CHAPTER 17

CRITICAL THINKING AS INQUIRY IN HIGHER EDUCATION

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1. INTRODUCTION

This paper will describe and argue for an approach to fostering critical thinking in higher education based on inquiry. This approach encompasses both critical thinking in everyday contexts and critical thinking within the disciplines.

A common approach to teaching critical thinking in higher education in North America is through separate courses. The focus tends to be on the evaluation of individual arguments typically found in everyday contexts (e.g., newspaper editorials). It is assumed that such a focus will result in students being able to think critically in real contexts. It is often also assumed that acquiring the skills of argument evaluation in these contexts will transfer, where relevant, to critical thinking in particular disciplinary areas. On the other hand, the assumption of traditional teaching in the disciplines has generally been that the modes of argumentation and reasoning of the discipline will be acquired automatically by students through learning the discipline.

We argue in this paper that these assumptions are unfounded. Focusing on the evaluation of individual arguments is problematic, based as it is on a faulty model of critical thinking which neglects the dialectical and contextual dimen-

sions of reasoning. Knowledge of the arguments on various sides of an issue as well as of the historical, intellectual, and social contexts is essential to making a reasoned judgment on everyday issues as well as in disciplinary contexts.

The assumption that critical thinking will be acquired automatically through disciplinary pedagogy is also unfounded. Reasoning and argumentation are seldom a focus of disciplinary pedagogy. Moreover, this approach neglects the common aspects of argumentation which transcend disciplinary boundaries.

What we propose as an alternative is an *inquiry approach* to critical thinking pedagogy which focuses on the comparative evaluation of competing arguments with the goal of making reasoned judgments (Bailin and Battersby 2016). This approach emphasizes both the aspects common to inquiry across a range of areas and the modes of argumentation that are specific to the area. This approach can be the focus of a separate course and can also be integrated into disciplinary instruction.

2. CRITIQUE OF CONVENTIONAL CRITICAL THINKING COURSES

It is often the case that the only concerted, overt attempts to teach critical thinking and argumentation at the postsecondary level take place through separate courses on critical thinking. Such courses are commonly offered in philosophy departments (at least in North America) and generally limit their focus to logic, formal or informal, and the evaluation of individual arguments. The arguments used are usually taken from the media, political speeches, and other sources of "everyday" arguments and are often presented out of context. Although some popular critical thinking texts with many editions (e.g., Moore and Parker 2010; Vaughn 2012; Waller 2011) have started to make some moves away from a sole focus on analyzing de-contextualized arguments, these efforts are

episodic (e.g., a section on analyzing longer arguments). None of these represents a unified focus on developing the abilities and habits of critical inquiry (Hamby 2012; Hitchcock 2013).

We therefore believe that this approach is inadequate (Bailin and Battersby 2009, 2016). In our view the goal of critical thinking instruction is to provide students with the understanding and skills necessary for thinking critically in real contexts. And the kind of critical thinking which actually takes place in real contexts, both in the disciplines and in everyday life, centrally involves making reasoned judgments on complex issues. The focus on reasoned judgments marks an approach to critical thinking which can be seen as epistemological (Siegel 1988, 1997; Lipman 1991; Paul 1990). An epistemological conception views critical thinking in terms of the quality of and criteria for good reasoning, and focuses less on arguments per se than does a more logically-oriented conception.

Indeed, it is our view that arriving at reasoned judgments on complex issues involves more than the evaluation of individual arguments. It involves a process which is dialectical (Blair and Johnson 1987, pp.45-46). To say that the process is dialectical means that it takes place in the context of some controversy or debate. This implies that it is initiated by some question, doubt, challenge, and that there is a diversity of views on the issue, arguments both for and against (if the controversy is genuine, then it is likely that there will be at least some plausible arguments on both sides (Johnson 2003, p.42)). The dialectical aspect also means that there is an interaction between the arguers and between the arguments involving criticism, objections, responses, and, frequently, revisions to initial positions (Bailin and Battersby 2009; Johnson 2000).

An implication of this view is that it is seldom the case that reasons and arguments can be evaluated individually in any comprehensive or significant manner. It is possible to evaluate individual arguments in a preliminary, *prima facie* manner,

discovering fallacies or errors in reasoning and evaluating the reasons or evidence in support of the conclusion (Bailin and Battersby 2016). In order to reach a reasoned judgment on the issue in question, however, we must go beyond this *prima facie* evaluation and evaluate the arguments in the context of this dialectic, of this historical and ongoing process of debate and critique. In order to reach a reasoned judgment, arguments need to be evaluated comparatively, in light of alternatives and competing arguments and views (Bailin and Battersby 2009, 2016; Johnson 2007, p.4; Kuhn 1991, pp.201f).

