity be a problem?**

In the outdoors, the children are free to create mess. The centre believes that messy art provides the opportunity for children to express themselves creatively and develop gross motor skills as they mixed colours using large body movements. The hands-on activity encouraged children to use their imagination and be creative, and also triggered learning of new vocabulary when they created new colours! After the activity, that was also a natural context for the children to practise being responsible for their surroundings when they helped to clean up the activity area.

- **How was the space set up to support this activity?**

As the centre is set in a void deck, it was important to ensure that **the common outdoor space was used respectfully, with due consideration given to other users.** Firstly, to ensure the common space could be kept clean, protective sheets were put up on the wall and laid down on the ground to cover the surface. Thereafter, careful consideration was given to the placement of the plastic sheet for the children to paint on. Multiple plastic sheets were hung so that all children could be engaged simultaneously. The plastic sheets were also hung at various heights. This created opportunities for children to move their bodies in different ways as they mixed the different colours on the plastic sheets. The placement of the plastic sheets, one against the white wall and the other against the sunlight; was also intentional. In this way, the children could **observe the sunlight coming through the plastic sheets** and thus, explore colours in different perspectives.



Engaging children in learning through purposeful play

Children were given the opportunity to explore the materials freely while the teacher planned the activity with the learning objectives in mind and provided the materials for children's exploration.



Teachers as facilitators of learning

The teacher provided opportunities for children to learn through the outdoors by making use of the sunlight available to enrich children's learning experiences in mixing colours.



- **What were the follow-up activities after this "Mess and Make" session?**

As the children were excited with the colours they had created, their work was put on display in the classroom and they were invited to talk about their experience mixing and playing with the colours. The children were also introduced to new vocabulary such as the names of the colours that they created on the plastic sheets. The children decided that they wanted to use the colourful plastic sheet as a curtain in their classroom and worked together to cut up the plastic sheet into strips, which formed the curtain that was hung up.

The curtain at the back of the classroom was created by the children during the "Mess and Make" session in the outdoors.

- **What could be done differently if a similar activity was to be carried out again?**

In addition to the primary colours (i.e. red, blue, yellow), the teacher could provide white paint to allow children to explore shades of colours. Through their exploration, the children might realise that colours would get lighter as white is added. This might **generate more curiosity among the children**, leading to more questions and investigation for richer and deeper learning.

For children who do not like to get dirty, the teacher could invite them to try mixing colours with their fingers first to ease them into the activity. As **children have different readiness when it comes to the outdoors and getting messy and dirty**, it is also important to make adjustments to the activity so as to ensure that all children get to participate and engage in learning.

Case study 5: “Our Obstacle Course” by MOE Kindergarten @ Punggol Green

At MOE Kindergarten @ Punggol Green, the Kindergarten 1 (K1) children designed and created their own obstacle course in the outdoor space at their centre. Through this outdoor activity, not only were they able to exercise autonomy and choice in creating their own play area, the K1 children were also given opportunities to work collaboratively with their friends and develop the learning dispositions of perseverance and inventiveness.

- **How did the idea for the activity come about?**

As part of a learning activity on the importance of regular exercise, the children participated in active play and games such as “Animal Fitness Stations” and “Dog and Bone”. Stemming from these activities, **the children wanted an exercise space where they could run, jump, hop and crawl to keep fit and healthy**. Hence, the children were invited to plan and design their own obstacle course as part of their play and exercise area.

- **How did the teacher make use of the outdoors in supporting the children’s autonomy and choice?**

The outdoors is a natural setting for active play and fitness activities. As the children already had many prior experiences of engaging in active physical play in the outdoors, creating an outdoor obstacle course was a natural extension of what the children were familiar with in terms of the various locomotor and non-locomotor skills they were able to do.

The open outdoor space allowed the children to freely explore how the available equipment can be used and set up. The children were jumping, balancing, jumping, hopping and crawling as they explored the use of the equipment in setting up different physical tasks for the obstacle course. This freedom for children to move around in the outdoors helped to **promote and support their need for adventure, experimentation and risk-taking**.



Children experimented with different equipment to set up their obstacle course.



