

# Inquiry Transforms Learning Environments for Students

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Strong inquiry transforms learning environments for children and is part of our Alberta teaching mandate.

Inquiry-based learning is not an add-on; rather, it is a way to achieve the goals of the Alberta programs of study, since inquiry-based learning is a component of all Alberta curricula (Alberta Learning 2004, ix).

Although inquiry-based learning is familiar to some teachers, it requires a re-examination of assumptions about learning at the same time. Teachers recognize when an insightful comment arises in a classroom conversation or when a child brings new questions and concerns to a topic. Teachers know what it is like when children burst beyond the confines of conventional assignments to enter into real, worldly, disciplined and intellectually sound work.

## What Is Inquiry?

Inquiry is the dynamic process of being open to wonder and puzzlement, and coming to know and understand the world (Galileo Educational Network, cited in Alberta Learning 2004, 1).

There are many ways to characterize inquiry learning. As teachers, if we are open to wonder and puzzlement, then we begin to understand that inquiry work is not about defining it. Inquiry, if it is only a label, may have a brief shelf life, because there is the danger that it can become simplified and devoid of deeply rooted understanding, or that it can be used to describe any teaching situation.

Strong inquiry work is a long-standing type of work that has powerful results for students and teachers. Teachers and students call inquiry work *hard fun* that is worth the effort and has the potential to transform teachers, students, learning environments and curricula, because it goes beyond merely transmitting information. Transforming learning environments for students takes the discipline

and the courage to examine and address our current assumptions about how children learn.

As students contribute innovative ideas to current issues, the subject discipline becomes enlivened. One Grade 6 student, who was collaborating with NASA scientists to design future space stations, recognized this and said: “If NASA had all the answers, they wouldn’t be asking us for our ideas.”

Teachers, in turn, become revitalized and comment: “Now I remember why I entered teaching in the first place.” This type of learning creates energy.

Inquiry has a rich history. Socrates believed that knowledge could only survive in a dynamic environment of human inquiry. John Dewey (1910) explained that inquiry involves studying, pondering, considering alternative possibilities and multiple sources of evidence. Jean Piaget claimed that children learn through questioning, challenging and reworking prior understanding through active engagement.

When teachers enter into inquiry tasks they are opening intellectual spaces for children.

Inquiry is not a methodology. Teaching with an inquiry stance requires understanding many teaching methods and the wisdom of educators who make decisions based on knowledge of their students in relation to the inquiry.

Transforming learning environments requires a community of learners and is a collaborative effort that takes careful preparation. Allowing for ongoing conversations among administrators, teachers, students, parents and mentors is key. Working with teacher mentors who have cultivated an understanding of inquiry is also a critical aspect of comprehending inquiry-based teaching and learning.

Because time is precious, one needs faith and patience to shape inquiry work. The pressing demands of teaching make it difficult for us to trust the process and be patient. This is often the biggest roadblock.

Understanding is an essential feature of inquiry. Determining what matters in core content and portraying this to students is critical. Also, asking ourselves what matters about this discipline and its meaning for today's children is a question we need to consider.

Emerging research about how children learn also highlights the importance of rethinking what is taught, and how it is taught and assessed in an era of information and technology advancement and global awareness (Bransford, Brown and Cocking 2000).

### Seven Characteristics of Inquiry Teaching And Learning

The seven characteristics of inquiry-based teaching and learning (Galileo Educational Network 2006) offer the potential for transforming learning environments and are in alignment with Alberta curricula and current research from the learning sciences (Bransford, Brown and Cocking 2000).

1. **Authentic**

Authentic work is work that the world needs done and is characterized by knowledge building (Bereiter 2002), not knowledge consumption and regurgitation.

2. **Academic Rigour**

Academic rigour requires that students engage in intellectually challenging tasks that entail discipline. Inquiry challenges our generally accepted assumptions of students' abilities. Working in inquiry-based ways, we continually find that children are capable of far more than adults might normally expect. By challenging assumptions about child development, we see evidence of how development both effects and affects learning, and how learning also effects and affects development (Bransford, Brown and Cocking 2002).

3. **Learning in the World**

Students address questions and issues that are relevant to the curriculum but also related to the world outside school. For example, students studying the water quality and supply of the Bow River address problem posing and problem solving. Such projects also require students to work in groups to communicate, make decisions

and apply project management skills with the guidance of their teachers. In strong inquiry work, students become engaged in tasks that adults undertake.

#### 4. **Digital Technologies**

Appropriate and meaningful integration of technology extends and enhances student thinking when it is integrated into all stages of the exploration. Exposing students to a variety of technologies (video conferencing, simulation, databases, multimedia and hypermedia software) allows them to choose the best one to assist in the initial stages of research and communication with their audiences both inside and outside the classroom. Technology also allows parents to communicate with teachers and stay abreast of their child's progress.

#### 5. **Active Exploration**

Active exploration in relation to robust inquiry requires students to become involved in authentic investigations using construction, fieldwork, laboratory work, interviews and studio work. Various ways to present the findings of inquiry give students the opportunity to extend their understanding. Active exploration builds upon current research in the discipline and invites the children's natural curiosity, creativity, effervescence and engagement.

#### 6. **Connecting with Experts**

It is necessary for students to communicate with experts to enhance the inquiry. This allows them to get a picture of what is relevant and topical in the discipline. Experts should recognize the student's work as worthy of the discipline.

#### 7. **Assessment for Learning**

Teachers' wisdom, the character of the discipline and knowledge of the *Alberta Program of Studies*, guide the selection of assessment criteria. At the outset of the study, students set clear criteria that is continually revisited and extended throughout the inquiry. Through ownership and involvement in the assessment process, students develop key understandings and skills and become increasingly self-reflective through targeted feedback. Formative assessment involves all participants. Ongoing feedback should be offered to students from teachers, peers, self and experts. Student learning is strongly

supported by feedback at all stages of the inquiry and is critical for cultivating deep understanding.

The seven characteristics offer ways to transform learning through inquiry and are in service of the disciplines in the world, as well as to the specific learner outcomes in the *Alberta Program of Studies*. Working with them may offer an incremental way of moving from conventional learning environments to inquiry-based teaching and learning.

## Conclusion

Strongly crafted inquiry work prepares students to build knowledge and understand the world (Bereiter 2002). As one Grade 5 student who was involved in inquiry-based learning observed: “When kids know what they can do, it becomes a part of them.” Such student learning and engagement have the potential to transform learning environments. The wisdom of teachers is still required, but in different ways, as students need to find, choose, understand, synthesize and communicate information to survive in an increasingly complex society.

## References

Alberta Learning. 2004. *Focus on Inquiry: A Teacher’s Guide to Implementing Inquiry-Based Learning*. Edmonton, Alta.: Learning and Teaching Resources Branch.

Bereiter, C. 2002. *Education and Mind in the Knowledge Age*. Mahwah, N.J.:

Lawrence Erlbaum Associates.

Bransford, J.D., A.L. Brown and R.R. Cocking, eds. 2000. *How People Learn:*

*Brain, Mind, Experience and School*. Washington, D.C.: National Academies Press.

Dewey, J. 1910. *How We Think*.

Galileo Educational Network. 2006. *Inquiry Rubric*. (Accessed February 1, 2006).

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