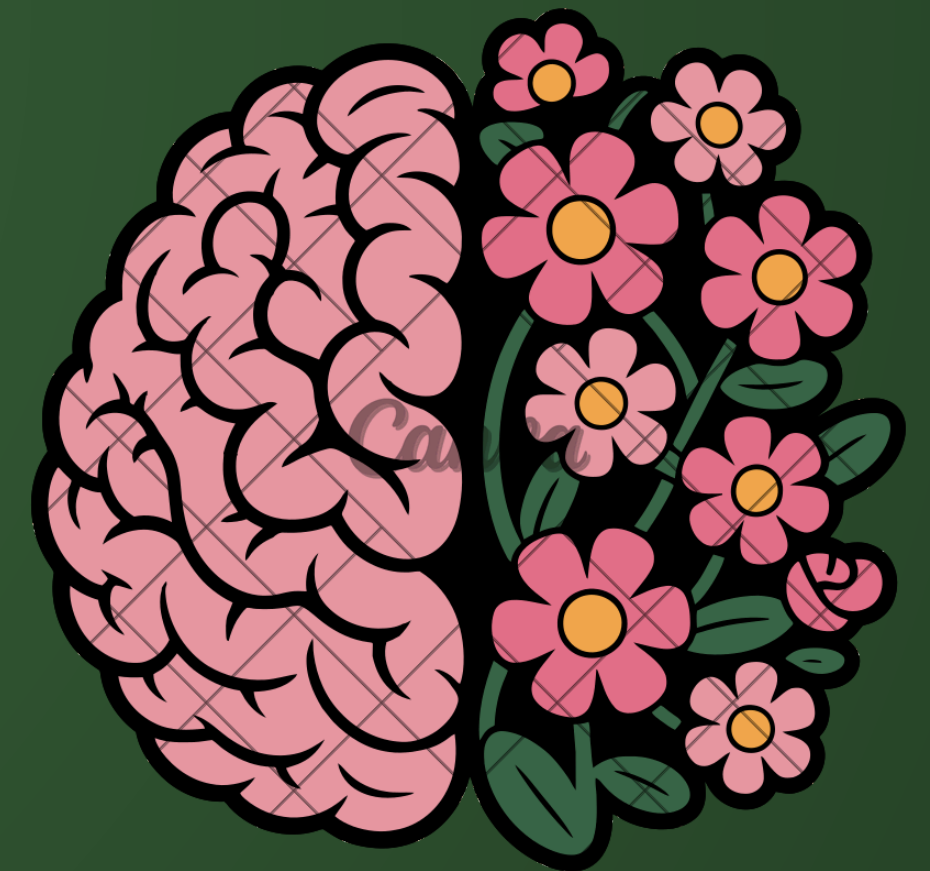
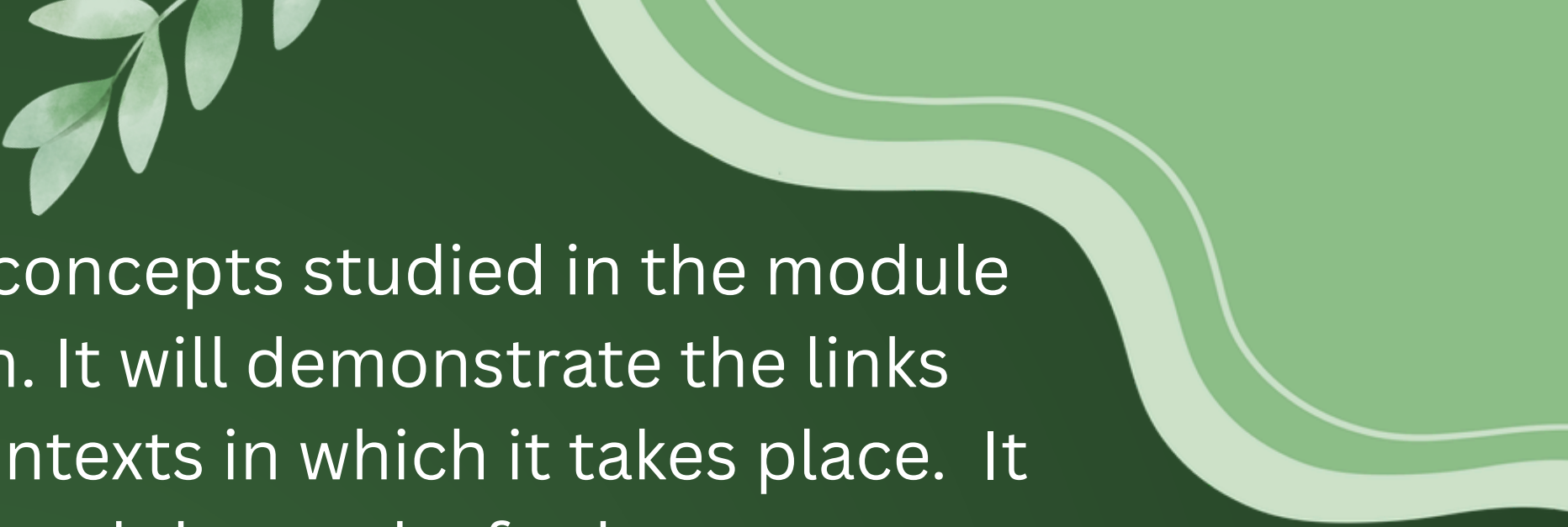


Enquiring Minds

5 key concepts that are
significant for 21st
century education.





The digital portfolio will reflect upon up to 5 key concepts studied in the module and their significance for 21st century education. It will demonstrate the links between enquiry and learning and the range of contexts in which it takes place. It will also consider my personal creativity and the work of others.

