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The development of critical thinkers: do our efforts coincide with students' beliefs?

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Critical thinking is one of the key attributes that crops up regularly in discussions concerning the role of tertiary education. In particular, it manifests in discussions about graduate and employability attributes: along with disciplinary content and skills, stakeholders contend that graduates should emerge from their tertiary studies with enhanced abilities in critical thinking, decision making, problem solving, logical reasoning and so forth. Indeed, excellence in teaching is seen to be tied to students' development of these skills just as much as to their building of discipline-specific knowledge. So, given that the development of these skills is thought to be an essential part of students' university experiences, what are they, how might we go about fostering them, and how do our students perceive our efforts? What are their perceptions of not only critical thinking, its importance, development and transferability to other subjects in their education or aspects of their lives, but of our attempts to inculcate it in their education as a core value and set of skills?

Hence, rather than expounding on the importance of critical thinking skills or outlining the various strategies I have developed as a philosophy lecturer to best facilitate students' acquisition of these skills, this paper tells another story. Specifically it presents highlights from the results of a recent research project (carried out in 2008 and involving philosophy students at the University of Ballarat) that analysed students' own beliefs regarding their development as critical thinkers.

Keywords: critical thinking, student beliefs, self-reporting

Introduction

There is agreement between national governments, employers, and teaching practitioners and researchers that one of the foundational objectives of the university system is the acquisition by students of those skills and attitudes commonly grouped under the umbrella of 'critical thinking'. Laurillard (1993, p.15), for example, contends: "student learning is not just about acquiring high level knowledge. The way students handle that knowledge is what really concerns academics". That is, students need to become effective critical thinkers and successful problem-solvers able to display flexibility and adaptability in their management of workplace and social change (e.g. Candy, 2000; Moon, 2007; Treleaven & Voola, 2008). There is thus a burgeoning literature concerned with students' development as effective critical thinkers, and which teaching practices may be optimal for developing their abilities (Biggs, 1999; Boekaerts, 1997; Laurillard, 1993; Phillips & Bond, 2004; Ramsden, 1992). Finally these skills are included in lists of tertiary education's desired graduate attributes. The Australian Council for Educational Research, for instance, included critical thinking as one of

the four areas assessed in their Graduate Skills Assessment, and research indicates that employers see critical thinking as one of the most important skills in university graduates (Tapper, 2004).

The purpose of this paper, however, is not to expound yet again on the importance of critical thinking skills or to outline the various strategies I have developed as a philosophy lecturer to best facilitate students' acquisition of these skills. Rather it is to present another side to the story: student's own beliefs regarding their development as critical thinkers in the context of their studies in philosophy, and with particular regard to their completion of Logic and Reasoning, a unit designed to explicitly teach critical thinking skills. My discussion of student beliefs and their evaluation of my practices will be based upon student self-reports collected in a small research project undertaken in 2008 with support from a University of Ballarat Learning and Teaching Incentive Grant received in late 2007.

Key contexts

Used to group a diverse array of skills and attitudes, 'critical thinking' is often argued to be at the heart of university education (Laurillard, 1993; Marshall, de Reuck & Lake, 1997; Moon, 2007; Pithers & Soden, 2000; Radloff & de la Harpe, 2001). Not only should "every course help students become aware of strategies for learning and problem solving" (McKeachie et al, 1986, p. 1), but every university graduate should graduate in full possession of these skills which include effective reasoning, interpretation, analysis, inference, evaluation and monitoring/adjustment of one's own reasoning processes. (For detailed descriptions of the skills included under the umbrella of critical thinking see: Geelan & Taylor, 2000; Kurfiss, 1988; Marshall, de Reuck & Lake, 1997; Phillips & Bond, 2004).