A major weakness of traditional critical thinking courses is that they do not focus on the kind of comparative evaluation which we make in actual contexts of disagreement and debate. It is this dialectical and contextual dimension which is largely missing from traditional critical thinking instruction.

3. CRITIQUE OF CONVENTIONAL DISCIPLINARY TEACHING

A different sort of problem arises in the context of attempting to develop critical thinking in the disciplines. The assumption of traditional teaching in the disciplines has generally been that the modes of argumentation and reasoning of the discipline will be acquired automatically by students through learning the discipline. Yet this assumption appears to be unfounded. Much research has indicated that even post-secondary students studying a discipline do not necessarily reason well in that discipline (Hestenes, Wells and Swackhamer 1992; Jungwirth 1987; Ferraro and Taylor 2005). This should not be particularly surprising given the fact that reasoning and argumentation are generally not a focus of disciplinary pedagogy. While many instructors admit the need to emphasize critical thinking, this concern is often overridden by the need to cover disciplinary content.

Another problem with leaving the acquisition of reasoning to the vagaries of disciplinary teaching is that this approach

neglects the aspects of argumentation which transcend disciplinary boundaries. To the extent that the reasoning in the discipline is a focus of study, it is likely to be limited to the type of reasoning and argumentation characteristic of the particular discipline, for example "scientific method" in the sciences. The aspects of argumentation common to various disciplines and to non-disciplinary contexts such as the procedures for conducting an inquiry, the logical analysis of arguments, fallacies and common errors in reasoning, the evaluation of sources, and those criteria for evaluation which are common across domains are not likely to be included. Thus the connection between inquiry in the particular discipline and the larger enterprise of inquiry is not likely to be made.

An additional problem with much traditional disciplinary teaching is that it tends to neglect the dialectical dimension of argumentation. But, as was pointed out above, reasoning and argumentation need to be evaluated in the context of the dialectic in which it arises and is embedded. This is equally the case for making a reasoned judgment in a discipline as it is for making judgments in everyday contexts. Making such judgments involves weighing and balancing competing arguments and so requires an understanding of the dialectic and a grounding in the debates within the discipline.

Simply introducing students to a variety of competing theories is insufficient, however. They also require the resources for comparatively evaluating these theories and judging among them. One of the requirements for comparatively evaluating competing theories and views is an understanding of discipline specific modes of argument and criteria, for example causal reasoning in science, statistical reasoning in the social sciences, or historical reasoning in history, which may not be addressed in separate critical thinking courses. Without a grounding in the debates within the discipline and without an explicit focus on the modes of argumentation and the evaluation criteria which are specific to the area, the modes of

argumentation and reasoning in particular disciplines are not likely to be learned.

4. TEACHING CRITICAL THINKING AS INQUIRY

What we propose as an alternative is an inquiry approach to critical thinking pedagogy. We use the term inquiry to refer to the careful, critical examination of an issue in order to come to a reasoned judgment. While the term inquiry is not common in the critical thinking literature, Hitchcock's notion of argumentative discussion has considerable overlap with our notion of inquiry: "An argumentative discussion is a sociocultural activity of constructing, presenting, interpreting, criticizing, and revising arguments for the purpose of reaching a shared rationally supported position on some issue" (Hitchcock 2002, p.291).

There are several aspects of inquiry that are significant in this approach. The first is that inquiry requires focus on an issue. An inquiry is initiated by some challenge, controversy or difference of view that is in need of resolution. The second aspect of significance is that inquiry involves a critical examination of evidence, arguments and points of view. It is not just an information-gathering enterprise but involves, centrally, a critical evaluation according to relevant criteria. The third significant aspect is that inquiry aims toward a reasoned judgment. By a reasoned judgment we mean not simply a judgment for which one has reasons, but a judgment for which one has good reasons, reasons which meet relevant standards. Making a reasoned judgment is not simply a matter of evaluating individual arguments, however. Rather, it requires the comparative evaluation of competing arguments and views (Bailin and Battersby 2016).