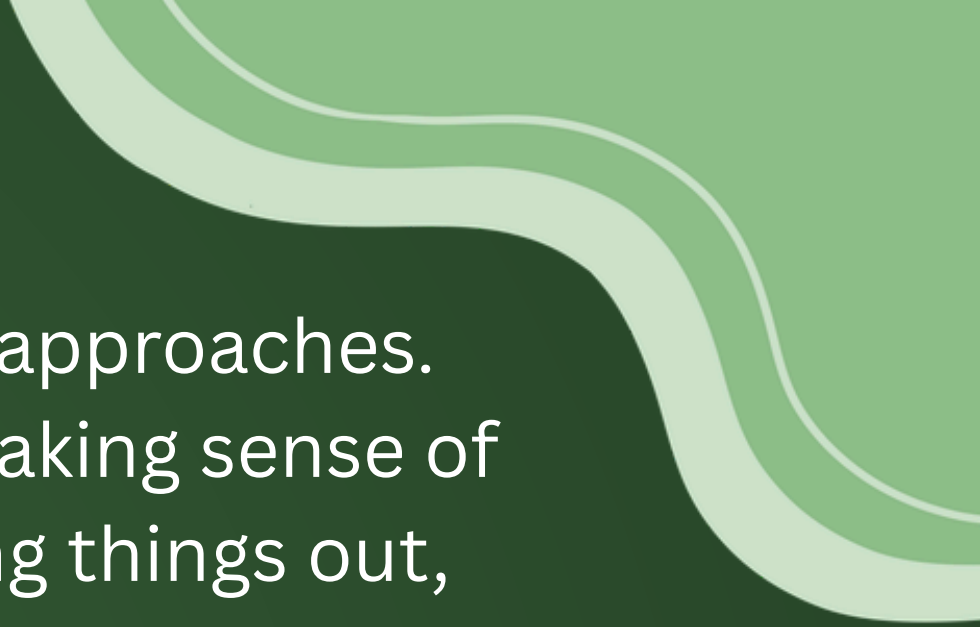
The five different creative approaches explored are: scientific play, creative writing, the Leonardo Effect, creative play and the mantle of the expert. Each section of the portfolio will explore one creative approach and a reflection on its significance in education today. The links between enquiry and learning within each approach will also be discussed. Furthermore, consideration to where in education the approach can be/is used will be examined. I will also reflect on my experience of this approach and relevant academic literature will be sourced to support this reflection.



Creative approach 1: Scientific Play

Fleer (2019[LD1]) challenges that “little is known about how scientific reasoning in guided imaginative play” and how this “can be designed into play-based teaching programs so that preschool teachers intentionally engage young children in scientific thought in play-based settings.” Furthermore, Fleer’s (2019) literature review suggests that “Teachers have difficulties with inquiry-based approaches” as “children have different developmental capacities, do not readily ask scientific questions that can be used as the basis for the inquiry” and teachers themselves “lack confidence in their knowledge of science concepts.”

Fleer (2019) opted to implement a “Playworlds approach to teaching science content to young children” with the aim of “understanding the pedagogical practices in the play-based setting that supported the scientific engagement of the children and teachers” along with “the development of scientific thinking within imaginative play”.

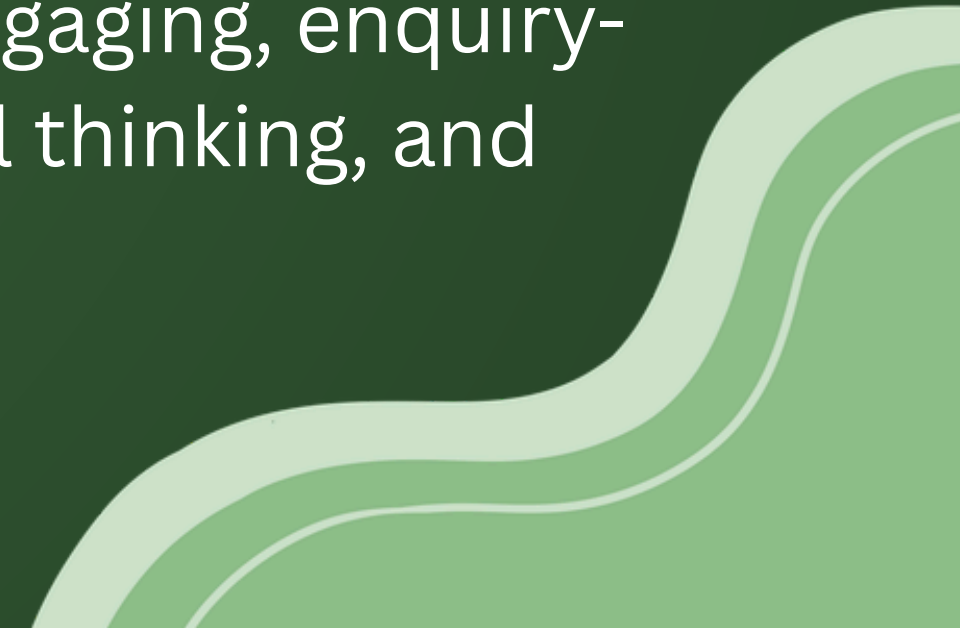


Enquiry and learning work together in play-based and constructivist approaches. Children learn best when they are actively involved in exploring and making sense of the world around them. By asking questions, investigating ideas, trying things out, using their imagination, and thinking about what they have experienced, they build new knowledge and skills. Learning is therefore more than memorising facts; it is an active process of discovery and understanding. In Fleer's (2019) Scientific Playworlds approach, children and adults learn together through shared enquiry. They ask questions, explore ideas, and use imaginative play to investigate scientific concepts. Curiosity, discussion, and wonder encourage children to think more deeply about what they observe and experience. As children create and share scientific stories and explanations, they develop a stronger understanding of concepts while also improving their scientific thinking skills. This creates meaningful, engaging, and lasting learning experiences





Fleer's (2019) Scientific Playworlds connects enquiry and learning through imaginative experiences, collaborative exploration, and problem-solving opportunities. Children build knowledge and understanding by questioning, experimenting, investigating ideas, and engaging with others in shared learning experiences. This approach draws on Vygotsky's cultural-historical theory, which suggests that learning develops through social interaction, communication, and play . Imagination plays a significant role in helping children make sense of new concepts and construct meaning from their experiences. One of the main strengths of this approach is its ability to foster curiosity, motivation, and deeper levels of understanding . However, its effectiveness depends on educators being able to skilfully guide discussions, support enquiry, and provide appropriate scaffolding while maintaining a balance between child-led play and direct teaching. Overall, the approach highlights the value of creating engaging, enquiry-based learning environments that promote participation, critical thinking, and independent learning .





Fleer's (2019) Scientific Playworlds supports the aims of the Curriculum for Wales by encouraging enquiry, creativity, teamwork, and problem-solving. Through imaginative play and shared investigations, children learn to ask questions, explore ideas, share their thoughts, and develop critical thinking skills that are important for future learning. It helps children learn science by encouraging them to observe, predict, investigate, and explain what they discover through meaningful experiences. The approach also develops wider skills such as communication, creativity, and collaboration. As children move through the progression steps, their learning develops from simple exploration and curiosity to more independent investigations and evidence-based explanations. Scientific Playworlds provides an engaging and age-appropriate way of learning that supports the Curriculum for Wales while reflecting Vygotsky's belief that children learn best through play, social interaction, and guidance from adults and peers.