However the best way to facilitate students' development of these skills is still under debate. Pithers and Soden (2000, pp. 239, 240), for example, make the points that confusion is discernible with regards to not only the "nature of critical thinking" but "how good thinking might be assessed", and that there is "a dearth of published research which examines the development of critical thinking during degree-level courses". Further, there is relatively little research examining students' own perceptions and self-reports regarding critical thinking and its importance, development and transferability to other subjects or aspects of their lives (Tapper, 2004). Nonetheless it is generally assumed that student development of these skills is best supported under a student-centred constructivist model of scaffolded teaching and learning (Biggs, 1999; Crebbin, 1999), according to which students are encouraged to become active, interactive and reflective learners. The question still at large is whether these skills are best taught directly or indirectly. The former approach includes units (such as Logic and Reasoning) whose objective is simply to 'teach' critical thinking. Their content is reasoning or (formal or informal) logic itself. Such units explicitly present critical thinking as a topic to be learnt, with students learning forms of reasoning or analysis, common mistakes or problems in reasoning or analysis, and how to apply these skills by practising on a wide range of examples. This approach is typically taken by textbooks in critical thinking and informal logic (e.g. Allen, 2004; Howell & Kemp, 2002; Thomas, 1997). On the other hand, if critical thinking is taught indirectly, this is carried out in units that aim to do two things: teach discipline-specific content, and use this content to develop students' critical thinking skills. Of course, for a philosophy lecturer, the perceived need to settle upon just one of these two approaches is moot. Given that philosophy as a discipline sees rigorous reasoning as its self-description, its methodology, and as an object of study (logic being recognised as one of philosophy's four major categories; the others being metaphysics, epistemology and

axiology), a focus on reasoning skills is integral to all philosophy units whether they explicitly teach metaphysics or logic.

This, then, is the context for a small research project carried out at the University of Ballarat (supported by a University of Ballarat Learning and Teaching Incentive Grant received in late 2007) that analysed philosophy students' own beliefs regarding attempts to facilitate their development as critical thinkers. Before, however, outlining some of the highlights from this research project there are two final issues needing mention. The first is to note that I follow constructivist tenets in my teaching practices. That is, I structure all units in terms of scaffolded and active learning. Both assessment tasks and weekly activities and topics build upon each other and student experiences, and all tasks and activities focus on enhancing student abilities and confidence in tackling assessment tasks and realising unit content objectives. (As will be seen below these efforts were recognised and valued by students.) Secondly, it should be noted that the research project employed a mix of qualitative self-reporting tools to collect information about students' own perceptions of critical thinking and its development.

Research design and participants

Approximately 40 students who had completed Logic and Reasoning (a unit that explicitly teaches reasoning skills) were invited to complete questionnaires, as was a second, similar sized group of students who had studied at least one other philosophy unit at the University of Ballarat. A total of 35 students returned completed questionnaires. Fifteen of the students who completed the questionnaire gave consent to be contacted about taking part in a follow-up interview. Nine students participated in these interviews. Project aims were to collect and compare both sets of student self-perceptions around their development as critical thinkers and the utility of direct versus indirect teaching (completing Logic and Reasoning versus completing other philosophy units). This paper can mention only highlights from these findings and focuses primarily on qualitative data collected in interviews.

Questionnaire respondents had completed between two and 9 semesters of study at the University of Ballarat at the time of completing the questionnaire (not including units undertaken at the time of completing the questionnaire), and had each completed between one and seven philosophy units (again, not including units which they were undertaking at the time of completing the questionnaire). Eighteen (51.4%) of the 35 participants had completed more than one philosophy unit, and of the 35 respondents, 14 (40%) completed Logic and Reasoning. None of the respondents had completed any formal study in philosophy apart from philosophy units studied at the University of Ballarat.

Interviews were carried out by an independent project officer with five males and four females. These participants had completed an average of 4.7 semesters of study towards their current degree at the time of the interviews and an average of 2.7 semesters of study in philosophy at the University of Ballarat. Interviewees were studying degrees within the disciplines of Humanities, Social Sciences and Psychology. Interview questions asked participants about how they defined critical thinking, the importance of critical thinking skills for university students, and about how these skills can be best taught at University. An analysis of notes taken during the interviews provided the key themes summarised below.

