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Students vary in the degree to which high school and family life prepare them for college, and that preparation has a dramatic impact on their transition to college and subsequent success there.

Rethinking College Readiness

David T. Conley

The likelihood that students will make a successful transition to the college environment is often a function of their readiness—the degree to which previous educational and personal experiences have equipped them for the expectations and demands they will encounter in college. A key problem is that the current measures of college preparation are limited in their ability to communicate to students and educators the true range of what students must do to be fully ready to succeed in college. This chapter presents a broader, more comprehensive conception of college readiness built on four facets: key cognitive strategies, key content knowledge, academic behaviors, and contextual skills and knowledge.

Recent research has shed light on the key elements of college success. At the heart of college readiness is development of the cognitive and metacognitive capabilities of incoming students: analysis, interpretation, precision and accuracy, problem solving, and reasoning. Student facility with these strategies has been consistently and emphatically identified by those who teach entry-level college courses as being centrally important to college success (Conley, 2003b, 2005; Conley and Bowers, 2008; National Research Council, 2002).

Close behind in importance is an understanding of specific types of content knowledge. Several studies have led to college readiness standards that specify key content knowledge associated with college success (Achieve, the Education Trust, and Thomas B. Fordham Foundation, 2004; ACT, 2004; College Board, 2006; Conley, 2003a, 2003b; Texas Higher

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Education Coordinating Board, 2008). Writing may be the single overarching academic skill most closely associated with college success, but the major theories and concepts related to each content area are important foundational elements in their own right.

Also contributing to student success is a set of academic self-management behaviors. Among these are time management, strategic study skills, awareness of one's true performance, persistence, and the ability to use study groups. All require students to demonstrate high degrees of self-awareness, self-control, and intentionality.

Finally, an increasing number of studies have highlighted the complexity of the contextual knowledge associated with application and acculturation to college (Conley, 2005; Lundell, Higbee, Hipp, and Copeland, 2004; Venezia, Kirst, and Antonio, 2004). The application process includes a great deal of technical information, such as how to apply to college, the differences among colleges and how to choose the right college, and the intricacies of the financial aid system. The first-year college experience itself has a strong cultural component. Some students will be far more comfortable than others in this new cultural milieu, but all will experience some degree of culture shock. This contextual awareness, or "college knowledge," is necessary for students to know how to interact with professors and peers and how to participate successfully as a member of an intellectual community.

General Elements of a More Comprehensive Definition of College Readiness

College readiness can be defined as the level of preparation a student needs in order to enroll and succeed, without remediation, in a credit-bearing general education course at a postsecondary institution that offers a baccalaureate degree or transfer to a baccalaureate program. *Succeed* is defined as completing entry-level courses at a level of understanding and proficiency that makes it possible for the student to consider taking the next course in the sequence or the next level of course in the subject area.

The college-ready student envisioned by this definition is able to understand what is expected in a college course, can cope with the content knowledge that is presented, and can develop the key intellectual lessons and dispositions the course is designed to convey. In addition, the student who is ready for college will be able to understand the culture and structure of postsecondary education and the ways of knowing and intellectual norms of this academic and social environment.

How College Is Different from High School

Although the numbers of nontraditional first-year students continue to increase, the vast majority of students in their first year of college are recent

high school graduates (National Center for Education Statistics, 2008) and are influenced, for better or worse, by their high school experiences. College is different from high school in many important ways—some obvious, some not so obvious. College is the first place where we expect young people to be adults, not large children. The pupil-teacher relationship changes dramatically, as do expectations for engagement, independent work, motivation, and intellectual development. All of this occurs when, for the first time, many young people are experiencing significant independence from family and from the role of child. It is no wonder that the transition from high school to college is one of the most difficult that many people experience during their lifetime.

Because college is truly different from high school, college readiness is fundamentally different from high school completion. Detailed analyses of college courses reveal that although a college course may have the same name as a high school course, college instructors pace their courses more rapidly, emphasize different aspects of the material taught, and have very different goals for their courses than do high school instructors (Conley, Aspengren, Stout, and Veach, 2006). The college instructor is more likely to expect students to make inferences, interpret results, analyze conflicting explanations of phenomena, support arguments with evidence, solve complex problems that have no obvious answer, reach conclusions, offer explanations, conduct research, engage in the give-and-take of ideas, and generally think deeply about what they are being taught (National Research Council, 2002).

