

Inquiry learning

Inquiry-based learning begins with a question, problem or idea. It involves children in planning and carrying out investigations, proposing explanations and solutions, and communicating their understanding of concepts in a variety of ways. Throughout the inquiry process children observe, raise questions, and critique their practices. It is an approach that encourages collaboration and can be used effectively in a trans-disciplinary way or in most subject areas.

In inquiry learning the role of the teacher is multi-faceted and requires a balance between being well planned and organised and yet flexible and confident to follow child-initiated interests through as they evolve over the length of the inquiry. ‘Teachers who work this way see the learner as an *active participant* in the learning process’ and themselves as learners (Murdoch, 2015, p. 14). As Claxton (2013) explains, ‘If we want young people to develop the habits of thinking for themselves, using their imagination, being open to new ideas, saying when they don’t understand, and exploring real challenges together, then they have to see their teachers doing the same thing’ (p. 123). In practice this means that all class members including the teacher view themselves as learners.

Teacher decision-making

There are a range of factors that teachers need to consider in order to create the conditions for successful inquiry learning. It is necessary for teachers to have combined knowledge of:

- young learners’ interests and capabilities and dispositions to learning
- their own interests, skills, capabilities and philosophies
- the Australian Curriculum
- evidence of learning
- school and community contexts.

Each of these factors contributes to teachers’ planning, informing the inquiry focus and the pedagogical practices used to support learning. Before undertaking inquiry learning with young learners it is also necessary to consider the range of skills they have or may need to learn in regards to thinking, researching, emotional and personal skills, collaborating with others and communicating ideas with a range of partners. The skills and dispositions required of young learners in an inquiry learning approach will take time, practice and repeated modelling to establish and will vary according to the prior experiences and strengths of each learner. Part of the teacher’s role is therefore, to make explicit the required skills and dispositions necessary for young learners to engage successfully in inquiry based learning.

Key drivers of inquiry learning

The key drivers that underpin inquiry learning provide a framework for teachers to discuss the benefits of this approach with colleagues and parents. The capacity to articulate *why* a particular approach is used helps to reassure parents of the potential benefits for their child in terms of short-term and long-term educational outcomes. The key drivers also help to shape teachers’ decisions in ways that support young learners’ holistic development, a critical aspect of contemporary education (see



Age-appropriate pedagogies for the early years of schooling: Foundation paper). Of note, are the benefits inquiry learning offers in promoting each young learner's sense of agency as they learn to make decisions, work collaboratively to investigate and problem solve, and develop increasing levels of independence and ownership of learning.

Inquiry learning helps to develop young learner's agency. Through quality questioning and involving learners in actively gathering and analysing information, the student gradually develops a sense of control and responsibility for themselves as a learner. They learn to learn. Teachers nurture independence

by gradually releasing responsibility and encouraging students to 'make meaning' using high-level thinking skills and strategies (Murdoch, K, 2015, p.15).

Drawing on the work of Kath Murdoch (2015, 19,) the key drivers that that underpin inquiry learning are:

Ownership: Learning is an active process of construction (not reproduction) and is enhanced when each learner has a voice in, and can make choices about their learning.

Interest: Providing opportunities for learners to identify and explore their own interests, beliefs and questions promotes deeper engagement.

Reflection: Learners benefit from continual reflection on and through the learning process. Self-knowledge and metacognition enhance learning and build self-efficacy.

Purpose: Learning should be guided by real purposes and situated in authentic contexts.

Prior learning: Learning is more powerful when the learner can make connections between the new and the known- where there is recognition of their prior knowledge.

Transfer: Learning is powerful and useful when we can transfer it to, and make connections with, other contexts. It is important to know how learning connects to a bigger picture.

Collaboration: Cooperation, interaction and mutual respect enhance opportunities for learning. We learn from and with others.

Resilience: Emotional resilience, a positive self-image and a 'growth mindset' help the learner set and work towards challenging goals and learn from mistakes.

