ISSN: 2036-5330
DOI: 10.32076/RA11211

On teaching critical thinking. Some reflections

L'insegnamento del pensiero critico. Alcune riflessioni

Aristides Galatis[1]

Abstract

What is critical thinking and how does one teach it? How does a teacher, often dragooned into teaching critical thinking, identify, develop, implement, assess and report on a capability that is often ill-understood, commonly feared, but widely acknowledged as being one of education's core business? In what follows, I detail three notable developments in our understanding of the pedagogy of critical thinking: the uptake of community of inquiry practices, the advent of argument-mapping and the use of a questioning type that demands the enactment of higher-order thinking. I argue that questioning remains a critical thinking teacher's primary pedagogical tool.

Keywords: Critical Thinking, Communities of inquiry, Argument-mapping, Questioning.

Sintesi

Cos'è il pensiero critico e come lo si insegna? Come fa un insegnante, spesso costretto all'insegnamento del pensiero critico, ad identificare, sviluppare, realizzare, valutare e riferire su una capacità spesso poco compresa, di solito temuta, ma ampiamente riconosciuta come una delle attività principali dell'educazione? Nell'articolo che segue, descriverò nel dettaglio tre importanti sviluppi nella nostra comprensione della pedagogia del pensiero critico: l'adozione delle pratiche di *community of inquiry*, l'avvento dell'*argument-mapping* e il ricorso a un tipo di domande che richiede la messa in atto di un pensiero di ordine superiore. Nell'articolo affermo che la problematizzazione rimane lo strumento pedagogico primario dell'insegnante di pensiero critico.

Parole Chiave: Pensiero critico, Communities of inquiry, Argument-mapping, Problematizzazione.

1. The University of Melbourne, the Melbourne Graduate School of Education, a.galatis@unimelb.edu.au

1. Introduction

There is more to teaching and learning than the discovering of facts and determining of truths. Understanding what to *do* with those facts and truths is equally important. After all, being able to respond effectively to 21st century environmental, social, economic, political, technological and moral challenges, whether they emerge at the global, national or local level, will require students to do far more than simply repeat information they have learnt. Teaching students the ability to subject ideas they encounter to critical scrutiny, rather than passively accepting them, and to do so using standards of good reasoning, is now well understood as being part of education's core business. However, how does a teacher of critical thinking identify, develop, implement, assess and report on that most vague and ineffable of thinking processes? In his recently edited book, *Studies in Critical Thinking* (2019), a collection of papers from a range of commentators who endeavour to shed some light on this question, Anthony Blair rightly observes that many higher-education instructors are often "thrown in at the deep end with unreliable life jackets. Understandably, most reach for the textbooks on the market to stay afloat" (p. 3). The same, I suspect, is true of those who have suddenly found themselves teaching critical thinking to children across the educational spectrum. Even more reason, then, to unpack what critical thinking is and the sorts of evidence-based pedagogies that can be used to develop it.

2. What is critical thinking?

Perhaps the best way to start is to consider what critical thinking is typically contrasted with: unreasonable, biased, dogmatic, "*unreflective* or *passive* thinking, the kind of thinking that occurs when someone jumps to a conclusion, or accepts some evidence, claim or decision at face value, without really thinking about it" (Fisher, 2019, p.29). Critical thinking, to be sure, is a belief-forming method, but one that attaches a great amount of importance to the role of sound reasoning, "to giving reasons and to evaluating reasoning as well as possible, and to valuing this focus" (Fisher, 2019, p.8). However, to describe critical thinking is not to define it.

Fortunately, there is an extensive body of knowledge and a rich 'critical thinking' tradition that can be drawn upon, developed by a range of contributors across multiple disciplinary areas and out of which one can discern an increasingly coherent conception of critical thinking. (See especially Dewey J. 1909; Glaser E., 1941; Ennis R., 1962; Scriven M., 1976; Siegel H., 1988; Facione P., 1990; Lipman M., 1991; and Paul R., 1992). In many ways, this critical thinking tradition owes its educational and philosophical lineage to the teachings of Socrates who, upon discovering from his good friend Chaerephon, that he was considered to be the wisest person in all of Athens, promptly declares '*All I know is that I know nothing'*. Proponents of critical thinking have inherited from Socrates this aversion to absolutist-oriented styles of thinking; styles that leave little room for self-

reflection and evaluation and that grant no role to critical thinking; beyond its mere use in the discovering of facts and determining of truths. Whilst not entirely converging in their definitions, one can nevertheless discern in the works of those who have contributed to the field several overlapping themes.

