
11.

Who Teaches K-12 Critical Thinking?

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Debates about the teaching and testing of critical thinking tend to assume a supply of competent critical thinking instructors. If such a supply does not exist (or cannot be produced), then it is difficult to see how students' instructional needs in this area can be met. In this chapter, I consider the capacity of K-12 teachers to serve as critical thinking instructors. I begin by developing the hypothesis that most of those who would be expected to teach critical thinking in K-12 are not adequately qualified, without the help of those who specialize in critical thinking, to do so. The circumstantial case for this hypothesis seems strong enough to justify the time and resources that would be needed to test it. I then consider the prospects for K-12 critical thinking instruction on the assumption that the hypothesis would be supported by appropriate assessment instruments.

Let us assume something that I take to be uncontroversial: that critical thinking is a complex of skills or abilities (I do not distinguish between skills and abilities). To avoid a possible misunderstanding, it is vital to note that the concept of skill or ability is ambiguous. The ability to speak a language is a skill, and the ability to read and write involves higher-order skills, but we distinguish between someone who is simply literate and someone we say is skilled in the use of a language, such as an accomplished novelist or poet. Anyone who has learned how to ski or play the guitar has acquired a skill, but someone who can ski or play the guitar is not thereby necessarily a skilled skier or guitarist. The words "skill" and "ability" can thus denote (1) the capacity to

perform a function to a certain baseline competence, or (2) the capacity to perform it to a high degree of competence (see Fisher and Scriven 1997, 23). We might call the former a “baseline” competence skill and the latter a “high” competence skill.

In which of these two senses is critical thinking a skill? If the concept of critical thinking is to denote anything of interest, anything worth teaching, or any ability to be prized, it must denote a higher degree of competence than that implied by a mere baseline skill. Critical thinking cannot be something everyone learns haphazardly, like the ability to speak a native language. It is more like the ability to teach: most people can acquire it to a moderate degree, but it takes effort and practice to do so. Many who think they have the ability do not, and most do not excel at it.

Like any other high competence skill, critical thinking is not universally distributed throughout the population. It cannot easily be acquired simply by unconscious modelling or copying (if it could, most people would be skilled at it). If critical thinking is to be learned, it must be taught. Supposing that it is an ability which is desirable in our society, it is desirable — other things being equal — to promote its acquisition. And because teaching is the way to promote its acquisition, it is desirable, and even necessary, to provide explicit instruction in, and/ or opportunities to deliberately copy, model, and practise critical thinking skills.¹

If it is fair to expect teachers to possess a level of competence in what they teach that is above the target level for those they are instructing, then those who teach critical thinking should be atypical. They should not share the general population’s low level of critical thought — the level that makes critical thinking instruction needed in the first place. But are there good reasons to think that K-12 teachers today think critically at the requisite level? Are K-12 teachers better at critical thinking than the average person? Are they sufficiently better to qualify them to teach critical thinking? This is an empirical question. Empirical testing that would provide an answer is desirable, but it has not been undertaken. In the absence of the empirical evidence such testing would provide, we can usefully speculate about the likely results

of such testing, and consider the practical implications of such results.

What distinguishes K-12 teachers from the rest of the population, apart from their motivation to teach K-12, are their general university education and the professional training in instruction they receive in faculties of education. So the question becomes “Is there any reason to expect that this education and training provide K-12 teachers with the critical thinking competence necessary to teach in this area?” To reasonably speculate on the answer to this question, we need to proceed with an understanding of what counts as critical thinking, and then consider the extent to which undergraduate education or teacher education is likely to provide it.

Definitions of critical thinking vary, but many suggest that it is thinking about thinking, or thinking about intellectual products and processes. So understood, critical thinking is made up of analysis and evaluation. It entails the recognition, interpretation, and analysis of thinking, in the first instance, which is to be followed up with evaluation that is achieved through the articulation and application of normative criteria. An implication is that critical thinking is to be distinguished from other intellectual activities such as decision-making and problem-solving, because these are not critical thinking so much as they are the intellectual processes about which it is possible to think critically (or not). As Sobocan and Hare have suggested in this volume, this implies that critical thinking cannot be sharply distinguished from creative thinking; thinking critically itself requires creativity (an ability to conjure up counter-examples, for instance), and creative work such as writing, painting, or composing requires critical thought — at least at the editing, revising, or refining stage.

