ROBERT J. STERNBERG

Wisdom, Intelligence, and
A New Model for

WICS provides a unified model of liberal education for admissions, instruction, and assessment that can be used at any level and for any subject matter

In 1968, I was a highly motivated college student taking an introductory psychology course. Having done poorly on IQ tests as a child, I wanted to figure out why my scores were so low. Things did not go as I had hoped they would. I received a grade of C in the course, and my professor commented to me that there was a famous Sternberg in psychology—and that it was obvious there would not be another one. I switched my major to math; but after failing the midterm exam in the introductory course for math majors, I decided that, actually, a C looked pretty good, relatively speaking.

A decade and a half later I was chairing the department at Yale in which the professor who gave me that C was still teaching, and three and a half decades later I found myself president of the American Psychological Association, the largest association of psychologists in the world. I commented to the past president, a Stanford professor, that it seemed to me ironic that the president of the organization had received a C in introductory psychology. He gave me a look of astonishment, and commented that he, too, had received a C in introductory psychology.

The kind of experience I had in introductory psychology is by no means limited to that course or even to psychology. Many low-level courses, graduate as well as undergraduate, are taught in such a way that the goal seems to be nothing more than the memorization of facts and concepts. In some schools, especially those with large classes, virtually all testing is done in short-answer or multiple-choice format. What is the problem?

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I tell the story of my introductory psychology experience because it illustrates something that, at some level, we all know. The skills people need to succeed in their careers do not always closely resemble the skills needed to succeed in college courses, especially introductory courses. Life rarely presents multiple-choice or short-answer problems. As the report *How Should Colleges Assess and Improve Student Learning?* (AAC&U 2008) makes clear, this is not merely my own personal opinion: employers overwhelmingly reject multiple-choice tests and other traditional instruments of assessment. Moreover, the competencies such tests measure are not the ones employers value. What, then, are the skills they value? *College Learning for the New Global Century* (AAC&U 2007) identifies a number of such skills, including inquiry and analysis, ethical reasoning and action, and synthesis. In this article, I try to boil down the rather long list of highly valued competencies into a set of key skills needed for school and job success. I argue that these are the principal skills that colleges need to develop in order to produce the active, educated citizenry of the future.

The WICS model

The overall model for liberal education is called WICS, which is an acronym for Wisdom, Intelligence, and Creativity Synthesized. The basic idea is that citizens of the world need creativity to form a vision of where they want to go and to cope with change in the environment, analytical intelligence to ascertain whether their creative ideas are good ones, practical intelligence to implement their ideas and to persuade others of the value of those ideas, and wisdom in order to ensure that the ideas will help achieve some ethically based common good, over the long and short terms, rather than just what is good for them and their families and friends.

The WICS model differs from the traditional model for liberal education, which emphasizes primarily memory and analytical skills.

Creativity Synthesized:
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Traditional methods of teaching as well as tests of conventional ability and achievement tend to emphasize stored knowledge of facts and basic skills. Such knowledge and skills are important. One cannot think creatively to go beyond what is known, for example, if one does not have the knowledge to move forward. Similarly, one cannot apply what one knows if one knows nothing. The problem is that stored knowledge can be inert and essentially unusable. Analytical skills can help one evaluate existing ideas, but they cannot help one come up with ideas of one's own; nor can they help one adjust to a world that is changing rapidly and that leaves behind people who cannot flexibly adapt to its shifting demands.

The risk of the traditional system is that it creates self-fulfilling prophecies, whereby those who do not test well are not given full opportunities in college to succeed. WICS is a framework that can help us get beyond self-fulfilling prophecies in admissions, instruction, and assessment.

Admissions through WICS

Is it possible that many students who are not now being identified as having impressive credentials for college or graduate work might, in fact, be so identified if they were assessed in a way that looked at creative and practical, as well as analytical, forms of skills? While at Yale, I led the Rainbow Project, a research study that sought to answer this question (Sternberg and the Rainbow Project Collaborators 2006). A wide variety of studies have shown the utility of the SAT as a predictor of college success, especially as measured by grade point average. The Rainbow measures were designed to supplement the SAT Reasoning Test, which now measures reading, mathematical, and writing skills. (At the time of the study, the writing component had not yet been added to the SAT.)

The Rainbow Project collected data at fifteen schools across the United States, including eight four-year colleges, five community colleges, and two high schools. The 1,013 student participants were, predominantly, in either their first year of college or their final year of high school. Here, I discuss the analyses for the college students alone, because they are the only participants for whom we had available college performance data. The total number of participants included in these analyses was 793.

