

# Teaching for Leadership

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## Abstract

Leadership involves creative, analytical, practical, and wisdom-based skills (WICS). Teaching for leadership thus involves teaching for these skills. Traditional teaching reaches students who are primarily memory learners, but may leave out students who are stronger in other kinds of skills, such as analytical, creative, practical, or wisdom-based ones. Such learners may find that neither the teaching nor the testing to which they are subjected adequately meets their needs. But success in life requires creative, practical, and wisdom-based skills at least as much as it requires memory and analytical ones.

In this article I describe how to teach in a way that meets the needs of virtually all students, including those who are gifted in nontraditional ways. I first present the theory of WICS, upon which the method of teaching is based; then I describe how to teach to all students, citing both principles and concrete examples from a variety of subject-matter areas; then I will describe data showing that such teaching improves students' academic performance; and finally, I discuss the implications of this work for successful teaching of diverse gifted students. I argue that societies shortchange themselves when they fail to respond positively to the gifts of all their students.

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Many children, including and arguably, especially, gifted children, fail to live up to their potential. There can be a number of reasons for this failure, but one reason is that the way in which the students are taught and, often, assessed in school does not enable the students to learn and perform in an optimal way. We have developed the theory of successful intelligence (Sternberg, 1997a, 1999) and of WICS (Sternberg, 2005a, 2005b), and have developed a set of methods of teaching to help these students reach their full potential (Sternberg & Grigorenko, 2007). Students are not “born leaders.” Rather, we can help them develop their leadership abilities so they can make a positive difference.

In this article, I first briefly review the theory of wisdom-intelligence-creativity-synthesized (WICS). Then I describe how to teach and assess for WICS. Then I present some data based on teaching for WICS. Finally I will draw some conclusions.

The theory of WICS conceptualizes giftedness in a way that is different from that of some conventional conceptions of giftedness, for example, those that view abilities as unidimensional (e.g., Jensen, 1998). There are multiple ways to be gifted. Teaching for WICS is designed to help ensure that all children can capitalize on their gifts, as well as correct or compensate for skill sets in which they have not developed gifts. Indeed, developing giftedness in leadership is seen, in large part, as helping children develop these patterns of capitalization, correction, and compensation.

## **THE THEORY OF WICS:**

### **A CAPSULE DESCRIPTION**

The theory of WICS suggests that students’ failures to achieve at a level that matches their potential often results from teaching and assessment that are narrow in conceptualization and rigid in implementation. Thus, none of the above explanations is

adequate. Rather, the ways of the academy simply fail to meet the needs of students. The traditional ways, in essence, typically shine a spotlight on a small number of students with a certain pattern of abilities, and almost never shine the spotlight on a large number of students who have the ability to succeed, but whose patterns of abilities do not correspond to the patterns valued by the schools. The solution is to value other ability patterns and then change teaching and assessment so that these other ability patterns can lead to success in school.

According to the proposed theory, leaders are effective to the extent they are (a) creative in generating new ideas, (b) analytical in assessing the value of these ideas, (c) practical in implementing these ideas and convincing others of their value, and (d) wise in ensuring the ideas help achieve a common good (Sternberg, 1997a, 1999, 2003a, 2003b, 2003c, 2005a, 2005b). We define wisdom as the application of intelligence, creativity, and knowledge as mediated by positive values toward the achievement of a common good through a balance among (a) intrapersonal, (b) interpersonal, and (c) extrapersonal interests, over the (a) short- and (b) long-terms, in order to achieve a balance among (a) adaptation to existing environments, (b) shaping of existing environments, and (c) selection of new environments

In considering the nature of giftedness, we need to consider the full range of definitions of success by which children can be gifted. For example, in research we have done in rural Kenya (Sternberg, Nokes, Geissler, Prince, Okatcha, Bundy, & Grigorenko, 2001), we have found that children who may score quite high on tests of an aspect of practical intelligence—knowledge of how to use natural herbal medicines to treat parasitic and other illnesses—may score quite poorly on tests of IQ and academic

achievement. Indeed, we found an inverse relationship between the two skill sets, with correlations reaching the -.3 level. For these children, time spent in school takes away from time in which they learn the practical skills that they and their families view as needed for success in life.

