Redefining College Readiness

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Prepared for the Bill & Melinda Gates Foundation, March 2007
Components in a Comprehensive Definition of College Readiness

College readiness is a multi-faceted concept comprising numerous variables that include factors both internal and external to the school environment. In order to provide a functional representation of the key facets of college readiness, the model presented below organizes the key areas necessary for college readiness into four concentric levels. These four areas of college readiness knowledge and skills emerge from a review of the literature and are those that can be most directly influenced by schools.

In practice, these various facets are not mutually exclusive or perfectly nested as portrayed in the model. They interact with one another extensively. For example, a lack of college knowledge often affects the decisions students make regarding the specific content knowledge they choose to study and master. Or a lack of attention to academic behaviors is one of the most frequent causes of problems for first-year students, whether they possess the necessary content knowledge and key cognitive strategies.

Figure 1: Facets of College Readiness

What the model argues for is a more comprehensive look at what it means to be college-ready, a perspective that emphasizes the interconnectedness of all of the facets contained in the model. This is the key point of this definition, that all facets of college readiness must be identified and eventually measured if more students are to be made college-ready.

Key Cognitive Strategies

The success of a well-prepared college student is built upon a foundation of key key cognitive strategies that enable students to learn content from a range of disciplines. Unfortunately, the development of key key cognitive strategies in high school is often overshadowed by an instructional focus on de-contextualized content and facts necessary to pass exit examinations or simply to keep students busy and classrooms quiet.

For the most part, state high-stakes standardized tests require students to recall or recognize fragmented and isolated bits of information. Those that do contain performance tasks are severely limited in the time the tasks can take and their breadth or depth. The tests rarely require students to apply their learning and almost never require students to exhibit proficiency in higher forms of cognition (Marzano, Pickering, & McTighe, 1993).

Several studies of college faculty members nationwide, regardless of the selectivity of the university, expressed near-universal agreement that most students arrive unprepared for the intellectual demands and expectations of postsecondary (Conley, 2003a). For example, one study found that faculty reported that the primary areas in which first-year students needed further development were critical thinking and problem solving (Lundell, Higbee, Hipp, & Copeland, 2004).
The term “key cognitive strategies” was selected for this model to describe the intelligent behaviors necessary for college readiness and to emphasize that these behaviors need to be developed over a period of time such that they become ways of thinking, habits in how intellectual activities are pursued. In other words, key cognitive strategies are patterns of intellectual behavior that lead to the development of cognitive strategies and capabilities necessary for college-level work. The term key cognitive strategies invokes a more disciplined approach to thinking than terms such as “dispositions” or “thinking skills.” The term indicates intentional and practiced behaviors that become a habitual way of working toward more thoughtful and intelligent action (Costa & Kallick, 2000).

“Understanding and mastering key content knowledge is achieved through the exercise of broader cognitive skills embodied within the key cognitive strategies.”

The specific key cognitive strategies referenced in this paper are those shown to be closely related to college success. They include the following as the most important manifestations of this way of thinking:

*Intellectual openness:* The student possesses curiosity and a thirst for deeper understanding, questions the views of others when those views are not logically supported, accepts constructive criticism, and changes personal views if warranted by the evidence. Such openmindedness helps students understand the ways in which knowledge is constructed, broadens personal perspectives and helps students deal with the novelty and ambiguity often encountered in the study of new subjects and new materials.

*Inquisitiveness:* The student engages in active inquiry and dialogue about subject matter and research questions and seeks evidence to defend arguments, explanations, or lines of reasoning. The student does not simply accept as given any assertion that is presented or conclusion that is reached, but asks why things are so.

*Analysis:* The student identifies and evaluates data, material, and sources for quality of content, validity, credibility, and relevance. The student compares and contrasts sources and findings and generates summaries and explanations of source materials.

*Reasoning, argumentation, proof:* The student constructs well-reasoned arguments or proofs to explain phenomena or issues; utilizes recognized forms of reasoning to construct an argument and defend a point of view or conclusion; accepts critiques of or challenges to assertions; and addresses critiques and challenges by providing a logical explanation or refutation, or by acknowledging the accuracy of the critique or challenge.

