

Why teach philosophy in a world dominated by science?¹

STEPHAN MILLETT
CURTIN UNIVERSITY

Abstract

The significant benefits children gain from doing Philosophy together in the classroom are increasingly well-documented and include enhanced social skills, statistically significant improvement of measured cognitive abilities, and better performance in English, science, mathematics and computers. However, the present day emphasis on science, technology, engineering and math (STEM) subjects across Western schools is correlated with a decline in the relative importance given to Humanities, Philosophy included. This paper explores the reasons why teaching children to do Philosophy, and to do it collaboratively, is vitally important to the moral and intellectual health of future generations. In doing so, it notes also that doing Philosophy will improve appreciation of (and very possibly,

¹A version of this paper was delivered as a keynote speech at the Murdoch University Philosophy Colloquium in November 2017.

performance in) the very STEM subjects that overshadow Philosophy and other Humanities subjects.

Key words: *Philosophy, Children, Science, Teaching, Wonder*

In an event of serendipity, I bought a copy of the magazine *New Philosopher* just before I boarded the Indian Pacific train in Sydney to spend four days crossing the Australian continent to Perth. I had planned to spend some of that time away thinking as I would not have digital distractions. That issue of the magazine just happened to serve up some bite-size morsels from some of my favorite thinkers—morsels that in various ways reminded me of ideas that had influenced me along the way and which have in a small way informed this paper.

I also thought that because of some dedicated philosophers and teachers working in schools there would be thousands of young people who, despite not having studied philosophy in a university, would likely be able to read this magazine with some knowledge and appreciation. But, sadly, there will be many more people who would not even think to be interested in such a magazine. Those with inquiring minds are more likely to seek one of the many popularized science magazines than they are to look into something on philosophy.

However, we cannot lay this at the feet of any intentional act, including the recent focus in Western schools on the so-called STEM subjects (science, technology, engineering and math). While the emphasis on STEM is correlated with a declining

relative importance of the humanities—the acronym itself is telling—the focus on STEM is part of something deeper and not just an instrumental response to the perceived needs of industry, now and in the future. While more students studying STEM subjects will undoubtedly lead to a more technically-proficient workforce and diverse benefits to the society as a whole, what might be the costs if that focus were too narrow?

Along with the many benefits of the humanities in general, the signal benefits enjoyed by students who *do philosophy* are increasingly well-documented² providing us with a good idea of what students will be missing out on. The benefits of doing philosophy in schools include enhanced social skills,³ statistically significant improvement of measured cognitive abilities (abilities that were sustained for at least two years after doing philosophy one hour a week for a year,⁴ or less⁵), and better performance in English, science, mathematics and computers.⁶

²S. Millett and A. Tapper, “Benefits of Collaborative Philosophical Inquiry in Schools,” *Educational Philosophy and Theory* 44, no.5 (2012), doi: 10.1111/j.1469-5812.2010.00727.x

³ Council for Education in World Citizenship, “Wiser Wales: Developing philosophy for children in different school contexts in Wales 2009–2012,” Final evaluation report, Cardiff, Wales, 2012, 1; Millett and Tapper, “Benefits of Collaborative Philosophical Inquiry in Schools.”

⁴ (e.g. an increase of an average of six standard points of measured cognitive ability after one year of philosophy one hour per week, sustained for two years beyond doing any further philosophy). K. J. Topping and S. Trickey, “Collaborative philosophical enquiry for school children: Cognitive effects at 10–12 years,” *British Journal of Educational Psychology* 77, no.2 (2007a): 271–288; K. J. Topping and S. Trickey, “Collaborative philosophical inquiry for school children: Cognitive gains at 2-year follow-up,” *British Journal of Educational Psychology* 77, no.4 (2007b): 787–796.

