Increasing Student Success and Retention: A Multidimensional Approach

By Paul R. Fowler and Hunter R. Boylan

ABSTRACT: ***Students who are seriously academically deficient, those who are underprepared in all subjects, face many academic challenges as they begin their coursework in higher education. However, students also face nonacademic and personal issues that create additional barriers to success. The results of this study suggest that increases in student success and retention may be achieved if developmental educators also address nonacademic and personal factors related to student success: (a) clear student guidelines, (b) integrating first-year transition coursework, (c) intrusive academic advising to treat the nonacademic and personal factors, and (d) traditional developmental education coursework and tutoring to address academic factors. The increase in the mean grade point average of Pathways to Success Program students as compared to nonprogram students, from 1.503 to 2.151, was statistically significant (p = .000). Increases in the number of students in good academic standing, increases in success in developmental education courses, and increases in the 1-year retention rate were also noted for participating students.***

Nonacademic (affective) and personal factors related to student success become increasingly important for students with weak academic skills.

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The fact that many students leave high school unprepared for college-level work has been well documented. For example, The U.S. Department of Education (Parsad & Lewis, 2003) found that 43% of students entering two-year institutions in 2000 were in need of at least one developmental course. McCabe (2003) agrees but suggests that the number is closer to 75% at some urban institutions, and a 2007 ACT report observed that as many as 75% of students who were ACT tested were not ready for college-level mathematics, English, social science, or natural science. The report acknowledges that most students need only a "small amount of additional preparation to be ready for college," but goes on to mention that 19% of those tested need "substantial help in all four subject areas to be ready for college-level work" (p. 2).

Despite the added time and cost to students who require developmental education courses, many students complete their developmental requirements and go on to take their general education coursework (Boylan, 2009). However, researchers have reported that 60% to 70% of the students placing into developmental education coursework never complete their developmental education sequence (Bailey, Jeong, & Cho, 2008; McCabe, 2003). The question becomes, how can educators best meet the needs and support students in developmental education coursework? Although most students are initially placed into developmental education courses through the scores earned on placement tests, the tests assess only their academic (cognitive) abilities (Bailey et al., 2008; Boylan, 2009). However, nonacademic (affective) and personal factors related to student success become increasingly important for students with weak academic skills (Sedlacek, as cited in Boylan, 2009).

Bloom (1976) has argued that as much as 25% of students' academic success is determined by what he referred to as affective or nonacademic characteristics. Examples of these factors include such things as students' attitudes; motivation; level of self-confidence in an educational setting; degree to which students are willing to do academic work; degree to which students associate and feel connected with other students, university personnel, and the institution as a whole; and the degree to which a student is willing to seek help (Sedlacek as cited in Boylan, 2009). Personal factors include any element in a student's life that may ultimately impact his or her performance in an academic setting such as medical issues, transportation, financial and work issues, as well as family obligations such as caring for children.

Boylan (2009) recommends gathering data on students' academic, nonacademic, and personal attributes and then tailoring institutional services to best serve them. Lotkowski, Robbins, and Noeth (2004) agree and note that students may be at higher risk of dropping out if only the academic factors are addressed. This paper details one program that tailors institutional services to students who are "seriously deficient" academically (McCabe, 2000, p. 36) by utilizing tutoring and developmental coursework to address the academic factors and clear student guidelines, intrusive academic advising, and transitional coursework to address the nonacademic and personal factors.

Academic and Nonacademic Factors Related to Student Success

Lotkowski et al. (2004) examined the academic and nonacademic factors related to student success by studying how both factors influence a student's college performance assessed by grade point average (GPA) and retention in higher education. They found a strong positive relationship to college GPA when socioeconomic status (SES) was combined with the academic factors of high school GPA and ACT assessment scores and the nonacademic factors of academic self-confidence and achievement motivation. Academic self-confidence measures a student's level of self-confidence in being successful in an academic setting whereas achievement motivation measures the "level of motivation to achieve success" (Lotkowski et al., p. 6).

The authors also found a strong positive relationship with retention in higher education when SES was combined with the academic factors of high school GPA and ACT assessment scores and the nonacademic factors of academic goals, academic self-confidence, and academic-related skills. An academic goal is the level of commitment to obtaining a college degree, whereas academic-related skills deal with time management and study skills along with study habits.

