

## Original Article

### Teaching children to think for themselves: From questioning to dialogue

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**Abstract:** The methods of teaching critical thinking currently favoured are critical analysis and metacognition. The former denies the place of interactive contextual judgment in reasoning, the latter devalues human purposes and quality. A metacognitive lesson on classification is shown to be too didactic to allow children to think in any but a passive sense. Splitter's categorization of questions shows how moving away from closed substantive questions to open ones through dialogue can encourage children to think for themselves. Some consequences for pedagogy and evaluating children's thinking are briefly examined.

## Introduction

### *How to teach thinking: Critical analysis and metacognition*

There is a growing perception worldwide of the need to teach children to think in the classroom. They need to adapt to rapid change. The two most common approaches used in schools so far are critical analysis and metacognition. The critical approach is the traditional philosophical method that has carried over from tertiary philosophy classes, described by Rod Girle as a sort of 'spot the fallacy' approach. Someone puts forward arguments, and the student simply pulls them apart. Argument is a set piece consisting of a set of premises and a conclusion. The critical approach is negative, encouraging them to see reasoning as remote from the realities of the everyday world. 'There is no emphasis on argument as a developing growing interaction' (Girle 1991, p. 49).

Psychologists such as Sternberg (1985), Swartz and Perkins (1989), Rigney (1980), Brown (1978) have argued on lines similar to Girle's that formal logic (what de Bono calls rock logic) is largely irrelevant to everyday thinking and non-productive. They believe that if teachers wish to develop effective thinking and intelligent behavior in students then they must develop children's metacognitive abilities, that is, they must encourage them to self-monitor and articulate their daily thinking processes, know when a sub-goal has been obtained, detect errors and recover from errors either by making a quick fix or by retreating to the last known operation. The techniques of metacognition are elaborated on in some more detail by Beyer (1987) and illustrated in this sample lesson for teaching a thinking skill directly, specifically the skills of categorization and classification. It is taken, slightly summarized, from a book called *Teaching thinking*.

**Thinking Skill: Classification/Categorization****INPUT:**

*Focus:* Tell the students that the purpose of the lesson is to learn what it means to categorize and to classify and why it is necessary to learn such skills.

*Vocabulary:* Classify, attribute, group, sort, categorize, compare, contrast.

*Ask them to discuss, define and distinguish the meanings of the words classify, categorize, sort and group (dictionaries will be helpful)*

To *classify* means to arrange objects into groups based upon similarities and to label these into groups, using a name that implicitly carries the significant attributes of the group members. *Citrus*, for example, is a label given to a class of fruit. No other fruits have the same attributes of citrus other than those members of that class.

To *categorize* means that the label is given and it is your responsibility to list all members of that group. When I say 'root vegetables', for example, what can you list under that label (carrots, beets, radishes, etc.)?

To *sort* means to take from a collection of random objects and to put those objects together that have like characteristics, for example, sorting laundry according to permanent press, coloured, whites etc.

To *group* means to assemble those items based upon common characteristics or attributes.

*Exemplify classifying and categorizing by giving a list of familiar fruits, for example: Grapefruit, lemon, peach, apricot, plum, pear, nectarine, apple, lime, cherry, orange, tangerine.*

*Ask them to put all those that are alike together and to give that group a label (citrus, stone fruit, core)*

*Ask them to categorize. Give them the labels root vegetables, and leafy vegetables for instance. Invite them to generate examples of items for each category.*

*Process: Present a list of words. It could be the week's spelling list or a list of vocabulary words from the science or social studies textbook. Ask students to work in small groups to classify the words and to think about what goes on in their heads when they classify.*

segment finger corner angle shoulder line square, surface machine magnet red circle strut wheel plane stomach mouth.

There is no one correct way to classify this list. What is important is that the students experience the process of classification and that they justify their choice of groups and labels. They might be divided into mechanical words, human body, geometric terms, but that represents only one of many possible classifications.

