Mobile junk and nature playground educators pack

Nature and its use in Australian early childhood settings. (a collection of writings) By Glenn Wagland

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Introduction

This collection of writings is amassed from blogs, reports, Social media posts, and notes from P.D sessions I have given. It covers nature play philosophies, risk aversion, regulations, learning frameworks and standards. It also examines the resources used in the Mobile junk and nature playground sessions, and how these support children's learning. Presently, a big push for nature play is moving through the education field, led by governments, and community concerns. In South Australia, agencies such as the Natural Resource Management Education (NRM), and Nature play SA have offered support to help hundreds of sites move forward, into a more sustainable nature based future. With a worldwide Environmental Education (EE) movement fuelled by the likes of Richard Louv"s book 'Last child left in the woods'(Louv 2010)), and Claire Warden's forest school movement, as well as traditional theorist supporting nature based learning, such as Dewey, Montessori and Kolb. It is evident nature-based learning is not just the latest fad, but a sound pedagogical choice for the future.

With every passing generation, children's access to the outdoors and the natural world becoming less and less. Schools and preschool environments, where children spend 15 to 50 hours per week, may be a last opportunity to reconnect children with nature, and help create future custodians of this planet (Malone & Tranter, 2003).

Mobile junk and nature playground Philosophy

We believe when children engage hands on with nature, then a love of nature will grow. To climb a tree, and reflect upon the world from the new vantage point, or to discover the world's biggest centipede under a rock that sat undisturbed next to your backdoor, are nature experiences that you carry for the rest of your life. Many of today's conservationist broke branches off trees to build cubbies, dammed creeks so they could swim, or brought animals home from the bush so they could watch them in more detail. While we don't support wilful damage of nature, we do believe children need to engage, hands on as children do, to really experience nature. Why would a child grow up wanting to save the forest, if the forest was nothing more than a 'look but don't touch' display? It's those memories of interaction with nature that cements the love of nature in us. The other driving philosophy is the place of loose parts. Our motto is "built and designed by kids, for kids". Too many education sites have been created for adults. Children are left with little to do than play with someone else's creation. Dempsey and Strickland (1999) believe 'fixed playground equipment sends the message 'your contribution to design is not valued'. The main theme behind the nature play program is to instil a connection between children and nature through interaction. The ideal way of doing this is to play out in natural forest. When that is not available the next best thing is to bring some of the forest to the play environment.

The Theories.

Nature based learning isn't a new concept. Froebel, mostly noted for his nature-based contribution to preschool education, the Kindergarten, argued back in 1896, that nature based 'learning through doing', was a salient learning tool for all ages (Fröbel & Hailmann 1896). John Dewey (1900, p.8) elaborated on this principle in his book 'School and society', stating, ' we cannot overlook the importance for educational

purposes of the close and intimate acquaintance with nature … with real things and materials', and much of Maria Montessori's theories embraced nature-based learning when she argued 'nature is a teacher, and it teaches the child the most arid part of language. It is a real school with methods. It teaches nouns and adjectives, conjunctions and adverbs, verbs in the infinitive', (Montessori 1949, p.175). In recent times Howard Gardner's theory of multiple intelligence (1998) added 'Naturalist Intelligence' to his ever expanding list, stating, 'due to students possessing abilities in this domain, teaching should attuned learning environments to support it'. David Sobel's book 'Children's special places' (Sobel 2001), looked at fort building and saw it as building blocks towards curriculum design supporting Geography, environmental education and social studies. With a plethora of supporting research (Brody 2005; Dowdell, Gray & Malone 2011; Kaplan 1995; Larson, Green & Cordell 2015; MacQuarrie, Nugent & Warden 2013; Payan 2012) teachers have a wide range of concepts to draw from.

Regulations and kid's creations

I was giving a talk at a recent PD session in an Adelaide childcare centre and we were discussing this rather sticky point. With all the standards attached to play equipment it is, for some people, a little unnerving to see children playing on a construction they created. Some staff enforce a strict building code on children's constructions, stating the roof cannot be higher than 500mm, the support beam must be tested to hold 250 kg and quicksand can be no deeper than 2 inches, while others take a common sense approach and address hazards before they are created. Regulations are law and must be adhered to. Luckily regulations have many grey areas open for interpretation. Regulation 39 in regards to Play equipment (whether fixed or not) states *it must not constitute a hazard to children at the service because of: the height from which a child can fall*. No measurements are given, just the idea if the height is a hazard it should be eliminated.

That's the confusing part. Each educators view on what constitutes a hazard varies. As a childhood danger freak, I would run along roof tops dodging a paddy-melon attack, yet a work colleague gets vertigo standing on a chair. What we see as a hazard differs. Luckily, we have common-sense and realise our interpretation cannot be swayed by our bias. It would be a shame to stifle creativity due to an over cautious interpretation of regulations. In regard to creating risk rich, nature based learning environments one of the main obstacles is this:

National Law: section 167

167 Offence relating to protection of children from harm and hazards

(1) The approved provider of an education and care service must ensure that every reasonable precaution is taken to protect children being educated and cared for by the service from harm and from any hazard likely to cause injury.

Penalty: $10 000, in the case of an individual. $50 000, in any other case.