Student beliefs

Overall, the majority of questionnaire respondents (88.6%) indicated that their critical thinking skills had improved as a consequence of studying one or more philosophy units. In response to an open-ended question asking them to describe the ways in which their critical thinking skills had improved, the most common responses given included changes such as being better able to read critically, construct, critique and analyse arguments and the way in which they are constructed, being more aware that there is often “no right or wrong answer”, less judgmental/more accepting of or open to new ideas/the views of others, more questioning (of own values, ideas, beliefs and those of other people) and gaining a better understanding of self. When asked about how studying a philosophy unit (or units) had helped them to develop their critical thinking skills, participants gave a variety of responses, with the most common highlighting interactive tutorials, class discussions, and the completion of and feedback from scaffolded assignments and essays. (Similar responses have also been collected through a range of formal and informal unit evaluation measures and unsolicited correspondences with students.) When asked to rate the extent to which they were able to apply the critical thinking skills learnt in philosophy to other areas of study or subjects, 77.2% of participants indicated that they were able to do so.

Similar beliefs were also prevalent within the interviews carried out by an independent project officer. These participants had completed an average of 4.7 semesters of study towards their current degree at the time of the interviews and an average of 2.7 semesters of study in philosophy at the University of Ballarat. An analysis of notes taken during the interviews provided the key themes summarised below.

Students’ views on what constitutes critical thinking

Interviewees saw critical thinking as a tendency to question assumptions, to actively evaluate the reasoning of others along with their own arguments and beliefs. As one student put it, “Critical thinking is looking deeper, rather than just looking at what’s in front of you. It’s searching for gaps in logic, realising that you need more than one example to back up a good argument.” Another interviewee stated that “Critical thinking is not just believing everything you read or are told... just because it’s in the paper doesn’t mean it’s true. It’s just their opinion and you should question it.” Developing solid arguments, avoiding “leaps of logic” and “dogmatic thinking” were seen as important aspects of critical thinking by most interviewees. Critical thinking was also described as allowing individuals to develop a better understanding of issues, to “separate fact from non-fact” and analyse cause and effect.

The notion that part of critical thinking is being well-informed or “knowledgeable” was also evident. Several interviewees saw gathering information or data from a number of different sources (rather than from just one source) as integral. However, when questioned as to whether critical thinking is simply “knowing stuff”, they tended to clarify that it involves going beyond “facts” and forming your own well-founded opinion. One interviewee believed an important aspect of critical thinking is moving beyond seeing teachers and figures of authority as “knowing all”, realising that you don’t have to agree with what they say or think. Another interviewee equated critical thinking with scientific thinking and the process of forming and testing hypotheses, re-testing these ideas, drawing from others’ ideas but not just accepting them at face value – “forming your own opinion.” For another student, a crucial aspect of critical thinking was “discovering that science isn’t necessarily as ‘scientific’ (i.e., isn’t always logical and rational) as it is depicted.”

Several interviewees highlighted that open-mindedness is a crucial aspect of critical thinking: “Critical thinking helps you develop a different perspective. You realise it’s not all black and white and to consider the gray areas...to consider other factors that influence situations or decisions people might make.” Such open-mindedness must extend even to previously unexamined or unquestioned beliefs that the individual may hold him or herself. As one interviewee noted “Critical thinking is the ability to question absolutely everything, even things you previously decided were not negotiable. No subject is out of bounds.”