*Interpretation:* The student analyzes competing and conflicting descriptions of an event or issue to determine the strengths and flaws in each description and any commonalities among or distinctions between them; synthesizes the results of an analysis of competing or conflicting descriptions of an event or issue or phenomenon into a coherent explanation; states the interpretation that is most likely correct or is most reasonable, based on the available evidence; and presents orally or in writing an extended description, summary, and evaluation of varied perspectives and conflicting points of view on a topic or issue.

*Precision and accuracy:* The student knows what type of precision is appropriate to the task and the subject area, is able to increase precision and accuracy through successive approximations generated from a task or process that is repeated,
and uses precision appropriately to reach correct conclusions in the context of the task or subject area at hand.

Problem solving: The student develops and applies multiple strategies to solve routine problems, generate strategies to solve non-routine problems, and applies methods of problem solving to complex problems requiring method-based problem solving. These key cognitive strategies are broadly representative of the foundational elements that underlie various “ways of knowing.”

These are at the heart of the intellectual endeavor of the university. They are necessary to discern truth and meaning as well as to pursue them. They are at the heart of how postsecondary faculty members think, and how they think about their subject areas. Without the capability to think in these ways, the entering college student either struggles mightily until these habits begin to develop or misses out on the largest portion of what college has to offer, which is how to think about the world.

Academic Knowledge and Skills

Successful academic preparation for college is grounded in two important dimensions—key cognitive strategies and content knowledge. Understanding and mastering key content knowledge is achieved through the exercise of broader cognitive skills embodied within the key cognitive strategies. With this relationship in mind, it is entirely proper and worthwhile to consider some of the general areas in which students need strong grounding in content that is foundational to the understanding of academic disciplines. The case for the importance of challenging content as the framework for developing thinking skills and key cognitive strategies has been made elsewhere and will not be repeated in depth here (Bransford, Brown, & Cocking, 2000).

In order to illustrate the academic knowledge and skills necessary for college success, a brief discussion of the key structures, concepts, and knowledge of core academic subjects is presented below. This presentation is not a substitute for a comprehensive listing of essential academic knowledge and skills.

A more complete exposition is contained in Understanding University Success, produced by Standards for Success through a three-year study in which more than 400 faculty and staff members from 20 research universities participated in extensive meetings and reviews to identify what students must do to succeed in entry-level courses at their institutions (Conley, 2003a). These findings have been confirmed in subsequent studies.

This overview begins with two academic skill areas that have repeatedly been identified as being centrally important to college success: writing and research. This is followed by brief narrative descriptions of content from a number of core academic areas.

Overarching Academic Skills

Writing: Writing is the means by which students are evaluated at least to some degree in nearly every postsecondary course. Expository, descriptive, and persuasive writing are particularly important types of writing in college. Students are expected to write a lot in college and to do so in relatively short periods of time. Students need to know how to pre-write, how to edit, and how to re-write a piece before it is submitted and, often, after it has been submitted once and feedback has been provided. College writing requires students to present arguments clearly, substantiate each point, and utilize the basics of a style manual when constructing a paper. College-level writing is largely free of grammatical, spelling, and usage errors.

Research: College courses increasingly require students to be able to identify and utilize appropriate strategies and methodologies to explore and answer problems and to conduct research on a range of questions. To do so, students must be able to evaluate the appropriateness of a variety of source material and then synthesize and incorporate the material into a paper or report. They must also be able to access a variety of types of information from a range of locations, formats, and source environments.
Core Academic Subjects Knowledge and Skills

*English*: The knowledge and skills developed in entry-level English courses enable students to engage texts critically and create well-written, organized, and supported work products in both oral and written formats. The foundations of English include reading comprehension and literature, writing and editing, information gathering, and analysis, critiques and connections. To be ready to succeed in such courses, students need to build vocabulary and word analysis skills, including roots and derivations. These are the building blocks of advanced literacy. Similarly, students need to utilize techniques such as strategic reading that will help them read and understand a wide range of non-fiction and technical texts. Knowing how to slow down to understand key points, when to re-read a passage, and how to underline key terms and concepts strategically so that only the most important points are highlighted are examples of strategies that aid comprehension and retention of key content.