In considering whether K-12 teachers are qualified to teach critical thinking, I will use the Fisher/ Scriven (1997) articulation of critical thinking, which I find compelling. It maintains that “critical thinking is the skilled and active interpretation and evaluation of observations and communications, information and arguments” (21). In this definition, “skilled” means skilled in the high competence sense — signifying, at the very least, a minimal

standard of quality beyond what is required to merely engage in critical thinking. “Observations and communications” and “information and arguments” include everything that goes into making judgments about attitudes and conduct. And “active” implies not only that the critical thinker reacts but also that he or she is proactive in thinking and investigating, possibly to an extent that will result in the formulation of new critical thinking principles.

The Fisher/ Scriven definition of critical thinking is consistent with many definitions in the literature.² Unlike some definitions, it has to my mind the virtue of not building the disposition to exercise critical thinking abilities into the very conception of critical thinking.³ Another virtue is its recognition that critical thinking should not be conflated with the ability to analyze and assess arguments. The latter is the principal focus of many college- and university-level critical thinking textbooks and courses, but dealing critically with arguments is just one element of critical thinking, and the Fisher/ Scriven conceptualization reflects that fact. This is a virtue because arguments are not the only processes and products of mind that may be thought about critically, however central their role in the life of the mind.

Understanding critical thinking in the Fisher and Scriven way, we may ask whether and to what extent it is taught in undergraduate university programs. I propose — for three reasons — that we leave out of consideration the dedicated critical thinking courses often offered by philosophy departments. First, their success in improving critical thinking competence is disputed. Second, in spite of their popularity, only a minority of undergraduates take such courses and there is no assurance that most K-12 teachers are among that minority. Third, it is plausible to suppose that high levels of critical thinking competence require discipline-specific background knowledge (and possibly discipline-specific principles of reasoning) which is particularly relevant to Grade 9-12 teachers who specialize in disciplines or groups of related disciplines. In view of the latter, what is particularly of interest is whether K-12 teachers possess sufficiently well-developed critical thinking skills in the

disciplines they teach — to the extent that they are qualified to teach critical thinking in their subject areas.

The question to be asked is the extent to which it is likely that a history major will have acquired the ability to think critically about historical issues, or an English major will have acquired the ability to think critically about the interpretation and assessment of literature. More generally put, the question is whether a social science major will have acquired critical thinking skill about matters falling within the domain of the social sciences or whether a science major will have learned to think critically about experimental research and theory in science.

Any critical thinking instruction that might occur in K-12 should also include training in critical thinking (applicable to the various fields) that relates to the current issues of the day with which an informed citizenry should be familiar. Consider, for example, thinking about social policies in each of the portfolios of civic life — be it finance and economic well-being, healthcare, energy production and conservation, housing, transportation, foreign affairs, environmental protection, or any other. In these areas, critical thinking requires the integration of background knowledge and theoretical insights from a variety of fields, including history, economics, politics, sociology, literature, philosophy, and the various sciences. In view of this breadth, we should be interested in the extent to which university training produces elevated critical thinking ability in such applications. We need to consider both students' training in their major subjects and the material used in the various optional courses that are supposed to broaden their education.

If we use the Fisher and Scriven definition, the question is to what extent we may expect that undergraduate university courses teach the skilled and active interpretation and evaluation of observations and communications, information, and arguments — both in a student's field of specialization and in applying that perspective to practical matters requiring multi-disciplinary analysis and evaluation.

I can make some observations about students' abilities in the interpretation and evaluation of arguments because I have taught

critical thinking and argumentation for thirty-four years. One of my courses in argument has prerequisites, so it is the second — sometimes the third — course devoted to critical thinking or argument interpretation and evaluation that my students will have taken. Despite this relatively extensive training in critical thinking, many of these students lack a clear understanding of the concept of argument when they begin, and relatively few of them are, at the outset, good at recognizing arguments and argumentation, let alone analyzing or evaluating them. By the end of the course, and with a great deal of practice, they have improved significantly, but only the better students — perhaps one-quarter to one-third of the class — have begun to be able to think critically about arguments at an advanced level. I would worry about asking the others to teach this aspect of critical thinking (that is, about arguments) to K-12 students.⁴

What is surprising, and alarming, given the ubiquity and importance of arguments in all corners of learning, is the low level of understanding of arguments, and facility with them, that students exhibit when they begin dedicated courses in this area. This suggests to me that they are not learning about arguments and their uses in other areas of their studies. It is surprising because these subjects require the understanding of contending hypotheses and theories, which seems to require an understanding and an appreciation of the force of the observations and evidence that tell for and against them, or in other, words, the strength of the arguments for and against them (see Kuhn 1991). If the students do understand the use of evidence in history, psychology, economics, physics, or biology, in particular, they do not seem to have learned how to generalize that understanding. They do not seem to have grasped the common general principles at work in the reasoning of these different domains.

