

Inquiry learning – journeys through the thinking processes.

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How come, when you bend over, your eyes don't fall out? (Prep student Hawthorn West Primary School)

Why do governments spend heaps of money on themselves and their cities and towns when they could use the money to help less fortunate people in the world? (Year 5/6 students Wodonga South primary School)

Do trees ever stop growing? (Year 2, Roberts McCubbin primary School)

Why do we scream when we are scared? (Year 3 student, Sacred Heart primary)

All of us want to know how the world works: why a piece of music is beautiful to one person and cacophonous to another, how engines are able to make cars move, why green leaves turn brown and helium balloons stay aloft, or how new languages develop. Living means perpetually searching for meaning. Schools need to be places that keep this search alive. Brooks and Brooks: 1999:12

The questions young people ask remind us that the search for meaning is fundamental to what it is to be human. The urge to inquire activates thinking on many levels and in many forms. When we seek to make sense of the world around us, we wonder, we plan, we analyse, we create, we reflect. At its very heart, inquiry is all about thinking – thinking in order to make meaning.

The benefits of an inquiry-based approach to teaching and learning have been well documented over several decades of educational research. Those who promote inquiry often describe the ease with which it allows for the integration of the curriculum. As students move through the process of inquiry, they can draw on several ways of investigating and expressing their growing understandings – integrating skills and content from multiple disciplines or learning areas. In recent years, we have seen a renewed interest in the use of both inquiry and integrative methods to plan and implement engaging curriculum for students. Parallel to this has been a growing emphasis on what is often described as 'the thinking curriculum'. In this article, I want to explore the role of an integrated, inquiry approach as a natural context for a thinking oriented curriculum.

When planning with the Victorian Essential Learning Standards, many teachers are discovering the value of inquiry to purposefully integrate domains from each of the strands. Thinking (as well as personal learning, interpersonal development, ICT and communication) is one domain I argue should be *consciously planned* into every unit – it is a natural companion for inquiry. When it is well conceptualized and rigorously planned, an integrated unit of inquiry, by its very nature, challenges students to think at higher levels. At the heart of the inquiry process is the task of helping deepen students' understandings by guiding their thinking about lower level 'facts' through to concepts and, ultimately, to higher level, transferable generalizations. While this 'scaffolding' process has been accepted for many years, we are becoming aware of the need for teachers to articulate it much more explicitly to students. This conscious 'spotlighting' of thinking provides a very exciting and challenging layer to the work teachers and students do in an inquiry.

I have been privileged to spend many hours planning and reflecting with teams of teachers as they endeavor to find ways to integrate a focus on thinking into their planning for inquiry. Several practices have emerged from this

experience and provide a useful set of considerations to bring to the 'planning table':

Frame inquiries around provocative, essential questions rather than closed 'topics'.

It has been common practice, particularly in primary schools, for units of inquiry to be framed around 'topics' – often with a 'catchy title'. For example, we might have planned a unit of work about invertebrates and called it 'Minibeasts' or a unit focused on Natural Disasters called 'Shake rattle and Roll'. The problem here is twofold. Firstly, the topic title does little to reveal what the focus of inquiry is actually about and, secondly, students see themselves as 'doing' the topic rather than *investigating* a significant question. There are many educators who argue that a more thinking-oriented device is the 'essential question'. Junior teachers at Roberts Mccubbin primary school, for example, planned an inquiry framed by the question "Why are invertebrates so important?" while the year 5/6 team at Ringwood Heights Primary School framed a unit around the question "How does the earth 'work' – and how do we know?"

Select content that will provide ample 'thinking leverage' – give students something worth thinking about

Critical to the success of an inquiry as a vehicle for rich and diverse thinking, is the *content* of the inquiry itself. The inquiries that set us up best to do powerful thinking work with students are those that easily link with rich, transferable concepts. Making this 'work' first requires teachers to be clear about the concepts that best relate to their essential questions. Once these are established, we are then more mindful about the way we question students and help them make important links in their thinking. For example, the inquiry into invertebrates has potential for students to develop a greater understanding of interdependence, cycles, growth and adaptation. Once we are aware of this, we can stretch students thinking beyond the 'topic' itself and compare and contrast the learning we are doing in this instance with conceptually similar contexts in the past. The children at Roberts Mccubbin primary school made clear connections between the concept of cycles as it related to invertebrates and then the concept of cycles as it related to economics – the flow of goods from market to consumer when they later studies the question "What, how and why do we buy".

Ensure inquiries are designed with sufficient points of reference or relevance to the real lives of students we teach.

Preparedness to engage in and persist with thinking is more likely to happen when students *care* about what they are thinking about! Inquiries that link learning in the classroom with real experiences in the students' own lives beyond school often make the task of encouraging deeper thinking easier for the teacher. Asking students to share the things they are passionate about, the things they are concerned with and interested in

can then inform the decisions we make about our programming for inquiry. When we connect with students' lives we activate prior knowledge and motivate the desire to think beyond the known.