Teachers as facilitators of learning

The teacher observed the children at play and guided them in their experimentation by asking questions.

• How did the teacher facilitate the activity?

Not all children were familiar with the concept of obstacle courses. Hence, the teacher held discussions with the children to find out their prior knowledge. The teacher also asked questions along the way as children explored different ways of creating their obstacle course. Through her observation of the children's experimentation, she prompted with questions like, "Why was it difficult to jump over this?" and "Is there enough space in between the hula hoops?" to guide the children in refining their obstacle course. After the obstacle course was completed, the teacher also guided the children in the process of reflection to help them consolidate their learning through the use of photographs and questions, such as "The play plan showed that we were supposed to crawl through the tunnel but we ended up crawling on top of it. Why?"

• Why did this activity take place over a few weeks?

This activity had the potential to develop in children other knowledge and skills besides simply putting together an obstacle course over a single session. **To maximise the learning potential of the outdoor activity, it was necessary for the children to think of and discuss their ideas with their peers in the classroom before trying them out in the outdoors.** For example, as the children played with the equipment, they began to develop an idea of what worked, and what did not. They also wanted to ensure that the obstacle course covered a wide range of gross motor skills. Over many cycles of experimentation and subsequent refinement, the children discussed, negotiated, and finally decided on a final plan for the obstacle course that worked well. The process was not straightforward, and the children met with various degrees of challenges and setbacks. This was when they needed to exercise their perseverance in order to continue with the project.



Children discussed the design of their obstacle course in the classroom.



The final play plan for the obstacle course was created by the children after many rounds of discussion and trying out the equipment.

After the children worked together to successfully set up the obstacle course, they played it numerous times. Their play experiences also led them to modify the obstacle course to further challenge themselves. For example, instead of crawling through the tunnel, the children wanted to try new ways of using the tunnel, such as climbing on, balancing on, and jumping off the tunnel. They also took pride when they saw children from other classes enjoying the obstacle course.



The children tried out new ways of using the tunnel.



The children enjoyed the obstacle course which they set up.



This project helped to nurture the learning dispositions of perseverance and inventiveness. How might the outdoors support the nurturing of other learning dispositions?

Case study 6: “Story Walk” by PCF Sparkletots Preschool @ Pioneer Blk 661B

In PCF Sparkletots Preschool @ Pioneer Blk 661B, outdoor learning is a regular feature of the children’s learning experiences at the centre. In this example, the K2 children went on a “story walk”, inspired by one of their favourite books, “The Very Hungry Caterpillar” by Eric Carle.



The children were engaged in a “story walk” led by the teacher.

- How did the idea for this activity come about?**
The outdoors has the potential to stimulate children’s imagination and help to make the story come alive. “Story walks” are part of children’s Speech and Drama experience at the centre, where they role-play as the main characters in the story as they take a walk in the neighbourhood.
- What did the children do in the “story walk”? What was the teacher’s role?**
 After reading the book, “The Very Hungry Caterpillar”, the teacher invited the children to suggest things that they could do in the outdoors while role-playing as the caterpillar, such as looking for food and changing into a butterfly. They then got into the character and experienced the story as **they immersed themselves in the outdoors, which provided an authentic context for children’s imaginary play.**

They also found out more about the outdoor environment through exploring the natural materials such as leaves, twigs, rocks and flowers. For example, the children decided to gather leaves and twigs and used them to create objects related to the story, such as the caterpillar's home. Learning becomes enjoyable as the children explore the natural materials, which also helps in strengthening their sense of wonder and curiosity, as well as their connection with nature.

To enable children to express their ideas through role-play, the teachers' role is firstly, to select a story which allows children to dramatise based on their imagination in the outdoors, and secondly, ensure a conducive outdoor environment for the children's "story walk". Besides conducting a recce of the outdoor space prior to bringing the children out, the teacher **also observes the children and encourages them to generate new ideas along the way**, to provide opportunities for the children to exercise their autonomy and choice.

Children as co-constructors of knowledge



Building on their prior knowledge from the stories, the children adapted their role-play in response to the new materials and stimulus present in the outdoors.



The children came up with the idea of creating objects from the story using the natural materials they found along the way.

