Mud Play
Introduction

Magical Mud Play invites practitioners to rediscover mud as one of the most valuable and versatile resources for outdoor learning in the early years.



What is mud play and why do we encourage it?

Often seen as something to avoid or clean up, mud is in fact a powerful tool for play, exploration, and development; offering children rich sensory experiences that support learning across all areas of the curriculum.

This chapter aims to build practitioner confidence in using mud as part of everyday provision. Mud play does not require specialist equipment or large outdoor spaces; it can be created with simple materials and adapted for any setting. When offered as open-ended play, mud naturally encourages children to lead their own learning through curiosity, imagination, and hands-on exploration. Magical Mud Play is not about setting up perfect activities, but about creating the conditions for meaningful play to happen.

By embracing mess, uncertainty,and experimentation practitioners can support children's physical development, emotional wellbeing, creativity and connection with the natural world, whilst developing a strong playful culture of outdoor learning within their setting.

Simple Ways to Offer Mud Play

Mud Kitchen: pots, pans and natural materials for role play and imagination.
Dig Pit or Digging Area: for physical play, investigation and exploration. Soil Creation: mixing soil, sand, water and leaves to make different textures.
Small World Mud Play: using figures, animals and natural objects.
Mark-making in Mud: sticks, brushes or fingers for drawing and early writing.

Physical and Sensory Development

Mud play supports children's physical development through lifting, carrying, digging, pouring and squashing. These movements strengthen muscles, improve coordination, and build fine and gross motor skills. The rich sensory experience of mud – its texture, temperature, smell and resistance – also supports sensory integration and body awareness. ***This helps children to understand their bodies in space and develop the physical confidence needed for more complex movement and play.***

Emotional Wellbeing and Self-Regulation

Playing with mud can be calming, grounding and deeply satisfying. The repetitive actions of scooping, mixing and pouring help children regulate emotions, release stress and feel more settled in their bodies. Mud play also supports resilience and confidence, as children take manageable risks and experience trial and error in a safe way. ***Over time, this can contribute to improved emotional regulation, concentration and a stronger sense of wellbeing.***





Creativity, Imagination and Learning

Mud is an open-ended material with no fixed outcome, making it ideal for imaginative play. It becomes soup, cake, cement, potions or landscapes, depending on the child's ideas. Through mud, children naturally explore early science concepts such as change, cause and effect, volume, texture, and transformation, while developing rich language and social skills through shared play. ***This kind of exploratory learning supports curiosity, problem-solving, and deep engagement with the world around them.***

Mud Play
Setting the Foundations

A strong mud play environment is not about creating a perfect or elaborate space, but about offering children regular access to simple, well-considered opportunities to explore soil and water through play.



What Mud Play Looks Like in Practice

In a good setting, mud play is seen as a normal and valued part of outdoor provision, not a special event. It is available often, supported by confident adults, and embedded into daily routines. Mud play works best when it feels intentional but not over-managed.

The aim is not to avoid mess altogether, but to make it manageable, purposeful and enjoyable for both children and practitioners. With a few clear systems in place, mud play can remain contained, safe and easy to maintain. Mud can be offered in many flexible ways; such as using tuff trays indoors, digging up a small square of turf outdoors or filling a car tyre or large container to create a dedicated mud area.

Practical Foundations for Successful Mud Play

- Clearly define where mud play happens (a specific area or zones).
- Use boundaries such as trays, crates, edging or ground mats.
- Provide limited but purposeful resources (avoid overcrowding.)
- Have simple routines for washing hands and changing clothes.
- Offer waterproof clothing and encourage appropriate footwear.
- Model positive attitudes to mess and exploration.
- Involve children in tidying, resetting and caring for the space.

Digging and Mixing Zone

A digging and mixing zone provides opportunities for physical exploratory play through digging, scooping, transporting and pouring. Tools such as spades, buckets and containers support coordination and problem-solving. Practitioners can extend learning with simple prompts while allowing children to lead. This zone supports physical development, early science, and emotional regulation through repetitive, grounding actions.

Small World and Mark-Making Zone

This zone allows children to use mud for storytelling, representation and early writing. Using small figures or natural objects, children can create landscapes, tracks and imaginary worlds. Mark-making tools such as sticks, fingers or brushes allow children to draw, trace and experiment with symbols. This creates a strong link between sensory play and early literacy.
This zone supports creativity, language development, and symbolic thinking through open-ended play.

Mud Making Zone

A mud-making zone focuses on the process of creating mud and encourages children to explore how soil and water interact. Children can pour, mix, stir and adjust materials to create different textures, from dry and crumbly to thick and gloopy. This area can be set up using trays, tubs or buckets with soil, sand and water alongside simple tools such as spoons, scoops and jugs. Practitioners can support learning by asking open questions without directing the play. This zone supports early scientific learning about materials and change, while offering rich sensory experiences that build language, concentration, and self-regulation.