$10,000 and $50,000 are pretty big numbers. Without a proper examination of this law, you would be forgiven, for creating a giant bubble wrap environment with children straightjacketed (you would have

to incorporate the straight-jacket into a play-based activity in order to not cause mental harm). Upon deeper investigation, grey areas appear. The regulators operational manual (see link below) explains in greater detail what these laws and regulations look like in a real environment.

Authorised officers should be aware the National Law does not require all risk and challenge to be eliminated from children's play or environments. When considering compliance with section 167, authorised officers should look for evidence that approved providers, nominated supervisors and family day care educators have weighed the obligation to protect children from harm against the benefit of providing children with a stimulating play environment. Some risks are acceptable because the benefit to children's learning and experience outweighs the risks. Considerations such as the age of the children, their developmental needs and the manner in which they are being supervised may impact what is considered a hazard. Many factors may contribute to a hazard, such as a poor program, inadequate supervision and worn equipment. **Operational manual pg. 147**

Grey areas such as 'the manner in which they are supervised' put a different light on what constitutes a hazard. At one site I have been at children use power tools such as drills, reciprocating saws and grinders. 'Hey kids help yourself to the box of power tools. If you need me I'll be in the staff room drinking coffee!" Actually it's the opposite. Small groups are informed of the hazards, protective clothing is used, the child using the tool is heavily coached and the educator is either helping hold the tool or supervising intensely. The background of each child is known and their disposition understood. If Sally housecoat is having a bad day, and she left her listening ears at home, today would not be power saw day.

The other piece of interesting text is where it says "Some risks are acceptable because the benefit to children's learning and experience outweighs the risks". That is a guide given to the assessors through their operational manual. They don't define the word 'some' though. The word 'some' is a grey area. In fact the word 'unacceptable risk' is a grey area.

The term 'unacceptable risk' appears in a number of provisions in the National Law and Regulations…. The National Law and Regulations do not define 'unacceptable risk'. This is because the nature and degree of risk to children will vary depending on the particular circumstances.

Operational manual pg. 16

The law is kind enough to allow us educators to use the risk matrix to decide levels of risk. (That's because we are grownups). If a risk is low according to the matrix then that's fine.

Law and regulations also address nature, and nature is a little more black and white, compared to risk.

Regulation 113 Outdoor space—natural environment

The approved provider of a centre-based service must ensure that the outdoor spaces provided at the education and care service premises allow children to explore and experience the natural environment.

The operational manual offers examples of how this can look.

The natural environment needs to include a variety of natural materials. This may include gardens, and pits and dirt patches, pebble/gravel pits, edible plants, shady trees, worm farms, compost areas, and water play areas. Approved providers may bring in logs, rocks, hay bales, tree stumps and potted plants to achieve natural environment requirements. This does not mean that all artificial grass and artificial features need to be replaced, rather that there is appropriate access for children to interact with the natural environment.

Operational manual pg. 176

On a slightly different tangent. I wonder if educators apply the same vigour in avoiding section 167 penalties as they do with section 168 penalties.

168 Offence relating to required programs

(1) The approved provider of an education and care service must ensure that a program is delivered to all children being educated and cared for by the service that—

(a) is based on an approved learning framework; and

(b) is delivered in a manner that accords with the approved learning framework; and

(c) is based on the developmental needs, interests and experiences of each child; and

(d) is designed to take into account the individual differences of each child.

Penalty: $4000, in the case of an individual.

$20 000, in any other case.

I can see a conundrum if an individual child's developmental needs, interest and experiences involve risk rich nature environments.

Links

http://files.acecqa.gov.au/files/OPM/2015%20JUNE/OPM%20BOOK%202015%20FINAL.pdf

National Quality standards (NQS) and nature/risky play.

Risky nature play is supported throughout the NQS Document. One standard of interest to most educators is Element 2.3.2;

'*Every reasonable precaution is taken to protect children from harm and any hazard likely to cause injury'*,

and one of the key factors in standard 2.1 is

'*monitoring and minimising hazards and safety risks in the environment*'.

If examined closely these statements don't advocate eliminating risk altogether. They call for constant monitoring of environments, something most educators do when working in risk rich environments. The NQS guide also asks the question;

How do we ensure children are alerted to safety issues and encouraged to develop the skills to assess and minimise risks to their own safety?

If we are to ensure children are alerted to safety issues, and then ask them to develop skills to assess and minimise risks, can this be done in an environment where we have removed all issues and risks ourselves? Even though risk rich environments are not promoted as visibly as they are in the regulations, they are still evident when analysing these statements.

In Standard 3.2, element 3.2.1 it states;

'*Outdoor and indoor spaces are designed and organised to engage every child in quality experiences in both built and natural environments'.*

The NQS guide goes on to add the outdoor environment should allow children to access areas with natural features such as plants, trees, edible gardens, sand, rocks, mud and water.

Standard 3.1.2 states

'*Premises, furniture and equipment are safe, clean and well maintained.'*

This can cause a little confusion when implementing natural environments, because, traditionally cleaning involves removing dirt. If you remove dirt in a natural environment, then not much is left. Especially a mud pit. So the word clean is subjective. Also the standard says environments should be cleaned regularly, yet doesn't state how often. Where do mud kitchens fit in to all of this?

In the guides introduction to standard 3 is states;

The physical environment plays a critical role in keeping children safe; reducing the risk of unintentional injuries; contributing to their wellbeing, happiness, creativity and developing independence; and determining the quality of children's learning and experiences.

One term I find curious is 'unintentional injuries'. Does that mean there can be intentional injuries? Most literature on risky play says yes.