John Dewey (1859–1952) was perhaps the first, of the contemporary theorists to emphasise the importance of *self-reflective* practice. Good critical thinkers characteristically weigh evidence up, carefully and persistently, actively subjecting ideas, their own and those of others, to critical scrutiny. Dewey (1909) too emphasises the importance of *reasoning* in our belief-formation; that is the *grounds* we have that support the beliefs (conclusions) we hold. A good critical thinker is a skilful "reasoner".

Edward Glaser (1941) replaces the concept of "grounds" with "evidence" and goes on to develop a list of skills underlying critical thinking (too numerous to repeat here). From the ability to marshal pertinent information, to recognising logical relations between propositions, definitions of critical thinking soon take on a multi-faceted appearance. Bucking this trend, Robert Ennis (1962) fashions a definition that becomes widely used:

> «Critical thinking is reasonable, reflective thinking that is focused on deciding what to believe or do (See Norris and Ennis, 1989)» (Fisher, 2019, p.10).

Later, Richard Paul, introduces concepts like "fair-mindedness" and, with it, the realisation that critical thinking competency, is underpinned by cognitive *skills* as well as affective *dispositions*. He also distinguishes between what he calls, "weak" critical thinking from "strong" critical thinking:

> «[T]hose who engage in what Paul calls 'weak' critical thinking might be good at reasoning things through, but such people will use this skill only to pursue issues from their own perspective, to pursue their own interests (narrowly conceived), to defend their own position, and to serve their own ends, without questioning these—without subjecting their own beliefs, assumptions and presuppositions to scrutiny. Most of us will be 'weak' critical thinkers some of the time.
>
> Someone who engages in 'strong' critical thinking will also display skill at reasoning things through—will clarify issues where necessary, will assess assumptions and implications, give relevant reasons, apply intellectual standards, etc. But such a person (as contrasted with both the uncritical and the weakly critical thinkers) will not simply use this skill narrowly to defend their own position and interests, but will also employ it just as readily to scrutinise their own thoughts, beliefs and actions, their own judgements about their interests, their own goals, their own perspectives, even their own 'world view'. They will give equally serious weight to the different beliefs, goals, and assumptions, conflicting perspectives and opposing world views of others. In short, someone who engages in a good deal of strong critical thinking will live what Socrates called 'the examined life', and this is Paul's ideal» (Fisher, 2019, pp. 11-12).

In Paul's definition of strong critical thinking one may notice, the inclusion of *perspective-taking*; the ability (and willingness) to

imaginatively stand in the other's position.

In his book, *Educating Reason* (1988), Harvey Siegel echoes Paul's ideas, by likewise emphasising the attitudinal, dispositional or affective elements of critical thinking:

> «In order to be a critical thinker, a person must have certain attitudes, dispositions, habits of mind and character traits, which together may be labelled the 'critical attitude' or 'critical spirit'» (p. 39).

In the late eighties, philosopher Peter Facione at the request of the American Philosophical Association to investigate what critical thinking is and how it should be taught and assessed, assembles a group of 46 experts in the field to tackle the problem. The result is the publication of "The Delphi Report. Critical Thinking: A Statement of Expert Consensus for purposes of Educational Assessment and Instruction; Executive Summary" (Facione, 1990). The Delphi Report becomes the most comprehensive classification of, and "systematic inquiry into the current state of CT [critical thinking] and CT assessment" (p. 2). Among the many findings, is the recommendation that the cultivation of CT skills and dispositions can and "should be made an instructional goal at all levels of the K-12 curriculum" (p. 15) and, indeed, beyond. That is, CT can be taught and learnt. Featured in its comprehensive list of affective dispositions, are "open-mindedness in considering divergent world views, flexibility in considering alternatives and opinions, and understanding of the opinions of others" (p. 13). A consensus view emerges that good critical thinkers, among other things, are especially adept at considering multiple perspectives; that is, in decentric thinking.

Finally, Michael Scriven (1997) likens critical thinking to a "skilled" activity much like reading and writing, requiring a certain standard or degree of competency; that is, one may be more, or less, skilled at it. Critical thinking competency, he would argue, is a matter of degree, rather than an all-or-nothing affair.

To summarise, critical thinking, can be defined, in its broadest sense, as the employment of a range of cognitive skills and affective dispositions, including, but not limited to, self-reflection, evaluation and the ability and willingness to consider multiple perspectives, which, informed by skilled reasoning, results in belief-formation. It is "*pervasive* and *purposeful*" (Facione, p. 5) having applications and, therefore, value, in all areas of personal and civic life. Most importantly, it is a competency that can be learned and, therefore, developed and taught.