• We understand that the children go outdoors often in your centre. How did you gain parents' buy-in to the frequent outdoor activities?

Communication with the parents is important. We inform parents who are interested in enrolling their children at our centre about the importance of outdoor learning and how it is a core feature of our curriculum. As a result, a vast majority of our parents share the same belief towards outdoor learning and are largely supportive of our efforts in promoting outdoor learning for the children.

We also let the parents know when outdoor learning activities are going to take place, so that they can send the children to school with the necessary items such as mosquito repellent patches and hats. This helps to prepare the children for the outdoor experience and creates **positive associations with outdoor learning**. We also conduct a benefit-risk assessment for the different spaces used in outdoor learning, to ensure that potential risks have been accounted for.

It is also important to **provide timely updates on the children's experiences in the outdoors to the parents**, so that they can regularly see for themselves the benefits of outdoor learning for the children. In our centre, we provide weekly updates through the mobile application which all parents have access to, featuring photographs and brief descriptions of the children's outdoor experiences. The parents are also issued with termly newsletters which provide detailed descriptions of children's outdoor learning activities. With that, the **parents are reassured that the children are engaging in meaningful outdoor learning activities and that helps to reinforce their support for outdoor learning in the centre**.



Frequently Asked Questions

Programme

1. Singapore's weather can be either too hot or rainy.

How can we conduct outdoor activities in such a climate?

- When in the outdoors, take sun protection measures such as wearing a broad-brimmed hat, using sunscreen and wearing sunglasses.
- Look out for shady places nearby to retreat to if necessary, and remind the children to drink water regularly to prevent dehydration.
- Conduct outdoor activities when the ultraviolet (UV) index is likely to be lower. You can check the hourly UV index on the National Environment Agency website (www.nea.gov.sg/weather/ultraviolet-index).
- In the rainy season, check for lightning information on the Meteorological Services website (www.weather.gov.sg/lightning) or the Weather@SG mobile application before bringing the children out.
- In case of rain when children are outdoors, ensure that they put on their raincoats or use an umbrella. This will allow them to enjoy the outdoors while staying dry.

“There is no such thing as bad weather, only inappropriate clothing.”

– Sir Ranulph Fiennes

2. My centre has a curriculum and the programme is packed with planned activities. How can I possibly squeeze in more time for outdoor learning?

- There are always opportunities to integrate outdoor learning into existing curriculum plans and activities. For a start, go through your planned activities and identify those that can be conducted outdoors instead of indoors. Talk to your colleagues and share ideas on how these activities can be brought outdoors.

- Think about how the unique characteristics of the outdoors can be tapped to enhance children’s learning experiences. For example, if it is an art activity, could children draw inspiration for their artwork from the shapes and colours of the flora and fauna around them, or from the lines and patterns present in the buildings and structures in the neighbourhood?
- Alternatively, for a project- or theme-based curriculum, consider introducing more outdoor-based projects or themes. That would be a natural way to introduce more outdoor activities for the children as they carry out the project or engage in theme-based activities.

Children

“The more risks you allow children to take, the better they learn to take care of themselves.”

— Roald Dahl

3. Adults are often concerned about safety in the outdoors, especially for children. How can we keep children safe in the outdoors?

- There is a need to understand the difference between perceived risks and actual risks in the outdoors. Look at your outdoor environment and the activities you intend to carry out and consider the benefits of the learning experiences for the children, how much of the risk is real, and how much is actually just perceived risk. While we should manage real risks, we should also be mindful of over-protecting children just to avoid perceived risks.
- All children need and want to take risks so that they can explore limits, create new experiences, develop their capabilities and extend their knowledge, skills and dispositions. Nevertheless, centres must still exercise due diligence in ensuring that all safety precautions are taken when bringing children outdoors. Refer to pages 25-28 for more information on the safety precautions.
- Besides supervising children’s activities and ensuring their safety, it is also important for teachers to empower the children to make their own decisions when it comes to risk assessment. For example, as they are climbing on structures, we can ask them, “Do you feel stable?”. This question not only reminds children to check in on their own readiness, but also builds their confidence when they successfully complete a challenging task and helps them gain experience in behaving and responding appropriately to the outdoor environment.