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Baseline measures of standardized test scores and high school grade point averages were collected both to evaluate the predictive validity of current tools used for college admission criteria and to provide a contrast for our current measures. All Rainbow assessments were administered either in paper-and-pencil format or via the World Wide Web. The measures of analytical skills were provided by the SAT plus analytical items of our own invention. One, for example, required students to figure out the meanings of neologisms from natural contexts—a novel word is embedded in a paragraph, and its meaning must be inferred from the context. Other measures required students to complete series of numbers and figural matrices.

We assessed creative skills by using both multiple-choice and open-ended measures. In one open-ended task, students chose two from a list of unusual titles—"The Octopus's Sneakers," for example—and wrote a short story to fit each. In another, they chose picture collages and orally told two stories based on them. And in a third, they captioned cartoons chosen from among several provided as options.

We assessed practical skills by using both multiple-choice items and performance-based measures called "situational-judgment inventories." In one of the latter, the students were

asked to respond to movies depicting situations that commonly confront college students—asking for a letter of recommendation from a professor who shows through nonverbal cues that he does not recognize the student, for example, or figuring out what to do after eating a meal and not having the money to pay for it. A "commonsense questionnaire" presented everyday business problems, such as being assigned to work with a coworker whom one cannot stand, and a college-life questionnaire presented everyday college situations for which a solution was required.

The new assessments provided very substantial reliability gains over traditional measures. As predictors of freshman-year academic success, the Rainbow assessments were twice as reliable as SAT scores alone. They were 50 percent more reliable than SAT scores combined with high school grade point averages.

In addition to predicting success in college, an important goal of the study was to develop measures that reduce racial and ethnic group differences in mean levels. We found that our assessments did reduce racial and ethnic differences relative to traditional assessments like the SAT. Although the group differences were not eliminated entirely, our findings suggest that measures can be designed that reduce racial and ethnic group differences on standardized tests, particularly for such historically disadvantaged groups as black and Latino students. These findings may also have implications for reducing adverse impact in college admissions.

In 2005, I moved from Yale University, where I was the IBM Professor of Psychology and Education and the lead collaborator in the Rainbow Project, to Tufts University, where I became dean of the School of Arts and Sciences. Since Tufts strongly emphasizes the role of active citizenship in education, it seemed to offer an ideal setting within which to put into practice some of the ideas from the Rainbow Project. Accordingly, Lee Coffin, the dean of undergraduate admissions, and I instituted the Kaleidoscope Project, which represents an implementation of the Rainbow ideas, but also goes beyond them to include in its assessment the construct of wisdom. Other collaborators—

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Christina Bonney, Liane Gabora, Linda Jarvin, and Tzur Karelitz—have since joined the project.

Whereas in the Rainbow Project we used separate high-stakes tests to collect student data, in the Kaleidoscope Project we used the college application. It just was not practical to administer a separate high-stakes test, such as the Rainbow assessment, for admission to a single university. So instead, to the application that is prepared by the more than fifteen thousand students who seek admission each year to the schools of arts, sciences, and engineering at Tufts, we added optional questions designed to assess WICS. A creative question asked students to write stories with titles such as "The End of MTV" or "Confessions of a Middle-School Bully." Another asked students what the world would be like if some historical event had come out differently—if Rosa Parks had given up her seat on the bus, for example. Yet another creative question, a nonverbal one, gave students an opportunity to design a new product or an advertisement for a new product. A practical question queried how students had persuaded friends to accept an unpopular idea, and a wisdom question asked how one of their passions could be applied toward a common good. The advantage of the Kaleidoscope approach is that it has gotten us away from the high-stakes testing situation in which students must answer complex questions in very short amounts of time under incredible pressure.

We found that Kaleidoscope scores correlated only minimally (0.1 or less) with the SAT, and the kinds of racial and ethnic differences encountered on both the SAT and the Rainbow assessments disappeared. This means that the Kaleidoscope scores predicted less than 1 percent of the variance in SAT scores. Students who scored at high levels on the Kaleidoscope assessment have shown increased participation in extracurricular activities during their first year of college, relative to those who did not score as high. Academically, these high-scoring students performed at levels comparable to students who excelled in ways other than through Kaleidoscope, such as in student government, musical, athletic, or other forms

of high school participation. Thus, the assessment provided a way of predicting leadership involvement, independently of racial or ethnic group, and without any sacrifice in academic skills. Such projects can be done at the graduate level as well. My colleagues and I designed an admissions test for a large and highly rated business school in the Midwest. We showed that we could increase prediction accuracy and decrease both sex and ethnic group differences in admissions (Hedlund et al. 2006).