Research findings describe college courses that require students to read eight to ten books in the same time that a high school class requires only one or two (Standards for Success, 2003). In college classes, students write multiple papers in rapid succession (National Survey of Student Engagement, 2003, 2004, 2006). These papers should be well reasoned, well organized, and well supported with evidence from credible sources. By contrast, high school students may write one or two research papers at most throughout all of high school and may take weeks or months to do so. Increasingly, college courses in all subject areas require research capabilities, the ability to read and comprehend a wide array of document types, and well-developed writing skills.

Contrary to popular misconception, most first-year college students work in groups inside and outside class on complex problems and projects and make class presentations. They are not simply lectured to. At the same time, they are expected to be independent, self-reliant learners who recognize when they are having problems and know when and how to seek help from professors, students, or other sources. College faculty also report that first-year students need to be spending nearly twice the time they indicate they spend currently to prepare for class (National Survey of Student Engagement, 2006).

Finally, the relationship between teacher and student can be much different than it was in high school. An oft-cited example by college faculty is the first-term first-year student who is failing a course and sends an e-mail near the end of the term without ever having communicated with the professor previously requesting "extra credit" in order to be able to pass. Students complain bitterly when no special arrangements are forthcoming.

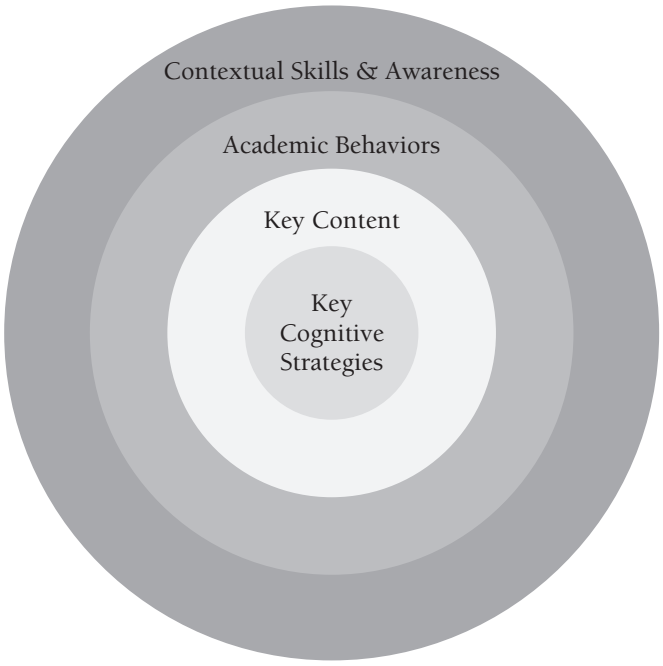
In short, the differences in expectations between high school and college are manifold and significant. To be successful in college, students must be prepared to use an array of learning strategies and coping skills that are quite different from those they developed and honed in high school.

Components in a Comprehensive Definition of College Readiness

College readiness is a multifaceted concept comprising numerous factors internal and external to the classroom environment. The model presented in Figure 1.1 derives from my research and organizes the key areas necessary for college readiness into four concentric levels.

In practice, these various facets are neither mutually exclusive nor 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 content knowledge they choose to study and master. Or a lack of attention to time management and study skills is one of the most frequent causes of problems for first-year students, even if they possess sufficient content knowledge.

Figure 1.1. Facets of College Readiness



The model, explained in greater detail below, argues for a more comprehensive look at what it means to be college ready and more attention to preparation that addresses all four facets.

Key Cognitive Strategies

Several studies of college faculty members nationwide, regardless of the selectivity of the university, expressed near-universal agreement that students arrive largely unprepared for the intellectual demands and expectations of postsecondary education (Conley, 2003b). They have difficulty formulating and solving problems, evaluating and incorporating reference material appropriately, developing a logical and coherent argument or explanation, interpreting data or conflicting points of view, and completing their assignments and projects with precision and accuracy (Conley, McGaughy, and Gray, 2008).