An inquiry approach emphasizes both the aspects common to inquiry across a range of areas and the aspects and modes of argumentation that are specific to an area. Conducting inquiries on relevant topics can be used as a focus for and way

of structuring free-standing critical thinking courses and it can also be integrated into subject area instruction. Thus critical thinking pedagogy is structured around complex, authentic tasks. The various aspects that go into the process of inquiry are learned not as de-contextualized "skills" but rather in the context of coming to reasoned judgments on complex issues.

4.1. Teaching Inquiry in Separate Courses

How might one teach critical thinking as inquiry in a separate course? Our critical thinking text, *Reason in the Balance: An Inquiry Approach to Critical Thinking* (Bailin and Battersby 2016), provides one example of an inquiry approach to teaching critical thinking. The text uses dialogues among an ongoing cast of characters involved in realistic situations as a context for discussing the various aspects that go into the practice of inquiry, including identifying issues, identifying the relevant contexts, understanding the competing cases, and making a comparative judgment among them. These aspects are instantiated in inquiries on topics such as vegetarianism, the minimum wage, the legalization of marijuana, the regulation of dangerous dogs, the evaluation of a film, the bombing of Hiroshima, and the right of hate groups to speak. These various aspects are also applied to inquiry in specific contexts, including science, social science, philosophy, and the arts. There is also considerable emphasis placed throughout on the habits of mind which are essential for inquiry, including (among others) open-mindedness, fair-mindedness, the desire to act on the basis of reasons, the acceptance of uncertainty, and respect for others in dialogue – habits of mind which we characterize as the spirit of inquiry.

4.1.1. Guiding questions for inquiry

The following set of guiding questions is used to structure inquiry throughout the text:

- What is the issue?
- What kinds of claims or judgments are at issue?
- What are the relevant reasons and arguments on various sides of the issue?
- What is the context of the issue?
- How do we comparatively evaluate the various reasons and arguments to reach a reasoned judgment?

The text devotes chapters to each of these questions, with the students developing an understanding of each, applying them in practice contexts, and then using each one in turn to progressively develop an inquiry on a topic of their choosing. Through this process, the various aspects of inquiry are integrated and students gain proficiency in conducting inquiries.

We have reproduced here an excerpt from one of a series of dialogues between two students, Phil and Sophia, on capital punishment. We shall use this example (the present excerpt and the dialogues that follow it) to illustrate each of the aspects of inquiry.

> Phil has been reading an opinion piece in a newspaper in which the chief of police of his town is arguing for capital punishment for murder.
>
> *Phil:* Hey, Sophia—let me read you something interesting:
>
> "Society has an obligation, first and foremost, to protect its citizens from harm. And the most serious form of harm is murder. Protecting citizens from murder involves ensuring that murderers don't repeat the offence. It also involves dissuading others from committing murder. Now I and other law enforcement officers know from a vast amount of firsthand experience with criminals that the only form of punishment that can effectively achieve both goals is the death penalty. Capital punishment involves taking the life of a person who has committed

murder in order to save the lives of innocent people, and so is the best option under the circumstances."

Phil: What he says makes a lot of sense. After all, society needs to do whatever it can to protect innocent people. And murderers have really given up their right to be protected because they've taken someone else's life. So killing them to save innocent people seems OK.

Sophia: Hold on a minute, Phil! Not so fast. You're leaping to conclusions again. You haven't even thought the issue through.

Phil: But what this guy says seems right.

Sophia: So are you just going to believe what he says without checking it out? What else would you expect a police chief to say?

Phil: Well, he does have a lot of experience with crime.

Sophia: But you haven't considered the other side. Your police chief certainly hasn't given us any of the arguments *against* capital punishment.

Phil: But what about his argument?

Sophia: I think that there's a lot more that we need to know before we can decide whether his argument is any good. We need more information. We need to know some facts about capital punishment. We need to look at all the arguments on both sides . . . We need to … I know. What we need to do is…

Sophia and Phil: . . . Conduct an inquiry!

Sophia: Now the first step, if I remember right, is to be clear about what the issue is.

Phil: That's pretty easy. The issue is whether we should have capital punishment.

Sophia: For what crimes? We need to be specific. In some countries, there's the death penalty for adultery.

Phil: No, no — I wasn't suggesting that. I'm only thinking about cases of premeditated murder.

Sophia: I'm glad you're clear about that.

Phil: OK . . . next question—what kind of judgment does this involve?