4. There are children with additional needs in my class. How can I go about planning outdoor learning experiences for them?

- For a start, you need to be familiar with the needs of the individual child, and the concerns of the parents before coming up with a plan for outdoor learning for the child. There is no one-size-fits-all approach, as every child is unique and different.
- If the child has physical challenges, consider making the space accessible for the child, and putting in mobility aids enroute to, and within the outdoor spaces so that the child can move about independently. You could also work with the parents to make slight adjustments to the child's routines to facilitate outdoor learning, e.g. encouraging the parents to dress the child in long pants to avoid scratches if the child is prone to falls.

Educator

5. As an educator, I find bringing children outdoors daunting. How should I get started?

- Start small! You could bring the children out to an area familiar to you for a shorter duration with simple activities to gain confidence, before planning and conducting more extended periods of exploration outdoors, or more elaborate outdoor learning activities.
- Books and the Internet are also wonderful resources for educators. Look for ideas online and in books, then tailor them for your children, considering the guiding principles for outdoor learning, your centre's approach to outdoor learning in the curriculum, and your children's interests and needs.
- You could seek advice and learn from fellow educators who are more experienced in planning outdoor activities through formal networking channels or informally through your own contacts. Do not be afraid to ask more senior educators, or even your centre leaders for advice. They want to help you succeed in creating meaningful outdoor learning experiences for your children too.

6. I am a centre leader, and I agree that outdoor learning is very important for children. How can I motivate my teachers to get started?

- It can be difficult to convince teachers who are reluctant to go outdoors. You have to give them time to get used to the idea of going outdoors regularly. As a start, build in time within the centre's curriculum and programme for teachers to bring children outdoors. Scheduling time for outdoor activities in the timetable signals the importance of outdoor experiences in the centre's curriculum and programme.
- Communicate the baseline expectations and let teachers start at a level that they are comfortable with. Promoting outdoor learning is for the long-term and it is crucial that efforts put in must be sustainable.
- Once the teachers are more comfortable with the outdoors, you can encourage them to try out more activities in the outdoors. When teachers see how the children are benefitting from outdoor experiences, they will also naturally want to carry out more outdoor activities.
- It is also a good idea to create opportunities and put in place structures for teachers to brainstorm ideas, collaborate on projects, and learn good practices from one another for outdoor learning. Consider appointing "Outdoor Advocates" or form small workgroups to promote professional learning and sharing about outdoor learning within your centre. This helps to inspire, lead and guide teachers in planning and conducting outdoor activities .

7. I am clueless about the plants, insects and animals found in the outdoor environment. How can I facilitate children's learning in this area when I don't even know the basic information?

- There are plenty of resources in the library, relevant mobile applications or the Internet, which specialise in helping you identify local flora and fauna. For example, you can look into various publications or mobile applications on local flora and fauna by the National Parks Board (NParks) (See www.nparks.gov.sg/about-us/publications and www.nparks.gov.sg/mobile-applications for more information). The Flora & Fauna Web (www.nparks.gov.sg/florafauweb) also provides valuable information on plants and animals in Singapore. The website, "Trees.sg" is also a useful resource which identifies trees by their physical location in Singapore. You can simply enter your location and it will tell you the name, age, physical features and origin of individual trees in the area.
- It is important for you to role model a sense of wonder and curiosity for the children. Together with the children, you could engage in the process of investigation to find out more about the flora and fauna seen outdoors. Do not worry that you do not have all the answers and knowledge about local flora and fauna as it is more important to develop children's ability to tap different sources of information to find out answers to their own questions.

Family

8. The parents at my centre have so many concerns about children going outdoors, such as mosquito bites, sunburn, germs and risk of falling. What can we do to convince them and address their concerns?