Although developmental coursework is fundamentally related to academic factors, Lotkowski et al. (2004) suggest that nonacademic factors such as achievement motivation, institutional commitment, and social support can be addressed through the use of a continuous orientation and/or first-year transition programs. Such programs allow students to feel they have a safe environment in which to learn, matter to the institution, and are supported as they form social support networks and progress toward educational goals (Engstrom & Tinto, 2008; Lotkowski et al.; Tinto, 2002). Inherent in these programs is continuous student engagement and interaction with faculty and advisors, both of which allow a student to develop a professional relationship and feel a sense of connectedness with faculty, academic advisors, staff, and the institution as a whole. A student's relationship and interaction with the academic advisor and faculty can be the single biggest factor in increasing student retention (Brown & Rivas, 1993; Kramer, 2000; McPhee, 1990; Tinto, 1990).

Based on the literature search, four essential components have emerged to address developmental students' academic, nonacademic, and personal needs. These components are: (a) clear student guidelines supported by research (Fowler, 2007; Miller & Murray, 2005; Stewart, Brewer, & Brown-Wright, 2006; Tinto, 2004), (b) a mandatory orientation to transition students to college (Escobedo, 2007; Kuh, 2007; Lotkowski et al., 2004; Varney, 2007), (c) intrusive academic advising (Earl, 1988; Ender & Wilkie, 2000; Escobedo, 2007; Glennen & Baxley, 1985; Kuh, 2007; Vander Schee, 2007), and (d) structured and rigorous developmental education coursework that develops critical thinking (Boylan, 2002; McCabe, 2000).

Multidimensional Approach Components

Clear Student Guidelines

Clear student guidelines spell out what is expected of students (Fowler, 2007; Miller & Murray, 2005; Tinto, 2004). Guidelines typically include policy and procedure on attendance, grading, assignments, advising, tutoring, and classroom behavior. Institutional guidelines should detail admissions policies, required assessments, and program completion requirements as well. Written guidelines should be made readily available in a variety of formats so students can take responsibility for their actions. Guidelines should also include clear explanations of the consequences of noncompliance with a stated policy (McPhee, 1990; Miller & Murray, 2005; Stewart et al., 2006). Improved understanding of institutional policies, procedures, and consequences of noncompliance may impact the attrition rate for students in developmental education.

A first first-year transition course goes beyond the orientation.

Mandatory Orientation and First-Year Experience

Next, a required orientation prior to registering for classes has proven effective for students to begin to form an academic and social support system (Stewart et al., 2006). The primary assumption is that "students can be taught orientation skills" (Earl, 1988, p. 32). Essentially, an orientation allows students to become familiar with their new environment. This is particularly important for first-generation college students. However, a first-year transition course goes beyond the orientation and assists in the integration of students into both the intellectual and social aspects of college life (Lotkowski et al., 2004; Tinto, 1993). A first-year transition course may also focus on familiarizing students with campus resources. At the same time, the course may offer psychological inventories so students may begin to better understand themselves and how they learn (Lotkowski et al., 2004; McCabe, 2003). These types of activities also assist students in developing an appropriate choice of major and sharpening their focus on personal, academic, and career goals (Tinto, 1993).

The first-year transition course should function cooperatively with various other campus departments in order to continually engage students (Earl, 1988; Kuh, 2007; Lotkowski et al., 2004; McCabe, 2003; McPhee, 1990; Tinto, 1993). This provides a support structure and referral service to answer student questions; interpret assessment results; and deal with academic, nonacademic, and personal issues that threaten to become barriers to student success.

Prescriptive, Developmental, and Intrusive Advising

Academic advising itself and the personal interaction between the student and the academic advisor can take several forms. First, "prescriptive academic advising" is "almost a clerical function," according to McCabe (2003, p. 3). The advisor's role is giving advice based on authority; the advisor makes decisions for the student based on an institutional policy or a list of requirements (Earl, 1988; Vander Schee, 2007). However, Vander Schee (2007) notes that prescriptive advising does not promote the "development of independent problem-solving strategies needed to improve poor academic performance" (p. 51) and therefore can be less appropriate for underprepared students. The student may not accept responsibility for the ultimate course of action since advisors act in an authoritative capacity (Kramer, 2000).