Time: Deeper learning requires adequate time for investigation, processing and creating, and communicating learning.

Feedback: The learner should be given continual and specific support, guidance and feedback to take their understandings and skills further.

Environment: Learning environments (social, temporal and physical) should promote care, curiosity, flexibility and independence.

Openness: Learning should be approached with openness, flexibility and curiosity.

Joy: Learning, even when challenging and difficult should be invigorating and joyous and feed the desire to do and learn more.

What knowledge, skills and dispositions do young learners need to engage in inquiry learning?

The skill and dispositions young learners require to participate in inquiry learning share strong commonalities with the Australian Curriculum general capabilities for personal and social capability and critical and creative thinking. In the Australian Curriculum, capability encompasses knowledge, skills and dispositions. Teachers discuss and model these capabilities as part of everyday classroom experiences to facilitate young learners' understanding and application of research and problem solving skills.

Personal and social capability: Teachers discuss and model ways to:

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| Recognise emotions | 'If someone took my pencil I would feel sad too...' |
| Expresses emotions appropriately | 'Maybe we could try...' |
| Work collaboratively | 'When I get stuck I take a deep breath and say to myself, you can do it and then I try again.' |
| Communicate effectively | 'Thank you for waiting patiently, it's your turn next Jess.' |
| Negotiate and resolve conflict | 'What if we try this Zander?' |
| Develop leadership skills | 'I'm looking at Sasha while she speaks and holding my body still so that she knows I am listening.' |
| Think about thinking (metacognition) | 'It's my turn next could you please pass me...' |
| Reflect on processes | 'Jake you look a bit upset, can you tell me what happened and then I can help you?' |
| Transfer knowledge into new contexts | 'When it's hard I don't cry I just try and try...' |
| Apply logic and reasoning | 'If you see someone who looks upset you could ask "Would you like some help?"' |
| Draw conclusions and design a course of action | 'If we move the tables and chairs around we might have more space for the museum tours with parents. Does anyone have some ideas to share so that we can create a plan?' |
| Evaluate procedures and outcomes | 'I'm not sure that this website gives us enough information for our information report.' |

Critical and creative thinking: Teachers discuss and model ways to:

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| Pose questions | 'A question often starts with a who, what, where, why, or how word like, 'How does a caterpillar turn into a butterfly?' A question can also start with the word can – 'Can you tell me what happened first?' |
| Identify and clarify information and ideas | 'I don't think we can put the fish straight into the water in the tank. Does anyone know what we need to do first and why?' |
| Organise and process information | 'First I'm going to make a list of what I need and then I'm going to draw a plan. I wasn't sure where to start so I made a list of questions and then where I might be able to find some information.' |
| Imagine possibilities and connect ideas | 'I wonder what might happen if we add more water to the paint? What do you think might happen to the painting?' |
| Consider alternatives | 'We could search for information in the library about insects. That's one way to research. Maybe we could also try...' |

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| Seek solutions and put ideas into action | ‘If we all use the resource books at the one time there won’t be enough to share. What other ways can we gather information in small teams?’ |
| Think about thinking (metacognition) | ‘When I’m thinking about a difficult word I need to write, I close my eyes and think about the shape of the word, and the sounds that I can hear in it.’ |
| Reflect on processes | ‘Next time we plan an investigation it would help to think about different ways we could represent our learning so that we can share our discoveries with other classes.’ |
| Transfer knowledge into new contexts | ‘I knew that frogs lay eggs that turn into tadpoles but I didn’t know about froglets.’ ‘When we read about the lifecycle of a moth I wonder what new scientific words we’ll learn? Learning new words helps us in our reading and our writing.’ |
| Apply logic and reasoning | ‘I think this seedling has too much direct sunlight because its leaves are wilting.’ |
| Draw conclusions and design a course of action | ‘If we move the seedling tray to an area on the veranda that doesn’t get the hot afternoon sun, the plants might survive.’ |
| Evaluate procedures and outcomes | ‘I’m not sure that my research question helped me to find out all that I needed to know. Next time I’m going to break my investigation task into to a few research questions.’ |

Implementing an inquiry

Inquiry learning experiences vary considerably in the length of time involved, the content and the focus. An inquiry may be child-initiated, teacher-initiated, in response to local events (e.g. a community event), or to meet a school priority. Often an inquiry may contain aspects of an investigation that combine teacher and child-initiated questions, problems or ideas.