Sophia: Well, since we're talking about what we "should" or "should not" do, then I guess it's an evaluative judgment. But I can see already that we'll also need to look at some factual claims on the way—like whether capital punishment really does help prevent murders (Bailin and Battersby 2016, pp.185–186).

What is the issue?

In order to even begin to inquire, it is of vital importance to be clear about the issue which is to be impetus for the inquiry. Among the characteristics of an appropriate issue are that it be sufficiently focused to allow for productive inquiry; precisely and neutrally framed, avoiding vague, ambiguous, or biased formulations; and controversial, evoking genuine disagreement.

In the dialogue excerpt, Sophia notes that Phil's original formulation of the issue, whether we should have capital punishment, is too vague as it does not specify for which crimes.

What kinds of claims or judgments are at issue?

It is important to understand what types of judgments are called for by the inquiry which we are undertaking because different types of judgments are supported by different types of reasons and arguments and are evaluated by different criteria. For example, while a judgment in science will appeal to the criterion of fit with observations, a moral judgment will appeal to reasoning according to moral principles. Although there is a range of types of judgments, they can be categorized broadly into three types: factual judgments, evaluative judgments, and interpretive judgments.

In the dialogue, Phil and Sophia recognize that their inquiry calls for an evaluative judgment about whether capital punishment *should* or *should not* be practiced, but that it will also involve factual judgments, for example with respect to whether capital punishment really does act as a deterrent. As

the inquiry proceeds, they also recognize that their inquiry will require moral judgments, for example with respect to the risk of the state executing innocent individuals.

As another example, if students wished to address the issue of climate change, they would need to be able to distinguish among the kinds of judgments required by different questions about climate change, e.g.: "Is the climate changing significantly?" (factual descriptive); "Is climate change humanly caused?" (factual causal); "What, if anything, should we do about climate change?" (evaluative).

What are the relevant reasons and arguments on various sides of the issue?

A key aspect of inquiry involves laying out the arguments on various sides of an issue. This will include the various positions on the issue in question that have been offered; the evidence that has been brought forward and the arguments that have been made in defense of the various positions; the objections that have been levelled against the positions and the responses that have been made to these; the alternatives that have been put forth.

In the dialogue, Phil is initially inclined to accept the one argument in favor of capital punishment which he reads but Sophia recognizes the need to look at the whole debate and to evaluate the arguments on both sides of the issue before making a judgment. In a subsequent dialogue, after doing some research, they discover a number of arguments which are generally offered both in favor of capital punishment (e.g., arguments from deterrence, incapacitation, retribution, and cost) and against (e.g., arguments focused on the immorality of taking a life, the immorality of executing innocent individuals, rehabilitation, and the social causes of crime). They also find the various objections and responses which have been offered to these arguments. Making a judgment on the issue of capital punishment will ultimately require them to be aware of this entire dialectic.

What is the context of the issue?

Finding out about the contexts in which issues are situated can provide valuable information when conducting an inquiry. There are three aspects of context that we believe need to be considered: the state of practice, the history of the debate, and the intellectual, social, political, and historical contexts.

The state of practice refers to how things currently stand with respect to the issue. An understanding of the state of practice can provide information necessary for making a reasoned judgment. For example, in order for students to make a reasoned judgment regarding the raising of the minimum wage, they would need to know information such as the wage in other jurisdictions, when the minimum wage was last raised, the effect of inflation on wages, costs of living, and so on.

The history of the debate refers to the history of argumentation and deliberation which has led to current practice or thinking about the issue. Knowledge of the history of the debate can be helpful and is in some cases essential to understanding what is significant or contentious about an issue and in understanding the various positions which are contesting for acceptance. Knowing the history of a debate is also important in determining where the burden of proof lies.

Understanding the intellectual, political, historical, and social contexts surrounding an issue is also important in that it can aid us in understanding and interpreting arguments and can reveal assumptions underlying arguments and positions which may be important for their evaluation. For example, in making judgments about the legalization of marijuana in North America, it would be important to understand aspects of the history and social context of marijuana prohibition, including the fact that there is an enormous governmental and police investment in drug prohibition.