Consider the 'kind of thinking' that students will most often need to be doing as they move into the inquiry.

The explosion of interest in (and publications about) 'thinking tools' has meant that many teachers now have a healthy repertoire of various techniques. PMI, SCAMPER, thinking hats, Y charts, POOCH, Venn diagrams, thinkers keys...there are a vast number of structures and strategies that can help engage students in thinking exercises and these can be very useful strings to the complex bow of teaching thinking. Within an inquiry, however, the use of these 'tools' must be carefully planned. The key is to match the *strategy* to the teaching and learning *purpose*. Whilst there is a case for teaching the tool – the real strength lies in its application in context. When planning, we should ask ourselves: what *kind of thinking* do my students need to do at this point? and then, 'what structures or strategies might help support their thinking?' For example, we may be asking our students to synthesise their understandings towards the end of an inquiry – a useful 'tool' for this could be a concept map. When selecting strategies to use within an inquiry, it is important to consider how well they promote student participation in logical, creative and reflective thinking. Try asking yourselves:

- Is the strategy/ies suitable given the age and experience of the learners?
- Does it suit the overall, existing classroom planning?
- Do students need direct, explicit instruction to be able to use the strategy?
- Does it support or extend (not restrict) student thinking?
- Are all students able to demonstrate what they think?
- Is the strategy open ended?
- Is the strategy flexible enough to cater for all sorts of thinkers?
- Is there potential for students to adapt the strategy if they need/want to?

(adapted from Wilson and Murdoch (2006))

Consider the thinking *dispositions* that you can 'spotlight' through the inquiry

As students inquire into various questions, we often find opportunities to enhance their understandings of the dispositions that effective thinkers cultivate. Many schools, for example, have adopted Art Costa and Bena Kallick's 'Habits of Mind' as a powerful set of thinking behaviours about which to teach students. In addition to the focussed teaching of the Habits of Mind, an inquiry will often naturally lend itself to the exploration of one or more. For example, a unit exploring the question "What is a challenge and how do people respond to challenges in their daily lives?" is the perfect vehicle for exploring the habit of *persistence* whilst an inquiry into the question "How and why do people tell their stories?" provides an opportunity to examine and practice the habit of *listening with empathy*.

Spend time 'tuning in' to students' thinking early in an inquiry

The early phase of inquiry (often referred to as 'tuning in') is commonly seen as a time in which to engage students – often by 'immersing' them in experiences related to the topic. This phase, however, is also critical as a kind of 'reconnaissance' time. Here, we encourage students to share the conceptions and misconceptions they have and to make 'visible' their current thinking about the subject/question. This can be a challenging phase for a teacher because it requires a deliberate 'stepping back' as students theorise, hypothesise and wonder. The work that is produced at this stage can activate powerful reflective thinking later in the inquiry as it is returned to and self assessed. When they can compare their earlier and later thinking they become more conscious not only of *what* they have learned but of *how* their thinking has changed along the way. Using structured learning journals is a useful way to document changes in thinking and understanding as a unit progresses.

Using students' own questions

Many of the inquiries we work on are built around shared, essential questions. Within these inquiries, however, it is vital that students are given the opportunity to raise and explore questions of their own. We refer to this phase of the process as 'going further' – and it is often manifested in the form of mini inquiries or personal investigations. When students are given the choice of what they will pursue, how they will pursue it and how they will share their learning with others – they are challenged to use important skills in decision making, planning and problem solving. Individual inquiries help students practice the kinds of thinking required for self management.

Make thinking explicit – talk about it and model it

One of the most powerful ways to enhance students' thinking - and their understanding of thinking processes is to ensure that we are as *explicit* as possible about it as we work through an inquiry. Both the content *and* the process of learning need to be discussed and articulated with students in order to maximize the learning opportunity. Questions that assist this include:

What have we been doing to find out about this?

What have been some of the most effective resources?

How might we go about organizing this information?

If we wanted to get another point of view about this – what should we do next?

What will we need to think about before we get started on this?

How are you feeling about what you have learned/done so far?

How are your ideas about this changing?

What has been the thing that has most changed your thinking? Why?

What are you noticing about your thinking?

What kind of thinking will we need to do to achieve this?

Press the pause button – take *time* to stop and think

As our work in designing integrated inquiry evolves, we are seeing great benefits of reducing the volume of tasks and providing more *time* for reflection and deliberate 'unpacking' of the learning that is taking place. Keeping visual, written, and digital records of the process of an inquiry are very powerful ways to help students review what and *how* they have learned. By planning for and reflecting on thinking processes within an inquiry– we add a powerful layer to the journey – one that ensures we help students not only come to understand more their world but also about themselves as thinkers and learners.

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