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ABSTRACT

Thirteen guidelines are offered to teacher educators who seek to improve student thinking by improving the teaching of thinking in schools: (1) regard improved thinking as a means to an end, not the end itself; (2) be precise in the language and terms used to describe thinking; (3) recognize that the term "critical thinking" is a loaded term, with negative connotations, in some communities; (4) acknowledge that critical thinking is only one of many kinds of thinking; (5) avoid either/or approaches to the teaching of thinking; (6) recognize that helping students to become more skilled thinkers is a gradual process, not to be accomplished all at once; (7) acknowledge that the most effective thinking program is K-12 or K-16 at least; (8) be practical about strategies for implementing thinking skills instruction; (9) acknowledge the reality of the classrooms where most teaching is carried on; (10) ensure that attention to thinking is for all students rather than a chosen few; (11) reflect on one's own teaching to identify what helps novices improve their thinking; (12) become active in the world of classroom teachers and curriculum developers; and (13) work with teachers, not on them. (IAH)

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The Institute for Critical Thinking at Montclair State College is designed to support and enrich faculty development efforts toward critical thinking as an educational goal. Guided by a National Advisory Board and a College Advisory Council, its primary purpose is to serve as a catalyst in the development of educational excellence across the curriculum at the College. A collaborative, multi-disciplinary approach is in process, with attention to the study of both the theoretical aspects of critical thinking across the disciplines and their implications for teaching and learning at the college level. Leadership roles have also been assumed in helping other colleges and schools to incorporate critical thinking into their curricula.

As part of this effort, the Institute for Critical Thinking publishes a newsletter, *Critical Thinking: Inquiry Across the Disciplines*, on a monthly basis during the academic year. The newsletter publishes information about the activities of the Institute, as well as brief analyses of various critical thinking issues. In addition, the publication of several series of resource documents are in process. These publications will make available, to interested faculty and others at Montclair and elsewhere, working papers related to critical thinking as an educational goal. These publications will enable those persons interested in critical thinking to have access to more extensive discussions of the kinds of issues that can only be presented in summary form in the newsletter. These discussions will typically be regarded as works-in-progress--articles written as tentative arguments inviting response from others, articles awaiting the long publication delay in journals, etc. The proceedings of our conferences will also be presented in the form of resource publications, as will articles based on our series of lectures, inquiry panels, and faculty seminars and forums.

In this first series of resource publications, we have included working papers by members and guests of our Institute Fellows "Round Table." Most of these working papers have been presented for discussion at one or more of the Fellows' seminar meetings, and have influenced our thinking about the nature of critical thinking as an educational goal.

The Institute welcomes suggestions for our resource publication series, as well as for our other activities. Correspondence may be addressed to us at

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Hints for Improving the Teaching of Thinking in Our Schools: A Baker's Dozen

Barry K. Beyer

It has been almost five years now since American schools started showing serious interest in improving the thinking of their students. During that time I have been in at least 141 of these schools, in some for only a day but in others for a week or more, in some only once but in others on a continuing basis over a period of three years or more. During that time I have taught dozens of thinking skills lessons, observed scores of teachers teaching similar lessons, and helped hundreds of teachers design -- and revise -- thinking skills lessons of their own. I have also studied dozens of textbooks, analyzed scores of tests, and examined several hundred local and state curriculum guides, all in an effort to identify the approaches to teaching thinking included in each . I have worked with a number of publishers and editors, instructional designers and textbook authors, again in an effort to improve instruction of thinking, this time through the medium of print. And I have met thousands of teachers, supervisors, and administrators, all involved in one way or another in efforts to improve student thinking. As a result of these activities, I have seen, heard, and studied a great deal about the teaching of thinking in our schools and about how -- and how not -- to go about efforts to improve it.

This occasion thus seems like an appropriate time and place to reflect on these experiences and to share what I have learned about this important topic. In doing this, I want especially to address myself to those of us who are committed to improving the thinking of students of all ages beyond as well as within our own classrooms. And so I want to suggest a baker's dozen of guidelines we all might be well advised to follow if we want our efforts in this direction to be successful.

However, before I start enumerating these guidelines, it is important to offer a word of caution. I do not pretend to have any special insight into the teaching of thinking, other than that generated by the experiences detailed above. I present these guidelines ever so mindful of the situation once faced by Bishop Fulton J. Sheen, who once got lost on his way to deliver a lecture in Philadelphia's Town Hall. Spotting some youngsters on a corner, Bishop Sheen asked them how to find Town Hall. They told him, and then asked him "What are you going to do there?"

