

Toward a More Comprehensive Conception of College Readiness

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The complete article can be obtained at:

<http://www.aypf.org/documents/RedefiningCollegeReadiness.pdf>

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Introduction: An Operational Definition of College Readiness

College readiness can be defined operationally 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. This conception is calibrated against what our recent research has come to define as “best practices” entry-level courses as opposed to the stereotypical freshman course (Conley, Aspengren, Gallagher, & Nies, 2006a, 2006b; Conley, Aspengren, Stout, & Veach, 2006c). If students are prepared to succeed in best practices courses, they will be able to cope with the full range of college courses they are likely to encounter.

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 take away from the course the key intellectual lessons and dispositions the course was designed to convey and develop. In addition, the student is prepared to get the most out of the college experience by understanding the culture and structure of postsecondary education and the ways of knowing and intellectual norms of this academic and social environment. The student has both the mindset and disposition necessary to enable this to happen.

Toward a More Comprehensive Conception of College Readiness

How College Is Different from High School

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. Almost all of the rules of the game that students have so carefully learned and mastered over the preceding 13 years of schooling are either discarded or modified drastically. The pupil-teacher relationship changes dramatically as do expectations for engagement, independent work, motivation, and intellectual

development. All of this occurs at a time when many young people are experiencing significant independence from family and from the role of child for the first time. No wonder that the transition from high school to college is one of the most difficult that many people experience during a lifetime.

Because college is truly different from high school, college readiness is fundamentally different than high school competence. 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 material taught, and have very different goals for their courses than do high school instructors (Conley et al., 2006c). Students fresh out of high school may think a college course is very much like a similarly named high school class taken previously only to find out that expectations are fundamentally different. The college instructor is more likely to emphasize a series of key thinking skills that students, for the most part, do not develop extensively in high school. They 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 these college classes, students write multiple papers in short periods of time. These papers must be well reasoned, well organized, and well documented with evidence from credible sources (National Survey of Student Engagement, 2003, 2004, 2006). By contrast, high school students may write one or two research papers, at the most, during high school, and may take weeks or months to do so. Increasingly, college courses in all subject areas require well developed writing skills, research capabilities, and what have been commonly described as thinking skills.

According to the National Survey of Student Engagement (2006) the vast majority of first-year college students are actively engaged in small groups and are expected to work with others inside and outside class on complex problems and projects. They are then expected to make presentations and to explain what they have learned. In these courses, students 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.

At the same time, college faculty consistently report that freshman students need to be spending nearly twice the time they indicate spending currently to prepare for class (National Survey of Student Engagement, 2006). These students do not enter college with a work ethic that prepares them for instructor expectations or course requirements. College freshmen who are most successful are those who come prepared to work at the levels faculty members expect. Those who do not are much less likely to progress beyond entry-level courses, as witnessed by the high failure rates in these courses and the significant proportion of college students who drop out during the freshman year.

Finally, the relationship between teacher and student can be much different than in high school. An oft-cited example by college faculty is the first-term freshman who is failing the course, shows up at office hours near the end of the term, and requests “extra credit” in order to be able to pass. College instructors are often mystified by such requests. The students are equally mystified by the instructor reaction, since this strategy has worked very well for the student throughout high school. In other words, the cultural and social expectations about learning and performance that students encounter tend to be vastly different as well.

In short, the differences in expectations between high school and college are manifold and significant. Students must be prepared to use quite a different array of learning strategies and coping skills to be successful in college than those developed and honed in high school. Current measures of college readiness do not necessarily capture well these many dimensions of readiness.

Components in a Comprehensive Definition of College Readiness



Key Cognitive Strategies

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).

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 open mindedness 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).

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.

Example Performances

The general characteristics listed above are suggestive or descriptive of tasks that students will have to be able to complete in college courses. The following examples, while far from all-inclusive, illustrate what a student who has sufficient competence in the general areas listed above would be able to do in a college course. Any student who can do the following with proficiency will likely be ready for a range of postsecondary learning experiences.

- Write a 3- to 5-page research paper that is structured around a cogent, coherent line of reasoning, incorporate references from several credible and appropriate citations; is relatively free from spelling, grammatical, and usage errors; and is clear and easily understood by the reader.
- Read with understanding a range of non-fiction publications and technical materials, utilizing appropriate decoding and comprehension strategies to identify key points; note areas of question or confusion, remember key terminology, and understand the basic conclusions reached and points of view expressed.
- Employ fundamentals of algebra to solve multi-step problems, including problems without one obvious solution and problems requiring additional math beyond algebra; do so with a high degree of accuracy, precision and attention to detail, and be able to explain the rationale for the strategies pursued and the methods utilized.
- Conduct basic scientific experiments or analyses that require the following: use of the scientific method; an inquisitive perspective on the process; interpretation of data or observations in relation to an initial hypothesis; possible or plausible explanation of unanticipated results; and presentation of findings to a critical audience using the language of science, including models, systems, and theories.
- Conduct research on a topic and be able to identify successfully a series of source materials that are important and appropriate to explain the question being researched; organize and summarize the results from the search, and synthesize the findings in a coherent fashion relevant to the larger question being investigated.
- Interpret two conflicting explanations of the same event or phenomenon, taking into account each author's perspective, the cultural context of each source, the quality of the argument, its underlying value positions, and any potential conflict of interest an author might have in presenting a particular point of view.
- Communicate in a second language, using the language in a culturally appropriate fashion for common daily tasks and interactions, without resorting to literal translation except for certain specific words.

- Punctually attend a study group outside of class with students who represent a continuum of academic abilities and cultural backgrounds, incorporating the strengths of group members to complete the assignment or project at hand or prepare successfully for the exam or presentation in question.
- Complete successfully a problem or assignment that requires about two weeks of independent work and extensive research, utilizing periodic feedback from teachers and other pertinent resources along the way to revise and improve the final product.
- Create and maintain a personal schedule that includes a to-do list with prioritized tasks and appointments.
- Utilize key technological tools including appropriate computer software to complete academic tasks such as conducting research, analyzing data sets, writing papers, preparing presentations, and recording data.
- Locate websites that contain information on colleges, the admissions process, and financial aid, and navigate such websites successfully, comparing the programs and requirements of several colleges and assessing the financial requirements and feasibility of attending each.
- Present an accurate self-assessment of readiness for college by analyzing and citing evidence from classroom work and assignments, grades, courses taken, national and state exams taken, and a personal assessment of maturity and self-discipline.