

## **Essential elements of lessons designed to promote critical thinking**

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### **Abstract**

While many educators commonly identify critical thinking as a goal for learning, they struggle with creating lessons that encourage students to take charge of their own thinking. This paper presents four essential elements of lessons designed to promote critical thinking including ill-structured problems, criteria for assessing thinking, student assessment of thinking, and improvement of thinking. With these four elements in place an iterative process of lesson planning emerges which simplifies the planning process for teachers while engaging students' thinking to benefit their learning.

Key words: critical thinking, lesson planning, infusion

The critical thinking movement continues to develop in a variety of educational settings. From primary grades through higher education and in non-academic settings, the development of thinking skills and dispositions can and should be a priority. While the philosophical basis and empirical evidence of the value of critical thinking is strong, a continual barrier to greater infusion of critical thinking throughout teaching and learning is the difficulty many educators have in translating the concept of critical thinking into pragmatic, pedagogical approaches. Given this difficulty, the purpose of this paper is to describe the essential elements of a lesson intended to foster critical thinking among students.

The purpose is not, of course, to offer a complete portrayal of educational strategies that would aid the development of critical thinking, but to portray essential elements in and around an individual lesson that provide a structure for the systematic development of student thinking. An assumption of this development is a repetitive cycle of lessons containing the essential elements. In other words, for critical thinking to be fostered it must be explicitly focused on and perpetually present and infused in the curriculum, individual courses and the basic building block of formal education, the lesson plan (Swartz, 2000). The thinking development of students is compromised when critical thinking receives sporadic emphasis. Teachers should not confuse critical thinking with an educational strategy like lecture, small group discussion, experiments, role-play, or debates. Rather, it is an approach to teaching and learning that needs to be infused throughout the educational experience and within these strategies.

The essential elements of lessons designed to promote critical thinking are ill structured problems, criteria for assessing thinking, student assessment of thinking, and improvement of thinking. They are deemed essential because in the absence of any of these elements, critical thinking is not being completely addressed. These essential elements are derived from definitions of critical thinking, one of the more authoritative of which was developed through a Delphi study conducted by the American Philosophical Association. The expert consensus statement defined critical thinking, in part, as “purposeful, self-regulatory judgment” (Facione, 1997). Norris and Ennis (1989), in a widely cited definition of critical thinking, defined it as “reasonable and reflective thinking that is focused on deciding what to believe or do” (p. 3). Similarly, Paul and Elder (2001) defined critical thinking as “that mode of thinking – about a subject, content, or problem – in which the thinker improves the quality of his or her thinking by skillfully taking charge of the structures inherent in thinking and imposing intellectual standards upon them” (p. xx). While there are many competing definitions of critical thinking that may detract or add to the presupposition of the essential elements, taking these definitions at face value and translating them into instructional approaches supports the widely held belief among critical thinking theorist and researchers that critical thinking is distinct from other forms of thinking primarily due to the metacognitive nature of critical thinking (Ennis, 1991; Facione, 1997; Glaser, 1941; King & Kitchener, 1994; Paul, 1995; Paul & Elder, 2001; Weinstein, 1993).

### **Ill structured problems**

Lessons promoting critical thinking need to be focused on ill-structured problems. King and Kitchener (1994) described ill structured problems as those which “cannot be

described with a high degree of completeness; cannot be solved with a high degree of certainty; experts often disagree about the best solution, even when the problem can be considered solved” (p. 11). Ill structured problems do not have one right answer but better or worse answers arrived at through reasoning and “reflective judgment,” the highest levels of thinking in King and Kitchener’s Reflective Judgment Model. At this stage of development, thinkers recognize the complexity of problems and reach conclusions based on interpretations and assessment of the best available evidence while leaving these conclusions open to revision as new evidence comes to light.

Similarly, Paul (1995) described three types of questions common to all inquiry. Factual questions have one right answer, what King and Kitchener would term well-structured problems. Preference questions are those with no right answer because they are truly dependent upon human preference (e.g. What is your favorite poem? How do you like to relax? Who do you think is an entertaining musician?). Reasoning questions have better or worse answers – the same as ill-structured problems. Determining a course of action, predicting an outcome, judging the adequacy of a theory, interpreting a text, and assembling a case are a few types of problems (with embedded questions) that require reasoning.

Ill-structured problems & reasoning questions are numerous and only limited by the teacher’s imagination. Students may be uncomfortable with these types of problems and struggle mightily at solving them, but the process of persevering until reasonable conclusions are reached is essential to critical thinking – the same process they’ll experience throughout their life. So within each lesson designed to promote critical thinking, teachers need to be sure students are considering ill-structured problems.