"I'm giving a lecture on heaven and how to get there," the good bishop replied. "Would you like to come and find out?"

"You're kidding," replied one youngster. "You don't even know the way to the Town Hall!"

With that word of caution in mind, then, here are thirteen things that I believe ought to guide the efforts of any and all of us who seek to improve student thinking by improving the teaching of thinking in our schools.

1. ***Keep our eyes always on the real target.***

Mastery of thinking skills or strategies is *not* -- or ought not to be -- the ultimate goal of our efforts. We seek not simply to produce individuals who have technical expertise in thinking but to produce individuals who can think to produce better products of skilled thinking and who are *willing* to do so. As Matthew Arnold once wrote, "It is nice you can think but after all what is really important is *what* you think." The products of improved thinking include higher academic achievement, improved citizenship, enhanced individual self-concept, and, in a word, student and societal survival and progress. Improved thinking is a means to these ends -- not an end in itself.

2. ***Be precise in the language and terms we use to describe thinking.***

All too often the language used by proponents of improved student thinking seems to be vague, contradictory, and full of multiple meanings. Key terms go undefined or get defined in mutually exclusive ways. Is critical thinking really problem solving, as one scholar has asserted, or isn't it? If it is, why is it called critical thinking and not problem solving? Is making a conclusion really summarizing, as one textbook defines it, or noting similarities and differences as it is described by another text used at the same grade level, or generalizing as another text describes it? Is critical thinking a useful generic term for all thinking or is it but one rather precise kind of thinking, that by which we judge the worth, accuracy, or utility of something? To be successful in efforts to improve the teaching of thinking we must practice the first rule of critical thinking -- be precise in the language we use. Minimize technical jargon, use terminology meaningful to non-experts in the field, and define clearly and consistently what we mean by what we say. While a certain ambiguity may be useful for political reasons, precision and clarity are needed if we hope to be successful in our efforts to effect changes in the classroom teaching of thinking.

3. ***Recognize that the term "critical thinking" is a loaded term in some communities, full of negative connotations.***

Unfortunately, the term critical thinking for some people means fault -finding, a carping, negativism which they do not want to have taught to their children. Such erroneous impressions seem to result from associating it with the book, television and movie critics encountered in the media who, as often as not, mercilessly rip films, TV shows, and newly published books to shreds. Many parents do not want their children to behave this way, especially at home at the end of a parent's hard day in field, factory, or office. Others seem suspicious of critical thinking for its presumed potential in subverting the authority of the family, the school, the teacher- student relationship, and the social fabric. Advocates of critical thinking instruction must take great pains to be clear about the nature of critical thinking and its positive value to a democratic society. It may be that a less charged term (such as analytical or evaluative thinking) needs to be substituted for critical thinking simply to get it accepted in some schools. At the very least, however, awareness of the negative connotations of the term *critical thinking* should guide us in our representations of thinking to the general public.

4. ***Acknowledge that critical thinking is only one of many kinds of thinking.***

Thinking takes many forms and serves a variety of functions. It includes problem solving, decision making, conceptualizing, comprehending, analysis, and many other cognitive operations, none of which are synonymous with critical thinking, correctly defined. Moreover, thinking includes what Robert Ennis calls dispositions and Richard Paul labels passions -- habitual ways of behaving that motivate, direct, and support certain kinds of creative and critical thinking. And thinking also consists of certain kinds of knowledge, including knowledge of thinking heuristics, subject matter (or domain-specific) knowledge and knowledge about the very nature of knowledge. Thinking, in fact, consists of substance as much as process, art as much as technique. To label all thinking as critical thinking misrepresents both. Teaching thinking requires sustained attention to all major aspects and components of thinking.

5. ***Avoid either/or approaches to the teaching of thinking.***

Teaching thinking in our schools is *not* a matter of teaching either critical thinking or problem solving, of either decision-making or information processing skills, of either holistic thinking or discrete skills. It is *not* a matter of teaching either subject matter or process; it is *not* a matter of teaching either technical skills or general ways of thinking; it is *not* a matter of teaching either skills or dispositions. Teaching thinking is *all of the above.* One cannot teach thinking in a content vacuum, just as one cannot teach subject matter without the use of thinking. One cannot teach thinking successfully without embedding thinking skills in the context of broader, more holistic thinking strategies and the dispositions supportive of thinking as a whole. Those who ignore or fail to acknowledge these facts simply do not understand or choose to remain uninformed about the significance and complexity of the interrelationships of skills, process, knowledge, and affect on learning anything.