At the beginning of the Prep year an inquiry may be a short class session that focuses on an authentic experience, for example, a child is upset and says that they had no one to play with at lunch time. The basis of the inquiry could start with the acknowledgement of the child’s feelings, before brainstorming ideas with the class about what the young learner could try in future. In this way the

teacher draws on each young learner’s existing knowledge about strategies for forming friendships, how to enter into play with others and what to do if feeling lonely. Resolving common social and emotional challenges similar to this example tend to be revisited throughout the year as friendships grow, develop and change. An inquiry of this kind can be connected to the Australian Curriculum personal and social capability (Australian Curriculum, 2018).

The following descriptions of the phases of an inquiry and suggested teaching strategies are adapted from Murdoch (2015, pp. 90-93). The suggested strategies are not exhaustive or prescriptive and will be shaped by individual, school and curriculum priorities. The cycle of inquiry however, is important to maintain. The process of moving through the inquiry cycle with young learners helps them to learn how to learn.

| Inquiry phase | Teaching strategies relevant to this phase of the inquiry |
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| <p>Tuning in</p> <ul style="list-style-type: none"> Gathering data about each young learner's knowledge and interest in the inquiry focus Helping young learners to make connections to key concepts Engaging young learners in authentic experiences | <ul style="list-style-type: none"> Sharing artefacts from home e.g. photos, drawings, tools, curios Think-pair-share Concept mapping e.g. KWL chart, I wonder chart Listing then sorting questions into inquiry strands Posing questions, 'How could we find out about?' Collective brainstorming Post a question (class letterbox) |
| <p>Finding out</p> <ul style="list-style-type: none"> Gathering information to support the inquiry focus Developing research skills Learning how to organise and manage the steps in finding out Stimulating each young learner's curiosity Learning about ways to record information | <ul style="list-style-type: none"> Draw on community members with expertise in the field of inquiry Interview an 'expert' Conduct experiments and record data Gather information from sources including digital searches, e.g. web searches, YouTube, the learning place, school library search, photographic and written texts Record ideas and information gathered using multimodal technologies and share information amongst class groups |
| <p>Going further</p> <ul style="list-style-type: none"> Opportunities for young learners to explore and work more independently on aspects of the inquiry | <ul style="list-style-type: none"> Creating an 'I wonder chart' where additional inquiries related to the key inquiry become the source for extension experiences Create small group work to follow up new lines of inquiry |
| <p>Reflecting and acting</p> <ul style="list-style-type: none"> Young learners transfer learnings to other contexts Young learners reflect on what they have learned and how | <ul style="list-style-type: none"> Share exhibitions of learning with school, parents and community Responding to questions throughout the inquiry Self-assessment tasks, learning logs or journals kept |

Through each cycle of inquiry it is necessary to engage in critical reflection as a core component of practice. Reflection helps teachers to identify how their decisions influence the breadth and depth of educational opportunities in which young learners may take an active role.

Teacher self-reflection on understandings of inquiry learning

- In what ways do I initiate the inquiry through a question, problem or idea?
- In what ways do I support young learners to theorise, hypothesise and wonder?

- How do I provide opportunities for young learners to become more confident and autonomous problem-solvers and thinkers?
- How do I organise for learning experiences extending beyond singular activities, that can be repeated or returned to, and that lend themselves to active engagement in purposeful learning?
- In what ways does my planning demonstrate a strong understanding of the Australian Curriculum learning area/s and associated achievement standard/s that underpin this approach?