


Cooperative Learning &
**Higher-Level
Thinking**
The Q-Matrix



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HAWKER BROWNLOW
EDUCATION

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Foreword

by Dr Spencer Kagan

Judge of a man by his questions rather than by his answers.
— Voltaire

The introduction of the Q-Matrix is an important moment for education.

For some time we have gotten a clear message from those who study the future: To prepare for the future, we must move from the teaching of facts to the teaching of thinking. It has become clear that unless we make that transition, we will produce a generation of students ill-prepared to cope with their world.

I had six honest serving men
— They taught me all I knew:
Their names were Where and What and When
— and Why and How and Who.
— Rudyard Kipling

In the world beyond the year 2000, the rate of change and the information explosion will have combined so that most of today's students will find jobs in job categories not yet created.

Although we cannot name or even clearly imagine those jobs, we know that most of them will be in the information segment of the economy — heavily concerned with processing,

generating, analysing, storing and/or communicating information. Further, we know that our students will have numerous forms of employment over their lifetime; the accelerating change rate will create an economic mobility the likes of which we now find hard to imagine — a dozen different jobs over a lifespan will be common.

Given these trends, our only chance of creating a prepared population is to teach thinking skills. This we have known for some time. What have been missing are the tools to restructure

student thought to acquire higher level thinking skills. Chuck Wiederhold's Q-Matrix provides us with one set of incredibly powerful tools designed to restructure the thinking of students. His fresh approach to teaching thinking skills — through materials which generate questioning — is applicable from preschool to post-university. The Q-Matrix should be heralded as a set of empowering tools to be placed in every teacher's toolbox.

Those of us concerned with the development of inquiring minds have for years noted a distressing phenomenon: At and near entry to school, our pupils are brimming with questions. They want to know about everything — from why the sky is blue to where the wind goes when it stops blowing. After a few years of traditional schooling, when asked by the teacher if they have any questions, those very same students sit silently. An intelligence once alive, hardly able to be contained, appears dead. The miracle of the Q-Matrix shared in this book is that they release the inquiring mind. As soon as we let students play with the Q-Materials, we discover

student curiosity trapped by traditional classroom structures was never dead, just dormant. With the right structures and materials, the inquiring mind blossoms.

Like some of the most important revolutionary breakthroughs, the Q-Matrix is simple. The whole Q-Matrix is based on twelve simple words, most of which have but two or three letters! But in combination, these words form powerful tools. These simple tools, placed in the hands of our students, revolutionise student interaction patterns and thinking. It is as if Multi-Level Questioning Materials were the key all along, waiting to be discovered. Now with little effort we can pick up that key and open the door to higher level thinking for all of our students.

Spencer Kagan, PhD

A Better Mousetrap

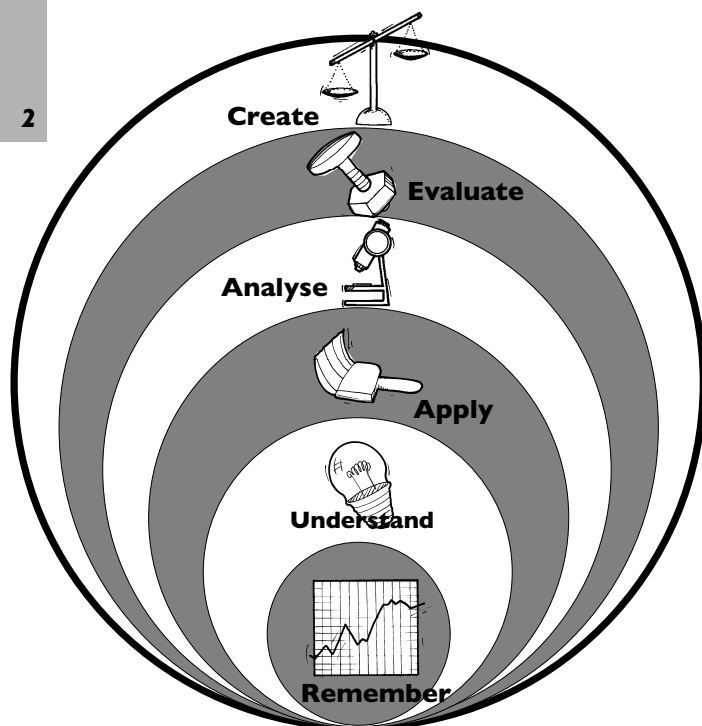
Bloom's Taxonomy ■

Problems with Bloom's ■

Foundations ■

Bloom's Taxonomy ■

What you are given in this book is a new system for generating questions which uses the most widely accepted hierarchy of cognitive processing: Bloom's Taxonomy of Educational Objectives in the Cognitive Domain. What is new and fresh is that Bloom's Taxonomy is presented with new Q-Materials that are user-friendly. With the Question Matrix presented in Chapter 3, the Quick & Easy starting activities in Chapters 4 and 5 and the classroom activities in Chapters 6 to 10, you are guided to the immediate application of quality questions in your classroom.