My experience is admittedly anecdotal, but it is consistent for over thirty years of annually changing populations. It leads me to expect a similar situation in other areas of critical thinking. I do expect that the better students who take several communications courses become adept critical thinkers about communications, that is, skilled and active interpreters and evaluators of

communications. Similarly, I expect that a minority (the better of the students) who major in, or take several courses in, biology become skilled and active interpreters of observations, particularly biological observations; that the better students who major or take several courses in political science become skilled, active interpreters of information, especially public policy information; and so on. But it does not necessarily follow that these students think critically about matters not specific to their domains of competence, or that they apply what can be generalized about their particular domains, or transfer their critical thinking skills to applications beyond their disciplines. For the bottom two-thirds or three-quarters of the class — the majority of graduating undergraduates — the prospects are even dimmer.

Should we believe that the situation changes as a result of the year of training that students receive at faculties of education while completing their qualifications to become K-12 teachers? I do not know the answer. Familiarity with the current theoretical literature on the teaching of critical thinking and practical experience in teaching critical thinking are not requirements for instructors in faculties of education, and the presence of critical thinking experts in these faculties is a matter of happenstance. Some faculties of education have several faculty members with these credentials and backgrounds, but others have few or none.

A more compelling factor than the absence of qualified faculty of education instructors is the extremely heavy curriculum burden facing would-be K-12 teachers, not to mention their instructors. There is so much other essential material, or so it is perceived, to be conveyed in such a short time in a one-year education program that it is doubtful that there is room for critical thinking instruction that could possibly make up for the shortfalls and defects of the student teachers in this context.

In sum, there is every reason to expect that the quality of critical thinking among K-12 teachers is, at best, uneven when they begin their careers, and not at a level that properly qualifies the majority of them to teach critical thinking. In the context of calls to improve students' critical thinking abilities, this raises some serious questions about our ability to provide the instructors required to

teach critical thinking in K-12 in the absence of a dedicated component of theoretically sound instruction in critical thinking and its teaching as part of teacher training.

All of these considerations raise doubts about the ability of K-12 teachers to provide (without further training) critical thinking instruction to their students. These doubts suggest that teachers' critical thinking skills should be evaluated to discover whether the hypothesis that they do not have the necessary skills is supported by evidence as well as by speculation. My first point, then, is that we need to think about testing the critical thinking competence of K-12 teachers in tandem with testing that would test the critical thinking competence of K-12 students.

Let us suppose that my hypothesis about K-12 teachers can be supported by valid and reliable testing. Does that imply that we should abandon the notion that critical thinking instruction should be included in the K-12 curriculum, given the absence of sufficiently qualified instructors? I don't think so. It would indicate a problem, but one that can be solved, provided that there is some way for teachers to acquire the competence they need to teach critical thinking to their students.

The need for such instruction might seem to be as much of a hurdle as teachers' initial lack of qualifications, but I would suggest otherwise. If testing shows that K-12 students need training in critical thinking, and if the resources are available to provide it, then the conditions needed to prepare K-12 teachers to be critical thinking instructors can be supplied.

In providing critical thinking instruction to K-12 students, it will be necessary to design instructional materials for stand-alone units on critical thinking and critical thinking add-ons that can infuse critical thinking across the present curriculum. These critical thinking instructional materials can do double duty; they can be used to train teachers as well as students. It should be possible for anyone motivated to teach critical thinking to master such materials. In thoroughly mastering the materials, teachers will acquire sufficient critical thinking competence to teach critical thinking skills. In this way, teachers can teach themselves the

material that they are to teach to their students. This much is the bare minimum, but it can be done.