Whilst it is best conceived as having both a cognitive skills dimension and a dispositional dimension, the capacity to suspend one's judgement to consider alternative possibilities, viewpoints and opinions clearly emerges as one of the key attributes of a good critical thinker, and for good reason. Perspective-taking competency is a core cognitive tool, allowing us to navigate our intrapersonal and interpersonal worlds, by encouraging such diverse areas as social cognition and understanding, empathetic thinking, whilst also assisting with intention and belief formation, problem-solving, complex reasoning and forward planning.

So how, then, can critical thinking, with

its emphasis on skilled reasoning and perspective-taking, be best developed and what might it look like in a classroom?

3. Communities of Inquiry

Originating in the works of pragmatists John Dewey and C. S. Peirce, Communities of Inquiry (COI in short), a pedagogical method used in Matthew Lipman's program of Philosophy for Children (just to mention one example) offers us a possible way forward, with studies showing evidence of both cognitive and non-cognitive gains (Hart, 1981; Karadag & Demirtas, 2018; Topping & Trickey, 2004, 2007; Siddiqui, *et al*., 2017)[2].

COI methods use stimulus material (or texts) to generate 'provocations', often through targeted questioning, which allow students to co-construct knowledge and make epistemic progress through teacher guidance and facilitation. They are especially well placed to enable students to enact and develop their reasoning and perspective-taking skills; and this, irrespective of where students happen to reside along the learning spectrum. As a pedagogical form, COI is characterized by communal discourse; dialogical rather than monological and constructivist rather than transmissional. Whilst making use of some philosophical concepts, content delivery is minimized in place of dialogue, appropriate for and accessible to children and young adults, and where collaborative, cumulative and caring talk is favoured over disputational talk:

> «When a class moves to become a community of inquiry, it accepts the discipline of logic and scientific method; it practices listening to one another, learning from one another, building on one another's ideas, respecting one another's points of view, and yet demanding that claims be warranted by evidence and reasons. Once the class as a whole operates upon these procedures, it becomes possible for each member to internalize the practices and procedures of the others, so that one's own thought becomes self-correcting and moves in the direction of impartiality and objectivity. At the same time, each member internalizes the attitude of the group toward its own project and procedures, and this translates into care for the tools and instruments of inquiry as well as respect for the ideals (e.g., truth) that serve both to motivate the process and regulate it» (Gardner, 1996, p.103. Originally in Lipman, 1988).

The idea of using philosophy to conduct COIs with children was further developed by Matthew Lipman and Ann Margaret Sharp in the 1970s and 1980s through their Philosophy for Children program. This method of collaborative group inquiry lays the emphasis on students' autonomy and intellectual rigour, while the teacher-facilitator maintains direction, encourages greater depth in students' responses and ensures the promotion of good thinking. It is a method that has gained considerable attention in recent years and has now spread to over 60 countries. The International Council of Philosophical Inquiry with Children (ICPIC), the Institute for the Advancement of Philosophy for Children (IAPC), the Federation of Australasian Philosophy in Schools Associations (FAPSA)

2. See Siddiqui, N., *et al.*, (2017). Non-cognitive impacts of philosophy for children., Project Report. School of Education, Durham University, Durham.

and SAPERE, a national charity supporting Philosophy for Children, or P4C in the UK, are some of the organisations offering resources and training for interested teachers.

4. Argument-Mapping

One of the most exciting recent developments in the teaching of critical thinking has been the generation of Computer-Assisted Argument-Mapping (CAAM) systems, like Rationale and MINDMUP, to diagrammatically represent the logical structure of arguments. The process of being able to visually represent or reconstruct an argument, with its various tiers, clearly and concisely, divorced from prose, whilst itself not new[3], has now migrated to the digital domain and brings with it some obvious advantages:

> «Argument maps can [. . .] help students evaluate reasoning because they can easily focus on evaluating each inferential step of an argument [. . .]
> [U]sing interesting examples that increase the demands of the argument mapping course gradually and incrementally allows students to have fun exploring how different arguments work. In most argument mapping software students can freely move the parts of an argument around and experiment with different logical structures. This ability to 'play around' with an argument allows students, over time, to gain a deep and practiced understanding of the structure of arguments - an important aim of any critical thinking course. Anecdotally, it also helps with student engagement: by manipulating parts of a map using a software, participants more actively engage with critical thinking tasks than they would do otherwise (i.e., if maps were not being used)» (Davies *et al*., 2019, p. 133).