6. ***Don't try to do everything at once.***

While critical thinking -- or problem solving or decision making, for that matter -- in the so- called "strong sense" may be a highly desirable target, seeking to accomplish such thinking right off the bat is not only unwise and impractical, but also virtually impossible. Building a comprehensive thinking skills program requires attention to dispositions as well as skills, learning environments as well as instructional techniques, teacher skills as well as learning behaviors. Teachers as well as students are novices regarding many of these dimensions of thinking. Time and the school resources needed to provide the training, instructional materials, and curriculum support necessary to institutionalize worthwhile thinking programs are in short supply in many areas. Moving too fast with too little into unfamiliar areas will simply cause teaching and learning overloads that may well abort efforts to achieve these goals.

We will make our best progress toward accomplishing the goal of helping all youngsters become skillful thinkers, willing and able to think -- indeed, committed to effective and efficient thinking -- when we start small and go slowly. That is, we should focus on a limited number of short-term objectives, focus on

teaching a few specific thinking operations in an efficient, continuous fashion over an extended period of time, and provide the training and support needed by teachers to accomplish the larger goal before we expect to have a comprehensive program in place.

7. ***Think K-12 or K-16.***

In spite of the necessity of building a comprehensive thinking program in small increments, it is still important to keep the big picture constantly in mind. The most effective thinking program will be one that is a K-12 or K-16 program at the least. It takes a long time to become a skillful thinker. Thinking operations become more sophisticated over time as we use them for increasingly sophisticated purposes in a variety of contexts for a variety of purposes. One does not become a skillful thinker as a result of a single course or single year of study. Students are not likely to develop to the fullest their potential as skillful thinkers unless the dispositions, skills, and processes that constitute skillful thinking are reinforced, transferred to a variety of contexts beyond those in which they are introduced, and applied with instructive guidance outside of academic settings as well as in them.

8. ***Be practical.***

The time has come to go beyond exhortation, to stop talking only about how important critical thinking or problem solving or analysis, synthesis and evaluation are. For administrators, pre-college teachers, and college instructors, many of whom already have been persuaded of the value of more serious attention to teaching thinking, the questions are of a more practical nature. These questions are of four types: What do I/we teach? How does it work? How can I/we teach it better/differently than I/we now do? How will I/we know students are getting better at the thinking skills, processes, and/or dispositions being taught? Those asking these questions seem to be especially interested in very specific information about the nature of the thinking operations recommended for instruction (e.g., "Exactly what do you do to identify unstated assumptions?") and about specific techniques for explaining to students "how to do it." Helping them answer these questions involves translating into specific, practical everyday language ways to execute a variety of thinking operations and tasks as well as ways to teach students how to execute the thinking tasks which they are being urged to develop.

9. ***Acknowledge the reality of the classrooms where most teaching is carried on.***

Recommendations for improving the teaching of thinking won't work if they do not square with the realities of the classrooms where such teaching is to occur. For most pre-collegiate students today, learning environments are less than optimum for thinking or learning how to think, especially about academic subject matter. Learning for many students is fragmented and episodic, interrupted frequently by absence from school, being pulled out of class, public address announcements, disorders, testing, and numerous other intrusions. Many students are unmotivated to learn the content of academic courses. Competency testing runs counter to the goals of instruction in higher order

thinking. Storing and remembering subject matter usually takes precedence over inquiry into it. Indeed, for many students, thinking at all above the level of recall or translation does not appear to pay off in their classrooms. Coupled with the facts that many teachers feel pressed for time to cover the content assigned to them and are already convinced they are doing all that is possible now to improve student thinking, these conditions do not exactly invite intervention with much hope of success.

What can be done to make the best of these conditions? First, proponents of the teaching of thinking must recommend the teaching of skills and techniques for teaching them that help teachers and student accomplish other goals that they value, sometimes goals that on the surface, at least, appear to be quite contradictory. Thus, for example, because content learning is so important to teachers, the teaching techniques recommended must be those that use this content to advance content learning while simultaneously improving student abilities to execute significant thinking operations. Teaching techniques that require considerable preparation or extended periods of time to carry out may need to be revised to reduce the teacher and student time needed to execute them.

10. ***Ensure that attention to thinking is for all students.***

In many instances the teaching of thinking is still reserved for students designated as gifted and talented. But *all* students can benefit from attention to developing thinking. The more the teaching of thinking is carried beyond the classrooms of the "gifted and talented" and into *all* classrooms, from honors and academic classes into vocational and remedial classes, the better off all our students -- and we -- will be. In many cases, the teachers of gifted students can provide leadership in carrying out this task because they may already have experience in teaching thinking that can be translated into classes for other students and used by teachers of all subjects and students of all ability levels. Working together, these teachers and specialists in thinking skills instruction can do much to ensure that thinking becomes more than enrichment for some students and a primary focus of all.

