



F a i r D e a l i n g ( S h o r t E x c e r p t )

Reading: Ch. 1. Getting Started: Inquiry-based learning with junior learners (*THINQ 4-6: Inquiry-Based Learning in the Junior Classroom*)

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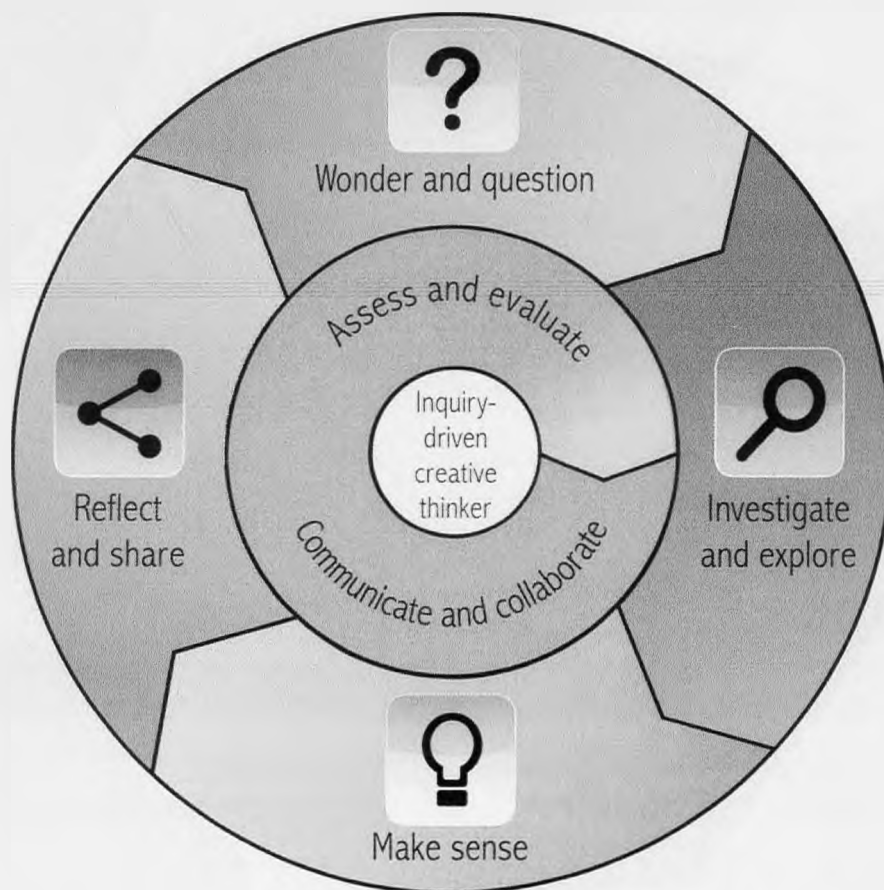
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# CHAPTER 1

## GETTING STARTED: Inquiry-based learning with junior learners



# 1.1 What is inquiry learning?

Inquiry learning is rooted in our curiosity and innate desire to make sense of the mysterious world. When we ask questions, determine a problem and use our heads and our hearts to investigate what fascinates us, we are engaged in inquiry.

Inquiry learning is not the latest educational fad, although it may seem to be due to its renewed popularity. It is not an innovation or a program. It is a way of being as a learner in the world and it is also a specific type of pedagogical practice. By pedagogical practice, we mean what you consider important for your students to learn and the purposeful steps you take to make that learning happen.

Inquiry learning has been around as long as teachers have encouraged and supported intellectual curiosity. Socrates is often cited as one of the first recorded inquiry teachers of antiquity. So why is the age-old practice of inquiry learning making a resurgence in education? Inquiry poses an alternative to rote learning. It is a form of deep learning that allows children to learn *how* to learn as opposed to making children learn *what* to learn in the form of isolated and fragmented content.

Teachers are no longer a main source of facts. The Internet houses more information than any learner could ever require or acquire. In a world where technology makes it easy to find answers and assists us in digging deeper into topics that fascinate us, education has a new purpose. That purpose is to foster curiosity and the asking of deeper questions, encouraging the use of intellect and conscience to answer these questions, and to provide opportunities to share new knowledge. Today, asking the right question is perhaps the most important step in finding the right answer.

## THINQ

- How do the quotes of Wiesel, Dewey, hooks and Einstein support inquiry learning?
- How do these quotes resonate with you as a teacher and as a learner?
- What do you consider the essential traits of inquiry learning?
- Is it important to have a common understanding of what inquiry-based learning is at your school?

## BIG IDEA

We learn by asking questions (inquiring).

## FOOD FOR THOUGHT

"In the word question, there is a beautiful word — quest. I love that word."

Elie Wiesel

"Every thinker puts some portion of an apparently stable world in peril and no one can wholly predict what will emerge in its place."

John Dewey

"My hope emerges from those places of struggle where I witness individuals positively transforming their lives and the world around them. Educating is always a vocation rooted in hopefulness. As teachers we believe that learning is possible, that nothing can keep an open mind from seeking after knowledge and finding a way to know."

bell hooks

"It is, in fact, nothing short of a miracle that the modern methods of instruction have not yet entirely strangled the holy curiosity of inquiry; for this delicate little plant, aside from stimulation, stands mainly in need of freedom; without this it goes to wrack and ruin without fail. It is a grave mistake to think that the enjoyment of seeing and searching can be promoted by means of coercion and a sense of duty."

Albert Einstein

## 1.2 What are inquiry dispositions?

Curiosity, open-mindedness and confidence in your ability to reason are inquiry dispositions — or what some call “inquiry habits of mind.” They are what keeps the learner on the journey of inquiry. These dispositions support risk-taking and commitment to inquiry learning. They make us perseverant and accepting of failure and mistakes as an important part of the journey.

