Best Practices for Access and Retention

in Higher Education

Irene M. Duranczyk
Jeanne L. Higbee
Dana Britt Lundell
Editors

UNIVERSITY
OF MINNESOTA

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Irene M. Duranczyk
Jeanne L. Higbee
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Emily Goff
Assistant Editor

Karen A. Bencke
Cover Design & Layout

CRDEUL

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Foreword
Norman Stahl

With the transition into the 21st century, the General College of the University of Minnesota continues to build upon its historical legacy of providing access to postsecondary education to diverse generations of nontraditional students. Through its Center for Research on Developmental Education and Urban Literacy (CRDEUL) it has evolved into an increasingly important center for the development and dissemination of theory, research, and best practices in developmental education and learning enhancement programs. CRDEUL's monograph series has addressed a number of important topics for the profession, and now you hold in your hands or view on your computer screen the fifth volume titled *Best Practices for Access and Retention in Higher Education.*

It is true that our profession has a long history of providing access to higher education going back to the preparatory programs of the 1800s as well as the beginnings of the junior college movement at Joliet Junior College, and it is true that a number of classic texts pertaining to the topic of access such as Cross's *Accent on Learning* (1976) should be read by all in higher education. It is equally true that our profession has been concerned with the practice of retention with historically important programs dating to Harvard University (Moore, 1915), and it is true that a number of classic texts pertaining to the topic of retention such as Tinto's *Leaving College: Rethinking the Causes and Cures of Student Attrition* (1987) should be read by all in higher education. So do we really need another volume on this topic? The answer is clearly in the affirmative.

Best Practices for Access and Retention in Higher Education is a particularly timely volume as policy analysts believe that the reauthorization of the Higher Education Act by the U.S. Congress will place emphasis on affordable and universal access to higher education and also on the retention of students to a timely graduation. Furthermore, the joining of the concepts of access and retention as the shared focus in a single volume is an important philosophical position to be taken by the Center for Research on Developmental Education and Urban Literacy given its mission in General College.

Still what many of us might accept as a pedagogical variation of "Yin and Yang," access and retention are not necessarily understood nor implemented in practice as an integrated construct in many schools across the nation. However, with foresight of the likely policies within the Higher Education Act, it can be proposed that the field has entered a period when the idea of access and the concept of retention can no longer be viewed as separate constructs. Indeed, we must revise our thinking so as to adopt a strategy that postulates "if access is granted to an institution then retention must be promoted through research-driven programs."

The issue then becomes whether or not we are providing programs that are based on the constructs of what the National Research Council and the federal authorities refer to as scientifically-based research. It is clear that instruction and programmatic initiatives must now be driven by research, and such research must meet the "gold standard" of replicable, randomized empirical methodology. Unfortunately, such research across the past two decades in higher education is remarkably sparse. Furthermore, traditional attrition studies and institutional research cannot get at the heart of what makes a successful learning enhancement program. Still during this period researchers have asked many interesting questions of

a contextualized nature that have been well studied through qualitative methods. Such qualitative endeavors have raised ever so many more questions. Indeed, such may be the very nature and the strength of the work.

In the next decade, the field must build upon the contextualized knowledge developed during the qualitative revolution so as to measure the effectiveness of our programs. Never before have we faced more pressure from federal and state government as well as accreditation agencies to demonstrate the true effectiveness of access and recruitment programs such as Equal Opportunity Programs, general colleges, or dual admissions programs along with retention endeavors such as First-Year Experience programs, freshman interest groups (FIGs), learning communities, developmental education programs, tutorial programs, lower-division advising centers, summer bridge programs, learning assistance centers, writing centers, Supplemental Instruction (SI) programs, and so on. The message is clear that we must design a spiral research agenda where well-designed qualitative research endeavors drive gold standard quantitative endeavors, which in turn drive more qualitative endeavors whether in sequential patterns or with mixed-methods designs.

An era with a focus on such accountability may be daunting, but it is also a period filled with opportunity for seminal scholarship. You have the opportunity to take up the first actions of this onus as you read and ponder the diverse set of articles in *Best Practices for Access and Retention in Higher Education*.

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Introduction

Irene M. Duranczyk

General College, University of Minnesota

Access and retention in higher education continue to be cornerstones for the democratization of the United States and achieving a more equitable world. In an increasingly technological world with a globalized economy, a primary role of higher education must continue to be the struggle to create a one-to-one correspondence between access and retention.

The issue of educational access in the United States was decided 50 years ago, May 17, 1954, when the Supreme Court of the United States ruled in Brown *v.* Board of Education that the "separate but equal" doctrine adopted in Plessy *v.* Ferguson cannot continue in public education. Separate is not equal. Equal protection, as provided in the Fourteenth Amendment of the United States Constitution, is inclusive of public education. Yet, today in higher education we still struggle in applying the law and creating opportunities that optimize access and student retention to graduation.

Our world continues to change rapidly. Throughout the United States and the world, diversity grows. Immigration, increased mobility within the United States, and a world economy have accelerated the process of cultural integration. This integration has continued the challenge and need for higher education to focus on access and retention. As Stahl has stated in the Foreword to this monograph, the issue of access to higher education began in the 1800s. The conditions in the United States have changed over the past two centuries, but equal access to and retention in higher education irrespective of socioeconomic status, race, ethnic identity, religion, disability, age, home language, sexual orientation, and gender have not been achieved. We must continue to read, research, report, disseminate, and implement strategies to ameliorate the effects of an educational system that underserves many of its constituents. The democracy ideal must include all constituents. Only when all constituents gain access and the opportunity to participate, contribute, and benefit from their contributions can a free and just society be built.

Monograph Contents

Best Practices for Access and Retention in Higher Education contains a variety of researched-based chapters written to expand our thinking and guide us toward achieving that one-to-one correspondence between access and retention. We have divided the monograph into five sections.

The first section, Historic Note, is a one-chapter section authored by Brothen and Wambach. It provides an historic account of retention at the University of Minnesota and the founding of the General College (GC) in 1932. It was a concern for increasing student retention and success that precipitated the founding of the General College. The authors use the historic account to present the scope of issues institutions must address to effectuate increased student success.

The next section, Programs and Practices That Enhance Access and Retention, contains two chapters. The first chapter, by Higbee, Chung, and Hsu, presents the theory and practice of Universal Instructional Design in three academic disciplines—Physical Science, Symbolic Logic, and Psychology. Practitioners will see practical examples of how designing a course that prepares for the diversity of students' educational, physical, and psychological needs minimizes the need to *accommodate* students with special challenges. The second chapter in this section by Arendale provides a review of six research-based peer collaborative learning models that have increased student persistence to graduation. Suggestions and resources for further research are embedded.

The third section of the monograph is titled Multicultural and International Strategies That Foster Access and Retention. This section includes five chapters addressing institutional and classroom-based strategies for improving access and retention by attending to the multicultural complexion of our institutions.

The first two chapters of this section give examples of how culturally-rich, discipline-based materials can increase the academic performance of all students. "Introductory Level College Mathematics Explored Through a Sociocultural Lens" by Duranczyk, Staats, Moore, Hatch, Jensen, and Somdahl provides a review of ethnomathematics literature and research that can broaden our thinking about developmental mathematics theory and practice. It provides a starting point for expanding the cultural presentation of mathematics, considering alternative pedagogical approaches, and diversifying assessment techniques to be more inclusive of our mulitcultural population. "Retention and Effects of Multicultural Content on Reading Performance" by Fleming, Guo, Mahmood, and Gooden is a qualitative study documenting increased academic success of all students when using culturally-relevant material in an English classroom.

"Graduation of Black Students: A Comprehensive Strategy" by Blake and Moore provides data documenting improved retention and graduation rates of Black students. This study can be used as a guide for institutional change. It is not a classroom-based approach but an integration of academic, student services, and administrative resources focused on increased retention of students.

"Between Old Country and New: Academic Advising for Immigrant Students" by Swanson presents best practices for academic advisors and other student affairs workers to achieve greater access and retention of students from immigrant families. Case studies are presented demonstrating conflicts between students' experiences and campus culture. Swanson models culturally-sensitive practices to ameliorate student-advisor communication and improve access and retention. "Access and Engagement: A New Zealand Study" by Anderson, Millward, Rio, and Stephenson is a qualitative study suggesting that when engagement between students and institutional personnel reaches a significant level, persistence increases and personal and structural obstacles to retention in higher education are offset.

The next section contains three chapters addressing Factors Influencing Retention. Sanders and Schuh present a review of existing research linking student retention to the size of students' financial aid packages and their socioeconomic status. They provide recommendations for expanded financial aid research and offer institutional practices to improve retention of students from low socioeconomic groups. Lifton, Seay, and Bushko conducted a quantitative study, "Measuring Undergraduate Hardiness as an Indicator of Persistence to Graduation Within Four Years." Can a 30-item test of hardiness (commitment, challenge, and control) really predict student retention to graduation? "The Importance of a Good Start" by Moore is a study exploring possible correlations among class attendance, first-year academic performance as measured by grade point average (GPA), and university graduation rates. Can attendance patterns during the first year of college help us predict who will graduate in four or six years? The reader is urged to contemplate these questions while reading these chapters.

The final section of this monograph is a commentary, "The Learning Skills Professional as a Therapist?" by Congos and Burgan. The skill set and work performance of learning skills professionals are compared and contrasted with those of cognitive and behavioral therapists. Higbee responds to the question of calling learning skills professionals therapists, and then Congos and Burgan individually refute Higbee's arguments. We look forward to receiving further responses from readers.

The editors welcome readers' responses to any or all of the chapters addressing access and retention in this monograph. Likewise, we invite the reader to submit manuscripts for CRDEUL's next monograph, which is titled *Student Standpoints About Access Programs in Higher Education*. We hope that this publication moves the reader to explore and actively engage in activities to enhance access and retention of all students.

Acknowledgments

Historic Note

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A Historical Note on Retention: The Founding of General College

Thomas Brothen and Cathrine Wambach

University of Minnesota

More than 3 decades ago, Cross (1971) framed retention as an issue for developmental educators. As readers of this monograph will find, creative educators are still working to meet this challenge. In this note we view retention through a lens provided by the founding of the General College at the University of Minnesota in 1932.

Concern for student retention and success has been integral to the University of Minnesota (U of M) throughout its history. Gray (1958) characterized the U of M as "archetypal of the land grant school" (p. 14) and pointed out that it has always fostered broad educational opportunity to serve all people of the state. Nearly a century ago, concerned Minnesota educators grappled with many of the same student retention issues that Cross (1971) identified 3 decades ago and still face us today. We believe a historical perspective is useful to developmental educators seeking to provide appropriate educational opportunities for all students.

Retention Problems in the Early 20th Century

J. B. Johnston, Dean of the College of Science, Literature, and Arts from 1914-1938, was a pioneer in retention work at the University of Minnesota. In the first line of his book reporting 16 years of work on the retention issue, he wrote "The function of the college is to make learning available to society" (Johnston, 1930a, p. 3). However, he was very concerned that although a greatly increasing percentage of the population was going to high school and then on to college in the early 20th century, the number of unsuccessful students was also increasing. As a land-grant institution, the U of M was open to any high school graduate in the state. However, more than half of all new students dropped out or were counseled out soon after enrolling, and only 15 to 20% of all incoming students received degrees in four years (MacLean, 1934).

The Problem of Low Student Ability

Johnston's (1930a) approach to this serious retention problem was one that is familiar to developmental educators today—determining whether students were appropriate for admission. In 1914, upon assuming the deanship, he himself went to area high schools and computed grade percentile ranks for students who had been admitted to the University that

For further information contact: Thomas Brothen | University of Minnesota | 128 Pleasant Street S.E. | Minneapolis, MN 55455 | E-mail: broth001@umn.edu

year. He found what he had expected: nearly half of males and over a quarter of females were below the 50th percentile in high school rank. In follow-up research he found that few of these students were successful at the University. In 1917, Johnston secured copies of the newly developed Army Alpha intelligence test. He administered them to entering students, and after a process of experimentation and revision, he and psychologists at the University created a college aptitude test that they administered statewide.

At about the same time, the U.S. Army sent large numbers of World War I recruits to universities for military and educational training. Johnston found many of them uninterested in and unqualified for college coursework. This experience apparently hardened his belief that selecting the right students could solve the retention problem (Gray, 1958, p. 122).

In the early 1920s Johnston (1930a) averaged students' high school grade and aptitude test percentile ranks and named the result the college aptitude rating (CAR). His research demonstrated clearly that virtually no students scoring below the 30th percentile on the CAR were successful. He asserted that such students were simply inappropriate for university work, and rather than expending resources on them, universities should not admit them. Instead, society should find ways to matriculate high ability students unable to afford access to higher education. He then took two steps toward his goal of improving retention through restricting access.

First, Johnston conducted an experiment (Johnston & Williamson, 1934) whereby nearly 1,000 students with low CARs were admitted in the 1920s as noncandidates for degrees. These students could take introductory survey courses but not highly demanding courses in which students with low CARs typically did poorly. The intent was to give them courses that "might help them to discharge their duties as citizens" (p. 735). The results revealed that less than 10% of these students achieved at least a C average, and virtually none graduated in 4 years, bolstering Johnston's argument. Second, he helped develop a counseling program in state high schools that utilized a 22-page pamphlet he wrote (Johnston, 1930b) explaining the relationship between student success and CAR. By the early 1930s the number of students with low CARs seeking admission was down significantly. Johnston believed he was solving the retention problem.

The Problem of Insuring Access

L. D. Coffman, president of the University of Minnesota from 1920 to 1930, viewed retention problems differently. He believed passionately in the land-grant principle of universal access to education and also that university education had become less useful to students and society (Gray, 1958, p. 153). In a 1928 speech, Coffman (1934) responded to Johnston's stance by agreeing that "the progressive advancement of democratic institutions depended upon an educated citizenry" (p. 47), but warned that "the student of few talents shall not be denied his [sic] opportunity while the student of many talents is given his" (p. 41). Coffman was demonstrably uncomfortable with classifying students and restricting access to some because they did not fit the University. He wanted to change the institution to serve all students better.

Although Johnston and Coffman were often at odds with each other (Gray, 1958, p. 138), the president could not ignore the data that his liberal arts college dean had amassed. Therefore, he approached the problem of retention differently. Coffman was a proponent of the general education movement—a reaction against overspecialization in higher education and a drive to create more educationally well-rounded graduates (Gray, 1934). The objective of the movement, as Coffman (1934) stated in a 1930 speech, was to make education more useful by recognizing that students "who are sharpened to a point must have broad bases if the broader interests of human welfare are to be considered" (p. 143). He set in motion the creation of a new college at the University of Minnesota and recruited an educational democrat named Malcolm MacLean to implement a unique variation of general education.

Education for Living in the General College

President Coffman brought Malcolm MacLean back to the University of Minnesota from the University of Wisconsin in 1932 to establish the General College (GC; MacLean, 1962, 1977). MacLean had done his graduate work at the University of Minnesota in the 1920s and had worked with D. G. Paterson in the faculty-counseling program. He was very familiar with Johnston's work and with the general education

movement. His charge was to create a new educational program to meet Coffman's concerns about narrow specialization at the University and to serve what today we call developmental students (Williams, 1943).

MacLean attacked the problem of low student retention by developing a 2-year curriculum useful for living (Spafford, 1943). Courses were broad rather than narrowly specialized. Biology helped students live healthful lives, physical science helped students understand manufacturing technologies, child psychology and home life helped them set up good homes and become good parents, and a how-to-study course helped them to be successful students. These ideas pervaded the 47 new courses that awaited the first class of nearly 500 students in the fall of 1932.

The new curriculum carried no credits and grades were simply honors, pass, and fail. To determine whether students had met the curricular objectives, MacLean and his staff designed a comprehensive examination (University Committee on Educational Research, 1937). This exam qualified students for an associate's degree after 2 years or certified them for transfer to a baccalaureate degree-granting college of the University.

Thus, the General College's two purposes were to serve students who were unlikely to go on to the regular four-year curriculum at the University and to help transfer students who demonstrated the potential to earn baccalaureate degrees. A prominent educational theorist characterized the General College developmental mission as one that "deliberately sets out to stimulate interest, to set fire to students who have as yet, perhaps, merely smoldered" (Hibbard, quoted in Gray, 1934, p. 129).

Lessons for Retaining Students Today

The General College of the University of Minnesota has 72 years of experience with trying to "set fire" to students. As Brothen and Wambach (in press) point out, this is not always going to happen. The retention of developmental students is unlikely ever to be a 100% success story. For example, creating the special GC curriculum for less qualified students had a positive effect on retention, but did not work miracles. Eckert's (1943) study of GC student outcomes in the 1930s found that about 15% of students dropped out after their first term. From the 1930s until the 1980s, a consistent 15% of GC students transferred to other U of M colleges and graduated. This rate did not change until the College adopted a preparation-for-transfer mission in 1985 (Wambach & Brothen, 2002), which caused the transfer rate to increase to 60% and the 6-year graduation rate to reach 30%.

The University's liberal arts college pursued the retention strategy of restricting admissions to better-qualified students. This strategy did not dramatically improve graduation rates, which stayed at about 20% in 4 years, 30% in 5 years, and 40% in 6 years (University of Minnesota Senate Committee on Education, 1942). In the 1980s an undergraduate initiative that led to smaller classes, more student involvement with senior faculty, and better classroom facilities attracted higher numbers of highly qualified students and increased the 5-year graduation rate to 53% (University of Minnesota Office of Institutional Research and Reporting, 2003).

This University of Minnesota's history with retention suggests that simply excluding the least qualified students is not enough to improve retention greatly. Significant improvement requires attracting highly qualified students. It also suggests that although the retention of high-risk students can be improved, financial, personal, and family problems that interfere with their continuing in college require interventions that go beyond curriculum and guidance (Brothen & Wambach, 1999). Clearly, the issue of student retention is not new and remains a challenge to developmental educators.

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Programs and Practices That Enhance
Access and Retention

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Enhancing the Inclusiveness of First-Year Courses Through Universal Instructional Design

Jeanne L. Higbee, Carl J. Chung, and Leonardo Hsu

University of Minnesota

This article describes the theory behind Universal Instructional Design (UID), an educational application of the architectural concept of Universal Design. UID is a model for creating inclusive curricula that are accessible to a larger proportion of students, especially those with disabilities. Components of UID include creating welcoming classrooms, determining essential course components, using diverse teaching strategies, and enabling students to demonstrate knowledge in multiple ways. Three faculty members who teach traditional first-year core curriculum courses in physics, symbolic logic, and psychology discuss implementation and benefits of UID-inspired teaching techniques.

Universal Instructional Design (UID; Bowe, 2000; Silver, Bourke, & Strehorn, 1998) is a relatively new pedagogical model for providing access to higher education for students with disabilities by rethinking teaching practices to create curricula and classrooms that are inclusive for all students. Although federal legislation assures access for postsecondary students with disabilities (Kalivoda & Higbee, 1989, 1994), research (Kalivoda, 2003) indicates that faculty members continue to perceive barriers to providing academic accommodations. Lack of time and resources are among the constraints listed by faculty members, who often are more likely to be rewarded for acquiring grants and producing publications than for excellence in teaching (Kalivoda; Smith, 1997). Training (Fox, Hatfield, & Collins, 2003; Hatfield, 2003; Junco & Salter, 2003) can yield more positive attitudes but will not necessarily alleviate some faculty members' skepticism about the fairness of providing accommodations for students with documented disabilities, especially when considering "hidden" disabilities such as psychological disabilities, Attention Deficit Hyperactivity Disorder (ADHD), and learning disabilities (Kalivoda; Williams & Ceci, 1999). Universal Instructional Design does not ask faculty to "make exceptions" for students with disabilities. Instead, through UID all students have the opportunity to learn more effectively and to earn grades that reflect their knowledge. Furthermore, although it takes some time "up-front" to implement UID in a course, the eventual result is a net savings of time for the faculty member because fewer accommodations will then need to be made upon request for individual students with disabilities.

The purpose of this article is to review the theory behind UID and to present examples of how three

faculty members implement UID in their courses. UID is especially appropriate for core curriculum courses, particularly first-year courses because the first year is when students in postsecondary education experience the greatest number of transitions and are the most vulnerable to dropping out (Noel, Levitz, & Saluri, 1985; Upcraft, Gardner, & Associates, 1989). Because UID-inspired approaches have helped each of us create more welcoming learning environments and increase meaningful student-to-student and student-to-faculty interactions, we argue that UID is a useful framework for guiding curricular development and for enhancing the success of first-year students (e.g., Hatch, Ghere, & Jirik, 2003).

Components of Universal Instructional Design

An architectural concept, Universal Design (Center for Universal Design, n.d.) provides the foundation for Universal Instructional Design. When planning a space, the architect takes into consideration the needs of all potential users of that space. As a result, ramps, elevators, expanded doorways, signs, bathrooms, and other features do not have to be added or modified at additional expense after the completion of a building. Some of the same architectural features that accommodate people with disabilities also benefit many others, including senior citizens, families with young children, and delivery people. Universal Instructional Design applies this same concept, advance planning to meet the needs of all learners, to curriculum development. Steps in this process, which are based on the work of Chickering and Gamson (1987), include: (a) creating welcoming classrooms; (b) determining the essential components of a course; (c) communicating clear expectations; (d) providing constructive feedback; (e) exploring the use of natural supports for learning, including technology, to enhance opportunities for all learners; (f) designing teaching methods that consider diverse learning styles, abilities, ways of knowing, and previous experience and background knowledge; (g) creating multiple ways for students to demonstrate their knowledge; and (h) promoting interaction among and between faculty and students (Center for Universal Design, n.d.; Fox, Hatfield, & Collins, 2003). For purposes of this article, we will focus specifically on four of these steps.

Creating Welcoming Classrooms

In order to encourage retention, it is imperative that faculty teaching first-year courses communicate to students that they are welcomed and valued. Many of the students who drop out during or at the end of the first year of college do so for nonacademic reasons. They are choosing to leave, as opposed to being suspended or dismissed from the institution because they have not achieved the grades required to remain. Reasons for leaving are numerous, including financial and family pressures and other issues over which neither students nor faculty may have much control. However, faculty members can control the manner in which they choose to communicate with students. In the film *Uncertain Welcome* (2002), which can be downloaded free of charge from the World Wide Web, students with disabilities discuss some of the factors that make them hesitant to disclose their need for accommodations.

For students with physical disabilities, many traditional classroom spaces are daunting. For example, the student using a wheel chair is often relegated to the end of the aisle of the first or last row of seating, rather than having the same freedom of choice afforded to any other student in the class, and may or may not be provided with an appropriate writing surface for note taking. For the student who is blind, navigating across and throughout the campus poses multiple challenges. Although faculty may have little control over some of the physical barriers that students with disabilities must overcome on a daily basis, they can pay heed to their own attitudes and the tone they set in their own courses.

In the past, students with disabilities have been stigmatized (Johnson & Fox, 2003) by a medical model approach, in which these students have been perceived as "deficient" rather than merely "different." Universal Instructional Design is an outgrowth of an interactional, social constructivist approach to disability issues. Instead of providing accommodations on a case-by-case, situation-by-situation basis, this model explores how individuals interact with the environment to construct knowledge (Aune, 2000; Groce, 1985; Johnson & Fox, 2003; Jones, 1996).

One of the first steps in integrating rather than segregating students, whether physically or metaphorically, is to create a syllabus statement (Pedelty, 2003) that clearly states that students with disabilities

will have equal access and equal opportunity. However, too often the syllabus statement is treated as an administrative or legal requirement, rather than as a means of assuring students with disabilities that their requests for accommodations and modifications are reasonable and will be met. Pedelty argues the importance of "performing" this statement aloud, rather than just assuming students will read it for themselves. By publicly addressing access for students with disabilities in the classroom, teachers communicate that they welcome all students in their course and that they want all students to have equal opportunity to succeed.

Determining Essential Components

What are the essential skills and knowledge that a student should be able to demonstrate upon completion of the course? In an introductory college-level general biology course, for example, is it necessary for a student to physically perform a dissection, or can the same knowledge be gained and demonstrated in other ways (Hatch, Ghere, & Jirik, 2003)? Would the answer to this question be different in a biology course for pre-medicine majors? Can introductory biology laboratories be offered online through the use of computer simulations? In addition to students with mobility or vision impairments, distance learners and students whose religious or moral beliefs prevent participation in dissection can benefit from the use of other teaching and learning strategies in biology labs, as long as students are fulfilling the *essential* requirements of the course.

Designing Diverse Teaching Methods

All students can benefit from the opportunity to learn material in multiple ways. Many students prefer learning through visual and interactive means rather than by listening to lectures and reading a text (Higbee, Ginter, & Taylor, 1991). Faculty members who explore alternative teaching styles often find adopting new methods to be rewarding for students and teachers alike. For example, a faculty member teaching a developmental college algebra course learned that by introducing collaborative small-group activities she was able to address affective barriers to learning math, enhance students' confidence, and engage students who had not seemed particularly attentive during her lectures. Students' grades in subsequent credit-bearing

mathematics courses were higher than the grades of students who participated in more traditional developmental math classes (Higbee & Thomas, 1999; Thomas & Higbee, 1996). Furthermore, a student with a hearing impairment emerged as a leader in small group discussions.

Several years later, the same faculty member was asked to offer one section of her course on cable-access television (Thomas & Higbee, 1998). In order to face the television camera, she was forced to work from an overhead projector, rather than turning her back on students to perform math problems on the board. This change in behavior had an immediate impact on her teaching, enhancing communication with all members of the class. The televised section created access for a wide variety of students and provided a community service as well. Students enrolled in other sections of the course could watch or videotape the televised section to make up what they missed due to absences. One student with multiple severe disabilities used her videotapes of the class when working with her tutor, stopping the tape to work through the problems.

Just as some students can excel at learning math at a distance, particularly those for whom the course is serving as a review in preparation for other quantitative courses, other students need to attend class to achieve (Thomas & Higbee, 2000) and prefer having immediate access to the teacher and to one another. As demonstrated in another developmental mathematics program (Kinney & Kinney, 2003) where students can choose between computer-assisted or more traditional classrooms, allowing students to select among sections offering different formats to find a good match between preferred learning and teaching styles can be just as effective as offering a wide array of teaching strategies within a single course section. The "universal" in Universal Instructional Design does not imply that "one size fits all." Instead, it refers to universal access to curricula.

Demonstrating Knowledge in Multiple Ways

Courses that use a single format to assess content mastery discriminate against many students, not just those with disabilities. For example, first-year courses in which students' only means of demonstrating knowledge is computer-based, randomly-generated multiple choice tests can disadvantage less affluent

students who come from homes and schools that did not provide access to computers on a regular basis. Similarly, first-year composition courses in which students compose in-class essays at a computer terminal can benefit many students with learning disabilities but can pose multiple barriers to achievement for students who have limited proficiency with computers. For some students, trying to master computer skills while simultaneously completing an evaluative task can cause performance-impairing anxiety, especially if the student is also surrounded by students who are competent and comfortable with computers. When designing assessments for first-year courses, it is imperative to consider issues beyond cost-effectiveness, especially in large lecture classes that can already seem impersonal to students.

In the following sections of this article, three faculty members who teach first-year core curriculum courses provide personal accounts of their efforts to implement these components of Universal Instructional Design in their classes. By planning at the outset to meet the needs of all learners, including students with disabilities, these faculty members are able to make appropriate use of available resources during course development. Although it may be argued that these examples merely illustrate good teaching practices (Chickering & Gamsom, 1987; Hodge & Preston-Sabin, 1997), Universal Instructional Design takes good teaching one step further. How many faculty members, for example, take into consideration when choosing instructional materials or designing the day-to-day activities for their courses whether those materials and activities might serve to exclude a student who is blind? Until a student with a severe vision impairment actually enrolls in one of their courses, do most faculty members think about whether their means of disseminating information would be equally accessible to a student who is blind? Do they try to imagine understanding a chart or graph that one cannot see? Do they explore the availability of raised images that make diagrams (e.g., of the human digestive tract) accessible? Are they aware descriptive services that can make films accessible to people with vision impairments? Have they explored all possible ways of integrating accommodations in their teaching rather than segregating students with disabilities?

Although some students with disabilities will still need accommodations (e.g., a sign language interpreter for a student with a hearing impairment), faculty

members who practice UID are less likely to find themselves dealing with the time constraints that are inevitable when trying to accommodate a student with a disability at the last minute, often when receiving a letter from the institution's office of disability services hand-delivered by the student on the first day of class. In the following pages, three faculty members each describe how they have implemented Universal Instructional Design in their first-year courses in physical science, logic, and psychology.

The Physical Science Course Taught by Leon Hsu

"Physical Systems: Principles and Practices" is a physical science course in which students learn some fundamental concepts in physical science and the framework through which scientists view the world. The majority (85%) of the students are non-science majors taking the course to fulfill a science core curriculum requirement. The remaining students are interested in majoring in a scientific or technical field, but are looking for a refresher before taking the introductory physics course offered by the physics department.

The essential skills and knowledge that I expect my students to gain from this class are to be able to:

1. Demonstrate an understanding of basic physics concepts by: (a) applying those concepts to solve problems using a variety of representations, including equations, diagrams, and graphs; (b) using the concepts flexibly to solve problems both in familiar and unfamiliar contexts; and (c) recognizing their applicability to real-world situations.

2. Write scientific arguments and explanations using commonly accepted scientific principles as supporting evidence.

3. Obtain accurate measurements in the laboratory, identify possible sources of error, and organize data in the form of charts and graphs.

4. Work collaboratively with peers in solving problems on paper and in the laboratory.

The structure of the Physical Systems class is fairly traditional, with two 75-minute lecture periods and one 2-hour lab. The lecture periods, however, have been

modified using UID principles. The 75-minute period is divided into three or four learning cycles, each involving a new concept or skill for the students to learn. During each cycle, I lecture for about 10 minutes on the new topic, and students spend the next 5 to 10 minutes working on a related problem either by themselves or with their neighbors. Then I call the class back together and lead a large group discussion to go over a solution to the problem. By breaking the 75-minute lecture period into smaller chunks, students assimilate new knowledge in more manageable pieces. In addition, since students are performing a variety of activities, they are not forced to sit silently and maintain their concentration for a long period of time. Finally, integrating problem solving into the lecture gives students a chance to assess their knowledge of the material being presented, helping them to self-monitor their understanding.

I also give students copies of notes that I have written to go along with the lectures. The class notes serve several purposes. First, they help to focus the students' attention on the most important parts of new concepts. Each set of notes is preceded by a one-page summary of the important information for that lecture period. This summary provides a handy reference that is easier to use as a reference than a 15-page chapter in a science textbook. Second, the notes free students from feeling like they must copy down everything I write on the board, enabling them to devote more attention to what is actually happening in class. To encourage students to attend class and practice using the concepts by working the in-class problems, some parts of the notes are purposely left blank, to be filled in during class. The notes are posted on the class Web site before each class so students can download them to prepare for class. Lastly, because the notes exist in electronic form, they can easily be translated into alternative formats for any students with disabilities in the class. During the semester in which I had a student who is blind, this practice eliminated the need for a note-taker for this particular student. Similarly, this approach enables students with learning disabilities and ADHD to get organized in preparation for class.

Students have additional opportunities to learn by interacting with their peers in the laboratories associated with the class. During the labs, students work in groups of three. These groups are switched only once during the semester to enable students to form social bonds with a few of their classmates, to provide a support network for students, and to help them find study partners. The labs are run by undergraduate teaching assistants who have recently taken the course themselves and thus can sometimes provide students with more effective help than the instructor.

The labs also give students a chance to work with the concepts in a concrete manner. Students perform experiments using everyday objects such as Hot Wheels cars, pennies, or their own bodies and apply the concepts learned in the course to interpret their observations. This experience allows students to practice using the concepts in both concrete (lab) and abstract (lecture) contexts, making the material accessible to students with a range of learning styles. For example, Tinkertoys were used to help students visualize the addition and subtraction of vectors, giving them something tangible to hold and move around instead of just drawing lines on a piece of paper. This activity was particularly helpful for a student who is blind.

Traditionally, students' grades in science classes are based largely on their performance on exams. To make the course more inclusive, the grade in my physical science class is distributed more evenly among homework (20%), lab (20%), the in-class problems (10%), and exams (50%). This approach allows students to demonstrate their knowledge of the concepts by solving problems in timed or untimed contexts (e.g., exams or homework) or by writing a detailed analysis of a physical situation including making tables and graphs (lab).

I write the course exams so that a typical student can complete it in about 75% of the allotted time. This eliminates much of the time pressure from the students by giving all of them some extra time. As a side benefit, students with disabilities have never needed to take the exams outside of the usual classroom situation, relieving them of having to inadvertently disclose their situations.

The Symbolic Logic Course
Taught by Carl Chung

Ideally, the UID framework could be used to dramatically reinvent a particular course, rendering "special" accommodations for any student unnecessary. However, in the real world of day-to-day practice, it is also possible to use the basic ideas and tools of UID to

tinker with and gradually improve even more traditional courses. Alternatively, it is possible to adopt UID as a more global framework within which to think about how existing course components might or might not contribute toward an inclusive student experience. A good example of this is my own course in introductory symbolic logic, which targets first-year students who are, for different reasons, "math phobic." By mastering basic logical concepts (e.g., argument, premise, conclusion, valid form, etc.), developing the ability to translate English sentences into symbolic notation, learning how to identify and evaluate patterns of reasoning, and becoming proficient at constructing geometry-style proofs of argument forms, students can satisfy my institution's "mathematical thinking" requirement without having to take algebra or calculus.

My course is taught fairly traditionally. I lecture, assign weekly homework problem sets, give quizzes, and administer in-class examinations. However, UID principles have helped me to improve how I teach the course, and the UID framework has allowed me to step back and consider how different course components function together to promote inclusiveness. For example, UID's emphasis upon creating a welcoming classroom in which students feel valued has helped me to be mindful of establishing a supportive tone and rapport with students. On the first day of class as we are going over the mechanics of the course, I stress that doing symbolic logic will be hard for some students at first because of its unfamiliarity. I draw an analogy to how one might feel when visiting a foreign country such as Greece, Russia, or Japan, with a radically different alphabet. At first, it feels very disorienting and frustrating not being able to get around as easily as we are used to—not being able to make sense of signs, for example—but eventually as we learn the language and become more familiar with our surroundings things get easier. Approaching the topic in this manner also resonates with students who are non-native speakers of English, and particularly those who are recent immigrants, a growing population on many college campuses. At the University of Minnesota, for example, we have experienced a significant influx of Somali, Hmong, and Russian students. Addressing different symbol systems is a means of acknowledging learning differences among a wide range of students from diverse backgrounds, including students who communicate via American Sign Language or Braille.

To drive this point home, I then ask students to take out a sheet of paper and engage in a thought experiment. In this experiment I ask them to copy down a short definition of a logic concept that I write on the board. But the "trick" is that they must use their "opposite" hands to write, and I ask them to imagine that their entire course grade depends upon how quickly *and* neatly they can copy the definition. Finally, I ask them to verbalize what they are feeling as they write by answering the following questions: How does what you are producing look? How do you feel about what you are producing? What do you think about having your entire grade determined by this assignment? Usually, of course, what they are putting down on paper resembles scribbling, and as I walk around the room reminding them that their entire grade is at stake, students laugh nervously, express their frustration, or just shake their heads.

There are two main points to this exercise. First, I draw an analogy between students' hands trying to copy the definition and students' brains trying to learn symbolic logic. At first, doing the work will feel awkward, frustrating, and difficult, I tell them. But if they stick with it, I argue, it will get easier, just as it would get easier writing with that opposite hand given enough practice. Second, the exercise acknowledges students' anxiety and allows them to face it and express it publicly without singling out individuals. In this way, I believe I communicate to the students that their anxiety is understandable, that they are all "in the same boat" because everyone has some level of anxiety, but that every one of them can succeed in the course if they just stick with it and take advantage of the support structures built into the course.