*Ask the students and the thinking-process observer to share what they did when they classified (metacognition). Record their contributions randomly, as they are given, on an overhead, a chart, or the board. They may look something like this.*

*When we classify we*

- Scan the list;
- Look for similarities between the words;
- Try a label to see if there are other words it might fit;
- Define the words;
- Fit other words—having found a label—into that group;
- Decide what to do with words that fit more than one category (plane);
- Decide what to do with words that are 'left over';
- Subclassify words within categories;
- Expand the label to fit other words in the list;
- Check to see that all words are accounted for;
- Call on previous knowledge of what words mean;
- Decide a purpose for classifying words.

*Next ask the students to reflect on the sequence of steps, what did they do first, second, etc. and refine the list accordingly.*

#### OUTPUT:

*Now, invite the students to apply what they have learned about classifying in a new situation (teach for transfer)*

*Ask your students for help in straightening up your desk drawers (or cupboards, or storage units)*

*Divide the class into three or four groups or teams. Assign each team a drawer or cupboard. Ask them to take out all objects and classify them. Again, appoint a thinking process observer to collect data about the group's metacognitive steps in completing the task.*

*When the tasks are complete, ask the groups to discuss their classifications and what they did in the process of classifying. Return to the list of metacognitive operations generated in the preceding phase.*

*Refine the list as needed. Ask students to bridge to other subject areas. When else do they need to classify? How would it help them if they learnt the steps of classification in mind as they performed a learning task? Ask students to bridge to other times outside*

*school where they need to classify (allocating pocket money, going to the supermarket, using the library, etc.). Invite students to think about professions and careers in which classification is essential (postal workers, librarians, zookeepers, etc.).*

*Ask students to identify examples of classification systems they use (zip codes, Dewey decimal system, bar codes, etc.)*

## REVIEW:

As other learning experiences requiring classification and categorization abilities are encountered in the curriculum, have students recall what it means to classify. Review what they must keep in mind during the learning. Encourage students to use the terminology correctly, distinguishing precise meaning between such words as classification, categorization, sorting, grouping (from Costa & Lowery 1990).

If the traditional analytic model mentioned at the beginning suffered by focusing only on critical thinking, metacognition suffers from the other extreme of leaving it out. For here children are encouraged to focus on how they think rather than how *well* they think or why these classifications of sorting activities are useful. Or rather, how well they think is defined in parameters fairly clearly defined by the programmed lesson plan and the teacher-given definitions. They are not being encouraged to think for themselves outside the frame presented in class. The making of judgements is restricted to the same judgements they make in applying algorithmic rules in maths to new problems ... it lacks the kind of judgment that they need to relate their own understanding of the world to that of other people. The related output and review activities *consolidate* the original definitions that have been taught rather than encourage thinking about them. To twist an old phrase of Kant's, the lesson has children relate to concepts without percepts<sup>1</sup>.

More importantly metacognition here, as it often does, assumes a structuralist model of learning, that there is a layer of language which is either innate or true (i.e. it corresponds directly with things in the world. We construct language through reality and it accurately reflects the way things are in the world). As a consequence, the teacher is now teaching critical thinking in a manner as abstract and verbal as science or maths. It has become another subject in which there are incorrect answers, another part of the content dense curriculum. But we aren't looking for 'lessons in how to think correctly'. We are trying to help children to think for *themselves*, creatively as well as critically.