⁵ F. Fair et al., “Socrates in the schools from Scotland to Texas: Replicating a study on the effects of a philosophy for children program,” *Journal of Philosophy in Schools* 2, no.1 (2015): 18–37; F. Fair et al., “Socrates in the schools: Gains at three-year follow-up,” *Journal of Philosophy in Schools* 2, no.2 (2015): 5–16.

⁶ L. Hinton, “Reinventing a School,” *Critical and Creative Thinking: The Australasian Journal of Philosophy in Schools* 11, no.2 (2003): 47–60; S. Gorard et al., *Philosophy for children:*

The impact that teaching philosophy has on science, mathematics and computers is especially relevant. And whilst we should agree that the role of the humanities in general, and philosophy in particular, is not to be the handmaiden of technology, we cannot afford to gloss over the absence of ethics, philosophical analysis, and critical thinking in science education—something that Tim Sprod from Tasmania has been working to address for more than 30 years.⁷

Sprod is a science teacher and philosopher who has devised many ways to incorporate philosophical thinking into school science classes. Like Sprod, we need to find ways to embed philosophical inquiry in STEM and other subjects in the curriculum as well as to create a standalone space for philosophical dialogue in the compulsory years of education. But that is an uphill battle, not only because of impediments such as standardized curricula, timetables, and a lack of teacher knowledge and skills. The battle is also against what we might call the hegemony of science, as seen in for example, the powerful (but wrong) idea that science gives us value-free knowledge and, as followers of Gramsci say, that through a rhetoric of neutral objectivity we are led to submit to ‘governance as technocracy.’⁸

Evaluation report and executive summary (Millbank, United Kingdom: Education Endowment Foundation, 2015), https://educationendowmentfoundation.org.uk/public/files/Support/Campaigns/Evaluation_Reports/EEF_Project_Report_PhilosophyForChildren.pdf

⁷ See, e.g. Tim Sprod, *Discussions in Science: promoting conceptual understanding in the middle school years* (Melbourne: ACER Press, 2011).

⁸ <http://www.internationalgramscisociety.org/communications/Science-as-cultural-hegemony.pdf>, accessed November 2017

In his book *Reasonable Children*,⁹ Michael Pritchard argues that schools can and should promote reasonableness in children. In a subsequent article he follows up on this idea by arguing that “natural science classes can play a significant role in fostering the reasonableness of children”¹⁰ and that, additionally, science teachers have a vital role as moral educators. Following Lawrence Splitter and Ann Margaret Sharp, he says that reasonableness is a social disposition in a setting where there is a degree of uncertainty about whether any views being heard are right, including one’s own. The reasonable person is prepared to take other views into account and to consciously “allow her own perspective to be changed by others.”¹¹

The process of doing philosophy in the classroom, whether a science classroom or any other, models rational self-governance of the group of students by the students themselves. And through a process identified by the Russian psychologist Lev Vygotsky, amongst others, the social behaviors learned in the group are internalized by each participant and inform their own self-governance.

Philosophy in the Science Classroom

It is Pritchard’s view that science should be considered a human *activity* rather than a body of knowledge and that by

⁹ Michael S. Pritchard, *Reasonable Children: moral education and moral learning* (Lawrence: University Press of Kansas, 1996).

¹⁰ Michael S. Pritchard, *Reasonable Children: Science Teachers as Moral Educators* <http://onlineethics.org/edu/precol/reasonable/childrenreason.html>

¹¹ Lawrence J. Splitter and Ann Margaret Sharp, *Teaching Better Thinking: The Classroom Community of Inquiry* (Melbourne: Australian Center for Educational Research, 1995), 6.

putting this view into practice, science classes can contribute to the moral education of students. His first step is to ask teachers to challenge what is known as the fact/value distinction,¹² then to acknowledge that science does not create itself and is not value-neutral, but is in many ways normative. Science depends on the cooperation and integrity of scientists and the inferences supported by a majority of scientists come to take on a social and political force.