In a dialogue subsequent to the one reproduced above, Sophia and Phil investigate each of these aspects with respect

to the capital punishment debate. They discover the current state of practice in their location (that there is no capital punishment) as well as the situation worldwide – a general trend toward abolition, and recognize the argumentative implications of these facts in terms of which views carry the burden of proof (those which go against current practices). Looking at the history of the debate, they discover that some of the arguments (e.g., retribution, deterrence, and incapacitation) have very ancient roots, and also that the primary argument offered in favor of capital punishment has changed recently from deterrence to retribution in light of the lack of evidence of a deterrent effect. With respect to the intellectual, social, political, and historical contexts, they recognize that the pro and con positions on capital punishment tend to be associated with different worldviews with respect to issues such as tradition versus change in society, individual versus societal responsibility, and social order.

How do we comparatively evaluate the various reasons and arguments to reach a reasoned judgment?

- *Evaluating individual arguments*

The core of an inquiry is the evaluation of the various views and arguments in order to reach a reasoned judgment. A crucial aspect involves the evaluation of the individual arguments which have been made. It is here that the usual criteria for evaluating arguments come in. Undertaking a *prima facie* or preliminary evaluation of the arguments for fallacies or errors of reasoning is an important first step. In addition, the various claims need to be evaluated according to the relevant criteria — factual claims by looking at evidence in support of claims and the credibility of sources, evaluative claims by assessing the argumentation.

In conducting their *prima facie* evaluation in a subsequent dialogue, Phil and Sophia do encounter fallacies of anecdotal evidence and improper appeal to authority, as well as possible

bias in the police chief's argument. They realize, however, that the fact that there are fallacies in the arguments does not invalidate the views which he is defending. What it does mean is that they must go on to evaluate the various claims.

With respect to the factual claims, after extensive investigation, they succeed in determining that there is a consensus in the research that capital punishment does not act as a deterrent to murder. The also discover that the claim that capital punishment is less costly than life imprisonment is false. With respect to the moral arguments, they decide that there is a morally appropriate desire for justice behind the retribution argument for capital punishment, but that the concern about the state executing innocent people constitutes a very strong moral argument against capital punishment.

- *Comparative evaluation*

The evaluation of the individual arguments is necessary, but it generally cannot on its own lead to the making of a reasoned judgment. In order to come to a reasoned judgment, we need to perform a comparative evaluation of the arguments in order to determine their weight in terms of the overall case, and then combine the various evaluations in order to make a final judgment. This process involves balancing the various considerations which have come to light.

In their final dialogue on capital punishment, Sophia and Phil summarize their evaluation of the various arguments and weigh their comparative strength. In terms of the pro arguments, they conclude that there is no support for the deterrence or cost arguments, that incapacitation can be achieved by less drastic means than putting the perpetrators to death, and that there is some moral legitimacy to the retribution argument in terms of the desire for justice but that it can be achieved through life imprisonment. In terms of the con arguments, they conclude that the risk of the state killing innocent citizens is a very strong argument which overrides the retribu-

tion argument, especially as there are less morally problematic alternatives to capital punishment which can achieve retribution. Their anti-capital punishment judgment is strengthened by the worldwide trend toward abolition which places a burden of proof on the pro side.

4.1.2. Inquiries in Specific Areas

It is our belief that, if our goal is to foster students' critical thinking in the range of contexts which they will encounter, then it is important in a critical thinking course to include inquiries that focus on disciplinary knowledge and criteria in areas such as science, social science, philosophy, and the arts. Thus, in addition to focusing on topics such as capital punishment, the text also focuses on topics which require a knowledge of discipline-specific procedures and criteria, for example polygamy (philosophy), the effects of violent video games (the social sciences), interpreting a challenging work of art (the arts), and some historical examples of inquiries in geology, epidemiology, and evolutionary theory (the natural sciences). These inquiries exemplify both how the guiding questions, procedures and criteria apply in various areas and also the criteria which are specific to the discipline.

5. INTEGRATING INQUIRY INTO SUBJECT AREA INSTRUCTION

The inquiry approach can also provide a method for instilling critical thinking into discipline-focused courses while still providing adequate coverage of course material. Organizing teaching around inquiries can serve to illuminate the common structure and aspects of inquiry as well as illustrating how this structure and these aspects are manifested in the particular area. This approach also highlights the specific concepts, forms of reasoning, argumentation and criteria which are particular to and dominant in the particular discipline. Nosich's recommendation to focus student thinking on a deep understanding

of the central concepts of a discipline is very much in consonance with an inquiry approach (Nosich 2012).