From Risky Play to Dirty Play Research

why young children need 'dirty' nature play in their lives

Alexia Barrable & Jake M. Robinson

Mud Play
Reflecting on Experiences

The Magic of Mud activities provide a purposeful framework for using mud as a meaningful learning resource within the nursery environment.



Integrating the Magic of Mud in Nursery Practice

Through the six, carefully designed activities, children engage in sensory exploration, imaginative play, early mark making, communication, and problem-solving.

These experiences support key areas of development while promoting curiosity, resilience, and independence.

Importantly, they also open the door to a much wider world of mud and soil exploration, encouraging practitioners to see these activities not as a complete programme, but as a starting point from which further ideas, investigations, and child-led projects can grow. When embedded into everyday practice, mud play becomes more than an outdoor activity; it becomes a consistent, valued part of the learning culture that encourages children to explore, experiment, and express themselves freely.

Six Magic of Mud Activities

- Integrated into continuous outdoor provision.
- Offered two to three times a week, with opportunities for repetition.
- Used as adult-led, adult-supported, or child-initiated experiences.
- Adapted to suit different ages, abilities, and interests.
- Refreshed regularly by changing resources and muddy zones.

Embedding Mud Play into Daily Practice

Mud play is most effective when it becomes a familiar part of the nursery routine rather than a one-off activity. Offering open-ended experiences allows children to explore mud in their own ways, make independent choices, and follow their own ideas without a fixed outcome. Regular opportunities enable children to revisit experiences, build confidence, and deepen learning through repetition, exploration, and sustained shared thinking.

Keeping the Magic Alive Outdoors: An Outdoor Lead

Having an identified outdoor lead, just as you would have a room lead, supports high-quality outdoor provision. The outdoor environment is a rich and valuable area of learning that needs a dedicated practitioner to thoughtfully plan, observe, and reflect. By maintaining resources, responding to children's interests, and making intentional changes to muddy zones, the outdoor lead helps keep outdoor learning alive, nourished, and meaningful.





Following Children's Interests Through Mud

When muddy zones reflect children's current interests, engagement and sustained play increase. Practitioners can enhance mud play by adding resources linked to these interests, such as small world figures, vehicles, natural materials, or story prompts, allowing children to create narratives, explore ideas, and make sense of the world around them. Responding to children's fascinations in this way ensures mud play remains open-ended, relevant, and deeply supportive of learning and imagination.

Mud Play
And the Gut Microbiome

Early childhood is a critical time for the development of the gut microbiome, the collection of beneficial microorganisms that live inside the digestive system.



Microbiome Through Nature

Research increasingly shows that young children benefit from regular contact with natural outdoor environments, including soil and mud. In nursery settings, mud play offers a safe, meaningful, and developmentally appropriate way for children to engage with the natural world while supporting both physical health and emotional wellbeing.
Modern childhood has become increasingly indoor-based, with high levels of cleanliness sometimes limiting natural microbial exposure (Gill, 2014).

Nursery settings play an important role in modelling a healthy balance; allowing children to engage in mud play while maintaining good hygiene routines such as handwashing before meals. This approach supports children's physical health, while also reducing anxiety around dirt and germs, helping them develop confidence rather than fear.

Through regular mud play, nursery-aged children may:

- Be exposed to a greater diversity of natural microorganisms found in soil.
- Support the development of a healthy gut microbiome during early childhood.
- Help their immune systems learn to distinguish between helpful and harmful microbes.
- Avoid over-sanitisation by developing a balanced relationship with dirt and hygiene.
- Build resilience and wellbeing through regular contact with natural environments.

Building a Healthy Microbiome Through Nature

Studies suggest that exposure to diverse natural environments in early childhood supports the development of a varied gut microbiome, which plays a role in immune function and overall health (Rook, 2013; Hanski et al., 2012). Mud and soil contain a wide range of naturally occurring microbes that differ from those found indoors. When nursery-aged children dig, mix mud, and explore soil, they encounter these microorganisms in a gentle and natural way; helping their bodies learn to respond appropriately to the world around them.

Building Strong Immune Systems

Research suggests that early exposure to a diverse range of natural microorganisms plays an important role in shaping the gut microbiome and may contribute to a more resilient immune system later in life. During nursery-aged years, experiences such as mud play allow children to come into gentle contact with soil-based microbes that are largely absent from indoor environments. Studies including Rook's Old Friends Hypothesis (2013) and research (Hanski et al., 2012) indicate that regular interaction with natural





environments in early childhood helps the immune system learn appropriate responses, reducing the likelihood of overreacting to harmless substances as children grow older. By provid-ing regular, well-managed opportunities for mud play alongside good hygiene practices, nurseries support the development of healthy immune foundations without promoting unsafe behaviours.