Fleer's (2019) example of application to practice involved:

Using metacommunicative language such as “Pretend I am inside the drop of water or inside the compost bin”, and use a sing-song cadence at the end of a sentence to signal that they are inside the imaginary situation to their play partner (...and the worms were wriggling around [inflexion on the word around]), signalling an invitation to imagine along with them, and use conjunction words to keep the storyline going (e.g. and or then) (Bretherton 1984, quoted in Fleer, 2019).

She suggests that:

teacher use and modelling of metacommunicative language specific to preschool science, such as “I wonder if...”, has the potential for better understanding how play-pedagogy could consciously and systematically over time support science learning in play-based settings (Fleer, 2019).

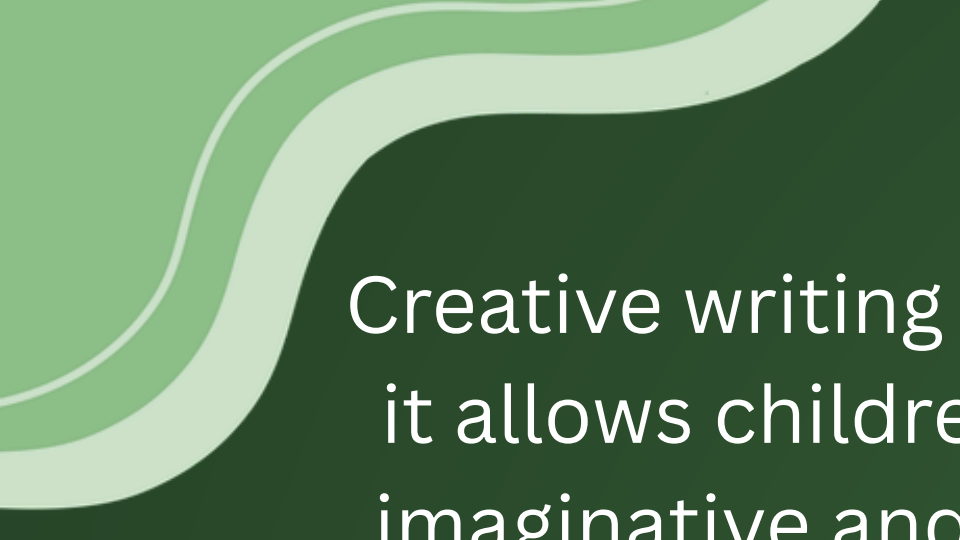




Creative approach 2: Creative Writing

Creative writing is the use of imagination and expressive language to share ideas, feelings, and experiences through forms such as stories, poems, plays, and creative non-fiction (Britannica, no date). Its main aim is to inspire, entertain, and help people make sense of the world rather than simply provide facts (Britannica, no date). Creative writing encourages creativity, self-expression, empathy, and the development of a personal voice (National Literacy Trust, 2026). In education, it allows learners to explore their ideas, experiment with language, and build confidence in their communication skills (Scottish Book Trust, 2022). It can also support wellbeing, imagination, and engagement with learning while helping children understand their own experiences and those of others (Scottish Book Trust, 2022; National Literacy Trust, 2026).





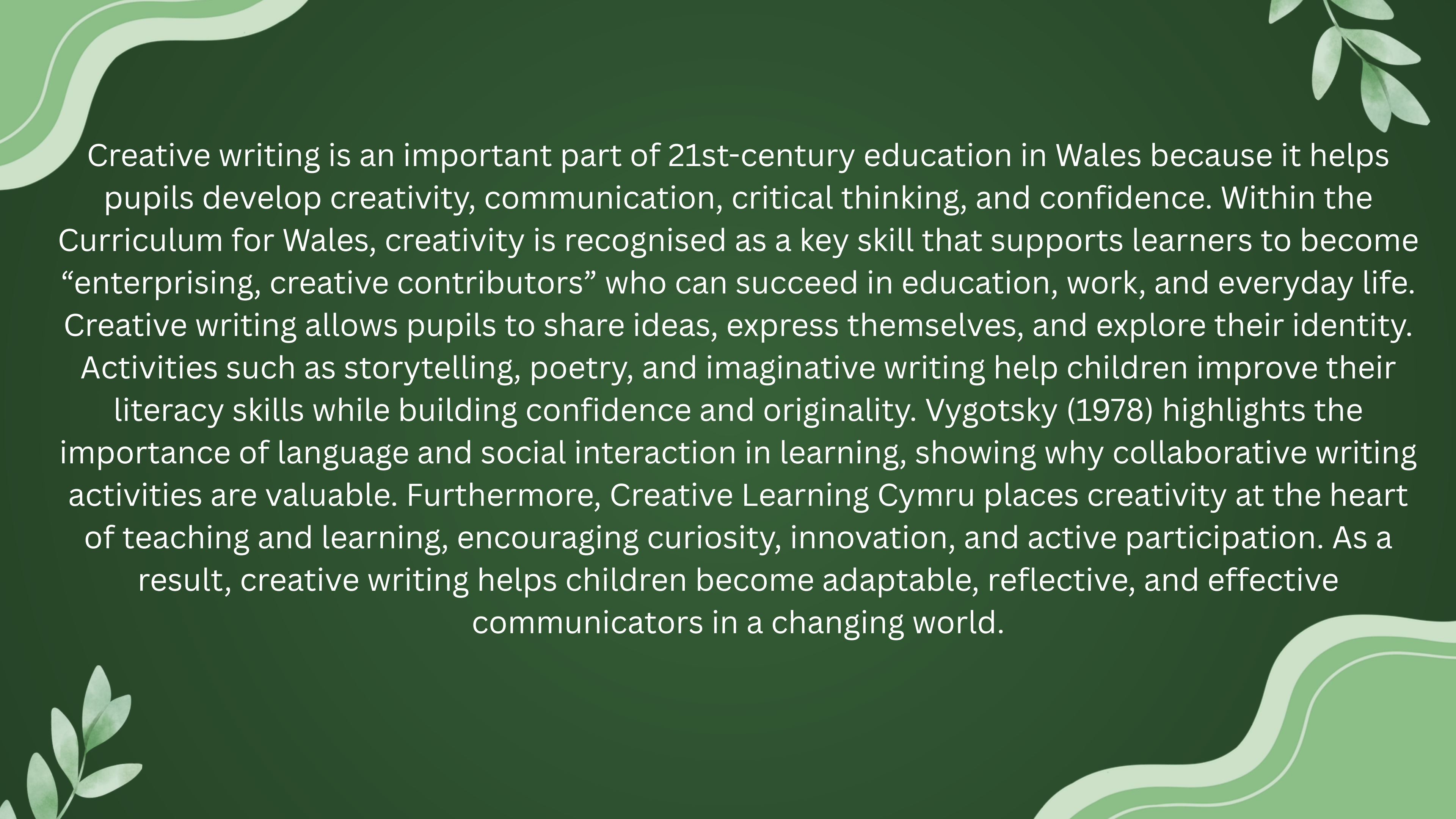
Creative writing provides an important context for enquiry-based learning because it allows children to explore ideas, ask questions, and construct meaning through imaginative and purposeful composition. Enquiry emerges as learners investigate topics, experiment with language, and create narratives shaped by their interests and observations. Research shows that early writing develops through exploratory and meaningful engagement, enabling children to express increasingly complex thinking (Rowe, 2018). Creative writing also supports critical thinking and problem-solving, as learners generate, test, and refine ideas through drafting and reflection (Cremin & Myhill, 2012). These enquiry-rich processes build confidence, creativity, and deeper understanding. Evidence further indicates that writing connected to children's curiosity strengthens early literacy and contributes to cognitive, social, and expressive development (Gibson, 2019). Therefore, creative writing offers a strong pedagogical environment in which enquiry drives purposeful, self-directed learning.