"Developmental academic advising," on the other hand, is a "process-oriented relationship" between the student and advisor in which the main focus is the student's ultimate goals (Vander Schee, 2007, p. 50). Developmental advising focuses on the growth of the student, instilling an "awareness of the relationship between education and life, the ability to set realistic academic and career goals as well as a program to achieve them, [and an] awareness of life extending beyond the college years" (Kramer, 2000, p. 84). The student uses the advisor as a resource whereby the student and advisor act in a problem solving role together (Earl, 1988; Kramer, 2000). The relationship also focuses on "academic competence, personal involvement, and developing or validating life purpose," all of which are associated with academic success (Ender & Wilkie, 2000, p. 119).

Intrusive academic advising (Glennen & Baxley, 1985) is a model of advising whereby the advisor "is actively concerned about the affairs of the student" (p. 12) and does not depend on

the student seeing the advisor voluntarily (Earl, 1988). Structured intervention protocols are used to motivate the student to seek help at the first sign of academic difficulty. It is characterized by early warning systems that provide for immediate action-oriented responses to specific academic problems and relies upon professional advisors trained to respond to various situations (Earl, 1988; Escobedo, 2007). Intrusive advising, with its quick feedback, can identify and suggest support mechanisms to students faltering on their path to college success.

Finally, academic advising should be contextual; meaning that that the advisor's role changes as students learn and grow (Creamer, 2000). As a result, the level of intrusiveness and whether prescriptive or developmental advising is used depends on each individual situation. For example, advisors may combine intrusive advising with prescriptive advising to address a "crisis situation," often the result of nonadaptive behaviors such as not seeking help when difficulty arises or not complying with stated guidelines (Vander Schee, 2007, p. 51).

Developmental Education Coursework

In examining the academic factors related to student success, McCabe (2003) notes that developmental education programs should have two primary academic goals:

> (a) to ensure that every student is prepared for the academic rigors of progressive courses in a particular content sequence and
>
> (b) to ensure that students are not allowed to enroll in a course in the sequence until they are prepared to be successful in that course. (pp. 82-83)

McCabe (2003) also recommends limiting a student's overall academic load and enrollment in credit courses; this limitation allows students to have adequate time to deal with nonacademic and personal concerns. It also gives students an increased chance for success and prevents them from enrolling in classes for which they are not prepared. Nevertheless, it is often important to enroll students in at least one or two credit bearing courses in order to allow them to feel that they are making progress toward degree or certificate completion.

Generally, the best practices in developmental education include varying instructional methods in order to accommodate different learning styles (Boylan, Bonham, Claxton, & Bliss, 1992; McCabe, 2000, 2003; McCabe & Day, 1998; Silverman & Casazza, 1999), frequent assessment (Roueche & Wheeler, 1973), and immediate and specific feedback noting student difficulties along with what can be done to improve (Silverman & Casazza, 1999). Other components can increase student success, such as instruction in learning strategies, critical thinking, and transferability of learned skills (Grubb and associates, 1999). Next, tutoring provided by peers or professionals is recommended, provided the student tutors are trained (Casazza & Silverman, 1996). Supplemental Instruction is also an option since it focuses on collaborative learning and targets difficult courses while assisting students in developing the study strategies needed to be successful (Boylan, 2002). Lastly, research on best practices recommends using technology in moderation and in a way that supports ongoing personal contact with faculty and staff, keeping in mind that pedagogy should drive technology decisions since students may not be familiar with common software packages (McCabe, 2003).

Purpose

Beginning in 2002, institutional officials noted that, although underprepared students were being admitted to the college, they were not well served as indicated by the high percentage of these students being academically dismissed each semester. As a result, the faculty and staff created and implemented the Pathways to Success (PWAY) program in the Summer of 2004. The specific purpose of the program was to enhance the freshman experience as measured by increases in success in developmental education coursework, cumulative GPA, and 1-year retention rates. The purpose of this study was to investigate the effectiveness of the PWAY Program by comparing data for success rates in developmental education courses, grade point averages, and academic standing from Fall 2003 to Spring 2004 (just prior to program implementation) to Fall 2008 to Spring 2009 (the PWAY Program's 5th year). In addition, retention for new, first-time freshmen in the non-PWAY and PWAY groups was also examined to determine if the program was effective.