Various uses of science also raise ethical questions, for example, whether to clone humans or how best to handle toxic wastes. The direction of science (what is researched and what is not) is frequently determined by value choices made by corporations, governments and funding bodies. Science also creates possibilities that raise ethical issues. For example, medical science can now keep alive very seriously ill patients, but the 'can' does not necessarily imply 'should.' And many of the concepts embedded in science can be viewed as value laden (e.g. health, pollution, disease).

The methods of scientific inquiry marry well with philosophical and ethical inquiry in the classroom. An ethical question stemming from science cannot be answered *by* science but to address the question adequately questioners still need to find and pay attention to the relevant established facts. They need then to build appropriate responses, such as sound arguments from analogy as well as to challenge poor arguments, such as the logical fallacies used too often to oppose the conclusions of

¹² See, for example, David Hume (1711–1776) and his skeptical position that we cannot derive an 'ought' statement from an 'is' statement.

science. The introduction of ethics into the science classroom may even open the door to students valuing a role for philosophy.

In a recent article, US philosopher Subrena Smith¹³ notes that STEM education is accorded much greater importance than anything in the humanities and she explains why she thinks her college students do not see the point of philosophy. She begins a course by telling her students that philosophy addresses issues that can't be settled by facts alone. She builds on this by noting that the inductive logic underpinning science is, for philosophers, inadequately justified and therefore poses a problem for science. She also invites her students to understand how difficult it is to decide "which evidence fits which hypothesis uniquely, and why getting this right is vital for any scientific research."

In effect, she is articulating an epistemic conundrum: core problems of science cannot be addressed by science but must be pursued outside of science. Her students still don't see the point and "treat philosophy as wholly distinct from, and subordinate to, science."¹⁴ She offers some possible reasons: (1) the students think of science as something that itemizes the 'facts' of the world and solves real-world problems; (2) they are not aware of the historical connectedness between philosophy and scientific thinking; and (3) a naïve idea of objectivity is deeply implicated in the popular understanding of science.

¹³S. Smith, Why philosophy is so important in science education. 2017, <https://aeon.co/ideas/why-philosophy-is-so-important-in-science-education>, accessed November 13, 2017.

¹⁴Ibid.

How do we challenge the ideological force of scientific thinking—without throwing the baby out with the bathwater—and along the way bring significant social and cognitive benefits to school children? We teach them the power of clear, critical, and creative thinking—by helping them engage with philosophy collaboratively.

Children and Philosophy

Children come to philosophy easily. They ask questions. They wonder: and as Plato in the *Theaetetus* (155c-d) and Aristotle in the *Metaphysics* (982b) are often quoted, “philosophy begins in wonder.” My Penguin translation has Socrates saying, “a sense of wonder is perfectly proper to a philosopher: philosophy has no other foundation.”¹⁵ But perhaps a better translation is that “wonder is *only* the beginning of philosophy.” When reading Plato and Aristotle, the translation of the Greek *thaumazein* as “wonder” may hide a dual meaning in the original. *Thaumazein* can mean to open our eyes or to plunge us into darkness. It is “both a startled start and flinching in bewilderment.”¹⁶ So how do we help children to take the startled start into philosophy and prevent them from flinching in bewilderment and not moving beyond accepting the fact-oriented responses that they too often receive from their questions? Take the following exchange:

Year 1 Pupil: “Why is the sky blue?”

Teacher: “Well it has to do with the way the light from the sun gets split up into different colors.”

¹⁵ Plato, *Theaetetus*, translated by Robin Waterfield (Harmondsworth: Penguin, 1987).

¹⁶ J. Lewellyn, “On saying that philosophy begins in *thaumazein*,” *Afterall: a Journal of Art, Context and Enquiry*, (2001):1, accessed 13 November 2017, <http://www.journals.uchicago.edu/doi/abs/10.1086/aft.4.20711438?journalCode=aft>.

Year 1 Pupil: “No. Why did God choose blue?”