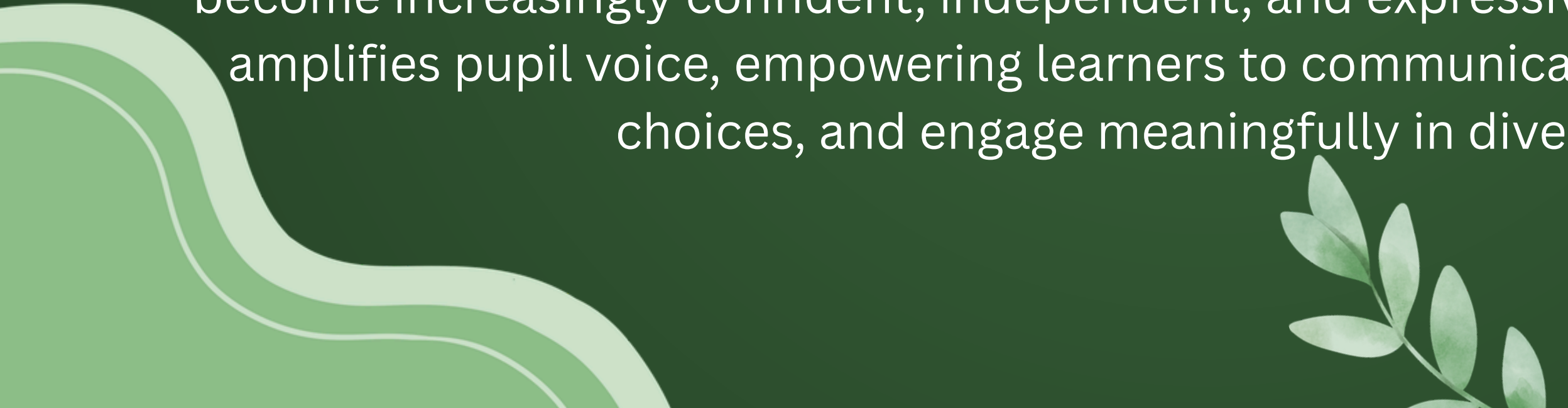


A creative writing approach in primary education can be reflected on using a plan-teach-review cycle that strengthens literacy learning through constructivist principles. Story prompts, discussion, and storytelling can support pupils develop ideas and maintain engaged. Vygotsky's sociocultural theory states that children learn best through interaction and support from others within their Zone of Proximal Development (Vygotsky, 1978). Guided learning can therefore strengthen creative thinking. The use of scaffolding strategies such as modelling, shared writing, and questioning is applicable. Bruner (1983) suggests that scaffolding helps children become more confident and independent learners. Graves (1983) argues that meaningful writing experiences encourage pupil voice and active participation through creativity, motivation, and ownership in their writing. Improvements for future lessons could including differentiation, inclusion, and peer feedback.





Creative writing is an important part of 21st-century education in Wales because it helps pupils develop creativity, communication, critical thinking, and confidence. Within the Curriculum for Wales, creativity is recognised as a key skill that supports learners to become “enterprising, creative contributors” who can succeed in education, work, and everyday life. Creative writing allows pupils to share ideas, express themselves, and explore their identity. Activities such as storytelling, poetry, and imaginative writing help children improve their literacy skills while building confidence and originality. Vygotsky (1978) highlights the importance of language and social interaction in learning, showing why collaborative writing activities are valuable. Furthermore, Creative Learning Cymru places creativity at the heart of teaching and learning, encouraging curiosity, innovation, and active participation. As a result, creative writing helps children become adaptable, reflective, and effective communicators in a changing world.



Estyn (2024) acknowledges Y Bont Faen Primary School's effective and innovative practice as they place creativity at the core of its Inspire Curriculum, recognising creative writing as a powerful tool for developing pupils' literacy, oracy, and higher-order thinking skills. Through inquiry-based learning and the Creative Habits of Mind framework (Lucas, Claxton and Spencer, 2013), learners are encouraged to think imaginatively, reflect critically, and communicate their ideas with confidence. Creative writing is embedded across the curriculum and enriched through collaboration with creative practitioners via the Lead Creative School Scheme. For example, Year 2 pupils participated in creative projects that enhanced literacy, explored anti-bullying themes, and enabled them to share their work with authentic audiences. Additional challenge activities foster imaginative writing through visual stimuli, problem-solving opportunities, and open-ended 'what if...?' questions. As a result, pupils become increasingly confident, independent, and expressive writers. Creative writing also amplifies pupil voice, empowering learners to communicate their ideas, make informed choices, and engage meaningfully in diverse contexts.

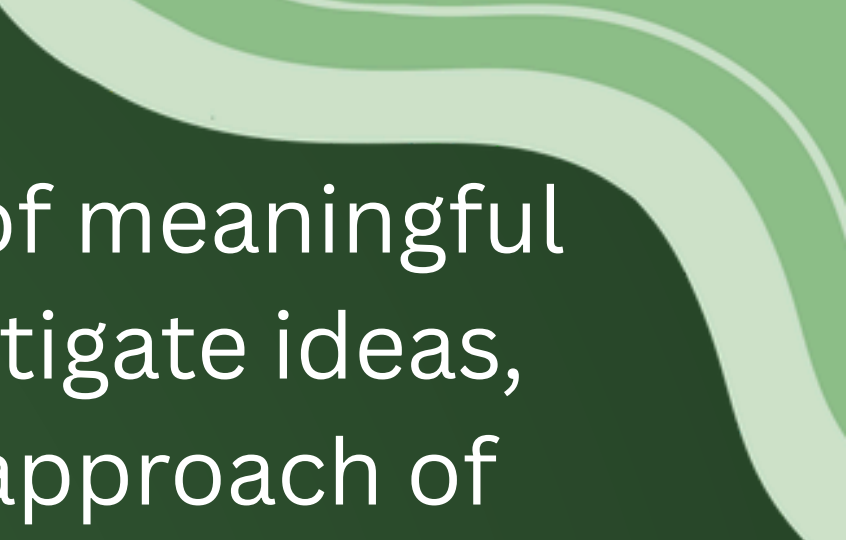


Creative approach 3: Leonardo effect

The Leonardo Effect is a creative, interdisciplinary approach to learning that combines different subjects, especially art and science, to help children make meaningful connections across the curriculum (Hickey and Robson, 2012). Its main aim is to develop curiosity, creativity, and motivation by encouraging learners to actively participate in their own learning.