A second example involves learning cycles that are very similar to those discussed by Leon Hsu in the previous section. From the students' point of view, a typical class period comprises several of these learning cycles, which look like this:

1. The instructor lectures briefly on a new concept or technique.

2. Students ask questions.

3. The instructor works examples.

4. The students have another opportunity to ask questions.

5. The students work examples individually, in pairs, or in small groups.

6. The instructor asks questions such as "How should we start this problem?" "Why won't this work?"

7. The students engage in a large group discussion of the problem(s).

8. The instructor moves on to a new concept or technique, and the cycle repeats.

9. In this way, there is ongoing interaction between instructor and students, and students alternate between more passive and more active modes of engaging course material.

The daily learning cycles are embedded in a larger learning cycle that centers on the exams: read text, take notes in class, ask questions, practice examples, do homework, ask questions, take quiz on homework, do a mock exam, review, take in-class exam. In this way, students can demonstrate proficiency in a series of manageable steps. Early in the cycle, students have lots of support (e.g., in-class practice and feedback with instructor and peers) that—within the classroom setting—gradually diminishes as students begin the homework set (i.e., working on problems at home away from class, possibly with peers), move on to the quiz (exam conditions but with relatively few points at stake), and, finally, work on a mock examination with solutions. This gives students time to master the material gradually and to build confidence as they work toward the in-class examinations.

For me, the transition from straight lecturing to learning cycles came about as I wondered how to help students who struggle to understand all the different concepts and rules of logic as a coherent system. Whether due to a learning disability, lack of background, lack of confidence, or a preference for learning styles that are active, concrete, and hands on, some students understand parts of what we are doing in isolation but have trouble tackling new or complicated problems. Learning cycles break complicated material into discrete components, build in repetition, practice, and immediate feedback, and require students to actively engage and apply new ideas. By proceeding in this manner, I, as the instructor, know right away whether students "get it" and are ready to move on. Although I originally conceived of learning

cycles as a way to help struggling students, it is a technique that improves learning for all students in my class.

Even though the majority of my course revolves around these recurring learning cycles, around the tenth week of the semester we take a break from this routine and do something different. Instead of the usual focus on new logical concepts or techniques, students come to class, break into small groups, and work together on a structured discussion project. Students are given a philosophy article and must reconstruct and identify the author's pattern of reasoning. This requires students to work together to find the author's conclusion and main premises and to determine how the premises support the conclusion. Each group must submit a written summary of its answers to questions and main points of discussion. Then we reconvene as a large group and discuss the project and whether the students accept the author's conclusion, which provocatively argues that those of us living in affluent societies are morally obligated to donate much of our income to help people who are starving, homeless, or unable to get adequate medical care.

The educational goal of the project is to show students first-hand that what they are reading outside of class also has logical structure, and that applying what they have learned in class is useful. But the project also promotes inclusiveness since all students can read through parts of the article and participate meaningfully in their group's discussion even if they don't completely understand the logical concepts. In fact, students often end up re-teaching each other the concepts being applied. Because the project does count toward the final course grade and because it draws upon a different set of skills—discussion in a small group, working together to write a coherent summary of that discussion—than is usually emphasized in class, it is one example of an alternative way for students to demonstrate knowledge related to the course.

In the context of UID, I use learning cycles and the different activities to deliberately structure and package a variety of teaching methods (i.e., lecture, small group work, whole group discussion, active learning, problem solving, written summaries of peer discussions) to try to maximize learning opportunities for all students and to promote inclusiveness. However, what goes on outside of class can be equally important for realizing these UID-inspired goals.

One example of this is what I call the "logic lab." The logic lab is a two-hour block of time that I purposely schedule away from where I usually meet with students (e.g., the classroom or my office). The lab is informal, optional, and unstructured. Students can just come sit and work on their homework, receive supplemental instruction, work additional practice problems, or catch up if they missed class. The informality of the logic lab results in a wider range of students taking advantage of it compared to office hours. Often students will start talking to and helping each other, coming to me only when they get really stuck. In this way, I believe students develop a sense of community and ownership of the course, and it affords me the opportunity to interact individually with more of them. Clearly students who are struggling stand to benefit the most from the logic lab, but because it is open to all students and because students can come and initiate the kind of interaction they want and need, whether with me or with peers, this simple alternative to standard office hours also allows me to maximize learning opportunities and to promote inclusiveness in my class.

The Psychology Course
Taught by Jeanne Higbee

"The Psychology of Personal Development" is a challenging first-year course that applies psychological theory to students' everyday lives. The following objectives describe the essential knowledge and skills required for successful completion of the course:

1. Students will become acquainted with prominent psychological theories and the theorists who espoused them.

2. Students will be able to define key psychological concepts.

3. Students will learn the relationship between psychological constructs and those of other fields of study, including history, political science, sociology, economics, and anthropology.

4. Students will become familiar with research methodologies.

5. Students will be introduced to basic statistical concepts such as central tendency and correlation.

6. Students will develop the skills and knowledge necessary to critique psychological research.

7. Students will learn about psychological assessment.

8. Students will apply psychological theory and concepts to their own development and relationships.

9. Students will learn to identify key ideas in a psychology textbook.

10. Students will further develop their writing skills.

11. Students will use higher-order thinking skills to analyze, synthesize, and evaluate course materials.

12. Students will use knowledge acquired in the course to propose creative solutions to real-life problems.

13. Students will become aware of the ways in which people from diverse cultures are similar.

14. Students will work collaboratively to complete tasks.

15. Students will facilitate their own learning.

On the first day of class, I reassure students about the challenges ahead as I go over the syllabus. I also introduce myself by disclosing some personal information and sharing some of my values, meanwhile explaining that it is not my intent to impose those values on my students. I want them to think for themselves, not tell me what they think I want to hear. I try to create a classroom environment that will be welcoming to students. However, I recognize that it will still be difficult for some students with disabilities to approach me in person, so I ask all students to complete a "student information form" that seeks basic information. On that form I reiterate my commitment to providing accommodations for students with documented disabilities, and give students the opportunity to self-disclose privately and in writing rather than having to approach me in front of the class.

The course text for the Psychology of Personal Development, *Psychology Applied to Modern Life*, by Weiten and Lloyd (2003), is frequently used for upper-level psychology of adjustment courses. In order

to assist students in mastering the material in the text, I have developed my own study guide for each chapter. Each study guide asks students to define key terms in their own words and then poses a series of short essay questions. Some of the essays are purely factual (e.g., "Outline Freud's five psychosexual stages" or "Describe one intervention to assist in overcoming prejudice"), merely requiring comprehension of a theoretical framework. Other questions demand the use of higher-order thinking skills (Barbanel, 1987; Bloom, 1956), as illustrated in the following examples:

1. "Discuss how feedback from others and cultural guidelines can shape self-concept."

2. "Provide an example of each of the following common defense mechanisms: denial of reality, (b) fantasy, (c) intellectualization (isolation), (d) undoing, and (e) overcompensation."

3. "Give an example of how you have used an impression management strategy."

4. "What are steps *you* can take to enhance *your* self-esteem?"

5. "Describe a snap judgment you have made about someone in the recent past. Did it turn out to be accurate?"

These study guides differ significantly from the standard guides often published to accompany textbooks, which are more likely to be made up of objective questions. Although the study guides are time consuming for students, each is worth only 10 points, for a total of 150 out of the 1,000 possible points available in the course. The purposes of the study guides are to: (a) assist students in navigating the text and determining how to read for main ideas; (b) ensure that students have an understanding of the theories upon which class activities are based; and (c) prepare students for weekly quizzes, which usually cover one textbook chapter.

The quizzes consist of objective questions (e.g., multiple choice, true-or-false, matching) and are worth 25 points each. On quiz days, class begins with a question-and-answer period so students can review and clarify any confusing material. Students typically take 10 to 20 minutes to complete a quiz, but they are given the remainder of the 50-minute class period to do so.

When students turn in their quizzes, they receive the study guide for the next chapter, which they then begin in class. Students with documented disabilities that indicate accommodations like extended time for tests are given the option to take the quizzes in another location, but seldom choose to do so because the entire class receives extended time, and they prefer not to "advertise" their disabilities by being "absent" on each quiz day. Even if their disability is one for which a less distracting testing environment might be beneficial (e.g., students with ADHD), students will often express a preference for remaining in the classroom. My response is to have the student try taking a quiz in class and see how it goes. Because students do not feel constrained by time, if they are prepared they usually do well on quizzes. Class means for each of the 13 quizzes generally fall in the 80 to 85% range. Students may drop their lowest quiz score, but there are no "make-up" quizzes.

The quizzes serve as preparation for the final exam, also objective, worth 100 points. In addition, over the course of the semester the students write four papers, with a minimum of two double-spaced pages each, worth 50 points each. These assignments enable students who are not skilled in taking objective tests to demonstrate their knowledge using a different format. Students have a choice of 12 essay topics, although only the first four will have been covered at the time the first essay is due. Each topic requires students to apply the subject matter to their own lives. Students may also choose to write a fifth essay to replace one quiz grade, but the fifth paper is then worth only 25 points. Thus, if a student is absent on two quiz days, the student can drop one zero grade, and replace the other with an essay grade. If a student has documented extenuating circumstances (e.g., hospitalization) for missing more than two quizzes, I allow the student to write additional essays in lieu of make-up quizzes. As a result, I do not have to prepare two separate quizzes for each chapter, which would require considerable additional time, yet I can still accommodate all students, including students with disabilities, who have legitimate reasons for missing class.

My favorite assignment in the course is the final project, worth 100 points. Although one option is to write a research paper, few students choose that path. Instead they can create a game, draw or paint a picture, produce a video, write a short story or poem, make a

collage, or propose their own idea, and then present their project to the class. I am always impressed by the imagination and creativity displayed in these presentations.

Students earn the remaining 150 points for the course via participation in a wide range of in-class activities. I seldom lecture. Students respond to psychological assessments and then critique them. They engage in a series of activities that might be classified as "left brain" or "right brain" and then evaluate their own performance, as well as exploring the concept of hemisphere dominance. They create a research question and a series of hypotheses, develop an idea for an experiment to test their hypotheses, and then explore the limitations of research with human subjects. They watch a contemporary film and then describe how scenes from the film depict key terms from the text. In addition to the captioning for people with hearing impairments now available on all recent releases, films are also available on videocassette in formats that are accessible to students with visual impairments through DVS Home Video, 1-800-736-3099, with major funding provided by the U.S. Department of Education. For each chapter I endeavor to use a film or provide an activity that enables students to learn and demonstrate knowledge in a unique way.

The first time I taught this course, which occurred just as my introduction to Universal Instructional Design began, I was filling in at the last minute for a hospitalized colleague. I had no time to prepare. In a class of 40 students, I had one student with a severe hearing impairment, four with learning disabilities, one with a mobility impairment, one with a psychological disorder, and three recent immigrants for whom English was a second, third, or fourth language. In retrospect, I am sure that the first week was a disaster. I lectured from overheads and bored myself. The grades on the first quiz were dismal. It was my first semester in a new job, and I was just imagining the impression that first set of teaching evaluations would give, and rightfully so, because the students were obviously not learning. Thanks to my involvement in faculty development in the area of UID, what began as a nightmare for students and teachers alike turned into an opportunity to rethink pedagogy and provide a learning experience that enabled students with diverse backgrounds, ways of knowing, abilities, and preferred learning styles to excel.

The Importance of Faculty Development

The concept of Universal Instructional Design in higher education has achieved broad acceptance among disability services providers, but information has not been disseminated widely to administrators and faculty members, who would have primary responsibility for its implementation. Through a grant from the U.S. Department of Education (*Curriculum Transformation and Disability* [CTAD], n.d.; Higbee, 2003), a team comprised of faculty, campus disability services providers, and external consultants in specific areas of disability developed a series of training models that can be used on any campus (CTAD; Fox, Hatfield, & Collins, 2003). Components of the training include: (a) approaching disability from the perspective of the interactional model, rather than perceiving disability as a deficiency; (b) familiarizing faculty with legal issues and establishing their responsibility under the law; (c) attending to student perspectives; (d) understanding the underlying principles of UID and applying these principles to instruction; (e) learning about assistive technologies; (f) investigating local resources; (g) responding to case scenarios; and (h) creating an individual action plan. A guidebook for the training modules is available at www.gen.umn.edu/research/ctad.

Participants in training sessions held on several campuses between 2000 and 2002 evaluated the workshops very highly, with overall means exceeding 5.0 on a 6-point Likert-type scale, except for the pilot training session, for which the overall evaluation of workshop content was 4.8 (Fox, Hatfield, & Collins, 2003). One participant wrote:

> What I left with is the most valuable and that is the wider view regarding disabilities, a more positive outlook on various approaches to use, a renewed sense of "what I should be doing," tons of useful knowledge regarding the law, access issues, and what [my campus] has to offer. (Fox, Hatfield, & Collins, p. 32)

Throughout the nation, however, campus disability services providers continue to be challenged by faculty who have been briefly introduced to the concept of Universal Instructional Design, and understand its practicality and benefits as a pedagogical tool, but still

want more guidance about how to implement UID in their own courses. Typical questions posed at sessions on UID at professional conferences where the training model has been introduced begin with statements like, "OK, I can see how this might work in a composition class, but I teach chemistry." One of the purposes of this article has been to demonstrate how three faculty members teaching in different disciplinary areas have reconceptualized their teaching in order to integrate Universal Instructional Design in their work.

Conclusion

Although Universal Instructional Design may be considered "just good teaching" (Chickering & Gamson, 1987; Hodge & Preston-Sabin, 1997), it goes one step further. It involves our purposeful attention to differences among learners, and provides an excellent model for multicultural education (Barajas & Higbee, 2003) because its goal is inclusion. Through advance planning, faculty members who endeavor to implement UID find that it can be liberating, enabling them to bring more creativity to their teaching, and also rewarding, because students are responsive to more inclusive pedagogy. Although UID cannot eliminate all needs for individual accommodations for students with disabilities, it can be surprising how much less time faculty members must devote to making modifications "upon demand." Furthermore, UID benefits all students and counteracts the criticism that accommodations for students with disabilities disadvantage other students competing for grades in the same classes.

Finally, UID-inspired change can make a significant contribution toward the success of all first-year students. That is, although success in the freshman year involves more than just what transpires in the classroom, as Upcraft, Gardner, and colleagues remind us, "First and foremost, freshmen must succeed academically and intellectually" (Upcraft et al., 1989, p. 2). But how can instructors help first-year students to achieve the basic "academic and intellectual competence" (Upcraft et al., p. 2) they need in order to thrive in college? Our experience shows that UID offers both a theoretical framework and practical guidance that are worth considering. By foregrounding the importance of welcoming classrooms, essential course components, diverse teaching methods, and multiple paths for demonstrating knowledge, UID has helped each of us in different ways—to get students intellectually involved in our courses, to emphasize interaction among students to promote learning, and always to keep in mind the role of instructor contact and involvement (Upcraft et al., pp. 4-5) in the success of students in our first-year courses. We firmly believe UID can help other instructors do the same.

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Pathways of Persistence: A Review of Postsecondary Peer Cooperative Learning Programs

David R. Arendale

University of Minnesota

This chapter focuses upon a subset of the broader educational practice of peer collaborative learning, specifically postsecondary peer cooperative learning programs that embed study strategy practice within their activities. These practices have demonstrated higher student outcomes including increasing student persistence towards graduation. Adoption of such research-based practices has become more essential because institutions cannot waste scarce resources on programs that may not contribute both to increased student success as well as enhancing the institution's economic stability through lower student dropout rates and the loss of tuition dollars.

Peer collaborative learning has been popular in education for decades. As both a pedagogy and a learning strategy, it has been frequently adopted and adapted for a wide range of academic content areas throughout education at the elementary, secondary, and postsecondary levels due to its benefits. The professional literature is filled with reports of individual professors integrating this approach into postsecondary classrooms in diverse ways. Increased attention has been placed on this practice due to claims by some programs that carefully coordinated and managed learning programs with specific protocols can increase student persistence rates toward graduation, supporting student aspirations as well as bolstering institutional revenues.

This chapter does not attempt to be inclusive of this broad field of literature concerning peer collaborative learning. Instead, it is focused intentionally on a subset of the educational practice that shares a common focus with increasing student persistence toward graduation. Rather than a meta-analysis of all published research studies, this chapter is a preliminary review and a description of six models. At the end of the chapter several suggestions are made for differentiating the models from each other and the level of institutional resources required for implementing them.

The six student peer learning programs included in this chapter meet the following characteristics: (a) must have been implemented at the postsecondary or tertiary level, (b) has a clear set of systematic procedures for its implementation at an institution, (c) has been evaluated through studies that are available for review, (d) intentionally embeds learning strategy practice along

with review of the academic content material, (e) includes outcomes of both increased content knowledge and higher persistence rates, and (f) has been replicated at another institution with similar positive student outcomes. From a review of the professional literature six programs emerged: Accelerated Learning Groups (ALGs), Emerging Scholars Program (ESP), Peer-Led Team Learning (PLTL), Structured Learning Assistance (SLA), Supplemental Instruction (SI), and Video-based Supplemental Instruction (VSI). As will be described in the following narrative, some of the programs share common history and seek to improve upon previous practices. Other programs were developed independently.

Collaborative Learning, Cooperative Learning, and Learning Communities

A review of the professional literature finds that the terms collaborative learning, cooperative learning, and learning communities are sometimes used interchangeably. Although they share similarities with one another, a more precise differentiation is needed to help explore the utility of each for its intended educational outcomes (Cooper, Robinson, & Ball, 2003). Regarding their historical development and appearance within the professional literature in the United States, collaborative learning appeared first, cooperative learning second, and learning communities last. A search of the Educational Resources Information Center (ERIC) Database (2004) found more than 8,000 entries regarding descriptive and research studies that contained one or more of the three terms indexed within their documents.

Collaborative learning refers to a wide range of formal and informal activities that include any form of peer student interaction. This is the broadest and most general of the three terms. This term describes any classroom activity by an instructor that involves student peer-to-peer involvement. Cooperative learning is more narrowly defined as a subset of collaborative learning. It often follows these principles: (a) positive interdependence established in the group through adoption of different roles that support the group's moving to complete a goal, (b) peer interaction, (c) activities structured to establish individual accountability and personal responsibility, (d) development of interpersonal and small group skills, and (e) group processing of small group activities through verification of information accuracy (Cuseo, 2002; Johnson, Johnson, Holubec, & Roy, 1984).

In contrast with collaborative and cooperative learning groups, learning communities are distinguished by their focus on interactive peer learning. Learning communities are often more focused on enhanced curricular and pedagogical outcomes. In addition to often employing some version of student interactive learning, learning communities take several approaches to modifying the classroom experience by restructuring the curriculum. Some of the ways that courses may be modified are through linked courses, learning clusters, freshman interest groups, federated learning communities, and coordinated studies (Gabelnick, MacGregor, Matthews, & Smith, 1990).

A way to understand the relationships among these three terms is through a diagram, as provided in Figure 1. Collaborative learning is considered to be the largest construct, both due to its general definition as well as its numerical ranking as most frequently cited in professional literature (ERIC, 2004). A smaller construct lies within collaborative learning. This is cooperative learning. Although it holds to the same generalizations and goals of collaborative learning, it is much more specific in its implementation and following of specified protocols for its use. A related concept to both collaborative and cooperative learning is that of learning communities. While learning communities often utilize some peer collaborative or cooperative learning activities as part of their pedagogy, they generally focus more on curricular transformation. However, it is possible to implement some aspects of learning communities without extensive use of either collaborative or cooperative learning because the focus may be more on team teaching by instructors and the integration of academic content material (e.g., a cluster course that merges the content of an introduction-to-science with an ethics course) rather than extensive use of student peer interactive learning activities.

In this chapter the focus will be on peer cooperative learning programs that embed learning strategies practice within review of the academic content material and that also meet the other selection criteria previously mentioned. This is an important topic in the field of developmental education and learning assistance in particular and for postsecondary education in general because of the need by institutions to meet the needs of

a more diverse entering student body while maintaining or increasing academic rigor (Bastedo & Gumport, 2003). The institution must make systemic changes in the educational environment that will increase the academic success and persistence rates of all students to meet the expectations of stakeholders such as parents, legislators, and funding agencies. Although the number of academically underprepared students is increasing, historic delivery systems of academic development for students such as remedial and developmental courses are being reduced or eliminated by some states (Barefoot, 2003; Damashek, 1999; Parsad & Lewis, 2003). Many institutions have already adopted one or more of the six programs described in this chapter. The need for such approaches may increase due to the demands to meet the needs of access to an increasingly diverse student body without the traditional approaches offered by developmental education in the past.

Six Major Postsecondary Peer Cooperative Learning Programs

Six postsecondary peer collaborative learning programs were selected for inclusion in this chapter based on the criteria mentioned earlier in the narrative; the six are: (a) Accelerated Learning Groups (ALGs),

(b) Emerging Scholars Program (ESP), (c) Peer-Led Team Learning (PLTL), (d) Structured Learning Assistance (SLA), (e) Supplemental Instruction (SI), and (f) Video-based Supplemental Instruction (VSI). A short narrative overview of each follows with results from several research studies that have examined the impact upon student outcomes. The six programs have been divided into two groups.

The first group consists of those models that provide adjunct support through outside-of-class activities with little change by the primary course instructor. The first in this category is SI. In recent years two programs have been developed to address limitations of the SI model: ALGs and SLA. The second group of peer cooperative programs are those that share a common characteristic of a transformed classroom learning environment for all enrolled students. Major changes have been made by the primary course instructor through either integration of the peer learning model into the basic course delivery or heavy involvement by the instructor with the peer learning activities. The first of these programs is ESP, developed at approximately the same time as SI in the 1970s. In the 1990s two programs were created with similar purposes and protocols to ESP: PLTL and VSI. Most of these six programs cite in

Figure 1. Relationship Among Selected Learning Pedagogies.
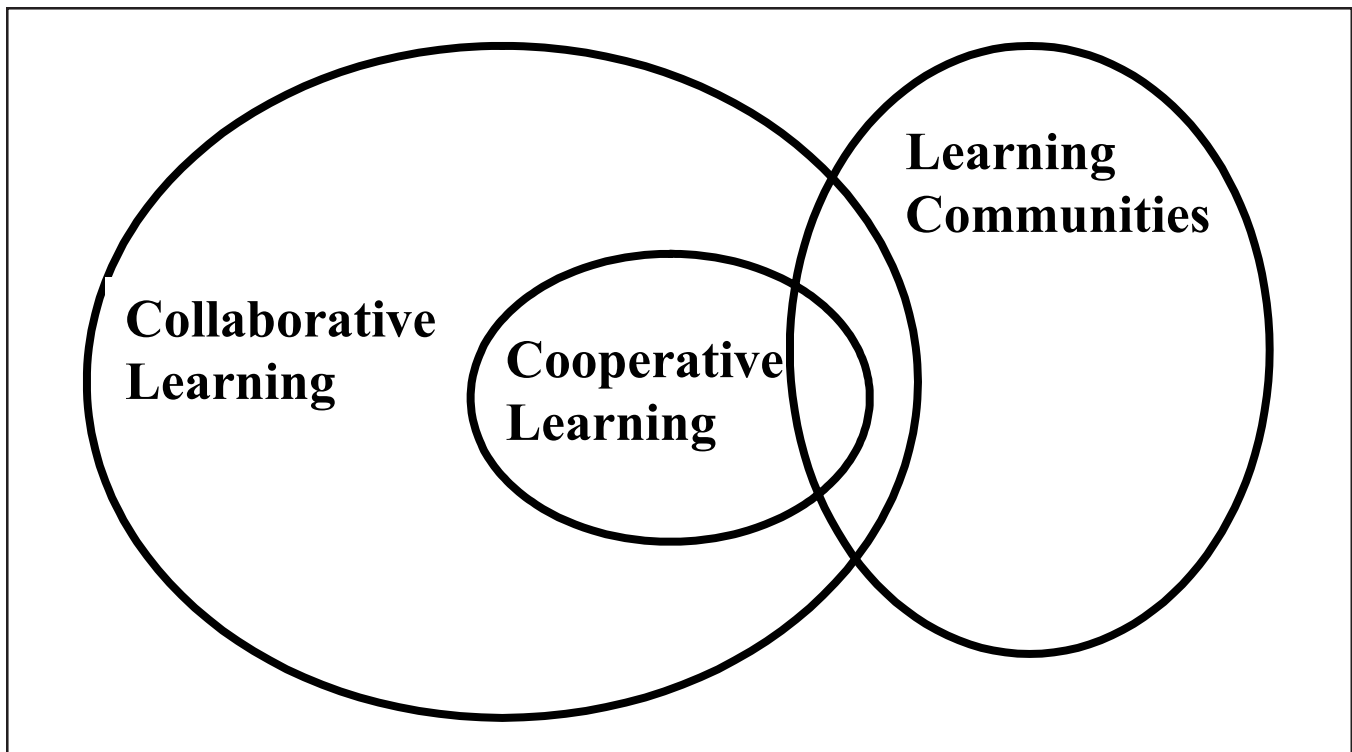
their literature reviews references concerning the other peer learning programs as it appears that each have been an incremental improvement upon previous peer learning models.

Adjunct Peer Cooperative Learning Programs to the Course

Supplemental Instruction (SI). The Supplemental Instruction model of academic assistance helps students in historically difficult classes master content while they develop and integrate learning and study strategies. The program was originally developed at the University of Missouri-Kansas City in 1973 and has been adopted by hundreds of institutions in the U.S. and abroad (Arendale, 2002). Goals of SI include: (a) improving student grades in targeted courses, (b) reducing the attrition rate within those courses, and (c) increasing graduation rates of students. All students in a targeted course are urged to attend SI sessions, and students with varying ability levels to participate. There is no stigma attached to SI because courses that have had high rates of Ds, Fs, and course withdrawals for multiple academic terms are the focus rather than attempting to identify specific students who are deemed to be high risk for failure due to predictors such as low standardized test scores or previous academic failures at the secondary or postsecondary levels. SI can be implemented in one or more courses each academic term (Martin & Arendale, 1994).

There are four key persons involved with SI. The first is the SI supervisor, a trained professional on the SI staff. The SI supervisor is responsible for identifying the targeted courses, gaining faculty support, selecting and training SI leaders, and monitoring and evaluating the program. When the historically difficult courses have been identified, the SI supervisor contacts the faculty members concerning SI for their course. The second key person for SI is the faculty member who teaches one of the identified courses. SI is only offered in courses in which the faculty member invites and supports SI. Faculty members screen SI leaders for content competency and approve selections. The third key person is the SI leader. SI leaders are students or learning center staff members who have been deemed course competent, approved by the course instructor, and trained in proactive learning and study strategies. SI leaders attend course lectures, take notes, read all assigned materials, and conduct three to five out-of-class SI sessions per week. The SI leader is the "model student," a facilitator who helps students to integrate course content with learning and study strategies. The fourth key component of the SI program is the participating students.

There have been several hundred research studies concerning SI conducted at institutions from around the world. Some of these and related information are available through Web sites maintained by the National Center for SI (Painter, 2004) and other professional organizations (Lipsky, 2004).

Doty (2003) reported on data supplied by 53 U.S. institutions between 1998 and 2003 concerning academic achievement for SI participants and nonparticipants. The data was drawn from SI reports covering 745 courses with a total enrollment of 61,868 students. SI participants were defined as those who attended one or more of the voluntary, out-of-class SI sessions sometime during the academic term. Outcomes displayed in the report included that SI participants received a D, F, or withdrew from the course at a rate between one-third and one-fourth that of nonparticipants, regardless of institutional type. In addition, mean final course grades were approximately a half letter grade higher for SI participants. These differences were statistically significant and were consistent across different types of institutions and academic content areas. The most prevalent use of SI is in the natural sciences (46%), followed by social sciences (20%), mathematics (15%), and humanities (7%).

Ogden, Thompson, Russell, and Simons (2003) assessed SI for short- and long-term impact on college academic performance and retention at Georgia State University. Data were compiled for students registered in a political science course supported by SI. Four groups were identified according to their university entry status and SI participation: traditional (regularly admitted) SI participants, conditional (Learning Support Programs or English as a Second Language [ESL] entry status) SI participants, traditional non-SI participants, and conditional non-SI participants. All SI participants volunteered for the program and were thus self-selected. There were no statistically significant differences between SI and non-SI participants in the two comparison groups when preentry attributes were analyzed (i.e., standardized college entrance exam

scores, predicted grade point average). Conditional students participating in SI had significantly higher short- and long-term outcomes compared to conditional non-SI participants. Conditional SI participants reenrolled at a higher rate than did the other three student groups included in this study. Traditional SI participants earned higher final course grades than their non-SI counterparts, though the results were not statistically significant. The ESL students were equally distributed among the four comparison groups and did not serve as a statistically significant factor in outcomes studied. The authors postulated that long-term benefits for SI would be fostered by offering the program throughout the academic course of study of students and not focused so commonly only during the first year of college.

Ashwin (2003) reported about a qualitative study on the impact of SI with an institution in the United Kingdom. More than one-third of the professional literature concerning SI has been published about programs outside the U.S. Ashwin found that attendance at SI sessions was positively and significantly correlated to academic performance. This relationship was found even when prior levels of academic performance were controlled. An unusual finding of the research was that students who attended SI sessions sometimes chose not to employ rigorous study strategies, which resulted in a reduction of the quality of the learning of these students. Qualitative evidence suggested that this change in approach was in response to an increased awareness of the assessment demands of the course and that these students had chosen to devote more effort to other courses that required higher levels of rigor to pass them. It is argued that these results suggest that the outcomes and operation of the SI program were influenced by the context in which it operated.

Congos (2003) is one of the most frequently published authors concerning SI. His latest publication identified recommended policies and practices for SI programs. The document provides a means for conducting a program review with 90 recommended practices. The categories covered by the evaluation tool include: SI leader pre-semester training, SI faculty training, SI leader training during the academic term, SI session observation and feedback, in-class introduction of SI, and end-of-term evaluation.

Accelerated Learning Groups (ALGs). Accelerated Learning Groups were developed at the University of Southern California in Los Angeles in the early 1990s by Sydney Stansbury (2001a; 2001b) and have been adopted at several institutions. They are designed to meet the needs of students who had significant skill or knowledge deficiencies that often inhibited their effective use of other voluntary participation peer cooperative learning programs, such as SI. Stansbury noted that the college students who were least academically prepared were often the ones who never attended, or only attended one or two SI sessions at the beginning of the academic term. The reasons for their noninvolvement included both their severe cognitive deficits as well as motivational issues. This knowledge helped to prompt the need to develop another intervention for these students, which eventually resulted in creation of ALGs (Sydney Stansbury, personal communication, January 15, 2004).

ALGs combine peer-led small group learning activities, assessment, frequent feedback by a learning skills specialist, and development of an individual education plan (IEP) for each student. Students participating in ALGs are concurrently enrolled in a challenging entry-level course while they develop the necessary skills and knowledge prescribed by the IEP. The ALG students are placed into a triad with another student with similar IEP objectives and a peer leader who works intensely with the students under the supervision of a learning skills specialist. Participation in ALGs continues throughout the academic term until the learning skills specialist deems it appropriate for transition into another peer development program or individual tutoring.

Minimum requirements for implementation of ALGs include academic testing of students, staff time of a qualified learning skills specialist, academic monitoring throughout the academic term, employment of well-trained student peer leaders to facilitate the triads, faculty support for the program operating in tandem with their course, and availability of an academic enrichment program, such as SI, to continue modeling cognitive and metacognitive learning strategies with the students after they complete their work within the ALG program.

In a study with students at the University of Southern California, Stansbury (2001a) found that ALGs were especially useful for students considered academically at-risk who were enrolled in an

introductory science course. A pilot study investigated whether at-risk students who participated in an ALG and SI combination demonstrated higher self-efficacy and SI attendance than those who participated in only SI. Results suggested that at-risk students were more likely to participate in 12 or more SI sessions if they attended an ALG and SI combination than if they attended only SI. In addition, the range of final grades was higher for those who attended an ALG and SI combination than for those who attended only SI.

According to ALG's creator, the development of prerequisite skills is essential for the efficacy of SI to serve academically underprepared students who may shun the very academic intervention that would be of most help to them (Stansbury 2001a, 2001b). One of the challenges for SI is that only approximately one-third of students in an average class attend SI sessions. This rate of participation holds nearly the same for all groups within the class, regardless of previous levels of academic achievement as measured by standardized test scores or high school rank or grade point average (Arendale, 1997). Therefore, only one third of the students from the lowest predicted academic preparation level attend SI sessions. It was for this target population that ALGs were created.

Structured Learning Assistance (SLA). Initiated in 1993 at Ferris State University (Michigan), Structured Learning Assistance workshops assist students in developing the background needed to connect to the course content and to develop and apply the learning strategies most appropriate to the content area. SLA has been recognized through several national awards and is currently supported by a three-year U.S. Department of Education grant from the Fund for the Improvement of Postsecondary Education (FIPSE). Results indicated that SLA can significantly improve student pass rates, including rates for at-risk students. Other institutions have attended training workshops hosted by Ferris State University to enable them to implement SLA. The current FIPSE grant supports four other institutions in successfully implementing the SLA model (Wolgamott, 2004).

SLA provides both an academic and an affective support system. SLA targets courses that are considered high-risk for failure, academically rigorous gateway courses for academic majors, or historically difficult upper- division courses. The SLA workshops are formally scheduled four hours weekly in the student schedule similar to an accompanying science lab. Attendance at the workshop is required of all students the first week of the course or until the first test, quiz, or other assessment is given in the class. Following this first course assessment, attendance is required only for students whose current grade in the course falls below a C. Other students may voluntarily continue to attend the SLA sessions. SLA was created, among other purposes, to address the problem of less academically-prepared students who were often not attending either SI or individual tutoring sessions (Wolgamott, 2004).

SLA class professors receive regular, ongoing information about student progress, student concerns, and ways of better connecting with students. SLA sessions provide explicit instruction in learning strategies. Research studies suggest that SLA students earn higher final course grades than nonparticipants in control groups (Doyle, 1999; Kowalczyk, 2003). A faculty development component is also part of SLA, which supports higher academic achievement for students. Informal classroom assessment information is provided to participating faculty members to assist them in making modifications to classroom activities and prompt review of difficult concepts (Doyle).

Two research studies have been published externally about SLA. Doyle and Kowalczyk (1999) conducted analyses of data collected within the SLA program at Ferris State University. Data suggested the following outcomes for the SLA program: (a) higher rates of students earning C– or better in the course, (b) higher persistence rates at the institution, and (c) 73% of students attributed SLA as significant to their academic achievement.

In another study at Ferris State University, Doyle and Hooper (1997) investigated SLA during a 3-year study. Results suggested that SLA can significantly improve student pass rates, even for students considered academically at-risk. In nearly 85% of the 42 courses offered with SLA support, the SLA students had higher pass rates than those of all other Ferris State students taking the same courses. This improvement was especially marked in the mathematics courses, where the average pass rate increased anywhere from 24% to 45%.

Embedded Peer Cooperative Learning Programs Within the Course

Emerging Scholars Program (ESP). Developed at the University of California, Berkeley in the early 1980s, the Emerging Scholars Program is also known as the Calculus Workshop Program, the Mathematics Workshop Program, and the Treisman model after its creator, Philip Uri Treisman (1986). The ESP program has been adopted and adapted by more than 100 institutions across the U.S. (Born, 2001). ESP was based on qualitative research by Treisman, who investigated the difference in academic success of students of different ethnic and cultural groups. The academic success rate for African American students in math, science, and engineering graduate programs was very low in comparison to Asian students. After an extensive ethnographic study of Asian students at UC-Berkeley, Treisman designed a program that created a system based on the informal student-driven sessions created by the Asian students in challenging calculus courses. The resulting program not only was based on sound cognitive learning strategies, but was also attentive to the affective domain of learning. After successful use with students of color at many institutions, implementors of the program have found positive results for many student demographic categories (Fullilove & Treisman, 1990; Moreno, Muller, Asera, Wyatt, & Epperson, 1999).