At least one mandatory break between classes was incorporated into PWAY student schedules.

Program Description

Clear Student Guidelines and Orientation

Students in the PWAY Program were required to attend orientation where they were introduced to the institution's catalog and bulletin as well as being informed of their responsibilities while in the program. PWAY students also signed a success contract agreeing to meet mandatory advising, tutoring, and attendance requirements. Students were informed that they were permitted to miss up to 1 week of class; a failing grade in the course would be recorded if more days were missed. PWAY students could not alter their own schedules. Instead, students had to see an academic advisor to change a section or withdraw from a course. PWAY students were informed that they completed their PWAY responsibilities by successfully completing developmental coursework consisting of the transition class, college reading, developmental English composition, and developmental mathematics (pre-algebra and introduction to algebra).

The PWAY orientation also detailed course information along with registration policies. For example, PWAY students were required to register for mathematics and English courses while enrolled in the program. Full-time students could register for a maximum of 12 credit hours depending on initial placement: the transition course, developmental English composition, pre-algebra, and an elective. Providing all these courses were completed successfully (grade of A, B, or C), full-time students were registered for college reading, introduction to algebra, general education English composition, and an elective their second semester. The elective choices were introductory courses chosen by a faculty committee with sections reserved for PWAY students.

At least one mandatory break between classes was incorporated into PWAY student schedules for tutoring, lunch, and convenience. Courses were 3 credit hours each meeting either Monday, Wednesday, Friday for 50 minutes or Tuesday, Thursday for 80 minutes. Full-time PWAY students attended classes Monday, Wednesday, Friday or in a Monday through Friday combination. Part-time students were also permitted to attend on a Tuesday, Thursday combination.

Prior to leaving orientation, academic advisors took time to complete prescriptive academic advising with each PWAY student to discuss the schedule, briefly explaining how transportation costs, time needed to study, work schedule, and personal family schedule could impact success. For instance, students with children or working 20-30 hours per week were advised to attend part time for the first semester to increase their chances of success. PWAY students attending part time were enrolled in the transition course and developmental English composition. Students could also be enrolled in developmental mathematics if they desired a third course.

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First-Year Experience Transition Course

The 1st-semester transition course delineated the expectations of the PWAY students and concurrently addressed some practical matters as they transitioned to higher education. Topics in the course included time management; learning strategies; note taking; using the institution's electronic equipment; basic elements of reading; metacognitive aspects to learning; the completion of various psychometric inventories; and the development of personal, educational, and long-term professional goals.

Prescriptive, Developmental, and Intrusive Academic Advising

Prescriptive academic advising began at orientation by dealing with clerical matters such as placement into courses based on transcripts and assessment results. Prescriptive advising then carried over to the transition course requiring students to see their academic advisor three times as out of class assignments. During the advising visits, professional and faculty advisors discussed nonacademic and personal success factors in addition to PWAY requirements. Through the 1st semester, prescriptive academic advising became developmental advising as advisors began to take less of an authoritative and more of a collaborative and process-oriented approach to their work with the students. Academic advisors frequently reminded students that the choices they make on a daily basis impact their success in progressing toward their goals. Advisors also assisted in the examination of the goals and whether or not they were realistic at that point in the student's life. At the same time, advisors constantly pointed to the often conflicting nature of a student's academic, nonacademic, and personal factors and how their own choices could become obstacles to academic success.

An early warning system existed during the first 1 to 2 weeks of each semester which signaled academic advising to become intrusive for some students. During this period, faculty referred noncompliant PWAY students to the Office of Developmental Education for intrusive advising. Noncompliance was defined as not doing homework, being late or absent from class, talking in class, answering a cell phone, or disrupting the academic environment. Depending on the severity of the issue, action was taken by either the full-time advisors or the director. Upon referral, the students were actively sought out and contacted via phone, e-mail, classroom, or campus housing visitation. Faculty who referred a student for intrusive advising were informed of the resolution on an issue through e-mail.