A key concept of the Leonardo Effect is synchronised integration, where skills and knowledge from different subjects are taught together rather than separately (Hickey and Robson, 2012). This helps learners see the bigger picture and understand how ideas connect. The approach promotes important values such as creativity, collaboration, enquiry, independence, and critical thinking. Through exploration, investigation, creation, and reflection, children take greater ownership of their learning while developing confidence, engagement, and academic achievement.

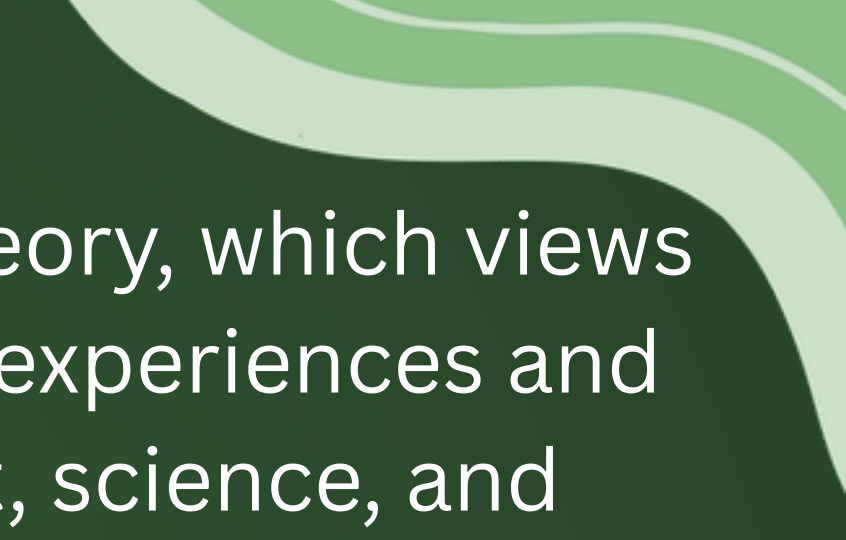




Within The Leonardo Effect, enquiry is viewed as a key driver of meaningful learning. Children are encouraged to explore questions, investigate ideas, and make connections across curriculum areas through the approach of synchronised integration (Robson, 2013). Rather than receiving information passively, learners actively construct knowledge through research, discussion, experimentation, and reflection (Robson, 2013). This process develops curiosity and motivates children to pursue their own lines of enquiry, leading to deeper engagement with learning (Robson, 2013).

Enquiry-based activities through the Leonardo approach promote creativity, collaboration, critical thinking, and learner independence while improving confidence and attainment (Davies et al., 2013 ; Vance and Vance, 2013). Consequently, enquiry and learning are closely linked, as children learn most effectively when they actively investigate, create, and reflect upon their experiences.



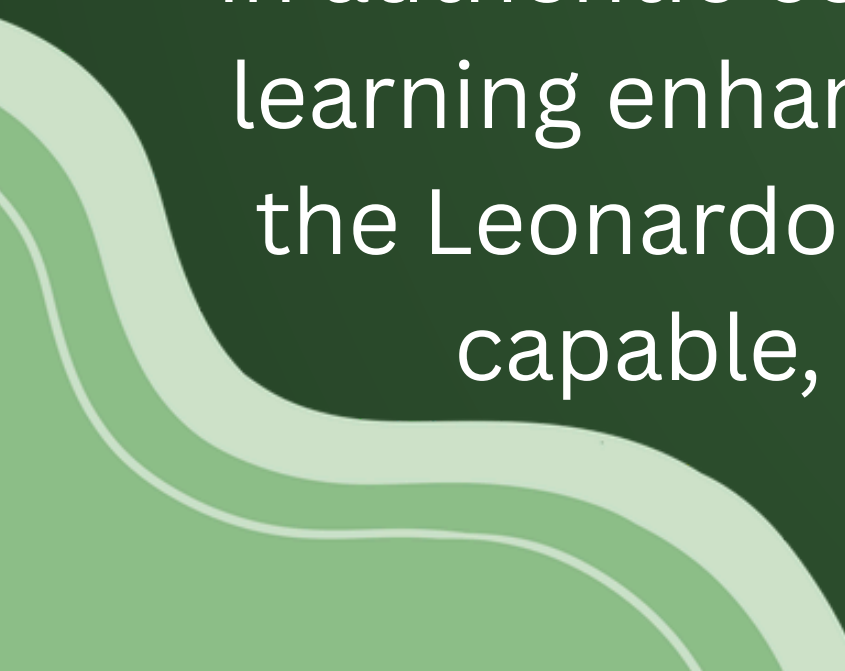


The Leonardo Effect is closely aligned with constructivist learning theory, which views knowledge as something learners actively build through meaningful experiences and connections across subjects. By integrating disciplines such as art, science, and literacy, the approach encourages pupils to develop a deeper understanding of concepts through creative and exploratory learning. Creative writing plays an important role within this model, enabling learners to communicate ideas, make sense of experiences, and apply knowledge in authentic contexts. Hickey and Robson (2013) suggest that interdisciplinary learning increases motivation, literacy attainment, and independent learning by engaging pupils' curiosity and imagination. The approach also reflects Vygotsky's (1978) sociocultural theory, which emphasises the importance of language, collaboration, and social interaction in cognitive development. Through discussion, creative expression, and shared inquiry, pupils become active participants in learning, developing creativity, critical thinking, communication skills, and greater independence.





The Leonardo Effect is highly relevant to 21st-century education in Wales because it develops creativity, critical thinking, collaboration, and interdisciplinary learning. By integrating subjects such as art, science, and literacy, pupils make meaningful connections across the curriculum and engage in deeper, more purposeful learning. This aligns with the Curriculum for Wales, which aims to develop learners as “enterprising, creative contributors” and identifies creativity and innovation as integral skills that should be developed across all Areas of Learning and Experience. The approach also supports progression by encouraging learners to apply knowledge, solve problems, reflect on their learning, and communicate ideas in authentic contexts. Hickey and Robson (2013) argue that interdisciplinary learning enhances motivation, attainment, and engagement. Consequently, the Leonardo Effect helps learners progress towards becoming ambitious, capable, and creative individuals equipped for future challenges.