Most ESP programs shared the following elements: (a) build a cohort community of first-year students of color that is academically oriented and a source of peer support, (b) provide the cohort with an extensive orientation to the institution and with ongoing academic advising, (c) advocate the interests of the cohort, (d) monitor their academic progress and adjustment to the environment, (e) provide the cohort with ongoing adjunct instructional sessions that promote development of cognitive and metacognitive learning strategies needed for independent learning, and (f) link high school-level and undergraduate-level affirmative action efforts (Treisman, 1986). During most ESP implementations, students commit themselves to attend two additional lab sessions weekly, each lasting two hours each. At some institutions students are required to attend the sessions based on preentry test scores, and at other institutions students are encouraged to make a commitment through creation of a perception that ESP is an honors program and that it is a privilege to participate (Leapard, 2001, Mills, 1999). Following is a summary of several research studies that have been conducted concerning ESP.

Born (2001) conducted a 2-year, quasi-experiment at Northwestern University to evaluate the effect of ESP on performance of historically underrepresented students (e.g., African American, Hispanic) and traditional (e.g., Caucasian, Asian) undergraduate biology students in a three-course series and to investigate motivational explanations for performance differences. Traditional students randomly assigned to the ESP workshops (n = 61) performed between one half and one standard deviation better than those assigned to the control group (n = 60; p <.05) in each quarter without spending more time studying. During the first quarter, ESP historically underrepresented students (n = 25) showed a pattern of increasing exam performance in comparison to nonparticipant students of similar ethnic background (n = 21), who showed a decreasing pattern (p <.05). Although gender differences in biology performance were studied, none were detected between those who participated in ESP and those who did not.

Fullilove and Treisman (1990) conducted an extensive study of the ESP at the University of California, Berkeley, between 1978 and 1984 with African American mathematics students. To provide comparison data, a baseline of student performance was established during the period of 1973 to 1977 before the ESP program was provided to students. The percentage of nonparticipants in ESP that earned grades of D or below ranged from 33% to 41%, depending upon the year. The ESP participants earned similar grades at a much lower rate, ranging between 3% and 7% in comparison over the time period. The percentage of nonparticipants earning grades of B– or higher ranged from 10% to 28%. The ESP participants earned much higher grades in comparison, with the percentage at B– or above ranging between 39% and 61%. The persistence and graduation rates favored the ESP participants at 65% versus 41% for the nonparticipants. The study took into account preentry attributes such as SAT scores on the verbal and mathematics subtests.

Leapard (2001) investigated affective, metacognitive, and conceptual effects of an Emerging Scholars Program on elementary teacher preparation. The study involved an elementary mathematics content

course that was constructivist in nature and emphasized the tenets of the National Council of Teachers of Mathematics Standards. Qualitative measures included in the study were student interviews, mathematical autobiographies, and classroom observations. Quantitative measures consisted of surveys on metacognition and mathematics anxiety and concept maps. Data concerning affective, metacognitive, and conceptual changes was analyzed both qualitatively and quantitatively. Results indicated an increase in metacognitive skills and a decrease in mathematics anxiety. The potential effect of ESP participation upon conceptual understanding was inconclusive. However, a significant increase in the preservice teachers' level of self-confidence in teaching was noted. The ESP appeared to have a positive effect on preservice elementary teachers when considering affective and metacognitive attributes related to mathematics, but appeared to have had a neutral effect on the reconceptualization of mathematical ideas.

Mills (1999) reported an in-depth study of ESP in chemistry and physics courses at the California State Polytechnic University, Pomona. Data for the first longitudinal component of this study were obtained by tracking three groups of students during spring 1998: (a) ESP participants from historically underrepresented groups (e.g., Latino, African American, and Native American workshop students); (b) a random sample of non-ESP participants who were from the same historically underrepresented groups; and (c) a random sample of non-targeted students (e.g., Anglo and Asian) enrolled in the same classes. Data for the second component of this study, an analysis of qualitative data, were obtained by administering questionnaires, conducting interviews, and observing science students. Even after taking into account verbal and mathematics SAT scores, ESP participation was a significant predictor of first-quarter course grade for historically underrepresented students in both chemistry and physics.

Video-based Supplemental Instruction (VSI). SI was developed at the University of Missouri, Kansas City, in the late 1980s and has been implemented by dozens of institutions in the U.S. and abroad. Video-based Supplemental Instruction is an interactive information processing and delivery system that helps academically at-risk students master rigorous course content as they concurrently develop and refine reasoning and learning skills. Rather than requiring prerequisite enrollment

in a traditional developmental course, VSI is a learning system that mainstreams the best practices of developmental education into historically-difficult core curriculum courses. Research suggests the efficacy of VSI for improving academic achievement for students of diverse levels, from elementary school children studying mathematics through professional school for future doctors studying to pass the first step of their medical license examination boards. VSI is presented as a holistic alternative to traditional approaches of developmental education (Martin, Arendale, & Blanc, 1997).

VSI differs from SI in several respects. With VSI, the students enroll in a designated core curriculum course. The course professor has previously recorded all didactic presentations on videotape for use with underprepared students as well as other students who opt for this highly interactive way of learning. Instead of attending the professor's regular lecture class, students enroll in the video section of the professor's course. Students in both sections, live and videotaped, are held to the same performance standards. Specially designed facilitator and student manuals support the video sections (Martin & Blanc, 2001). Integrated within these manuals are sections that require the students to practice use of appropriate study and learning strategies with the course content material. The VSI section of the course functions much like a distance learning telecourse.

VSI participants, led by a trained facilitator, start and stop the videotaped presentation at predetermined times as well as whenever they have a question or want clarification. Professors design the video presentations to include periodic small group assignments to insure mastery of one concept before the next is introduced. Students complete these tasks under the supervision and with the guidance of the facilitator. When the taped lecture resumes, the professor models how he or she thinks about the assigned tasks. In this way, the students have time to construct and verify their understanding as well as compare their own thinking to that of the expert (Martin & Blanc, 2001).

There are several published research studies concerning VSI. Hurley (2000) investigated several questions of the VSI program at the University of Missouri-Kansas City: (a) final grades earned by students in VSI as compared with students enrolled in a lecture-format class with the same professor; and (b)

potential changes in self-efficacy, self-confidence and mastery of learning strategies of VSI participants. The major conclusions from the study were the following: (a) the VSI participants received a statistically significant higher percentage of A and B grades than a comparable group of non-VSI students in the same history class over 14 semesters, and (b) the VSI participants received a statistically significant lower rate D and F final course grades than the non-VSI participants. Interviews with VSI participants suggested that VSI was a significant factor in the acquisition of a variety of strategies that provided them with the academic tools to be successful on their history exams in that class. In addition, the VSI participants indicated that they developed a greater sense of self-efficacy in the class and greater personal confidence.

Research by Koch and Snyders (1997) is representative of the studies conducted by VSI programs outside the U.S. The researchers investigated the effect of VSI on the mathematics performance of students whose matriculation marks did not enable them to be directly admitted to the Science Faculty at the University Port Elizabeth (UPE), South Africa. These students were enrolled in Ethembeni Community College in Port Elizabeth, which serves as a preparation area before admission to UPE. Fifteen students who enrolled in VSI math were matched with 14 students enrolled in a similar math course that required attendance at Supplemental Instruction (SI) sessions. Research suggests that VSI was a more useful instructional delivery system for students with a minimum level of preknowledge in mathematics. In addition, the researchers suggested the usefulness of VSI in distance learning venues where experienced and trained faculty members are unavailable to deliver live instruction.

Peer-Led Team Learning (PLTL). Peer-Led Team Learning is an innovative model in science education. PLTL was originally developed at the City University of New York (CUNY) in the mid 1990s. Support through a grant from the National Science Foundation has assisted in adoption of this model by more than 100 institutions. A Web site maintained by the national PLTL office disseminates information and research studies concerning PLTL (Dreyfus, 2004).

Student leaders guide the activities of small groups of students in weekly PLTL meetings. These meetings are included as part of the course requirements. The students work through challenging problems that are designed to be solved cooperatively. The student leaders receive extensive training before the beginning of the academic term in a wide variety of areas including how to foster student engagement with the content material and with each other. According to the program's developers, the PLTL methodology offers a number of educational opportunities: (a) the supportive format encourages questions and discussions that lead to greater conceptual understanding; (b) students learn to work in teams and to communicate more effectively which are valuable skills needed for further success in postsecondary education as well as when they enter the world of work; (c) use of standardized adjunct print curriculum materials and workbooks help to ensure higher quality learning that is more often uniformly experienced by all students at PLTL-implementing institutions; and (d) peer leaders learn teaching and group management skills (Cracolice & Deming, 2001).

A difference between the approaches of PLTL and ESP relates to curriculum development. While in ESP each course supported by the program develops its own curriculum materials, the national office for PLTL has published supplemental textbooks and workbooks that can be added to the course delivery and also serve as models for development of local curricula. In addition, PLTL offers national conferences and training workshops to support institutions with implementing the program. This latter approach allows for more efficient and effective adoption of the PLTL program and increases the quality of sessions that are facilitated by student peer leaders (Cracolice & Deming, 2001).

The following are guiding principles of PLTL: (a) the program is integral to the course through required attendance at two hours of workshop time weekly, (b) peer leaders are trained in group leadership and course content, (c) activities and materials are challenging yet accessible, (d) faculty are deeply involved in the program, (e) physical space and environments are conducive to discussion and learning, and (f) the program has strong support from the institution (Gosser, Cracolice, Kampmeier, Roth, Strozak, & Varma-Nelson, 2000; Gosser & Roth, 1998).

In addition to numerous studies provided through the national PLTL Web site, independent researchers are conducting detailed studies at their home institutions. Tien, Roth, and Kampmeier (2002) reported their study of PLTL in an undergraduate organic chemistry course. Quantitative and qualitative

data were collected. PLTL participants (i.e., treatment group) were compared with students who participated in recitation sessions (control group). PLTL participants earned higher final course grades and had higher persistence rates. Analysis of interviews with PLTL participants suggested that the program helped them to learn more course material, and that they were more socially engaged, intellectually stimulated, and found the experience to be a productive use of time.

Selecting the Cooperative Learning Model for Institutional Needs

To display the relationship between the six identified peer cooperative learning programs and learning assistance programs in general, it would be helpful to compare them with Keimig's (1983) Hierarchy of Learning Improvement Programs:

In the Hierarchy of Learning Improvement Programs, four basic program types are described and ranked, differentiated by the extent by which they are comprehensive in response to the various needs of students and institutionalized into the academic mainstream. Level 1: Isolated courses in remedial skills. Level II: Learning assistance to individual students. Level III: Provides course-related supplementary learning activities outside the class for some

objectives. Level IV: Comprehensive learning system in the course. (p. 21)

Using Keimig's hierarchy it is possible to arrange the six peer cooperative programs as illustrated in Figure 2. According to Keimig, the highest level of student outcomes occurs when a comprehensive learning system is integrated throughout the course learning experience. This requires a transformative experience by the institution due to: (a) heavy involvement of the course professor with curriculum development; (b) training, monitoring, and supervision of peer group facilitators; (c) alignment of educational objectives among all course components; (d) changes in institutional and course policies and expectations; (e) release time for professors to complete essential tasks; and (f) stable, long-term institutional funding because outside grants are difficult to obtain or maintain. ESP, PLTL, and VSI fit into this fourth category level. Although these programs have a higher likelihood of improved student outcomes, they are also the most demanding of institutional resources and changes in the campus environment.

The next level of programs, according to Keimig, are those that are adjunct to the course and provide support for it through either voluntary or required participation. ALGs, SLA, and SI are placed into this group. The expectancy for results, based on Keimig's model, is not as high as for the level four comprehensive

Figure 2. Placing Peer Cooperative Learning Programs Within Keimig's Hierarchy of Learning Improvement Programs.

Levels of Integration Within the Course	Peer Cooperative Learning Programs	Likelihood of Improved Student Outcomes
Level Four: Comprehensive learning system within the course	ESP, PLTL, and VSI	High
Level Three: Supplementary learning activities adjunct to the course	ALG, SLA, and SI	Above Average
Level Two: Learning assistance to individual students, i.e., tutoring, outside of the course		Below Average
Level One: Isolated separate courses in remedial skills		Low

programs as described in the previous paragraph. But ALGs, SLA, and SI are predicted to yield higher student outcomes than either individual assistance to students such as that provided through tutoring or enrollment in remedial courses. This third category is less expensive and less labor intensive to implement, but may yield lower desired student outcomes.

Higher levels of institutionalization of peer learning programs require high levels of funding and support from administration and faculty members. This investment may pay high dividends. The future political and economic environment may be more supportive for these types of programs for supporting higher student persistence rates in comparison with traditional remedial or developmental education courses, which are under considerable pressure for curtailment as described earlier in this chapter. It is recommended that before adoption of any of the six programs, a careful review of the published literature be undertaken as well as personal communication with those successfully operating the programs.

Some of the programs, such as PLTL and SI, offer national training workshops to enable others to implement the programs. On-site observations can probably be negotiated with any of the six programs. The investment in such telephone and on-site observations will help to reveal the essential elements needed for successful implementation of the specific practice. Often these essential details are not revealed in the published literature, which tends to be more focused on statistical studies and not on the detailed implementation protocols. Based on personal experience as a former national training director for one of the six programs, I strongly recommend careful planning before attempting to implement the programs. Although the educational outcomes described in the published literature are replicable, achieving these outcomes generally requires careful implementation and constant monitoring to assure continued quality.

Further Research Issues Regarding Peer Cooperative Learning

One of the most perplexing issues facing peer cooperative learning groups is dealing with student motivation and goal orientation. Sometimes the students who could most benefit from the positive effects of peer learning are the ones least likely to participate due to fear of exposing their academic weaknesses to others or even to themselves. Most of these six programs have dealt with the issue through mandatory attendance at sessions. Although brute force does compel attendance, it does not necessarily follow that students willingly adopt the new academic behaviors and implement them in other courses when not under the dictates of program requirements. The complexity of student motivation is being carefully studied among elementary and secondary education student populations. However, this important construct is often ignored in the study of postsecondary education in general, and research regarding the provision of learning assistance at the college level is overlooked in particular.

Creating peer cooperative learning programs that provide both structure and an environment that encourages students to modify their motivations for learning will require more work by program designers. Too often students have been expected to adopt the expectations and learning conditions of the institution without direct instruction. This literature supports the notion that it is necessary for institutions to implement programs that are more attentive to individual differences among students. Much work has yet to be done.

Additional Resources

By its very nature, this chapter will be dated as soon as it is printed. Further information on these six postsecondary peer cooperative learning programs is available through the following Web site: http://www.tc.umn.edu/%7Earend011/. In addition to the interactive database, a print version of the annotated bibliography is available in the Acrobat PDF format for users to read online or to print on their computer. This print document as well as the on-line resource and instruction for its use are available at http://www.tc.umn.edu/~arend011/Peerbib03.pdf.

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Multicultural and International Strategies
That Foster Access and Retention

CRDEUL

Introductory-Level College Mathematics Explored Through a Sociocultural Lens

Irene M. Duranczyk, Susan Staats, Randy Moore, Jay Hatch, Murray Jensen, and Chas Somdahl
University of Minnesota

The field of ethnomathematic and sociocultural theory can enrich developmental education practices. A survey of ethnomathematics literature uncovers a few examples of how faculty can infuse ethno-pedagogy and ethno-assessment into developmental course offerings. This article hopes to instill interest in and motivation for innovative practices and classroom-based research grounded in ethnomathematics and sociocultural theory.

Ethnomathematics links students' diverse ways of knowing and learning and culturally-embedded knowledge with academic mathematics. Reviewing ethnomathematics literature with a sociocultural lens can enrich mathematics education. A summary of ethnomathematics and sociocultural-based research, pedagogy, and assessment techniques is provided for the purpose of (a) expanding the conversation, (b) exploring possible adaptations of ethnomathematics and sociocultural knowledge within the developmental education community, and (c) considering its theoretical base for the reconceptualization of teaching and learning in developmental education. This chapter suggests some first steps for developmental mathematics practitioners to explore academically-sound and culturally-rich ways to provide a more inclusive developmental program for the diverse populations served at their institutions.

Present Status of Ethno-Research

A shift in the focus of mathematics education was induced by the need for greater democratic access to mathematics learning in our increasingly technological world (American Mathematical Association of Two-Year Colleges [AMATYC], 1995; Mathematical Association of America [MMA], 1998; National Council of Teachers of Mathematics [NCTM], 2000). This need was embraced and advanced by ethnomathematicians well before the traditional mathematics organizations stated the need for greater democratic access. It was an integral part of Gloria Gilmer, Ubiratan D'Ambrosio, and Rick Scott's motivation for incorporating the International Study Group on Ethnomathematics in 1985 on the heals of the Fifth International Congress on Mathematics Education in Adelaide, Australia (Powell & Frankenstein, 1997c).

The following quote captures an understanding of democratic access and its importance for educators working to create opportunity and improve completion rates for underserved, marginalized populations:

> The crux of democratic access to mathematics is our understanding, and researching new ways to think about mathematics teaching and learning that has a moral commitment to the common good, as well as to individual needs. This is democratic education. Democratic education is important for social justice and equity in our world where, at the present time, they do not always prevail. An additional benefit of such education is that it provides mathematical access to all students because it is inclusive of all cultures and students rather than exclusive to cultures and students who historically have had access. Democratic education is collective in its goals and individual in its opportunities for student participation. As a result, it is emancipatory for all students. (Malloy, 2002, p.17-18)

Historic Roots of Ethnomathematics

The work of educational theorist Paulo Freire (1973, 1974) predates ethnomathematics. Freire was one of the first authors to assert the importance of literacy for democratic participation. His adult literacy writings and research outline how persons stigmatized as illiterate were educationally and politically empowered through the use of culturally-relevant materials and practices. Through the International Study Group on Ethnomathematics, a group of scholars built upon the theoretical work of Freire as applied to mathematics and have investigated the underpinnings of mathematical knowledge beyond Eurocentrism in mathematics education. Under the leadership of Ubiratan D'Ambrosio (Powell & Frankenstein, 1997c), this group of scholars has explored theoretical frameworks for teaching and learning as a dynamic process utilizing individuals' cultural histories to explore ways of knowing in many countries and cultural or socio-economic groupings.

Although many educators have embraced Freire's (1973, 1974) ideas, there has been limited research using Freire's pedagogy within the mathematics world in the United States, and specifically with culturally

diverse, first-generation, economically or educationally disadvantaged students who were underprepared for university success. Even less of this research has been disseminated and interwoven into mathematics education for underprepared, underrepresented college students. The results of the Third International Mathematical and Science Study (Mullis et al., 2001) indicated that many U.S. students still believe that the ability to do math is innate and only some people from certain ethnic and gender groups possess it. Ethnomathematics researchers and developmental educators need to continue to demystify this belief. All cultures have math and use it as a system for making meaning in their world (Ascher, 1991, 2002). In order to counteract students' negative attitudes toward themselves as learners of mathematics, and particularly those that originate with stereotypes according to gender, race, and other social group identities, developmental educators need to develop bridges between academic math and everyday, culturally-based mathematics.

> Teaching math through cultural relevance and personal experiences helps the learners know more about reality, culture, society, and themselves. That will, in turn, help them become more aware, more critical, more appreciative, and more self-confident. It will help them build new perspectives and syntheses, and seek new alternatives, and hopefully will help them transform some existing structures and relations. (Fasheh, 1997, p. 288)

Thus, an ethnomathematics approach for empowering marginalized students seems to be exceptionally well suited and appropriate.

Current Work in Ethnomathematics

The Yup'ik project for Alaskan elementary students directed by Jerry Lipka has generated strong learning outcome data in support of the transformational capacity of ethnomathematics curricula (Lipka & Adams, 2004). The module *Building a Fish Rack: Investigations Into Proof, Properties, Perimeter, and Area* was developed in consultation with Yup'ik elders. Rural, primarily Yup'ik students had a statistically significant 8% gain between the pretest and posttest compared to nonparticipants, and, notably, the mixed ethnicity classes in an urban Fairbanks school district also had a

significant 12% gain. The fact that the module provided learning gains for students of various ethnicities should encourage teachers of diverse classrooms to consider ethnomathematics as a reform pedagogy and not simply an exercise in identity politics.

Because ethnomathematics gained recognition through the clear goal of transforming the educational experience of marginalized elementary through secondary students (K-12), it is ironic that this possibility is seldom investigated at the undergraduate collegiate level. An informal survey found that incorporating ethnomathematic ideas into developmental and mainstream mathematics classes is quite rare; liberal arts elective classes and mathematics education classes are by far the most common venue for ethnomathematics ideas (Gould & Craine, 2002). Probably the most influential researcher of ethnomathematics for undergraduates is mathematician Marcia Ascher (1991, 2002). Ascher, along with her anthropologist husband Robert Ascher (1981), published their analysis of Andean accounting textiles which resulted in the highly-respected volume *Code of the Quipu: A study in media, mathematics, and culture*. Ascher's (1991, 2002) subsequent work is characterized by careful attention to ethnographic detail and the illumination of significant and varied mathematical ideas within traditional practices. Also influential are works by George Gheverghese Joseph (1992) and Claudia Zaslavsky (1973). Ron Eglash (2002, 2003) has recently organized a group of faculty to present his online, culturally-situated design tools to undergraduates. These design tools encourage students to explore the Cartesian and polar coordinates, symmetry, fractions, transformational geometry, modular math, and fractal geometry through African, Latino, Native American, and Youth Subculture artifacts, hair designs, graffiti, rhythms, navigation, and clothing. Students explore the mathematics behind cultural expressions.

"A Survey of Current Work on Ethnomathematics" by Paulus Gerdes (1997), published in *Ethnomathematics: Challenging Euro-centrism in Mathematics Education* (Powell & Frankenstein, 1997c) identifies a few researchers investigating the implications of ethnomathematics for postsecondary learners in the United States, specifically S. E. Anderson, Arthur B. Powell, and Marilyn Frankenstein. Anderson (1997) has tested his theories in classrooms with underprepared and underrepresented populations in New York and Newark. He states the mission, "Our duty is to lay the seeds for a more egalitarian educational system based on the assumption that any person can learn anything" (p. 293). Anderson has used classroom research to expand his knowledge of the interplay between culture and mathematical knowledge. His work, although having national significance, was locally-based and has not been widely applied or adapted to other developmental mathematics programs in higher educational institutions. Anderson is presently Education Director at Medgar Evers College.

Arthur B. Powell (Powell & Frankenstein, 1997a, 1997b, 1997c), who has been teaching developmental mathematics at Rutgers University on the Newark Campus since 1981, has explored ethnomathematics with his students and the efficacy of a classroom-based participatory research model. Powell is learning about the students' world and experiences. Students are exploring the mathematics and power relationships behind our social, cultural, educational, economic, and political systems. Students improve their self-esteem and work toward building a more just society.

Marilyn Frankenstein (1989; 1997a, 1997b, 1997c) also extended ethnomathematics to critical mathematics, emphasizing reflection and action after exploring the interconnections between mathematics and political realities. For example, Frankenstein uses editorials, newspaper articles, cartoons, and other representations of social issues presented from multiple points of view and has students (a) read and discuss main points, (b) assess the kinds of mathematical knowledge necessary to understand the issue presented and support the multiple perspectives on the issue, (c) look up other sources to compare and contrast information at hand, and (d) evaluate the information and draw conclusions based on their interpretation of the information. Voting, health, poverty, and other social welfare issues are discussed within the mathematics classroom, and the hidden mathematics of our social and economic systems are explored. Students are then encouraged to bring their personal experiences and community knowledge into the classroom to contextualize new information and perspectives. Students are encouraged to reflect and take action on issues that are particularly important or relevant to them. There is a give and take between multiple perspectives, issues, and ways to represent the

mathematics. *Relearning Mathematics: A Different Third R—Radical Maths* (Frankenstein, 1989) is an example of a pre-algebra mathematics text using this approach. Frankenstein bridges academic mathematics with real-world mathematics. Powell and Frankenstein (1997b) conclude, "We suggest co-investigation between students and teachers into discovering each others' ethnomathematical knowledge. This will improve our teaching, and will also point the way to new research methodologies" (p. 321). The need remains for extending these studies beyond a single campus and designing a research model that captures student and faculty data from community colleges, four-year institutions, and research universities.

Another example of ethnomathematics is embodied in the work of Robert Moses and the Algebra Project (Moses & Cobb, 2001). Moses adapted Paulo Freire's (1973, 1974) methods for use with urban, middle-school students beginning their explorations in algebra. Moses incorporated his own organizing history from the civil rights era and experiential and sociocultural learning theory to inform his practice and research. His students used the urban environment and their lived experiences to explore pre-algebra and algebra concepts to understand operations with signed numbers, variable notation, order of operations, and other key concepts. For example, students rode the subway system in Boston and then calculated distances and displacement, exploring absolute values and negative and positive numbers, involving higher-order thinking and problem-solving skills to mathematize their experience moving for point a to point b. Parents and community members became involved in the project supporting teacher and students' quest for excellence. As Moses uses new techniques and methods in the classroom he trains and informs parents and supportive community members. Moses continues his grassroots organizing work through professional training sessions demystifying mathematics for teachers, parents, or community support groups.

"Researchers in the field of Ethnomathematics will be faced with the continuing tasks of mobilizing human energies to generate and disseminate more ethnomathematical knowledge and to use ethnomathematical approaches for promoting human development" (Gilmer, 1997, p. 414). Mathematics education is not equal across race, gender, and ethnic groups in the United States (Oakes, 1990; Secada, 1992; U.S. Department of Education, 1998). Research seeking to empower underrepresented groups in mathematics and math-related careers is an unmet need in the United States, as evidenced by the National Science Foundation's priorities (Lesh & Lovitts, 2000).

Ethnomathematics research is also encouraged by The National Council of Teachers of Mathematics, the Mathematics Association of America, and the Joint Mathematics Meeting as evidenced by presentation strands in ethnomathematics at their national conferences. The International Congress on Mathematical Education also includes many presentations on ethnomathematical research, primarily focusing on elementary education topics. Representation from the developmental mathematics community has been limited in all of these mathematical communities. The conversation of ethnomathematics at developmental education conferences has been nonexistent. There is a need for research that may assist in bridging academic mathematics with real-life, culturally-embedded, problem solving. There is a need to strategize with underserved students on ways to extend their histories and mathematical knowledge into powerful mathematical constructs. As Romberg and Collis (2000) stated in *Research Design in Mathematics and Science Education,*

> Because an object of the reform movement is classrooms that promote understanding, field studies of students and teachers interacting in classrooms about important problems leading to students' understanding of mathematics are warranted. Furthermore, in conducting field studies, multiple sources of evidence usually need to be gathered so that a well-grounded story can be told about the classroom situation being investigated (p. 84).

The ground work has been done. Developmental educators just need to review this culturally rich literature and purposefully, respectfully, conduct classroom research applying the principles of ethnomathematics to the developmental mathematics curriculum. What follows are some suggestions to help begin the journey.

Ethno-pedagogy

Ethno-pedagogy can vary from practitioner to practitioner. Keys to ethno-pedagogical practice demand

moving from a deficit, cognitive model to an ethnographic, cross-cultural model that will reveal students' competencies and approaches to learning and bridge this knowledge with academic information and processes. Ethno-pedagogy can be seen in Freire's epistemology and enhanced by experiential, constructivist, and sociocultural theory, research, and practice (Mosses & Cobb, 2001). For example, Robert Moses and the Algebra Project focused first on middle school students and now encompasses activities within high schools. This model could be extended easily into developmental mathematics education. The cognitive requirements of this model are certainly part of the repertoire of adult students (Bransford, Brown, & Cocking, 1999). The types of activities (e.g., gaming, modeling, exploring one's environment) need to be adapted to the interests, experiences, and motivation of adult students. Activities that empower students to question and explore (a) their environmental or cultural realities, (b) political decisions, (c) voting or polling information, (d) local economics, (e) social services criteria such as income, and (f) cultural differences and richness will increase students' mathematical skills and their awareness of how numbers count in the real world. The purpose of mathematical activities developed with this pedagogy would be to empower students with mathematical skills and attitudes that will make a difference in their lives, preparing students for life with mathematics embedded. Students seeing their

mathematical power then would be less willing to give up career paths that included mathematics preparation. Students might be more willing to embrace the challenge of learning the mathematics necessary to be successful in their preferred career choice.

The following model can be used to incorporate experiential learning theory as developed by Kolb (1984), adapted by Nelson-Barber and Estrin (1995) and Moses (Moses & Cobb, 2001), into a pedagogical structure to explore, develop, and internalize academic mathematical knowledge through lived experiences. The following is a brief description of the aspects of a culturally responsive, experiential learning model incorporating Nelson-Barber's and Moses' work:

Physical Event or Students' Lived Experiences (Step I)

The learning process starts with a physical event or a recapturing of students' lived experiences. Many textbooks conforming to AMATYC and NCTM standards use an activity for review at the end of a chapter. Beginning and intermediate algebra books by Hall and Mercer (2003), Martin-Gay (2004), and Thomasson and Pesut (2003) are just a few examples. In the experiential learning model, the project activity is the beginning point. Students are not guided to look for

Figure 1. An Ethnomathematical or Sociocultural Learning Model.
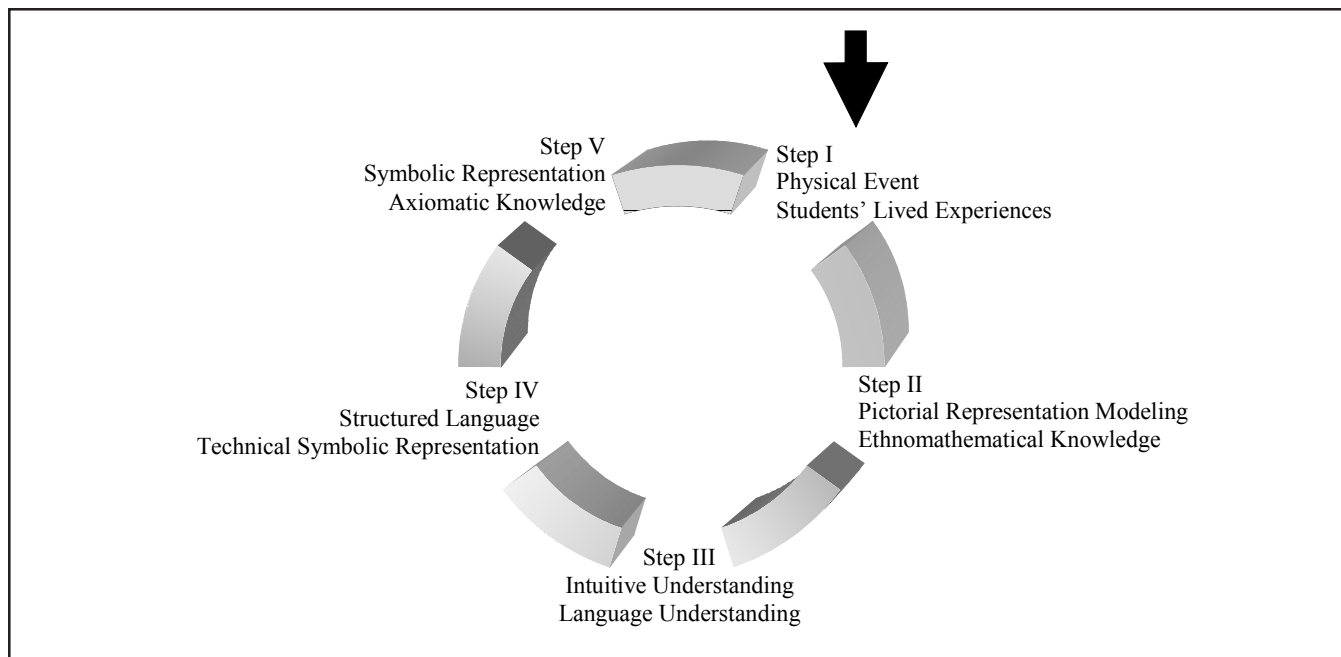
mathematics, but to experience the event as a normal process. They are then asked to verbally share their experience. This process does not need to include any mathematical discussion. The event will be one that has mathematics embedded, such as sequence, time, distance, displacement, measurement, patterns, routines, and so on. Students are to focus on enjoying and experiencing a natural event. For example, students can (a) go to a bookstore on campus and return, (b) examine a Hmong story cloth, (c) retell an immigration story, or (d) use public transportation to plan a trip.

Pictorial Representation or Modeling or Capturing Ethnomathematical Knowledge (Step II)

Students then capture the event in a diagram, schemata, pictorial representation, or whatever method fits their preferred learning styles, cultural experiences, and lived understanding of the event. This representation of knowledge allows students to utilize their present knowledge and skills. There is no right or wrong answer. Students capture their thoughts. Students can modify if necessary as they complete step 3. Faculty observe students' methods and can begin to envision ways to bridge mathematical concepts with students' representations. "In learning about the ethnomathematics of students, teachers gain respect for and understanding of the kinds of mathematical ideas that they possess" (Powell & Frankenstein, 1997a, p. 250). It is in this phase of the pedagogical process that faculty become aware of students' knowledge and connections, the natural cognitive maps students utilize in nonstructured settings. Inter-student dialogue will enhance this experience for the students and the faculty member. It is not a time for the faculty to be in control or manipulate the conversation. It is a time for the faculty to observe and learn from the students.

Intuitive Language or Intuitive Understanding (Step III)

In this phase students capture in their own words what they experienced in time, place, space, and so on. It is important for faculty to explore how the semantic and syntactic structure of the students' intuitive language may facilitate or hinder mathematical learning. Faculty will want to pay particular attention to: (a) contradictions that may surface when students' intuitive understanding of mathematics interfaces with academic mathematics and vocabulary, and (b) language differences that can enhance or create a barrier when real-life mathematical language intersects with academic mathematics language usage.

Structured Language or Technical Symbolic Representation (Step IV)

Faculty present the language and symbolism of the academic mathematics. Students now are encouraged to use the structural language of academic mathematics to capture their experience and relate this academic presentation of their experience to their own words and symbols. Students translate their schematic and language with the formal processes and language of academic mathematics. This is where students and faculty draw connections between their understanding and knowledge of mathematics and the academic discipline's language and representation of mathematics. The use of mathematical technology can be used if applicable. By this time students have developed confidence in their own knowledge, and the faculty have insight into how to create a bridge between the two worlds. The faculty is assisting students in building connections based on their experiences—trusting their intuition and understanding. Academic mathematics vocabulary and methods are introduced and reinforced.

Symbolic Representation or Axiomatic Knowledge (Step V)

In the last phase, students finalize their experience incorporating standard academic knowledge and processes with their intuitive understanding by generalizing their knowledge. In the world of developmental algebra this would incorporate the four rules of mathematics—understanding academic mathematical concepts, problem solving, or symbolic representation (a) in words, (b) numerically, (c) algebraically, and (d) graphically. Students are encouraged to make conceptual bridges and generalize their knowledge to new, nonroutine situations. Students explore the power of mathematics.

Progress in ethno-pedagogy can be enhanced by utilizing qualitative research methods that capture the process and the outcomes. Using classroom research techniques to capture the content and process of this ethno-pedagogy will provide other developmental

Figure 2. Grading Rubric-Project Activities.