We balance four kinds of abilities in order to achieve our desired ends: analytical abilities, creative abilities, practical abilities, and wisdom-based abilities. Most people who are good and effective leaders are not equal in these four abilities, but they find ways of making the three abilities work harmoniously together—that is, they successfully synthesize the abilities.

We have used five kinds of converging operations to test these ideas: cultural studies, factor-analytic studies, information-processing analyses, correlational analyses, and instructional studies (some of which are described below). This work is summarized elsewhere (e.g., Sternberg, 1985, 1997a, 2003a, 2003b; Sternberg et al., 2000). Examples of kinds of evidence in this work supporting the theory are the factorial separability of analytical, creative, and practical abilities (Sternberg & the Rainbow Project Collaborators, 2006); the substantial incremental validity of measures of creative and practical intelligence over the validity of measures of academic (general) intelligence in predicting school and job performance (Stemler et al., 2006; Sternberg et al., 2000; Sternberg & the Rainbow Project Collaborators, 2006); the usefulness of instruction based on the theory in comparison with other forms of instruction (Sternberg, 2003b); and differences in the nature of what constitutes practical intelligence across cultures (Sternberg, 2004).

This notion of WICS contains within it several implications for teaching (Sternberg & Grigorenko, 2007; Sternberg & Spear-Swerling, 1996).

## **TEACHING AND ASSESSING FOR WICS**

A number of implications follow from the theory of WICS with regard to teaching and assessment (Sternberg, 2006; Sternberg & Grigorenko, 2007). At some level, the practices of good teaching will be the same without regard to the theory that generates these practices, and hence there will be overlap in such practices across theoretical frameworks. Moreover, many good teachers already follow the suggestions we make. The fourth implication below, with regard to teaching for analytical, creative, practical, and wise thinking, is what most distinguishes the theory from other related constructivist theories (e.g., Collins, Brown, & Newman, 1989; Palincsar & Brown, 1984; Rogoff, 1990), in general, or other broad theories of intelligence, in particular (e.g., Gardner, 1983, 1999).

1. Because students have different life goals and hence different outcomes that, for them, are successful, student success needs to be defined in terms that are meaningful to the students as well as to the institution.

- (a) Provide numerous examples of concepts that cover a wide range of applications.

- (b) Give students multiple and diverse options in assessment.

- (c) Grade student work in a way that preserves the integrity of the course as well as the integrity of the students' varied life goals.

2. Help students to capitalize on strengths and at the same time help them correct or compensate for weaknesses.

(a) There is no one right way of teaching and learning (Sternberg, 1997a, 1997b).

(b) There is no one right way of assessing students' achievement.

(c) Teach and assess to weaknesses as well as to strengths.

3. Students need to learn to balance adaptation to, shaping of, and selection of environments.

(a) Students, like teachers, need to develop flexibility.

(b) Students need to be allowed and even encouraged to take risks and to make mistakes.

(c) Students need to learn how to overcome obstacles.

4. Teaching and assessment should balance use of analytical, creative, and practical thinking.

(1) *Teaching analytically means encouraging students to (a) analyze, (b) critique, (c) judge, (d) compare and contrast, (e) evaluate, and (f) assess.* When teachers refer to teaching for “critical thinking,” they typically mean teaching for analytical thinking. How does such teaching translate into instructional and assessment activities? Consider various examples across the school curriculum:

(a) *Analyze* the development of the character of Heathcliff in *Wuthering Heights*.