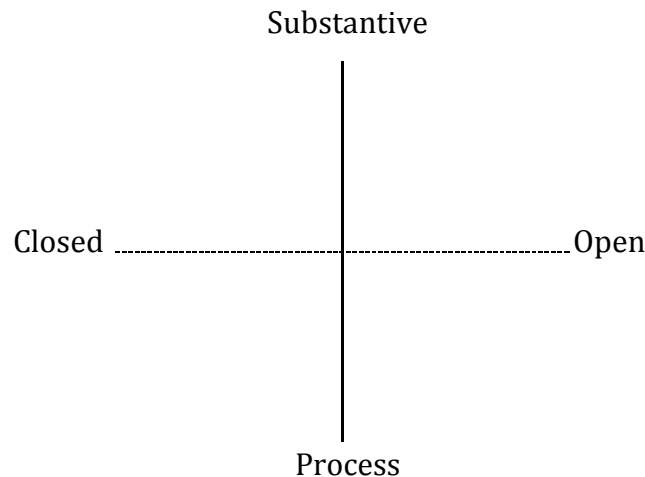
Is there a way in which the teacher can guide and control the students to think more deeply about issues that directly affect them, without the students simply looking to the teacher for correct answers and without merely being critical of suggested solutions? The solution seems to lie in the correct management of classroom dialogue, where the teacher by skillful use of questioning techniques can encourage children to follow their own line of reasoning, and subject it to the critical appraisal of other children.

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<sup>1</sup> 'Percepts without concepts are empty, concepts without percepts are blind' (Kant 1787, A51-B75).

### Helping students to think

Laurance Splitter (1991) has categorized the questions that teachers use in classrooms on two orthogonal dimensions.



Most teacher questions sit in the left-hand portion of the figure, where teachers ask a question to which they think they know the answer. Questions which encourage thinking, where the questioner doesn't know the answer are on the right-hand side. Splitter gives four examples:

- |  |                    |
|--|--------------------|
| a. What is the capital of Australia?       | Closed-Substantive |
| b. What did she first say?                 | Closed/Process     |
| c. Why did you say that?                   | Open/Process       |
| d. If $y$ is right, wouldn't it mean $x$ ? | Open/Substantive   |

Categorizing questions in this manner shows how limited is any assessment method that assumes the more questions the teacher asks, the more the children are being encouraged to think for themselves.<sup>2</sup> One model that legitimizes this, the VICS model, assumes that all questions are of the same sort. But they clearly are not, as Riegler (1976) began to illustrate. There are many questions which are little more than a covert means of control, of finding out how conservative the children are, to what extent they are paying attention to the lesson, whether they have learnt the correct answer. So the type of question needs also to be considered, that is, to what extent is it a closed or open question?

Tom Jackson from the University of Hawa'i has provided a set of questions (WRAITEC) to help the teacher promote thinking without closing off answers:<sup>3</sup>

<sup>2</sup> An increase in the proportion of questions generated by the students might well reveal more about student capacity for generating thinking than the number of questions the teacher asks the class.

<sup>3</sup> Unpublished course notes.

- W** *What's* the problem? Focus?
- R** Are *reasons* being given to support claims?
- A** Are we identifying *assumptions* being made?
- I** Are *inferences* and *implications* of what is being said being explored?
- T** Are we *testing* the *truth* of what is being said, or asking how we can find out?
- E** Are *examples* being used to support claims?
- C** Were we able to find *counter-instances*?

Splitter elaborates on these to provide key discussion questions for the teacher to prompt more than superficial or anecdotal chatter, and at the same time encourages the children to formulate their own answers and ideas rather than relying on the teacher. The teacher is encouraged to ask open process questions to which he or she does not have 'the correct answer'; questions such as: Who has a question or is puzzled? Does anyone else find that strange? Can someone ask that in a different way? How can we go about answering that? What reasons do you have for saying that? Are Leslie and Francis saying the same thing? Is there a rule for what you are saying? Do you think that is always true? Let's see what would happen if ... See if you two can sort it out and we'll listen. Does that explain it? Who's still confused? Can someone summarise that part of the discussion?

Use of these open questions is the method favoured by Lipman for his programme Philosophy for Children currently being taught in many Australian schools at primary and secondary level. He has many specific examples of exercises and similar questions directly related to the text in the manuals provided by Montclair. The programme has its critics. Many feel the series of novelettes too slow moving and the methodology too restrictive. But does it work in helping children to think for themselves? It would intuitively seem so and there is a growing body of evidence to show that it is so.

