



INTRODUCTION

Introduction to the special issue on critical thinking in higher education

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The articles included in this issue represent some of the most recent thinking in the area of critical thinking in higher education. While the emphasis is on work being done in the Australasian region, there are also papers from the USA and UK that demonstrate the international interest in advancing research in the area.

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‘Critical thinking’ in the guise of the study of logic and rhetoric has, of course, been around since the days of the ancient Greeks and the early beginnings of universities. In a narrower sense, critical thinking has been central to higher education as a desirable attribute of graduates since at least the beginning of the twentieth century. The work of John Dewey, and others, emphasised the importance of ‘good habits of thinking’ as early as 1916. In 1945, the Harvard Committee placed emphasis on the importance of ‘thinking effectively’ as one of three desirable educational abilities in their *General education in a free society*. This was later endorsed in 1961 by the US-based Educational Policies Commission: ‘The purpose which runs through and strengthens all other educational purposes ... is the development of the ability to think’ (Kennedy, Fisher, & Ennis, 1991, pp. 11–12).

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In recent times, universities have made a point of emphasising the importance of critical thinking as a ‘generic skill’ that is central to most, if not all, subjects. There is not a university today (in Australia at least) that does not proudly proclaim that their graduates will – as a result of a degree program in their institution – learn to think critically. Further, there is rarely a subject taught that does not offer the opportunity to acquire skills in critical thinking. However, where is the evidence that we teach critical thinking in higher education? Disturbingly, despite our best intentions, it appears we may be teaching very little of it. *The Australian’s* Higher Education Supplement recently reported on a large-scale study that used Collegiate Learning Assessment data to track the educational development of a range of skills of 2322 American college students from 2005 until 2009. It established that 45% of students made no significant improvement in their critical thinking or reasoning skills during the first two years of college and that 36% made no significant improvement after an entire four-year college degree (Arum & Roksa, 2011; Rimer, 2011; Trounson, 2011). Students tested could not, after completing a university course of study, sift fact from opinion, nor could they clearly present an objective review of two or more conflicting reports or determine a cause of an imaginary problem without being influenced by persuasive spin and emotional blackmailing.

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Another study found that many students leave college ‘unable to understand, evaluate, or write arguments’ (Larson, Britt, & Kurby, 2009, p. 340). This study, involving 57 native English-speaking students found that without a tutorial on the generic skills of argumentation, college students ‘frequently failed to distinguish acceptable arguments from structurally flawed arguments’ (p. 358). Acceptable arguments are ones in



which a student can distinguish warranted arguments (i.e., supported by sound reason) from unwarranted ones (i.e., assertions, statements or claims without any reasons at all). Shockingly, college students could only identify warranted arguments from unwarranted arguments and mere assertions with only 66% baseline accuracy.

5 Yet another study involving 76 native English-speaking tertiary students found that students are ‘not skilled at identifying key elements of an argumentative text’ and ‘were not proficient comprehenders of natural, written arguments’ (Larson, Britt, & Larson, 2004, pp. 205, 220). Only 30% of all participants could identify and distinguish between *claims* (assertions) and *reasons* in a text. Most students selected reasons that could not support the claims being made and mistakenly identified counter-claims as main claims.

10 The concern about limited reasoning skills is not new. As early as the 1980s, the US-based National Committee on Excellence in Education found that: ‘few students could provide more than superficial responses to [critical] tasks, and even the “better” responses showed little evidence of well-developed problem-solving strategies or critical thinking skills’ (National Assessment of Educational Progress, 1981, p. 2). This is consistent with the work of others who have established that the majority of people, both inside and outside the academy, have very little natural capacity for critical thinking (Kuhn, 1991). As noted by Harrell in this issue, there is no shortage of studies demonstrating that ‘very few college courses actually improve these skills’ (Annis & Annis, 1979; Pascarella, 1989; Resnick, 1987; Stenning, Cox, & Oberlander, 1995). Critical thinking, it seems, is a skill that needs to be taught and this is not happening on our campuses. This is not news for employers. Australian employers report ‘capacity for independent and critical thinking ... sets apart successful from unsuccessful applicants... but it is *rare*’ (Commonwealth of Australia, 2000, p. viii, *emphaisis in original*).