Levels	Problem Solving	Reasoning and Proof	Communication	Connections	Representations
Novice 2 points	No plan is identified, or a plan is started but not complete. Little or no evidence of drawing on some relevant previous knowledge is present. Lacks evidence of some relevant engagement in the task.	Positions are made without support. No reasoning or justification for reasoning is present.	No clear presentation of ideas. Little or no communication of an approach is evident. Everyday, familiar language is used to communicate ideas but not related to formal mathematical language	No connections are made linking this activity with life experiences and academic mathematics.	No attempt is made to construct multiple representations.
Apprentice 4 points	A partially correct strategy is chosen, or a correct strategy for only solving part of the task is chosen. Evidence of drawing on some relevant previous knowledge is present, showing some relevant engagement in the task.	Some arguments are made and are supported. Some correct reasoning or justification for reasoning is present but not a clear, complete, systematic presentation.	Some communication of an approach is evident through verbal or written accounts and explanations, use of diagrams or objects, writing, and using mathematical symbols. Some connections between informal and formal math language is used, and examples are provided to communicate ideas.	Some attempt to relate the task to other subjects or to own interests and experiences is made.	An attempt is made to construct personal and mathematical representations to record and communicate problem solving. Multiple representations are evident.
Practitioner 6 points	A correct strategy is chosen based on the mathematical situation in the task. Planning or monitoring of strategy is evident. Evidence of solidifying prior knowledge and applying it to the problem-solving situation is present.	Arguments are constructed with adequate mathematical reasoning. A systematic approach or justification of correct reasoning is present including: 1. Clarification of the task. 2. Exploration of mathematical phenomenon. 3. Noting patterns, structures and regularities.	Communication of an approach is evident through a methodical, organized, coherent, sequenced, and labeled response. Informal and formal math language is used throughout the solution to share and clarify ideas.	Mathematical connections or observations are recognized.	Appropriate and accurate personal and mathematical representations are constructed and refined to solve problems or portray solutions, and hint at axiomatic knowledge and multiple representations.
Expert 7 points	An efficient strategy is chosen, and evidence of evaluating progress toward a solution is present. Adjustments in strategy, if necessary, are made along the way, or alternative strategies are considered. Evidence of analyzing the situation in informal and formal mathematical terms, and extending prior knowledge is present.	Deductive arguments are used to justify decisions and may result in more formal proofs. Evidence is used to justify and support decisions made and conclusions reached. This may include: 1. Testing and accepting or rejecting of a hypothesis or conjecture. 2. Explanation of phenomenon. 3. Generalizing and extending the solution to other cases.	Communication beyond the practitioner level is achieved. Communication of arguments is supported by mathematical properties used. Precise math language and symbolic notation are used to consolidate math thinking and to communicate ideas.	Mathematical connections or observations are used to extend the solution.	Multiple abstract or symbolic representations are constructed to analyze relationships, extend thinking, and clarify or interpret phenomenon.
Student's Evaluation					
Professor's Evaluation					

educators with data to improve student learning opportunities. *Classroom Research: Implementing the Scholarship of Teaching* (Cross & Steadman, 1996) is one resource for capturing classroom data.

This ethno-pedagogical model is also very consistent with *Beyond Constructivism: Models and Modeling Perspectives on Mathematics Problem Solving, Learning, and Teaching*, the research base and model used by Robert Lesh (Lesh & Doerr, 2003). Lesh promotes a six-step process for assisting students to explore, master, and transfer mathematical concepts. A look at his research can also guide developmental educators in implementing learning activities that begin with a shared experience.

Ethno-Assessment

Ethno-assessment utilizes a number of formative assessment approaches. Assessment is incorporated as a dynamic process. Certainly an authentic assessment model (Fischer & King, 1995; Hart, 1994) can support and advance the principles of ethnomathematics. Authentic assessment takes into consideration multiple facets: (a) an expanded view of multiple ways of knowing or learning, (b) multiple measures of skills and understanding, and (c) levels or dimensions of understanding. In authentic assessment a rubric is often used to quantify how a faculty member is evaluating students' work. Students' involvement in this process is encouraged through their initial assessment of their work before it is reviewed by the faculty. Assessment becomes an integral part of the instructional cycle identifying (a) strengths and weakness, (b) current capacities and areas for growth, and (c) next steps and extensions. Howard Gardner's multiple intelligence research (1993) calls for a new vision for learning and evaluation that is multidimensional, broad-based, relevant to real life, process orientated, and based on multiple measures. What does this look like in the developmental, ethnomathematic classroom?

In an ethnomathematics classroom faculty can evaluate project-based materials using a rubric that involves levels of understanding and the multiple facets of the project (i.e., thinking and reasoning strategies, use of mathematical tools, axiomatic knowledge). Figure 2 (models a rubric that allows students to evaluate their work in five areas: (a) problem solving, (b) reasoning and proof, (c) communication, (d) connections, and (e)

representations. This rubric models for students ways to reach expert status in project activities.

Ethno-assessment can also be achieved through the use of any of the following assessment techniques.

1. Create open-ended tests on concepts and skills that are graded on process, procedures, strategies, reasoning, and correct answers.

2. Use audio or video tapes that capture students' interactions when attacking new projects, skills, or concepts, which can be used in developing an evaluation of problem-solving skills. Use qualitative research methods to code and analyze the information.

3. Assign student portfolios that document students' accomplishments and reflections on their work, assignments, tests, and overall performance.

4. Use student-graded assignments or narratives accompanying corrections that demonstrate students' reflections on their work and clarify their mathematical understandings.

5. Use assessments that require students to formulate problems, devise solutions, and interpret results.

These are just a few examples of assessment techniques that are geared toward creating a more complete picture of student progress and accomplishments. Figure 2 is one model that could be used to develop an authentic assessment rubric for a developmental mathematics project. Emphasis on multi-dimensional approaches to assessment is warranted. No one approach will adequately re-present students' mathematical power. Each assessment tool represents a single snapshot. Thus, it is important to use multiple assessments.

Summary of Implications for Developmental Mathematics Educators

Ethnomathematics research is a rich area of exploration with many facets of intersection for developmental educators moving beyond the "deficit" model of education. The reference list for this chapter can serve as an introductory reading list for the

development of research, theory, pedagogy, and assessment strategies enhancing developmental mathematics education with an ethnomathematics framework. The anticipated long-range outcomes of ethno-pedagogy and ethno-assessment approaches within developmental mathematics include increased: (a) success of underrepresented, underprepared college students; (b) numbers of nontraditional students having the power and interest to pursue math-based careers; and (c) democratization of mathematics through the utilization of activity-based mathematics introducing and bridging real-world mathematics with academic mathematics. Summative data collection and evaluation could document and measure: (a) changes in students' perceptions, attitudes, metacognitive reflections, and career aspirations; (b) students' mathematical performance on project-based materials and subsequent academic performance on test items measuring academic mathematical knowledge, and; (c) faculty's perceptions, attitudes, and reflections of the feasibility and effectiveness of ethnomathematics-based materials.

This chapter explores the first steps for beginning the dialogue between faculty and students, among faculties, and within the developmental mathematics community for enriching the experience of our students. Access to mathematical power continues to be a challenge for many of our constituents. Ethnomathematics is a best-practice model. It is an inclusive practice for student empowerment.

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Effects of Multicultural Content
on Reading Performances

Jacqueline Fleming, Jason Guo, Salma Mahmood,
and Cherry R. Gooden
General University Academic Center
Texas Southern University

Standard and culturally-relevant instructional materials were developed for developmental English classrooms. The results showed that exposure to multicultural materials in reading resulted in performance on culturally-relevant materials that was up to 112% better than on standard materials, and that culturally-relevant materials appeared to facilitate learning from standard to culturally-relevant materials. The results suggest that multicultural education not only serves the purposes of equity and cultural democracy, but also the purpose of enhancing the performance of African American students.

The movement in multicultural education seeks to achieve equity in education through cultural democracy in education (Gay, 2001), relevant pedagogy (Ladson-Billings, 1994), and the development of relevant instructional materials (e.g., Hilliard, Payton-Stewart, & Williams, 1990). Indeed, the absence of cultural relevance in education has allegedly created cultural conflicts and made the development of positive identity difficulty for African American students (Boateng, 1986; Ogbu, 1990; Parham & Helms, 1985). The exclusion of positive references to African cultures and their accomplishments in the school curriculum is widely accepted as fact among educators. However, the consequences of exposure only to Western curriculum for students of color are a subject of debate. Writers on the subject have charged that the widespread policy of denigration of African and other third-world cultures has a damaging effect on African American students' confidence and self-esteem and is a primary factor contributing to the poor school performance of African American children (*A Curriculum of Inclusion*, 1989). Although these sentiments have many proponents among social scientists, there is one crucial factor missing from the thesis: no concrete evidence has been presented to support the claims of damage to African American children. Because society has given education the responsibility for eliminating ignorance, the importance of the curriculum issue requires that research document the effects of exposure to a multicultural curriculum. Thus, the present study was designed to gather evidence as to the effects of positive culturally-relevant curricular content on underprepared, African American college students.

For further information contact: Jacqueline Fleming | Texas Southern University | 30001 Cleburne Ave. | Houston, TX 77004 | E-mail: JacquelineFleming@yahoo.com

Research in multicultural education has often concerned textbook bias and described the absence of multicultural content in the secondary school curriculum (Grant & Tate, 2001). The problem of textbook bias is long-standing and has been reported for at least 50 years with little improvement to the present day. For example, Knowles and Prewitt (1969) reviewed several analyses of social studies texts and concluded that attempts to include Blacks in textbooks fell short of fairness. These texts were unable to acknowledge the disparity between stated American ideals and actual institutional practices, and non-White cultures were evaluated in terms of their acceptance or rejection of American values. An Anti-Defamation League study by Marcus (1961) spanning 12 years and covering 23 major U.S. history texts concluded that the treatment of Asian and Hispanic minorities improved slowly, but that the treatment of African Americans remained unchanged and that this group was still invisible. Three-fourths of the texts mentioned African Americans, but only half mentioned them in the context of present society. Only six books mentioned the name of an African American person: one mentioned two prizefighters, and another mentioned a baseball player. Although half of the books mentioned the Supreme Court desegregation ruling, only two discussed the underlying principles and attempts at evasion. All texts played down the history of violence and covered racial matters with a misleading optimism.

More recent appraisals of secondary school texts come to similar conclusions and indicate little progress. Garcia and Goebel (1985) examined the portrayal of African Americans in U.S. history texts and found that although African Americans and other people of color were mentioned more often than in the 1960s, their presence was not sufficiently integrated into the curriculum. Banks (1988) maintains that African Americans were quickly and thoughtlessly added in bits and pieces to the curriculum after the ethnic revitalization movements of the 1960s, but that the additive approach acted to trivialize ethnic cultures, rather than integrate them. Thus, although Banks envisions teachers as interpreters of ethnic and majority cultures for both mainstream and African American students, he also acknowledges that selecting and training teachers who support democratic values is probably the most challenging and difficult task that lies ahead. Teachers are the products of their own lack of multicultural exposure, such that the stereotyping that takes place in the absence of democratic education creates a breeding ground for the non-encouragement of African American children.

A number of authors link poor academic achievement among African American children to the absence of recognition of the African American socio-cultural experience, yet do not cite evidence to substantiate the claim. The frequency of such charges without supporting evidence prompted a specific review of the research. An examination of 60 books and articles revealed that only one of them, a doctoral dissertation, entailed actual research on the effects of multicultural curriculum on students. The remainder were concerned with tangential issues such as public policy, classroom dynamics and philosophy, developmental issues in intercultural sensitivity, and identity issues. Even the extensive review by Grant and Tate (2001) did not present evidence as to the effects of multicultural education on students. Collectively, the search was remarkable for its absence of research links between multicultural education and actual performance. One lone research study investigated the impact of multicultural education on the self-concept, racial attitudes, and student achievement of Black and White fifth and sixth graders (Shirley, 1988). These students attended eight elementary schools in Jackson, Mississippi, and were matched into experimental and control groups based on income, racial make-up, and geographical location. For 9 weeks multicultural activities were infused into the English, social studies, and reading curricula of the experimental group. Cooperative learning activities were also used. The results showed no effects on any of the measures for Black children. However, the racial attitudes of the White children became significantly more positive toward Black children, compared to the attitudes of the White children in the control group.

Thus, one available study found that multicultural curricula had no effects on Black children but had positive effects on White children. The paucity of relevant research clearly reveals a need for further research to determine the wider implications of multicultural education on African American performance. Furthermore, research is needed at the postsecondary as well as elementary and secondary levels. The development of a program for underprepared freshmen at Texas Southern University provided an opportunity to explore the potential effects of infusing the curriculum with multicultural content.

The Fast Track Program

The Fast Track Program was implemented in 2001 to address the needs of Texas Southern University's most vulnerable students. These students were placed in more basic remedial first-semester courses, as opposed to developmental first-semester courses. The academic thrust of the program was to provide intensive, everyday immersion in math and English. Student classes were blocked from 8:00 a. m. until 12:00 p. m. so that English and math classes took place in two-hour segments from 8:00 to 10:00 and 10:00 to 12:00, Monday through Thursday. On Friday students were required to take a two-hour computer science course and a two-hour Sociology 211 course that serves as an introduction to managing college life. Students were permitted to take an elective in the afternoon hours.

Fast Track participants were asked to sign a contract for program participation, which includes Texas Academic Skills Program (TASP) scores and other identifying information. At the end of the semester, each student can earn the opportunity for a free TASP test. When and if a student meets all set standards of the program, the instructors decide the student's area of greatest academic strength. The student then has the opportunity to take that one test component at no charge. Fast Track participants complete classes almost a month before other students because of their increased class hours per week. Thus, they can start their vacations early.

For program participants, the last three weeks of the semester are reserved for Boot Camp. Boot Camp is a mini-version of the semester Fast Track Program format. Students sign another contract and agree to attend daily and participate fully in classes from 8:00 a. m. to 3:00 p. m. Unlike other Fast Track activities, this program was not limited to Fast Track participants.

The Fast Track faculty consisted of two math instructors, two English instructors, a Sociology 211 instructor (i.e., an academic advisor), and a computer science instructor. Class size is approximately 25 students, which permits greater teacher-student interaction compared to regular developmental classes. English and math classes provide a mix of teaching, student participation, and TASP lab time. At the end of one semester, Fast Track students "graduate" to the regular series of developmental classes.

In addition to the intensive academic experience provided by Fast Track, this program was also designed to incorporate innovations each semester as suggested by student surveys, observations of classroom interaction, best practices appearing in the academic literature, faculty experience, and individual interviews with students by the General University Academic Center's Learning Specialist. The Retention Coordinator was responsible for overseeing and tracking classroom instruction and student performance as a result of successive innovations.

The fall 2001 semester's experience resulted in the implementation of two initiatives: (a) a major restructuring of classrooms to provide highly interactive classes permitting greater student participation, and (b) the infusion of culturally-relevant content into math and English courses. Separate instruments and methods were used in English and math classrooms to effect the infusion of multicultural content into the classroom. This chapter focuses on the effects of multicultural content in the English courses. This effort to enhance the performance of Fast Track participants in English focused on reading comprehension. Although the reading component of TASP is a particular problem for these students, the combining of reading and writing instruction tends to result in the neglect of reading because most instructors are trained in writing, rather than in reading. Therefore, the introduction of reading comprehension tests in the English classroom served to insure that a minimum number of reading lessons were taught.

Purposes of the Study

The present study had three major purposes. The first goal was to obtain pretest scores on previously-developed instructional materials that included both culturally-relevant content as well as standard content in reading. Second, the goal was to develop and then present students with 12 sets of new multicultural reading exercises, which doubled as TASP-type tests. The third goal was to obtain posttest scores on previously-developed instructional materials. In addition, the study sought to determine whether exposure to multicultural exercises had a positive influence on the passage rates of the TASP test required to continue matriculation in Texas colleges and universities. The name of this test has since been changed to the Texas Higher Education Assessment

(THEA), but the content has remained the same. Although there were no previous studies to guide this research, it was expected that African American students would perform better on tests with positive cultural content. Note that the materials developed were not simply related to Black issues, but attempted to present students with positive cultural achievements and to avoid negative aspects of the African American experience.

Method

The Fast Track program served students who scored at or below 190 on all three TASP component tests in math, reading, and writing. Students who scored 190 or below on two component tests, and scored at or below 200 on the third component, were also considered for admission into the program. According to Boylan

Figure 1. Essay Topics and Multiple Choice Formats for Instructional Reading Comprehension Exercises.

STANDARD SAT-TYPE, TASP-TYPE ESSAY TOPICS:

"Bohemia" and Its Characteristics

Diseases and Their Historical Epidemiology

Durkheim and the Development of Sociology

Kathleen Godwin on Her Mother

Waste in Advertising

Varieties of Rodents

CULTURALLY-RELEVANT ESSAY TOPICS:

African Science: Myth of Reality

Culturally Diverse Individuals in the Sciences

Margaret Garner: She would kill herself before she would return to bondage

Olaudah Equiano: They carry off as many as they can seize

The Gurus of Hip Hop: Simmons, Combs, Miller

A History of Texas Southern University

TASP-TYPE MULTIPE CHOICE QUESTIONS:

Grammar: Which of the following is grammatically correct?

Author's Purpose. The author's main purpose in writing this selection is to:

Main Idea. Which of the following best expresses the main idea of the selection?

Main Idea. Which of the following expresses the main idea of paragraph three?

Vocabulary. Which of the following best defines the word _____ as used in the selection?

Organization. Which of the following list of topics best organizes the information from the selection?

Fact/Opinion. Which of the following statements from the selection is presented as a statement of fact (or opinion)?

Inference. From the selection, which of the following statements best expresses the meaning of the saying, _____?

Inference. From the selection, we can infer that. . .

(2000), such students have serious academic deficiencies that may require one or more years of intensive remedial assistance to be prepared to pass the TASP test.

Participants

Seventy-one students entered the spring 2002 Fast Track program, including 45 males and 26 females. The average initial TASP scores were 169.2 for math, 179.8 for reading, and 176.8 for writing. Passing scores are 230, 230, and 220 respectively. There were no differences in test scores by gender. Background information was obtained for 67 of the students. Their average age was 19.6. Their fathers averaged 13.3 years of school, and their mothers averaged 12.4 years. The vast majority, or 94.8%, were full-time students, and 54.2% reported being on financial aid. Almost half, 45.2%, had not declared majors, while 21% wanted to major in business, and another 21% aspired to majors in the humanities.

Instruments

The pre- and posttests consisted of four short reading comprehension passages, followed by five typical SAT-type questions. The four pretest topics were: (a) African American Scientists and Inventors, (b) Children's Language Acquisition, (c) The Relationship Between Egypt and Africa, and (d) the Impact of Aristotle. Posttest topics were: (a) African Contributions to European Civilization (b) Medieval Town Life, (c) Migrations of the Africans, and (d) Weather and Climate. The standard reading passages were taken from SAT practice materials, while the culturally-relevant versions were developed from a variety of sources during a seed grant from the Higher Education Extension Service from the National Association of Black School Educators (Fleming, 1997).

For the 12 instructional reading comprehension tests used during the semester, the standard materials were taken from SAT and TASP practice materials. The

Table 1
Effects of Culturally-relevant Versus Standard Instructional Materials in Reading Comprehension

Test	Culturally-relevant Form		Standard Form	
Pretest	37.9%	(N=33)	17.9%	(N=33)
Instructional Test 1	54.8%	(n=31)	35.0%	(n=28)
Instructional Test 2	41.5%	(n=26)	52.9%	(n=41)
Instructional Test 3	51.9%	(n=31)	49.3%	(n=30)
Instructional Test 4	46.3%	(n=35)	36.9%	(n=35)
Instructional Test 5	71.0%	(n=10)	53.0%	(n=10)
Instructional Test 6	60.0%	(n=10)	72.5%	(n=12)
Instructional Test Average	55.4%		42.6%	
Posttest	30.8%	(N=13)	30.8%	(N=13)
Pre-post Percentage Gain	-23.1%		72.1%	

Note. Number words and score: $r = .08$, *ns*; number students and score: $r = -.625$, $p = .03$; order of administration and score: $r = .616$, $p < .05$.

six culturally-relevant exercises were developed in-house by a team of administrators and instructors. Each passage was followed by 10 TASP-type questions that constituted of a test as well as a complete lesson (as illustrated in Figure 1). The standard essays included topics such as Bohemia, Durkheim's Sociology, and Waste in Advertising, and the culturally-relevant exercises included topics such as Science in Ancient Africa, Gurus of Hip Hop, and History of Texas Southern University.

Treatment of Data

There were a number of problems that occurred in tracking performance on reading comprehension. Because of erratic attendance, especially after the midterm exam, the number of students taking each of the tests varied greatly from 10 to 41. The number of students appears to affect performance because the larger the sample, the lower the average score ($r = -.642$, $p < .05$). The smaller samples, typical of later in the semester, may include more committed students. This trend, however, affects both standard and relevant scores.

An attempt was made to assess level of difficulty by measuring number of words in the essay. There was no significant correlation between number of words and score ($r = .161$, *ns*). Note, however, that scores on relevant tests tended to increase with number of words ($r = .504$, *ns*), while scores on standard tests tended to decrease with level of difficulty ($r = -.486$, *ns*). However interesting, these trends were nonsignificant and based on only six instructional tests. T-tests were used to determine the significance of mean differences for the pre- and posttests, as well as for each series of exercises. A primary task was to describe the progression of results by charting the means and standard deviations and graphing the results.

Results

As shown in Table 1, Fast Track participants performed more than twice as well, or 112% better, on the culturally-relevant versions of the pretest compared to the standard versions. While students only answered 17.9% of the standard items correctly, they answered 37.9% of the culturally-relevant items correctly ($t = 4.89$, $p < .001$).

Performance on the 12 instructional tests given during the semester was better, but there was far less difference in performance between the two categories of tests. Averaging performance across the semester, students participating in the Fast Track program scored an average of 55.4% on culturally-relevant versions of reading comprehension tests, although average performance ranged from 41.5% to 71% correct responses. On standard test versions, students scored an average of 42.6%, with a range of 35% to 72.5%. Although 71% and 72.5% as the top of the performance ranges did not indicate stellar performance after multicultural exercises, recall that Fast Track participants were the lowest performers in the freshman class. The important thing to note is that student performance was 112% better on culturally-relevant instructional test versions on the pretest, but only 30% better on culturally-relevant test versions for the semester average. The question is, why has performance converged on culturally-relevant and standard tests during the semester?

The answer lies in the rate of improvement over the semester on each category of test, with greater improvement on the standard test versions. In general, performance improved on tests given later in the semester, as would be expected if they were learning to read better. The correlation between order of administration and test score was significant: .616, $p < .05$. On culturally-relevant tests, the correlation with order of administration was .557, *ns*, but increased to .691, *ns*, on standard versions. This suggests that the learning curve is somewhat steeper on standard tests, and that students made up some of the initial difference in performance on standard tests. This also suggests that learning appears to transfer from culturally-relevant versions of the test to standard versions, with the final result of nearer-equal performance.

The posttest confirms this interpretation of the results. On the posttest, Fast Track participants scored exactly the same on standard and culturally-relevant versions, that is, 30.8% correct. Note that from pre- to posttest, performance decreased 23.1% on culturally-relevant reading comprehension tests, but increased 72.1% on standard reading comprehension tests. The fact that only 13 students took the posttest, as opposed to 33 for the pretest, poses a problem for interpretation of the results, but the results seem promising enough to encourage pursuing follow-up

research. Furthermore, the fact that performance was lower on pre- and posttests than during the semester is also problematic, but may reflect the different test format (i.e., SAT-type questions on the pre- and posttest versus TASP-type questions on the instructional tests).

Discussion

Proponents of multicultural education have often charged that the denigration of African American cultures combined with the absence of positive culturally-relevant education makes the development of positive identity difficult among African American students. Although low academic performance and high attrition have been alleged as consequences, there is little research to prove actual effects on performance. The present study designed and presented African American students with test and instructional materials capable of tracking performance on standard as well as culturally-relevant test items.

In reading, performance on culturally-relevant test items was as much as 112% better, and relevant content also appeared to facilitate the learning of standard reading comprehension exercises. In short, the results suggest that the introduction of culturally-relevant materials might assist students in learning to read and to transfer reading skills from culturally-relevant to standard test materials. If the scores for each test are any indication of student interest in culturally relevant topics, then contemporary Black issues seem to best capture their interests. The scores on the Hip Hop essay were the highest at 71% correct. Anecdotally, English instructors reported that students seemed to be more animated in discussing culturally-relevant topics. They more readily chose points of view because of their relevant personal feelings and experience, and as a result they became more engaged in classroom discussion. The instructors believed that the students' ability to take a strong personal position enabled the answering of test questions. Finally, instructors reported that lack of interest was never a problem with culturally-relevant materials, although some students thought they would be better served by practicing on the standard materials on which they would be tested. Several students also believed that culturally-relevant versions were less difficult, although there was no evidence of differential difficulty levels and no correlation between length of the essay and score.

The standardized TASP pass rates provide limited confirmation of the instructional test results. In spring of 2002, 58.3% of Fast Track participants passed their recommended TASP component test in one of three areas. This is in comparison with the fall pass rate of only 20% when no multicultural instructional materials were used. These pass rates must be viewed in the context of other major instructional changes designed to create highly interactive classrooms. However, the infusion of culturally-relevant content into the math and reading curricula was one of the efforts undertaken. In reading, the spring TASP pass rate was 100% compared to 16.7% in the fall. The TASP reading results, although based on small numbers of students, could suggest that the introduction of culturally-relevant content has a positive impact on performance.

Given the promise of these initial, exploratory efforts to provide multicultural educational content to African American students, it would appear that multicultural education may not only serve the purposes of equity and cultural democracy, but may also serve the purposes of enhancing the performance of African American students. At the very least, continued research in this area seems warranted. The greater challenge is truly to embed, rather than add on, multicultural content into the educational curriculum, and then to determine whether cultural equity improves education for all Americans.

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Retention and Graduation of Black Students: A Comprehensive Strategy

J. Herman Blake and Emily L. Moore
Iowa State University

For more than a decade the 6-year graduation rate of African American students at Iowa State University ranged from 27% to 38%. However, in the past 3 years the rate has risen to above 40% and remained there. An analysis of a comprehensive approach to student retention and graduation provides insight into how educational institutions can improve retention and graduation rates of Black students.

Retention and graduation of African American students has long been a challenging issue in colleges and universities across the country. Even though college enrollment of African American students has risen in recent decades, graduation rates have not increased at the same pace. Indeed, 6-year graduation rates of African Americans significantly lag behind those for White students (Harvey, 2003, Table 9). In the decade between 1991 and 2001 graduation rates in public institutions were consistently above 50% for White students and consistently in the 30% range for Black students (Harvey).

A similar pattern has also existed at Iowa State University of Science and Technology, a land-grant university with a long and distinctive record of educating African American students. The University assiduously recruits nationally and seeks some of the highest-performing African American students, offering them liberal scholarships. Even though they are well prepared academically as measured by class standing and grade point averages, we found that their academic goals were often replaced by the time-consuming social and sports-oriented activities of peer cultures. As a result even very capable students often find themselves with severe academic deficits by the end of their first or second semester of college study.

In fall 2002 Iowa State University enrolled 641 African American students, with an impressive gender balance of 300 males and 341 females. However, during the 1990s institutional data show that approximately two-thirds of all Black students admitted did not graduate within 6 years. Between 1994 and 2000 the 6-year graduation rate for African Americans ranged between a low of 27.3% in 1998 and a high of 37.8% in 1994 (Board of Regents, 2002, Table 4). When one realizes that Iowa State University historically has educated some of the most distinctive Black leaders in American higher education and actively recruits Black

students, such rates of completion are perplexing. However, in 2001 the 6-year graduation rate increased to 44% for African American students. After a dip to 40% in 2002, the rate rose again to 44% for 2003 (Office of Institutional Research, 2004). This chapter reports on a comprehensive approach to retention and graduation of Black students that was initiated during fall semester 1998 when we joined the university and worked together toward increasing levels of academic achievement for African Americans.

Prior to accepting the invitation to join the faculty at Iowa State University both of us had occupied positions as members of the faculty and administration in a wide range of academic institutions, ranging from an elite private college to one of the highest-ranked research universities in the nation. They also included two different Historically Black Colleges and Universities as well as an urban university and also two different religiously-based liberal arts colleges. In every venue we placed significant emphasis on academic achievement for all students—but particularly students of color and low-income White student students—with considerable success. From the very outset our goal upon our arrival at Iowa State was to continue the emphasis on student academic achievement and reach a high level of effectiveness quickly even though we had limited resources. Our previous research and professional experiences led us to the conviction that we could do even more with a proactive as well as comprehensive strategy.

In our research and observations of students in a variety of academic settings we had identified key features of academic success of underrepresented and underprepared students, including the recognition that students arrive in the academy with a number of assets and strengths, in spite of poor preparation. Programs that build on students' assets are more likely to have successful outcomes (Blake, 1985). We had also identified some of the pre-existing as well as institutional barriers to student academic achievement. These observations revealed some of the extraordinary complexities, and even contradictions, in student behavior that impacted the effectiveness of academic programs directed toward students of color and other underserved populations. The complexities included such phenomena as transforming student alienation from a deficit to an asset and coping with the devastating pattern of "the ultimate doom syndrome" (Blake & Saufley, 1973; Blake, Cowan, Porter, & Saufley, 1990).

Our understandings were enhanced by knowledge of the successful work of others, particularly Uri Triesman (1992) in California and Texas and Freeman Hrabowski (Hrabowski, Maton, & Grief, 1998, 2002) in Maryland. We were also guided by the scholarship of Signithia Fordham (1996), Claude Steele (1997; Steele & Aronson, 1995), Jacqueline Fleming (1984), Arthur Chickering (1969; Chickering & Reisser, 1993), Alexander Astin (1975, 1977, 1982), Vincent Tinto (1975, 1988), and Sheila Tobias (1990). In addition, the U.S. Department of Education's Study Group on the Conditions of Excellence in American Higher Education's publication, *Involvement in Learning*, provided greater insight into the complexities of the challenges facing students. This growing body of research demonstrated that the following processes were highly effective: (a) active involvement of students in the learning process, (b) high expectations both for and by students, (c) front-loading academic programs, (d) both homogenous and heterogeneous social opportunities, (e) student identity with academic achievement, and (f) academic cooperation and mutual support. Indeed we were particularly compelled by studies of role identity that showed that academic commitment, which combines a positive sense of self and identity with academic domains, improved student motivation toward academic achievement (Steele).

Thus, when we started at Iowa State University, it was with the conviction that a comprehensive approach to academic achievement for African American and other underserved students could be very effective. Such an approach would combine the understandings from research and scholarship on student academic achievement with our long experience as administrators as well as faculty. Our belief was that such a strategy mandated a combination of student affairs perspectives with rigorous academic programs. Such an effort would have positive consequences for all students regardless of background, but we were convinced that it would be particularly successful with students of color, and particularly with African American students.

Curricular Transformation: Emphasis on Expectations and Involvement

The first step in developing a comprehensive strategy to enhance retention was to increase the academic rigor of the African American Studies curriculum. The goal was to create an environment of

high expectations in which students would realize they could achieve far beyond the perception of their abilities. We endeavored to get students more actively involved in the study and learning process by significantly increasing the amount of time they were required to spend on their academic pursuits. Therefore, we significantly restructured the courses for which we were personally responsible to raise the level of expectations.

In the foundation course "Introduction to African American Studies" taught by Dr. Blake, students are required to read 18 major books in their entirety. In addition they write 13 short essays on assigned topics, lead three to four class discussions accompanied by additional written presentations, and complete a comprehensive final examination. The workload requires that students become actively involved in the learning process, and the syllabus indicates that we expect a student to spend approximately 12 hours each week studying for the course. We presumed that when students become serious about spending so much time studying for one 3-credit course they will become much more intentional about the organization of their time and give greater consideration to their academic goals. Every essay assignment receives a careful and thorough written narrative evaluation that is returned to the students during the following class session. We encourage all students, regardless of level of performance, to meet with the instructors to discuss their work and learn more about the instructors' expectations. We also require students to participate in small group discussion sessions, often asking them to lead the discussion and then write additional papers about issues under consideration in the course. The course regularly attracts 80 to 90 students every semester, of whom about 15 to 20 are African American. The course is designed for freshmen and sophomores. Similar heightened expectations combined with active student involvement in learning are also a part of two other basic courses: "African American Women" (30 students, taught jointly by both of us, and a freshman-only course that Dr. Blake teaches for our Multicultural Learning Community, which involves 60 students).

Through these curricular efforts we engage approximately 250 to 300 students each academic year. We seek to help students expand their sense of self-identity from the social arena of their racial and ethnic backgrounds into an equally complex academic arena. Our own applied and research experience over 4 decades as well as the scholarship of others shows that deliberate and carefully-constructed links between high academic expectations and student life programs help students strengthen their identity within academic domains, often within the framework of their social identity.

Multiple Co-Curricular Strategies

Three carefully designed student support groups augment the curricular innovations of high expectations and student active involvement in learning. The student groups meet monthly in consciousness-raising sessions that place emphasis on academic identity, self-esteem, and academic achievement. The groups provide students with both homogeneous and heterogeneous settings where they can explore many complex and often very personal issues. All the groups are racially and ethnically inclusive, but they each have a different focus. Led by undergraduate peers, the student support groups also include participation by faculty, administrators, and graduate students who are important resources to the undergraduates.

Between the regular meetings the three groups collaboratively sponsor study tables, mentoring programs, and cooperative study efforts all designed to keep students focused on their academic studies—and only their academic studies. The student support groups make special efforts to engage freshmen from the time they arrive on campus so they will be less likely to let the social side of campus life overwhelm academic progress. The undergraduate student coordinators of each group, under our guidance, maintain communication and contact with the students between the meetings and organize study sessions and special activities.

All of the groups meet in comfortable settings in the student union with lunch always provided. There is no cost for attendance or participation in any of our events, and students claim they find it convenient to come to a meeting and have lunch and a stimulating discussion before going to their afternoon classes.

The "A-Society" is the umbrella organization from which the two other groups build their programs. The

A-Society is a heterogeneous group made up of men and women from all backgrounds. Through presentations by faculty as well as students, the A-Society engages in substantive discussions of intellectual issues. Every meeting begins with the students self-reporting on their academic progress and the particular challenges they are facing. Others offer counsel and advice and volunteer assistance when appropriate.

The A-Society has become the place where committed and supportive faculty can go to increase their communication with students. Often they will also be invited to even more focused and intense meetings with the other two groups. Recently the chair of a major science department asked the students to advise him on their experiences in his department. It was intended as an effort to increase faculty understanding of the students, but in the process the session raised the students' sense of responsibility for their success in the program. The open and candid discussion was beneficial to both students and faculty, helping to bridge the gap of misunderstanding and misperception. In another instance a professor with concerns about how to most effectively engage students of color in classroom discussion of a sensitive topic without the students feeling singled out brought these questions to a meeting of the A-Society for feedback from students in a supportive setting.

The "Band of Brothers" is open to men only. Although this organization is open to men from all backgrounds, the focus is on consciousness-raising and academic achievement among African American males. In their meetings the participants talk candidly and honestly about issues they would be uncomfortable discussing in the presence of women. The candor reflected in the deliberations leads students to deeper insights about what they must do to succeed academically. Students report they have found new and supportive friends as well as study partners in the meetings. Male faculty—particularly those from underrepresented groups themselves—find the meetings an excellent place to renew their commitment to motivating young men.

The "Circle of Trust" focuses on self-esteem and academic achievement among African American females. In their meetings the women are also able to explore ideas that would be impeded by the presence of male peers. Women faculty, administrators, and graduate students regularly attend the meetings and give support to the participants. Some of the women faculty participants have offered frank and critical advice to young women facing difficult personal challenges. They help the students keep their focus on their academic programs rather than social obstructions.

In all the meetings of the student support groups some of the discussion focuses on study and learning strategies to meet the high expectations of the African American Studies courses as well as other academic programs, particularly in the sciences. The heightened levels of expectations in the courses motivate students to become involved in the support programs. Furthermore, it is our belief that when African American students find these expectations in courses in which they identify with the subject matter and even the instructor, the high expectations are more easily absorbed into their consciousness as not only reasonable but also possible.

As previously mentioned, faculty, administrators, and graduate students also attend the meetings of the student support groups. It gives them an opportunity to connect with students in an informal setting over lunch and offer advice and counsel as well as organize study groups. Faculty participants are particularly grateful for the chance to meet with students outside of the classroom and share ideas with them. Often faculty will discuss their own undergraduate experiences and give students excellent insights about dealing with the academic culture in higher education. In the process, students and faculty develop meaningful bonds that enhance the identification students feel with the professor and ultimately with the discipline. For freshmen and sophomores who are often intimidated by faculty, participation in the support groups helps them "demystify" the faculty members and become more assertive in class.

From time to time we, as well as other faculty, have made special presentations requested by the students. These have covered such issues as effective study and learning strategies in the various disciplines and preparing for postgraduate studies and summer internships. In some cases faculty with research grants have recruited students to work on their teams, another way of strengthening the students' identity with academic achievement. Several times students have requested that Dr. Moore make a special presentation on her research on HIV/AIDS prevention strategies. In

a number of instances students enrolled in Dr. Moore's graduate course on contemporary students in higher education find the African American Studies support groups are excellent places to enhance their learning by implementing some of the theories and strategies presented in the course.