- Share information on the benefits and importance of outdoor play to convince parents (refer to pages 6-8). You can do this through numerous channels such as centre-based workshops, newsletters and emails with articles on the benefits of outdoor learning.
- Explain to parents the rationale behind your centre's approach and practices for outdoor learning. The best time to do this might be before they enrol their children at your centre. That way, expectations with regard to outdoor learning are laid out right from the start and you are less likely to face resistance thereafter.
- On a regular basis, you should also let parents know of their children's experiences in the outdoors, e.g. through photographs in the newsletter or displays at the parents' corner in the centre. When parents see the children enjoying and benefitting from the outdoors, they are more likely to support your efforts in outdoor learning.
- For parents with valid concerns, e.g. safety of children with additional needs, work with them individually to come up with a customised approach towards outdoor activities for their children, so that their children may continue to enjoy the benefits of outdoor learning.

9. It is important to involve the family so that children have outdoor experiences outside of school as well. What are some resources I can share with the parents so that they can also engage children in outdoor learning?

- Parents can start with something as simple as bringing children regularly out to the neighbourhood playground and park for free play and exploration. You can also share with parents some simple activities that they can engage children in, such as bubble play, ball games, and neighbourhood walks.
- For parents who are more motivated, there are many activity and resource kits meant to encourage parents to bring children outdoors. For example, the Early Childhood Development Agency (ECDA), in partnership with the National Library Board, National Museum of Singapore and NParks, has developed a resource kit targeted at parents to encourage their pre-schoolers to pick up new skills while exploring the outdoors. The kit, "Creative Conversations: The Scent of Spices (Parents' Edition)", is available on www.go.gov.sg/thescentofspices.

Spaces and Resources

10. I am located in a commercial building and do not have adequate outdoor spaces of my own to make use of. What can I do to promote outdoor experiences for my children?

- Establish a good relationship with the management office overseeing the building and approach the management staff with ideas and proposals on the use of available common outdoor spaces to support children's learning and development.
- Show the stakeholders how the outdoor space has been made use of and maintained, and the benefits of outdoor learning for the children before approaching them with your proposals for additional spaces, if needed.
- Look out for and make use of potential outdoor spaces in the immediate environment near your centre such as parks and gardens.

11. One of the outdoor spaces I frequently use is the playground in my centre. This is a shared space which is also used by other children in the premises during the weekends. Sometimes, the structures children have created in the playground get destroyed and they are very affected by it. What can I do to manage this?

- This is an excellent learning opportunity for the children to learn about collaborating with others to create common spaces that all can enjoy.
- You can also explore having the children put up hand-written signs to help others understand that they should respect and not destroy the children's creations.

12. Open-ended and found materials sound great! Where can I get hold of materials like old tyres, wooden planks and recycled items?

- This is where you need to be resourceful! There are many places where you can obtain open-ended materials for children's outdoor play. Try approaching:
 - NParks for logs, branches and trimmings;
 - Neighbourhood shops for items like large cardboard boxes, tyres, and wooden pallets;
 - Contractors for pipes, wood trimmings, and tiles;
 - Nurseries for gardening materials; and
 - Online communities and social enterprises to crowdsource recycled materials, unused items, and other objects.

- Do not forget to tap parents as resource people! Some of them may work in, or have connections to places which can supply cheaply (or for free) items for children's play. For example, one centre received leftover concrete slabs for their garden from one of the parents' renovation projects. Let the parents know what resources you are looking out for and you may be surprised with what they can help you with!

13. I agree that it is important for children's voices to be considered in the design of outdoor spaces in my centre. How can I get started on this?

- You can start by bringing the children out to look at the various outdoor spaces available in your centre. Elicit their views on what they would like to keep, remove or add. Finally, involve them in the planning of the change process and in the setting up of the new outdoor space. This does not have to involve large-scale changes. For example, it could be as simple as children bringing different found/reusable materials from home to add new elements of play in their outdoor space.

14. Since the outdoors is full of surprising and unexpected stimuli, how can I make sure that my class is equipped to make full use of these stimuli at all times?

- Children must be equipped with the dispositions to observe and ask questions about their observations from the outdoors. To develop these dispositions in children, you should firstly, carefully select the activity and outdoor space to elicit such observations and questions. You could also role model a sense of wonder and curiosity in the outdoors, and facilitate children's process of finding out answers to their questions. Over time, children will demonstrate these dispositions naturally and this will lead them to notice and explore the stimuli around them in the outdoors.
- There are also resources which support observations and investigations in the outdoors. Consider putting together an "Explorer's Bag" with items such as a magnifying glass, binoculars, a plain sheet of white cloth to set items on for closer observation, a camera, a container, some pencils and paper for quick recording or sketches. These items will help your children to carry out closer investigation and exploration of what catches their attention in the outdoors.