CAAM, as Davies, Barnett and van Gelder (2019) point out, and as research suggests (van Gelder *et al*., 2004), brings with it a range of pedagogical advantages, including:

- Making arguments easier to follow, (maps are easier to digest than verbal or written descriptions);
- Actively involving students in their learning process;
- Promoting collaborative learning;
- Improving engagement, as students are better able to remember complex relationships when represented diagrammatically;
- Making visible the relationships existing between the various components of arguments, in turn assisting students' analytical thinking;
- Replacing surface learning with deep learning; and
- Assisting memory retention using novel, multi-modal means of developing critical thinking.

Maps allow the separate encoding of information in memory in visual as well as propositional form; a phenomenon called "conjoint retention" or "dual coding" (Griffin & Robinson; 2005).

3. For a brief history of argument mapping see Davies, Barnett & van Gelder (2019).

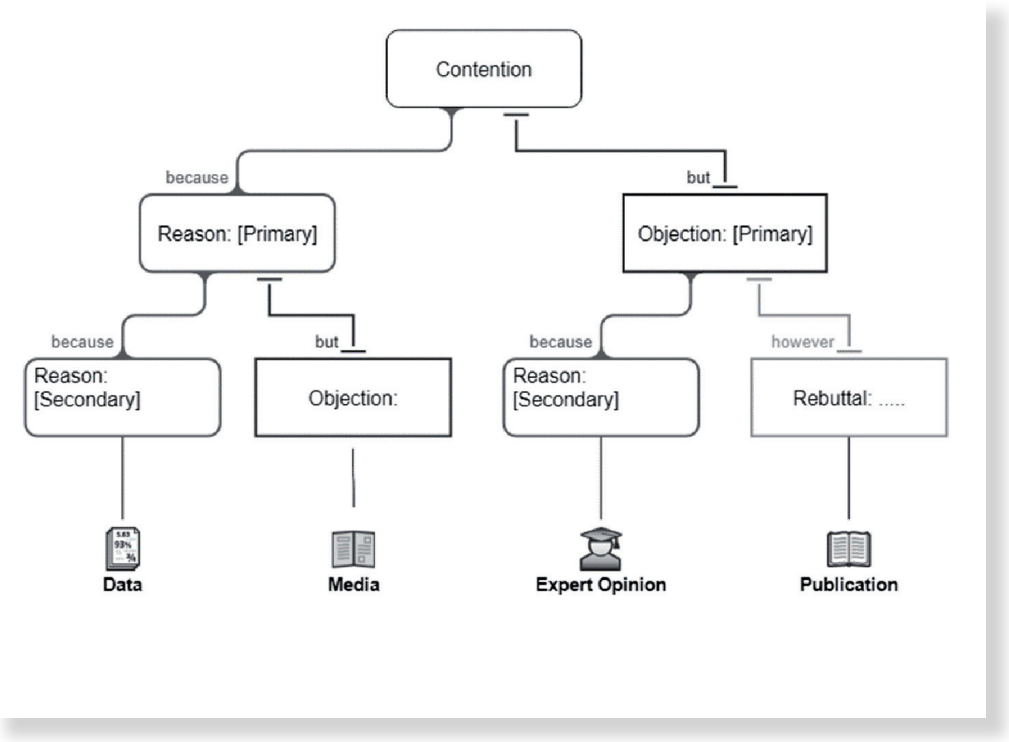

Fig. 1 - *A three-tier argument map using Rationale*[4] .(www.rationaleonline.com)

5. Questioning

Whilst COI methods and P4C practices assist teachers in promoting the sort of intellectual values and dispositions that help develop classroom cultures where critical thinking is valued, and which can be developed and enacted in a safe and supportive learning environment, CAAM can assist in the visualisation of sound argumentation. CAAM software provides teachers of critical thinking with much-needed additional strategies to expand their pedagogical toolbox.

However, whilst both COI and CAAM have their uses, questioning techniques and their purposeful use when conducting dialogic instruction remain the single most effective tool in a critical thinking teacher's arsenal. Understanding the differences between procedural and substantive questions, exploratory and clarifying questions, empirical and analytical questions, leading and anchor questions (to name just a few) and knowing *when* and *how* to use these, will go a long way towards developing in depth-reasoning.