Tutoring and Developmental Education Courses

The last two major program components were tutoring and the developmental education coursework itself. PWAY students were required to seek tutoring if their performance fell below a grade of C on a single major assessment in English composition, pre-algebra, or introduction to algebra. Tutoring was available face-to-face using either a supplemental instruction approach or one-on-one with a faculty member. Online tutoring was also available. PWAY students who did not meet tutoring requirements were sent an e-mail warning them of their noncompliance. In addition, the noncompliance typically could also be addressed by the instructor or advisor.

The developmental instructional methodology was traditional face-to-face lecture discussion. Average class sizes were 25 in mathematics, 24 in English composition, and 21 in the orientation and college reading courses.

Method

Setting and Participants

The study was conducted at a public, two-year college. Total enrollment at the institution during the academic years for which study data was collected was 3,194 for 2003-04 and 2,779 for 2008-09. The site was a small, open-admission institution located in a rural area in the southern United States.

Two distinct student groups were identified for this study. Student data from Fall 2003–Spring 2004 for students with parallel entry characteristics enrolled prior to the PWAY Program being implemented was compared to Fall 2008–Spring 2009 student data for those enrolled in the program during its 5th year of operation. All participants had no ACT scores, had a composite score of 15 or less, or were transfer students who had completed less than 12 hours at another institution and either had no ACT scores or had a composite of 15 or less. Students who withdrew from all classes during the semesters studied were removed from the pool. In addition, students who completed 30 or more hours were not included in the data set since they were considered sophomores. The resulting sample included two student groups: A total of 453 non-PWAY students, with 62% of them being first-time full-time freshmen in Fall 2003 and 21% of them being first-time full-time students in the spring. This included 34% male and 66% female students; 46% of the study participants were white (non-Hispanic), 52% were black (non-Hispanic), and 1% was Hispanic. For the PWAY "treatment" group, 434 individual students were included in the study, with 42% of them being first-time full-time freshmen in the fall and 13% of them being first-time full-time freshmen in the spring. This Pathways cohort included 27% males and 73% females; 40% were white (non-Hispanic), 54% were black (non-Hispanic) and 1% was Hispanic (see Table 1).

Procedure

For Fall 2003, a list was generated from the institutional database. Transcripts for each student enrolled prior to the PWAY Program were inspected to determine if the student would have been placed into the PWAY Program had it existed. This procedure was repeated for Spring 2004 to generate a list of cumulative GPAs for non-PWAY students. For Fall 2008 and Spring 2009, two lists of students enrolled in the program were also used to generate cumulative GPAs. The institutional database was further mined to determine academic standing, probationary status, and dismissal for the two groups.

Results

Grade Point Average and Success in Developmental Courses

Student cumulative GPAs for non-PWAY and PWAY cohorts were analyzed with SPSS version 17.0 using a *t*-test for independent samples (see Table 2, p. 8). The mean GPA for the treatment group (2.151) was significantly higher ($p = .000$) than the mean of the Spring 2003 nontreatment

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Table 1

Participant Demographics

Group	*N*	Age (*M*)	Gender		Ethnicity			
			% Male	% Female	% White	% Black	% Hispanic	% *not* Reported
Fa 03 – Sp 04 (Non-PWAY)	453	23	34	66	46	52	1	1
Fa 08 – Sp 09 (PWAY)	434	24	27	73	40	54	1	5

Note. White and Black categories are non-Hispanic.

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group (1.503). Using cumulative GPAs, the academic standing of each group was also determined (see Table 3). The percentage of students in good academic standing increased from 46% to 70% for students in the PWAY Program, and those placed on probation decreased slightly from 31% to 24%. In addition, the percentage of students academically dismissed at the conclusion of spring decreased from 19% to 3%.

Success in the developmental classroom was also examined for the two student groups (see Table 4). The percentage of students successfully completing developmental English composition increased from 55% in Spring 2004 to 76% in Spring 2009. Similar increases were also noted in developmental mathematics as the success rate for pre-algebra increased from 30% to 51% and introduction to algebra increased from 27% to 47% during the same time period. The success rates for both orientation course and college reading also increased; however, it should be noted that neither course was required during Spring 2003, resulting in low enrollments.

Retention

One year, fall to fall retention rates were calculated for the new first-time freshmen in each of the two groups (see Table 5). Students being retained for 1 year increased from 29% the year prior to the PWAY Program to 52% for the PWAY cohort under study (enrolled in the 5th year of the program). Institutional data also indicated that retention for PWAY students in the study may be 65% if students who requested transcripts be sent to other institutions of higher education were included as "retained."