The Q-Materials are generic with regard to content area and year level. Also, they foster both teacher-generated and student-generated questions. The system for generating questions presented in this book has broad application across all teaching styles and all forms of student grouping. However you choose to use the materials, they can increase the level of student thinking in your classroom.

If you are among the 80% of classroom teachers who still rely on whole-class question-answer methods, the Q-Materials can help you ask better questions across all levels of Bloom's Taxonomy. If you are a teacher of Cooperative Learning, the use of these materials will empower your students to do even more of their own thinking and to do it at a higher level.

And, if you are already practising the Structural Approach to Cooperative Learning, the Q-Materials were designed especially for you.

Bloom's Taxonomy can be viewed as a continuum of thinking skills. Evaluation, by definition, includes all of the other skills and requires us to make a judgment — a decision.

An example of the application of those major categories is shown below: Australia's National Anthem — Applying Bloom's Taxonomy.

Bloom's Taxonomy

Remember statements ask the student to recite from memory. Example: "Sing the first verse of the 'Advance Australia Fair'."

Understand statements ask the student to explain the meaning of words contained in the anthem. Example: "Explain what 'girt by sea' means."

Apply statements ask the student to apply understandings. Example: "Create your own verse for the anthem including something you believe is valuable about Australia."

Analyse statements ask the student to interpret word meanings in relation to context. Example: "Discuss the meaning of 'our land abounds in nature's gifts' in terms of its importance to the country."

Evaluate statements ask the student to judge the relative merits of the content and concepts contained in the subject. Example: "Describe the purpose of the national anthem and assess how well it achieves that purpose. Suggest improvements."

Create statements ask the student to apply concepts in a new setting. Example: "Write an anthem for your city (or suburb) describing all the factors that make it a great place to live."


Q-Activities

In this chapter are many suggestions for quickly getting started using the Q-Materials with students — no need for formal structures or teaching complete lessons.

The activities are designed to promote critical thinking about teamwork, communication and content in a variety of subject areas. The subject areas presented include Art, Geography, History, English, Maths, Science and Humanities. Each subject area heading suggests a content focus, the appropriate Q-Material and a short activity. Any of the suggested activities may be modified or extended to fit particular instructional goals. The activities are starters — suggestions for giving any

area of the curriculum a jump start with Critical Thinking Manipulatives. Many of the activities may be used as sponge activities which can be completed within a few minutes' time.


FUN EASY
Simple




The Q-Activities are simple. They are easy to do. And they are fun! They engage students in higher level thinking and problem solving, using one or more of the Q-Materials. Use them with the content suggested or with content of your own. Use them at any year level.

SPONGE ACTIVITIES

Higher Level Thinking



The Q-Activities support higher level student thinking through meaning centred questions generated by the students themselves. The activities may easily be combined to tie two lessons together or to create thematic units. With any of the Q-Activities presented in this chapter you can mix up True and Review Questions (see page 8:3).

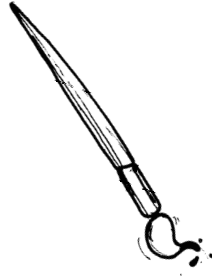


These quick sponges and starters may be easily adapted to a wide variety of teaching situations. The activities require the Q-Materials, pencils and paper. Some activities may require other standard classroom supplies such as string, cardboard or coloured textas. The activities are organised alphabetically by subject and each one takes only 10 to 20 minutes of class time.

1 ART ANALYSIS**Q-Materials**

1 Event Q-Strip per team
1 or more study prints

Suggested Structures
Partners-Question (6:17)
RoundRobin (6:33)

**Suggested Content**

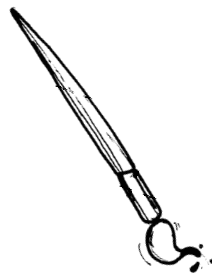
Visual Arts

Students use the Event Q-Strips to generate questions focused on an artist's use of colour, line, space, perspective or media. Students exchange questions with a partner. Partners share answers with the team.

2 FAMOUS ARTISTS**Q-Materials**

1 Person Q-Strip per team
Several study prints

Suggested Structure
RoundRobin (6:33)

**Suggested Content**

Visual Arts

Display several study prints of the work of well-known artists the class has been studying. Number each of the prints and obscure the artist's signature if it shows on the print. Have students use the Person Q-Strips to generate a review question about each of the study prints. Teams **RoundRobin** the questions.