For an inquiry approach to be successful, the instructors need to be clear about the long-term learning goals of the course. This is especially important for introductory or general education courses where students are unlikely to go on further in the discipline. Presumably the goals will include engaging the student in the subject and the disciplinary approach to subject matter, but should also include empowering students to use the methods and information produced by the discipline to make thoughtful and reasonable decisions as individuals, citizens and workers. As long as the primary goal of a course, especially an introductory course, is to lay down a basic vocabulary or get students to retain abundant factual information, it will be difficult to devote enough time or student energy to learning how to inquire and to understanding argumentation in the discipline. But if the primary outcomes include an understanding of the issues and claims in the discipline and the ability to make reasoned judgments using disciplinary criteria, then the inquiry approach can be used both to reinforce the learning of subject material and to develop those abilities and habits of mind that lead to reasoned judgment. For example, students in an ecology course could be asked to assess local laws governing logging. Through engaging in this inquiry, students would learn the requisite ecological concepts of forest development and sustainability, but they would also learn what is involved in coming to a reasoned judgment on the issue.

To illustrate how one might integrate the inquiry approach into disciplinary teaching, we will show how each of the guiding questions could be used to address the questions of logging and forest management.

What is the issue?

In order to pursue this inquiry, students would need, first, to be clear about the issue or question. Is the question what regu-

lations would provide for sustainable logging? Or is the question how to protect ecosystems for animal conservation?

What kinds of claims or judgments are at issue?

It would be important, for this inquiry, to distinguish between normative claims and judgments about the value of forests, and scientific claims about the consequences of logging on fishing or ecosystem health. The idea of "ecosystem health" is a good example of a concept that students would need to grapple with in trying to sort out value and factual questions. "Health" is a complex concept including both norms and facts and getting clear about what is at issue is an important intellectual challenge.

What are the relevant reasons and arguments on various sides of the issue?

Ecological issues are often characterized by bias, and getting a full range of views with their attendant arguments is obviously important for making a reasoned judgment. Students must have adequate conceptual knowledge and be able to apply an understanding of the scientific approach to these issues to evaluate the debate. In addition, students would need to understand the economic pressures that are part of this debate as well as the normative questions that are involved.

What is the context of the issue?

There are a number of ways in which understanding the history of ecological debates is important for coming to reasoned judgments. For example, one well-known debate surrounding logging of old growth forests in the United States is the spotted owl debate. Because the spotted owl's habitat is old growth forest and because the United States has strong endangered species legislation, preservation of the spotted owl has been used to protect large areas of old growth forest from logging. If one does not know this background, the intensity of the current debate over strategies to preserve the owl (including the idea of culling competing species) would be incomprehensible.

It would appear to be about owls, but it is actually about logging old growth forests.

Understanding the history of a debate is also important for determining the burden of proof on an issue. At any historical moment in most disciplines there are accepted theories or factual claims which are supported by a wide consensus, and these constitute the default views. Anyone wishing to refute these views bears the burden of proof. Determining where the burden of proof lies with respect to the issue of logging regulation would form an important aspect of this inquiry, although the fact that ecology is a relatively young discipline makes this determination particularly challenging. For many introductory students, the default view is whatever they have learned from their upbringing or even perhaps from their own experience. It is interesting to invite students to reflect on the question of who bears the burden of proof and to consider whether their position can be appropriately treated as the default view.

How do we comparatively evaluate the various reasons and arguments to reach a reasoned judgment?

While the issue of logging regulation involves numerous ecological questions, it also involves economic and ethical ones. How do we weigh short term economic benefits against long term ecological sustainability? There are no easy answers, but explicitly addressing these issues and attempting to balance competing values and interests is crucial to making a well informed and reasoned judgment.

The preceding is but one example of how an inquiry approach can be used in disciplinary teaching, in this case with respect to an interdisciplinary issue having a strong scientific component. We would like to stress, however, that this approach can be used in virtually any subject area, for example in the social science (e.g., Should we allow our children to watch violent video games?), in the arts (e.g., Is Duchamps's urinal really art?), or in philosophy (Should polygamy be legal?) (Bailin and Battersby 2016).

6. FOSTERING INQUIRY ACROSS THE DISCIPLINES

Some more general strategies can also be employed in all areas in order to foster inquiry across disciplinary areas. The goal is to promote an understanding of the process of inquiry practiced in the particular area as just one example of the enterprise of inquiry more broadly, involving a similar aim, namely to reach a reasoned judgment, common guiding questions, some common or overlapping concepts and criteria, and the same habits of mind (e.g., open-mindedness, fair-mindedness, a commitment to reason, an inquiring attitude) (Bailin and Battersby 2016).