Teachers should spend significant time creating an inquiry classroom culture that supports both the affective and the cognitive elements of inquiry learning. Students should expect a range of emotions while completing an inquiry — from joy and wonder to challenge and frustration. Checking in frequently with your students will help validate their emotions as well as provide information on how you can support their thinking and dispositions.

You can begin by modelling these dispositions to your students. What are you curious about? What makes you wonder? What questions have driven and continue to drive your life? Your students benefit from hearing your experiences as an inquiry learner and in seeing first hand your enthusiasm for aspects of life that they may or may not have considered.

At the heart of an inquiry community are learners who feel supported by each other. Getting to know your students, their identities, their cultures and their communities goes a long way in helping you build an inquiry community. The chart below offers some preliminary suggestions on how inquiry dispositions can flourish in your classroom.

**BIG IDEA**  
Inquiry dispositions support risk-taking and a sustainable commitment to inquiry learning.

**CONVICTION**  
How convinced are you that curiosity, criticality, hopefulness and open-mindedness are necessary conditions for learning?

**COMMITMENT**  
When have you been most engaged as a learner and why?



**FIGURE 1.1** Curiosity, criticality, hopefulness and open-mindedness are the essential building blocks for creating a sustainable culture of inquiry-based learning.

Disposition	Description	Ways to promote the disposition in your classroom
<b>Curiosity and wonder</b>	You see the world as mysterious and have many questions and interests as you try to make sense of the world.	<p>Create and share simple, open-ended yet purposeful provocations with your students to invite, entice and expand intellectual curiosity on a specific topic or concept. Common provocations include an interesting photo, book, picture, natural object, question, event, or an interest of the students.</p> <p>Create a wonder wall of student questions.</p> <p>Share your own curiosities, pivotal questions, interests, and the successes and pitfalls of your own inquiry endeavours.</p>
<b>Criticality (critical thinking)</b>	<p>You enjoy thinking deeply. This thinking may involve making predictions, verifying evidence and assessing arguments and claims.</p> <p>You do not accept arguments based purely on authority (because someone else said so) You like to figure things out for yourself.</p> <p>You take risks in thinking and accept that mistakes and errors are essential for learning.</p>	<p>Teach students and provide students with opportunities to:</p> <ul style="list-style-type: none"> <li>• construct and recognize valid arguments and conclusions.</li> <li>• recognize common mistakes (fallacies) in reasoning.</li> <li>• distinguish between evidence and interpretation of evidence.</li> <li>• continually reinforce that learning to think deeply is a challenge for everyone and that learning involves making mistakes (highlight your own mistakes to students and how you learn from them).</li> </ul>
<b>Hopefulness</b>	<p>You see the world as it is and like to think how it can be improved. You do not accept the ways things are as inevitable.</p> <p>You care about and have a sense of purpose in your inquiries.</p>	<p>Inquiries involve problem-solving — they are future oriented. Do not deaden an inquiry process by presenting current knowledge as the be-all and end-all.</p> <p>Allow student to create their own knowledge and to be change agents. Recognize and model wonder about the world.</p>
<b>Open-mindedness</b>	<p>You are open to surprises.</p> <p>You consider many sides and perspectives when thinking.</p> <p>You are aware of your own biases and actively seek new questions and ideas about the world that you may not have considered before.</p>	<p>Highlight mysteries, big ideas and questions about the world.</p> <p>In preparing guided inquiries, be sure to provide evidence and arguments from multiple perspectives for students to consider.</p> <p>Provide multiple opportunities for students to self-reflect on their thinking.</p> <p>Tempt students out of their comfort zone by providing opportunities for them to learn more about themselves, their communities and the world.</p> <p>Have students create an “amazing and astonishing” wall that highlights new learning they have discovered through the inquiry process.</p>

**FIGURE 1.2** There are many ways to promote inquiry dispositions in your classroom.

## TEACHER QUERIES

### Am I already doing inquiry learning?

Teachers frequently ask us for reassurance (“Am I doing inquiry?”) since they employ a wide variety of instructional strategies or research methods in their classrooms. These teachers may already be extremely proficient in encouraging inquiry disposition such as curiosity and critical thinking in their students.

It has been our experience that the vast majority of teachers are engaged in some type of inquiry learning and many are doing considerable amounts of inquiry throughout the school day.

If you are asking students open-ended questions, if you are provoking their curiosity and if you are supporting them to think deeply about their own learning and the world around them, you are “doing inquiry.”

So the issue for most teachers is not if they are “doing inquiry,” the real issue is how we can get better; better by offering more opportunities for inquiry, by deepening opportunities for thinking at each stage of inquiry, by clarifying our own understanding of inquiry skills and dispositions and by broadening our practices of the assessment of inquiry. And that’s where this book comes in. We hope to offer practical support in deepening and supporting you and your students’ inquiry work.

#### CONTEXT

How much inquiry are you currently doing in your classroom?

#### CAPACITY

What do you think you need to learn in order to do more and better inquiry?

## THINQ

- How do you build a classroom culture that supports inquiry dispositions?
- How do you see yourself reflected in these inquiry dispositions?
- How could your school be more reflective of these inquiry dispositions?