Christine Perrott has analysed the dialogues of children involved in a Philosophy for Children programme and a fairly standard classroom discussion. She notes that in the philosophy sessions,

It appears that there is a shift in relationships, roles and agendas. There is also a difference in epistemic stance with relation to how and what knowledge is interchanged. The transcript demonstrates that it is not a matter of listening to and commenting upon knowledge from the 'expert' or even of trying to answer the questions put by the 'expert'. Rather it is a case of knowledge and questions from the 'inexpert', the curious ones, the ones who don't know or who dare to disagree, and are prepared to express this publicly. Because the content has been turned over to the children, there is an increase in interest and thus genuine curiosity. (1990, pp. 13-15)

In the Philosophy for Children classes, the pupils move away from a transmission instructor mode towards an inquiry mode characterized by:

- Relatively large amounts of pupil talk
- Extended pupil answers
- Breaking out of the teacher-pupil-teacher pattern of talk
- Lack of teacher manipulation toward a certain response or content coverage
- Shift in role of teacher from that of expert information giver to that of listener
- Non-curriculum content topics pursued
- Teacher questions which have no right answer
- The emergence of pertinent and thoughtful student questioning

We teach children to think for themselves only by allowing them to practice in an environment in which thinking well is valued and modeled. This is what Lipman called a community of inquiry and it is characterized by structured or connected conversation. In this form of dialogue children are encouraged to be aware of how they think, in a context which encourages them to follow their own argument and those of others. Through dialogue the students develop competence in making the all-important transition from the realm of their own experiences and thoughts to the more general level of concepts, criteria and principles at which deeper understanding can take place. Lipman has in Philosophy for Children offered a K-12 programme which can be used to initiate children into habits of thinking through issues. But, as Splitter (1991, p. 107) points out, it cannot be deemed to have succeeded in a school in which the community of inquiry fails to spread across the curriculum. This is not so much a specific programme which feeds into but sits alongside the rest of the curriculum. It ideally is infused through the curriculum itself. Lipman manuals will not suffice to teach children to think for themselves if they suspect that there is a right answer to the question as to where, for instance, Harry discovers or invents the rules of logic. It is not a closed question. The exercise is there to promote pupil thinking, not to problem-solve or find THE answer.

This is one of the reasons why philosophy for children is so hard to evaluate. The answers the children arrive at are important, and it is certainly the case that not anything goes, but the emphasis will be on peer evaluation and acceptance rather than application of a standard set of responses. Despite the avowal in the sample lesson above that 'There is no right answer to the question of sorting' the implication of the whole lesson is that the teacher *has* the formulae for classification which the children are to learn, even to the giving of definitions, the dictionary ones. Is the teacher's assumption that there is a correct way to classify the fruit appropriately? Are students who confuse classification with categorization going to be penalized? Dividing the class into a discussion group and having them classify objects in the classroom will not guarantee that they think for themselves, in any other sense than applying the 'right answers' in a relatively contrived situation.

I have argued (Haynes 1991, p. 133) that thinking skills are best not taught dialectically as in the formal logic, with exercises, of traditional philosophy classes. Nor do I believe that self-reflection about the skills one uses, as is advocated by the metacognitivists, necessarily increases skills by making a given structure explicit. There is little point in measuring, say, their knowledge of a definition of classification, if they don't classify well in real life. They have to *understand* what it means to classify, not merely define it, or shift the rules mechanically to a new context.

What makes me say that the above lesson from Costa and Lowery is not a genuinely open discussion? Participatory dialogue in principle means that every student has an equal right to particulate. In the above lesson, the teacher is concerned to control the thinking. In order to really have children think for themselves, dialogue must try to break down the notion of hierarchical control, the teacher domination of the class. Perhaps that is one reason why many principals are reluctant to take up Philosophy for Children programmes. It seems to deny the teacher any role or power. How can the teacher take on the role of guiding, evaluating assessing without becoming didactic, the holder of the answer? What sort of control is legitimate? Do students take over everything? We might well ask, what happens to evaluation or the students as successful dialogists? Is self-evaluation enough?