15 The articles in this issue confront the issue of critical thinking head on and do so from a variety of perspectives. Some deal with the theory of critical thinking in higher education: what is critical thinking? How can critical thinking be best taught? These articles revisit the important scholarly debates between Ennis, McPeck and Paul in the 1980s and 1990s on the extent to which critical thinking is a generic skill and the extent to which it is best understood as a discipline-specific skill (Ennis, 1992; McPeck, 1981, 1992; Paul, 1992). This issue has been aired again recently in this very journal (Davies, 2006; Moore, 2004) and it is one that seems unlikely to go away.

20 Moore opens the special issue by revisiting the case for a conceptualisation of critical thinking as discipline-specific. Using data from a small-scale qualitative analysis of the views of academics from three subject areas (Philosophy, History and Literary/Cultural Studies), he outlines how different the concept of critical thinking is in these disciplines. He draws the conclusion that critical thinking is not a general skill, but, rather, a ‘loose category taking in diverse modes of thought’. He claims that it is folly to suppose that critical thinking ‘can be reduced to a defined set of cognitive operations’ and that it should, instead, be considered ‘a form of metacritique’. Drawing on Wittgenstein’s concept of ‘family resemblances’, he claims that critical thinking is not a generic skill, but a ‘multiplicity of practices ... rooted in the quite individual nature of different disciplinary language (and thinking) games’.

25 By contrast, in the following article Robinson argues for a more subtle case, in which generic approaches have some value, though not as much as traditionally supposed by generalists. She outlines how specifists such as Moore owe an account of why, if critical thinking is subject specific, generic logic textbooks seem to be uniformly and consistently useful as a mechanism of teaching skills in critical thinking. Toying with an

‘infusionist’ position, which combines elements of generalist and specifist theses, she finds specifist arguments to the contrary to be less than satisfactory.

Several articles deal with the practical elements of teaching critical thinking, how it can be scaffolded into the curriculum and how critical thinking can be best taught to international students from Asia. Using a small-scale experimental approach, in which a split-test version of the Watson Glaser Critical Thinking Appraisal Test is presented to two groups of students (one group taking an English section before a Chinese section, the other group doing the opposite), Floyd argues that there is evidence that critical thinking is harder in a second language, but this is not tantamount to the idea that Asian students lack strong critical thinking skills. She finds that issues such as working memory, reading comprehension, word recognition and individual differences in approach to study are central.

Hammer and Green present a case for scaffolding the development of critical thinking skills in a way that is ‘both discipline and unit specific’. Using the example of integrating critical thinking into a first-year Management unit, they show that considerable care is needed in developing critical thinking skills. They need to be developed both ‘situationally’ (i.e., in practical, decision-making contexts) and ‘epistemologically’ (i.e., in theoretical, abstract contexts) and they need to occur in conjunction with the development of academic literacy skills. By contrast, Wass, Harland and Mercer describe a very different scaffolding approach to critical thinking looked at from the student perspective. They borrow Vygotsky’s concept of the Zone of Proximal Development, in which students are treated as ‘academics in training’ and given opportunities for authentic research experiences. In particular, they describe the process students go through over the course of a three-year Zoology degree. They describe an incremental approach where research skills develop by means of theory and knowledge-testing in first year and more extensive teacher-led scaffolding in second and third year, beginning with peer conversations and leading to more increased student-centred responsibility. This, they argue, goes part of the way to developing strong critical thinking skills.

Kek and Huijser look at critical thinking from a different perspective. They assess the extent to which pedagogical techniques such as problem-based learning can both ‘promote and develop transferable critical thinking skills ... whilst simultaneously [helping students] acquire domain-specific knowledge or content’. They look at the generation of current students that they claim is ‘highly adept at multi-tasking and handling a sea of information at seemingly dazzling speed [and yet for whom] ... the ability to critically assign value to such information is often missing’. After a summary of a variety of strategies for teaching critical thinking, Kek and Huijser note that there has been a shift from teacher-focused strategies to student-focused strategies in recent times and that problem-based learning is an important pedagogical tool in advancing the teaching of critical thinking.