[Literature]

(b) *Critique* the design of the experiment (just gone over in class or in a reading) showing that certain plants grew better in dim light than in bright sunlight. [Biology]

(c) *Judge* the artistic merits of Roy Lichtenstein’s “comic-book art,” discussing its strengths as well as its weaknesses as fine art. [Art]

(d) *Compare and contrast* the respective natures of the American Revolution and the French Revolution, pointing out ways both in which they were similar and those in which they were different. [History]

(e) *Evaluate* the validity of the following solution to a mathematical problem, and discuss weaknesses in the solution, if there are any. [Mathematics]

(f) *Assess* the strategy used by the winning player in the tennis match you just observed, stating what techniques she used in order to defeat her opponent. [Physical Education]

(2) *Teaching creatively means encouraging students to (a) create, (b) invent, (c) discover, (d) imagine if..., (e) suppose that..., (f) predict.* Teaching for creativity requires teachers not only to support and encourage creativity, but also to role-model it and to reward it when it is displayed (Sternberg & Lubart, 1995; Sternberg & Williams, 1996). In other words, teachers need not only to talk the talk, but also to walk the walk. Consider some examples of instructional or assessment activities that encourage students to think creatively.

(a) *Create* an alternative ending to the short story you just read that represents a different way things might have gone for the main characters in the story. [Literature]

(b) *Invent* a dialogue between an American tourist in Paris and a French man he encounters on the street from whom he is asking directions on how to get to the Rue Pigalle. [French]

(c) *Discover* the fundamental physical principle that underlies all of the following problems, each of which differs from the others in the “surface structure” of the problem but not in its “deep structure....” [Physics]

(d) *Imagine if* the government of China keeps evolving over the course of the next 20 years in much the same way it has been evolving. What do you believe the government of China will be like in 20 years? [Government/Political Science]

(e) *Suppose that* you were to design one additional instrument to be played in a symphony orchestra for future compositions. What might that instrument be like, and why? [Music]

(f) *Predict* changes that are likely to occur in the vocabulary or grammar of spoken Spanish in the border areas of the Rio Grande over the next 100 years as a result of continuous interactions between Spanish and English speakers. [Linguistics]

(3) *Teaching practically means encouraging students to (a) apply, (b) use, (c) put into practice, (d) implement, (e) employ, (f) render practical* what they know. Such teaching must relate to the real practical needs of the students, not just to what would be practical for individuals other than the students (Sternberg et al., 2000). Consider some examples:

(a) *Apply* the formula for computing compound interest to a problem people are likely to face when planning for retirement. [Economics, Math]

(b) *Use* your knowledge of German to greet a new acquaintance in Berlin.  
[German]

(c) *Put into practice* what you have learned from teamwork in football to making a classroom team project succeed. [Athletics]

(d) *Implement* a business plan you have written in a simulated business environment. [Business]

(e) *Employ* the formula for distance, rate, and time, to compute a distance. [Math]

(f) *Render practical* a proposed design for a new building that will not work in the aesthetic context of the surrounding buildings, all of which are at least 100 years old.  
[Architecture]

(4) *Teaching for wisdom means teaching students to think dialogically and dialectically—to understand how to see others’ points of views and to understand that what is “true” varies over time. It means teaching students to avoid certain cognitive fallacies.*

(a) The first, the *unrealistic-optimism fallacy* occurs when they think they are so smart and effective that they can do whatever they want.

(b) The second, *egocentrism fallacy*, occurs when successful leaders start to think that they are the only ones that matter, not the people who rely on them for leadership.

(c) The third, *omniscience fallacy*, occurs when leaders think that they know everything, and lose sight of the limitations of their own knowledge.

(d) The fourth, *omnipotence fallacy*, occurs when leaders think they are all-powerful and can do whatever they want.

(e) The fifth, *invulnerability fallacy*, occurs when leaders think they can get away with anything, because they are too clever to be caught; and even if they are caught, they figure that they can get away with what they have done because of who they imagine themselves to be.

(f) The sixth, *ethical disengagement fallacy*, occurs when leaders think that ethics apply to others but not to themselves.

Clearly, it is possible to implement teaching for WICS in a wide variety of academic contexts. But there are potential problems with any new methodology. What are the potential problems for this one?

### **SOME INSTRUCTIONAL DATA**

We have sought to test aspects of the theory of WICS in the classroom. In a first set of studies, we explored the question of whether conventional education in school systematically discriminates against children with creative and practical strengths (Sternberg & Clinkenbeard, 1995; Sternberg, Ferrari, Clinkenbeard, & Grigorenko, 1996; Sternberg, Grigorenko, Ferrari, & Clinkenbeard, 1999). Motivating this work was the belief that the systems in most schools strongly tend to favor children with strengths in memory and analytical abilities. Much of our work so far has emphasized the analytical, creative, and practical abilities that comprise what we call “successful intelligence,” with wisdom-based abilities a more recent focus.