Perhaps one assumption of metacognition was right—that in thinking about the process and making the rules of thinking explicit, students will gain a structure which will help them to gain new skills at a higher order level of thinking. Any course in reasoning or thinking skills, says Girle (1991, p. 52) has at least five different foci: making assertions, giving and evaluating reasons, asking and answering questions, explaining and withdrawing assertions and changing commitments, and the teacher can draw the students' attention to these different foci. Naming them often helps students see significant differences. It *does* help to classify if one knows that there are differences between grouping, sorting, classifying, categorization, even if these differences are not hard and fast, and there are no necessary or sufficient conditions for their use. There are nonetheless criteria which shift in different contexts. If making students aware of these processes sounds a bit like the old lessons in metacognition, there are important differences in both pedagogy and evaluation. In an open dialogue one does not start with the definitions, or, if one does, they are open to discussion and debate. One could start with asking the class to 'organize' various real fruits in whatever way they want. They may well not come up with categories of fruit as in the sample above. They might choose to divide the fruit into groups of different colours, or different shapes, or even different tastes. No matter how they divide them up, the teacher will still ask them to 'label' their groups and justify them. Then perhaps talk about applying those labels to a different set of fruits. And then ask the students if they can generalize from the first set to the new set and if there is a difference between classifying and categorizing. The labelling is less important than the understanding in action.

The sorting of words is an equally interesting exercise and could be the starting point for another lesson. One would hope that it would generate questions about whether we are



doing the same thing in classifying words as we are in classifying objects/and a discussion of how language already categorizes for us to a certain extent. 'Definition' means defining the limits. But that direction could not be set down in a formal lesson plan as Costa and Lowry have set forth. The process of thinking about categorization and classification should occur in a dynamic sequence of events, and the teacher has far less say in the content and the direction in which the dialogue takes place.

Instead of evaluation being on a basis of testing the verbal abilities of students, the focus is now on their *thinking* abilities. Can students make clear what they wish to assert? Can they clarify their assertions when questioned? Do they understand the relationship between what they assert and what others are asserting in some dialogue? Can they name relevant reasons for assertions? Can they ask appropriate questions and recognise answers which are appropriate? Do they understand the sorts of conditions which good explanations should satisfy? Do they have a grasp of those conditions under which commitments need to be revised or abandoned?

The metacognitive approach had assumed that we have to develop a 'language of cognition' arguing from that assumption that teachers must learn how to embed in their everyday language opportunities for students to hear cognitive terminology and be presented with day-to-day challenges to think. Similarly, students must understand the language of thinking in order to facilitate their own cognitive growth (Costa & Lowery 1990). No, they just have to be encouraged to *do* it well, both in thinking and acting.

To paraphrase Bruner (1986, p. 123) education is as much one of the main forums for negotiating and renegotiating meaning, and for explicating action as it is a set of rules or specifications for action. 'The child should negotiate and share in discovery' (Bruner, 1986, p. 129).

Unfortunately the constraints of a printed paper force me to adopt a didactic role, equivalent to standing in front of the classroom, to give you examples, taxonomies, information and definitions. The words may have effect but they can engage you only abstractly. And you are a passive reader to the extent that I cannot witness your engagement or lack of it, your perplexities, your resistances. What I am trying to guard against is any method of teaching which simply creates new categories, not only of sorting, but of questions, and thereby reinforces the content-dense curriculum. Like Richard Paul, I want to operate with a content-*deep* curriculum, where the reader, like the child, does understand and relate to new language and ideas, different possible ways of organizing the world through words.

So let us begin by setting up a community of inquiry, by asking you some questions to facilitate dialogue:

Teacher A: The bell has rung. It's time to go home. Clear off your desks, stand behind your desks, stand behind your chairs, and quietly slide your chairs under your desks.

Teacher B: The bell has rung. It's time to go home. What will you need to do to get ready?

In which of these examples of teacher language is more responsibility for thinking thrust upon the students? Why and how is it done?