Anderson (2013) exemplifies application of the Leonardo approach in a Scottish primary classroom:

When taking a closer look at feathers, the joint learning outcome was to investigate and draw a feather. To be successful, pupils had to touch it, feel it and talk about it, paying close attention to colour, line and texture. This fulfilled both the curriculum for excellence second-level art experience and outcome: ‘Through observing and recording from my experiences across the curriculum, I can create images and objects which show my awareness and recognition of detail’ (Scottish Executive 2009b).

It also covered the CfE science overarching experience and outcome: ‘Learning in the sciences will enable me to develop curiosity and understanding of the environment’ (Scottish Executive 2009a).

Looking both as artists and scientists meant the children didn’t look at objects as merely things to draw but as a means to understanding how a small part, a feather, could make a bigger thing work, or in this case fly.

One pupil recorded, ‘Getting to feel and draw the feathers helped us to understand their colours and how light they are’.





Creative approach 4: Creative Play

Creative play can be described as a child-led way of learning in which children make sense of the world by imagining, exploring, and expressing ideas. Through activities like pretend play, storytelling, art, building, and movement, children try out ideas, solve problems, and create new understandings. This type of play supports their independence and helps them develop cognitive, social, and emotional skills in ways that feel natural and meaningful. Research highlights that creative play is a key foundation for learning because it helps children interpret their experiences and extend their thinking (UNICEF, 2018; NAEYC, 2022).

Creative play aims to build children's creativity, curiosity, independence, communication, collaboration, and problem-solving while supporting holistic development. It emphasises imagination, exploration, inquiry, active, child-centred learning, and play. Core values include respecting children's ideas, promoting inclusion, fostering confidence and resilience, encouraging self-expression, and ensuring enjoyment in learning.





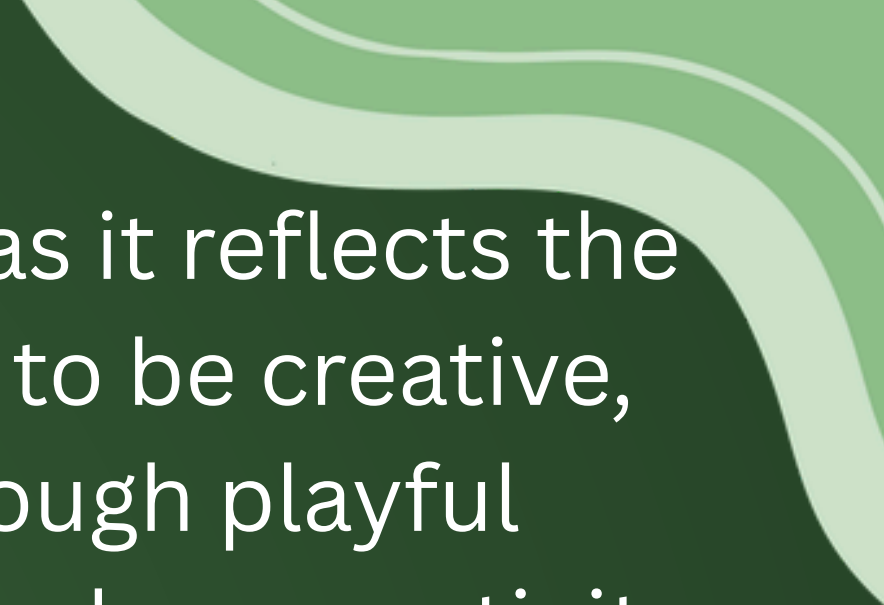
Creative play can be understood as a learning process where enquiry guides children's exploration and understanding. Through activities such as storytelling, pretend play, building, and expressive movement, children investigate ideas, ask questions, and try out different possibilities. This enquiry-driven engagement helps them test their thinking, consider alternatives, and reflect on outcomes. Such experiences build cognitive flexibility and problem-solving skills, while also supporting social and emotional growth through shared play and collaborative interactions. Research demonstrates that playful, immersive learning environments encourage deep exploration and strengthen children's engagement and comprehension (Colvert and Stephenson, 2026). Additional studies highlight that enquiry-based play boosts motivation, agency, and holistic development across learning domains (Barnes et al., 2026). Overall, creative play provides a rich context where enquiry becomes a powerful driver of meaningful, self-directed learning.