### 1.3 I say inquiry, you say inquiry: Are we talking about the same thing?

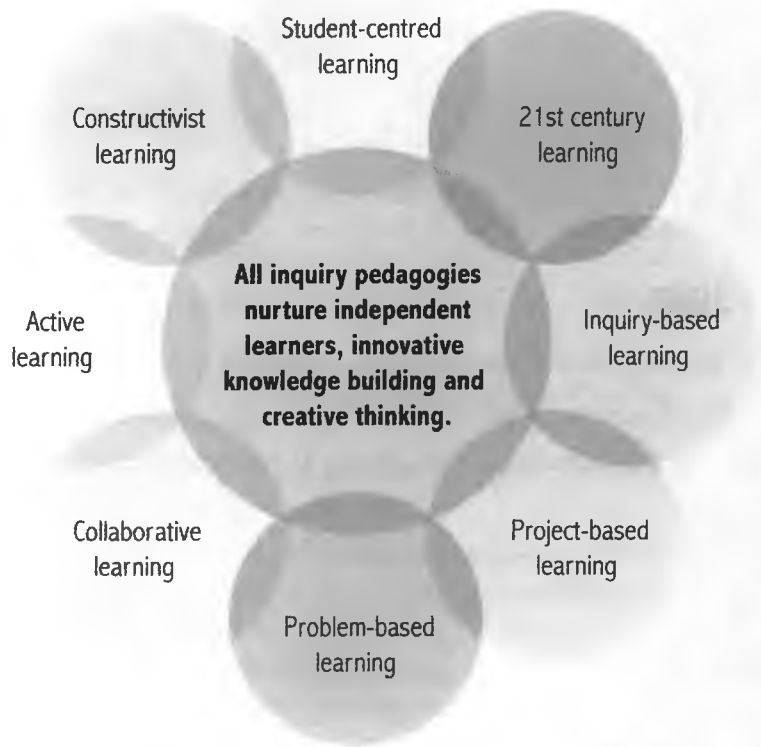
We have found the term “inquiry” to be an elusive term since inquiry learning shares important purposes and traits of other pedagogies such as constructivist learning, active learning, discovery learning, student-centered learning, collaborative learning, 21<sup>st</sup> century learning, transformational learning, critical pedagogies and others. To simplify, all these pedagogies share a purpose, and that purpose is to make a child an effective and independent learner by giving them opportunities to build knowledge.

For all of these pedagogies, knowledge is living and changing because it is socially and personally constructed. Students learn best when they are invited to be part of the active and exciting process of knowledge building. Learners are no longer viewed as containers to be filled with disconnected bits of knowledge; they are naturally curious, rational and committed to making sense of their world.

Teachers also should be intellectually engaged in their craft and not merely following lock-step curricular or instructional mandates. Teachers are not all-knowing authority figures but are skilled facilitators and talented conceptual thinkers who can provoke wonder in their students. So when teachers grapple in trying to distinguish inquiry from other pedagogies, it is helpful to remember what these have in common — an inquiry orientation in how knowledge is created, built and shared.

**BIG IDEA**  
All knowledge is living and changing because it is personally and socially constructed.

**CONFIRMATION**  
In your experience, do children learn best when they are actively involved in “building knowledge”? Why or why not?



**FIGURE 1.3** All inquiry-type pedagogies share a common purpose.

## 1.4 Isn't there a standard type of inquiry or method of inquiry?

In addition to pedagogies that include inquiry purposes and qualities, there are also discrete types of inquiry for teachers to choose from. These include problem-based learning, project-based learning, play-based learning and design-based instruction, to name just a few. Your grade division or school or school district may be trying out various forms of inquiry-based learning, or is a proponent of one or two in particular.

It is easy to become overwhelmed with so many choices of inquiry learning. Some inquiry types focus on technology, especially in the sharing of new ideas with a larger world audience. Some deal more with the creation and innovation of objects while others remain more in the realm of ideas. Some types are aimed at different age groups. Nonetheless, what we find helpful is to grasp the three essential traits of all types of inquiry learning.

### Essential traits of inquiry

1. Inquiry is rooted in an essential question that invites the learner to wonder, think deeply and solve.
2. Answering the question or solving the problem involves a method. This method involves discrete steps or stages of a cycle that help the learner with their thinking. This method may be particular to a discipline.
3. In answering the question or solving the problem, the student experiences a developmentally appropriate version of the way professional or expert learners in a field engage in their work. Like professionals, they think critically, self-reflect, contribute, communicate and share findings. New knowledge is created.

### BIG IDEA

All inquiry learning, regardless of grade or discipline, has three common essential traits.

### CAPACITY

Do you feel you have a clear understanding of the nature of inquiry learning? What else would you like to know?



**FIGURE 1.4** All inquiry learning experiences share three essential traits.



## Discipline-based inquiry models

In addition to the many types and variations of inquiry, there exists yet another factor that distinguishes inquiry. Each discipline has its own way of building knowledge and verifying what it considers quality work. The process of inquiry learning tends to reflect the particular qualities of the specific disciplines of the inquiry. If you are doing a math inquiry or a historical inquiry or a visual arts inquiry, the method, stages, processes and questions of the inquiry can be distinct.

Consider the five visual models of inquiry processes on the following page. These visual models are helpful in supporting the understanding of teachers and students since they are an attempt to represent the complexity involved in the inquiry process. Referring to the models frequently and consistently helps teachers and students address concerns and provide appropriate instructional support.

Don't be deceived by some of the linear ways in which inquiry can be represented. Experienced inquirers know that the process is responsive to the individual, recursive, non-linear and flexible, with a lot of "looping back" unlike more traditional models of a research process.

These are just five examples of inquiry processes based on a particular discipline. Your curriculum documents may outline specific inquiry processes that you and your students should be using. Does this mean you have to become experts in all the disciplinary methods of inquiry? Certainly not, but it does help to recognize that there are differences to consider. We advise avoiding getting bogged down in the many distinctions, especially when you are working with junior learners. We recommend instead that you focus on the three shared essential traits and purposes. Discipline and interdisciplinary examples are provided in upcoming chapters to help clarify any important differences in inquiry processes.

## THINQ

- What are the differences and similarities between the various inquiry processes represented in the graphics on the next page?
- Why may it be important for your students to use different inquiry processes?
- What other inquiry processes are you familiar with?
- Which ones do you think are most helpful to your learners and why?