The introduction also lists physical characteristics of an outdoor environment:

• They are environmentally sustainable

• They promote an understanding of and respect for the natural environment

You can clearly see where recycled loose parts and nature fit in to this standard.

A question the NQS guide asks is;

What elements and features in the physical environment invite open-ended interactions, spontaneity, risk taking, exploration, discovery and connection with nature, and what additional resources can be introduced to provoke interest and more complex and increasingly abstract thinking?

You have to dig deep throughout the standards, however, risk taking is acknowledged as a salient attribute of an outdoor learning environment.

Standard 3.3 is the big one. Sustainability and caring for the environment.

The service takes an active role in caring for its environment and contributes to a sustainable future.

Without hands on engagement with nature, children will have little interest in caring for it. It will be an abstract concept from a book they once read. If you can't take the kids to nature, then bring nature to them. Rocks, mud, sticks, plants and water will enrich their understanding of nature. Also, engaging with recycled loose parts, such as pallets, bricks, barrels and tyres teaches children sustainability concepts such as re-using, and refusing. Refusing is the concept, you can refuse to consume resources if you don't need to. Playing with some old bricks and mud, to build a wall is better for the environment, than buying plastic blocks from a shop. Engaging with these resources opens up many opportunities to discuss sustainability.

A log gorilla and the DECD's literacy indicators.

I was at the Southern Flinders. It was 38 degrees and a hot dusty North Westerly was blowing. This day was a reprieve. Only 32 degrees. With a gentle hot northerly blowing. That's alright though, because I was actually in a lush jungle feeding a baby gorilla some mashed banana. A new friend handed me the crying infant to nurse, while she prepared the mash. Shhh, she whispered to the baby, "it's coming." "She hates waiting for her food" she tells me.

I might have to step back a little. We were crouched under half a ton of sticks piled high on some climbing frames, nursing a baby gorilla sized log, feeding it a mash made from pulverised ochre. I accidently started the gorilla thing by saying I wonder if the roof could hold my weight, as I weigh as much as a gorilla. Ten minutes later a group constructed a gorilla nest, they become gorilla mums, the logs became hungry babies and the rocks were crushed to become baby food.

I love a good theorist. What would have Vygotsky said about this. In one of my favourite bedtime reads, Mind in society (Vygotsky 1978) Vygotsky reasons, when an object becomes a symbol for something else (such as the log becoming a baby gorilla), then higher order thinking is needed. And Vygotsky also sees a continuum from linking a log to a gorilla, to, linking a scribble on a piece of paper to a sound or word. They are both symbolic representations of something. A plethora of research supports this. Schrader (1990) notes many 'studies have suggested that children use similar representational mental processes in both symbolic play and literate behaviour'. Pellegrini and Galda (1993, p.167) argued, 'the symbolic transformation component of symbolic play seems important for the early writing of preschool children'.

Another way research has found symbolic play supports early literacy is the fact it encourages meta-language. My new Gorilla friend was talking to me as a mum gorilla. She was telling me about the woes of Gorilla motherhood, and then without blinking, she became a four-year-old girl, and she asked me where I got the rocks from. This ability shows her understanding of language. Talk like this, and you are a gorilla mum, talk like that and you are yourself. Pellegrini and Galda's research highlights the affordance symbolic play has, when it comes to talking about language.

The DECD literacy indicators have something to say about all of this. One of the four indicators are “I represent my world symbolically”. Understanding conventions of text, being a key element. For my Four year old gorilla mum, using language to flick from Gorilla mum to four year old, and flipping from genre’s, Narrative, to a discussion, show, she is on her way to master the complex world of literacy.

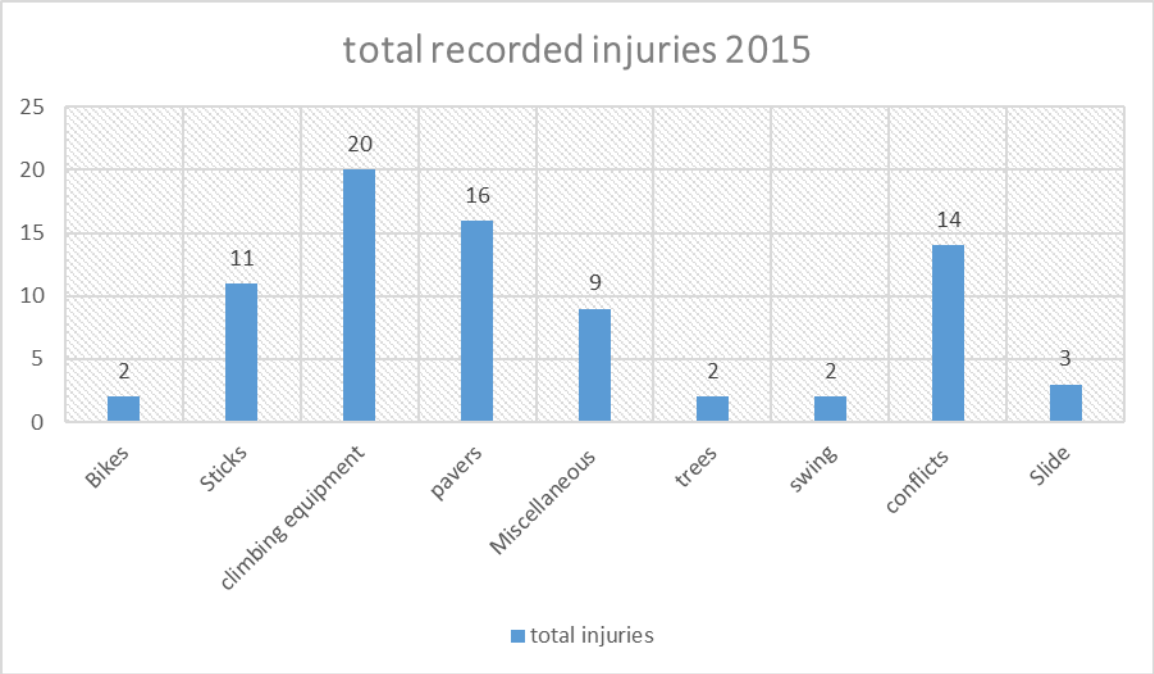
And the last word goes to Singer (1961) who says “abstract symbols provide distance from ‘‘the bondage of direct sense perception’’

