

Introduction

From Student Thinking to Teacher Action

Some years ago, Carla Marschall was working with a first-grade teacher on her Living Things unit. It was the start of the unit, and the teacher had just elicited questions from the class, recording them on a piece of chart paper.

Our Questions About Living Things

- Why are some animals sleeping in the winter?
- How does a caterpillar change into a butterfly?
- Why does a mosquito have such long feet?
- Why can some animals swim and others not?
- Why do ants carry things? How do they do it?
- Why do snakes look so crazy?
- Why do frogs blow up their cheeks?
- Why are some animals dying on the road?
- Why do the seeds of an apple look like a star?
- Where did the first owl come from?

With such diverse yet specific questions, it was difficult to decipher next steps. Would it be possible or even desirable to follow each child's individual inquiry, or would this just end up with a patchwork unit that flitted between topics? Would it be more appropriate to use teacher questions to drive learning, or would that devalue student thinking? Were these even *genuine wonderings* and not incidental thinking that occurred when we invited questions? At the time, it was unclear how to reconcile such narrow, yet child-constructed, questions with the teacher's aim to guide students to conceptual understandings about living things. If we let children investigate their questions without helping them connect to transferable ideas, could we be confident that they would move beyond the facts to achieve deeper understanding?

Most of us can probably relate to this situation and have encountered a time when we asked for student thinking without necessarily knowing how it would be used to drive instruction. From experience, we know there were moments when we dutifully collected student thinking, only to have a stack of sticky notes with unanswered questions at the end of the unit. This was not for lack of motivation, but an organizational issue around how student thinking fits into the larger context of a unit. We had not yet worked out a framework for how student and teacher thinking can come together in an inquiry to enable conceptual understanding.

The purpose of this book is to address these issues by presenting both a model for Concept-Based Inquiry and accompanying teaching strategies that support inquiry-based learning for understanding in Kindergarten to Grade 12 classrooms. More specifically, we provide concrete ways for teachers to co-construct understanding with their students by developing generalizations, or statements of conceptual relationship. We feel strongly that all children deserve the opportunity to think conceptually, regardless of how “naturally” it may come to them. In every classroom, there are children who will acquire concepts and make connections between them without explicit support from the teacher. We believe that *all* children can acquire the ability to think at the conceptual level, giving them the chance to transfer their understandings to new situations. In the context of a complex, rapidly developing 21st century, the role of the teacher as a facilitator of conceptual understanding has never been more important or pressing.

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Over a number of years, we have been collaborating to devise ways to help teachers implement Concept-Based learning in the classroom. Our thinking has been grounded in practice and developed in schools around the world: the United States, Brazil, Germany, Switzerland, Egypt, Hong Kong, Singapore, and New Zealand. These various contexts have highlighted the importance of transferable practice and easy-to-use strategies that can be easily modified and applied in schools with diverse populations. Beginning as a video project, our collaboration has expanded to include a model for teaching for understanding.

Structure of this Book

It is extremely important to us that this book blends theory with practice. As computer scientist Walter J. Savitch (1984) eloquently shared, “In theory, there is no difference between theory and practice. But, in practice, there is.” When it comes to applying ideas to the classroom, we concur with this remark. The layout of the chapters balances theory and practice, recognizing how we must rely on both to create strategies of value for the classroom.

Throughout the book, we also model our strategies. For instance, each chapter has a set of visual notes, which accompanies it (an organizing strategy from Chapter 7). We also have examples of the Frayer Model, Spectrum Sort, and All, Some, None strategies in Chapter 1. We make reference to the related strategy as we introduce figures throughout the chapters. As you will see, these strategies also support adult learners and, therefore, can be used at the organizational level within schools too.

Part I (Chapters 1 and 2) of this book looks to clarify what we mean by inquiry-based and Concept-Based learning. Chapter 1 discusses types of inquiry, considering the benefits and challenges each may bring. Drawing on the work of Dr. H. Lynn Erickson and Dr. Lois A. Lanning, we also share the Structures of Knowledge and Process in this chapter. Chapter 2 outlines the defining features of Concept-Based Inquiry as a form of inductive inquiry that teaches for understanding. Our inquiry model, along with a description of each of the phases, is included.

Part II (Chapter 3) brings the phases together, illustrating how our inquiry model may be implemented during a unit. With a focus on the unit planning process, this chapter provides a number of tips to integrate conceptual thinking in an inquiry.

Part III (Chapters 4 to 10) walks the reader through each of the phases of our inquiry model. Each of these chapters is made up of two sections: a short summary providing the theoretical background for the phase and a practical section sharing a number of strategies that can be easily implemented in the Concept-Based Inquiry classroom. Additional resources related to these chapters, such as videos, planners, and resources, can be found on our membership site (www.connectthedotsinternational.com/members-only).