The heightened expectations in our courses, along with the active participation of faculty and administrators in the meetings of the student support groups, help to create an environment of academic identity that propels students beyond their previous frames of reference. The focus is on high expectations and student active involvement in the learning process. The intensity of the meetings carries over into the general life of the campus for committed students. At a recent meeting of the Band of Brothers students were talking after the session ended and remarked that in the particular setting it was acceptable to ignore sports and focus on classes and academics.

In another effort to promote academic achievement the African American Studies Program sponsors a student recognition luncheon at the end of each semester. At this function graduating students are recognized and presented with a gift for their personal library. In addition participants who have earned a 3.5 grade point average (GPA) the previous semester are awarded a personally engraved plaque to mount on their wall. Finally, at each spring semester recognition luncheon generous cash prizes are awarded to the winners of the annual campus-wide essay contest sponsored by the African American Studies Program. The winning essays are posted on our web site: http://www.iastate.edu/~aastudies/.

Outcomes

The initiation of a comprehensive program focused on academic achievement is very difficult in any institutional setting and requires a long period of commitment as well as dedicated work. Even when there are general principles and strategies as guides, every program must be salient to the particular institutional culture. Although we started immediately with the reorganization of our courses, we took a slower pace in developing the co-curricular strategies, often building

Figure 1. Student Participation Fall 2000–Spring 2003.
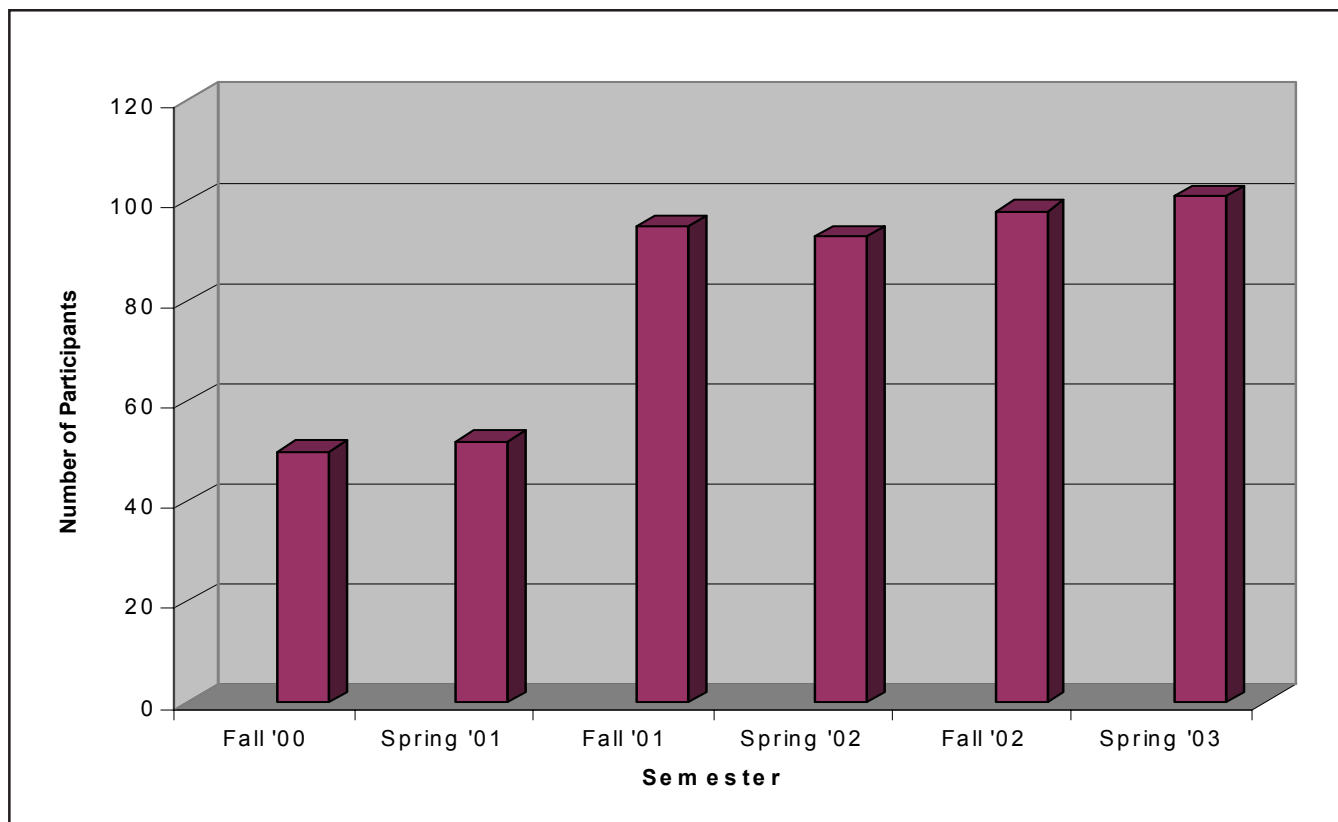
on serendipitous and unique opportunities. In the first year of operation (i.e., 1998-1999) the A-Society was the only group formed, and rarely more than two or three students attended. We recognized it would take persistence and patience to reach our goals.

Our courses attracted students interested in issues relevant to the African American community, and the high expectations led a growing number of students to commit themselves to serious study and learning. We began to recruit students into the support groups out of the classes as well as through other activities. Participation grew rapidly. During the 2000-2001 academic year we had 50 students involved in the three student support programs. Within another year the number had doubled (see Figure 1).

The 6-year graduation rate among African American students has also increased in recent years (see Figure 2). Approximately 34% of the African American students entering the institution in 1993 and 1994 had completed their degrees 6 years later. However, the 1995 cohort had a 44-percent completion rate—well above the national average for African American students in public universities—and the rate has remained above the national average for three consecutive years.

We recognize there are many complex factors that account for these outcomes, and we do not claim sole responsibility for these results. However, we are confident that our focus on higher expectations in our courses, as well as an emphasis on students' active involvement in learning, has played a significant role in this change. As we continued our interaction with the students we learned more about the difficulty of the challenges in raising levels of persistence to graduation as well as academic achievement for African American students.

We saw some of the earliest successes as well as problems with the young men participating in the Band of Brothers. The program was initiated in 1999 with the limited participation of dubious students. By the fall 2000 semester 19 Brothers completed forms pledging their commitment to work toward higher levels of academic achievement. Most of them set semester goals of a GPA of 3.0 or higher. Of the 19 members, 12 reached that goal with 4 of them exceeding a 3.5 GPA and making the Dean's list. We thought we had discovered the key to academic achievement among Black males, but this initial surge was not sustained the next semester (i.e., spring 2001). In the spring only 4 of the 19 reached their goal of a 3.0 GPA, with 2 of them exceeding 3.5.

Figure 2. Iowa State University Six-Year Graduation Rates (%), by Race and Ethnicity for Entering Classes, 1988–1997.
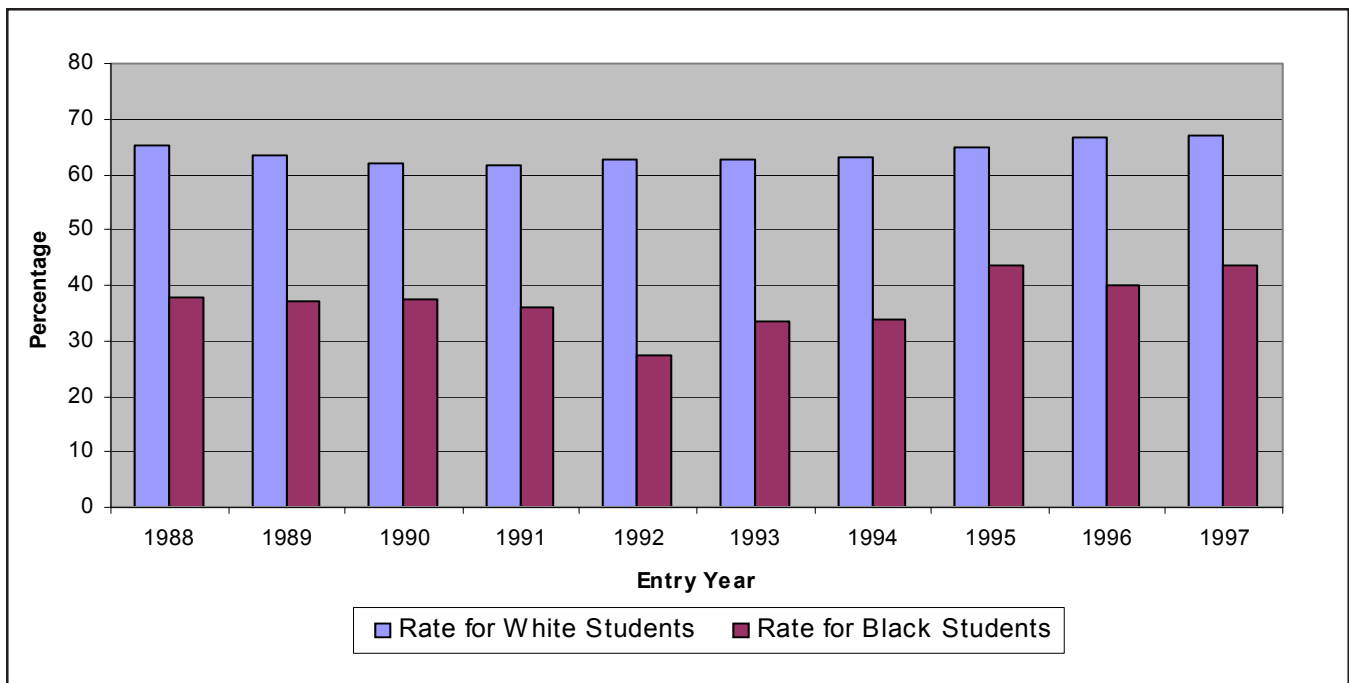
Because we had the trust of the students we talked with them to see what had happened after such a successful fall semester. We got the most informative response from one student who had moved from a 2.0 GPA for spring 2000 to a 3.6 for fall 2000. During spring 2001 his GPA plummeted to a 2.6. He told us he could not understand his actions himself. After doing so well for one semester he stated that he just stopped working at achieving academically. He overslept, missed classes, procrastinated on assignments, and acted in what he knew was an irrational manner if he wanted to achieve his academic goals. In his remarks we saw the reflection of some of our earlier research on a phenomenon we labeled "The Ultimate Doom Syndrome" (Blake & Saufley, 1973; Blake, Cowan, Porter, & Saufley, 1990). However continued discussion and reflection along with active involvement in learning did result in significant change for the student. In his last two semesters in the University he earned GPAs of 3.9 and 4.0 respectively. He also became a model and inspiration for the other Brothers because they saw that it was his discipline, dedication, and hard work that produced these results. In the meetings he talked candidly about a pattern of success followed by failure that had plagued him since elementary school—often caused by social circumstances.

We were surprised by how often we have seen the same pattern among other students—a fall semester of high academic achievement is followed by a reversal in the spring semester. This anomalous pattern of academic achievement is worthy of detailed study. It is when we examine the grade performance of students over the past 3 years that we get greater insight into student persistence to graduation at Iowa State University. Figure 3 shows the grade point averages for our student participants for the past six semesters. These data show that even though we have had good participation from high performing students, our highest levels of participation are from students at the lower end of the academic achievement spectrum. In the first two semesters of data the highest participation was among students below a 2.5 GPA. More recently our greatest participation has come among students with GPAs below 1.99. As we talk directly with students and listen to their comments in meetings and elsewhere, we have come to the realization that our greatest impact

Figure 3. GPA of Student Participants by Semester Fall 2000–Spring 2003.
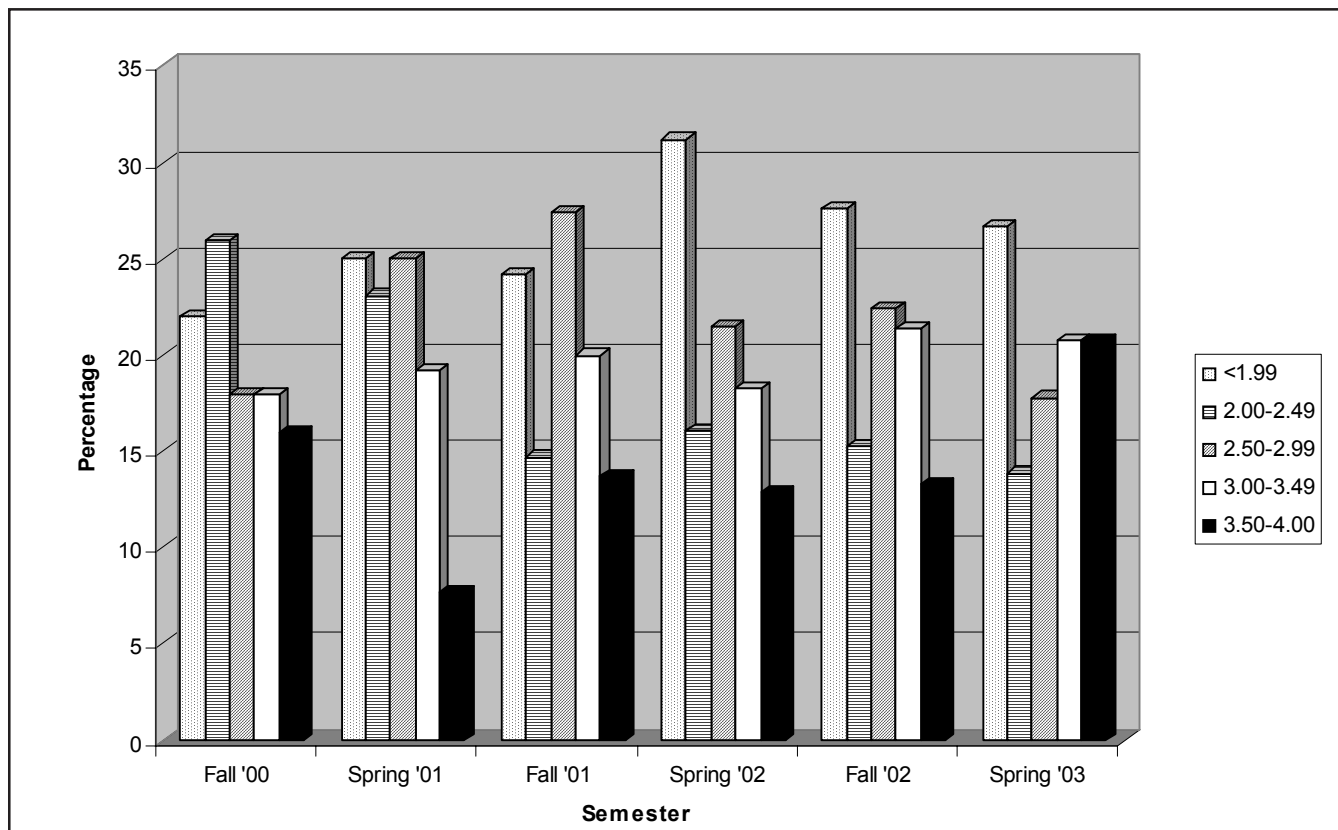
thus far has not been raising levels of academic achievement. Instead it appears we are having our most significant impact on the persistence of the students on the lower end of the academic performance scale—students who in previous years would have left college before completion of their baccalaureate degree. These students are not dropping out. Our goal is to ultimately engage 10% of the African American students at Iowa State in regular participation in our curricular and co-curricular programs. Our success in community organization and development in both urban and rural settings leads us to believe that when we can fully involve 10% to 15% of the Black students in our various efforts, as a result of the "ripple effect" we may actually impact as many as one-third of all African American students at Iowa State University.

Looking Toward the Future

Because we get excellent faculty participation in our student support groups we recently initiated a study to identify faculty strategies for academic achievement for both undergraduate and graduate students. We have conducted 15 in-depth interviews thus far. We seek to identify the point at which the faculty members interviewed began to make the role or identity shift beyond racial and ethnic identity to becoming a scholar and academician. We hope to use these results to create a stronger theoretical foundation for our efforts. In our deliberate strategy to foster academic identity and active involvement among our undergraduates, several students have participated in this research project and have written reflective essays on the understandings they developed from the interviews. We will also continue our data collection and analysis of student success in academic performance, persistence, and graduation from Iowa State University of Science and Technology. Even with our previous experience in other venues we would not have predicted the results revealed in Figure 3. We want students to do much more than persist to graduation at low levels of academic achievement. We believe they can excel, and we want to move beyond individual examples of academic excellence. We want high levels of academic achievement as well as graduation to become the hallmark of Black student life at Iowa State University. The success of earlier cohorts of African American students under much more difficult conditions than those experienced by contemporary students mandates that we do nothing less.

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Between Old Country and New: Academic Advising for Immigrant Students

Christine Swanson

University of Minnesota

Academic advisors and other student affairs workers can expect to encounter students from immigrant families. This applies not only to urban campuses, but also to colleges attracting students from rural areas and small towns. Immigrants come with needs that are quite different from those of international students or native-born, native speakers of English. This chapter describes models for adjustment and English language learning. Scenarios offer examples of situations academic advisors encounter. Best practices are suggested, based on awareness that assumptions student affairs workers have in mind when they work with native-born, native speakers of English are not necessarily as appropriate for immigrant students. Student affairs workers who are aware of the needs of immigrants can help make the climate on their campuses more hospitable to this group of students.

Immigrants and refugees are a growing presence in our schools, colleges, and universities. There are significant numbers of new Americans not only in big city schools, but also in small towns and rural districts. They are finding their way into postsecondary institutions of all kinds. College faculty and staff often think of immigrant students together with those who come from abroad on student visas. Yet students from immigrant families bring experiences and needs that are quite distinct from those of other students. Awareness of the unique situations of immigrant students can help advisors and other student affairs workers to serve them better. Although this chapter is directed at academic advising issues, student affairs professionals in residence life, career counseling, financial aid, and related areas encounter similar concerns. Awareness of immigrant issues can help high school counselors and admissions professionals guide students through the process of entering college.

Here, immigrants are defined as students whose parents were born outside the U.S., but have settled in the United States. Some immigrant students were themselves born outside the U.S. Others were born in the U.S. to parents who were born elsewhere (Harklau, Losey, & Siegal, 1999; Rumbaut, & Ima, 1988). Members of this group, sometimes called "generation 1.5," have completed all or part of their schooling in the U.S.

It is worth remembering that some students who are not immigrants or members of generation 1.5 may be English language learners. For example, people born in U.S. territories like Puerto Rico are not immigrants,

For further information contact: Christine Swanson | University of Minnesota | 101 Pleasant Street S.E. | Minneapolis, MN 55455 | E-mail: cswanson@class.cla.umn.edu

but Spanish may be their first language. Students who are not themselves immigrants or the children of immigrants may have grown up in well-established immigrant communities, for example Latino or Hmong. They and their families may share some, but not all, of the concerns of immigrants. The experiences of immigrant students vary greatly, but they have in common a few areas of concern.

It is important to remember that the concerns of immigrants differ substantially from those of long-established or indigenous minority groups. For example, African Americans and African immigrants may share appreciation of their African heritage. However, their experiences may lead them to different conclusions about how to approach education and the strategies that are effective in achieving success (Ogbu, 1990). Some students of Hispanic heritage may not themselves speak Spanish (Gloria & Rodriguez, 2000). Their experiences are likely to be different from those of students who are bilingual.

Immigrant concerns differ from those of international students as well. International students generally come from good secondary schools, where they have studied without disruption. Many immigrant students, however, have had interruptions in their schooling. For instance, Somali students may have spent years in refugee camps with no formal schooling at all. Some of them have experienced severe trauma.

Where international students attended secondary school surrounded by their home languages and cultures, immigrants have been pushed to meet high school standards set by state boards of education with native-born students in mind. International students transfer good, solid academic knowledge from one language to another, while some immigrant students may not have complete mastery of the material they studied in U.S. high schools.

Immigrant students are in a different legal and financial situation from international students. International students come, in theory at least, with financing in place. That is one of the conditions for obtaining a student visa to study in the U.S. As permanent residents of the U.S., students from immigrant families are eligible for the same financial aid programs as other Americans. Yet, they may be responsible for contributing toward the support of siblings, parents, and others. The need to send funds to relatives abroad puts strains on the family budget that the financial aid system does not consider. These and other logistical issues complicate the situation of immigrant students.

Immigrants and the children of immigrants are in an ambiguous situation in other ways as well. Both immigrants and international students may be English language learners. Immigrants and international students with origins in the same home countries may share cultural similarities. On the other hand, immigrant families may be living between two worlds, with one foot in their country of origin and the other in the U.S. Knowing something about who the immigrant students are, how their situations are unique, and sensitivity to the various cultures of immigrant families can help advisors and other college and university personnel connect with these groups within the college community.

Minnesota's Immigrants and Where They Come From

Today's elementary and secondary school students are tomorrow's college students. It is, therefore, useful for student affairs workers to have a sense of which groups are prominent in regional school districts. For instance, the Minnesota Department of Education Data Center (2003) posted information on elementary through secondary (K-12) learners and their English proficiency status as of October 1, 2003. A look at this information is a clue to understanding the immigrants who may soon become Minnesota college students. The cities of Minneapolis (23%) and St. Paul (34%) are home to the largest number of Minnesota learners with limited English proficiency (LEP). Inner-ring suburbs of the Twin Cities also come in near the top of the list: Brooklyn Center (30% LEP), Columbia Heights (18% LEP), and Richfield (16% LEP).

Immigrants have also settled in smaller communities, often attracted by employment opportunities (Minnesota Department of Education, 2004; Minnesota Department of Employment and Economic Development, 2004). Thus, the special needs of immigrant students are important not only on urban college and university campuses, but they affect regional universities as well as community and technical colleges located in smaller towns. The fact that the employment opportunities in these towns are primarily in the meat

processing industry may mean that many of the parents attracted by these jobs do not themselves have U.S. high school educations. The families may not be familiar with the process of choosing and attending a U.S. college. For example, of Willmar's (District 347) 4,246 learners, 16% are LEP. The Jennie-O Turkey Store, the world's largest turkey processor, is Willmar's largest employer with over 1,300 employees. Worthington (District 518) enrolled 2,264 learners, 20% LEP. Swift and Company is by far the largest employer in town, with 1,700 people working at its pork processing plant. Of the 1,245 learners in St. James District 840, 16% are LEP. Con Agra, an animal slaughtering and process operation, employs 400 people in St. James. Westin Automative employs 250 people at its parts manufacturing plant. Pelican Rapids (District 548 with 1,189 learners) has 25% LEP. West Central Turkeys is by far the largest employer at 750.

Critical Literacy in English

Immigrant students face a number of academic issues. Their English language skills may not be up to college-level standard. While international students are highly literate in their home languages, some immigrants may not have been fully literate in any language until they began English classes. The process of developing literacy and doing it in a foreign language is challenging.

There are three broad categories of literacy (William & Snipper, 1990). Functional literacy is basic coding (i.e., writing) and decoding (reading) skill. The goal is to exchange information. Readers are expected to understand and carry out instructions; for example, to use recipes, set an alarm clock, or register for a college course. A second category involves cultural literacy, the shared experiences and background knowledge of a culture required to interpret texts. Immigrant students may have trouble in courses that assume knowledge of American and western European culture, history, music, art, political thinking, and more. A third category is critical literacy, which includes awareness of the social and political implications of written communication. Children who have grown up in print-oriented societies learn to interact with texts. They also have many role models for how literate people behave.

It is this third kind of literacy, critical literacy, that is required in college. Students must not only decode texts in a dictionary way; they must draw inferences, make predictions, summarize, and synthesize various versions of the same concept. From role models, students learn how to interact with each other, instructors, and college staff. They acquire research and critical thinking skills useful in an academic setting. Children who learn to read in their home languages, in schools where their home cultures are valued, have a good chance of acquiring critical literacy. Immigrants and members of ethnic minorities may find that home and school cultures are at odds. Behavior learned in one place is not valued, maybe even punished, in the other. Weinstein (1984) and Ogbu (1990), among others, have commented on the critical thinking and social skills associated with literacy. Students may have trouble succeeding in their courses if the behavior expected on campus is at odds with the behavior valued at home.

It is helpful for college faculty and staff to be aware of these aspects of literacy in a second language. Some immigrants, especially refugees, may not have mastered decoding skills. Their mastery of vocabulary and grammar may be incomplete. Students with good functional decoding skills may not have the cultural and critical literacy skills needed in college. For instance, students who know the dictionary definitions of individual words may be frustrated when they try to answer a question by quoting directly from the text or choosing the correct definition for a specific context. They may not yet be accustomed to summarizing an extended text or to drawing inferences that are not explicitly stated.

Immigrants may have experienced obstacles to acquiring critical literacy, with its social implications. Immigrant students may have experienced interruptions in their schooling or have heavy responsibilities at home that take them away from academic work. International students, who have attended good secondary schools in their home countries, may have developed critical literacy in their home languages, which can be transferred to English.

Cultural Adjustment

The process of cultural adjustment is in some way similar for international and immigrant students. There are, however, special challenges for immigrants. Models of adjustment such as the one described by the National

Alliance for Multicultural Mental Health (2000), begin with excitement and high expectations upon arrival in a new country. This is the arrival or honeymoon phase of adjustment. The reality phase begins as recent arrivals discover that success in a new environment is more difficult than they had anticipated.

In the third stage, immigrants begin to understand what they have to do to succeed in their new surroundings. If they accept the challenges, they enter into a kind of negotiation with their new environment to take the steps necessary for success. This is the start of integration, the fourth phase, when immigrants begin to feel at ease in their new home. They begin to take charge of their new lives.

For some immigrants, understanding what needs to be done is an overwhelming task. If they do not get appropriate support, immigrants can feel alienated from their surroundings. Help from health and human services workers, including academic advisors, can prevent this. Students at risk for alienation may have the right intentions, but find it difficult to overcome practical obstacles. They may need extra help locating resources like transportation and child care. Negative experiences with authority figures in their home countries may lead immigrants to be afraid of approaching figures of authority on campus. To help, an advisor may decide to call ahead to alert colleagues in resource centers that the immigrant student is coming and briefly explain the errand. This might reduce a student's anxiety over explaining difficult circumstances to yet another stranger. Sensitive listening skills help the advisor assess how self-sufficient the student is. The advisor can then offer an appropriate level of support and encourage the student to assume responsibility as coping skills grow.

Immigrants may have particularly strong feelings of fear, loss, disappointment, anger, and lack of self-determination. International students know they will—or at least can—return home. Immigrants have made a commitment to find a place in their new country. Frustration can turn to despair as they wonder whether they will ever be able to reconstruct their lives. All of this is even more difficult for refugees who have had traumatic experiences or may even have been victims of torture (Center for Victims of Torture, 2001). Post-traumatic stress can interfere with academic progress. The ability to make the kinds of decisions college students normally face is impaired.

Campus Culture

Campus culture is likely to be new to immigrant students, even those who have attended U.S. high schools. They may not fully understand the process of preparing for college and applying for financial aid. They may not be accustomed to making choices about careers and majors. They may not understand how much outside work classes require. They may be overwhelmed by the latitude American students have in choosing courses for themselves. Some immigrant students must be encouraged to work in a collaborative manner with a variety of people: academic advisors, career counselors, faculty members, student activities leaders, residence hall staff, and many others.

Models of student development, that serve as the basis for student affairs work on U.S. campuses, as illustrated in Creamer's (2000) summary of various theories, may not be applicable to immigrant students. International students generally come to American campuses with rather definite academic and career goals in mind. They return to their home countries to carry out their long-range goals. Immigrants are caught between the life-planning strategies of their home cultures and the mainstream, middle-class American culture of most campuses.

American models of student development assume that students will learn quickly to gather information about their options and work collaboratively with family, faculty, and advisors to set goals for themselves. In some cultures, students are accustomed to relying on family for information about their options rather than researching the possibilities for themselves. Some immigrant families cannot afford to let students make their own choices because they need the economic contributions young adults make to family economies. In these cases, personal fulfillment takes second place to economic stability for the group. Some immigrant families are concerned about preserving the home culture in a new environment. They may see campus culture as a threat to the values of their home traditions.

Balancing loyalty to home and campus values is a challenge for recently arrived immigrants. Immigrant families make decisions about which aspects of their new country's culture to adopt and which traditions they must retain. Families try to integrate into their new surroundings without assimilating. They strive to retain

their identities as members of their home cultures, while succeeding in their new one (Ogbu, 1990).

The legal status of immigrants is quite different from those of international students and native-born, native speakers of English. For example, as permanent residents of the U.S., immigrants are eligible for the same financial aid programs as citizens. However, the Federal Application for Student Aid (FAFSA) makes assumptions that are not compatible with the lives of some immigrant families. Students holding I-551 or I-551C cards (often called "green" cards) are eligible for assistance. Other eligible noncitizens may have legal I-94 records referring to refugee status or other humanitarian designations. Students who do not fit these categories are not eligible for federal assistance, although they may be in the process of legalization. Meanwhile, they will be interested in campus-based and private scholarships that do not require legal permanent residency.

By signing the FAFSA, families authorize the Secretary of Education to check with the Internal Revenue Service, the Immigration and Naturalization Service, and other Federal agencies to verify information. Students whose families are in the process of establishing permanent legal status in the U.S. may be reluctant to participate in the financial aid system. Some students need extra help in completing the FAFSA accurately, without unnecessary anxiety. Others will decide not to apply for aid. They are likely to need help planning their course work around jobs and other family obligations. Student affairs workers can help undocumented immigrants by knowing the rules for their institutions and how to refer students to the proper campus expert.

It can take time for advisors to develop trusting relationships with immigrant students. There may be lack of understanding, or even suspicion, on both sides until the student is ready to work in confidence with student affairs staff. Familiarity with some of the rules that affect immigrants, combined with patience, can help advisors connect with students. It is not possible for every advisor to be an expert on every culture represented on campus. However, sensitivity to the possibility that home and campus cultures may not be entirely compatible will help advisors collaborate effectively with immigrant students. Very often, substantive conversations about the challenges of an immigrant student's situation occur only after a series of meetings about more procedural issues like registration and degree requirements. Occasionally, a crisis may force a student into confiding in an advisor.

Scenarios

The following scenarios are intended to illustrate the many challenges facing immigrant students enrolled in postsecondary institutions in the U.S.

Paula

Paula, age 25, brought the equivalent of three semesters in transfer credit from a university in her home country. About a month into Paula's first semester, she came to the advising office on a busy day, without an appointment. Paula would like to attend medical school; nursing is her back-up plan. The advisor told Paula that nursing is generally not considered a pre-med program. Students choose either nursing or an undergraduate major compatible with the pre-med program, but not both. The advisor referred Paula to information sessions for details and told her she would be happy to go over her plans more thoroughly in an appointment.

Eight months later, Paula has made an appointment with her advisor. Since her walk-in visit, Paula has attended the recommended information sessions. She has applied to the School of Nursing, and they have turned her down because she has not completed the prerequisites. On her second visit to the advising office, Paula is no longer interested in nursing. She wants to plan a major in a life science program, including all the pre-med courses.

What is going on? Like many immigrants, Paula did not come to the university with the same understanding of the U.S. occupational structure most native-born students get in school. At first, staff in the advising office considered Paula's behavior to be uncooperative and pushy. She came to the office without an appointment expecting a thorough discussion of her overall academic and career plans. The advising office staff consider these longer-range planning discussions to be ideal topics for appointments, but less appropriate for walk-in contacts. At the end of the first conversation, Paula appeared to reject the advice offered.

Many immigrants come from places where citizens do not trust government officials and assume that an aggressive attitude is required. In their home countries,

they have had to struggle to obtain passports, gain admission to a university, get transcripts, and negotiate other routine matters. Getting settled in the U.S. may also have felt like a series of battles with unfamiliar procedures. They approach the advising office with anxiety, which might appear to the advising office staff as an uncooperative attitude.

International students, too, have overcome obstacles before arrival in the U.S. The difference is that immigrants are settling permanently in this country. In addition to the usual challenges involved in entering a university, immigrants experience the additional stresses of planning a life in their new country. They may have underestimated the difficulties involved. To American student affairs workers, expressions of frustration can look like refusal to cooperate.

On her second visit to the advising office, Paula was willing to brainstorm ideas with her advisor. At this point, eight months after enrolling, Paula has more information. She feels more in control of her situation, less anxious. With experience, her confidence about the future has grown. She has achieved some of her goals and has a better sense of the realistic possibilities for the future.

Recommendations. Advisors must be patient with students like Paula. They should be prepared to offer basic information on how American institutions are organized. Models of the stages of adjustment place immigrant frustration into perspective (National Alliance for Multicultural Mental Health, 2000). In hindsight, it appears that when Paula first came to the advising office, she was entering the negotiation phase of adjustment. Having understood and accepted the situation, she enters the integration phase. Later, after a total of 3 years at her American university, Paula has completed her science degree. Medical school has not yet worked out, but Paula is beginning a career in medical research.

Abdi

Abdi comes from rural East Africa, by way of refugee camps. In his U.S. high school, he participated in a special program for English language learners. At the university, he needed more work in English as a second language. He also took social science and humanities courses especially designed for recent immigrants.

Age 20 at the beginning of his third year, Abdi came to his academic advisor to discuss a science major. He was in the first course of a chemistry sequence central to his intended program. The advisor pointed out to Abdi that the chemistry sequence would take a minimum of three years to complete. This meant Abdi would need a total of at least five years to earn a degree in his science program. The advisor urged Abdi to look at alternatives. She explained that planning a five-year program is not ideal for a number of reasons. For instance, federal regulations place a 6-year limit on eligibility for student financial aid, and limits for some programs are only 4 years, which means Abdi could easily run out of financial aid before he finishes his degree. In addition, the university, in an effort to assure responsible management of resources, launched a number of initiatives to put students on track for graduation in an efficient manner.

Abdi was crushed. He had been proud of his achievements in spite of extremely difficult circumstances. Six years ago he was in a refugee camp and could speak no English. Now he is at an American university, doing well in his courses. Science is all he wants to do. Is the advisor telling him he can't?

What is going on? Abdi is justly proud of his achievements. The courses designed especially for recent immigrants gave Abdi a start toward critical literacy. They offered a supportive environment for making the transition to U.S. academic culture. However, the need to spend his first 2 college years working on English language and acculturation places Abdi in a difficult situation. Either he did not realize he should have begun the chemistry sequence earlier (his advisor may not have pointed this out), or he was not in a position to do so. At this point, Abdi will have to plan carefully to complete his degree before financial aid eligibility ends. Abdi eventually completed his degree with an individualized major built on his own abilities, interests, and deadlines.

Recommendations. Abdi's advisor learned two lessons about working with refugees. One is that students working on language and cultural skills in bridge programs need information about which academic programs include long sequences of courses. Advisors should work carefully to help students begin sequences as soon as they are able, but avoid pushing them prematurely into courses for which they are not prepared.

Second, Abdi's situation is an example of how expectations appropriate for most students may not be realistic for refugees and other immigrants. University administrators are under pressure to increase the proportion of students who complete undergraduate degrees in 4 to 5 years. There is no excuse for failure to plan efficiently, but flexibility is required as well.

Students like Abdi who report spending time in refugee camps may have experienced trauma that they are not willing to discuss. Internet and other resources for people who work with refugees can alert student affairs professionals to the kinds of trauma their students may have experienced. Refugee students benefit from specialized career, academic, and personal counseling. Academic advisors can consider collaborating with colleagues in international student advising offices and immigrant service agencies to construct a list of referrals.

Annie

Annie, age 22, was in her fourth year at the university. One day she came to see her advisor, leaving two men in the reception area. Annie told her advisor she needed to drop all of her classes. She explained that the men waiting for her were her husband and father-in-law. She wanted to end her arranged marriage and stay in school. However, the husband and father-in-law had paid a bride price, which would have to be returned if Annie left the marriage. She wanted to run away, but had no idea where to go. She felt very much alone and had considered suicide. For now, she was forced to withdraw from school.