To validate the relevance of the theory of WICS in the classroom, we have carried out a number of instructional studies. In one study, we used the Sternberg Triarchic Abilities Test. The test was administered to 326 children around the United States and in some other countries who were identified by their schools as gifted by any standard whatsoever. Children were selected for a summer program in (college-level) psychology if they fell into one of five ability groupings: high analytical, high creative, high practical, high balanced (high in all three abilities), or low balanced (low in all three abilities). Students who came to Yale were then assigned at random to four instructional groups,

with the constraint that roughly equal numbers with each ability pattern be assigned to each group. Students in all four instructional groups used the same introductory-psychology textbook (a preliminary version of Sternberg [1995]) and listened to the same psychology lectures. What differed among them was the type of afternoon discussion section to which they were assigned. They were assigned to an instructional condition that emphasized either memory, analytical, creative, or practical instruction. For example, in the memory condition, they might be asked to describe the main tenets of a major theory of depression. In the analytical condition, they might be asked to compare and contrast two theories of depression. In the creative condition, they might be asked to formulate their own theory of depression. In the practical condition, they might be asked how they could use what they had learned about depression to help a friend who was depressed.

Students in all four instructional conditions were evaluated in terms of their performance on homework, a midterm exam, a final exam, and an independent project. Each type of work was evaluated for memory, analytical, creative, and practical quality. Thus, all students were evaluated in exactly the same way.

First, we observed when the students arrived at Yale that the students in the high creative and high practical groups were much more diverse in terms of racial, ethnic, socioeconomic, and educational backgrounds than were the students in the high-analytical group, suggesting that correlations of measured intelligence with status variables such as these may be reduced by using a broader conception of intelligence. Thus, the kinds of students identified as strong differed in terms of populations from which they were drawn in comparison with students identified as strong solely by

analytical measures. More importantly, just by expanding the range of abilities measured, we discovered intellectual strengths that might not have been apparent through a conventional test.

Second, we found that all three ability tests—analytical, creative, and practical—significantly predicted course performance. When multiple-regression analysis was used, at least two of these ability measures contributed significantly to the prediction of each of the measures of achievement. In particular, for homework assignments, significant beta weights were obtained for analytical (.25) and creative (.16) ability measures; for the independent project, significant weights were obtained for the analytical (.14), creative (.22), and practical (.14) measures; for the exams, significant weights were obtained for the analytical (.24) and creative (.19) measures (Sternberg, Grigorenko, Ferrari, & Clinkenbeard, 1999). Perhaps as a reflection of the difficulty of deemphasizing the analytical way of teaching, one of the significant predictors was always the analytical score. (However, in a replication of our study with low-income African-American students from New York, Deborah Coates of the City University of New York found a different pattern of results. Her data indicated that the practical tests were better predictors of course performance than were the analytical measures, suggesting that what ability test predicts what criterion depends on population as well as mode of teaching.)

Third and most importantly, there was an aptitude-treatment interaction whereby students who were placed in instructional conditions that better matched their pattern of abilities outperformed students who were mismatched. In particular, repeated-measures analysis revealed statistically significant effects of match for analytical and creative tasks as a whole. Three of five practical tasks also showed an effect. In other words, when

students are taught in a way that fits how they think, they do better in school (see Cronbach & Snow, 1977, for a discussion of the difficulties in eliciting ATIs). Children with high levels of creative and practical abilities, who are almost never taught or assessed in a way that matches their pattern of abilities, may be at a disadvantage in course after course, year after year.

A follow-up study (Sternberg, Torff, & Grigorenko, 1998a, 1998b) examined learning of social studies and science by third-graders and eighth-graders. The 225 third-graders were students in a very low-income neighborhood in Raleigh, North Carolina. The 142 eighth-graders were students who were largely middle to upper-middle class studying in Baltimore, Maryland, and Fresno, California. These latter children were part of a summer program sponsored by the Johns Hopkins University for gifted students. In this study, students were assigned to one of three instructional conditions.