The problem here is that the teacher has answered a *How* question when the pupil was asking a deeper *Why* question. If the teacher does not see that, or feels yet again the pressure of a crowded curriculum, the opportunity for philosophizing is gone and the inquiry that can come out of wonder is shut down. However, if in response the teacher wrote the students’ “big” questions on the board and set aside a half hour or so a week to discuss them as a class there could be a wonderful transformation in the children. A well-worn quote from the philosopher Ludwig Wittgenstein comes to mind: “A philosopher who is not taking part in discussions is like a boxer who never goes into the ring.”¹⁷ If we are to get children to use philosophy to better engage with their world, they need to get into the ring. But saying that presupposes that kids can do philosophy. It also raises a question as to what the ring looks like and who else is in it.

Can children do philosophy? Not if by philosophy we mean understanding Kant’s *Critiques*, or Peircean logic or any number of ideas we might ruminant on or apply in universities. But if we think of learning philosophy similarly to the way we think of learning mathematics or language then, yes, children *can* do philosophy.

In teaching math we don’t start kids off on differential calculus or advanced geometry and algebra: we start with fingers and counting, show them numerals and get them to write them, just like we get them to learn and write the alphabet. After

¹⁷In Rush Rees, ed., *Personal Recollections: Conversation of 1930* (Totowa, N.J.: Rowman and Littlefield, 1981).

counting we bring in addition, subtraction, multiplication and division and so on. We give them the building blocks of thinking mathematically and then—if we are doing it right—we show what can be done when these are used as tools in our daily lives. The same process applies to teaching philosophy to children. Children can begin to wonder about concepts for which they don't yet have a vocabulary or processes to explore in depth. And by giving the tools of philosophical inquiry in a graduated scope and sequence (like the programs developed and taught in the Buranda state school in Brisbane)¹⁸ and encouraging dialogue in the classroom, children can develop a rich understanding of some complex concepts. This rich understanding and the method by which children achieved it is transferable—to other disciplines and beyond the classroom. But as with all teaching, the teacher is a vital part of the success or failure of a teaching strategy. Teachers must be alert to what the children may be meaning, and not take statements or questions at face value: what teachers understand may not be what a child in their class means and they must take the time to ensure they have understood each child correctly.

As a teacher of small children I have often heard questions and statements which, once I have interpreted them on the basis of my understanding of philosophical ideas, head the class into philosophical discussion: like the day I had a group of Year 2 children for an hour in the company of some parents. What came out of their discussion—unprompted by me, except that it was a

¹⁸S. Daveys Chester et al., *Philosophical Inquiry in the Middle Years and Beyond*, (Australian Curriculum Studies Association, 2013).

discussion of causation (or explanation, at least) originating in dropping some balls from a height—was in effect the First Cause Argument for the existence of God. On another occasion, in response to a simple story about stars in the sky, one bright spark in a pre-primary class, in response to a classmate's question "Where did the universe come from?" answered, "The Big Bang." The one who asked the question was not satisfied and asked, "But what came before the Big Bang?" to which the response was, "The Big Singularity." "But what came before the Big Singularity?" Answer, "Another Big Bang." They went on until they themselves recognized where this had gone and came to their own understanding of the problem of infinite regress. The children had brought their own out-of-class learning to bear on a big question and I was there to be midwife to their nascent understanding.

These examples are my personal accounts of teaching some especially bright children in a Western Australian primary school. We don't always have really smart children, but all children, even very young ones, are capable of wonder. They are capable of making connections between ideas. They are capable of communicating ideas. They are capable of synthesizing ideas. And, they are capable of dealing in abstracts. Take what may be the first basic abstraction: starting from a "this" or a "that" statement made by pointing, or ostension—to *indicate* (literally) an object in the world around them—and moving from this to their competent use of the indefinite article.

