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Introduction

People ask me why I keep going back to Antarctica again and again. Well, I like it there. I like the endless reaches of wind-rippled snow, the stark peaks, the awesome glaciers Most of all, I guess, I like the challenge of it, for Antarctica still plays for keeps. And I believe, as the scientists do, that the things we can learn there will have a profound effect upon the lives of us all.

Rear Admiral Richard E. Byrd

Transformational Experience

Once there was a year seven student who read a book that was full of adventures, daring exploits, dangerous journeys, and rewarding conquests. The book, *Alone*, by Admiral Richard E. Byrd, describes a continent full of mystery. This continent is visited by very few humans, but it continually challenges people with puzzles to solve.

The continent is Antarctica, a mass of land covered by ice (in some places almost five kilometres thick), where temperatures dive down to -85 degrees Celsius and winds screech at hurricane force. It is not very hospitable, but Antarctica is unspeakably beautiful.

For many reasons the young student was captivated by stories from the heroic age of exploration and he wanted to know more. His continual questioning about this complex, earthly puzzle led to a wide variety of inquiry approaches: reading books, drawing charts, writing letters, building models, keeping a journal, conducting in-person interviews with explorers, visiting ships that sailed to Antarctica, setting goals to reach there, designing strategies to reach those goals, eventually reaching the continent, and setting out on explorations of his own. These are just some of the inquiry strategies he used, mainly on his own as the result of reading that book, which was suggested by another member of his family. He continued to gather and reflect on new discoveries made by scientists from all over the world and to entertain new, more challenging questions.

This ongoing learning situation is what Perkins (1995) has called a transformational experience, one that changes a person's life. And it certainly did that for this boy, who is the author of this book.

Journey of Thought

This book is titled *PBL: An Inquiry Approach* because developing questions about complex, intriguing, and sometimes mysterious experiences or phenomena seems to be a very natural occurrence. When people encounter strange happenings or difficult concepts and ideas, they naturally formulate questions such as, “What is going on? Why is this happening? What does this mean? What will happen in the future?” If they decide to answer these questions, they embark on a journey of thought that may take a few minutes, hours, or years. This book helps teachers create environments wherein they and their students can work with complex, intriguing situations that foster inquiry, research, and the drawing of reasonable conclusions.

Stop and Think

At various points in this text, there are places for the reader to stop and reflect on a question. This is an opportunity for the reader to generate his or her own ideas and then compare them with those of others. The purpose of the ‘Stop and Think’ sections is to elicit a wide variety of answers and get teachers thinking about how to use inquiry for problem-based learning (PBL).

There is also a ‘What’s My Thinking Now?’ page at the end of each chapter. This page offers the reader an opportunity to reflect on the chapter and jot down any comments or questions they may have—ones the reader may want to research later.

Transformational Elements

Not all school-based learning experiences can be called transformational; however, the premise of this book is that *with* students, teachers can design learning opportunities that build on the inquiry process. Inquiry, posing questions, is important for several reasons:

- Inquiry is a natural process, one people engage in from the time they begin to experiment with language.
- Thinking begins with problematic situations, ones characterised by doubt, difficulty, and uncertainty.
- Thinking through such dilemmas or perplexities often leads to answers and then more and more questions.
- The process is transferable from any one situation to another, across all cultures and ages.



Stop and Think

Identify a transformational experience of your own, one that may have begun with a complex situation that invited problem solving or long-range investigation.

What were the essential elements within this experience, elements that might be found in other peoples' experiences, ones that might be transferable to other experiences for adults and youngsters?

Here are some essential elements found in others' experiences:

- Identifying an intriguing phenomenon
- Making choices
- Generating lots of questions
- Being self-directed
- Searching for answers in many different places with a wide variety of people
- Learning teamwork
- Learning in new and exciting ways
- Setting goals and achieving them
- Sharing information with others
- Reflecting on the process continually.

PBL as an Inquiry Process

This book uses the inquiry process to introduce PBL. It explains how to create an invitational environment, then walks the reader through three phases of PBL. It begins with the teacher-directed approach in which the teacher presents students with a problem to solve. The text then moves to a teacher-student shared inquiry in which students begin to direct their own learning. The final approach discussed is student-directed inquiry in which students become self-directed learners. All three of these phases include sample units for the reader to use as models. Also included is an explanation of how to use PBL in the multidisciplinary classroom. The text ends with a discussion of how to assess this inquiry-based approach to learning and, possibly more important, how to transfer the learning to life outside of the classroom.

Chapter 1

An Inquiry Process



Working Definition of PBL

PBL (problem-based learning) can be defined as an inquiry process that resolves questions, curiosities, doubts, and uncertainties about complex phenomena in life. A problem is any doubt, difficulty, or uncertainty that needs some kind of resolution. Student inquiry is very much an integral part of PBL and problem resolution.

Thus, in this book, PBL is presented as a way of challenging students to become deeply involved in a quest for knowledge—a search for answers to their own questions, not just answers to questions posed by a textbook or a teacher. Identifying problematic situations within the curriculum, posing questions, researching, and reporting depend on and foster a community of inquiry. In such a community, participants listen to each other, are open to different points of view, and can work collaboratively toward reasonable conclusions.

Importance of PBL

Many researchers have many reasons for promoting PBL.



Stop and Think

Why do you think PBL is so important in today's educational settings?