Smashing things for fun (or. To smash or not to smash. That is the question)

One thing I have seen a lot of, is smashing things for fun. I know there are some smashers who do it because they are angry and have no wellbeing, but I’m talking about the ones that smash for fun. The way this affects educators can vary. Some think “you little bugger. You’re going down for that”, while others look at it and wonder what is happening in the smashers mind. How can smashing further learning? Is there legal smashing? I have a confession…. I’m a smasher. When I was a kid, my siblings and I ended up smashing every window in the derelict farm cars. In the farm junk pile, we smashed every old window we found. We even smashed up asbestos sheets (it was the 70’s after all). We didn’t smash peoples house windows. That would be wrong. We didn’t smash because we were bad, or angry, we smashed because it was interesting, full of wonder and fun. The sound, the imagery. The way a flat piece of glass would instantly change into a thousand sharp little squares, or a hundred razor sharp knives. I have camaraderie with the exploratory, fun-seeking smashers out there. With my Mobile Junk and Nature Playground I have, what I refer to as, legal smashing. Pounding rocks into dust using railway nails, and hitting drums with sticks as hard as you can. You can even smash yourself around in a plastic 44-gallon drum as you roll down a hill.

Do learning environments cater for the smasher? While I don’t think kindergartens should have a beer bottle smashing wall, however a mud throwing wall would satisfy many smashers urges (Hmmmm, dry mud balls smashing on a wall…sweeeeet). Some may feel that kids won’t be able to tell the difference between legal smashing and ‘illegal’ smashing. Alfie Kohn talks about the teacher’s image of a child as being the starting point on how they teach. If you think smashers are nothing but a bunch of little buggers, then maybe you have a deficit view on children’s behaviours, and you may feel you need to teach ‘smashing’ out of them. If you think children are competent learners, then maybe you will see smashing as a child’s interest and program learning from it.

A normal year at a risk rich preschool learning environment.



I had the opportunity to tally up a kindergarten's recorded accidents for the year 2015. We wanted to see how the risky play environments measured up to the traditional kindergarten play environments. First, a bit of context. The Kindy has nearly 60 kids, split into two groups over the week. When it comes to risky environments, this kindy is up there with some of the best. Kids don't need shoes, they climb trees, they play outdoors, no matter what the weather, loose parts consist of rocks, bricks, logs branches, pallets and lots and lots of mud. Metal spades are used, as well as hot glue guns, hammers and on the odd occasion, power tools. The kindy also has the typical kindy resources, such as low climbing frames, playdough, tricycles and slippery dips.

The severity of the injuries

Like a lot of kindy's, this site recorded most injuries, no matter how slight. The overall tally of 79 injuries makes it look like the kindy is a dangerous place, however you have to factor in, most injuries required a cold compress or a Band-Aid. Grazes, small bruises, and tiny cuts made up 76 reported injuries. Only three injuries required a follow up with a doctor (One needed a tetanus shot, and two needed some doctor glue).

The frequency and the graph.

The graph shows some interesting things. Firstly, the traditional climbing equipment rates the highest. Regulation climbing equipment, on soft fall, accounted for almost double the injury rate compared to stick play, yet stick play is seen as risky play. Bikes, swings and trees saw the same tally, yet some of the children were climbing very high in the trees. Running on pavers is another big ticket item. 4-year olds, feet, and cement pavers are destined to collide. For this data to have any relevance, you would have to understand how often the kids engaged with the resources. It's easy to see why pavers figured so high, as the kids ran on them a million times a day. Conflicts rate high, because you have nearly 30 four year olds together,

and regulation climbing equipment rates high, because……..well I don't know why. Maybe when kids climb on 'safe' regulation climbing equipment, they think they are indestructible and become careless.

Conclusion

One thing the data shows though, is risky nature play doesn't play a big part in the recorded injuries. Metal shovels and bare feet didn't even have one injury, yet playdough did. For a parent or a teacher who wants to get rid of the risky play resources, you would also have to look at getting rid of the pavers, regulation climbing equipment, and other four year olds. This research only has relevance to this particular site. For others, it is just a curious read. I would love to see some big time quantitative research conducted in this area. It would be handy to challenge barriers faced when implementing risk rich play environments.

Multidisciplinary learning through nature, and embodied cognition.

(this was written for primary schools, yet it is still relevant for preschools).