### How inquiry models can help

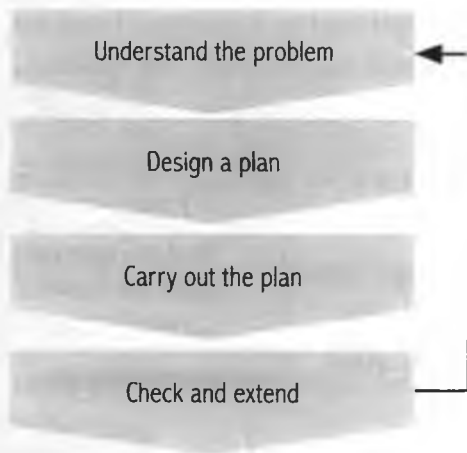
#### Inquiry models:

- represent a holistic view of active knowledge creation.
- attempt to simplify complex learning experiences.
- use "steps" to highlight important distinctions in thinking.
- facilitate thinking important to the discipline.
- focus on process of knowledge creation rather than outcome.
- remind learners to pause, stop and think as thinking proceeds and deepens.
- highlight transferable skills.
- stress collaboration at all stages in order to make meaning.
- vary in usefulness according to context.

**FIGURE 1.5** Inquiry models can be helpful to learning in many different ways.



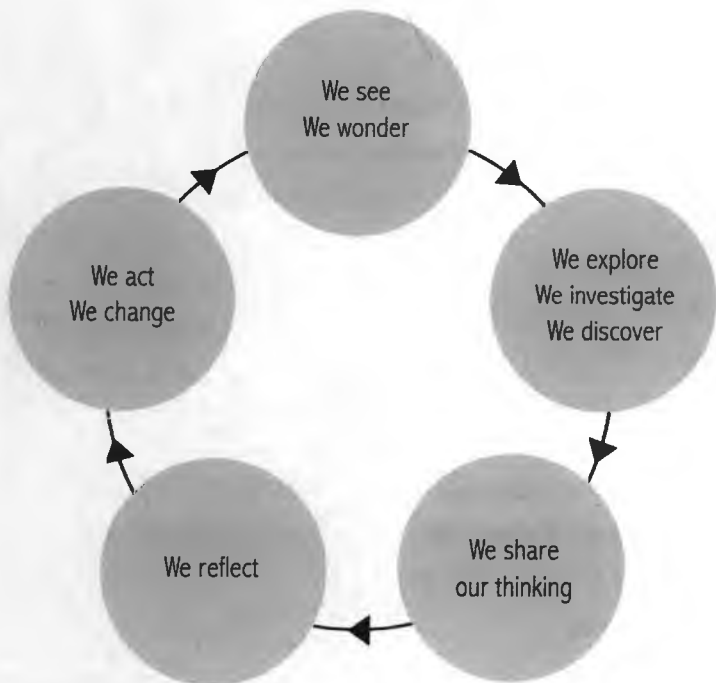
**FIGURE 1.6** A scientific inquiry model focuses on experimentation and discovery (C. Bruner, 2014).



**FIGURE 1.7** Polya’s mathematical inquiry model focuses on solving problems.



**FIGURE 1.8** Design-and-build inquiry focuses on innovation and doing and making things better.



**FIGURE 1.9** A social studies inquiry focuses on wondering about, exploring and understanding the world.



**FIGURE 1.10** An arts inquiry or creative process model is focused on the act of creation.

## 1.5 Why is inquiry a better way to learn?

So this is where we come in, educators who believe that inquiry learning promises a “better way to learn.” But how is it a better way to learn? Let’s consider some fundamental beliefs about learners and then turn to recent educational research that supports the belief that inquiry is a good way to learn.

### Beliefs about learners

Inquiry learning is rooted in progressive and constructivist educational philosophies of the early 19<sup>th</sup> century. Progressive educators, such as John Dewey, proposed that learners should “do” the discipline by thinking, communicating and verifying knowledge in an authentic manner. He felt passive transmission-based pedagogies were flawed since the memorization of facts, discreet procedures and algorithms were quickly forgotten because the learner had no part in working with them or in building new knowledge that was relevant to them or to the real world.

Paulo Freire’s critical pedagogy labelled education a “banking model” with the teacher filling the learner’s mind with information. Learners were passive and oppressed by an education that was imposed on them. He advocated for an education where learners would critically engage with knowledge, where they would grapple and build upon what is known, and strive to change the world based on this new knowledge.

Central to inquiry learning are beliefs in who learners are and what they are capable of. Inquiry learning encourages human curiosity. It demands rational thought. It is grounded in what is already known but pushes the learner to add to this knowledge through a process in which they explore the ideas again from new perspectives and viewpoints. Learners are in control. They are active participants, not passive recipients. Learning is a collaborative endeavour. Ideally, learners should be self-motivated, confident and excited about the inquiry. Inquiry learning deals with “real world” problems that are important to our students, who they are, and what is important to them.

Inquiry learning can be a transformational mode of learning. It changes the learner and the learning community, both in and beyond the classroom walls.

### **BIG IDEA**

Central to inquiry learning are beliefs about who learners are and what they are capable of.

### **CONVICTION**

What are your beliefs about the learners in your classroom?

## Research about inquiry learning

Scientific research on learning supports the theoretical claims of these respected education theorists. Dr. Sharon Friesen and David Scott (*Inquiry-Based Learning: A Review of the Research Literature*, 2013) thoughtfully detail a diverse and wide body of research on the most common types of inquiry learning in North America. Some of the highlights of their research suggest:

- inquiry-based approaches to learning positively impact students' ability to understand core concepts and procedures. Inquiry also creates a more engaging learning environment.
- disciplinary-based inquiry does not detract from traditional forms of assessment but actually increases achievement on traditional forms of standardized assessment (Friesen, 2010).
- discipline-based approaches to inquiry learning (as opposed to minimally-guided instruction), if designed well, support students in deep learning.
- inquiry helps students develop their critical thinking abilities and scientific reasoning, while developing a deeper understanding of science (Barrow, 2006).
- problem-based learning increases student engagement in mathematics, leads to less anxiety towards mathematics, a greater willingness to see mathematics as relevant to everyday life, and increases willingness to approach mathematical challenges with a positive attitude (Boaler, 1997).
- problem-based learning fosters greater gains in conceptual understanding in science (Williams, Hemstreet, Liu and Smith, 1998).