In this paper I aimed to open up questions about questions. Unfortunately I have no way of hearing your immediate responses, unless I present it through electronic mail, which allows individual responses almost immediately and reader-to-reader responses as well. But it was not intended to be completely open-ended. For dialogue is neither teacher-centred or a case of anything goes. It should flow to and fro in a genuine community of inquiry. That shifting away from the teacher and the teacher's knowledge as the focal point of the discussion does not deny the teacher any role or responsibility. The dialogue has a point, and the writer's concern is to focus attention of the reader on aspects of knowledge and teaching which he or she might otherwise not have considered. It is not appropriate to conclude this with a summary of the answers I have arrived at. It is much more appropriate to turn this into a lesson on dialogue and ask you to videotape a lesson you have just had with your students. And then preferably as a group exercise, to 'organize' the questions raised in the class, both by yourselves and the students, in a way that is a meaningful to you. You could use Splitter's quadripartite model, and consider how open your questions are. Or the WRAITEC model. Or your own categories. After you have each done that to your satisfaction, compare your different ways of organizing the data and ask for reasons for doing it one way rather than the other. More interestingly, ask yourselves what you are doing in the process—sorting, classifying, grouping, or categorizing,. Don't bother to look up the dictionary, or even the definition offered by Costa and Lowry. You use the words every day. You do know how you understand them, though disagreement about their use may alert you to the limitations of your understanding. You may well be doing what you want your students to do, namely thinking for yourselves about what I have said.

### **Reflective commentary on 'Teaching children to think for themselves'**

#### **Metacognition**

The term 'metacognition' literally means cognition about cognition, or more informally, thinking about thinking, and would therefore appear to be consistent with any attempt to reflect upon one's own ideas which seems to lie at the heart of thinking critically. However, as it was developed by John Flavell (1979), it developed more upon the lines of training in the regulation of cognition and learning experiences rather than making contextual judgments or learning by discovery. Planning the way to approach a learning task, monitoring comprehension, and evaluating the progress towards the completion of a task are skills that are metacognitive in their nature, implying an active and self-conscious level of thinking that involves deliberate control over the process of thinking. On the surface, it seems to be a difference in degree of regulation but, as my examples from teaching above show, it also reflects a different assumption about how learning is

best acquired—metacognition requires training, learning conventional definitions and repetition; community of inquiry needs imagination, interaction/collision with different cognitive schemas, exploration and discovery, a Piagetian view of building on existing schemata which combines open and closed systems rather than instructing and training in closed systems and celebrates disturbance of the equilibrium rather than punishing it.

### The question quadrant

Philip Cam (2006, p. 34), working with students and teachers in order to hone, sort and categorise students' questions for philosophical dialogue, elaborated on Splitter's model of questioning in a Question Quadrant (Figure 1). It is a tool which assists teachers to teach question types while using students' questions to guide learning, particularly philosophical inquiry.

	TEXTUAL	QUESTIONS	
	<p>Is the season summer or winter?</p> <p>Who is dressed more warmly, Pooh or Piglet?</p>	<p>Where are Pooh and Piglet going?</p> <p>Why isn't Pooh dressed more warmly?</p>	
<b>CLOSED</b>	<b>READING COMPREHENSION</b>	<b>LITERARY SPECULATION</b>	<b>OPEN</b>
<b>QUESTIONS</b>	<p><b>FACTUAL KNOWLEDGE</b></p> <p>Who wrote the stories about Pooh or Piglet?</p> <p>What are the names of some of the other characters in those stories?</p>	<p><b>INQUIRY</b></p> <p>Is it important to have lifelong friendships?</p> <p>Can something last even longer than forever?</p>	<b>QUESTIONS</b>
	INTELLECTUAL	QUESTIONS	

**Figure 1:** Cam's question quadrant

The horizontal axis represents the continuum between closed and open questions, and the vertical axis represents the continuum between textual questions and questions about life. The four quadrants categorize questions as Reading Comprehension, Literary Speculation, Factual Knowledge and Inquiry. He presents this brief extract from AA Milne:

Pooh and Piglet can be seen trudging along a snowy track. The day is clear but the sun is low and it casts a yellowish-orange glow over the scene. Piglet is wrapped in woollens and a scarf, while Pooh has nothing on but an old short-sleeved top that is several sizes

too small for him. Piglet says to Pooh touchingly, 'We'll be friends forever, wont we Pooh?' 'Even longer'. Pooh replies.