Annie dropped her courses, declined referrals to the counseling center, and left with the two men. The advisor, who had been surprised by Annie's disclosures, began investigating possible sources of help for Annie. The advisor had no idea whether she would hear from Annie again. A week later, Annie e-mailed to say she had run away from her marriage. The advisor gave her information on local resources, including shelters and legal centers for battered women. A few days after that, Annie was back in the advisor's office.

A council of elders would soon decide whether Annie could leave her marriage. Her father had advised against taking any legal action, at least until after the family meeting. Going to outsiders for help would be disrespectful of the elders. At the end of the appointment, Annie and her advisor walked together to the counseling center. Annie reenrolled in two of the four courses she had dropped.

What is going on? Annie's story is more dramatic than most, but it illustrates a concern for immigrants from a variety of cultures. Groups of recent immigrants settle in closely knit communities and work hard to maintain their traditions in new surroundings. This has at least two implications for student affairs workers. One is that students may be dealing with family traditions that conflict with the values upon which mainstream American higher education is based. The second is that some immigrant communities have established institutions parallel to those of mainstream America. For example, arranged marriage, bride price, and polygamy may exist alongside mainstream American marriage customs. Student affairs professionals are called upon to support students as they negotiate conflicting loyalties.

Recommendations. The process by which immigrant students decide when and how to seek help may differ from the process other students follow. The advisor wants to know that Annie has appropriate personal support, whether in a conventional counseling relationship or from members of her community. Annie must make her own decisions about whether or not to depart from her community's traditions. Annie finished her degree about 2 years after leaving her marriage, after a total of 5 years of undergraduate study. Her story illustrates the tremendous strength and resiliency many immigrant students demonstrate.

Juan

Juan, age 18, was born in the U.S. His mother is a permanent resident of the U.S., but his step-father is an undocumented immigrant from Mexico. Based on his family's income, Juan is eligible for substantial financial aid. Because of his step-father's undocumented status, however, Juan is reluctant to apply for state and federal funds.

Toward the end of his first semester at the university, Juan is passing all four of his courses, but just barely. He has been working off campus 30 hours per week to pay his tuition and fees. He has contributed regularly toward household expenses as well.

Juan is unsure whether he should register for a second semester. He tells his academic advisor that he does not have time to visit the tutoring centers for help with his courses, nor has he had time to make friends on campus or to get involved in student organizations. He has not had time to socialize with his friends from high school either.

Juan has not been able to pay the balance due for his first semester. He says he has not had time to investigate how applying for financial aid could affect his step-father. He knows his mother has been working to legalize his step-father's status, but that process can take months or years. Juan feels he is working too hard, both in his courses and at his job, and not seeing results.

What is going on? Some of Juan's assumptions are unfounded. Born in the U.S., Juan is a U.S. citizen and eligible for government-based financial aid. It is Juan who must demonstrate citizenship, not his step-father. The undocumented status of Juan's step-father may, however, be part of the reason Juan needs to work so much. Without proper documents, the step-father's opportunities to work are limited. Knowing how insecure his step-father's status is, Juan may be reluctant to ask questions about his options. An academic advisor could encourage Juan to pick up financial aid application materials and review with him the questions that establish basic eligibility.

The situation for students who are themselves undocumented is much more difficult. They are not eligible for federal aid, the basis for many other kinds of institutional funds and private scholarships. Public colleges and universities may require undocumented students to pay higher out-of-state tuition rates. This is, in fact, a hot controversy in some states. Some institutions allow refugees (with proper endorsements on the I-94) to pay in-state tuition while they are in the process of legalizing their immigration status. Advisors should have a basic understanding of the rules for financial aid and in-state tuition rates so they can place students' worries into appropriate perspective and refer students to the financial office with confidence.

Recommendations. Because he works so much and lives at home, Juan is not making connections on campus. Juan may feel disconnected from his background if his campus is one with few Latino students. Connecting with campus culture while maintaining the identity with which they grew up is a challenge for many students, but especially for those from immigrant families. Advisors can help by making referrals to student organizations on campus and encouraging students to get involved off campus in their communities. Ideas from the experience of Latino students (Hernandez, 2000; Hurtado & Carter, 1997) may offer insight into the concerns of newer immigrant groups as well.

For now, Juan's advisor is helping him investigate financial aid, on-campus employment, Latino connections on campus, and the advisability of part-time study. Juan has decided to stop out for at least one semester while he explores the possibilities, including the option of transfer to another institution or another college within his university.

Best Practices

Immigrant students face a variety of academic, personal, and practical challenges. Advisors should expect to give them extra help as they negotiate obstacles. Some best practices to consider are:

1. An understanding of which immigrant groups are present on campus can help an advisor prepare by learning about the cultures involved. It is not possible for each advisor to be an expert on each immigrant group, but awareness that home cultures may affect how students handle their college experiences is useful.

2. Knowledge of a few of the basic legal and financial aid policies that affect immigrant students is helpful. Advisors will have to decide how comfortable they are helping students negotiate the regulations without making judgments about their reasons for coming to the U.S. or their strategies for balancing home country and American lifestyles.

3. Awareness of models of second language learning and critical literacy may help advisors talk with immigrant students when they have difficulty with their courses. With this background, advisors can make appropriate referrals to campus resources.

4. Models of adjustment may be good background for talking with students about practical obstacles they are facing. Immigrants experience frustration, even anger, as they come to terms with their new environments and devise coping strategies. Post-traumatic stress may complicate adjustment.

5. Awareness that models of student development and related institutional procedures may not fit the situation of immigrant college students can help advisors apply appropriate flexibility.

6. Trusting relationships take time to develop. For some immigrants, it is essential to have the relationship in place before discussing personal goals, successes, and problems. On the other hand, advisors may be surprised by what students in crisis have to say, even before a relationship is established.

7. Realization that many immigrant students have much heavier responsibilities to their families than most U.S.-born students is essential. For instance, immigrant students may be responsible for a large share of the household work. They may be obliged to assist their families as translators and cultural bridges between family members and American service providers. In some cases, academic and career goals are set by the family, not by the individual student. American assumptions that students make decisions as individuals do not always apply as immigrant students devise coping strategies.

Working with immigrant students is a stimulating challenge. It is also an opportunity for both the student affairs professional and the student to learn together. Both sides benefit when they form a partnership. There is also the issue of equal opportunity. Student affairs leaders who consider the special needs of immigrant students, and the unique contributions immigrant students make to the campus community, are in a position to make the climate increasingly hospitable.

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Access and Engagement: A New Zealand Study

Helen Anderson

Manukau Institute of Technology

Maxine Stephenson, Pam Millward, and Nane Rio

The University of Auckland

This chapter considers a qualitative study of students' perceptions of the nature of engagement in a degree programme. The findings of the study are discussed with regard to studies of attrition and retention proposed by Vincent Tinto and critiqued by a range of authors. As a concept, "engagement" provides a useful frame for debate, and the data suggests that engagement is a critical element in successful study within this study.

Access to tertiary (i.e., postsecondary) studies is a function of the interface between the community and educational institutions. The accessibility of an institution includes the ability to attract, retain, and foster the success of people who wish to participate in study. Access can be expressed in terms of enrollment, retention, and success, with the definition of success needing some particular clarification with regard to the goals of the institution, the community, and individuals. There is a significant body of research addressing the issues of access. This chapter uses the work of Vincent Tinto (1975, 1982, 1993, 1997) as a reference point in its discussions focusing on the concept of "engagement" as a mechanism of access. Please note that the conventions in written English that are standard in New Zealand are retained as an editorial commitment to valuing difference.

The seminal work of Vincent Tinto (1975) in the 1970s on why students leave tertiary studies cemented the scholarly focus on attrition for some time. Many studies followed from his work, and these looked at the reasons students did not complete their tertiary programmes. Tinto's early work directed attention to attrition, and at the same time brought the institution and its practices into focus and began the very useful process of raising the expectation that institutions might think about institutional factors and not just student factors in the attrition of students.

The more recent work by Tinto (1982, 1993, 1997, 2002) demonstrates a progression from identifying why students leave tertiary studies to identifying why students might stay, shifting the focus from attrition to persistence. Within this approach is an explicit expectation that institutions must take responsibility

for the quality of the learning environment they offer—a learning environment that makes it possible for students not only to stay but to learn, to succeed at their studies, and to go on to make effective contributions to the communities in their orbit.

Tinto's early work identified academic and social engagement as the critical factors in attrition. He conceptualised lack of engagement along the same lines as Durkheim's (1951) view of suicide as resulting from inadequate integration into the social fabric. Tinto (1975) suggested that dropout can be similarly modelled as lack of connection with the academic and social system of the tertiary institution. Although "dropout" and retention do not constitute a matched pair, the concept of engagement, or connection, permeates both discussions. Recent thinking (Gee, 1998) suggests that lack of connection would have its origins in the attempts of institutions to maintain an exclusivity that would not provide an engaging environment for already underrepresented groups, especially where these are minorities within the wider society.

Tinto's work has been criticised (Tierney, 1999) for not considering the two-way process of accommodation between institutions and minority student populations that may be seen as essential if tertiary study is to be accessible to traditionally underrepresented groups. The concept of engagement as a reciprocal activity opens the door to an interpretation wherein the activity of engagement may be seen as a mechanism not just for the student to adapt to, or integrate into, the institution but for the institution to also adapt to diverse students. Failure to engage or integrate may be as much a function of the individual experience as of the institutional attitude. While minorities such as Maori and those from Pacific nations in New Zealand continue to be overrepresented in "dropout" statistics, institutional adaptation remains part of institutional responsibility. Tinto (2002) identified institutional responsibility as a key element in supporting student persistence.

Tinto's (1975, 1982, 1993, 1997) revised model of engagement that is his "Student Integration Model" (1997, p. 11) has been the subject of considerable research. Although the word "integration" has connotations of cultural abasement in countries where racial, ethnic, and religious minorities have been subjected to one-sided integration, its interpretation as

engagement offers potential for reciprocity and equality. The work of Cabrera, Nora, and Castaneda (1993) is illuminating. They used structural equation modelling to test Tinto's model. This usefully extended the qualitative and statistical analyses already carried out and confirmed the direct effects of many of the elements of the Tinto model. The authors noted that the critical factors were identifiable statistically, but from the practitioner's perspective it would not be useful to simply provide disconnected sets of services to prevent attrition. Rather, a concerted effort is needed to integrate services so that needs may be met in a way that acknowledges the complex interplay of factors that is expressed in individual students.

Tinto's recent work (1993, 1997, 2002) described and analysed learning communities. He proposed that the significant elements supporting effective access (i.e., enrollment, retention, and success) to tertiary education are academic and social support, academic and social integration, and student learning. In other words effective access means that students are engaged. For this to occur, Tinto states that the institution must be committed to student engagement, and this translates into the fourth element of effective access, which is high expectations, defined as a genuine belief across the institution in the capacity of all students to succeed.

This chapter considers a Bachelor of Education (Teaching) programme taught at the home campus of a major university and also at a campus some 20 kilometres distant in an area that is economically disadvantaged and is peopled with groups who are generally underrepresented in tertiary studies and particularly at the bachelor-degree level. The programme is located on the campus of a polytechnic institution. The programme is "owned" by the university while the polytechnic provides the space and student services.

The challenge for this degree programme is to provide a learning environment that makes it possible for its students to succeed. The students in this programme are culturally diverse and primarily mature students who have frequently gained entry to the university through its provisions for special admission. These provisions recognise life and work experience and academic potential where traditional academic qualifications have not been attained by applicants over the age of 20.

This chapter offers discussion around the qualitative findings arising from interviews with the students studying in the Bachelor of Education (Teaching) programme. This discussion aims to add rich interpretation to some of the elements of engagement in tertiary study proposed by Tinto, critiqued by other authors, and heard in the student voices.

Research Method

The project method was to interview students from each of the year cohorts and then to reinterview these students each subsequent year of study and including their first year as teachers. The interview schedule provided an open-ended guide for the interviewer and was designed in collaboration with the students. Interviews are between 60 and 90 minutes long. The interviews were conducted with a view to recording the students' experiences and their interpretations. The project has completed its first year of interviewing (51 interviews); the project team has been expanded, and the second year of interviews has begun.

Transcripts were analysed using a computer package, N6 (QSR Software, 2003) that supports qualitative analysis.

Findings

The interview transcripts provided rich data regarding the histories and experiences of students in the programme. This monograph chapter offers an analysis of the interview transcripts using the theme of engagement drawn from Tinto's work as a conceptual framework. Tinto's (2002) recent work on the development of learning communities proposed several factors that support enrollment, retention, and success for students, and these factors cluster around the concept of engagement. The following analysis considers elements of engagement in the transcripts of the participating students. Note that all quotes are from transcripts of interviews with students.

Engagement With Lecturers

This element is expressed in the data across three strands: (a) question asking, (b) lecturer accessibility, and (c) feedback. Most students identified asking questions of lecturers as critical to their learning. Those who were comfortable with asking questions saw it as

an important skill and noted that some lecturers could be asked within the lecture but, where the lecturer seemed unresponsive, students kept their questions for tutorials, and some approached the lecturer after class. The use of e-mail was identified as a strategy that circumvented personal contact when students were not confident and alternatively as a strategy that extended positive contact with the lecturer. The following exchange was typical:

"Sometimes I just don't understand what she's talking about."

"Do you ask?"

"No I don't I'm just too afraid to ask. I don't know why."

For many students in the study, asking questions was a difficult and emotive issue. These students had frequently experienced negative responses to asking questions in their primary and secondary schooling. They perceived asking questions as an expression of ignorance and had this view reinforced by the response of teachers and peers in their early education. When it came to asking questions in their tertiary programme, the desire to understand did not always supersede past experience, but there was evidence of students looking for strategies such as e-mail and asking friends to avoid direct contact and public exposure. Some lecturers were identified as establishing an environment in which asking questions was valued, but this meant students with issues about asking questions would go to them directly, not in class. One student commented, "the teacher's attitude back there, because she was very loud and scary and I didn't want to ask her because I didn't want to look stupid." Another student asserted, "There are teachers I do feel comfortable around . . . and the ones that just, I don't know, it makes your heart jump, scares the hell out of you and you don't want to approach them about nothing what so ever."

Asking questions overlaps with lecturer accessibility. The most frequent comment here was that accessibility was related to learning, especially in clarification of assignment requirements and slightly less frequently in relation to concept elaboration. Willingness to talk after class, take questions in class, be available during office hours, and make e-mail and phone contact were identified as elements of accessibility.

Most students saw accessibility as important and were surprised by the degree of accessibility available. This contradicted their preconceived notions of how lecturers behave based on prior schooling experience. A small number of students were aware of lecturer accessibility but did not use it, preferring to focus on peers as their source of interactive academic engagement. Students identified some lecturers as not accessible: "You have this idea you know, a stuffy room with a man in tweeds and you know, minding his ps and qs, you know, all the rest of it but it's not like that."

Feedback as an element of engagement produced universal agreement as to its value and a considerable amount of dissatisfaction with regard to its variable timeliness and quality: ". . . and we didn't get our assignment back before we went out to school, we just needed to know if we were OK." Students saw feedback as important. As potential teachers they had learnt about its place in the educative process and had experienced its value in their own learning. There were no expressions of negative value in this factor, and criticism was reserved for performance.

Engagement with lecturers was identified by students in their second and third year of study as a way to develop reciprocal understandings. They saw the diversity of the students as a challenge for both lecturers and students and identified ways both groups had learned to adapt to each other. This was primarily expressed in growth of understanding about different cultures and willingness to respect difference. Engagement was thus a reciprocal process at the teaching interface. One student noted that "the teachers learn from our cultures . . . and that's where they know where our needs are. [How] a teacher knows where the student's needs are is to involve with the students." Referring to classroom diversity, another student stated, ". . . So it gives everyone a richness of everyone else's cultures."

Engagement With Peers

Although Tinto (1997) separated academic and social engagement, our research found that the two elements were inextricable. Engagement with peers brings together the concepts of academic engagement and social engagement. The students in our study frequently described their study groups as being both serendipitous with regard to ethnic, gender, and age mix and intentional with regard to study needs. These groups were primarily student initiated and sometimes lecturer facilitated. The members of informal study groups were frequently described as friends, and study groups occurred either in space provided by the institution or in people's homes. Most people in the study identified themselves with informal membership in study groups and saw them as learning based and providing support by stronger students for weaker students. One student shared,

> We all sit together every day and we share sometimes . . . like the maths and we're sitting there, listen and when the lecture's finished someone understands, some who don't so that was really important in our group . . . we're all in groups and discuss and if we don't understand then it's back to the lecturer. . . . We're like friends, we're like mothers, we're like sisters . . . go to somebody else's house and then we talk and they have a cuppa . . . .

Another student commented, "We realised there was a problem there and we worked together as we had to do something about it eh. So we got together and made lecture notes."

There was much comment on the value of the cultural and ethnic diversity of peers in student learning: "I'm quite good at weaving my way in and talking with other people, and it's also an exchange of resources as well as your tapping into their knowledge, they can also—you can share yours as well."

One group was identified as having a language-based factor where students speaking a particular language could work through content issues with reference to the common language that was not the language of instruction. One student mentioned that the group "talked about it in our language, the Tongan language, to be easier."

A small group of students in the study identified themselves as loners, excluded or voluntarily not engaged, preferring to work alone. These students identified issues around age difference or barriers related to ethnic and cultural differences. One said, "There's no one that's interested in my interests. There's no one I can relate to." Another remarked, "I recognise when they ask them some questions, they don't even want to share."

Engagement With the Institution

Tinto's (1997) model identified student commitment to the institution as a factor in access to tertiary study, and in a later discussion Tinto (2002) talked about the institution's commitment to the student expressed in provision of services and high expectations of student success. In this study several themes interact around this aspect of engagement: "Support Services," "Administration" (e.g., enrollment, loans, allowances, course changes), and "Value of the University."

High value was placed on the provision of support services, but interestingly these were seen by the students as the availability of the programme coordinator and other lecturers to provide academic support across subjects and "on call." Although the study does not ask explicitly about other services, when asked about what makes a difference to their learning, they rarely initiated a comment about them. Services with occasional comment were the counselling service and the student learning centre. For example, one student addressed the support of a particular staff member: "I think if it wasn't for _____ I couldn't speak more highly of her in terms of her dealing with the needs of the students here."

Administration attracted primarily negative comment in this study, which probably reflected the ongoing issues of providing service to a distant and different campus. One student indicated that her frustration with study was in part based on the lack of administrative efficiency of the institution, and many commented on this contributing to their uncertainty about their value within the University, but not in the profession.

> Even when I've got tertiary fees to FAX through here sometimes there can be administrative hold ups. You know, they'll say, it has to be this piece of paper. Your name has to be on this list but I've got the receipt for paying fees so why can't I have my ID so I can get in and get the books early.

This programme is unusual in its location, which provides a useful opportunity to see if it makes a difference to students that while the programme is located in a relatively low-status polytechnic institution it is a programme belonging to a very high-status university. Commitment to the institutions was expressed in different ways. Commitment to the polytechnic was expressed in terms of convenient location, friendly and diverse population of staff and students, and pleasant physical environment with easy parking. Small classes and high levels of interaction with staff were identified with the campus location and frequently contrasted negatively with the University's home campus. There was consistent expression of the value of the University ownership of the degree in terms of providing students with status, especially in the eyes of family and friends and also in terms of job seeking in New Zealand and overseas.

> Well, I think it is quite important because I want to come out with a degree that has _____University attached to it because I would say that the perception of people is that _____ University is a professional place to get a degree from.

External Factors

There are a cluster of other factors identified in the analysis of the data that demonstrate some convergence with the analysis by Cabrera, Nora, and Castaneda (1993) discussed previously. As well as affirming many elements of the Tinto (1975, 1982) model, they commented on some weakness in Tinto's explication of external factors in the delineation of student persistence. In this study the strength of family support and expectations, the "rightness" of the choice of the subject of education, and the impact of differences between home language and the language of study were noted as well as the need to take paid work. Although these sources may be external, these factors appear to impact strongly on engagement, as documented in the following quotes:

> "Expectations . . . From my Mum and Dad? . . . I strongly believe it's still there. That's why I'm doing what I am doing now. . . ."

> "Yes, my parents look after my baby . . . ."

> "I'd have to get them all in my head and when I went home . . . translate it all back in my language. . ."

External factors are clearly important both in supporting student persistence and in prompting attrition.

Discussion

This chapter began with the intent to locate engagement as a conceptual entity within the broader idea of access and to test this conceptual framework on the data gathered from interviews of students in a particular programme. The work of Vincent Tinto has provided a model and referential research to add shape to the discussion. Tinto began with attrition; more recently, he has been working on how to foster productive retention. This chapter offers some leads on the implications of this work for a particular programme and tentatively for the generic model.

One of the key challenges to the Tinto model from this research is to consider the integration of academic and social engagement. Quantitative analysis of factors leads to separation of these items, but a qualitative approach suggests that they may be inextricable, and by extension it may be that separation detracts from access and persistence. This has been tested positively in the equation modelling study referred to previously and in the practice of learning communities described by Tinto (1997) and evaluated by McIntosh, Packskamp, and Ridzi (2001).

The second aspect for consideration is the positioning of external factors in this research agenda. It reflects considerable progress to shift thinking from assuming external factors are the primary cause of attrition and that institutions need only maintain their academic character, to seeing institutional responsibility as a large element in attrition. It would, however, be unfortunate to ignore external factors that may impinge on the capacity of the student to engage in learning. These factors have implications not just in terms of institutional responsibilities but also with regard to government policies. It may be argued that the balance of priorities (i.e., learning versus external pressures) is influenced by the quality of the learning environment, but the current models offer no specific analysis of where the direct effects are. It may be that when engagement reaches a significant level, structural and personal factors identified as external may have a reduced impact on the accessibility of tertiary education. Further, the quality of engagement in terms of creating a set of shared understandings between student and institution may be much more critical than Tinto's model suggests. Reciprocal engagement may be the mechanism for creating a learning environment that is less alienating for students who are underrepresented in tertiary studies and who are more likely to drop out.

Tierney (1999) challenges Tinto's (1997) work with regard to the question of why and how institutions should change alongside students to facilitate engagement. In this study, the reciprocity element of engagement is seen at the teaching and learning interface with lecturers and among peers, but it is not evidenced in the administration. Thus, the possibility of engagement being reciprocal is supported at the "people" level but it is not well evidenced as yet at the "institutional" level in this study.

Conclusion

This chapter affirms the work of Cabrera, Nora, and Castaneda (1993) in calling for closer attention to variability in the way engagement factors are manifested in individuals while retaining an interest in teasing out the factors to be considered. It is suggested that the criticisms put forward by Tierney (1999) may have neglected the potential of engagement to be reciprocal. Thus, engagement and its depth of reciprocity continues to be a useful concept in evaluating the quality of the learning environment

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Factors Influencing Retention

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The Influence of Financial Aid on the Persistence of Students from Low-Socioeconomic Backgrounds

Kevin P. Saunders and John H. Schuh
Iowa State University

This chapter is concerned with the relationship of financial aid to the persistence of students of low socioeconomic status (SES), an issue of increasing importance to policy makers, institutional leaders, and faculty. It summarizes selected foundational studies on this topic, presents studies that describe how financial aid is related to institutional factors that influence students' persistence, and identifies barriers that students from low-SES backgrounds face in completing their education. The chapter uses previous research to provide recommendations for research and practice. Specifically, future research needs to consider the interaction of financial aid with students' background characteristics and institutional experiences and to explore the reasons for the differential impact of various forms of financial aid. The chapter concludes that efforts to expand grant aid represent a promising strategy that can improve the persistence of students from low-SES backgrounds.

Institutions of higher education, policy makers, and the public increasingly are concerned about the accessibility and affordability of higher education for students. Society values equality of educational opportunity and looks to higher education to ensure access to students of low-socioeconomic status (SES) (College Board, 1999; Terenzini, Cabrera, & Bernal, 2001). The data suggest, however, that family income appears to have a direct relationship with college attendance and success. One study found that for high school graduates in 1992, "The proportion of all students who enrolled in postsecondary education within two years of high school graduation was directly related to family income: 64 percent of low-income, 79 percent of middle-income, and 93 percent of high-income students attended postsecondary education by 1994" (U.S. Department of Education, 1997, p. iv). Fitzgerald (2003) adds that despite efforts to improve college access and attendance for lower-SES students, ". . . significant [financial] barriers to college remain" (p. 3).

Economic theories of student departure emphasize the importance of individual finances and financial aid in enabling educational attainment. Many studies have examined the influence of financial aid on students' collegiate experiences. For example, the role of financial aid in equalizing educational opportunities for students in need of financial assistance (Astin, 1975; St. John,

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Andrieu, Oescher, & Starkey, 1994), and the influence of economic factors on educational outcomes such as academic and intellectual development or grade point average (e.g., Cabrera, Nora & Castañeda, 1992; St. John, Paulsen, & Starkey, 1996), have been explored in detail.

This chapter is designed to summarize existing research on the relationship of financial aid with the persistence of students from low-socioeconomic backgrounds, defined as students whose parents' income is below the poverty level or education level is less than a bachelor's degree, and then present strategies that, according to the literature, enhance persistence. It begins by reporting selected foundational economic studies of college persistence and then considers expanded studies that explain how student finances interact with other factors to influence college persistence. Then it examines how low-socioeconomic backgrounds affect college student persistence. Based upon the extant research, the chapter concludes with recommendations for institutions that wish to improve the student persistence of students from low-SES backgrounds through financial aid programs that have been demonstrated to have a positive effect.

Economic Studies of Degree Attainment

Foundational economic studies of persistence looked to ascertain the direct effects of financial factors on student persistence. For example, several studies relied on price-response theories of attending college based upon students' ability to pay and their perceptions of the benefits of college attendance (e.g., St. John, 1990; St. John, Kirshstein, & Noell, 1991; Stampen & Cabrera, 1988). Studies that focus on the influence of financial factors related to persistence examine how financial need, student aid packaging, and the adequacy of student financial aid influence persistence (Cabrera et al., 1992; St. John et al., 1996). In general, these studies consistently found that financial aid has a significant effect on persistence, although they did not consider the differential effect of financial aid for students from various socioeconomic status backgrounds.

Several foundational economic studies of persistence examined the influence of various financial factors on students' analyses of the cost and benefits of earning a baccalaureate degree. Previous research

concluded that various forms of financial aid (i.e., grants, loans, and work-study) are positively associated with enrollment decisions (St. John, 1990), and persistence (Nora, 1990; St. John et al., 1991). Other studies focused on the influence of financial aid on cost and benefit analyses made by students from low-SES backgrounds. These considered the effectiveness of various financial aid sources on persistence and found that students from low-SES backgrounds are particularly responsive to changes in grant amounts, but not to changes in loan amounts (e.g., Astin, 1993; St. John, 1990).

Although these foundational studies helped to examine the effect of financial aid on persistence, they did not provide a complete understanding of the true nature of financial influences on persistence. For example, they failed to consider the influence of other factors that shape student departure decisions. Tinto (1986) argued that these studies emphasized the importance of individual finances and financial aid in students' educational attainment decisions, without consideration of the "social or nonpecuniary forces inside and outside institutions that color individual decisions regarding persistence" (p. 363). Additionally, St. John, Cabrera, Nora, and Asker (2000) indicated that some economic studies provided an incomplete understanding of the true nature of financial influences on persistence because they did not consider the interactions among all the important factors that influence persistence.

As noted by Cabrera et al. (1992), most finance studies typically include measures of other variables, such as precollege motivational factors, academic ability, demographic factors, socioeconomic status, and college performance, to "control for background or precollege sources of variance when assessing whether financial aid or combinations of student aid packages increase persistence" (p. 572), but failed to consider the interactive effects of the variables. Voorhees (1985) also highlighted the lack of research designs that understand the relationships among variables selected for research: "The result has been a profusion of 'stepwise' multiple regression analyses and multidiscriminant analyses that dissect, or pull apart, variables without regard to how they might work together to impact persistence rates" (p. 22). This lack of integration of financial factors into the research is critical given public investment in financial aid programs and the efforts of policymakers

and practitioners to understand how financial aid influences the entire persistence and degree attainment process (Cabrera et al.). These criticisms of finance studies have led to other studies that consider the interaction of financial aid programs with other variables that affect student persistence.

Expanding the Economic Model

Previous studies on financial aid and educational attainment primarily have focused on the ability of financial aid to equalize educational opportunities by eliminating income differences (e.g., Hossler, Braxton, & Coopersmith, 1989; St. John & Noell, 1989; Stampen & Cabrera, 1988) or the effectiveness of aid packages in promoting persistence (e.g., Bean, 1985; St. John, 1990; St. John et al., 1991; Stampen & Cabrera). Although these two lines of inquiry have offered important insights regarding the role of financial aid in equalizing educational opportunity or promoting persistence, they do not promote an understanding of how financial aid interacts with students' motivational and ability factors or institutional experiences (Cabrera, Stampen, & Hansen, 1990). Expanded economic models offer promise for both future persistence research and strategies for effective institutional practice.

St. John et al. (1991) used educational attainment models as a foundation for a conceptual model of the effects of student financial aid on persistence to degree completion. St. John et al. concluded that educational attainment models provided a basis for a logical extension of financial aid research to include the interaction of financial aid with other factors that influence persistence to degree attainment. For example, in addition to measures of financial aid, their model explicitly incorporated measures of academic integration (e.g., grades) as part of a student's educational experience and a measure of educational aspirations as an indicator of goal commitment. The model used by St. John et al. incorporated features from several areas of research to view degree attainment as a function of "social background, academic ability/ achievement, high school experience, postsecondary aspirations, college experiences, and student financial aid" (St. John et al., p. 386).

Several studies have explored the effects of finances on persistence by incorporating economic factors in the context of noneconomic variables such as academic skills, academic integration, social integration, and goal commitment (Cabrera et al., 1990, 1992; Nora, 1990; St. John et al., 1991). In one example, Cabrera et al. (1990) provided a model that is drawn from Tinto's (1975) student integration model, Bean's (1982) and Nora's (1987) findings regarding the influence of support from others on persistence, and Vorhees' (1985) research indicating that economic need negatively affects college academic performance. Their model added the element of ability to pay as a variable that directly affects students' decisions to persist in college. In addition, they hypothesized that financial variables also would have an indirect influence on persistence by moderating the effects of institutional commitment, goal commitment, academic performance, and institutional variables on students' decisions to remain at an institution. The results from the study did not indicate that ability to pay—defined in the study as satisfaction with cost of attendance and SES—moderated the effect of either academic performance or social interaction on a student's decision to persist. They did, however, report an interaction effect between students' ability to pay and goal commitment, providing support for Tinto's claim that external factors are likely to moderate the effect of goal and institutional commitments. In other words, Cabrera et al. (1990) supported the hypothesis that financial variables can influence the effect of educational aspirations, which contradicts a common assumption that an individual's commitment to complete college can overcome a lack of financial resources.

St. John et al. (1996) considered the need to merge economic models with student-institutional fit models. Their college choice-persistence nexus model described persistence as a three-stage process. In the first stage, students' predisposition to pursue a higher education degree is shaped through socioeconomic factors and academic ability. During the second stage, students next estimate the costs and benefits of attending college, which influence subsequent enrollment decisions. St. John et al. found that financial factors affected college choice during the second stage. Student entry into an institution represents the third stage, in which college characteristics, social experiences, and academic performance shape degree aspirations. Considering the third stage, St. John et al. found that finances interacted with academic and social experiences to shape students' calculations of the costs and benefits of their college experiences. In other words, students' reenrollment

decisions were shaped by both the quality and the cost of their college experiences. Overall, this nexus model indicated that financial factors influence both college choice and persistence decisions.

In another example of integrating financial variables with other factors that influence degree attainment, Cabrera et al. (1992) explored the indirect and direct effects of finances on persistence in the context of variables such as significant others' influence, precollege academic achievement, academic and social integration, goal and institutional commitments, and intent to persist. As noted by Cabrera et al., little effort has been placed on examining what role financial aid has in the college persistence process together with student's motivational and ability factors. Their model of student persistence posited that finances have a direct effect on persistence decisions while affecting students' social and academic experiences. The model also assumed that finances have a direct effect on academic integration, social integration, and institutional and goal commitments. The model posed by Cabrera et al. is important theoretically because it considers "What are the effects of student finances on college persistence when academic ability, motivational, and integration and commitment variables (as well as their underlying structural patterns) are simultaneously taken into account?" (p. 588). Their research effectively converged two separate lines of research that previously considered the role of financial and organizational factors in isolation. Cabrera et al. found support for the indirect influence of finances on the persistence process, demonstrating that financial aid can enhance factors that are associated with persistence such as academic performance, social interaction with other undergraduates, and desire to persist.

College Persistence and Low-Socioeconomic Status

College students from lower-SES backgrounds face several barriers that can hamper their ability to complete their baccalaureate education. Before students begin postsecondary education, socioeconomic factors influence students' predisposition to attend college, search for potential institutions, and choice among institutions. For example, SES influences the likelihood that parents will talk to their children about college (Stage & Hossler, 1989), the level of parental encouragement (Cabrera & La Nasa, 2000; McDonough, 1997), and the formation of postsecondary plans (Cabrera & La Nasa; King, 1996; Trusty, 2000). When searching for possible institutions to attend, students from low-SES backgrounds have fewer information sources about college (Tierney, 1980) and less knowledge of financial aid availability and qualification criteria (Olson & Rosenfeld, 1984; U.S. Department of Education, 2000). As students make choices among institutions, students from low-SES backgrounds are more sensitive to college costs and availability of financial aid (U.S. Department of Education, 2003a). These students and their parents are less likely to have obtained information about or could estimate the cost of tuition and fees according to a U.S. Department of Education study (2003a) when compared with students and their parents from middle and higher income families. Additionally, they and their parents were unable to predict college costs as accurately as middle or higher income students and their parents (U.S. Department of Education, 2003a).

One of the most significant differences between students from low- and high-socioeconomic backgrounds is in their preparedness for college study. Terenzini et al. (2001) noted sharp contrasts in the academic achievement of high school seniors in the areas of reading, math, science, and social studies across SES quartiles. Other research has indicated a relationship between the level of high school curricula students complete and factors such as family background and socioeconomic status (Adelman, 1999; U.S. Department of Education, 2001).

Financial aid has been shown to have a positive effect on both college attendance (St. John, 1990), retention (U.S. Department of Education, 2003b) and on baccalaureate degree attainment (Cabrera et al., 1992). However, several studies have suggested that the shift in federal financial aid policies from gift aid to self-help aid, regardless of need, threatens equal access to educational opportunity (Fenske, Porter, & DuBrock, 2000; King, 1996). For example, the 1992 reauthorization of the Higher Education Act allowed for greater borrowing limits and established a loan program that is open to all students regardless of need. King explained that federal student loan programs are shifting their emphasis from creating access for financially disadvantaged students to broadening choice and enhancing convenience for middle class students.

At a time when students increasingly are concerned about affordability, the refocusing of financial aid from grants to loans has important implications for encouraging able students from low-SES backgrounds to pursue a college degree, including limiting their range of college choices and their experience once they enroll. Campaigne and Hossler (1998, p. 100) concluded, "As federal policy shifts from a reliance on grants to increased emphasis on loans, low- and moderate-income students are less likely to consider attending private colleges and universities. They may also be less likely to attend 4-year public institutions as residential students." Living on campus can provide important experiences for students as Terenzini, Pascarella, and Blimling (1996) have pointed out, which suggests that low-SES students' lower likelihood of attending institutions as residential students may negatively impact their educational experiences. Moreover, as private borrowing increasingly becomes an option for students who require additional resources beyond the allowable maximum for federal loan programs, Wegmann, Cunningham, and Merisotis (2003) reported that students from families from the lowest income quartile were less likely to receive private loans than their middle-income counterparts.

The discussion of financial aid thus far concentrated on the impact of grants and loans. It is also important to note that work-study has a positive effect on persistence (Astin, 1975). Phipps and Merisotis (2003) reported that the connection between work-study and persistence is true for low-income students as well, noting that work-study was positively associated with higher grade point average and greater engagement in campus activities, which in turn impact persistence. In contrast to the positive effect of on-campus work-study positions, research indicates that full- or part-time, off-campus employment inhibits persistence (Pascarella & Terenzini, 1991). Based upon this research, it is apparent that on-campus work-study can assist students from low-SES backgrounds in overcoming barriers to persistence, while off-campus work may create additional barriers.