The importance of developing critical thinking skills

All interviewees saw developing critical thinking skills as very important for university students. A number saw university as the best place to develop a solid foundation or grounding in critical thinking skills which could then be used in other aspects of life including the workplace or in the wider community. One interviewee saw critical thinking skills developed at university as a platform for developing greater community engagement, awareness and debate surrounding important political issues. Other interviewees noted the importance of critical thinking skills for success at university (e.g., in writing essays, assignments etc). The most commonly expressed view was, however, the notion that critical thinking skills are important because they are needed in virtually all aspects of life – everything from reading the newspaper and discussing current affairs to reading and interpreting books and films and having an argument with a family member was seen to involve these skills. In other words, if you have good critical thinking skills, you are better equipped to engage meaningfully with the world around you.

The unique role of studying philosophy in developing students’ critical thinking skills

All students interviewed believed that philosophy plays a unique and important role in fostering the development of critical thinking skills in university students. Most acknowledged that studying other non-philosophy units (e.g., other Arts/Social Sciences units, Psychology units, etc) also played a role in broadening their critical thinking capabilities, but saw philosophy units as playing a more important and central role in this regard. Through focusing more directly on teaching critical thinking skills, philosophy units were perceived as providing a “solid grounding” or “foundation” of critical thinking skills on which the students could build. They believed that having this foundation made it easier for them to apply critical thinking skills in other units and/or disciplines. One student summarised this common perception when she stated, “Other units have helped my critical thinking but philosophy is *informing* these units. It provides the building blocks.” Another participant noted that she sees the skills learnt in philosophy (e.g., reading, writing and thinking skills) as “generic, foundation skills” which then need to be embedded within other units/disciplines. For this reason, a number of interviewees believed that the Logic and Reasoning unit offered by the philosophy department every second year at the University of Ballarat should be offered every year and be compulsory for all first-year Bachelor of Arts students. Students would then receive a solid grounding in critical thinking and be better able to apply these skills in other disciplines/subject areas rather than just having to try and pick up the skills along the way in the absence of explicit instruction and guidance. As one student put it, Logic and Reasoning takes away the focus on content (that most units have), leaving more space and time to focus on developing critical thinking skills. Another believed that philosophy, unlike other disciplines, teaches a process for answering questions, “a procedure, a way of unpacking a problem.”

When asked to further unpack/explore the role of studying philosophy in the development of critical thinking skills, participants saw the unique “world-view” or perspective on which

philosophy studies are based as being particularly important. All interviewees commented on the fact that their philosophy studies had taught/encouraged them to adopt a more critical and questioning attitude, a perspective which they saw as being central to critical thinking. As one student put it, “Philosophy isn’t focused on ‘facts’ like other units. You have to work out what *you* think about things.” Similarly, another participant stated that:

... in philosophy (unlike in other units), you are allowed to have your own ideas, even if they’re not proven. You can think for yourself.

Participants felt that “everything is challenged” in philosophy – assumptions and ways of thinking that they may otherwise take for granted were questioned and examined – and that this is why philosophy plays a unique and crucial role in the development of critical thinking. Through explicitly teaching students to de-construct arguments, justify their statements more carefully and examine the evidence for the conclusions that they and other people draw, studying philosophy was thought to provide students with a set of thinking tools or strategies central to critical thinking. There was a sense that, through studying philosophy, students were better equipped to adopt a critical perspective of their own thinking/beliefs and frameworks as well as those of others (e.g., authority figures such as teachers, theorists/thinkers, the media and broader society). As one interviewee stated, “Philosophy begins with asking why are these things/beliefs dear to us?” and then moves on to questioning them, working out whether they are in fact valid, justifiable and whether you still believe in these ideas.

A related theme that emerged from the interviews was the difficulty of this study. Several interviewees highlighted this by saying things like “Philosophy does your head in”, “it drives you crazy sometimes” or “I hate it because it’s hard but I love it too.” When questioned about their “love/hate” relationship with philosophy and critical thinking, interviewees acknowledged that being forced to “think for themselves” was, at times, difficult and they felt they could not just “get away with sloppy thinking” in philosophy units like they could in other subjects. Some also felt that delving into the complexities and “grey areas” of philosophy and critical thinking was unsettling because it made them realise that “things aren’t just black and white”, “there’s no capital-T truth” and “sometimes there is no right answer to a problem.” In fact, developing a tolerance for ambiguity was seen as an important aspect of critical thinking and an outcome of studying philosophy but one that sometimes caused anguish, particularly in students who came from scientific disciplines and expected things to be “cut and dried”. One student believed that people who drop out of philosophy units tend to do so because they cannot cope with the idea that “there’s no right and wrong answer.” Despite the challenges associated with developing critical thinking skills and studying philosophy, it was acknowledged that “It might be scary but it’s good for you!”