Cam then asks some questions about this little scene:

1. Is the season summer or winter?
2. Who is dressed more warmly, Pooh or Piglet?
3. Who wrote the stories about Pooh and Piglet?
4. What are the names of some other characters in those stories?
5. Where are Pooh and Piglet going?
6. Why isn't Pooh dressed more warmly?
7. Is it important to have lifelong friendships?
8. Can something last even longer than forever?

In what is a very long quote, I give Cam's explanation of his categories. He begins by accepting Splitter's Open/Closed distinction:

'By an open question I mean one that does not have a settled answer, and by a closed question I mean one that does. If there are facts to hand which settle the answer to a question beyond all reasonable doubt, say, or the answer is a matter of general knowledge, then the question is normally regarded as closed. This applies to the first four questions on our list, two of which demand nothing more than what is generally thought of as reading comprehension, while the other two refer to matters of general knowledge.

'When I say that these questions are closed, I do not mean that they need be settled in the minds of every person who reads the passage or has it read to them. The first questions, for instance, might not be settled in a reader's mind for all sorts of reasons. The reader might not know the relevant facts of climate, for instance, or be uncertain about where Pooh or Piglet live. Even such a straightforward question is settled only in the context of relevant background knowledge and assumptions. Even so, the question is almost certain to be regarded as closed because on standard background assumptions the scene is winter. Similarly it is easy to imagine someone tossing up as to whether the answer to the third question on our list is AA Milne or say, Kenneth Graham (author of *Wind in the Willows*) so that the question is not settled in their mind. Once again, however the question can be regarded as closed because there is no serious dispute that AA Milne wrote the stories about Pooh and Piglet. There is a single established correct answer in this case.

'Stories leave many things indeterminate. It need never be explained to us why Pooh is out walking on a winter's day dressed only in a short-sleeved top. We might be left to guess. Perhaps it could be because he already has a warm furry coat. Maybe the top is all that he has to wear. It could be that, being a Bear of Very Little Brain, it simply didn't occur to him to dress for the weather. Such suggestions maybe more or less plausible or

fitting, but neither the text nor the background knowledge and assumptions that we bring to it need rule them out. They are open possibilities.

‘Questions 5 and 6 on our list ask us to imagine such possibilities. Although they provide very elementary examples of open imaginative questions, it is easy to see that they can help to fulfill a very important educational function. Imaginative exploration of the possibilities within a story is a means to its interpretation. We engage in it whenever we make guesses about what a character will do, where their behavior is likely to lead, what possibilities are open to them, or how a plot will turn. We also do exactly the same thing in daily life when we attempt to discern people’s motivations, try to predict how they would behave in a given set of circumstances, or think about our own life’s possibilities. Obviously we can do these things either more or less intelligently and with varying degrees of insight and understanding. In the long run, the difference between a well-developed capacity of this kind and a poorly developed one will have such far reaching consequences for our lives that we should pay considerable attention to its development. The nurturing of such a capacity is arguably the greatest benefit that the study of literature can confer and this provides one quite compelling reason to give students ample opportunity to study it.

‘The final two questions on our list are open questions of a rather different character. They are larger more general questions about what we value in life and our conceptions of what is possible. A proper exploration of these questions will require us to think very hard about how we should respond, and engage us together in thinking through and testing out alternative points of view, in which we do things as clarify what we are saying, give and evaluate our reasons, examine our assumptions, draw relevant inferences, make necessary distinctions and connections, examine our concepts, and make use of appropriate criteria. In short, if we are to adequately address these two final questions then we will need to engage in intellectual inquiry. Hence we may call them inquiry questions.’