The success of a well-prepared college student is built on a foundation of key cognitive strategies that enable students to learn content from a range of disciplines:

- *Problem formulation and problem solving.* The student develops and applies multiple strategies to formulate and solve routine and nonroutine problems and selects the appropriate method for solving complex problems.
- *Research.* 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 documents assertions and builds an argument that extends from previous findings or arguments. The student uses appropriate references to support an assertion or a line of reasoning. 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, and proof.* The student constructs well-reasoned arguments or proofs to explain phenomena or issues, uses recognized forms of reasoning to construct an argument and defend a point of view or conclusion, accepts critiques of or challenge 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. The student synthesizes the results of an analysis of competing or conflicting descriptions of an event, issue, or phenomenon into a coherent explanation. The student states the interpretation that is most likely correct or is most reasonable based on the available evidence. The student 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 when a task or process is repeated, and uses precision appropriately to reach correct conclusions in the context of the task or subject.

These key cognitive strategies are broadly representative of the foundational elements that underlie various ways of knowing. They are at the heart of the intellectual endeavor of the university and necessary to discern truth and meaning, as well as to pursue them. They are also at the heart of how postsecondary faculty members think about their subject areas.

Academic Knowledge and Skills

Following are some of the key structures, concepts, and knowledge associated with core academic subjects. A more comprehensive exposition is presented in *College Knowledge* (Conley, 2005).

English. The knowledge and skills developed in entry-level English courses enable students to engage texts critically and create well-written, well-organized, and well-supported products, both oral and written. The foundations of English include reading comprehension, literature, writing, editing, information gathering, analysis, critiques, and connections. To be ready to succeed in such courses, students need to build vocabulary and word analysis skills. Similarly, they need to use techniques such as strategic reading that will help them understand a wide range of nonfiction and technical texts. Knowing how to slow down to understand key points, when to reread a passage, and how to underline key terms and concepts strategically so that only the most important points are highlighted aids comprehension and retention of key content.

Math. Students with a thorough understanding of the basic concepts, principles, and techniques of algebra are more likely to succeed in an entry-level college mathematics course. 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, solve the problem, and 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 its facets. In addition to using all the steps in the scientific method, students learn what it means to think like a scientist. This includes the communication conventions that scientists follow, 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. They master core concepts, principles, laws, and vocabulary of the scientific discipline being studied. Laboratory settings are the environments where content knowledge and scientific thinking strategies converge to help students comprehend content knowledge fully.

Social Studies. The social sciences entail a range of subject areas, each with its own content base, analytical techniques, and conventions. The analytical methods that are common across the social studies emphasize the skills of interpreting sources, evaluating evidence and competing claims, and understanding themes and events within larger frameworks. Helping students be aware that the social sciences consist of theories and concepts that are used to order and structure all of the overwhelming detail can help them 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. 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 second language. Language learners need to understand the structure and conventions of a language, and not solely or primarily through word-for-word translation or memorization of decontextualized grammatical rules. Instead, students of a language need to master meaning in more holistic and contextual ways.

Arts. The arts encompass art history, dance, music, theater, and the visual arts. Students ready for college-level work in these subjects possess an understanding of and appreciation for the contributions made by the most innovative creators in the field. Students think of 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 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 behaviors that reflect greater student self-awareness, self-monitoring, and self-control of processes and actions necessary for academic success. These tend to transcend content areas.

Self-management is a form of metacognition—the act of thinking about how one is thinking. Research on the thinking of effective learners has shown that such individuals tend to monitor actively, regulate, evaluate, and direct their own thinking (Ritchhart, 2002). Examples of some key

self-management skill areas are awareness of one's current level of mastery and understanding (and misunderstandings) of a subject; the ability to reflect on what worked and what needed improvement regarding a particular academic task; the ability 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, Brown, and Cocking, 2000).

Another important set of academic behaviors is student mastery of study skills necessary for college success. College courses require that significant amounts of time be devoted to out-of-class study. Study skills encompass active learning strategies that go far beyond reading the text and answering the homework questions.