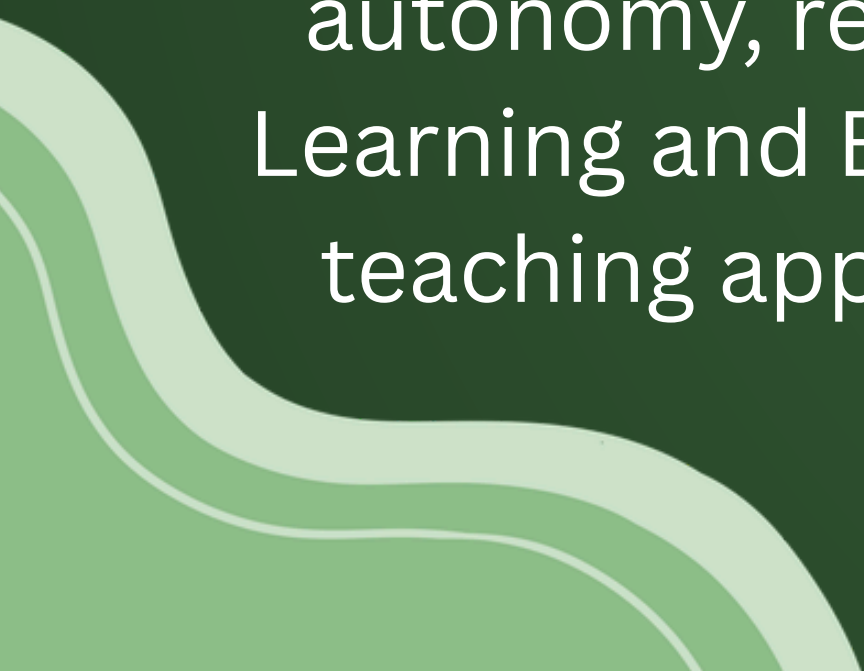


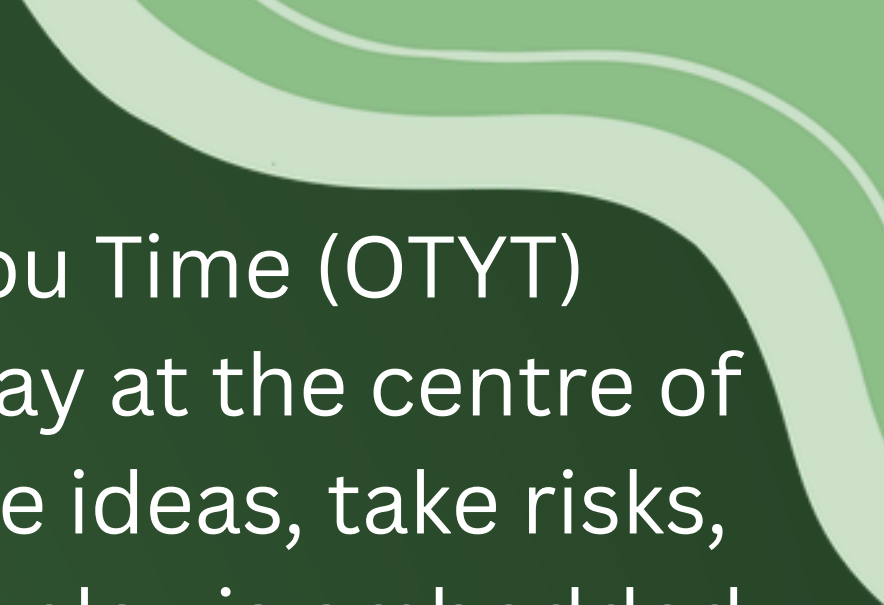
Creative play is strongly connected to key learning theories, especially those of Piaget (1962) and Vygotsky (1978). Piaget (1962) suggested that play helps children build knowledge by exploring, experimenting, and using symbols, which supports cognitive development and flexible thinking. Vygotsky (1978) focused on the social side of play, arguing that imaginative activity allows children to learn within the zone of proximal development, with support from adults or more skilled peers. These perspectives show how creative play encourages enquiry, independence, and shared meaning-making. Current research continues to highlight the relevance of both theorists, demonstrating that play supports emotional, social, and cognitive growth in early childhood settings (Springer, 2026). Together, their theories explain why creative play remains a powerful foundation for holistic learning.





Creative play is important in 21st-century education in Wales as it reflects the aims of the Curriculum for Wales, which encourages learners to be creative, independent, and capable (Welsh Government, 2021). Through playful exploration, children develop essential cross-curricular skills such as creativity, critical thinking, communication, collaboration, and problem-solving, skills needed for a changing world. Creative play also supports the four purposes, helping children become confident, ethical, informed, and healthy individuals (Welsh Government, 2021). Within the progression steps, play offers developmentally appropriate ways for children to build knowledge, practise skills, and deepen understanding through enquiry-based learning. It promotes autonomy, resilience, curiosity, and meaningful connections across Areas of Learning and Experience (AoLEs). Overall, creative play is not only an effective teaching approach but a key part of Wales's vision for holistic, future-ready education.





Estyn (2019) recognises Shirenewton Primary School's Over To You Time (OTYT) approach as effective and innovative practice as it places creative play at the centre of learning. Through child-led learning, pupils are encouraged to explore ideas, take risks, solve problems, and make decisions in meaningful contexts. Creative play is embedded across indoor and outdoor environments, allowing learners to follow their interests while developing literacy, numeracy, communication, and thinking skills. Topic immersions, such as beach visits and medieval workshops, provide rich experiences that stimulate imagination and inspire creative responses. During OTYT, pupils choose activities, undertake challenges, and direct their own learning pathways, fostering independence and pupil voice. Staff support learning through questioning, shared thinking, and purposeful interactions that extend creativity and understanding. As a result, pupils become confident, motivated, and resilient learners. Creative play also enhances wellbeing, social skills, and engagement, while promoting a lifelong love of learning through authentic and enjoyable experiences.



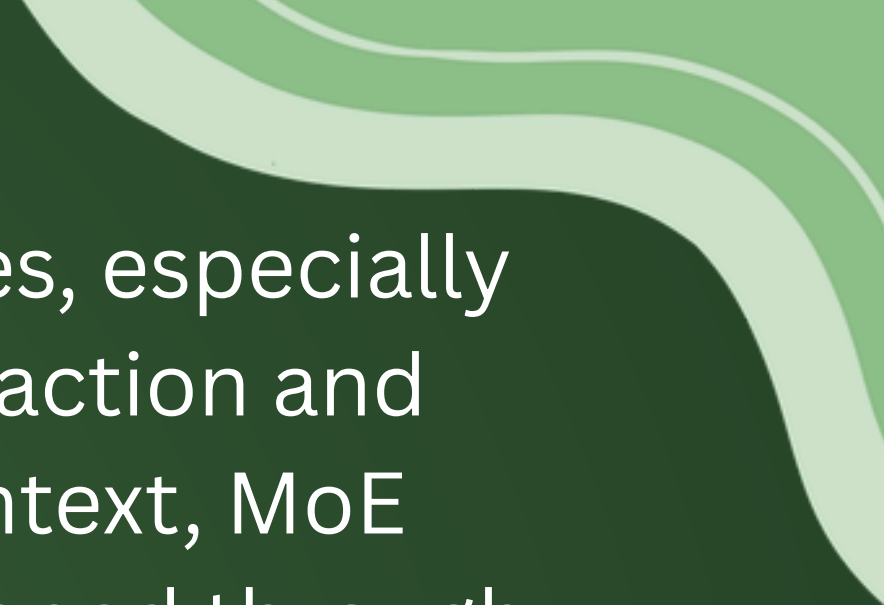
Creative approach 5: Mantle of the Expert

The Mantle of the Expert (MoE) approach places learners in expert roles within a fictional situation, allowing them to engage in enquiry-focused and purposeful learning. Its main aim is to create realistic tasks that build responsibility, collaboration, and problem-solving (Taylor, 2025). Core concepts include role-taking, jointly constructed dramatic context, and dramatic-inquiry structures that support learning across conceptual, personal, and social levels (Heathcote and Herbert, 1985). By adopting expert identities, pupils gain ownership, motivation, and stronger engagement with curriculum content (Selderslaghs, 2019). The approach also promotes values such as empathy, teamwork, ethical awareness, and real-world relevance, developed through collective decision-making and reflective practice (Taylor, 2025). Overall, MoE offers a socially grounded pedagogy that encourages agency, resilience, and meaningful participation in learning.