For a child to understand what to do when I say: "Pass me *a* cup, please," she needs in some way to understand that I want to be given a member of a class of objects. Her reply: "Which one do you want?", in effect acknowledges that she has understood at

some level the *concept* of ‘cup.’ I do not need to continue pointing to the physical objects for her to understand. Children learn what a ‘cup’ is by being asked to pass ‘that cup’ or pick up ‘this’ cup or even ‘pick up *your* cup.’

In teaching philosophy to kids we might start with differences between this or that, with giving reasons, with questioning. They do not need to know that the roots of these building blocks of philosophical discourse go back to Aristotle, Plato, and Socrates. But they do need to practice them. If we modify Wittgenstein’s boxing analogy, children need to get into the ring not to fight (philosophy need not be a blood sport) but to practice the techniques, the strategies and the tools and to work toward a shared understanding of concepts.

A sound and increasingly well-documented approach to doing this is by joining others in what is known as a community of philosophical inquiry—an approach that usually involves sitting in a circle. This approach takes the view that thinking is not a purely private and internal phenomenon. The process is based on the ideas of social psychologists George Herbert Mead and Lev Vygotsky, especially the idea that thinking is the internalization of dialogue.¹⁹ Vygotsky recognized that there is a difference between children’s ability to understand and solve problems collaboratively and their ability to do so individually. The community of philosophical inquiry fosters collective reflective thinking and listening and is at the heart of the very significant benefits that doing philosophy with children brings to each individual child’s cognitive, social and moral development.

¹⁹ M. Lipman et al., *Philosophy in the Classroom* (Philadelphia: Temple University Press, 1980), 23.

The philosophical community of inquiry, as first theorized and implemented by Matthew Lipman, draws on not only Mead and Vygotsky, but also the insights that Weber, Piaget and Durkheim had about the ‘ways individuals internalize social controls’; Dewey’s ideas on democratizing education; Wittgenstein’s emphasis on reasons rather than arguments; as well as Peirce’s logic of relations—such as using ‘better than’ or ‘worse than’ when reasoning about values.²⁰ It usually starts with a purpose-written or well-chosen text and the children’s questions. The kids sit in a circle, with the teacher as one of the members of the circle. The text is usually read aloud then, using a variety of tools and processes, the children generate questions. These are all written down. The children are then invited to identify questions that might belong together, and to give reasons why they think the questions belong together. This helps everyone understand the questions. Following this, the teacher (or the class once they have a bit of practice) choose which question to start with in a class discussion. The discussion proceeds with students agreeing and disagreeing with each other—always accompanied with reasons— and the teacher acting as a midwife for the children’s ideas and as a guide to rich understanding. During the activity, the class follows some simple rules:

1. Listen to other people
2. Build on what others say
3. Respect other people’s ideas
4. There may be no single right answer
5. Be prepared to think²¹

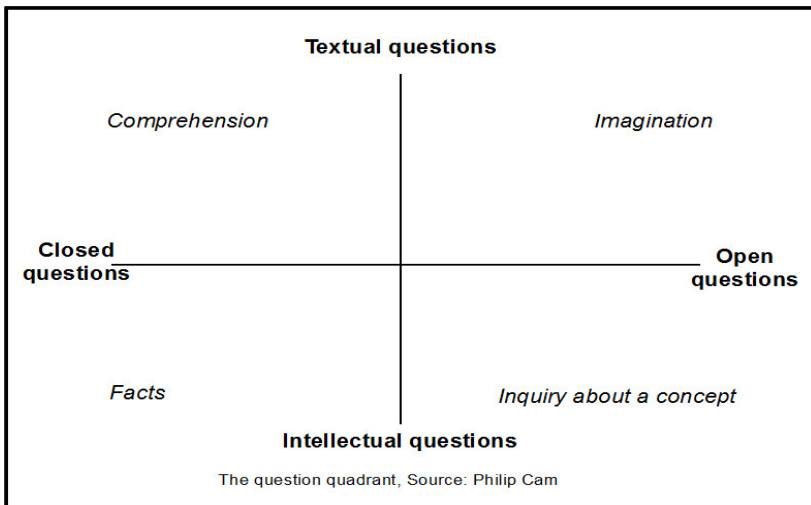
²⁰ M. Lipman, *Philosophy Goes to School* (Philadelphia: Temple University Press, 1988), 52–53.