*Math*: Most important for success in college math is a thorough understanding of the basic concepts, principles, and techniques of algebra. This is different than simply having been exposed to these ideas. Much of the subsequent mathematics they will encounter draw upon or utilize these principles. In addition, having learned these elements of mathematical thinking at a deep level, they understand what it means to understand mathematical concepts deeply and are more likely to do so in subsequent areas of mathematical study. College-ready students possess more than a formulaic understanding of mathematics. They have the ability to apply conceptual understandings in order to extract a problem from a context, use mathematics to solve the problem, and then interpret the solution back into the context. They know when and how to estimate to determine the reasonableness of answers and can use a calculator appropriately as a tool, not a crutch.

*Science*: College science courses emphasize scientific thinking in all their facets. In addition to utilizing all the steps in the scientific method, students learn what it means to think like a scientist. This includes the communication conventions followed by scientists, the way that empirical evidence is used to draw conclusions, and how such conclusions are then subject to challenge and interpretation. Students come to appreciate that scientific knowledge is both constant and changing at any given moment, and that the evolution of scientific knowledge does not mean that previous knowledge was necessarily “wrong.” Students grasp that scientists think in terms of models and systems as ways to comprehend complex phenomena. This helps them make sense out of the flow of ideas and concepts they encounter in entry-level college courses and the overall structure of the scientific discipline they are studying. In their science courses, students master core concepts, principles, laws, and vocabulary of the scientific discipline being studied. Laboratory settings are the environments where content knowledge and scientific key cognitive strategies converge to help students think scientifically and integrate learned content knowledge.

*Social Studies*: The social sciences entail a range of subject areas, each with its own content base and analytic techniques and conventions. The courses an entry-level college student most typically takes are in geography, political science, economics, psychology, sociology, history, and the humanities. The scientific methods that are common across the social studies emphasize the skills of interpreting sources, evaluating evidence and competing claims, and understanding themes and the overall flow of events within larger frameworks or organizing structures. Helping students to be aware that the social sciences consist of certain “big ideas” (theories and concepts) that are used to order and structure all of the detail that often overwhelms them can help build mental scaffolds that lead toward thinking like a social scientist.

*World Languages*: The goal of second language study is to communicate effectively with and receive communication from speakers of another language in authentic cultural
contexts through the skills of listening, speaking, reading, and writing. Learning another language involves much more than memorizing a system of grammatical rules. It requires the learner to understand the cultures from which the language arises and in which it resides, use the language to communicate accurately, and use the learner’s first language and culture as a model for comparison with the language and culture being learned. Second language proficiency can improve learning in other disciplines, such as English, history and art, and expand professional, personal, and social opportunities. Language learners need to understand the structure and conventions of a language, but not through word-for-word translation or memorization of de-contextualized grammatical rules. Instead, students of a language need to master meaning in more holistic ways and in context.

The Arts: The arts refer to college subject areas including art history, dance, music, theater, and visual arts. Students ready for college-level work in the arts possess an understanding of and appreciation for the contributions made by the most innovative creators in the field. Students come to understand themselves as instruments of communication and expression who demonstrate mastery of basic oral and physical expression through sound, movement, and visual representations. They understand the role of the arts as an instrument of social and political expression. They formulate and present difficult questions through their personal artistic visions. They are able to justify their aesthetic decisions when creating or performing a piece of work and know how to make decisions regarding the proper venue for performing or exhibiting any creative product.

Academic Behaviors

This facet of college readiness encompasses a range of behaviors that reflect greater student self-awareness, self-monitoring, and self-control of a series of processes and behaviors necessary for academic success. These are distinguished from key cognitive strategies by the fact that they tend to be more completely independent of a particular content area, whereas the key cognitive strategies are always developed within the ways of knowing a particular content area. The key academic behaviors consist largely of self-monitoring skills and study skills.