## **Criteria to assess thinking**

Once ill-structured problems have been selected, a lesson designed to promote critical thinking needs to provide students with criteria for assessment of thinking. Since a key distinction between critical thinking and other forms of thinking is the assessment of thinking, criteria are necessary. Examples of criteria for assessment include clarity, accuracy, precision, relevance, depth, breadth, logic, significance, and fairness (Paul, 1995; Paul & Elder, 2001). The point is, in all cases where critical thinking is desired, students need to explicitly and consciously use criteria to assess their own thinking and that of others. This is true whether the thinking is being engaged by reading a text, interpreting a painting, analyzing a historical problem, diagramming a football play, or writing an essay. Whatever the ill-structured problem or reasoning question at hand, for critical thinking to occur there needs to be criteria clearly established to assess the quality of thinking. So in a lesson, teachers need to identify the relevant criteria or have students select appropriate criteria to be used to assess thinking.

One example of criteria used successfully in my teaching is clarity. Paul & Elder (2001) described how greater clarity in writing and speaking can be achieved when we state, elaborate, exemplify and illustrate. In other words, when learners can state a position or concept, elaborate by giving details, exemplify by providing specific, real examples, and even perhaps illustrate with an analogy, metaphor, picture or chart, they are much more likely to demonstrate a clear understanding. In classes I refer to this as the “SEE technique” (I drop the “I” in the acronym because it doesn’t quite fit – then introduce clarity with musical accompaniment of the Jimmy Cliff song “I can see clearly now”). Interestingly, getting students to practice the technique also improves depth of

thinking. For example, in “Foundations of Inquiry,” the required course on critical thinking for all incoming freshmen at Illinois State University, I introduce the criterion of clarity during the first week of class and then require students to use it in all written work for the course. Class discussions are also aided by applying the criterion of clarity. Asking students, “Can you tell us more? Can you elaborate? What is a specific example? Can anyone think of a different example or counter-example? Does anyone see how this issue we’re studying is similar to another issue? Explicitly using criteria like clarity to assess thinking becomes accessible to students as well as instructors and removes a lot of the ambiguity of assessment – something very important when students are asked to assess thinking. Clarity then, is essential to thinking, like breathing is essential to our bodies. In the absence of respiration, the body quickly dies. The same is true of our thinking when it is vague, muddled and unclear.

Before going on, please notice how the SEE technique was used in the preceding paragraph. Can you “see” the elaboration (“In other words...”), the exemplification (“For example...”) and the attempt at illustration in the last three sentences? As students become accustomed to applying the criteria to their thinking, they can also begin to assess how well the criteria are used by themselves and others. So let’s now turn our attention to student assessment of thinking.

### **Student assessment of thinking**

A lesson designed to promote critical thinking needs to involve students in the assessment of thinking (Browne & Freeman, 2000). The ultimate goal is for students to conduct meaningful and valid assessments of their own thinking, something they struggle with but can improve over time with structure and practice (Walker & Warhurst, 2000;

Zoller, Tsaparlis, Fatsow, & Lubezky, 1997). The greatest barrier to critical thinking is likely dispositional rather than ability (Facione, 2000; Perkins & Tishman, 1998). The degree to which students struggle with completing assessments and receiving feedback is highly indicative of the dispositions they bring to critical thinking. Closed-minded, self-protective, timid, ambivalent, and apathetic responses to assessments of student work exemplify weak dispositions that can, in turn, become foci for further developmental work. Students' emotional reactions to assessments reveal dispositions that can become a topic of discussion and learning in classes. And teachers can be valuable role models of strong dispositions when they portray their own struggles with course material and actively seek assessment of their teaching then respond to it in open, positive, and appreciative ways.

While we might hope students would naturally desire critical assessments of their work this typically is not the case. Most students will only benefit from assessing their own and others work if they are held accountable for the quality of their assessment. Once criteria have been selected, a helpful technique is to have students assess the work of peers and write a narrative explaining strengths and weakness and specific suggestions for improvement. Students then give one copy to the author and one to the instructor who can assess the assessment. In this way, students are held accountable for the quality of the peer assessments they complete. The same approach can be used when self-assessments are completed.

Assessments can also be completed by others such as professionals in the discipline, other faculty, or students in another course within the discipline or another major all together. For example, one approach using students in another course within

the discipline is to have upper level students complete an assessment of the work of students in an introductory course. Here again, the student completing the assessment must be held accountable for the assessment and it is best if they provide feedback in writing and in person to the original author. In all cases, students completing assessments need to be identified so they feel a greater sense of responsibility and accountability by making the assessment a product eligible for review by the instructor. In cases where students are creating products that would be appropriate for a population not familiar with the discipline students from another major can provide a valuable source for assessment. Examples of how this interdisciplinary work could benefit students would be if a student in communications assessed the work of a student in social work who had developed a brochure, or a biology student who prepared a technical report had it assessed by an English major.

Whatever form of assessment is employed it is important to remember the ultimate goal of critical thinking – for the student to take charge of his/her own thinking thereby becoming self-reliant and self-correcting. Lesson plans designed to promote critical thinking need to feature this regularly.