Better, and also within the realm of practicality, is the mastery of some background theoretical knowledge — something like the Norris and Ennis (1989) and the Fisher and Scriven (1997) monographs, and ideally an encyclopedia of critical thinking, containing short articles on its key terms and various elements. So the second point I would make is that, if K-12 teachers are to be entrusted with teaching critical thinking, it will be necessary to produce materials for stand-alone or across-the-curriculum instruction, and desirable to design a package of backup theoretical material as well. (In testing such teachers, one might use the same instruments one uses to test the critical thinking skills of higher-level students.⁵)

Some might object to my pessimism and the proposed solution to the problem of qualified critical thinking instruction by suggesting that there are other ways to teach critical thinking. At least at the secondary level in Ontario one might point to the opportunities that the Grade 11 and Grade 12 philosophy curricula provide for teaching critical thinking in high school. Both course descriptions include significant references to critical thinking, and teachers who have some university training in philosophy would seem qualified to teach these courses. According to this objection to my proposals, critical thinking can readily be taught in Grades 11 and 12 — within the high school philosophy courses present in the Ontario curriculum — and in similar courses, if they exist now or once they can be introduced, in other provincial or state jurisdictions (such as California).

In deciding whether this possibility is a real option, we might look more closely at the relevant curriculum documents. The Ontario Grade 11 philosophy course, “The Big Questions,” lists a series of philosophical questions — such as “What is a person?”, “What is a just society?”, and “What is human knowledge?” — as its topics. The course description states that “students will learn critical thinking skills in evaluating philosophical arguments related to these questions” (*The Ontario Curriculum, 2000*; course description for Grade 11 philosophy).

The Ontario Grade 12 philosophy course, “Questions and Theories,” states that it “addresses three (or more) of the main areas of philosophy: metaphysics, logic, epistemology, social and political philosophy, and aesthetics” (ibid., course description for Grade 12 philosophy). The course description advises that, among other things, “the students will learn critical thinking skills” (ibid.). So the Grade 11 course description promises critical thinking skills as they apply to a particular topic (the philosophical arguments that relate to the questions taken up in the course), whereas the Grade 12 course description promises learning critical thinking skills, *tout court*. In both cases, the critical thinking skills are not a topic or a unit of the course, but are to be learned in the process of learning how to think about philosophical issues.

Turning to the detailed descriptions of the curricula for the courses in question provides a clearer idea of the way in which the course developers conceive of critical thinking and critical thinking instruction. In the Grade 11 course, the aspects of the course that might reasonably be related to the promise to teach critical thinking skills are the following expectations of what students will be able to do by the end of the course: “summarize some arguments for and against answers to [some of] the big questions of philosophy,” “describe the strengths and weaknesses of the main arguments used to defend answers to [some of] the big questions of philosophy,” “describe important similarities and differences [of competing philosophical theories],” “describe the strengths and weaknesses of alternative responses to questions of applied philosophy,” “apply philosophical skills such as precise writing and critical analysis to solve problems that arise in jobs and occupations,” “identify philosophical positions presupposed in some other disciplines,” “contrast alternative philosophical viewpoints presupposed in some other disciplines,” and “identify examples of fallacies in reasoning in writings from other subjects” (*The Ontario Curriculum, Grades 11 and 12: Social Sciences and Humanities, 2000*, Philosophy: The Big Questions, Grade 11).

Being able to do all these things does demonstrate a degree of critical thinking skill as it relates to philosophical issues and their applications. But philosophical theories and arguments are *sui*

generis. The argumentation involved is conceptual and normative, not empirical. So even though the curriculum clearly envisages relating philosophical questions and theories beyond philosophy, it is doubtful whether such a course will teach critical thinking skills that apply to other kinds of subject matter or general critical thinking skills (assuming there are such general skills).

In the Grade 12 philosophy curriculum, the units on metaphysics, epistemology, ethics, social and political philosophy, and aesthetics contain no explicit reference to teaching critical thinking. They say students will use critical thinking skills in their arguing and evaluation of arguments, but nothing is said about dedicated instruction in the development of such skills. The learning of critical thinking skills would, in these units, presumably occur to the extent that these skills are needed for the interpretation and evaluation of philosophical arguments — and in some cases for the application of philosophical issues and theories to other subjects or topics. Moreover, the assumption seems to be that all there is to critical thinking is the critical assessment of arguments. The curriculum exhibits no explicit appreciation that things other than arguments can be the objects of critical thinking, that instruction in critical thinking skills might require separate attention, or that skill in critically evaluating philosophical reasoning and arguments might not generalize.