How does one assess answers to questions that seem so subjective? The assessment is done using well-developed rubrics. For example, we assess analytical responses based on the extent to which they are (a) analytically sound, (b) balanced, (c) logical, and (d) organized. We assess creative responses on the basis of how (a) original and (b) compelling they are, as well as on the basis of their (c) appropriateness to the task with which the students were presented. We assess practical responses on the basis of how feasible they are with respect to (a) time, (b) place, (c) human and (d) material resources, and (e) how persuasive they are. We assess wisdom-based responses on the extent to which they (a) promote a common good by (b) balancing one's own interests with the interests of others as well as with larger interests, (c) over the long and short terms, through (d) the infusion of positive (prosocial) ethical values.

Teaching and assessing for WICS

Can we teach for WICS—the kinds of skills and attitudes that really matter in life and in jobs? Yes, there are many techniques that can be used to teach for WICS in any subject-matter area and at any level. Our belief that we could have success in this realm dates back to a study in which my collaborators and I tested over three hundred high school students across the United States (Sternberg et al. 1999). The test was designed to select students, based on their analytical, creative, and practical abilities, for placement in sections of a college-level summer psychology course. When we divided the students into groups, we noticed something unexpected. Students in the high-analytical group—that is, those who excelled

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in the abilities measured by conventional tests—were mostly white and middle class. Many had previously been identified for other programs as gifted. Students in the high-creative and high-practical groups were ethnically diverse, and many had never before been identified as gifted.

The question, of course, was whether those identified as strong in creative or practical abilities actually performed at high levels academically. The answer was clear: when students were taught, at least some of the time, in a way that matched their patterns of abilities, they excelled. In other words, the creatively and practically oriented students did excel academically, so long as the way they were taught matched, at least some of the time, the way they learned. Good teachers use a variety of teaching methods to accommodate the diverse learning styles of their students; any student taught in a way that is responsive to his or her pattern of abilities can excel. After concluding this study, my colleagues and I went on to show that teaching to diverse styles of learning does indeed improve achievement relative to teaching that emphasizes just traditional memory-analytical patterns of learning and thinking (Grigorenko, Jarvin, and Sternberg 2002; Sternberg, Grigorenko, and Zhang 2008; Sternberg, Torff, and Grigorenko 1998).

I currently teach for WICS in a course on leadership in the Department of Psychology at Tufts University. The course is open to undergraduates at all levels and in all fields of specialization, and it has no prerequisites. The course involves a textbook on leadership theories and research, as well as a book of case studies of leadership and two books by leadership theorists on their own views on leadership. Consider as well four additional features of the course.

First, in every class except the first and the last, a leader comes and speaks to the students for about fifteen minutes on his or her leadership experiences. The leaders come from all domains of life, including politics, finance, management, the arts, sports, and religion. Then for an additional forty-five minutes, the class asks questions of, and has a discussion with, the leader. Students' interactions with the leaders give them a chance to develop as well as to challenge their own beliefs about leadership.

Second, every class except the last involves an active leadership exercise. For example, in the first class, a shill joins the students and pretends to be one of them. After I go through the syllabus, the shill challenges it and complains that it is inadequate in a variety of ways. Students are amazed at the shill's audacity. When he finishes with his complaints, I thank him, and then note to the class that every leader, sooner or later, confronts public challenges to his or her authority. The question is not whether it will or will not happen—it will—but rather how the leader handles such challenges. Students divide themselves into three groups and then simulate how they would handle public challenges. In another class, students have to "hire a dean." They divide themselves into three groups. One simulates the formation of a vision statement, the second simulates a job interview, and the third simulates a persuasion interview to entice the selected candidate to come. In another class, students simulate how they would deal with an incompetent team member. And in another, each of three groups formulates a proposal to improve the university and then has to persuade the class, acting as funders, to fund their project.

Third, students are required to complete both individual and group projects. For the individual projects, the students apply leadership concepts to their own leadership experiences as well as those of other leaders whom they've interviewed. For the group project, the students use course principles to analyze the leadership of a major known leader (past choices have included Bill Clinton, Bill Gates, and Kenneth Lay).

Fourth, all exams are open-book, open-note. The idea is to convey to students that leaders are leaders by virtue of their ability to apply what they know to leadership activities. For example, the final exam presents the story of a leader, told from the time she first undertook a leadership position to the time she considered leaving it, and the students have to analyze her leadership performance at every step along the way.

Conclusion

WICS provides a unified model of liberal education for admissions, instruction, and assessment that can be used at any level and for any subject matter. One advantage of WICS is that it goes beyond more traditional models that emphasize memory and analytical learning and, as a result, enables all students to capitalize on their strengths and to compensate or correct for their weaknesses. And since it reduces racial, ethnic, and other differences in performance commonly found in traditional assessments, the WICS model provides a basis for tertiary education that represents the realities of the twenty-first century, rather than those of a bygone era. □

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