Students’ views on how best to teach critical thinking at university

All but one interviewee believed that critical thinking skills are best taught directly and explicitly through units designed to teach these skills rather than taught indirectly through content-focused units. The reasoning behind this view was that teaching critical thinking skills directly provides a solid foundation which can then be applied in other areas/disciplines. Another student summarised his belief by saying “when you are taught critical thinking skills indirectly you are sort of stumbling around in the dark. You may not be aware of what you’re trying to do.” One student felt that in Psychology subjects, students were told to use critical thinking without actually being taught how to do this.

Discussions in philosophy tutorials were seen as particularly important opportunities for developing critical thinking skills, providing a chance to explore ideas, hear what others think, and tease out new concepts and arguments. A particularly useful aspect of philosophy tutorials identified by interviewees was being challenged by the teacher and/or other students to justify their beliefs or arguments, “not being let off the hook”. The “communal” aspect of tutorials was also seen as important for the development of critical thinking, as tutorials were seen as providing support, guidance and a safe environment in which to explore new ideas and perspectives. Modelling critical thinking through “thinking aloud” was also seen as a particularly effective means of teaching critical thinking skills. This strategy involves the teacher verbally outlining the steps she is going through in forming an argument or opinion so that students gain an insight into the steps involved. As one student noted, “Jane does this really well. You can see her thinking something through right there in class...she explains ‘I was going to do it this way and then I thought no because....’” In doing this, the teacher “provides a model for how critical thinking works and how to do it yourself.”

A number of interviewees also saw writing essays as a valuable tool for helping students develop critical thinking skills: “in an essay, there’s no hiding as you have to put it down on paper.” Other activities or approaches mentioned by interviewees as assisting in their development of critical thinking skills included: workshops on critical reading and argumentative essay writing delivered by philosophy teaching staff; practice in critiquing and de-constructing poor writing and arguments; diagramming the various components of an argument or theory; the inclusion of assessment criteria related to the extent to which students have demonstrated critical thinking in their work and explicitly providing feedback on this; and analysing examples of media in which particular arguments are put forth. A number of students also spoke about an activity they had completed in a philosophy class which they identified as having been particularly useful for developing their critical thinking skills. In this activity they were required to write a letter to a particular philosophical thinker, asking him/her specific questions about their theories and arguments. Students then adopted the persona of a particular thinker and answered one another’s letters. Interviewees found this activity useful for developing critical thinking skills as it required them to really place themselves “inside” a particular thinker’s head and look at the issues from this different perspective.

Conclusion

These are of course preliminary findings in a research project far too small in scope and problematic in design (how to separate the relative impacts of students’ experiences of teaching and learning in philosophy, teaching and learning in other subjects, and non-university experience, for example) to allow the drawing of any strong conclusions. However, it does raise some interesting points. First (these) students do value explicit skills-teaching, appreciating the opportunity to study in a unit that commits to the direct teaching of critical thinking skills – further wanting to make such a unit compulsory – and my attempts to make the processes of critical thinking explicit in my practice, design of assessment tasks and through the delivery of additional workshops. Secondly, despite the acknowledged difficulty of teaching critical thinking and its transference into other arenas (van Gelder, 2005), (these) students express confidence in their development and use of these skills. These are provisional conclusions, but they suggest the need for further research regarding how a classical discipline such as philosophy can constructively contribute to students’ development as critical thinkers.

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