### CONVICTION

How convinced are you that research provides evidence of the benefits of inquiry learning? What else would you like to see?

### CONFIRMATION

Do your own classroom experiences confirm or contradict the research?

### Benefits of inquiry-based learning

More engaging learning environments

Positive impact on student core conceptual understanding

Increased student achievement (even on standardized tests)

Fosters critical, creative, innovative thinking

Greater student engagement

Improved student attitudes to learning

**FIGURE 1.11** Research indicates there are significant benefits to taking an inquiry stance to learning.

## Inquiry-based learning in the Information Age

Inquiry-based learning takes on a whole new dimension for students living in the Information Age. Teachers and textbooks are no longer the only expert sources of knowledge. When motivated, students can access a multiverse of sources and information to satisfy their curiosity. More powerfully still, this inquiry process can be personalized to meet each students' interests and learning preferences. Students are no longer limited to traditional one-size-fits-all tools and processes for gathering sources.

It's imperative, however, that students hone their analytical skills when faced with so much information from so many sources; that they become critical consumers and responsible creators of information. Teachers can respond to this need by modelling and facilitating the kind of analytical thinking required to conduct inquiry. They might also expect that the process and products of learning will not look the same as they once did.

It is reasonable to expect that teachers will respond to students' considerable skill with digital technologies by encouraging their thoughtful, purposeful and creative use — whether by encouraging Internet searches for evidence; collaborating on solving problems in a social network; or sharing ideas, conclusions and questions with the wider digital world.

**FIGURE 1.12** By taking an inquiry stance, many important aspects of best-practice teaching, learning and assessment can be addressed.

## THINQ BIG

### Inquiry learning: A bridge to the future

As our world continues to change at an ever increasing rate, reforming and transforming education to teaching and learning in a digital age can seem a daunting task. In our view, inquiry-based learning represents an overarching big idea that offers a possible bridge to the future.

In the same way, the goal of putting a person on the moon offered a powerful vision that engaged millions of people around the world. Achieving this goal was immensely complicated, involving thousands of people doing things that had never been done before. All of this activity and complexity was glued together by a single central vision.

Inquiry-based learning offers similar possibilities for education. In taking an inquiry stance, the challenges of 21<sup>st</sup> century learning can be tackled, not by focusing on dozens of different priorities, but on a singular, powerful and overarching vision of inquiry that can be shared across schools, disciplines and grades.

Traditional learning	Inquiry learning
Have to learn	Want to learn
What to know	How to know
Tell and memorize	Ask and inquire
Only one right answer	Many possible conclusions
Teacher directed	Learner centered
One-size-fits-all	Personalized
Passive learning	Active learning
Assessment for marks	Assessment for learning

# 1.6 What is the junior teacher's role in inquiry learning?

When we talk with junior teachers who use inquiry learning, we learn a lot from them and about them. Firstly, these teachers believe that they are learning alongside their students and are excited by the prospect of doing so. They are passionate and curious about their disciplines and about critical and creative thought.

They “think big” by identifying essential concepts and skills and they don't abandon those big ideas, even when faced with pressures of coverage, standardized tests and other external mandates. They have confidence in their students' abilities and are responsive to their interests. These teachers take appropriate risks in their teaching by challenging students to think deeper, to question, to refute, to support, to interrogate, to consider many perspectives, and to stretch beyond the obvious and easy-to-answer questions.

These teachers talk about overcoming their own fear and trepidation when conducting an inquiry due to the reality that they never know for sure what may happen. This initial fear changes to excitement over time and in seeing the benefits to student learning and engagement. These teachers have tried and stumbled and tried again to create and hone strategies to make their students better inquiry learners.

**BIG IDEA**  
 Inquiry learning is a continuum, with guided inquiry and a large degree of teacher direction at one end, and open inquiry with a large degree of student autonomy at the other.

**COMMITMENT**  
 How comfortable are you with the possibility of changing your role as a teacher?

Traditional teaching	Inquiry teaching
Teacher is the expert	Teacher <b>is a co-learner</b>
Teacher tells	Teacher <b>models</b>
Teacher controls	Teacher <b>activates</b>
Teacher corrects mistakes	Teacher <b>gives feedback</b>
Teacher gives answers	Teacher <b>asks questions</b>
Teacher is a manager	Teacher <b>is a mentor</b>
Teacher assesses task completion	Teacher <b>assesses learning</b>

**FIGURE 1.13** In an inquiry learning classroom, students benefit when teachers participate as co-learners who model and activate learning.

## From guided to open inquiry

Some of the nervousness many teachers feel when planning inquiry learning is due to a misconception involving the appropriate degree of student autonomy. Inquiry learning is a continuum that begins with a large degree of teacher direction and a small degree of student autonomy. The continuum extends to the point of no teacher direction and complete student autonomy; this is called “open inquiry.” The latter is more of an idealized horizon on the continuum of guided inquiry.

You know your learners best. A learner who has little experience with asking questions, selecting and assessing evidence and drawing conclusions needs direct instruction and modelling. Not providing that instruction, modeling and the opportunity to practice would only frustrate that learner.

Sometimes the learner is good at asking questions and gathering evidence, but is not very skilled at synthesis, evaluation or critical self-reflection. This student doesn't need the teacher to model scaffolded questioning or evidence gathering, but they do need help to make them more self-directed in other aspects of critical thinking.

Rarely is there an inquiry experience in classrooms at either end of the continuum. Most inquiry learning is a blended version of teacher direction and student autonomy. Teachers, through careful consideration and using their knowledge of their students, explicitly plan, teach and model the stages of inquiry so that student proficiency increases and future inquiry opportunities can become increasingly student-directed. This, of course, is the ultimate goal of inquiry: giving students the power to conduct their own inquiries throughout their lives, independent of teachers and schooling.

### WORDS MATTER

#### Guided

Conducted by a guide.