The only explicit reference to critical thinking in the Grade 12 philosophy curriculum is found in the guidelines for the unit on logic and the philosophy of science. It is stated there that by the end of the course students will “apply logical and critical thinking skills in practical contexts, and in detecting logical fallacies” (*The Ontario Curriculum, Grades 11 and 12: Social Sciences and Humanities, 2000, Philosophy: Questions and Theories, Grade 12* — unit on Logic and the Philosophy of Science). But explicit reference to critical thinking disappears when these expectations are spelled out more specifically and are replaced by references to logic. Thus students will be expected to demonstrate an understanding of what a valid argument is and what a logical fallacy is; correctly use logical terms such as “logical consistency,” “contradiction,” “deduction,” and “validity”; and distinguish valid

from invalid arguments, and sound from unsound arguments (*ibid.*). Critical thinking skills, in short, are taken to consist of the skills entailed in using deductive logical norms. As valuable as such skills are, they by no means exhaust the skills entailed even in the use of arguments, let alone the other aspects of critical thinking such as evaluating arguments.

It seems to follow that the Ontario Grade 11 and Grade 12 philosophy curricula cannot be regarded as the equivalent of, or as substitutes for, a curriculum in critical thinking. The philosophy courses certainly aim to convey some of the elements of critical thinking abilities, but they are too narrow in three respects. First, they focus only on philosophical questions, theories, and arguments, and their applications — a rather specialized domain. Second, they focus primarily on the analysis and evaluation of arguments, which comprise only one of the components of critical thinking. Third, they focus on the deductive norms of arguments, which apply to most philosophical argumentation, but which are only one of a variety of norms that apply to arguments and argumentation in general. These considerations themselves make it doubtful that teachers with sufficient competence in philosophy to teach these courses would thereby have the competence to teach critical thinking skills in other areas. I conclude that we should reject the suggestion that the philosophy curricula solve the problem of where and how to teach critical thinking in K-12, or even 9-12.

I believe that the move to teach critical thinking in K-12 is a desirable development, but one that will require a great deal of work. We have good reason to believe that K-12 students' critical thinking skills (like those of university students) will be found wanting, and this suggests that there is a need for critical thinking instruction. There are similar reasons for predicting that requisite critical thinking skills of K-12 teachers also will be lacking, which suggests that teachers need training, even if it is only self-administered. And the teaching of critical thinking in K-12 cannot plausibly be left to the Grade 11 and 12 philosophy courses in the Ontario curriculum (or similar philosophy courses in other jurisdictions).

Quite apart from the daunting political effort required for curriculum change (whether in K-12 or in university faculties of education), valid and reliable testing instruments should inform attempts to make critical thinking a key component of K-12 education. The advanced or K-12 test should be administered to potential teachers as well as current teachers and students. At the same time, suitable curriculum materials for students, and instructional packages for teachers, need to be prepared. Such tasks will require a sustained, multi-year commitment by those well positioned to bring about change in our education systems (both in schools and in faculties of education). For many reasons, I believe this is a project that is worth the effort.

References

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Notes

1. The "other things being equal" qualification I have inserted in this paragraph hides difficult decisions about time- and resource-allocation priorities. Many things are desirable in our society. It is desirable to teach more things in K-12 than time and other resources permit. So, solely from the fact that it would be a good thing for students to acquire critical thinking skills, it does not follow that they should be taught in K-12. Still, it is arguable that the ability to think critically ought to have a high priority. I will proceed on the assumption that the case can be made for including it in the K-12 curriculum.
2. Especially Ennis's (1990) very influential definition that critical thinking is "reasonable and reflective thinking about what to believe and do" (396).
3. Skills are conceptually distinct from the disposition to practise them, however much the acquisition of a skill can causally depend on an

inclination to engage in the activity in question. Moreover, skills can be assessed independently of any disposition to practise them, which is convenient, since they are easier to assess than attitudes. Whether one ought to try to inculcate a disposition to engage in critical thinking at the same time one is teaching critical thinking skills is a matter of debate that does not have to be resolved for the purposes of the present discussion.

4. Teaching something improves one's understanding of it and one's skill in doing it, so teachers might become better critical thinkers about argument and argumentation as teachers of it than they were as students. This is an important point, to which I return below.
5. If mastery of the curriculum materials minimally qualifies someone to teach critical thinking, then a high score on a Grade 12 critical thinking test should suffice to select instructors who are ready to work through the critical thinking curriculum materials on their own and prepare unit and lesson outlines for critical thinking instruction anywhere in the K-12 range.