The idea of learning through nature, is that engagement with nature will help multidisciplinary learning. Playing in mud will help students understand volume (maths), particle density (Science), soil types (Geology) and mud properties and how they were used over time by society (Aboriginal studies, HASS). Creating structures from sticks will promote understanding of geometry (maths), structural integrity (Technology and design), and housing construction throughout the world (geography). Observing patterns in pine cones, shells and trees will develop understandings of concepts such as the Fibonacci sequence (maths). There are many more learning opportunities available, in even the smallest of nature areas, and the one thing they all have in common, is the sensorimotor aspect. Piaget (1953) believed children made sense of their world through hands on manipulation of concrete materials. Vygotsky (1978) argued, children didn't make sense of their world by the manipulation of concrete materials, rather the mediation of the manipulation led to learning. Vygotsky's theory of the connection of mind and body, is a theme carried by many theorist and researchers in a line of psychological research called embodied cognition (Anderson 2003; Kontra et al. 2015; Osgood-Campbell 2015). Modern neuroscience also backs up this link. Kontra et al (2015) cites studies where they used fMRI scans to trace brain patterns, finding sensorimotor and cognitive pathways connect. Lakoff and Johnson (1999) suggest, "the same neural and cognitive mechanisms that allow us to perceive and move around also create our conceptual systems and modes of reason". This evidence supports the idea; deeper learning is achieved when cognitive concepts are created alongside sensorimotor activity. One studied showed college students could articulate concepts of force and motion (torque) better, when they used a spinning wheel and axle to manipulate force, while the students who passively observed the demonstration, had a lower test results. Many learning environments focusing on the mind, leaving the body up to P.E. classes. Kontra et al (2015) posit, the neurological system is connected as a whole, and cannot be viewed in isolation. While obvious multidisciplinary learning opportunities, such as measuring sticks, water flow rates, and particle density can be gained through nature based learning, the evidence of embodied cognition suggest, all learning could benefit from hands on manipulation.

Tips on sourcing loose parts

One of the most asked questions we get is 'where do you source all of your loose parts?' We have quite a collection accumulated over the last few years. Most free, some very cheap and nothing retail. We have also met some services that have some amazing scores. The following is a list of sources that we have found as well as a few cool ideas from other services.

- Branches: A cheap permit from some councils allows you to take wood from the side of the road. Even though a lot of it should remain where it lands, if you don't grab it and use it in a natural learning environment someone else will grab it and burn it to keep warm for the night. Arborist (Tree fellers) can be handy to meet. Some of them still remember what it was like to be a kid and are very sympathetic to the nature play cause.
- Logs. Arborist again. One fellow said it's easier to leave the logs intact rather than feed them into their chipping machine.
- Rocks. A lot of farms are full of rocks. They breed worse than rabbits. A lot of farmers would be really happy to see a pile gone.
- Junk. I went to a garage sale and bought some loose parts. (Pots and pans). Around the corner from the garage sale area was the 'it's on its way to the junk yard pile". Lots of free goodies to grab.
- The local wineries have tons of white cardboard that they chuck. It has endless uses. (Cubby roof, walls and signs)
- Vineyard owners are a good source of blue plastic 200 lt barrels. (Make sure they are not poison barrels).
- Cooking oil drums. Most fish and chip shops have heaps. Try and get the ones with the removable lids.
- One kindy got permission to fish around at the local dump.
- I bumped into some resourceful 9 year olds who asked a bloke at a building site if they could have some wood. He said you can grab whatever you want from the giant bin. They came back with piles of 2x4's a metre long.
- Most areas have a free give away facebook page. Check it out.
- Irrigation businesses can be a great source of pvc pipe.
- Horse people have heaps of twine.

One of the best resource suppliers are the families that use the service. Once they see the loose parts in use they start to notice resources laying around their homes and places of employment. When you are chatting about the child's day of learning, and engagement with loose parts, inquire whether they have similar stuff.

Mobile Junk and Nature resources

The Dirty side

Throughout history, mud, dirt, dust and soil have often been given negative connotations (Curtis, 2007). Soiling your pants, getting muddy, and being dirty are concepts most of us avoid. White and Stoecklin (cited in MacEwan, MacEwan, & Toland 2017) discuss the concept of biophobia as a fear of nature. It has been noted that children denied access to all aspects of

nature (Mud, weather, animals, fire) in the first 2 years of life will probably develop aversions to mud, dirt, insects and weather extremes (Nedovic, & Morrissey 2013).

Once, I would wash all of the playground resources after each session. Two things bothered me. Firstly; I am promoting sustainability, yet I am using lots of water for no other reason than to make resources look presentable to the person who thinks dirt is unhygienic. Secondly; I am promoting nature play, yet I am washing a pile of nature (dirt) down the drain every day. I made a pedagogical decision to leave everything muddy. By bringing in muddy resources I am defending nature and denouncing the demonising of it and I am also showing children how other children have previously used the resources. Often the blue barrels would have muddy hand prints on them, and the cubby building tarps would be covered in mud writing (children's names, and warnings such as 'no boys allowed!").