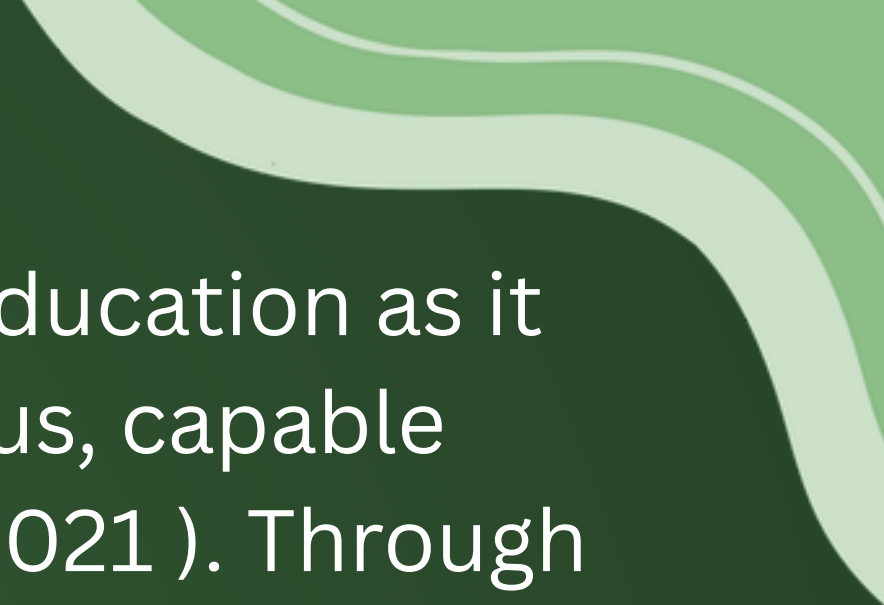
In MoE, enquiry and learning are closely linked as learners take on expert roles within a shared fictional context. This setting encourages them to investigate problems, ask purposeful questions, and make informed decisions as part of an active enquiry process (Taylor, 2021). Working within collaborative story worlds and dramatic-inquiry activities, learners engage in realistic tasks that require evidence-gathering, reasoning, and reflection (Elliott, 2020). Research shows that MoE deepens learning by prompting students to justify choices, evaluate information, and respond to complex situations, mirroring real-world enquiry practices (Taylor, 2021). These enquiry-rich experiences also support motivation, agency, and social learning as pupils negotiate roles and responsibilities within the expert team (Elliott, 2020). Overall, MoE provides a dynamic environment where enquiry drives meaningful learning.





Mantle of the Expert (MoE) links closely to sociocultural theories, especially Vygotsky's theory that learning develops through social interaction and shared activity. By giving pupils expert roles in a fictional context, MoE creates collaborative spaces where enquiry and learning are shaped through talk, joint problem-solving, and guided participation (Vygotsky, 1978). The approach also reflects Bruner's theoretical concept that narrative is central to how people make meaning, as MoE uses story-based enquiry to help pupils build understanding through imaginative situations (Bruner, 1990). Heathcote's dramatic-inquiry principles further emphasise learning through active involvement, responsibility, and real decision-making (Heathcote and Herbert, 1985). Together, these theories demonstrate how MoE blends enquiry, social learning, and narrative to support engagement and cognitive growth.





Mantle of the Expert (MoE) is significant in 21st-century Welsh education as it supports the Curriculum for Wales aim of developing ambitious, capable learners who think creatively and critically (Welsh Government, 2021). Through expert-role enquiry, MoE provides meaningful contexts to pupils that deepen understanding of curriculum content while building key skills such as collaboration, ethical thinking, and problem-solving (Welsh Government, 2022). Its dramatic-inquiry approach helps learners apply knowledge across Areas of Learning and Experience, supporting progression in conceptual, personal, and social development (Heathcote and Herbert, 1985) . MoE also fits well with progression steps, offering structured opportunities for learners to grow in independence, reflect on choices, and show increasing sophistication in enquiry-based learning (Taylor, 2021). Overall, MoE strengthens skills, supports progression, and contributes to Wales's holistic educational vision.





Evans (2023) addresses how Penmaenmawr Museum's Not Child's Play project worked with a local primary school to create learning resources that support the Curriculum for Wales. The project first focused on the roles carried out by Victorian children in Penmaenmawr and planned to use the Mantle of the Expert approach. However, teachers felt pupils needed a more interesting starting point. Victorian toys were therefore chosen as the main theme, helping children explore topics such as poverty, wealth, education, leisure, health and child labour. The project produced resource packs for teachers and pupils, along with practical artefacts and activities linked to Numeracy, Literacy, and Humanities Areas of learning and Experience. After successful testing at Ysgol Capelulo, additional resources were developed on Victorian school life, healthcare, child labour and women's roles in the home. These resources encourage enquiry-based learning and help pupils connect historical topics to their local community and heritage.





Conclusion

This portfolio has shown that creative, enquiry-driven pedagogies are central to shaping meaningful learning experiences in contemporary Welsh education. Across the diverse approaches explored, a consistent theme emerges, enquiry enables learners to move beyond passive participation and instead engage actively with ideas, concepts, and problems. When children investigate, question, imagine, and collaborate, learning becomes a process of constructing understanding rather than receiving information. This shift reflects wider educational priorities in Wales, where curiosity, independence, and critical thinking are positioned as essential attributes for all learners (Welsh Government, 2022). Recent research reinforces the value of enquiry-rich environments. Fler (2019) demonstrates how imaginative scientific enquiry supports deeper reasoning and shared exploration. Creative writing research highlights how expressive composition encourages children to test ideas, refine thinking, and develop literacy through purposeful engagement (Rowe, 2018; Cremin & Myhill, 2012). Interdisciplinary models such as the Leonardo Effect show that enquiry helps learners connect knowledge across subjects, strengthening creativity and motivation (Hickey & Robson, 2012).





Conclusion

Likewise, creative play continues to be recognised for its contribution to cognitive flexibility, social interaction, and emotional wellbeing (UNICEF, 2018; NAEYC, 2022). Approaches such as Mantle of the Expert extend these principles by placing learners in authentic roles that require collaborative problem-solving and reflective decision-making (Taylor, 2021). Collectively, these approaches demonstrate how enquiry supports progression by offering developmentally appropriate opportunities for learners to deepen understanding, apply knowledge, and demonstrate increasing sophistication in their thinking. They also align closely with the four purposes of the Curriculum for Wales, which emphasise creativity, collaboration, ethical awareness, and independence.

Ultimately, the portfolio highlights that creative pedagogies are not simply engaging methods but essential frameworks for cultivating agency, resilience, and intellectual curiosity. When enquiry underpins learning, children become thoughtful, capable contributors equipped to navigate an increasingly complex world.



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