Important study-skill behaviors include time management, stress management, task prioritizing, using information resources, taking class notes, and communicating with teachers and advisers (Robbins and others, 2004). An additional critical skill is the ability to participate successfully in a study group and recognize its potential value.

Time management is perhaps the most foundational of all the self-management and study skills. Examples of time management techniques and habits include accurately estimating how much time it takes to complete 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 using settings conducive to proper study, and prioritizing study time in relation to competing demands such as work and socializing.

Contextual Skills and Awareness

College knowledge, that is, contextual skills and awareness, is the information students need to apply successfully to college, gain necessary financial aid, and then, subsequent to matriculation, understand how college operates as a system and culture.

The first dimension of college knowledge is the information—both formal and informal, stated and unstated—necessary to be eligible for admission, select an appropriate postsecondary institution, gain admission to a college, and obtain financial aid. Students with college knowledge understand college admission criteria including high school course requirements, know how to complete an application, understand that different colleges have different missions, can state approximate tuition costs and the likelihood of financial aid from various types of colleges, and know admissions-testing requirements and deadlines (Conley, 2005; Robbins and others, 2004; Venezia, Kirst, and Antonio, 2004).

College knowledge is distributed inequitably in society, and the lack of it frustrates and discourages many students who are the first in their families

to attend college. They may miss one of the myriad deadlines or overlook potential financial aid. Some of them simply do not apply at all. Many first-generation students who do attend struggle to become successful participants in the campus community; become alienated, frustrated, and even humiliated during the first year; and leave college precipitously.

Success in college is enhanced for students who possess the knowledge and skills that enable them to interact with a diverse cross-section of academicians and peers. These include the ability to collaborate and work on a team; knowledge of the norms of the academic culture and how to interact with professors, administrators, and others in that environment; the ability to be comfortable around people from different backgrounds and cultures; the ability to take advantage of academic and personal support resources available on most campuses; and the ability to demonstrate leadership skills in a variety of settings.

Conclusion

Clearly, far fewer students are truly ready for college when measured against this multidimensional model than when judged by the conventional standard of courses taken and grades received in high school. The goal of presenting a more comprehensive model of college readiness is not to deny students entrance to college but to highlight the gaps that exist between those who are college eligible and those who are college ready.

Colleges can take steps to ensure that more students are college ready. First, they should adopt a set of college readiness standards that affirm the importance of the key cognitive strategies and content knowledge incoming students need to know. At the very least, students should have an honest idea if they are adequately prepared for entry-level college courses. Parents should also know this. Ideally colleges will work with feeder high schools to create scoring guides, assignments, and even courses that help students diagnose their level of preparation for college in the key areas identified in this chapter. Every entry-level general education course can easily specify the key cognitive strategies and content knowledge that will be developed in the course and where students can go for help if they are concerned about their capabilities in a particular area.

Second, although an ideal K-16 educational system would eliminate the need for remedial (developmental) education, when such programs are necessary, they should be clearly focused on enabling students to grasp the key cognitive strategies, key content knowledge, and self-management skills necessary for college success. They should not simply focus on basic skills and ignore important thinking skills, key concepts of the core disciplines, and the structure of these subject areas. Colleges need better diagnostic information on incoming students in order to tailor remedial programs more closely to individual student needs and prepare them better for what they will encounter in entry-level courses.

Third, colleges that want to retain more first-generation attenders need to simplify the application and financial aid processes and provide better support services for these students. Assigning a personal mentor to each first-generation attender is one strategy to help these students develop college knowledge. The college can organize events at which these students learn to appreciate and enjoy academic culture while they also have an opportunity to express concerns and solve problems. Colleges can also work closely with feeder high schools to introduce collegiate culture and demystify college for high school students.

By adopting the four-part conception of college readiness presented in this chapter, high schools and colleges can use the same language to communicate what it takes for students to be ready for postsecondary education. The advantages and importance of greater agreement on what constitutes college readiness are apparent at a time when an ever-increasing proportion of high school students are choosing to go to college. Making certain that they are not just eligible but prepared will help students achieve their goals and help colleges function more effectively.

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