Mud Play
Further Thinking & Reading

For practitioners who already feel confident facilitating mud play, development lies in deepening pedagogical understanding through engagement with research, theory and reflective practice.



Expanding Practice Through Reading

Exploring academic literature can strengthen professional knowledge, support critical reflection, and provide an evidence base for advocating high-quality outdoor provision within settings and the wider early years sector.
Further reading enables practitioners to move beyond what works towards why it works; developing a more intentional and informed approach to outdoor learning. Research into play theory, nature connection, sensory development, wellbeing, and the emerging science of the gut microbiome offers valuable insights into the long-term benefits of nature-based play experiences. Practitioners are encouraged to access peer-reviewed journals, Early Years research organisations, and professional networks listed below. Engaging with research supports practitioners in becoming reflective, confident advocates for outdoor play, and in continually evolving their pedagogy to meet the needs of children, communities and environments.

Research:

- Early Childhood Research Quarterly
- British Education Research Journal
- Learning through Landscapes' website
- International Journal of Early Childhood
- Froebel Trust
- Outdoor Play and Learning resources (OPAL)
- University open-source research articles.

Impact of Nature-Related Activities on Gut Microbiome

This peer-reviewed study links nature-based play activities with changes in gut microbiota and improved psychosocial behavior among early years aged children, offering biological evidence relevant to mud play and microbial exposure, immune health, and emotional well-being in early childhood. While not exclusively "mud play," it directly supports theoretical links between natural soil play and physiological/behavioural benefits.

(Impact of outdoor nature-related activities on gut microbiota, fecal serotonin, and perceived stress in preschool children: the Play&Grow randomized controlled trial - PMC)

Why young children need 'dirty' nature play in their lives

This peer-reviewed research explores the concept of "dirty play", play involving soil, mud, and similar materials, as developmentally beneficial for children's physical health and regulatory capacity when thoughtfully facilitated. Though the full text may require academic access, the abstract and context point directly to the developmental benefits of nature/mud play.

(Full article: From risky play to dirty play: why young children need 'dirty' nature play in their lives)





Effective Learning Environments for Early Childhood

This peer-reviewed article explores how nature-based play environments, including earth and mud play, support early childhood development; particularly sensory, motor, cognitive; and social-emotional domains. It highlights the role of sensory play, manipulation of materials, and natural affordances in children's learning and development and ties these directly to outcomes foundational to early years practice.

(Effective Nature-Based Outdoor Play and Learning Environments for below-3 Children: A Literature-Based Summary - PMC)

Mud- Next Steps

Integrating the Magic of Mud in Nursery Practice

Once the Magic of Mud activities, muddy zones, and the role of an outdoor lead are established, the next steps focus on deepening learning and allowing exploration to grow organically from children's interests.



Mud play naturally opens the door to a wider world of soil, nature, and outdoor investigation; offering countless opportunities to extend understanding over time.

By maintaining and thoughtfully enhancing muddy zones, practitioners can support sustained engagement while keeping experiences open-ended and child-led.

Introducing new resources, stories, and real-life investigations encourages children to make connections, ask questions, and develop a deeper relationship with the natural world.

These next steps place emphasis on care, curiosity, and respect for living things, helping children build empathy and early environmental awareness through meaningful, hands-on experiences.

Next steps after introducing the Magic of Mud:

- Maintaining and refreshing muddy zones to keep them engaging.
- Extending learning through open-ended enhancements and provocations.
- Introducing stories, poems, and non-fiction texts linked to mud or nature.
- Providing opportunities for bug hunts and soil exploration.
- Exploring worms and other underground life to build empathy and understanding.
- Supporting children to identify common plants, creatures, and natural objects.
- Encouraging care, respect, and responsibility for the natural world.

Worms: Earth's Underground Superheroes

Exploring worms gives children a deeper understanding of how the natural world works and how living things are connected. Through first-hand experiences, children learn that worms eat dead plants and turn them into rich soil, soil helps plants and trees to grow, and trees make the fresh air we breathe — showing children that worms are truly the Earth's superheroes.

Nursery is often the first place where children have the time and space to explore life underground, ask questions, and develop empathy for living creatures. By teaching children to handle worms gently and explaining that a worm can only be held for five seconds because it needs to stay in the soil to breathe, practitioners help build respect, care, and a lasting love for the natural world.





Extending Learning Through Exploration and Literature

Mud play can be deepened by introducing stories, poems and non-fiction books linked to soil, nature, and outdoor environments. These texts can inspire new ideas, vocabulary, and imaginative play within muddy zones. Simple provocations, such as story characters, natural loose parts or questions posed by adults, help extend learning without directing it.