A particularly important distinction that can immediately improve one's dialogic practice has been the realisation that so-called open and closed questions are not as straightforward as they seem. In "Open thinking, closed questioning: Two kinds of open and closed question" (2015), Peter Worley, identifies a distinction that has for too long been conflated: A *grammatically closed question*, Worley

4. From Davies M. (2018) Computer Aided Argument Mapping. Presentation (2019) University of Melbourne.

explains, is closed in the sense that it "elicits a short, atomic answer in virtue of its structure, for example 'Is X F?' where the answer is something like 'yes', 'no', 'it depends', 'both', 'neither', 'I don't know' or 'x or y or z etc.' when there's more than one possible answer" (p. 19). Conversely, a *grammatically open question* is a question that cannot be answered by a simple "yes" or "no" or a one-word answer.

Importantly, however, there is another sense in which questions can be said to be "open" and "closed":

> «A *conceptually closed* question is one that contains or invites no tensions, conflicts or controversies in the concepts contained within the question itself, for example 'Do you like (the taste of) the malt extract spread Marmite?' A conceptually open question is one that contains or invites tensions, conflicts or controversies in the concepts contained within the question itself, for example 'Is it possible to make a deliberate mistake?' where there is an internal conflict between the concepts 'deliberate' and 'mistake', or one that has no determinate answer and where the possible answers may lead to conflict, such as 'What is the mind?'» (Worley, 2015, p.20).

With this distinction in hand, Worley goes on to argue that the sorts of questions that are best placed to elicit the exercise of critical thinking in classroom discussions are *conceptually open* questions that, at the same time, are *grammatically closed*: "Should mobile phones be permitted in schools?", "Ought single-use plastic bags be banned?", "Are dogs better than cats?", "Should asylum laws aim to curb migrant arrivals?", "Do governments have a right to impose the death penalty?". Contrary perhaps to our intuition, the use of *grammatically open* and *conceptually open* questions are *not* as well placed to permit the exercise of critical thinking capability. Classroom discussions commencing with questions like "What causes cancer?" or "What motivates people to commit murder?" become content-laden, immediately alienating discussants who happen to be unfamiliar or disinterested with the topic at hand.

However, the reason why conceptually open questions that are grammatically closed are suitable for engendering classroom discussions is because a person's answer to a grammatically closed question becomes their argument's conclusion: "No, [mobile phones should not be banned]" and the reasons one provides now become that student's premises ("Because mobile phones are distracting").

The role of the teacher now changes from that of a disseminator of outdated information and that of an authority figure, to a facilitator of inquiry. Aware of the distinction between two types of open and closed questions, and how to spot them, and able to use procedural questions to encourage intellectual depth and rigor, classroom talk can now more readily be metamorphosed into opportunities for students to enact their thinking skills; to reason, to justify, to disagree and to change one's mind. It is here, too, that perspective-taking competency, comes to the fore and whose elicitation and development by the teacher-educator can, and should, be cultivated and encouraged. It is through such purposeful questioning, through problematising and carefully crafted disagreement, that critical

thinking competency can be promoted and has the best opportunity to thrive. A question, writes Lipman, often "serves as a lure to make students aware of an underlying problem. The problem is, in a sense, the iceberg, and the question is the visible tip of the iceberg." (p. 32)

6. Conclusion

Teaching critical thinking is now commonplace in Australia, having recently been embedded in the Australian Curriculum. In the State of Victoria, critical (and creative) capability has been elaborately scoped and sequenced, setting out on a developmental learning continuum what students are expected to learn and what teachers are expected to assess. Significant strides have been made, both in the assessment of critical thinking and in the reporting of them. If critical thinking (skills and dispositions) can be evidenced by what students can make, do, say and write, then the prevailing view is that it can be learnt, taught, assessed and reported on, just as confidently as with any other discipline.

Questioning will always remain an important pedagogical tool. After all, it allows teachers to access information about what students comprehend and know. (Christenbury & Kelly, 1983, p. 2) However, understanding how to initiate questioning strings that promote the development of critical thinking and inquiry, or to be able to identify them when they organically occur, requires a more nuanced understanding of question types and of their relationship with higher-order thinking. Initial teacher education providers have an especially important role to play here. There is no doubt that effective questioning is a skill and, like any other skill, requires attention if it is to be done well.

References

Blair, J. A. (2019). *Studies in Critical Thinking.* Windsor Studies in Argumentation (Vol. 8). Digital Edition available from: https://windsor.scholarsportal.info/omp/index.php/digital-press/catalog/book/132 [Accessed 19.03.20].