Mud

Another way I address the problem of biophobia is by ensuring mud is a part of every session. The average Mobile Junk and Nature playground session goes through 20+ litres of mud. Most of the mud is sourced from a quarry at Gawler river. It has a high clay content, and is bought by the ton (not that the quarry has ever accepted my money). Now and then I sourced red clay and black Biscay from my neighbours in the Barossa. Many children, upon seeing mud for the first time, vocalise their disgust. However, once they see their peers engaging in mud play, most join in (some surpassing their mud loving peers in the intensity in which they engage). The mud can be used for mud kitchen cooking (mud soups, chocolate cakes, meat balls or poo stew), throwing, painting (body paint or footpath paint), modelling and eating. Did I say eating? While Curtis's (2007) research on the history of dirt aversion highlights developing humans wish to remain strong and disease free, modern times have seen it taken too far, and now global health concerns are emerging. The human body requires a balanced microbiota (gut flora) and the over use of sterilised environments and cleaning agents is seeing the gut ecosystem become unbalanced. This has led to, what some refer to as, a pandemic of allergies and other atopy issues (Rook, & Brunet 2002).

Eating Dirt, mud and dust is part of a healthy child's life. They can't avoid it. Babies put everything in their mouth, toddlers eat with dirty hands, and airborne dust gets inside of everybody. A balanced intestinal ecosystem has a way of sorting out the bad from the good. It is this action that builds a strong immunity system, and without contact with the Earth's microbiota children's immunity systems will be compromised (Callahan 2003). Not only does playing with dirt benefit the health of children, it can also be used to connect children to the soil. MacEwan, MacEwan, and Toland (2017) suggest this connection is paramount in creating future guardians of earths soils. For without soil we have no life. So, playing with mud saves children and the Earth. What else is it good for in an early years learning environment? The following text box list some (not all) of the learning witnessed at a kindergarten over a 6-week period.

Mud Kitchen

Here is a list of mud kitchen learning witnessed at a preschool over a 6-week period

- Mud develops creativity. A wet sloppy pile of mud became a chocolate stew in the mud kitchen. When children use their brains to pretend, theorist identify this as "Higher order thinking". Developing creativity and 'higher order thinking sets the learner on the road to great things.
- Numeracy. Understanding fractions. "only half fill it"
- Numeracy. Counting. "We need a plate for everyone. 1,2,3,4. Four plates"
- Numeracy. Classification. "All the spoons hang up there and all the tongs there"
- Literacy. Menus and recipes.
- Exploring society's values. How do you behave in a fancy restaurant? You speak in a different voice (posh) and use manners.
- Roleplaying observed kitchen behaviours. "Go and sit down, I have hot stuff!" . When children role play they get to test out various social situations in the safety of play.
- Literacy. In play children often use spoken procedural text. "Can you go and get some mud in this container and put it on the stove. Don't forget to put onion in it."
- Emotional and social skills. Cooperation, taking turns, sharing favourite resources, self-regulation of emotions, conflict resolution.
- Developing fine motor skills. Using pouring implements, salt shakers, teaspoons, cups.

Mud Pit

Here is a list of rich learning facilitated by mud play and dam building at a preschool over a 6 week period

- Testing theories. (the scientist) One child thought the water would flow all the way to the foot path. It didn't. It flowed to a nearby hole. Hypotheses wrong. Time to re-think.
- Mud develops creativity. A wet lumpy pile of mud became a wolf trap.
- Language development. Mud extends vocabulary. Instead of using only the noun 'Mud' children will add an adjective and say 'squishy mud'.
- Language development. Learning new words and using them in play context. Dam. Dam wall. Overflowing. Draining.
- Sense of belonging. Theorists note, children need a sense of belonging in order to develop healthy learning dispositions. Belonging is also the first part of the learning framework Belonging, Being Becoming. The children know they belong to this environment.
- Emotional development. Celebrating achievement when they built a successful dam. "We stopped the water!"
- Testing theories. "That wall will be strong enough to stop the water"
- Numeracy. Describing the depth of the mud dam. "It's deeper now!"
- Numeracy. Describing amounts. "We need more Mud!. Big shovel fulls!"
- Numeracy. Location. The water goes down there, through that pipe and under the fence.
- Literacy. Recounting stories. "We filled the top up with rocks and the water went down and it went over the side and into the Gruffalo trap. We had to dig it out with buckets"

Rocks

Every session contains about 40kg of rocks. Sandstone, ochre, clay and ironstone. Mortar and pestles made from railway sleeps and rail nails are used to crush the rocks into powder. Learning within these resources is multi-dimensional. First, the properties of rocks are examined first hand. Some rocks are hard to crush, some are easy. Some make coarse sand, others fine dust. Red rocks can be black on the inside, and yellow rocks can be purple inside. First hand manipulation can challenge children's alternative science concepts. Skamp (2012, pp 61-70) refers to this as thinking and working scientifically. The children become scientist, and construct questions about their world. Why is the rock a different colour? How come this one is hard to crush? Why are their lines inside?

Another learning opportunity is how it connects children to nature. Once the rocks have been crushed into powder they can be turned into paint. MacEwan, MacEwan, and Toland (2017) examine the role of

aesthetics and how it can build connections between children and soil. Instead of rock, dust and mud being viewed as dirty and messy, the children can see the vibrant natural colours it offers. The paint is used to decorate cubbies, faces, arms, trees and footpaths. On an artistic note, children can broaden their understanding of colours. The crushed rock paint can be reddy-brown, dark brown, yellow, or brownie black (imagine getting a paint sample brochure and trying to find the commercial names to match the mud colours).

Another valuable learning opportunity found at the rock crushing area is self-risk assessment, and resilience. While the travel of the pestle (railway nail) is limited by a chain, it can still cause minor injuries if the child crushes their fingers. Many children do crush their fingers. Most then decide to try again, and this time take extra care to keep themselves safe.