To return to Perrott’s distinction between discussion and dialogue, in terms of my original paper, discussion usually takes place in the quadrant for literary speculation, where, despite the openness of the answers, they are to be found within the text under discussion and are more or less corrigible. Dialogue of the open-ended sort, to which one has to appeal to one’s own mind rather than any specific text or issue or the answers, lies in the realm of inquiry rather than imagination and therefore more in the realm of critical and creative thinking skills. Cam’s model has been adopted in any school which promotes Philosophy for Children and reflects a similar movement towards openness in education.

### **Discussion, debate, and dialogue**

Since the Melbourne conference in 1980, Christine Perrott (1988a,b) has published her findings, which contained detailed analyses of transcripts of children’s discussions in English and Philosophy for Children classes. More recently, following Alexander

Sidorkin's rather radical introduction of hermeneutic discussion in the classroom (1999), Gert Biesta (2006) has refined an open-systems model of education consistent with quantum physics. This model replaces the transmission and training approach—presumed by metacognition—with a more natural evolutionary or biological model, similar to the local 'permaculture' model of education as natural growth espoused by John Dewey and some post-structural European educators such as Delueze and Guattari. Philip Cam, and Matthew Lipman have both written extensively on this open dialogue, which modeled on John Dewey, they call the 'community of inquiry'.

### Does it work?

Topping and Trickey (2004) conducted a series of controlled outcome studies of different methods of teaching critical thinking, which included norm-referenced tests of reading, reasoning cognitive ability and other curriculum-related activities, but also included measures of self-esteem and child behaviour, and child and teacher questionnaires. Their follow-up study in 2007 found that thinking skills intervention involving collaborative interactive dialogue (which they also refer to as the community of inquiry) could lead not only to gains in measured verbal cognitive ability but also generalize to non-verbal and quantitative reasoning ability. In all of these studies, community of inquiry method was shown to be more effective than the traditional didactic or training methods.

### Critical thinking as a method: research

In the earlier paper I focused on metacognition rather than critical analysis, but I had already developed the case against the formal teaching of critical thinking in my text *The art of argument* (1987), and more briefly in a later paper (Haynes 1997).

In the last twenty years there has been a gradual shift away from a trust in scientific facts alone to an acceptance that art forms and imagination are needed to keep a balance between restrictive control and adaptive change. This is not a loss of trust in tightly constructed closed systems of disciplines such as physics, but acceptance of the notion that these are restrictive and simplistic in a complex world, and have to be connected to or coupled with open systems, to use a metaphor from engineering. Karl Weick related this notion of loose coupling in his 1976 paper on *Educational organizations as loosely coupled systems*. Loose coupling, in Weick's sense, is a term intended to capture the necessary degree of flex between an organization's internal abstraction of reality, its theory of the world, on the one hand, and the concrete material actuality within which it finally acts, on the other. A loose coupling is what makes it possible for these ontologically incompatible entities to exist and act on each other, without shattering. What was wrong with the metacognitive model of training was that, even though it was applied to practical examples in the real world, the mind training took the place of a rather mechanical or closed structure discipline, which could be rote learnt without

understanding. The understanding that arises from trying out ideas loosely in a community of inquiry is that it allows for greater flexibility and resilience in a complex world. The mechanical training model is replaced by an adaptive biological or ecological model which remains an open system because it encourages diverse opinions (biodiversity) and cross-fertilization—we have shifted from a mechanical closed system to an ecologically-based biological system. Weick's innovation was transferring Langer's concept of mindfulness (consistent with metacognition) into the organizational literature as 'collective mindfulness'. The effective adoption of collective mindfulness characteristics by an organization appears to cultivate safer cultures that exhibit improved system outcomes.

Similarly trust in hierarchical models of governance, even in education, is waning because it is seen as too narrowly bound to cope with an increasingly complex world. The favoured structure of the twenty-first century is that coupling of open and closed systems. While resistance to the transformation to a more open and tolerant society has sometimes taken the form of drastic and brutal repression, I believe that acceptance and encouragement of children's capacity to change the world by being allowed to reflect upon it together in dialogue leaves room for a more open and equitable society.

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