15. Engaging in water play may result in wastage of water and this is not environmentally friendly. How can we manage water wastage, so that children can still enjoy the benefits of water play?

- Water play is also an opportunity for children to learn about water conservation. Consider placing large containers to collect the water as they play with them. Children can then reuse the water in these containers for continued water play. At the end of the water play session, the water can be used to water plants in the garden.
- We can also make use of rainwater for water play. If space at the centre permits, set out large containers to collect rainwater for the children's play. However, do note that the water should be used soon so that it does not become a mosquito breeding ground! After the water play session, we can similarly collect them to water the plants at the garden.

16. It looks like we need a lot of materials for outdoor activities, but there is limited storage space in my centre. How can I keep resources meant for outdoor play?

- For ease of retrieval and management, it is best if you can store the materials outdoors. Use weather-resistant sheds or boxes to store the materials in your outdoor spaces. For centres without outdoor spaces within the centre premises, you can work with the Town Council, or your building management office to identify and rent a space for storage of outdoor materials.
- Be creative in identifying outdoor storage space. Make use of vertical spaces, e.g. hanging baskets on the walls, and mobile storage solutions, e.g. trolleys and boxes with wheels to maximise the space available for storage in the outdoors.

References

- Ginsburg, K.R. (2007). The importance of play in promoting healthy child development and maintaining strong parent-child bonds. *American Academy of Pediatrics, 119*(1), 182-191. doi: 10.1542/peds.2006-2697
- Fiennes, C., Oliver, E., Dickson, K., Escobar, D., Romans, A., & Oliver, S. (2015). *The existing evidence base about the effectiveness of outdoor learning*. Available at www.blagravetrust.org/outdoor-learning-study/. Accessed 21 August 2019.
- Rivkin, M. S. (2000). Outdoor experiences for young children. *ERIC Digest ED448013*, Charleston, WV: ERIC Clearinghouse on Rural Education and Small Schools. Available at <https://files.eric.ed.gov/fulltext/ED448013.pdf>. Accessed 15 Feb 2019.
- Wells, N. (2000). At home with nature: Effects of "greenness" on children's cognitive functioning. *Environment and Behavior, 32*(6), 775-795.
- Canning, N. (2010). The influence of the outdoor environment: Den making in three different contexts. *European Early Childhood Education Research Journal, 18*(4), 555-566.
- Yildirim, G., & Akamca, G. O. (2017). The effect of outdoor learning activities on the development of preschool children. *South African Journal of Education, 31*(2), 1-10.
- Greenman, J. (1993). It ain't easy being green. *Child Care Information Exchange, 91*, 336-37.
- Maynard T., Waters J., & Clement J. (2013). Child-initiated learning, the outdoor environment and the 'underachieving' child. *Early Years, 33*(3), 212- 225. doi:10.1080/09575146.2013.771152
- Waite, S. (2011). Teaching and learning outside the classroom: Personal values, alternative pedagogies and standards, *Education 3-13, 39*(1). 65-82. doi:10.1080/03004270903206141
- Weinstein, N., Przybylski, A. K., & Ryan, R. M. (2009). Can nature make us more caring? Effects of immersion in nature on intrinsic aspirations and generosity. *Personality and Social Psychology Bulletin, 35*(10), 1315-1329. doi:10.1177/0146167209341649
- Ng, S. C., & Bull, R. (2018). Facilitating social emotional learning in kindergarten classrooms: Situational factors and teachers' strategies. *International Journal of Early Childhood, 50*(3), 335-352. doi: <https://doi.org/10.1007/s13158-018-0225-9>
- Corso, R. M. (2007). Practices for enhancing children's social-emotional development and preventing challenging behaviour. *Gifted Child Today, 30*(3), 51-56.
- Li, J., Hestenes, L. L., & Wang, Y. C. (2014). Links between preschool children's social skills and observed pretend play in outdoor childcare environments. *Early Childhood Education Journal, 44*(1), 61-68.
- Ouvry, M. (2003). *Exercising muscles and minds: Outdoor play and the early years curriculum*. London: National Children's Bureau.
- Fjortoft, I., & Sageie, J. (2000). The natural environment as a playground for children: Landscape description and analysis of a natural landscape. *Landscape and Urban Planning, 48*, 83-97.
- Tideman, J. W. L., Polling, J. R., Hofman, A., Jaddoe, V. W. V., Mackenbach, J. P., & Klaver, C. C. W. (2018). Environmental factors explain socioeconomic prevalence differences in myopia in 6-year-old children. *British Journal of Ophthalmology, 102*, 243-247.
- O'Malley, G., & Thivel D. (2014). *Physical activity and play in children who are obese*. European Childhood Obesity Group. Available at <https://ebook.ecog-obesity.eu/chapter-energy-expenditure-physical-activity-play-children-obese>. Accessed 15 Feb 2019.