Christenbury, L., & Kelly, P. P. (1983). *Questioning A Path to Critical Thinking*. Urbana, IL: ERIC Clearinghouse on Reading and Communication Skills.

Davies, M. (2018) *Computer Aided Argument Mapping*. Presentation (2019) University of Melbourne.

Davies, M., Barnett, A., & Van Gelder, T. (2019) Using Computer-Aided Argument Mapping to Teach Reasoning. In J. A. Blair (Ed.), *Studies in Critical Thinking* (pp. 131-175). Windsor Studies in Argumentation Vol. 8.

Dewey, J. (1998). *How We Think*. Dover Publications. (The beginnings of the modern tradition of critical thinking; first published by Heath and Co. 1909.)

Ennis, R. H. (1962). A Concept of Critical Thinking: A Proposed Basis for Research in the Teaching and Evaluation of Critical Thinking. *Harvard Educational Review*, 32, no. 1, 1962, pp. 81-111.

Facione, P. A. (1990). *The Delphi Report. Critical Thinking: A Statement of Expert Consensus for purposes of Educational Assessment and Instruction*. Executive Summary. California Academic Press. The complete APA Delphi Report is available as ERIC Doc. No.: ED 315423.

Fisher, A. (2019). What Critical Thinking Is. In Blair J. (Ed.), *Studies in Critical Thinking* (pp. 7-32). Available from: https://windsor.scholarsportal.info/omp/index.php/digital-press/catalog/book/132 [Accessed 19.03.20].

Gardner, S. (1996). Inquiry is no Mere Conversation (or Discussion or Dialogue) Facilitation of Inquiry in Hard Work. *Analytic Teaching*, 16 (2), pp. 102-111.

Glaser, E. (1941). *An Experiment in the Development of Critical Thinking: Advanced School of Education at Teacher's College, Columbia University*. New York: AMS Press.

Griffin, M. M., & Robinson, D. H. (2005). Does spatial or visual information in maps facilitate text recall? Reconsidering the conjoint retention hypothesis. *Educational Technology Research and Development*, 53, pp. 23-36.

Hart M. (1981). *Philosophy in the Classroom, 2nd Edition. By Matthew Lipman, Ann Margaret Sharp, and Frederick S. O. Scanyan.* Philadelphia: Temple University Press, 1980. NASSP Bulletin, 65(443), p. 118.

Karada, F., & Yıldız Demirta, V. Y. (2018). The Effectiveness of The Philosophy with Children Curriculum on Critical Thinking Skills of Pre-School Children. In *Ted Eğitim ve Bilim*, 43(195), pp. 19–40. DOI: 10.15390/EB.2018.7268

Lipman, M. (1991). *Thinking in Education*. Cambridge University Press.

Lipman M. (2009). Philosophy for Children: Some Assumptions and Implications. In E. Marsal, T. Dobashi & B. Weber (Eds.), *Children Philosophize Worldwide: theoretical and Practical Concepts* (pp. 23-43). New York: Peter Lang GmbH

Paul, R. W. (1992). *Critical thinking: What every person needs to survive in a rapidly changing world.* Rohnert Park, CA: Foundation for Critical Thinking.

Scriven, M. (1976). *Reasoning*. New York: McGraw-Hill.

Siddiqui, N., Gorard, S., & See, B. H. (2017). *Non-cognitive impacts of philosophy for children.* Project Report. School of Education, Durham University, Durham.

Siegel, H. (1988). *Educating reason: Rationality, critical thinking and education.* New York: Routledge.

Topping, K. J., & Trickey, S. (2004). Philosophy for children: a systematic review. *Research Papers in Education*, 19:3, pp. 365-380. DOI: 10.1080/0267152042000248016

Topping, K. J., & Trickey, S. (2007) Collaborative philosophical inquiry for schoolchildren: Cognitive gains at 2-year follow-up. *British Journal of Educational Psychology*, 77, pp. 787–796.

Van der Brugge, E. (2018). *The use of argument mapping in improving critical thinking.* PhD thesis, School of Historical and Philosophical Studies.

Van Gelder, T., Bissett, M., & Cumming, G. (2004). Cultivating Expertise in Informal Reasoning. *Canadian Journal of Experimental Psychology*, 58 (2), pp. 142-152.

Worley, P. (2015) Open thinking, closed questioning: Two kinds of open and closed question. *Journal of Philosophy in Schools*, 2 (2), pp. 17-29.