Implications for Research

Previous researchers have offered important insights regarding ways to improve our understanding of the persistence of students from low-SES backgrounds. For example, Stage and Hossler (2000)

called for a comprehensive student-centered theory of persistence that combines elements of student background, school experiences, intentions, preparations, and college entry. This framework offers the promise of conceptualizing degree attainment as a continuous process rather than distinct phases such as college choice, college enrollment, and persistence. There is a need to expand economic models of persistence to consider not only the importance of individual finances and financial aid on degree attainment decisions, but also to examine the additional forces that interact with economic resources to impact degree attainment. Tinto (1986) explained that although it is clear that financial considerations are important for students from disadvantaged backgrounds, there is little evidence to support the contention that economic forces are paramount in degree attainment once students are in college. Tinto suggested the need to expand economic models of persistence because previous research focused on the influence of finances on access rather than persistence, and it lacked an understanding of how finances related to long-term patterns of student departure.

Educators who wish to examine the influence of financial aid on persistence of students from low-SES backgrounds should consider the following strategies. First, it is important to examine how the relationship between financial factors and institutional experiences might vary by student background characteristics such as socioeconomic class. Previous research on financial aid and persistence often have controlled for SES differences, which limits the ability to understand the unique experiences of students from low-SES backgrounds. Secondly, as noted in this chapter, several studies have indicated that different forms of financial aid influence persistence in different ways. Therefore, researchers should continue to consider how different forms of financial aid contribute to degree attainment. Global measures of financial aid or students' ability to pay may limit a detailed understanding of how financial aid influences students' institutional experiences and indirectly influences degree attainment. Thirdly, although several studies empirically have demonstrated that financial aid in the form of grants has an influence on persistence, additional research may provide a grounded discussion about why this connection exists. Specifically, researchers need to understand how financial aid indirectly influences persistence through other factors such as motivation, academic achievement,

and academic and social engagement. Finally, future research should consider how institutional characteristics shape the experiences of students from low-SES backgrounds. For example, Anderson (1988) considered how factors such as the proportion of low-income students, the mean SAT score of the entering student class, selectivity, the proportion of students who live on campus, and the percentage of undergraduates who are enrolled part time influence student involvement, academic performance, goal commitment, and degree attainment.

Implications for Practice

As was mentioned previously, students from low-SES backgrounds are sensitive to price increases in higher education. Additionally, they have to overcome a variety of barriers to be successful and complete their baccalaureate degree. However, financial aid can be used to assist students in overcoming the barriers they face. Because three forms of financial aid (i.e., grants, loans, and work) are available to students, institutions can develop strategies, informed by research, to package aid to maximize its effectiveness.

Various studies have determined that student financial aid in the form of grants can have a positive effect on student persistence. For example, need-based aid has been found to be important to students from low-SES backgrounds when they make enrollment decisions (Leslie & Brinkman, 1988; St. John, 1990). In one study, St. John et al. (2004) noted that a $1,000 increase in need-based grant aid increased enrollment 11.5 percentage points, while the same increase in non-need grants resulted in an increased enrollment of 8.9 percentage points. St. John et al. concluded that the direct effects of need-based grants were much more substantial. Financial aid not only influences students' enrollment decisions (Paulsen & St. John, 1997) and persistence decisions (St. John et al., 1991), but the interaction between finances and academic and social experiences also influences degree attainment behaviors in positive ways. Astin (1993), for example, concluded that grant aid is the only form of financial aid that seems to have a measurable effect on student development. Terenzini et al. (2001) agreed and pointed out that students from low-SES backgrounds are more responsive to grants as opposed to loans and work-study programs.

Grants can have other desirable effects on students. They can have a positive influence on persistence (St. John et al., 1991), social integration (Astin, 1993), and grade point average (Cabrera et al., 1992). As a consequence, the implications for awarding financial aid are obvious. As institutions shape their financial aid program in the form of grants, they can have a positive influence on students' educational experiences and, ultimately, their persistence to graduation. This recommendation is supported by research conducted by the U.S. General Accounting Office (1995), which found a 14% reduction in the dropout probability of students from low-SES backgrounds with an additional $1,000 in grant aid. The same study found no significant effect for increases in loan aid.

Federal financial aid, increasingly, is taking the form of loans (The College Board, 2003), and the purchasing power of Pell Grants has eroded over time (The Institute for Higher Education Policy, 1999). As a consequence institutions have to explore alternative resources to develop strategies that will facilitate the persistence of students from low-SES backgrounds rather than look to the federal government for help in developing more robust grant programs. Among the available strategies are the following: (a) discounting tuition for students from low-SES backgrounds, (b) focusing current grant-based aid programs other than discounting programs on students from low-SES backgrounds, and (c) undertaking fund raising campaigns designed to endow grant-based aid programs for students from low-SES backgrounds. None of these prescriptions are easy in difficult economic times, when colleges and universities are strapped for resources (e.g., "The big squeeze," 2003). However, if the persistence to graduation of low-income students is a priority for colleges and universities, then more resources need to be identified to provide grant aid for students from low-SES backgrounds. As institutions consider these possible strategies, it is helpful to note that a report from the Lumina Foundation for Education showed that the standard practice of using institutionally-funded grants to defray college costs (tuition-discounting) for the general student population frequently fails to increase net revenue and student quality, while restricting the access to grant aid of students from low-SES backgrounds (Davis, 2003). Therefore, it seems likely that the three strategies outlined above can serve to promote postsecondary access and persistence of students from low-SES backgrounds.

Other strategies also could be employed to provide more grant aid for students from low-SES backgrounds by managing enrollment. Among them are admitting fewer students from low-SES backgrounds, thereby enabling an institution to be more generous with grant aid to those students from low-SES backgrounds who are admitted. Another is to admit more students who pay the full cost of admission, and as a consequence redirect some of the tuition dollars paid by them to students from low-SES backgrounds (Hill, Winston, & Boyd, 2003). Each of these strategies has drawbacks. In the case of the first approach, admitting fewer students from low-SES backgrounds hinders the objective of providing greater access for students from low-SES backgrounds and limits the socioeconomic diversity of the institution. In the case of the latter, admitting more full-paying students suggests that either some middle- or low-SES students will not be admitted to provide room for the students who are able to pay the full cost. A third approach is to reallocate grant aid from higher SES students to low-SES students. This may result, however, in limiting an institution's ability to attract students with unique talents (e.g., in the fine arts, athletics, or academics) who, instead may be recruited by other institutions willing to provide more grant aid to them.

Conclusion

This chapter has summarized existing research on the relationship of financial aid with the persistence of students from low-socioeconomic backgrounds beginning with several foundational studies and then reporting how student economic background interacts with other variables to provide special challenges for low-SES students. It is clear that packaging financial aid in the form of grants, regardless of the source, has a positive influence on the persistence of students from low-SES backgrounds. As a consequence, colleges and universities are urged to develop financial aid programs that emphasize grants because of their potency in helping students realize their goal of graduation.

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Measuring Undergraduate Hardiness as an Indicator of Persistence to Graduation Within Four Years

Donald E. Lifton

Ithaca College

Sandra Seay,

East Carolina University

Andrew Bushko

Widener University

This chapter makes a case for measuring first-year college students' hardiness upon their arrival to identify which undergraduates are most likely not to graduate four years later. The hardiness literature is reviewed. Labor-intensive persistence intervention programs are expensive. Enrolling only those who need them—regardless of demographic background—is most efficient. Blending undergraduate hardiness considerations into efforts that identify "at-risk" students avoids the uneconomical and demeaning simplification of characterizing all students from underrepresented populations as vulnerable. A two-campus longitudinal study of 471 first-year respondents revealed a correlation linking hardiness with persistence to graduation. Policy ramifications are discussed.

Early identification of students who have a high potential to drop out of college has become a key concern of faculty and administrators involved with improving retention. Creative intervention programs often incur expensive, labor-intensive costs. These initiatives would be more financially efficient if they were targeted only to those among the many new arrivals who are less likely to graduate in four years while exempting others who do not need them.

There might be an understandable temptation, for example, among administrators with concerns for building campus diversity to funnel underrepresented student populations into these retention programs regardless of whether or not such undergraduates might need the support. After all, 45% of Black students, on average, drop out of college within six years in comparison to the 33% of White students who leave (Swail, 2004). On the other hand, this suggests that 55% of Black students, as persisters, do not need retention intervention programs.

Enrolling all members of certain student population subsets into campus retention intervention programs risks reducing the entire group into a demeaning stereotype that overlooks the variety of persistence skills found within it. Targeting entire subgroups for services

also adds to the inefficiencies noted above by wasting retention energy on those students from underrepresented populations who do not need the help. One challenge for higher education administrators is to identify a practical mechanism that provides an early identification of "at-risk" students regardless of their background.

This report empirically tests the uncomplicated measurement of student hardiness as that user-friendly mechanism. The current study contributes to the expanding literature in two ways: (a) it is a rare use of hardiness as an independent variable in longitudinal research—particularly over a four-year period, and (b) it appears to be the first published linkage of hardiness as an independent variable to the dependent variable of undergraduate persistence found in a refereed venue.

Recognizing the complexity of the issue, theorists understandably posit sophisticated models that explain the variance in retention (e.g. Astin, 1982; Clewell, & Ficklen, 1986; Tinto, 1975, 1993). Typically, these models project the likelihood of retention by combining certain pre-college characteristics of high school students and their influence on individual commitments with both the formal and informal rhythms of their host campus. The traditional retention models are the long-term purview of university presidents and their boards of trustees. These approaches require sustained leadership commitment and significant resources over time to change the fundamental structure and culture of campus communities. Multivariate retention models, although quite helpful in their explanatory power, are not in tune with the needs of those higher education professionals working "in the trenches." Middle managers do not have the resources, the time or, indeed, the mandate to implement transformational campus models that can align their institution in a profound way to the individual new student's makeup, particularly during the crush of serving arriving newcomers.

Implicit in this current longitudinal research, however, is the hint of an alternative, "meantime" tactic to improve campus retention. While awaiting long-term transformational campus change, our alternative method would help those college officials who are responsible in the meantime for improving persistence to graduation within the often-inhospitable campus realities of the here and now. It acknowledges that retention administrators must focus on individual students' reaction to the host campus as they find it.

Retention administrators and faculty need a real-time, pragmatic technique that would identify entering at-risk students in the current environment upon their arrival. Testing for hardiness may be that technique. At-risk students of any background could then be placed immediately in appropriate intervention programs such as first-year seminars while campus policy makers address the long-term transformational issues outlined in the more elegant models.

Theoretical Framework

Describing Hardiness: A Review of the Literature

A substantial amount of psychological theory has focused on the human tendency to create and thrive during periods of change. Building on these schools of thought, Kobasa (1979) sought to describe a "hardy" person—one who welcomes and thrives during periods of stress. Hardiness can be defined as a personality style that influences ways of thinking, feeling, and acting in the world that lead to personal growth rather than debilitation—particularly during times of stress. Hardiness is based on a perceptual framework through which individuals see the world around them. This perceptual schema leads to growth-oriented cognition, emotion, and behavior. It is composed of three integrated components: commitment, challenge, and control.

"Commitment" is a sense of value, meaningfulness, and loyalty towards oneself and one's purpose in life. It is expressed by deeply involving oneself in activities, relationships, and communities that are personally relevant (Kobasa, Maddi, & Kahn, 1982). Constructs that are similar to commitment, for example Antonovsky's (1979) "sense of coherence" (p. 124), have been offered as mediators of the impact of stress. Specific commitment-related behaviors include developing a broad portfolio of life goals and regularly reviewing and reflecting upon them. College admissions officials often get glimpses of an applicant's commitment component through their description of extra-curricular activities.

"Challenge" fosters a willingness to leave behind the status quo to develop and grow with a new set of circumstances. The basis of the challenge component is the belief that change is inevitable in life and should be welcomed. Those who have or develop challenge in their personality style will look upon a confusing series of events, such as the transition to campus life, as a puzzle to be solved rather than a storm to be weathered. Challenge leads to problem solving and searching for new experiences. From a challenge perspective, opportunity only comes through change (Kobasa, Maddi, & Courington, 1981; Kobasa et al., 1982). Specific challenge-related behaviors include developing a broad range of options in response to any new or threatening situation. Student inquiries about campus life activities or discussions with their faculty advisor about course registration options and alternative majors to pursue can offer an impression of the level of the challenge component in their overall hardiness.

"Control" is a belief in one's ability to influence events. It is very similar to Rotter's (1966) "belief in internal control" (p. 1) discussion within the locus-of-control construct. Internal control is the belief that one controls one's destiny in life. Specific control-related behaviors include identifying and acting upon the most feasible of the options developed through the challenge behaviors. Student choices exercised in opting to join specific campus organizations or assertively registering for elective courses involve the control component of hardiness.

Hardiness can be seen as the theoretical development of Selye's (1976) statement that "how you take it" (p. 74) determines whether a positive or negative outcome results from a stressor. Hardy persons tend to see stressors as changes that provide opportunities for growth towards attaining desired goals. Thus, individuals with a high level of hardiness attribute greater competence to themselves, appraise situations as having potentially positive outcomes such as graduating, and engage in problem-solving behavior to yield these outcomes (Bartone, 1989; Kobasa, 1979; Kobasa et al., 1982; Nowack, Gibbons, & Hanson, 1983). They generate and then choose among a variety of responses to a stressor.

Hardy persons further believe that they can control stressful situations. This perspective helps them thrive in, rather than succumb to, new circumstances. We view the first arrival at college as a demanding new circumstance. It is what piqued our shared interest in exploring the potential linkage of hardiness to retention.

We believe the beginning of college is often a demanding new circumstance. The traditional new arrival to campus, perhaps not yet 18 years old, is suddenly thrust into different surroundings. The campus presents all the challenges of "learning the ropes," navigating one's way through unknown territory and integrating oneself into an unfamiliar environment. Its population—faculty, staff, administration, sophomores through seniors, and the citizenry of the broader locality—has a whole set of normative expectations of the newcomers that are already in place. These expectations are further complicated by the hopes and best wishes that members of the students' hometowns—extended family members, friends and professionals such as seemingly supportive high school teachers—had expressed before the fall departure for campus. For some, these elements of the transition to college life may prove far more stressful than exciting. Less able to manage the transition, these students may be more at risk of dropping out. Seidman (1996), for example, urges college and university administrators to use the data at their institution's disposal to develop student profiles of those who, historically, do not persist to graduation.

Our approach seeks to expand Seidman's (1996) campus-by-campus focus on each community's students to a more comprehensive attempt that can be applied to undergraduates in different settings. It emphasizes measuring students' hardiness as they begin the higher education enterprise to determine their likelihood to transform possibly anomic current campus climates into arenas that enhance successful individual journeys toward graduation within four years. Targeting less-hardy students, regardless of their background, for enrollment in retention intervention programs might permit more efficient usage of these expensive, labor-intensive efforts that are best suited only for those who truly need them.

Review of Hardiness Research

The reported research applications of hardiness are broad and growing. Respondent groups have included women survivors of sexual abuse (Feinauer, Mitchell, Harper, & Dane, 1996), children with attention deficit hyperactivity disorder (Brooks, 1994), Idaho farm and

ranch families (Carson, Araquistain, Ide, Quoss, & Weigel,1994), army disaster workers (Bartone, 1991), older adults (Magnani, 1990), executives (Maddi & Kobasa, 1984), bus drivers (Bartone, 1989), nurses (Harris, 1989), immigrants (Kuo & Tsai, 1986), student affairs administrators (Berwick, 1992), and adolescents (Hannah & Morrissey, 1987), among others.

Williams, Wiebe, and Smith (1992), for example, found among 139 undergraduate respondents sampled from an introductory psychology course that

> Hardiness was found to be positively related to problem-focused and support-seeking coping and negatively related to wishing and avoidant coping. Thus, individuals high in hardiness are more likely to report engaging in what are traditionally interpreted as adaptive coping behaviors and less likely to report engaging in more maladaptive coping practices. These data are consistent with the hypothesis that hardiness has a positive influence on one's general strategies for managing experienced stress. (p. 250)

Our research uniquely adds first-year students as a respondent group. We measured their hardiness just as they arrived on campus. The problem-focused and support-seeking coping behavior found among the hardy undergraduates studied by Williams and her colleagues might well serve these new arrivals well as they begin what should be seen as a potentially stressful transition to college life.

Dependent variables in hardiness-focused studies have included overall health and job stress (Sharpley, Dua, Reynolds, & Acosta, 1999), war-related stress (Bartone, 1999), drug use (Maddi, Wadhwa, & Haier, 1996), basketball performance (Maddi & Hess, 1992), burnout (Pierce & Molloy, 1990), and work performance (Westman, 1990).

There also is a focus on the linkages of hardiness with measurements of general well being. Manning Williams, and Wolfe (1989), for example, examined this correlation among 468 workers sampled from two firms involved in health insurance and manufacturing respectively. Although their empirical research did find a statistically significant correlation of hardiness with emotional and psychological factors thought to be related to personal well being and work performance, correlation does not indicate causation so they were reluctant to assert which might cause the other. In contrast, the Lambert, Lambert, Klipple, and Mewshaw (1989) found that hardiness and satisfaction with social support did serve as predictors of psychological well-being among 122 women with rheumatoid arthritis.

Our research uniquely adds persistence to graduation as a longitudinal dependent variable. The campus analogs to the kinds of social support intervention programs discussed by Lambert et al., (1989) such as First-Year seminars and intensified academic advising, are expensive and labor intensive. Given their costs, it might prove more efficient to aim these intervention programs at those students who are less hardy.

The current research focus on creating an uncomplicated mechanism to identify at-risk students is timely. Early in 2003, the Bush administration floated the notion of establishing a grant program for institutions that retain students and graduate them on time. Pennsylvania established a $6 million grant program to reward institutions that graduated at least 40% of their in-state residents within 4 years. To date, not one Pennsylvania public college or university has qualified for the money (Swail, 2004).

Undergraduate retention is also a noteworthy concern in the popular press. College guides often list persistence rates in each campus profile. *Time Magazine* recently used the quality of campus retention programs as the sole criterion for its "Colleges of the Year" selections (McGrath, 2001).

The purpose of this research is to explore the viability of hardiness as a predictor of college student retention. Earlier, a pilot longitudinal study at Ithaca College (Lifton, & Flanagan, 1995), using a 30-item, multiple-choice questionnaire (Bartone, 1991), found a positive correlation between student hardiness and persistence to graduation. The sample, however, was small and homogeneous in nature, made up of 189 mostly White students all majoring in business disciplines. Further research was needed to determine if the approach would be applicable to other types of student population subsets and different campus settings.

Method

As interest in the construct develops, hardiness methodologists will need to reach some consensus on how to assess it: "Unfortunately, there now exists nearly as many ways to measure hardiness and its subcomponents as there are people conducting research on the topic. Obviously, if progress is to be made in this area, this practice must stop" (Hull, Van Treuren, & Virnelli, 1987, p. 521).

Instrumentation

Hoping to create an "... improved measure that is grounded conceptually in the original work on the hardiness construct but ... corrects the psychometric limitations of the earlier measure(s)," Bartone (1991, p. 2) developed, tested, and reported the use of a 30-item instrument in 13 samples. Beyond the attraction of being able to compare undergraduate respondents' hardiness scores with different studies, we also found the Bartone instrument to be an appealing one because of its brevity—only 30 items, 10 each devoted to creating sub-indices for commitment,

challenge, and control. One of the 10 assertions used to create the commitment sub-index, for example, reads, "Most days, life is really interesting and exciting to me." Among the challenge statements, one states "Changes in routine are interesting to me." The control sub-index is created from 10 declarations including "Planning ahead can help avoid most future problems."

For each item, the respondent chooses one reply from four options arrayed in a Likert-type scale indicating whether the statement in question is either "not at all true," "a little true," "quite true," or "completely true" with an assigned score ranging from zero through three respectively. Thus, each aggregated subscale can vary in scores between a low of zero and a high of 30. Hardiness scores, the summation of the three sub-indices, can stretch, therefore, from zero to a high of 90.

In our research, the principal investigator in the initial Ithaca College pilot study collaborated in fall 1997 with colleagues then at Widener University and Mississippi Valley State University (MVSU) to replicate that exploration with a larger, more diverse student

Table 1
Comparison of Mean Hardiness Scores in Different Campus Studies

Institution	Year	N	Mean	Std. Dev.
College of William & Mary[a]	1990	164	61.56	6.42
Ithaca College[b]	1991	180	59.11	7.11
MVSU[c]	1997	192	59.11	7.40
Widener University[c]	1997	279	57.87	7.48
MVSU[d]	1998	198	57.84	7.21
Texas A&M, Kingsville[d]	1998	92	55.28	7.39
Mississippi State University[d]	1998	512	55.19	7.26
Elon University[d]	1998	443	56.56	7.29
Pacific Lutheran University[d]	1998	187	59.05	7.03

Note. The 1999 article reports the baseline profile of the current study. The overall mean hardiness score across both campuses (n=471) is 58.38 with a standard deviation of 7.46. [a]Bartone, 1991; [b]Lifton & Flanagan, 1995; [c]Lifton et al., 2000, [d]Lifton et al., 2002.

population. Located in Chester, Pennsylvania, Widener is a typical small-sized university of more than 2,000 undergraduates, augmented by an almost equal number of part-time students, none of whom were part of this study. MVSU, in Itta Bena, Mississippi, is a member of the nation's Historically Black Colleges and Universities (HBCU) network. Registration typically approaches 2,000 students in its full-time undergraduate population.

We believed that the target respondents, arriving college students collectively bred on sound bites within an "MTV culture," might have less patience than others for accurately answering a questionnaire that took more time than Bartone's 30-item, multiple choice instrument. Since we conducted our study, an even briefer 18-item survey shows great promise in recent test environments (Maddi & Khoshaba, 2001).

Bartone's (1991) questionnaire, slightly reworded for an undergraduate respondent base, was distributed to 471 full-time, first-year students early in their fall 1997 semester, 192 (40.8% of the total) at Mississippi Valley State University and 279 (59.2% of the total) at Widener University. Demographic data about each respondent were added to the data sets. These respondents' persistence to their expected graduation, four academic years later in spring 2001, was monitored to retest the pilot study hypothesis that less hardy students would be disproportionately higher among those who drop out. This study reports the results of the longitudinal research.

The "Baseline" Revisited

Our cross-sectional baseline study of the database has already been published (Lifton, Seay, & Bushko, 2000). The mean hardiness score was 58.38 (n=471) across the two campuses with a standard deviation of 7.46. Table 1 compares the current study's mean hardiness scores, disaggregated by campus, with the initial Ithaca College pilot study (Lifton, & Flanagan, 1995), one conducted at the College of William and Mary (W&M) by Bartone (1991), the original instrument's creator, and baseline data from a currently ongoing longitudinal study taking place on five campuses (Lifton, Seay, McCarly, Olive-Taylor, Seeger, & Bigbee, 2002).

While the William and Mary campus involved undergraduates from all four class cohorts, the other studies focused exclusively on arriving first-year students. The higher mean hardiness score at William and Mary may reflect a disproportionate dropping out of less hardy W&M students who thus are not captured in the sample by their upper-class years (Lifton & Flanagan, 1995). The statistically significant gender and racial composition variations between Widener and MVSU was in keeping with the typical historical pattern on each campus (Lifton et al., 2000).

The most striking finding in the baseline analysis, however, was the statistically significant different hardiness scores of the sample's Black females. Only their mean hardiness score (59) rose above the average, while the means for Black men and all White students fell below. Moreover, 23% of the Black females sampled had high hardiness scores (beyond one standard deviation above the mean) compared to 15% of all others. Only 7% of Black females scored in the low range (below one standard deviation), compared to 17% of all other students (Lifton et al., 2000).

The demographic breakdowns of race and gender highlighted the baseline study's more interesting speculations when they were correlated with hardiness and the more typical admissions criteria of SAT scores and high school rank in class:

[W]hite men did disproportionately well in one area, SAT scores, and poorly in the other, rank in class. Any prediction, therefore, that Widener's persistence to graduation rate will be enhanced by the larger number of better SAT scoring White men on its campus would be moderated by their lower achievements in high school rank.

[B]lack women were disproportionately more likely to have higher high school ranks but lower SAT scores. Any prediction, therefore, that MVSU's persistence to graduation rate will be enhanced by the larger number of better high school ranking Black women on its campus would be moderated by their lower SAT scores.

[H]ardiness may be the variable that resolves the contradiction found in the analysis of SAT scores versus high school rank in class. ... (O)ne might speculate that Black females, as a more hardy subset, will prove disproportionately more likely

to persist than other subsets in the sample thus giving the advantage to MVSU in the persistence "competition" artificially created here. (Lifton et al., 2000, p. 79)

Indeed, it could be argued that the "double whammy" American societal challenges of being both Black and female deter some African American young women from even applying to college in the first place unless they have the hardiness in high school to overcome the sociological obstacles that they, as a group, might confront. Hardiness of Black women who pursue postsecondary education should continue to serve them well throughout their undergraduate years. Thus, the previously published baseline discussion projected two fundamental hypotheses, synthesized below, to be tested in this longitudinal study:

Hypothesis 1. Undergraduate hardiness, measured as students begin their first year on campus, will correlate positively 4 years later with their persistence to graduation.

Hypotheses 2. Given their higher mean hardiness score, rates of graduation within 4 years will be highest among Black women.

Results

Four years after the respondents completed the hardiness survey upon their arrival at college, only 28% (n=132) of the 471 students sampled across both campuses graduated "on time." Almost half, 46% (n=218), had dropped out, while the remaining 26% (n=121) remained enrolled for continuing coursework.

Widener University had both the higher graduation and dropout rates. Over half, 52.7%, of the Widener undergraduates had dropped out compared to 37% at MVSU. Almost a third, 32.3% of the Widener students, graduated within the 4-year period. In contrast, just over a fifth, 21.9%, of the MVSU students graduated on time. Remarkably, 41% of sampled MVSU students had neither dropped out nor graduated within four years; they remained enrolled. The comparative figure for Widener was only 15.1%. These differences proved statistically significant at the .001 level.

The mean hardiness scores, harvested 4 years earlier upon their arrival to campus for each of the three student groups (i.e., new alumni, dropouts, and those still persisting) supported our first hypothesis at the .01 level of statistical significance. The graduates

Table 2
Four Years Later—Enrollment Status by Race/Gender Categories

Four Years Later	White Male	White Female	Black Male	Black Female	TOTAL
Graduated	22	36	13	35	106
	24.4%	48.0%	14.3%	28.0%	27.8%
Remain Enrolled	17	8	37	45	107
	18.9%	10.7%	40.7%	36.0%	28.1%
Dropped out	51	31	41	45	168
	56.7%	41.3%	45.1%	36.0%	44.1%
TOTAL	90	75	91	125	381
	100%	100%	100%	100%	100%

Note. p<.001

averaged 60.17 on the measure of hardiness. Dropouts averaged 57.44. Those who remained enrolled collectively scored a mean of 58.11, just shy of the total sample average of 58.38. The standard deviations for each group were 7.11, 7.53, and 7.43 respectively. These results support the first hypothesis.

The statistically significant racial and gender breakdown of enrollment status 4 years out, displayed in Table 2, relates to our second hypothesis regarding the disproportionately higher number of hardy Black females. These data help explain why the Widener subset had both the higher graduation and dropout rates. While 28% of the typically more hardy Black women graduated within 4 years, a percentage in keeping with the overall sample, their dropout rate was noticeably lowest among the four groupings. Instead, 36% returned to campus beyond the fourth year. Not surprisingly, only 11.2% of all Black female undergraduates in our sample studied at Widener. The Black female pattern, with their noteworthy enrollment continuation for many beyond 4 years disproportionately influences the overall picture of the experience found at MVSU. Although the same analysis might be said of the Black male experience, such a conclusion would need to be moderated by the comparatively high dropout rate among them.

Thus, the longitudinal results suggest that our second hypothesis giving primacy to graduation success among Black females needs recrafting to expand its emphasis beyond a 4-year graduation horizon. Instead, a combined focus on continuing persistence as well as well as graduation may well be seen as a positive student outcome associated with hardy personalities.

Discussion and Conclusions

The notion that hardiness might help explain positive student persistence outcomes also ironically adds a new explanatory tool for a cause of some concern among certain higher education administrators. They are dealing with the phenomenon that the majority of undergraduates take more than 4 years to graduate. Nationally, for example, only 39% of the 1999-2000 cohort took 4 years or less to earn their diploma. Specifically, those who had not interrupted their postsecondary enrollment longer than 6 months averaged 4 years and 7 months (55 months) to earn their bachelor's degree. Private, not-for-profit

campuses, like Widener University, averaged 51 months. Their sister public institutions, like Mississippi Valley State University, posted a 57-month average (National Center for Education Statistics, 2004). Only one third of the University of Texas system's students, for example, graduated within four years. The statistic for the state universities of Colorado, Washington, and California at Los Angeles (UCLA) are 38%, 42% and 42% respectively (Wingert, 2004). As they linger, these extended persisters take up valuable resources and space, thus limiting the size of the new entering class to be recruited.

It may very well be that their average higher hardiness disproportionately helps "protect" Black females from completely dropping out. They challenge higher education administrators, however, who simultaneously want to help educate them while making room, through timely graduation, for their successors.

This study's longitudinal results have provocative ramifications for higher education retention policy. The possibility that a simple tool, a 30-item hardiness questionnaire, could identify students at risk of not graduating within 4 years would give most empiricists, including the current researchers, pause. Any explanation that focused inordinately on a single, statistically significant finding of a bivariate correlation of hardiness with retention could demean the issue in oversimplification.

What such a finding does offer, however, is a possible approach for the "meantime." Retention administrators might consider emulating one quality of successful private, for-profit companies studied by Peters and Waterman (1982), that is, "A Bias for Action" (p. 119), rather than wait through the meantime for any of the previously discussed multivariate persistence models of comprehensive campus reform to be implemented. Focusing current retention efforts—perhaps as a pilot project—exclusively on the least hardy students, regardless of their demographic background, may prove to be a helpful and cost-effective interim measure.

Of course, one could suggest that a hardiness retention model might be used instead as an admissions criterion to weed out possible future dropouts altogether from the entering class. This seems unlikely for at least three reasons:

1. It is unethical and runs counter to the undergraduate instruction mission of American higher education institutions.

2. Pragmatically, it would become a public relations nightmare for any college if their use of such an admission screen leaked out.

3. Cynically, the need for "making the numbers" on a sufficient quantity of new enrollees to contribute their tuition dollars to annual operating budget revenues makes it financially far more prudent to admit less hardy students and then find ways to help them achieve their graduation goals.

Before campus administrators use a simple hardiness test to identify at-risk students, the justifying findings reported should first be confirmed by further research. To that end, we are engaged in a reiteration of the study. We are assembling a larger database (Lifton et al., 2002) across five college campuses consisting of respondents to the hardiness questionnaire who first matriculated in fall 1998. We hope to repeat the empirical longitudinal analysis on an even more diverse sample three-fold the size of this study, including a noteworthy number of Hispanics, to determine if similar results are found 4 years later at their expected graduation in spring 2002.

We anticipate that the reiteration beyond the pilot study and this research will confirm the current findings. If true, measuring undergraduates' hardiness upon their arrival would then hold promise as an effective, user-friendly procedure to identify which new students, regardless of their background, need the nurturing attention of the labor-intensive, expensive intervention programs already shown to help them persist to graduation.

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The Importance of a Good Start

Randy Moore
University of Minnesota

Graduation rates of developmental education students from the University of Minnesota are strongly associated with students' first-year grade point averages (GPAs). Academic aptitude rating (AAR) scores account for less than 2% of the variability in developmental education students' first-year GPAs, but class attendance is strongly associated with students' academic success. These results indicate that (a) students' first-semester and first-year GPAs are strong predictors of students' probability of graduating from the university, and (b) AAR scores are poor predictors of developmental education students' first-semester GPAs, first-year GPAs, and graduation rates from the university.

University administrators and faculty spend large amounts of money, time, and energy studying factors that predict students' academic success. These studies have examined a wide range of topics (Tinto, 1975), including personality and aptitude (Baird, 1984), stress and social class (Barney, Fredericks, & Fredericks, 1984), self-esteem and critical thinking (Bassarear, 1991; Berenson, Best, Stiff, & Wasik, 1990), academic autonomy and motivation (Higbee & Thomas, 1999; Thomas & Higbee, 2000), and scores on standardized tests such as the SAT and ACT (Arbona & Novy, 1990; Moore, Jensen, Hsu, & Hatch, 2002; Young & Sowa, 1992). Although these studies have often been informative, most of them have failed to help me answer the question that is asked of me most often by entering freshmen, "What can I do to succeed at the university?"

Providing effective answers to this question is especially important for education students participating in developmental education programs, who are at risk because they lack some of the academic skills and experiences that are often associated with academic success in college. Such "at-risk" students are becoming increasingly common at colleges and universities in the United States. For example, more than one-third of students in many states who have earned academic scholarships have to take developmental courses when they start college (Schouten, 2003), and 35% of the students who in 2000 entered 2- and 4-year public and private institutions in the United States took at least 1 year of remedial courses. For comparison, 28% spent that much time in remedial courses in 1995 (Cavanagh, 2003b; Remedial education, 2003).

In this study I examined how "getting off to a good start"—that is, how earning good grades in their first semester—is associated with the subsequent academic performances of developmental education students. I wanted to answer several questions. For example, how effectively do students' first semester GPAs predict their second semester GPAs? How effectively do students' first semester GPAs predict their first-year (i.e., cumulative) GPAs? What are these students' chances of graduating from the university? This study was supplemented by a corresponding analysis of how developmental education students' academic aptitude ratings (AAR, which equals a student's high school graduation percentile rank plus two-times his or her ACT composite score) are associated with students' grades during their first year of college. Do either of these factors accurately predict students' academic success?

Methods

This study was conducted in the General College (GC) at the Twin Cities campus of the University of Minnesota. GC is developmental education program that prepares students to transfer to one of the university's degree-granting colleges. Many students in GC are considered to be at risk because they have lower high school grades and ACT scores than most other students at the university. Courses in GC are credit-bearing, content-rich courses that count fully toward graduation from the university.

Students in the Study

In the fall of 2002, GC enrolled 896 new students (from a pool of 4,576 applicants to GC) who had an average ACT composite score of 20. Students in GC had an average age of 20. These students were 47% female and 53% male and had the following ethnic diversity: 17% African American, 2% American Indian, 16% Asian American, 4% Chicano or Latina, 58% Caucasian, and 3% Other (*Facts and figures*, 2003).

Students' GPAs and Graduation Rates

I used institutional data to determine AAR scores, first-semester GPA, second-semester GPA, and first-year (i.e., cumulative) GPA for each of the 896 students. I excluded students who dropped out of the university during their first year, as well as students for whom I could not calculate an AAR (i.e., students whose records did not include an ACT composite score or a high school graduation percentile rank). I also used institutional data to determine how GC students' first-year GPAs are associated with their graduation rates from the university. I did this by examining the first-year GPAs of all GC students who have graduated from the university between 1995 and 2003 (Office of Research and Evaluation, 2003).

Attendance Rates

To determine the importance of class attendance to students' academic success, I tracked the attendance rates and grades of all of the students who entered GC in the fall of 2002 who took introductory biology (GC 1131: Principles of Biological Science) during the 2002-2003 academic year. This course was chosen because it enrolls a large percentage of GC's first-year students. This subset of 263 students had an ACT composite score of 21, an average age of 20, and the same gender and ethnic diversity as the entire entering class.

All sections of the four-credit biology course were offered near mid-day and were taught by the same instructor in the same classroom in the same way (e.g., the same textbook, syllabus, pedagogical techniques, grading policies, exams). Class attendance was recorded in every class. All exams covered material presented both in class and in the required course textbook. Missing class did not prevent any student from earning an A, for students could have made an A on each exam if they had read and understood the assigned readings in the textbook. No grades were curved, students were not allowed to retake any exams, and there were no extra-credit projects. Final grades were based entirely on students' abilities to demonstrate their mastery of the course's academic content and skills. No points were awarded for excellent attendance, and no points were deducted for poor attendance. Students who failed the course because of academic dishonesty were not included in this subset; most of these students stopped coming to class after being told that they would fail the course because of their cheating. Additional information about students' performances in the course and their attitudes about class attendance and grades are presented elsewhere (Moore, 2003, in press a, in press b).