18. Rose, K. A., Morgan, I. G., Smith, W., Burlutsky, G., Mitchell, P., & Saw, S. M. (2008). Myopia, lifestyle and schooling in students of Chinese ethnicity in Singapore and Sydney. *Archives of Ophthalmology* 126(4), 527-530.
19. Thompson, C.W., Aspinall, P., & Montarzino, A. (2008). The childhood factor: Adult visits to green places and the significance of childhood experience. *Environment and Behavior*, 40(1), 111-143. doi:10.1177/0013916507300119
20. World Health Organisation (2019). *Guidelines on physical activity, sedentary behaviour and sleep for children under 5 years of age*. World Health Organisation. Available at www.apps.who.int/iris/handle/10665/311664. Accessed 22 August 2019.
21. World Health Organisation (2011). *Global recommendations on physical activity for health*. World Health Organisation. Available at www.who.int/dietphysicalactivity/publications/recommendations5_17years/en/. Accessed 22 August 2019.
22. Hinkley, T., Brown, H., Carson, V., & Teychenne, M. (2018). Cross sectional associations of screen time and outdoor play with social skills in preschool children. *PLoS ONE*, 13(4), 1-15. doi:10.1371/journal.pone.0193700.
23. Richardson, E. A., Pearce, J., Shortt, N. K., & Mitchell, R. (2017). The role of public and private natural space in children's social, emotional and behavioural development in Scotland: A longitudinal study. *Environmental Research*, 158, 729-736.
24. Kuo, F. E., & Taylor, A. F. (2004). A potential natural treatment for attention-deficit/hyperactivity disorder: Evidence from a national study. *American Journal of Public Health*, 94(9), 1580-1586.
25. Sobel, D. (1997). Sense of place education for the elementary years. *Roger Tory Peterson Institute of Natural History, Special Report*, 32-39.
26. Rivkin, M. S., & Schein, D. (2014). *The great outdoors: Advocating for natural spaces for young children*. Washington, D.C.: National Association for the Education of Young Children.
27. Bruce, T. (2015). *Early Childhood Education* (5th Ed). London: Saffron House.
28. Ashiabi, G. S. (2007). Play in the preschool classroom: Its socioemotional significance and the teacher's role in play. *Early Childhood Education Journal*, 35, 199-207. doi:10.1007/s10643-007-0165-8
29. Berk, L. E., & Meyers, A. B. (2013). The role of make-believe play in the development of executive function: Status of research and future directions. *American Journal of Play*, 6, 98-110.
30. Tsao, Y. L. (2008). Using guided play to enhance children's conversation, creativity and competence in literacy. *Education*, 128(3), 515-520.
31. Casey, T. (2007). *Environments for outdoor play: A practical guide to making space for children*. London: Paul Chapman Publishing.
32. Finch, K. (2016). The risks and benefits of nature play. In Sobel, D. (Ed), *Nature pre-schools and forest kindergartens* (pp. 137-158). Minnesota: Redleaf.
33. Curtis, R. (2005). *The backpacker's field manual*. New York, USA: Three Rivers Press.