²¹ With thanks to Alison Freeman, a wonderful teacher.

With a text, their questions and the foundations of civil dialogue, the children explore meaning, identify the shared concepts that underlie different questions, group and categorize and come to a shared understanding.

Before undertaking this activity, the students are encouraged to understand different types of questions: closed questions where there is an established answer (1) in the text or (2) another text; (3) open questions which might be an invitation to use the imagination, for example, based on what might have happened had the text been different, or (4) open questions that do not require knowledge of the text to understand what is being asked. A useful graphical way to represent this is Philip Cam's *Question Quadrant*.²²

Figure 1: The Question Quadrant²³



²² Philip Cam, *20 Thinking Tools* (Melbourne: ACER Press, 2006).

²³ Ibid.

Let's take a look at how this might work with the fairy tale *Goldilocks and the Three Bears*.²⁴

- A closed question based on the text: How many bowls of porridge were there?
- A closed intellectual question: What is porridge?
- An open textual question: What might have happened if Goldilocks had eaten all the porridge and then left the house?
- Finally, an open intellectual question: Is it ever wrong to go into someone's house and eat their food without their knowledge?

Now imagine how a class might interrogate an open intellectual question and ask: could they be doing philosophy? A lot of teachers and researchers around the world say: Yes. The evidence is there in primary and upper school philosophy programs.

Conclusion

Can children be taught to *do* philosophy? The short answer is yes. Are there sound pedagogical approaches to doing so? Yes. Are there model curricula available? Yes. But even if children can learn to do philosophy, why *should* they?

The short answer is that by learning to do philosophy *together* children learn to be more considerate and thoughtful social beings and become better thinkers across multiple disciplines and

²⁴ A version of the story of "Goldilocks and the Three Bears" can be found in http://www.dltk-teach.com/rhymes/goldilocks_story.htm.

situations. They will be less likely to be duped by the ‘alternative facts’ and fallacious reasoning to be found in the new so-called ‘post-truth discourse’ dominating social media. They will use better reasoning and become more reasonable. They will be able to reflect on flawed thinking habits—their own included—and work toward remediating them. They will understand better the strengths and weaknesses of science and maybe, just maybe, come to understand that a world short on clear thinking, short on imagination, short on the capacity and willingness to understand the views of others, is an impoverished world.

Can this happen, though, without the involvement of philosophers? No. There cannot be great philosophy curricula and exciting, philosophically sound, ways to lead children to understand complex concepts without the involvement of philosophers. Nor can there be competent philosophy teachers in schools without the involvement of good philosophers who are able and willing to help teachers and who can see in the language of children the inchoate forms of what they can nurture into rich philosophical understanding. Philosophers need to stand up as educators, not just as good thinkers. In standing up as educators we should reflect on the dual meaning of the word education implied in its etymology.

The word ‘education’ derives from two different Latin roots, *educare* [*educaray*] (to train or to mould), and *educere* [*educerreb*] (to lead out).²⁵ These relate to two different conceptions of education: preserving and passing down knowledge; or leading

²⁵ Randall V. Bass; J. W. Good, “Educare and Educere: Is a Balance Possible in the Educational System?” *The Educational Forum* 68, no. 2 (2004): 161–168.

students to inquire, to think for themselves and so be able to create solutions for problems that are yet to be known. The choice is here: get involved in nurturing philosophical thinking in young people—including very young people—or stand by as a world of received facts and instrumental thinking effaces all that philosophy has to offer. To start, all you need to do is help children understand and show ways to interrogate some deceptively simple questions: **What is there? How do I know? What ought I do? Is that beautiful?**