Randomization was by classroom. In the first condition, they were taught the course that basically they would have learned had there been no intervention. The emphasis in the course was on memory. In a second condition, students were taught in a way that emphasized critical (analytical) thinking. In the third condition, they were taught in a way that emphasized analytical, creative, and practical thinking. All students' performance was assessed for memory learning (through multiple-choice assessments) as well as for analytical, creative, and practical learning (through performance assessments).

As expected, students in the successful-intelligence (analytical, creative, practical) condition outperformed the other students in terms of the performance assessments. For the third-graders, respective means for the triarchic (successful intelligence), critical-thinking, and memory conditions were 6.31, 5.90, and 4.89 for analytical performance

measures; 6.71, 5.94, and 4.58 for creative performance measures; 5.96, 6.39, and 5.31 for practical performance measures; and 11.28, 10.54, and 10.73 for the multiple-choice memory measures. For the eighth-graders, the respective triarchic (successful intelligence), critical-thinking, and memory-condition means were 6.23, 6.42, and 6.11 for analytical performance assessments; 7.32, 5.60, and 6.01 for creative performance measures; 7.14, 6.12, and 6.30 for practical performance measures; and 32.57, 30.06, and 28.03 for the multiple-choice memory measures. One could argue that this pattern of results merely reflected the way students were taught. Nevertheless, the result suggested that teaching for these kinds of thinking succeeded. More important, however, was the result that children in the successful-intelligence condition outperformed the other children even on the multiple-choice memory tests. In other words, to the extent that one's goal is just to maximize children's memory for information, teaching for successful intelligence is still superior. It enables children to capitalize on their strengths and to correct or to compensate for their weaknesses, and it allows children to encode material in a variety of interesting ways.

We have now extended these results to reading curricula at the middle-school and the high-school level. In a study of 871 middle-school students and 432 high school students, we taught reading either triarchically or through the regular curriculum. Classrooms were assigned randomly to treatments. At the middle-school level, reading was taught explicitly. At the high school level, reading was infused into instruction in mathematics, physical sciences, social sciences, English, history, foreign languages, and the arts. In all settings, students who were taught triarchically substantially outperformed students who were taught in standard ways (Grigorenko, Jarvin, & Sternberg, 2002).

Effects were statistically significant at the .001 level for memory-analytical, creative, and practical comparisons.

## **CONCLUSION**

Why should teaching for WICS improve performance? There are at least four reasons. First, teaching for WICS encourages deeper and more elaborated encoding of material than does traditional teaching, so that students learn the material in a way that enhances probability of retrieval at time of test. Second, teaching for WICS encourages more diverse forms of encoding material, so that there are more retrieval paths to the material and hence there is greater likelihood of recall at time of test. Third, teaching for WICS enables students to capitalize on strengths and to correct or compensate for weaknesses. Fourth, teaching for WICS is more motivating to both teachers and students, so that the teachers are likely to teach more effectively and the students are likely to learn more. Ideally, of course, exams should *not* assess only static memory learning.

The theory of WICS can potentially modify the ways in which we think about identifying, teaching, and assessing the gifted and talented. It provides a unified model for all four operations. Analytical, creative, practical, and wisdom-based ability tests can be used in identification, as we have done. Teaching can then be done in ways that stress analytical, creative, practical, and wise thinking. Then achievement can be assessed via these four ways of thinking, in addition to assessments for memory. Through such procedures, a wider range of gifts is revealed, and students are better able to capitalize on the gifts they have.

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Table 1: Selected Prompts for Analytical, Creative, and Practical Teaching

*Analytical*

- (a) analyze
- (b) critique
- (c) judge
- (d) compare and contrast
- (e) evaluate
- (f) assess

*Creative*

- (a) create
- (b) invent
- (c) discover
- (d) imagine if...
- (e) suppose that...
- (f) predict

*Practical*

- (a) apply
- (b) use
- (c) put into practice
- (d) implement
- (e) employ
- (f) render practical