### **Improvement of thinking**

A lesson designed to promote critical thinking needs to contain strategies for the improvement of students' thinking. Just as an evaluation of a program is worthless unless improvements to the program are made, critical thinking only realizes its potential when conscious efforts at improving the outcomes of thinking (writing, speaking, reading, listening, creating) are required. Revisions of assessed work are therefore necessary. An ongoing element of lessons needs to be revision and resubmission of



student work. In most cases, this can be accomplished in between lessons as homework – an extension of the lesson into students’ own time.

Once initial work and assessments have been completed, showing students stronger and weaker examples of their peers work can help the revision process. I have tried a number of approaches including placing excerpts of written work on overheads and discussing it in class. This is usually done with strong and weak examples with student names removed from the examples. Disseminating stronger examples has been accomplished by linking examples to a course web page, and placing copies of student work in a three ring binder left in an accessible place for students. Before placing examples on a web page or making copies I ask students if they are willing to share their work with others and have yet to be turned down.

Assessments and revisions need to be made public for as Shulman (1999) stated, “Learning flourishes when we take what we think we know and offer it as community property among fellow learners so that it can be tested, examined, challenged, and improved before we internalize it” (p. 12). The process of assessment described above begins to make student work public. Students reporting changes made in an original piece of work to an assessment partner helps complete the process of learning before it is internalized. A course portfolio is useful in this capacity as well. Students compile all work produced for a course in a binder which can be shared. As a part of a lesson the student could be required to share portions of the portfolio with a writing tutor, major professor, professional in their chosen discipline, parent, other concerned adult or, of course, the instructor.

## **Reflective critique and conclusion**

For the past four years I have featured the essential elements and process described above in lessons. As a result I believe students have become more comfortable with critical thinking and especially with the concept and practice of assessing thinking. Prior to using this approach, student assessment of other's work was often very weak and not helpful. It seemed there was an unwritten rule among students that they can only provide positive comments on other students work and these tended to be very superficial. By infusing critical thinking and placing an emphasis on assessment, students are engaged in higher order thinking and, most critically, held accountable (i.e. graded) for the quality of the assessments they complete.

Incorporating these essential elements of critical thinking into my own lesson planning has been an evolutionary process. Once I learned and came to value the need for students to apply criteria to their own thinking and seek to improve their work the structure of many of my lessons and assignments began to change. For example, in a course I teach entitled "Needs Assessment in Health Education" students have written an action plan near the end of the course in which they must distill what they've learned about a health issue, prioritize the needs, and make initial proposals for solutions to the highest prioritized needs (see the assignment at: <http://www.cast.ilstu.edu/Broadbear/286actio.htm>). When I first started using this assignment several things were missing that are now included. In its current form I ask questions of students, emphasize the purpose of the assignment and provide students with examples of what constitutes stronger vs. weaker performance. Students must also apply specific criteria when prioritizing health needs and these are explicitly stated in the

assignment. Students complete peer assessments as they must apply criteria to the work of another student and suggest improvements and are then held accountable for these peer assessments. Changes like these were not difficult to devise or implement, but they were missing until I focused my lesson planning more fully on the essential elements. I do believe the rigor of the assignment has improved significantly as result and students are pushed to engage in deeper, richer, more critical thinking.

When implementing lessons featuring the essential elements, quite a bit of class time is spent having students complete assessments, providing feedback to each other and working on improvements. Some teachers might be uncomfortable with this, fearing the loss of “content coverage.” But this fear is unfounded for two reasons. When students are engaged in this sort of thinking they are still dealing with content. One can’t apply criteria, assess and improve thinking in the absence of content. So it seems reasonable to conclude that content is still covered when focusing on the essential elements. While I admit that this approach may mean sacrificing breadth of content coverage to depth of reasoning, it is a trade worth making. Several authors suggest a more narrow approach on a few key concepts in a course is actually more valuable to learning than breadth of content coverage (Case & Fraser, 2002; Paul, 1995; Powell, 2002; Shell, 2001).

An important benefit I’ve experienced by focusing on the essential elements is that lesson planning becomes streamlined and less time consuming. A predictability to lesson planning emerges where the teacher is introducing a key concept, asking questions and introducing ill-structured problems in various ways to guide student thinking about the concept, having them create products based on their thinking followed by assessments and improvements then introducing the next key concept.

Taken as a whole, the essential elements of ill-structured problems, criteria for assessing thinking, student assessment of thinking, and improvement of thinking imply an iterative process. A pattern emerges for lessons where problems and questions are introduced, criteria established, outcomes (spoken, written, created) developed based on students thinking about the problem or question, outcomes are assessed by the student and/or others and are then improved upon. All products from such an approach can be compiled by the student in a course portfolio for periodic assessment by the instructor. Such a structure infused in lessons captures the essentials of critical thinking.

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