#### Open

Willing to consider many different possibilities.

#### Facilitate

To help something operate more smoothly and effectively.

#### Model

An example to copy.

#### Feedback

Information that is used as the basis for improvement.

### CAPACITY

In your classroom, where would you place the readiness of you and your students on the continuum of guided to open inquiry?

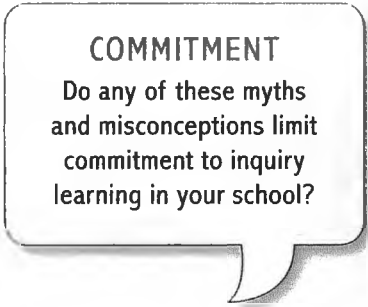


**FIGURE 1.14**

As you move from guided inquiry towards open inquiry, teacher direction decreases and student autonomy increases.

Another common misconception of inquiry is that it is the best or only teaching strategy that should be used in the classroom. Debates about the “best teaching strategy” are largely counterproductive in our view. In order for inquiry pedagogy to be successful, other strategies that promote learning, such as direct instruction, telling stories, practicing and mastering literacy, numeracy and performance skills, are also required.

Critics of inquiry learning (yes, they exist) claim that student learning is compromised when students are left to “discover” facts, procedures and skills without any assistance from a teacher. We can see their point. Students can become frustrated if asked to complete a cognitively demanding task with no prior experience or supporting knowledge. A considerable body of educational research shows that guided inquiry is the most effective form of inquiry learning.



**FIGURE 1.15** There are many myths and misconceptions about what inquiry is and how it works.

Inquiry myths and misconceptions	Response
<b>The teacher has no control.</b>	Students do not conduct inquiry unassisted. In order to maximize the impact of an inquiry, teachers adopt powerful questioning strategies, scaffold the inquiry method so that students understand what they are doing and why they are doing it, and provide frequent formative feedback. If a teacher is not used to the active learning that occurs during an inquiry, they may view it as chaotic when in fact it is productive learning.
<b>It takes too long.</b>	An entire inquiry method or cycle does not have to be completed for important learning to happen. Teachers can focus on one or two aspects of an inquiry method. Inquiry can take more time than passive transmission models, but the resulting learning is deeper, more beneficial for the learner, and will address a number of overall expectations, big ideas, or essential understandings of subjects.
<b>It's too hard for junior students.</b>	To claim that students must have acquired or memorized a certain set of facts or have mastered a set of skills before they can conduct an inquiry is to deny them the opportunity to become active learners and deep thinkers. Likewise, claiming that students have to be of a certain age or language proficiency to conduct an inquiry is misguided.
<b>It's difficult to assess.</b>	Effective inquiry learning, like other learning strategies, is most effective when supported by formative assessment strategies. Teachers do not have to learn a host of new assessment and evaluation methods when engaged in inquiry-based learning; they can apply good fundamental principles of assessment as, for, and of learning to inquiry.
<b>It's the best teaching strategy.</b>	Inquiry learning benefits the learner in many ways. It is not the only way to learn, nor is it the most expedient way to learn in some instances (e.g., learning how to measure angles, blending colours for painting, how to work best in a collaborative group). Inquiry is best used to actively explore deep questions based on important curricular concepts. It is best balanced with other teaching strategies.



We have seen effective inquiry in action: at different grade levels, within different subject-based disciplines, and in vastly different settings (e.g., urban and rural schools, small and large schools). In this book, we aim to provide you with the practical advice and examples of inquiry learning that will act, not as a recipe for success, but a guide to deepen the inquiry learning that is already happening in your classroom. One feature this book offers is a number of instructive case studies.

In the following case study, begin by considering if the teacher is conducting an inquiry based on the three essential traits: (1) an essential open-ended question; (2) a method for thinking about and answering it; and (3) critical thinking, reflection and sharing, leading to the creation of new knowledge.

## INQUIRY IN ACTION

### Science: Is this inquiry?

Let's consider a snapshot of Emma's class with the question "Is it an inquiry?" in mind.

Emma's grade 4 class is studying the topic of the habitats and animals of North America and she would like to include more inquiry learning in this unit. She decides to let the students choose their own animal to research. Emma has provided visual organizers for the students to use to organize their research. Students are expected to present their findings to the class in a format of their choice, such as a diorama, a series of pictures with text or a poster.

Emma's plan has a good degree of student choice, which can increase student engagement. To be a true inquiry, however, Emma should be posing a deep inquiry question to guide the students' understanding of the concept of habitat — a question that allows factual information about any living thing to be added to the more important conceptual understanding. An example might be "How is habitat essential to an animal's survival?" or "Why should we protect habitats?" Inquiry is grounded in an open-ended question or problem. (Learning that is focused on closed-ended questions or problems are more accurately called research or calculations.)

Students would engage in further questioning to guide their gathering of sources. Maybe these questions would

be posted on a "wonder wall" for that unit. Students could choose the "best" five questions for research on the animal's habitat (e.g., "What does this animal need to survive?" "What physical qualities of the animal reflect its habitat?" "Is this animal threatened because its habitat is changing?" "How do humans impact this habitat?").

They might also be engaged in the critical thinking demanded of an inquiry by assessing the sources of their research (e.g., "What sources are reliable?") by summarizing and synthesizing their research by using visual organizers provided by the teacher, and by drawing a viable conclusion based on the research.

Time is given throughout the inquiry for the students' critical reflection (e.g., "Is this the right question?" "Are these the best sources?" "Is there another way of thinking about this?" "Am I ready to make a conclusion?").

### THINQ

- How else could Emma deepen or focus this learning to make it more authentic inquiry learning?
- Consider a learning activity that you do with your students that involves inquiry. How could you hone this activity to honour and deepen each stage of inquiry?