One particularly important habit of mind that is central for inquiry in all areas is the propensity to always consider alternative views and theories. In order to develop this habit of mind, students can be required to defend competing theories with which they disagree and attempt to come to reasonable conclusions despite conflicting evidence and theories. It is often an illuminating experience for students to understand their resistance to evidence and argument for a theory with which they have a prior disagreement.

Many key concepts are used widely in many areas (e.g., concepts common in the sciences such as the distinction between correlation and causation, the problem of getting reliable data, the question of experimental validity, the problem of confirmation bias). All these widely shared concepts can be reinforced in almost any subject. Even such subjects as literary or artistic analysis can be shown frequently to involve reasoning to the best explanation while considering alternative points of view.

The ideal situation for teaching inquiry across the disciplines would be one in which instructors were aware of how faculty in other disciplines presented the key concepts of inquiry and critical thinking so that these concepts could be reinforced in all courses. This is a lot to hope for, but the notions of seeking alternative explanations, weighing compet-

ing arguments, and coming to a reasoned conclusion are sufficiently applicable across a range of subject areas that parallels can usefully be drawn. It is useful to ask students whether they recognize that argumentative and evaluative approaches in one course have analogies with those approaches used in other courses.

Because many of the problems of the real world involve interdisciplinary or multidisciplinary inquiries, there is a wealth of topics and issues which may be of genuine interest to students and which could be used to illustrate how some of the relevant evaluative criteria can be applied across disciplines.

7. CONCLUSION

We believe that an inquiry approach to teaching argumentation and reasoning is to be recommended for several reasons. First, in broadening the focus from the evaluation of individual arguments to the making of reasoned judgments, it aims to foster the kind of critical thinking which takes place in real contexts of disagreement and debate. This changed emphasis brings to the fore the dialectical and contextual dimensions of argumentation, which are central to the making of reasoned judgments. An inquiry approach also makes room for the inclusion of disciplinary criteria and modes of argumentation when dealing with everyday issues, the knowledge of which is often essential for making judgments with respect to complex, real-world issues.

There are also dispositional benefits to an inquiry based approach. The requirement to actively seek information and arguments in order to resolve an issue or puzzlement may foster habits of mind such as intellectual curiosity, truth-seeking, self-awareness, and intellectual perseverance. In addition, an open-minded, fair-minded, and flexible attitude is much more likely to be encouraged by an approach which focuses on inquiring through the evaluation of competing cases rather

than on one focused exclusively on the evaluation of individual arguments (Bailin and Battersby 2009).

With respect to teaching within the disciplines, an inquiry approach has the advantage of putting an explicit focus on disciplinary reasoning and argumentation, making reasoning a central part of what it means to learn a discipline. By highlighting the aspects of argumentation which are distinctive to particular disciplines, it gives students the tools to reason well within those disciplines and with respect to issues which call on disciplinary understanding. But it also has the additional merit of highlighting those aspects of argumentation which are common to inquiry across disciplines. In so doing, it makes explicit the connection between disciplinary inquiry and inquiry more broadly, enabling students to view reasoning and argumentation in any discipline not as an isolated activity but rather as connected with other critical practices of investigation, discovery and creation.

To date, our main basis for evaluating an inquiry approach is personal experience. We have been teaching using this approach for several years, both in undergraduate critical thinking courses and in an M.Ed. program for practicing educators, and our results have been extremely promising in terms of students' ability to conduct reasoned inquiries. In addition, Hitchcock (2013) has collected data on more than 400 students over the three occasions in which he used *Reason in the Balance*. What he found was that, although students did not do as well as previous students on some types of multiple-choice exam questions testing the micro-skills of argument analysis and evaluation, they did noticeably better on items testing their ability to identify a counter-example to a generalization, judge the trustworthiness of a source of information, and analyze and evaluate causal arguments. Their performance was comparable on items involving supplying missing premises, evaluating conditional arguments, judging deductive validity, and identifying fallacies. These multiple-choices exams did not,

however, test the ability of students to conduct inquiries leading to reasoned judgments. More systematic evaluation of the approach, especially in terms of the extent to which it enhances the making of reasoned judgments, would be an important subject for further research.

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