Another illuminating article is Cosgrove’s ‘Critical thinking in the Oxford tutorial’. What goes on in the traditional Oxford tutorial and does it, in fact, teach critical thinking skills? Long assumed to be the benchmark in terms of cultivating and internalising an attitude of critical thinking in students, Cosgrove demonstrates, by means of a small-scale study, that the much-lauded tutorial system is principally concerned with clarifying students’ questioning and questioning their assumptions, and not – as it is often assumed to do – engaging students in intellectual evaluation and developing intellectual traits of critical thinking. Oxford tutors apparently place little emphasis on the latter. He argues for a more comprehensive study of the Oxford tutorial system where these implicit skills are made explicit and are internalised by students.

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5 Golding takes a different tack. He develops a strategy for educating for critical thinking using a Socratic method of questioning, an extension of Paul's method. Golding's proposal is to use a 'community of inquiry' model in the university context in order to make critical thinking visible to the student. As he notes, being a critical thinker is a multi-faceted notion: merely knowing subject matter is insufficient for being a critical thinker, as is being disposed towards critical thinking without possessing strong critical thinking skills. His method begins with discipline-specific questioning, creating a community in which students respond to questions via a variety of modelling and facilitation strategies, and promotion of a thinking-encouraging approach on the part of lecturers. He makes the distinction between classes where students *engage* in critical thinking and classes where student *learn to be* critical thinkers.

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15 Completing the special issue are two articles looking at modern developments in teaching critical thinking through what is now called computer-aided argument mapping (CAAM) or argument diagramming (AD). Since the beginning of the twenty-first century, critical thinking in higher education has taken a new and very contemporary turn. Modern computer-based technologies have resulted in a plethora of tools to help visualise elements of thinking in interesting ways. Beginning with earlier mind and concept-mapping tools, and most recently encompassing argument-mapping tools (Davies, 2010), these technologies are now beginning to change the teaching of critical thinking in ways we are only beginning to discover.

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25 Harrell provides a rigorous analysis of two separate controlled studies, involving 269 students, in a semester-long Philosophy course. All students were assessed for their ability to identify main conclusions, sub-conclusions and premises in an argument, their ability to identify the structure of arguments (how premises fit together with conclusions) and their capacity to evaluate arguments. These pre-test results were compared to post-test results after intervention during which the treatment group was taught argument diagramming and the control group was not. She finds that low-achieving students (as measured by pre-test scores) benefited most from being taught argument diagramming. The result that students' critical thinking improves after exposure to AD is consistent with more extensive interventions conducted elsewhere ('Monash critical thinking study', 2009; Twardy, 2004; van Gelder, Bissett, & Cumming, 2004).

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35 In sympathy with Harrell's approach, Carrington, Chen, Davies, Kaur and Neville provide evidence that even a minimalist intervention of argument mapping into a normal subject stream can result in small, yet statistically significant, improvements to critical thinking skills. Aware of the practical and political difficulties of embedding AM into normal compressed timetables, they trialled a 'one-shot inoculation' approach of introducing AM into two large-cohort Commerce disciplines (109 and 182 students). They compare the results of student responses to a survey on the AD trial and their responses to the California Critical Thinking Assessment Test both before and after the intervention.

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45 Both Carrington et al. and Harrell's articles support the 'generalist' approach to teaching critical thinking. Critical thinking, it seems, *can* be taught using novel pedagogical approaches, providing the will is there to do so and if the curriculum permits. Moore's article rejects this approach as 'inadequate' and ill-considered and exhorts us to embrace the various 'distinctive critical modes' of the disciplines. Robinson's article takes a position mid-way between the generalists and specifists, but ultimately sides with generalist approach as being of value to students. The articles by Hammer and Green and Harland and Mercer ask us to consider scaffolding of curriculum

carefully and Floyd's article encourages us to consider the important issue of critical thinking in relation to Asian students. Huijser's article reminds us of how problem-based learning can enhance critical thinking skills. Golding and Cosgrove's articles consider how both community of inquiry approaches and the Oxford tutorial system (respectively) can help develop critical thinking skills that are so vital to graduates in the twenty-first century. Overall this collection provides food for thought on an important, if contested, educational topic.¹

Note

1. This is the final issue to come out under the editorial leadership of Professor Ian Macdonald, Dr Izabel Soliman, and Associate Professor Martin Davies. The new *HERD* editorial team would like to acknowledge the work done by the outgoing Editors.

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