## 1.7 Are inquiry-based learning and the junior learner a good fit?

Inquiry learning is a good fit for the junior learner. Junior learners have emerging qualities that can be intentionally strengthened by inquiry learning experiences. The junior learner also faces unique challenges that an inquiry-focused classroom can address.

### Characteristics of junior learners

In terms of emerging qualities, the junior learner is more intellectually and socially curious than a younger student. A classroom focus on collaborative wondering and questioning meets this junior learner's need.

The junior learner has more lived experiences and critical thinking capabilities to inform their learning. They benefit from investigating more complex topics that have no easy answers and that demand logic and reasoning. Junior learners also enjoy opportunities to test their thinking abilities.

They are more empathetic and have a more flexible sense of what is right and wrong compared with younger students. This ability to think with nuance, open-mindedness and to withhold judgment allows the junior learner to delve into open-ended inquiry questions without the same degree of frustration they may have felt at an earlier age.

### Strengths of junior learners

Inquiry learning taps into the inherent strengths of the junior learner. Junior learners are at an age where they are beginning to critically examine the world. They notice that "things aren't always what they appear to be." Inconsistencies, contradictions and unfairness bother them and make them wonder about how things got this way and how to make them better. They are developing more sophistication as speakers, writers and listeners for a purpose. They tend to enjoy puzzles, mysteries and surprises in their thinking.

### BIG IDEA

Inquiry learning taps into the inherent strengths of the junior learner.

### Characteristics of junior learners

#### Junior learners ARE...

- intellectually and socially curious.
- empathetic and open-minded.
- aware of and bothered by unfairness and inconsistency.
- becoming less egocentric and more willing to collaborate with peers.
- increasingly autonomous of adults and less likely to accept arguments based on authority.
- vulnerable to embarrassment and loss of self-confidence when compared to others.

#### Junior learners CAN...

- investigate more complex questions with no easy answers.
- think with more nuance and withhold judgment.
- examine the world more critically and see that things aren't always as they appear.
- make more connections from their lives to the rest of the world.
- better sustain their interest and effort when learning is challenging.
- face new anxieties about real world problems and issues.

**FIGURE 1.16** Inquiry-based learning offers junior learners many opportunities to express who they are and what they can do.

## INQUIRY FOR ALL

### Questions of personal significance

Their combined curiosity and energy help to sustain their interest even when learning becomes difficult. In a classroom that honours their voices and lived experiences as valuable, students make strong connections from their personal lives to the real world. They can gain confidence and determination to stay committed to learning, despite the challenges. They may like to wrestle with ideas together with their friends and fellow students. They develop beyond ego-centric concerns to a greater understanding of other people and communities.

Junior learners are more autonomous than younger children and feel the need to move away from adults towards peers. They may feel the need to challenge the adult world and to test boundaries. They realize that their beliefs may differ from others. The inquiry disposition of not accepting arguments purely on authority (because someone else said so) and wanting to figure things out for oneself mirrors the cognitive and social development of the junior learner.

As their sense of self builds, junior learners can feel vulnerable to embarrassment and may suffer a loss of self-confidence when compared to others. This trait creates challenges to traditional classroom assessment but not to the culture of learning required in an inquiry classroom. It's important to build a classroom culture that supports the inquiry dispositions of criticality and open-mindedness. By making sense of the world together, inquiry learning invites junior learners to take risks, contribute and share findings.

Junior learners can face new anxieties. They are moving away from fears of strangers, monsters and ghosts to real fears of wars, social injustices and environmental crisis. The junior learner realizes that actions in the present will impact the future, thus validating their fears. We have noted that one important inquiry

By focusing on asking questions and solving problems of personal significance, inquiry learning offers great potential to meet the needs of exceptional students. Tap into what students love to learn, regardless of whether it seems like a good curriculum fit. The student with passionate interests already brings prior knowledge that will assist them immensely throughout the inquiry process. Working collaboratively with peers in inquiry learning allows exceptional students to make friends, actively contribute and observe knowledge-building in action.

Students with special needs may require more support in the questioning and exploration part of an inquiry to gain the confidence needed to attempt new learning. These students will experience meaningful inquiry learning when teachers plan to focus on one or two appropriate inquiry skills (e.g., asking questions, recognizing reasons, developing reasons or sharing reasons) and allowing additional practice through questions of personal significance. Teachers should work together in a professional learning network to scaffold inquiry skills for exceptional students, perhaps through joint planning opportunities.

Teachers should communicate with the parents of exceptional students. One or two specific inquiry skills will assist students in making connections in their daily lives and helps to build and deepen these new inquiry skills. These skills may include social skills (e.g., taking turns in a group, giving positive feedback) and cognitive skills (e.g., using inquiry vocabulary, identifying reasons).

Teachers should always focus on the growth of the student in inquiry learning and celebrate and share these successes with the learner, peers and families.