Self-monitoring is a form of metacognition, the ability to think about how one is thinking. Examples of metacognitive skills include: awareness of one’s current level of mastery and understanding of a subject, including key misunderstandings and blind spots; the ability to reflect on what worked and what needed improvement in any particular academic task; the tendency to persist when presented with a novel, difficult, or ambiguous task; the tendency to identify and systematically select among and employ a range of learning strategies; and the capability to transfer learning and strategies from familiar settings and situations to new ones (Bransford et al., 2000). Research on the thinking of effective learners has shown that these individuals tend to monitor actively, regulate, evaluate, and direct their own thinking (Ritchhart, 2002).

Key academic behaviors consist largely of self-monitoring and study skills.

Another important area of college readiness is student mastery of the study skills necessary for college success. The underlying premise is simple: academic success requires the mastery of key skills necessary to comprehend material and complete academic tasks successfully, and the nature of college learning in particular requires that significant amounts of time be devoted to learning outside of class for success.
to be achieved in class. Study skills encompass a range of active learning strategies that go far beyond reading the text and answering the homework questions. Typical study-skill behaviors include time management, preparing for and taking examinations, using information resources, taking class notes, and communicating with teachers and advisors (Robbins, Lauver, Le, Davis, Langley, & Carlstrom, 2004). An additional critical set of study skills is the ability to participate successfully in a study group and recognize the critical importance of study groups to success in specific subjects. Examples of specific time management techniques and habits include: accurately estimating how much time it takes to complete all outstanding and anticipated tasks and allocating sufficient time to complete the tasks; using calendars and creating "to do" lists to organize studying into productive chunks of time; locating and utilizing settings conducive to proper study; and prioritizing study time in relation to competing demands such as work and socializing.

Contextual Skills and Awareness

The importance of this broad category has only recently been highlighted as an ever-wider range of students apply to college. Contextual factors encompass primarily the privileged information necessary to understand how college operates as a system and culture. It is this lack of understanding of the context of college that causes many students to become alienated, frustrated, and even humiliated during the freshman year and decide that college is not the place for them. Examples of key context skills and awareness include a systemic understanding of the postsecondary educational system combined with specific knowledge of the norms, values, and conventions of interactions in the college context, and the human relations skills necessary to cope within this system even if it is very different from the community the student has just left.

This does not necessarily mean that students need to disown their cultural backgrounds, heritage, and traditions, only that they need to understand the relationship between their cultural assumptions and those operating in college. Success in college is enhanced for students who possess interpersonal and social skills that enable them to interact with a diverse cross-section of academicians and peers. These skills include the ability to collaborate and work in a team; understand the norms of the "academic" culture and how one interacts with professors and others in that environment; interact with people from different backgrounds and cultures; communicate informally; and demonstrate leadership skills in a variety of settings.

Another important area of contextual awareness is known as "college knowledge." This is information, formal and informal, stated and unstated, necessary for both gaining admission to and navigating within the postsecondary system. College knowledge includes an understanding of the following processes: college admissions including curricular, testing, and application requirements; college options and choices, including the tiered nature of postsecondary education; tuition costs and the financial aid system; placement requirements, testing, and standards; the culture of college; and the challenge level of college courses, including increasing expectations of higher education (Lundell et al., 2004).

Admissions requirements, and timelines in particular, are extremely complicated, and students often do not know or understand the importance of either until it is too late. Specific institutions have additional special requirements and exceptions that are not immediately evident. Financial aid options are largely unknown or substantially misunderstood by many students most in need of such support. The economically well-off are more likely to have this knowledge than working-class families or families whose children are the first generation to attend college (Conley, 2005; Robbins et al., 2004; Venezia et al., 2004).

The next section provides an operational definition of college readiness that the conceptual model helps to delineate. The section seeks to include specific statements across all of the dimensions of college readiness. These statements are presented in a form that allows them to be measured or gauged. The net result would be a profile of college readiness that would help students know the degree to which they were college-ready, and could eventually help high schools in particular to know how well their programs of study are preparing students to be ready for college success.