11. ***Reflect on our own teaching to identify what really helps novices improve their thinking.***

What is it that successful teachers of thinking do in their classes to help students improve their own thinking? What is it these individuals do to execute the thinking tasks they seek to teach others? Stanford professor Lee Shulman argues that teachers need to reflect more on their own teaching, need to become more alert to and conscious of what they really are doing instead of presuming that what they are doing is what their students perceive they are doing. Teachers, for example, often feel that their class-ending reviews of "what we learned today" represent what their students actually learned, when in reality the students may have completely missed the point and learned something else altogether. Comparing student summaries -- written or oral -- of what they feel they learned with what a teacher wanted them to learn can sharpen an instructor's teaching abilities; comparing how novice thinkers execute a thinking task with how experienced thinkers execute the same task can, as researcher Robbie Case

suggests, provide insights into what can be taught to novices to sharpen their own thinking.

12. ***Become active in the world of classroom teachers and curriculum developers.***

Writing and talking to each other is not likely to help specialists in critical thinking or problem solving or information processing have much impact on the teaching of thinking in our schools. Rather, those interested in improving student thinking and the teaching thereof should become much more active in national organizations of professional educators such as the National Council for Teachers of English, the Association for Supervision and Curriculum Development, the National Association of Elementary School Principals, and so on. We ought to become especially visible at their national and regional meetings as presenters and speakers. We should also get much more involved in local school systems by volunteering to serve on curriculum revision committees, to teach staff development classes on thinking, or to work with groups of teachers to introduce thinking into their courses. We should make efforts to work with textbooks publishers to introduce instruction in thinking in texts in various subject areas, join committees examining, building, or evaluating tests of thinking, and join board of education sponsored task forces reviewing local or state-wide school skills curricula. We should share ideas with educators of all levels and subjects through the journals most read by these educators, including *Phi Delta Kappan, Educational Leadership, The History Teacher, Clearinghouse,* and other similar publications. Expertise is needed to revise or create appropriate thinking programs, tests, instructional packages, and inservice training programs, and those who have it should be more active in sharing it. The exchange can be beneficial to all.

13. ***Work WITH teachers, not ON them.***

Classrooms teachers have a wealth of experience and knowledge about students, about classroom teaching techniques, and about what works in general insofar as classroom activities go. They have much to contribute to teaching thinking. By sharing with them the special insights into complex thinking operations that they may possess, college faculty who specialize in teaching thinking can form partnerships or alliances that can improve the teaching of thinking in classrooms at *all* levels of the educational enterprise. Such cooperative endeavors are sure to keep everyone's feet firmly planted in reality and, as a result, to produce ideas and approaches much more likely to succeed in all classrooms.

Getting Serious About the Teaching of Thinking

Improving the teaching of thinking in our schools is a big order. And an important one. The guidelines outlined above are calculated to facilitate this work. Even by following them, however, the task will be difficult and, at times, even dangerous.

Don Marquis, author of *The Sun Dial*, wrote "If you make people think they're thinking, they'll love you. But if you *really* make them think, they'll hate

you!" Thinking is hard work. Few students signed up for schooling with that in mind. Teaching thinking is hard work, too. It is not easy for teachers to find the time in their teaching to focus on developing thinking skills and strategies. Teaching people how to teach thinking differently than they do now is even harder work. It requires developing proficiency in thinking and in new teaching strategies, becoming sensitive to student learning styles, and unlearning presently dysfunctional techniques in favor of new, more effective ones.

Yet, the effort to do so is most worthwhile. Thomas Edison has been quoted as declaring "Remember, nothing that's good works by itself just to please you. You've got to make the damn thing work!" Note that he did not say force it to work. Speaking in terms of a machine, he meant that we have to carefully, deliberately tinker, fuss, and guide it to work. Sometimes all it takes to do this is oil. Other times it may take a gentle rap! Sometimes it is necessary to take it apart and clean, repair, and reassemble the parts before they work as intended. Occasionally, replacement parts are needed. The same can be said of making thinking work. Sometimes it requires only encouragement and stimulation to help thinking work well. But more often than not it requires more explicit attention, sometimes even to the point of disassembling the process, perhaps to replace defective components with additional or more functional ones, sometimes simply to polish the various components and then reassemble them again. All of these tasks are part of teaching thinking.

For those of us who want to get serious about improving the teaching of thinking in our schools, there are both challenge and opportunity. Hopefully, the hints provided here will make the challenge worth accepting and the opportunity rich with promise.

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