Attendance Policies

The University of Minnesota has the following policy regarding class attendance: "Students are expected to attend all meetings of their courses" (Policies, 2002). The course syllabus emphasized that policy with the following statement: "I expect you to prepare for and attend every class. This is important because class attendance is usually a strong indicator of course performance." On the first day of class I discussed and emphasized this information.

Results

AAR Scores

Figure 1 shows the association of developmental education students' AAR scores and first-year GPAs. These variables had a correlation coefficient of 0.11 and a coefficient of determination of 0.01. AAR scores and first-semester GPAs had a correlation coefficient of 0.11, and AAR scores and second-semester GPAs had a correlation coefficient of 0.15.

Figure 1. The association of AAR scores and the first-year GPAs of developmental education students at the University of Minnesota. The equation for these data is y = 2.40 + 0.006x, and the correlation coefficient is 0.11.
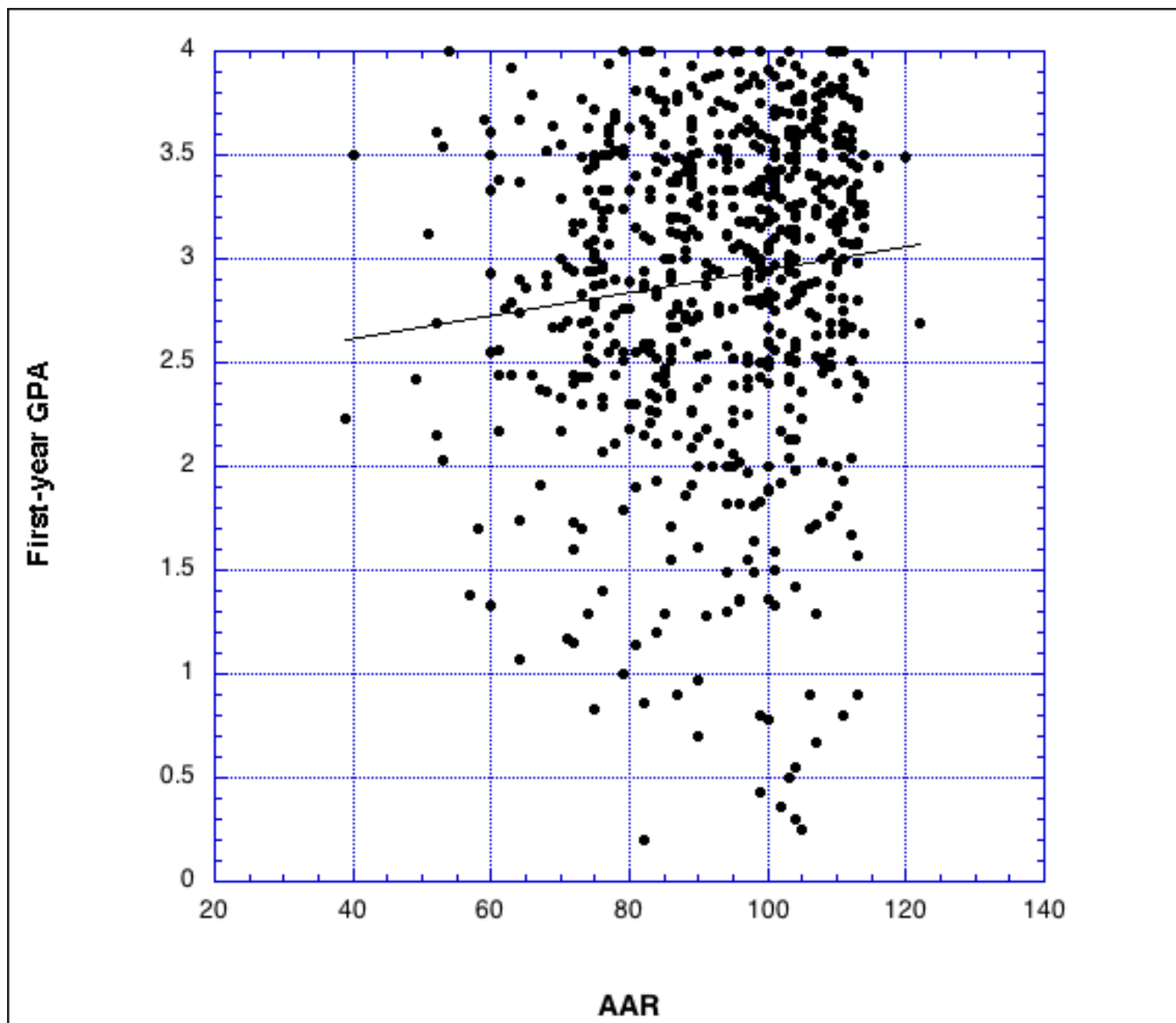
GPAs

Of the 896 students in this study, 13% earned GPAs lower than 2.0 during their first semester, and 22% earned GPAs lower than 2.0 during their second semester. After their first year of college, 17% of the students had cumulative GPAs less than 2.0. Between the first and second semester, 7% of the students in this study withdrew from the university for nonacademic reasons (e.g., illness, finances). These students had an average GPA of 3.0.

The association of students' first-semester GPAs and their first-year GPAs is shown in Table 1. First-semester GPAs and first-year GPAs had a correlation coefficient of 0.85 and a coefficient of determination of 0.73. First-semester GPAs and second-semester GPAs had a correlation coefficient of 0.59 and a coefficient of determination of 0.35. Most students who earned first-semester GPAs less than 2.0 also earned second-semester and first-year GPAs less than 2.0. Only 16% of students who earned first-semester GPAs of at least 2.0 posted second-semester GPAs less than 2.0.

Only 9% of the students who had first-semester GPAs equal to or above 2.0 ended their first year of college with a GPA less than 2.0. However, 43% of students whose first-semester GPAs were below 2.0 earned second-semester GPAs of at least 2.0. Thirteen percent of students who had first-semester GPAs less than 1.0 had first-year GPAs of least 2.0; this percentage rose to 36% for students who had first-semester GPAs between 1.0 and 2.0. First-semester GPAs and second-semester GPAs had a correlation coefficient of 0.59 and a coefficient of determination of 0.35.

Of the students who ended their first year of college with GPAs less than 2.0, 46% earned GPAs less than 2.0 in both their first and second semesters. Only 12% of students who ended their first year of college with a cumulative GPA of at least 2.0 posted a GPA less than 2.0 during one previous semester.

Grades and Attendance Rates

Table 2 shows the association of students' first-semester GPAs with their attendance rates and grades in the introductory biology course. Students' first-semester GPAs were strongly associated with high rates of class attendance (correlation coefficient = 0.51, coefficient of determination = 0.25) and with high

Table 1
First-Semester GPAs and Subsequent Academic Performances of Developmental Education Students at the General College

First-Semester GPA	Percentage of Students	Percentage with Second-Semester GPA < 2.0	Percentage with First-Year GPA < 2.0
0.00 - 0.99	4	70	87
1.00 - 1.99	9	52	64
0.00 - 1.99 Total	*13*	*57*	*70*
2.00 - 2.49	13	43	36
2.50 - 2.99	23	27	18
3.00 - 3.49	27	7	2
3.50 - 4.00	24	3	1
2.00 - 4.00 Total	*87*	*16*	*9*

grades in the course (correlation coefficient = 0.68). In contrast, AAR scores and class attendance had a correlation coefficient of 0.09 and a coefficient of determination of 0.01.

Graduation Rates

Table 3 shows the graduation rates over an 8-year period from 1995 to 2003 of GC students having various first-year GPAs. GC students who had first-year GPAs lower than 2.0 comprised only about 1% of GC's graduates from the university during this time period. For comparison, students who had first-year GPAs above 3.0 comprised 59% of the GC students who graduated from the university (Office of Research and Evaluation, 2003).

Discussion

Do students' first-semester GPAs accurately predict their second-semester and first-year GPAs? Yes.

1. Most students who earned first-semester GPAs above 2.0 also earned second-semester GPAs above 2.0. That is, most students who get off to a good start (i.e., earn first-semester GPAs above 2.0) continue to do well in their second semester.

2. Conversely, almost 60% of students who earned first-semester GPAs lower than 2.0 also earned second-semester GPAs lower than 2.0 (Table 1). That

is, most students who get off to a poor start (i.e., earn first-semester GPAs lower than 2.0) continue to do poorly in their second semester. Although first-semester GPAs lower than 2.0 and the accompanying letters about academic probation and possible dismissal from the university would presumably be a loud "wake-up call," most students who get such letters do not wake up.

3. Fewer than one-third of the students who earned first-semester GPAs lower than 2.0 ended their first year of college with cumulative GPAs above 2.0. Thus, even if students do heed the "wake-up call" caused by failing grades during their first semester, most usually do not raise their overall GPA enough to avoid being dismissed from the university at the end of their first year of college.

These data indicate that developmental education students' first-semester GPAs are usually an accurate predictor of students' second-semester grades and first-year GPAs (Table 2). Moreover, developmental education students' first-year GPAs are accurate indicators of students' probability of graduating from the university (Table 3).

First Year GPAs and Graduation Rates

Do students' first-year GPAs accurately predict students' chances of graduation from the university? Yes. Developmental education students' probabilities of graduating from the university improve in proportion

Table 2
The Association of General College Students' First-Semester GPAs, Average Attendance Rates, and Average Grades in an Introductory Biology Course

First Semester GPA	Biology Course Attendance Rate (%)	Biology Course Grade (%)
3.50-4.00	84	85
3.00-3.49	77	77
2.50-2.99	68	72
2.00-2.49	64	69
1.00-1.99	58	65
0.00-0.99	36	49

to their first-year GPAs; the higher a student's first-year GPA, the higher his or her chance of graduating from the university. Although some students having low first-year GPAs may later transfer to and graduate from a different institution, their odds of graduating from their original university (in this case, the University of Minnesota) decline in proportion to their first-year GPA (Table 3).

Although students having first-year GPAs equal to or slightly above 2.0 can remain in college, they remain at risk, for their GPAs provide little or no cushion for the "transfer shock" (i.e., lower grades) that often later accompanies their transfer to other colleges (Best & Gehring, 1993; Graham & Dallam, 1986; Graham & Hughes, 1994). This transfer shock helps explain why developmental education students who have the best starts (i.e., who earn the highest first-year GPAs) have the highest rates of graduation from the university. If developmental education students strive for and are satisfied with first-year GPAs of only 2.0 (as many of my students tell me they are), their subsequent GPAs will likely drop below 2.0 and result in suspension from the university when the students transfer to other colleges within the University of Minnesota. Students with higher first-year GPAs can withstand the shock of transferring to other colleges, but students having marginal GPAs (i.e., near 2.0) cannot, and consequently seldom graduate from the university (Table 3).

AAR Scores and First Semester GPAs

Many universities, including the University of Minnesota, use algebraic formulae such as AAR scores as an admissions criterion, presumably because such scores are effective predictors of students' academic success. Although some studies have reported that standardized tests such as the SAT and ACT accurately predict students' college grades (Nettles, Theony, & Gosman, 1986), others have reported that they do not (Allen, 1999; Arbona & Novy, 1990; Cloud, 2001; Sedlacek & Adams-Gaston, 1989; Young & Sowa, 1992). For the 896 students who entered GC in the fall of 2002, the correlation of students' AAR scores and first-year GPAs was weak. Indeed, variability in students' AAR scores accounted for only about 1% of the variability in students' first-year GPAs. Although AAR scores above 110 may correlate with higher grades in college (Moore, in press-a, b), most developmental education students have AAR scores significantly below 110 (Figure 1). For these students, AAR scores are unreliable predictors of academic success; they are also unreliable predictors of students' rates of class attendance, which are effective predictors of students' academic success (Table 2). Data presented in Figure 1 are not consistent with the claim that standardized academic aptitude and achievement tests such as the ACT are effective for predicting the college potential of developmental education students. (Brothen & Wambach, 2003).

Attendance and GPA

Do students' rates of class attendance accurately predict students' first-year GPAs? In the large introductory biology course studied here, students' first-semester GPAs were strongly associated with their rates of class attendance. Although some researchers have argued that students' grades are unrelated to class attendance (Berenson, Carter, & Norwood, 1992; Borland & Howsen, 1998; Devadoss & Foltz, 1996;

Table 3
The Relation of First-Year GPAs and Graduation Rates Over Eight Years for General College Students at the University of Minnesota

First-Year GPA	Percentage of Students	Percentage of GC Graduates From 1995 to 2003
0.00 - 1.99	18	1
2.00 - 2.49	15	11
2.50 - 2.99	25	29
3.00 - 4.00	42	59

Feldman, Carney, & Schloman, 1998; Hammen & Kelland, 1994; Thompson & Plummer, 1979), other studies agree with the conclusion presented here that class attendance is important for the academic success of developmental education students (Martin 1989; Moore, 2003; Thomas & Higbee, 2000; Wyatt, 1992). As Thomas and Higbee (2000) have noted, "Nothing replaces being present in class" (p. 229). Additional information about the association of class attendance and grades of developmental education students is presented elsewhere (Moore, 2003, in press a, in press b).

Recommendations

1. Developmental education programs should use mandatory summer orientation programs and meetings with academic advisors to convince students of the importance of getting off to a good start at college. The message for students is simple: If you make poor grades during your first semester, you are probably going to flunk out of the university, and you almost certainly are not going to graduate from the university. If you want to stay in college and later enjoy the many advantages and options offered by a college degree, you need to get off to a good start. Merely getting a 2.0 GPA during your first year of college probably will not be enough to save you later when you transfer to another college and take upper-division courses. To boost your chances of graduating from the university, you need first-semester and first-year GPAs of at least 3.0.

2. Developmental education programs should use mandatory summer orientation programs and meetings with academic advisors to convince students that the best way to get off to a good start in college is to attend and actively participate in all of their classes. Developmental education students who attend all of their classes usually make significantly higher grades than students who skip classes (Moore, 2003, in press a, in press b). Although some other students may have academic skills and experiences that enable them to overcome poor class attendance, developmental education students usually do not. That is, class attendance and an active engagement with the course material are especially important for the academic success of developmental education students. Although many first-year students ignore announcements on the first day of classes that they should come to class (Moore, 2003), the course-related behaviors (including class attendance) and grades of 15% to 20% of students usually improve when they are repeatedly exposed to quantitative data showing the benefits of coming to class (Moore, in press b).

3. If, after their first semester, students have earned GPAs lower than 2.5, they should be required to meet with their advisor to discuss their academic futures. These meetings should include a blunt discussion of the fact that most developmental education students who earn low grades during their first semester of college also earn poor grades during their second semester and are kicked out of school. Advisors and instructors should try to convince students that the students will probably not be an exception to this reality. If these at-risk students want to remain in college and enjoy the choices and economic rewards of being a college graduate, they must change their academic behaviors. This often means that they must attend more classes and be more engaged with their educations. As Thomas and Higbee have noted, "The best . . . teacher, no matter how intellectually stimulating, no matter how clear in providing explanations and examples, may not be able to reach the high risk freshman who has no real interest in learning . . . and will certainly not be successful with the student who fails to show up for class" (p. 231).

4. Eliminate or greatly reduce the use of AAR-type scores as an admissions criterion for developmental education programs. These scores, like the tests used in many states to measure high school students' academic skills, are poor predictors of college readiness and academic success (Cavanagh, 2003a; Hebel, 2003). AAR scores are also poor predictors of developmental education students' rates of class attendance, which are a reliable indicator of academic success (Table 2; Launius, 1997; Moore, 2003, in press a, in press b; Romer, 1993; White, 1992; Wiley, 1992). Replace AAR scores with measures of students' motivation and academic autonomy (Higbee & Thomas, 1999), which often accurately predict students' academic success.

5. Advisors should use data such as those presented in Figure 1 to try to convince developmental education students that their relatively low AAR scores do not predict the students' academic success. Many developmental education students believe that their relatively weak performances in high school and on standardized tests ensure that they will have a hard time

meeting the academic rigors of college. Data such as those shown in Figure 1 can be used to help dispel this notion.

6. Tell students that they will have to work hard if they want to succeed. Developmental education students can succeed at all universities, including large, impersonal research universities such as the University of Minnesota. However, students may not know that this success, like most other things of value, has a price: hard work. Perhaps this misconception is understandable; for example: (a) students who entered college in the fall of 2003 spent less time studying in high school than any previous class, yet their grades were higher than those of any previous class; (b) almost half of college freshmen in 2002 had an A average in high school, but only one-third of these students studied more than six hours per week (Marklein, 2003; Sax, Lindholm, Astin, Korn, & Mahoney, 2002). Moreover, most students in elementary through high school study less than an hour on most nights (Toppo, 2003). Developmental education students should be warned that their success will depend largely on their motivation and willingness to work hard. If students are not motivated enough to work hard, they probably will not succeed.

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Commentary

CRDEUL

The Learning Skills Professional as a Therapist?

Dennis H. Congos
University of Central Florida
W. Michael Burgan
Metropolitan State College of Denver

Learning skills professionals are underrated in terms of the skills required to perform their duties. A competent learning skills professional will have knowledge of the latest and most effective skills for college-level learning as well as counseling skills such as active listening, reflection of content, reflection of feelings, minimal encouragement to talk, appropriate following behaviors, and making suggestions when timely. However, many do not realize just how closely the required skills of learning skills professionals parallel established and proven counseling therapies. This article is intended to win the legitimacy, importance, and respect due to those in the learning skills profession.

Davisd Deckner-Glick (1998) compared sessions with learning skills professionals to counseling therapy sessions. He claims that there are enough similarities that a session with a competent learning skills professional is a therapy session and that a learning skills professional is equivalent to a true therapist. Of course, there are some obvious differences between a traditional therapist and a learning skills professional. For example, therapists typically treat a broad range of difficulties from anxiety and depression to psychotic disorders. Because these disorders often have a risk of self-harm, therapists are required to obtain specialized training to deal with these at-risk individuals. By contrast, the learning skills professional has a more narrow focus on the learner and the learning process. In addition, traditional therapists deal with such a range of pathology that many states have required that these individuals be licensed in order to practice their professions. This sort of licensure is not required of the learning skills professional.

How could a session with a learning skills professional resemble a therapy session with a licensed professional? Once a reasonable person compares the activities between the two, the vast differences in purposes and methods must become obvious. "Hrumph!" some will say. To be fair, let us examine the activities of therapists and learning skills professionals as follows and see if Deckner-Glick's claims might be true. The work of several noted psychologists can shed

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some light on commonly applied therapies and component activities.

Wolpe (1973) defines Behavior Therapy as a form of treatment that tries to change someone's particular unwanted behavior rather than treating the causes. A learning skills professional certainly tries to change a student's unproductive, therefore unwanted, behaviors rather than focus mainly on past causes of unwanted behavior. For example, a learning skills professional does not spend much time on how a student developed inefficient notetaking behaviors, but instead works with a student to refine and acquire more productive and effective notetaking skills in the present.

According to Beck (1990), Cognitive Therapy is a form of treatment used to change someone's habitual patterns of thinking when these thoughts are damaging that person. Certainly learning skills professionals are concerned with behavior damaging to students academically, and providing some form of treatment for the damaging academic behaviors is within the realm of what learning skills professionals do. For example, if during a session the learning skills professional hears a student verbalize, "I just can't do math; it is too hard," the session will likely focus on modifying the limiting effect of these cognitive patterns toward ones that permit acquisition of skills that enhance learning of mathematics.

Each counseling therapy has its own style and characteristics designed to help clients recover in one way or another. How do the characteristics of each one of these common therapies compare to the activities of learning skills professionals? It appears that the characteristics of what a learning skills professional does parallel what cognitive and behavioral therapists do in the course of common practice. Therefore, it appears that Deckner-Glick's perception is accurate.

Taking the learning skills professional's role as a therapist a little further, therapies that work for treating phobias may be useful in treating students' fears related to academics. The definition of a phobia is a persistent, abnormal, and irrational fear of a specific thing or situation that compels one to avoid it, despite the awareness and reassurance that it is not dangerous; a strong fear, dislike, or aversion (American Psychiatric Association, 1994). To help learning skills professionals understand how debilitating some fears related to learning can be, the chart below compares

manifestations of phobias and how they may exhibit themselves in students who face the challenges in college-level learning.

As shown in Figure 2, many symptoms observed in learning skills sessions can be very similar to characteristics of phobias. Therefore, intervention for students, whether called therapies, advice, strategies, or guidance, may provide benefits if these interventions mimic what a therapist does when treating phobias. Also, treatment of academic-related phobias and near phobias may benefit from the activities of the learning skills therapist when proper counseling techniques are used. However, when the symptoms of phobias are suspected, learning skills professionals are well advised to consult with a campus psychologist or psychotherapist and refer the student as appropriate.

Some of the treatments for phobias are listed below along with ways to utilize them to help students overcome academic-related fears. Behavioral therapy methods have proven successful for the treatment of phobias, especially the simple phobias like social phobias. One method is called systematic desensitization (Lazarus, 1989; Wolpe, 1984). It involves gradually confronting a person with situations that are closer and closer to the feared ones. Another method used by behavioral therapists is called exposure therapy (Licky & Gordon, 1991). With this method, fearful people are repeatedly exposed to the feared situation or object so that they can see that no harm befalls them. Eventually, the fear will begin to fade (Johnson, 1997).

Learning skills professionals can use a form of systematic desensitization when they meet with students with fears about academic related tasks. For example, if there is a student with fears about meeting with faculty members, they may set up a plan for confronting the fears in increments. In conjunction with a cooperative faculty member, increment number one could be saying "hi" to that faculty member. Increment number two could be asking that faculty member a question after class, even if the fearful student knows the answer. A third increment may be to schedule an appointment with that faculty member with two or three questions written on a notecard. Larger or smaller increments may be designed to go at a pace tolerable to each student. The benefits come as each increment is completed and the student sees that there are no external consequences that need to be feared.

Figure 1. Comparison of Therapies to Activities of Learning Skills Professionals.

THERAPY IN GENERAL	COGNITIVE THERAPY	BEHAVIORAL THERAPY	LEARNING SKILLS PROFESSIONAL
Short term structure	Yes	Yes	Yes—there is no long-term "therapy" in learning skills except possibly with students with learning disabilities
Utilizes collaboration between client and therapist	Yes	Yes	Yes
Helps client understand inaccuracies in thinking and behavior	Yes	Yes	Yes—helps students identify dysfunctional cognitive processes, behavior patterns, and skills used for learning
Helps client replace dysfunctional thinking and behaviors	Yes	Yes	Yes—helps students acquire more functional cognitive and behavior patterns and skills for learning
Focuses mostly on outward symptoms	Yes	Yes	Yes—observes symptoms of dysfunctional cognitive and behavior patterns and skills in learning
Focus is more on here and now and less on the past	Yes	Yes	Yes—targets dysfunctional cognitive and behavior patterns for learning that are affecting performance in the here and now
Concrete in nature (what can be done to fix it)	Yes	Yes	Yes—focus is on cognitive patterns, attitudes, skills, and competencies to replace dysfunctional ones
Goal is self-sufficiency, independent of the therapist	Yes	Yes	Yes—the goal is helping students become self-sufficient and independent of academic support services
Encourages metacognition—the ability to promote wellness by controlling and directing the thinking processes that affect feelings and behavior	Yes	Yes	Yes—the goal is to help students identify thinking patterns that affect feelings and behaviors, which in turn, affect learning and academic performance
Based on the premise that escaping from or avoiding dysfunctional thinking and behaviors is reinforcing	Yes	Yes	Yes—only through identifying the dysfunctional thinking and learning behaviors and replacing them can there be improvement and recovery from poor academic performance
Encourages clients to develop and practice more functional behaviors	Yes	Yes	Yes—regular meetings are encouraged for feedback on results of attempts to develop functional behaviors and for additional guidance
Success depends on the clients	Yes	Yes	Yes—students must make the changes necessary to succeed academically. Learning skills professionals do not do the work for the students

Repeated exposures to fearful situations can also be utilized by learning skills professionals. An example for test anxiety may be to give students a short test in the learning skills professional's office or in the learning support center after showing them a good way to learn the material. The test may consist only of one or two simple content questions over material on which the student was supposed to make notes and study them. In time, that could be increased to 5 to 10 questions. It is important to keep in mind that it is normal for students to feel anxiety going into a test if they are not confident that they know the material. For example, rereading text or rereading highlighted material puts students in an "out-of-control" situation in which they do not discover what has and has not been learned until they get a test grade back. At this point students may believe that they have no control over their test performance. Placing main ideas on one side of a notecard, recording related details on the other, and then quizzing oneself over these cards, can put students into a situation where they see what has and has not yet been learned before they take a test, when they can still do something about it (Annis, 1983, Congos, 1988). Feeling in control reduces fear and anxiety. When trying either of these approaches for academic-related fears, it is a good idea to do so in consultation with someone from the campus counseling center.

Because what we do as learning skills professionals so closely parallels what therapists do, models used by therapists may be adapted and applied to students with learning skills deficiencies. Knowing more about phobias and their treatments can provide a few more useful tools in the learning skills professional's kit for helping students acquire and refine the cognitive and applied skills for learning to succeed in college.

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Figure 2. Specific Phobias Related To Learning Skills.

PHOBIA CHARACTERISTICS	MANIFEST IN LEARNING
Marked or persistent fear that is unreasonable and is cued by a specific object or situation.	Fears may manifest themselves in terms of math anxiety, test anxiety, fear about in-class participation, fear of failure, fear of success, fear of meeting with professors, etc.
Exposure to the stimulus almost invariably provokes an immediate anxiety response.	This is true with many learning-related tasks such as exposure to impending exams and quizzes, textbook assignments, taking notes, contributing in class, participating in group projects, participating in study groups, performing lab work, etc.
The person recognizes that the fear is unreasonable.	Many students realize that the anxiety is unreasonable enough to have a disabling effect academically such as inhibiting understanding, learning, remembering, performing on exams, and earning desired grades.
The phobic situation is avoided or else endured with anxiety or distress.	When not involved in avoiding or enduring, anxiety and distress are by-products. These by-products may even become uncomfortable enough to function as a motivator to seek help from learning skills professionals or counselors.
The avoidance of distress interferes significantly with occupational or academic functioning.	Avoidance of distress related to academics often leads to behaviors that result in poor learning and low grades.

(Phobia characteristics are from the Diagnosis and Statistical Manual [DSM]-IV, 1994)

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On a Personal Note: A Response to Congos and Burgan

Jeanne L. Higbee
University of Minnesota

This note responds to some of the issues discussed in "The Learning Skills Professional as a Therapist?" by Dennis Congos and Michael Burgan and represents the views of the author only. Specifically, I discuss the distinction between the work of the professional licensed counselor and the learning assistance professional and the use of terminology that reflects a medical model for learning assistance.

I began my career as a developmental educator in 1974, serving as a graduate assistant coordinating learning skills programs within the counseling center at the University of Wisconsin-Madison. At that time learning support centers were just beginning to evolve as separate entities. My duties involved training graduate students and residence hall staff members to conduct individual and group counseling sessions related to enhancing reading skills, developing study strategies, and reducing test anxiety. In addition, I presented workshops and provided direct service to students. Upon completing my graduate work, I became the director of the Office of Counseling and Career Services at Western Maryland College (now McDaniel College), where I performed many of the same functions in addition to other duties. Later I served for 14 years as a faculty member within the counseling component of the Division of Developmental Studies, which was later to become Academic Assistance (ACA; Dwinell, Higbee, & Antenen, 1994; Higbee & Dwinell, 1998), and is now known as the Division of Academic Enhancement at the University of Georgia (UGA).

Thus, as I read Congos' and Burgan's commentary, "The Learning Skills Professional as a Therapist?" many of their ideas resonated with me. I appreciated their documentation of the comparison between therapeutic strategies and activities performed by learning assistance professionals. For three decades I have served as an advocate for the role of counselors in the work of developmental education and learning assistance (Dwinell & Higbee, 1990, 1991; Higbee, 1980, 1988, 1989; Higbee & Dwinell, 1990a, 1990b, 1992, 1993, 1995; Higbee, Dwinell, & Thomas, 2002; Higbee & Thomas, 1999). I agree that there is considerable room for overlap in the work done by learning assistance professionals and counselors working in the field of

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For further information contact: Jeanne Higbee | University of Minnesota | 128 Pleasant Street S.E. | Minneapolis, MN 55455 | E-mail: higbee002@umn.edu

college student development. Indeed, during my tenure at UGA the counseling center discontinued its role in providing study skills counseling. This function became part of the mission of the Division of Academic Assistance, which when changing its name from Developmental Studies had also shifted from the service of a target group of students considered underprepared at the time of admission to a unit that served all students at the university (Dwinell, Higbee, & Antenen, 1994; Higbee & Dwinell, 1998; Higbee, Thomas, Hayes, Glauser, & Hynd, 1998). The staff members engaged in providing this counseling within ACA through courses (Higbee, Dwinell, & Thomas), workshops, and individual and group sessions, as well as consultations in the newly established learning center, were trained counselors or graduate students from related programs.

As a result of my experience in the field, I differ with Congos and Burgan on two points. The purpose of this response is to articulate my personal viewpoint, which, like Congos' and Burgan's commentary, is not meant to represent the views of the Center for Research on Developmental Education and Urban Literacy, but my own.

First, although I believe that listening techniques and other counseling strategies should be part of the training provided for learning assistance professionals, I would not refer to them as "therapists." I think that it is critical to distinguish between appropriate activities to be performed in college and university learning support centers, depending upon the training of the staff, and the provision of therapy by licensed professionals. One of the most important aspects of training for learning assistance professionals must be when, how, and to whom to make referrals. For example, systematic desensitization (Wolpe, 1984) involves more than exposing students to a hierarchy of anxiety-provoking scenarios (Higbee, 1980). A trained therapist would also teach students progressive muscle relaxation, cognitive restructuring, and other methods for coping with the physical and emotional symptoms of stress.

Second, I believe that it is imperative that developmental education and learning assistance professionals avoid representing their work from the perspective of a medical model. The use of terms like "abnormal," "symptoms," "deficiencies," "phobias," and "treatment" create the impression that students who receive learning assistance are not "normal" or "well." Thus, the medical-model approach contributes to the sense of stigma (Pedelty, 2001) that dissuades some students who could benefit from learning support programs to seek assistance.

I agree with Congos and Burgan that the work of learning assistance professionals is often undervalued. Furthermore, many learning assistance professionals are as highly educated in their chosen disciplines as therapists are in theirs. In fact, in my early years at the University of Wisconsin I realized that I had no business teaching reading strategies, that my approach was superficial because I lacked the knowledge and training to do this work effectively. Learning assistance professionals certainly merit "legitimacy, importance, and respect" (Congos & Burgan). But learning assistance professionals deserve this high regard for the work they do, for the role they play in promoting student development and enhancing academic achievement and retention, not because of any similarities between their activities and those of trained therapists.

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Response to Higbee

Dennis H. Congos
University of Central Florida
W. Michael Burgan, Ph.D.
Metropolitan State College of Denver

Counter-point from Dennis Congos

The term "therapist" has many uses and meanings beyond medical models. With only a cursory scanning of internet dictionaries, we found play therapy, group therapy, occupational therapy, and recreational therapy. Definitions of the term "therapy" range from treating mental and physical illnesses to actions that help someone feel better, grow stronger, relieve tension, and be taken care of as by remedial training. It is even the name of a rock bank in Ireland. The term "therapist" seems to have evolved connotations and denotations with value and utility beyond the traditional medical application. Instead of trudging along with the old, time-worn, customary usage of the term, we asked why not use the term for learning skills specialists since what they do so closely parallels what traditional therapists do. To use a cliché: if it quacks like a duck, walks like a duck . . . etc.

Our aim is to bring more legitimacy to what hard working learning skills professionals do and enlighten those in the profession whose views are reminiscent of the story of the king's clothes where everyone is telling the king what he wants to hear so often that he believes it as he walks naked down the street. We dare to speak what has become obvious. It was inevitable that it would stir controversy between the old and the new. Is that a bad thing?

Counter-point from Dr. Michael Burgan

First of all, the term therapist is ubiquitous in nature. There are physical therapists, occupational therapists, etc., and using it in relation to learning skills professionals (LSP) is not a violation of any licensure law that I am aware of (I've worked in six states). It's not as if we were comparing LSPs to psychologists or licensed clinical social workers.

The techniques that we referred to in the article, such as systematic desensitization, are not exclusively reserved for any "therapist" group but are used successively by teachers, administrators, nurses, medical doctors, and others. Why shouldn't LSPs be able to use these approaches as well? The question of knowing "when, how, and to whom to make referrals" does not properly relate to our article. We were referring to what

LSPs do now and the recognition that they deserve for the breadth and depth of skills they bring to the profession. Of course referrals should be made when appropriate, but LSPs should not rush to refer someone, with whom they have established rapport, if they themselves have the requisite skills and training to intervene successfully. As mentioned before, the terms "abnormal, symptoms, deficiencies," etc., are just terms from medicine and the medical model. They are simply accurate depictions of behavior that communicate clearly to fellow professionals.

Dr. Higbee's response to our article supports the elitist, proprietary beliefs that one cannot appropriately utilize psychological techniques unless they possess a narrow range of training and licensure. This sort of thinking will only serve to reduce the benefits of a wide range of psychological interventions to students who choose to see LSPs and other campus professionals who are appropriately trained to provide these interventions.

Appendices

CRDEUL

Bibliography of Resources for Multicultural Higher Education

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Call for Submissions: CRDEUL Monograph Series
Student Standpoints About Access Programs in Higher Education

The sixth annually published monograph of by The Center for Research on Developmental Education and Urban Literacy.

We encourage and invite educators to contribute to the sixth independent monograph in a series sponsored by the Center for Research on Developmental Education and Urban Literacy (CRDEUL). The goal of these monographs is to build strong research and theoretical foundations in the fields of developmental education, learning assistance, and access education programs from the perspectives of teachers, administrators, researchers, support services specialists, and students. The sixth monograph will feature theory, research, and best practices that centrally feature student standpoints about access programs in higher education. Priority will be given to manuscripts that address student perspectives from populations traditionally underrepresented and underserved in higher education.

Articles for this monograph might explore and expand the following questions:

● What do students themselves have to say about the quality of their experiences in higher education access programs such as learning centers, developmental courses, or Supplemental Instruction? What do they think about these programs? What are the benefits and challenges? This kind of article might involve conducting qualitative research that primarily focuses on students' perspectives using interviews, focus groups, or case studies.
● What is the nature of the transition from high school to college as described by students who are under-served in educational systems? What kinds of access programs or services support their transition effectively? Where do students perceive the programs to be unsupportive?
● What kinds of education or workplace goals do students bring upon entering postsecondary institutions, and how do the access programs in which they participate specifically shape their perspectives, achievements, and outcomes?
● How do students perceive the impact of multicultural issues on their experiences with access programs? This includes race, ethnicity, home language, gender, disability, sexual orientation, and a variety of other factors that intersect within their personal, home, and academic lives.
● What kinds of biases or stereotypes do students hold as they enter higher education and participate in access programs? Is there stigma? What is the nature of this stigma? Are there positive experiences to report? What positive views do they hold?

Process: Submissions (see attached form) must be **postmarked by May 15, 2005**. Manuscripts will be forwarded to the editorial board for peer review. Authors will then be notified regarding the status of their proposals and receive recommendations and feedback by August 15, 2005. Manuscript revisions will be due by November 15, 2005. The publication date for this monograph is spring 2006.

Refer to the attached guidelines for authors for further information related to manuscript submission. This information is also available online at **http://www.gen.umn.edu/research/crdeul/monographs.htm**

For further information, contact:
Dana Britt Lundell, Co-Editor, CRDEUL Monograph
University of Minnesota-General College
340 Appleby Hall
128 Pleasant Street SE
Minneapolis, MN 55455
(612) 626-8706 (w)
(612) 625-0709 (fax)
lunde010@umn.edu

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