Cubbies (slightly less dirty than soil)

There was a time when the children would go down to the local creek and spend all day building great forts and cubby houses. A grand cubby house was not something that your Dad bought from Bunnings or something a cubby house designer installed in your backyard, looking like a miniature mansion and costing nearly as much! Cubby houses and forts grew from a ramshackle collection of broken branches and old sheets of galvanized iron or whatever else was available. Sometimes the cubby house or fort would collapse all around you and you would rock up home with a few more bruises. These are badges of honour and certificates in mastering the act of cubby house building. Tim Gill (2007), a world leading thinker in the area of risk benefit assessment says this is a dying art in the modern bubble wrap world and it is leading to an increase in children's injuries as the modern child is not developing risk assessment skills. Using branches, sticks, and stones to create cubby houses helps children develop strong problem-solving skills, develop socials skills, resilience and cognitive skills (Dempsey, & Strickland, 1999; Maxwell, Mitchell, & Evans, 2008; Nicholson 1972, Gibson, Cornell, & Gill, 2017). Renowned natural playground designer Adam Bienenstock says that standardised playgrounds standardize children's creativity. The open-ended nature of sticks and rocks develops creativity. The children are the designers and builders of their play environments. We supply over a ton of branches, rocks, sticks, recycled tarps and ropes. The following text box highlights many observations of learning witnessed when engaged with stick construction.

Examples of learning witnessed during cubby building.

DECD Numeracy key element: *Use properties of shape to make things fit, balance and transform.*

A group needed a door for the cubby, so they found a 'door' shaped pallet that did the job

DECD Numeracy key element: U*se measurement to compare objects, events and space.*

During cubby construction some children needed stick lengths equal to the ones they had already been using. They took a sample (a measuring stick) over to the wood pile to compare and select suitable lengths.

Examples of learning witnessed during cubby building, cont'd.

DECD numeracy key element : *Recognise that the principles of measurement do not change*

A child measured a stick with his feet and said the stick was 7 feet long. I measured it with my feet and said it was only 4 feet long. He said you can only measure using his feet.

DECD Literacy key element*; Use increasingly sophisticated language to connect and communicate*

Children can develop language through interactions with peers and adults. One child comments on the sturdiness of the structure. While the other listens on. Soon they are all commenting on how sturdy the structure is. The word "Sturdy" becomes the word of the day. Later, one of the children tries out his new word and tells another how 'sturdy' his new shoes are.

DECD literacy indicator: *I represent my world symbolically*

While building a cubby the children drew a Jolly Roger and stuck it on like a flag. The cubby now became a 'pirates' fort.

DECD Literacy key element*: Respond to sounds and patterns in speech and stories*

Some children were talking like pirates and shouting about swords and cannons. One child dropped the pirate talk and asked where his friend was. Once he was satisfied he resumed the pirate talk. This group understood language patterns and sounds are different between pirates and preschoolers.

DECD literacy key element: *Understand conventions of texts.*

The children had just built a cubby which morphed into a restaurant kitchen. They created menus, and written recipes to support the play.

DECD literacy key element: *Maintain a reciprocal shared conversation*

A group of children were constructing a cubby. Throughout construction they discussed what sticks they needed, where they should go, and how they should be attached. The all shared input, and many of their ideas were augmented through further discussions. For instance, one child said a tyre could be used to hold some sticks together, then another added the tyre would slip, so rope was needed as well.

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RISK BENEFIT ASSESSMENT

Location / Activity:	Mobile Junk and Nature Playground	**Date:**	2022
Assessor:	G Wagland	**Review date:**	2024

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Your overall risk rating – Low, medium or high – is based on your judgement about whether the BENEFITS of the activity or opportunity outweigh the RISKS.

ACTIVITY	How will young people BENEFIT from this activity?	Possible hazards	PRECAUTIONS in place to reduce the risk of injury	Overall risk RATING: L/M/H
Building using sticks, pallets and metal frames.	• Building self-confidence • Develop core body strength, plus arm and hand muscle development • Mathematical concepts; measurement, geometry and probability • Problem solving, prediction. • Learning through experience: accidents from which one might learn • Engagement with natural environment and natural elements • Potential for incorporation into imaginative games; e.g. building a jail, trap, house or ship. • Sensory integration. (vestibular, proprioception, and interoception)	• Bruises, grazes and abrasions due to sticks falling or being mishandled • Children creating 'entrapment' areas	• All sticks have had sharp ends cut at right angles and small sharp branches have been flattened • Choice of branch size (diameter no larger than 5 centimetres) reduces weight. • Pre-form frames are braced at right angles to prevent toppling over. • Supervision is heaviest at the beginning and reduces as the group experience grows. Supervision on areas such as children creating entrapment areas during large constructions, and excessive fall heights should be monitored and dynamically risk assessed. • Children are instructed in basic safety concepts such as 'watch the ends of the stick as you manipulate it. • An area around the construction is kept clear • Children who are misusing the equipment will be removed until they are ready to engage in a safe manner.	Low (based on matrix below)