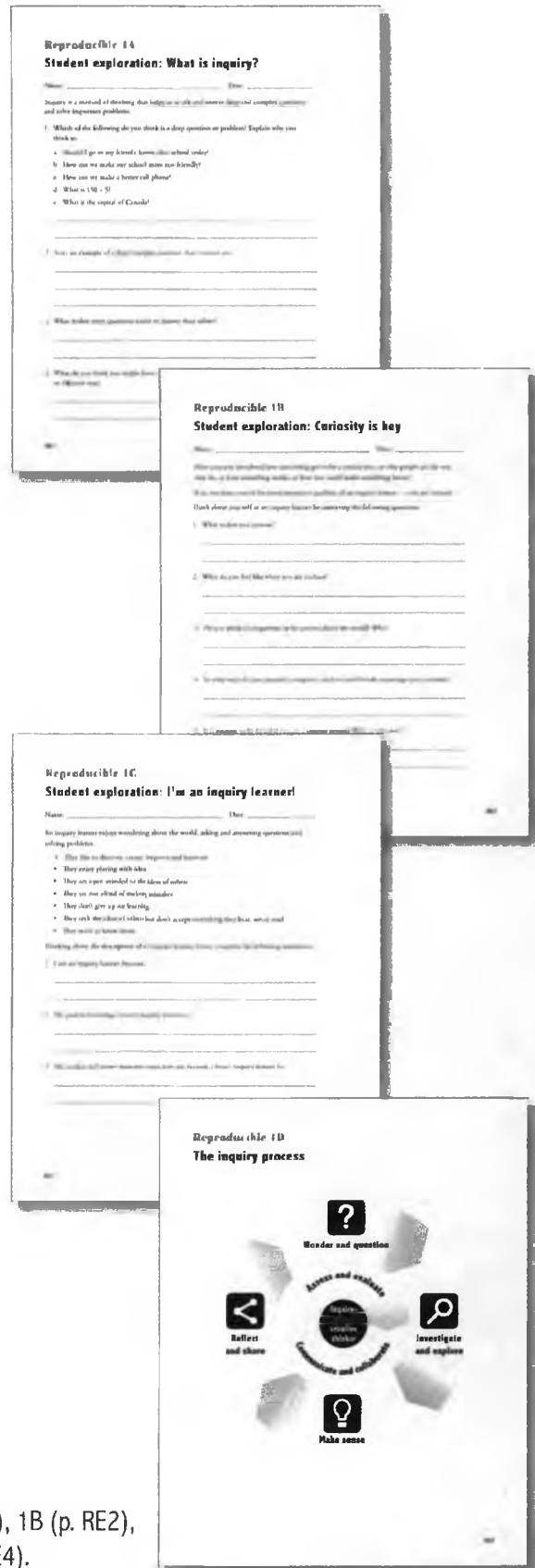
disposition is the ability to be hopeful. Inquiry learning allows students to both create their own knowledge and to be change agents. Hopeful inquiry learners do not accept the ways things are as inevitable. Thus, inquiry learning can help to alleviate some of these anxieties.

Inquiry learning and junior learners are a good fit. This rapid development of thinking and socio-emotional abilities is an ideal time for inquiry learning.

## Helping students to understand inquiry

It is helpful for students to understand what inquiry learning is. Here are three ways you can help students understand the process of inquiry:

- Have them define what it means to be an inquiry learner and to think about themselves as inquiry learners (see Reproducibles 1A, 1B and 1C). These reproducibles could be used as exit cards, learning or response journal entries, or as partnered sharing questions.
- Have them identify examples of powerful inquiries and people involved in them. Students can more fully appreciate the necessity of failure and making mistakes through the process when they see how other respected thinkers struggled before changing the world with their thinking.
- Post a visual of the inquiry method most suited to your students and the inquiry and refer to it frequently for the purpose of self-reflection (see Reproducible 1D).



**FIGURES 1.17–1.20**  
 Reproducibles 1A (p. RE1), 1B (p. RE2),  
 1C (p. RE3) and 1D (p. RE4).

# Revisit and reflect

This introductory chapter explored the possibilities of inquiry learning, namely what it is, how it benefits the learner and the idea that inquiry is an age-old process of creating and building knowledge that remains dynamic and responsive to today's challenge of fostering inquiry-driven and creative thinkers. In the next chapter, we delve into the assessment of inquiry and how teachers can best support students as they learn through inquiry.

## THINQ

- What are the opportunities and challenges for you in "going deeper" with inquiry learning?
- How do you or can you inspire your students to be creative and innovative in addressing challenges that arise during their inquiries?
- Which inquiry dispositions do your students possess? How might you model and support the growth of inquiry dispositions for your students?
- Consider Reproducible 1E, *Teacher self-assessment: Which pattern of inquiry best describes your practice?*
- Consider Reproducible 1F, *Teacher self-assessment: Inquiry readiness checklist*. How ready are you?

## BIG IDEAS

- 1.1 We learn by asking questions (inquiring).
- 1.2 Inquiry dispositions support risk-taking and a sustainable commitment to inquiry learning.
- 1.3 All knowledge is living and changing because it is personally and socially constructed.
- 1.4 All inquiry learning, regardless of grade or discipline, has three common essential traits.
- 1.5 Central to inquiry learning are beliefs about who learners are and what they are capable of.
- 1.6 Inquiry learning is a continuum with guided inquiry and a large degree of teacher direction at one end, and open inquiry with a large degree of student autonomy at the other.
- 1.7 Inquiry learning taps into the inherent strengths of the junior learner.

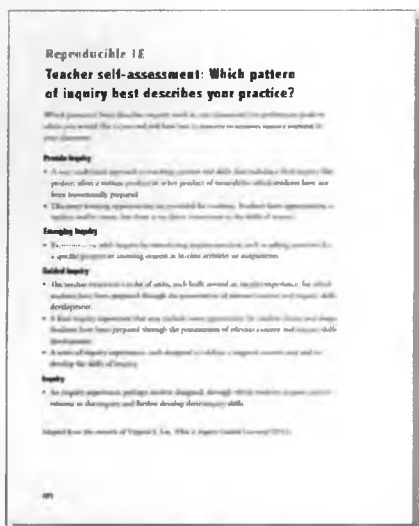


FIGURE 1.21 Reproducible 1E, p. RE5.

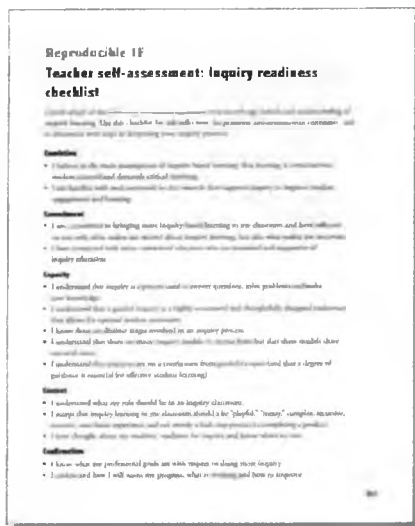


FIGURE 1.22 Reproducible 1F, p. RE6.