Our aim is that the structure of this book suits educators both new to and experienced with Concept-Based Inquiry. If you are new to Concept-Based Inquiry, we recommend beginning with Chapter 1 and familiarizing yourself with some basic tenets of inquiry-based and Concept-Based learning, before jumping into our model of Concept-Based Inquiry in Chapter 2. If you are an experienced Concept-Based Inquiry teacher, you may wish to review our inquiry model and recommendations for planning, and then dive into the various phases from Chapters 4 to 10.

Selecting Strategies

We are sometimes asked, “Which is the best strategy to use for concept formation?” or “Are some organizing strategies better than others?” These are the wrong questions to ask. Asking which strategy is best is analogous to asking which exercise is best to do at the gym. The exercises we do depend on our goals: Are we trying to build muscle, lose weight, increase endurance, or simply stay fit? How many repetitions we do, and how much weight we lift, depends on our current level of health and fitness. In the same way, each of the strategies shared in this book has a specific purpose, although most of them can be used across the disciplines in Kindergarten to Grade 12 classrooms. The key idea here is *intent*. We need to assess our students’ prior knowledge and consider the foundation of facts and skills students need to reach the intended conceptual understandings in a unit.

Beware of your default strategies. Just as we return to our favorite recipes every week, teachers also tend to return to the same strategies in the classroom. This book will provide even the most experienced Concept-Based Inquiry teacher with new ideas and strategies, but we hope that you revisit the strategies sections often. Take the book with you to your planning meetings. Develop and share your own strategies in relation to each of the phases. In this way, we can build our capacity as practitioners and create enriching learning environments that promote conceptual thinking.

Strategies included in this book are not meant to be exhaustive, nor should they be. We want to provide a range of strategies, but also want to promote ideation and creativity. We encourage you to take the ideas in this book, play with them, and develop strategies personalized for your own classroom.



Within each of the strategies, we have provided a quick visual reference to give you an indication of the age range most appropriate for the strategy. Each of the figures represents an age band as follows:


- The *smallest* figure represents early years to Grade 2 students
- The *second* figure represents upper elementary students—Grades 3 to 5
- The *third* figure represents middle school students—Grades 6 to 8
- The *largest* represents high school students—Grades 9 to 12

When the figure is shaded black, it means this strategy is suitable for students in that age band.

Membership Site: www.connectthedotsinternational.com/members-only



As teachers, we know how useful it is to have resources that enable us to easily put ideas into practice in the classroom. This book is accompanied by an exclusive membership website, full of resources to aid implementation of the ideas we share:

- **Videos:** With 23 videos highlighting learning in K–12 classrooms from around the world, these bring our phases of inquiry to life and illustrate specific strategies that can be implemented in the classroom. Video “callouts” are embedded throughout the book, flagged with this special video icon. 
- **Resources:** We know how much time teachers put into making resources for students. To make your jobs easier, we have constructed sample anchor charts and blackline masters for you to download. Our goal is to simplify implementation of the strategies included in this book by providing easy-to-use templates.
- **Sample Planners:** Sample planners, showing how our phases of inquiry come together in a unit, are also available in our membership area.



To read a QR code, you must have a smartphone or tablet with a camera. We recommend that you download a QR code reader app that is made specifically for your phone or tablet brand.

THE FOUNDATIONS OF CONCEPT-BASED INQUIRY

Inquiry-Based Learning

Concept-Based Inquiry

Concept-Based Learning

What is it?

~~direct instruction~~

“Use of **ACTIVE QUESTIONING** to drive Learning”

What is it?

“Organizing Learning around the development of **TRANSFERABLE IDEAS**”

Continuum of inquiry learning

less student agency more teacher control



more student agency less teacher control

Concepts are...



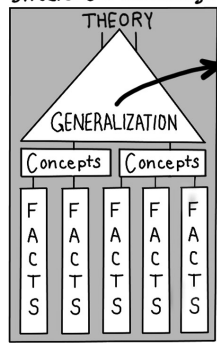
“**MENTAL CONSTRUCTS** drawn from a topic or a process that **TRANSFER** to new situations and contexts.”

CONCEPTS

o abstract o timeless o universal
Helps us make objects, situations, and ideas *meaningful & connected*

Forming concepts & generalizations

Structure of Knowledge

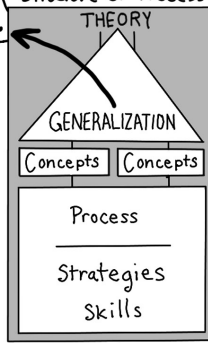


H. Lynn Erikson © 1995

What is a GENERALIZATION?

• Two or more concepts in a statement of **RELATIONSHIP** written as truths.

Structure of Process



Lois Lanning © 2012

Fosters: • curiosity
• developing hypotheses
• active problem solving

“Within a **Concept-Based Inquiry** a teacher usually designs learning engagements from all three types of inquiry to help students develop knowledge & process-based **GENERALIZATIONS**.”