ACTIVITY	How will young people BENEFIT from this activity?	Possible hazards	PRECAUTIONS in place to reduce the risk of injury	Overall risk RATING: L/M/H
Rock crusher	• Learn the different properties of rocks. Some consist of fine particles while others have fine particles • Learn about Indigenous Culture. Crushing rocks had many uses throughout pre-colonisation history. • Self-assess risks • Build fine motor skills • Build gross motor skills. • Develop hand to eye coordination.	• Rock fragments may get into the eyes • Fingers may get crushed with metal pegs.	• Chains are attached to the crushing pegs to limit the travel of the arc. • Rocks that don't split, or send out shards are used (Calcrete, clay and sandstone) • Children are supervised and alerted to possible hazards. • Crushing pegs have round heads and can't cut.	low
Playing in the blue barrels	• Numeracy skills (understanding properties of 3d shapes such as cylinders roll, things tumble inside) • Build resilience to low level bumps and knocks • Learn that resources can be source from recycled material • Social development, as they work out how to use spaces together. • Problem solving skills (how to move their body to get the barrel to roll) • Gross motor development. Using core strength to roll the barrel • Coordination as they role the barrel • Self-risk assessment as they decide what grade slope to roll down. • Sensory integration. (vestibular, proprioception, and interoception)	• Abrasions and bruises from rough use or rolling down steep slopes • Bruises from rolling into others.	• Inside edges of the barrels have been sanded smooth • Gradients of slopes are assessed beforehand and children are notified whether they are safe. • Supervision is heavy to begin with, as children learn how to use them in a safe manner. • Children misusing barrels are given options to engage in a safe manner, or find a less hazardous activity to engage in. •	Low

ACTIVITY	How will young people BENEFIT from this activity?	Possible hazards	PRECAUTIONS in place to reduce the risk of injury	Overall risk RATING: L/M/H
Using Tarpaulins, nylon fabric	• Problem solving • Creativity • Understanding wind movement. • Numeracy (i.e. area, coverage)	• Suffocation due to fabric being tightly wrapped around their face or neck.	• The fabric is very smooth, and slippery. Unlike, softer, non-woven plastics, it doesn't hold tight on to skin. • Students will be supervised at all times, and if any child wraps their head in the fabric, the hazard will be pointed out to them.	low

This document can be used to identify the level of risk and help to prioritise any control measures.
Consider the **consequences** and **likelihood** for each of the identified hazards and use the table to obtain the risk level.

			Consequences				
			1 – Insignificant Dealt with by in-house first aid, etc	**2 – Minor** Medical help needed. Treatment by medical professional/hospital outpatient, etc	**3 – Moderate** Significant non-permanent injury. Overnight hospitalisation (inpatient)	**4 – Major** Extensive permanent injury (eg loss of finger/s) Extended hospitalisation	**5 – Catastrophic** Death. Permanent disabling injury (eg blindness, loss of hand/s, quadriplegia)
Likelihoo	**A -**	Almost certain to occur in most circumstances	High (H)	High (H)	Extreme (X)	Extreme (X)	Extreme (X)
	B -	Likely to occur frequently	Moderate (M)	High (H)	High (H)	Extreme (X)	Extreme (X)
	C -	Possible and likely to occur at some time	Low (L)	Moderate(M)	High (H)	Extreme (X)	Extreme (X)
	D -	Unlikely to occur but could happen	Low (L)	Low (L)	Moderate(M)	High (H)	Extreme (X)

	E -	May occur but only in rare and exceptional circumstances	Low (L)	Low (L)	Moderate (M)	High (H)	High (H)

How to Prioritise the Risk Rating

Once the level of risk has been determined the following table may be of use in determining when to act to institute the control measures.

Extreme	Act immediately to mitigate the risk.Either eliminate, substitute or implement engineering control measures.	Remove the hazard at the source. An identified extreme risk does not allow scope for the use of administrative controls or PPE , even in the short term.
High	Act immediately to mitigate the risk. Either eliminate, substitute or implement engineering control measures. If these controls are not immediately accessible, set a timeframe for their implementation and establish interim risk reduction strategies for the period of the set timeframe.	An achievable timeframe must be established to ensure that elimination, substitution or engineering controls are implemented. **NOTE:** Risk (and not cost) must be the primary consideration in determining the timeframe. A timeframe of greater than 6 months would generally not be acceptable for any hazard identified as high risk.
Medium	Take reasonable steps to mitigate the risk. Until elimination, substitution or engineering controls can be implemented, institute administrative or personal protective equipment controls. These "lower level" controls must not be considered permanent solutions. The time for which they are established must be based on risk. At the end of the time, if the risk has not been addressed by elimination, substitution or engineering controls a further risk assessment must be undertaken.	**Interim measures until permanent solutions can be implemented:** • Develop administrative controls to limit the use or access. • Provide supervision and specific training related to the issue of concern. (See Administrative Controls below)
Low	Take reasonable steps to mitigate and monitor the risk. Institute permanent controls in the long term. Permanent controls may be administrative in nature if the hazard has low frequency, rare likelihood and insignificant consequence.	

Hierarchy of Control Controls identified may be a mixture of the hierarchy in order to provide minimum operator exposure.

Elimination	Eliminate the hazard.
Substitution	Provide an alternative that is capable of performing the same task and is safer to use.
Engineering Controls	Provide or construct a physical barrier or guard.
Administrative Controls	Develop policies, procedures practices and guidelines, in consultation with employees, to mitigate the risk. Provide training, instruction and supervision about the hazard.
Personal Protective Equipment	Personal equipment designed to protect the individual from the hazard.