Discussion

The findings of this study suggest that participants in the PWAY Program experienced statistically significant increases in cumulative GPA and improvement in all "measures of success" for which data was collected when compared to students enrolled prior to the program's initiation. These findings tend to support that the PWAY Program, with its blend of student services and its emphasis on the trio of success factors (academic, nonacademic, and personal) may have a positive influence on student academic success and retention for "new" students with an ACT composite score of 15 or less. This should be of no surprise given the fact that the program elements (clear guidelines, mandatory orientation and first year transition coursework, intrusive academic advising, and developmental education coursework) are supported by research.

The results also seem to confirm Lotkowski et al. (2004) and Boylan's (2009) assertion that

Table 2

Cumulative GPA t-Test Results for PWAY and Non-PWAY Students

	t	*df*	Sig. (2-tailed)	*M* 2004	*M* 2009	Mean Difference	*SD* 2004	*SD* 2009
GPA	8.166	666	.000	1.503	2.151	.648	1.110	.926

Table 3

Academic Standing at the Conclusion of Spring 2004 and Spring 2009

Classification	Non-PWAY Group Spring 2004 *N*=344		PWAY Group Spring 2009 *N*=324	
	n	%	*n*	%
Good standing (GPA ≥ 2.00)	157	46%	227	70%
Probation (GPA < 2.00)	107	31%	78	24%
Academically dismissed	66	19%	9	3%
Continued on probation	11	3%	7	2%
Removed from probation	3	1%	3	1%

Table 4

Success in Developmental Education Coursework

Course	Non-PWAY Group Spring 2004			PWAY Group Spring 2009		
	n	Number of Withdrawals	% Success	*n*	Number of Withdrawals	% Success
English composition	123	1	55%	119	13	76%
Pre-algebra	115	5	30%	187	43	51%
Intro. to algebra	128	14	27%	149	39	47%
University studies	26	0	19%	125	12	70%
College reading	22	0	50%	114	3	88%

Note. Percentages are based on students who remained enrolled in the course at the end of the semester. Success is defined as students receiving the equivalent of an A, B, or C.

Table 5

One-Year Retention for Non-PWAY and PWAY Groups

Non-PWAY Group			PWAY Group		
Fall 2003 *N*	Fall 2004 *N*	% Retained	Fall 2008 *N*	Fall 2009 *N*	% Retained
289	83	29%	199	103	52%

Note. Retention from Fall 2008 to Fall 2009 may be as high at 65% if those who requested transcripts sent to another institution are included.

nonacademic and personal factors are as relevant to student success as are academic factors, especially with students who are underprepared in all subjects. The "high touch" environment provided by the PWAY Program seems to set the stage for increased student success and retention beginning with orientation.

Over the course of the year-long program, the mandated prescriptive and developmental academic advising visits through the transition and college reading courses encouraged students to examine their own life situation and compelled students to examine their goals and choice of major. Students were also encouraged to think and read critically as they simultaneously completed developmental English composition, mathematics, and introductory electives appropriate for their majors.

The increase in academic success and retention also appears to suggest that limiting course load (to 12 hours in this study) and student elective choices while providing breaks between classes is a strategy that proved useful for the students in this study. Limiting student course load and choice prevents students from taking too many classes and becoming overloaded as well as taking inappropriate classes during their first semesters in college. Inserting mandatory breaks between classes also allows time for students to complete homework prior to leaving campus where family and work compete for their time allowing little time for coursework or tutoring.

Despite the increases in mean GPAs, success in developmental courses, and the 1-year retention rates, there is no doubt that improvements to the program should be made in order to augment success in developmental mathematics (see Table 4). Efforts should also be taken to further increase the 1-year retention rates (see Table 5) and decrease the percentage of students being placed on probation and academically dismissed (see Table 3). For some reason, certain segments of the PWAY students continue to choose not to help themselves. It might benefit the institution and the students if program administrators investigate this further to determine the reasons for such noncompliance.

Limitations

The primary limitation associated with this study is that it was conducted at a single, small, two-year institution with a limited number of students. As a result, care should be taken in generalizing the results to other institutions. In addition, this study should be replicated so additional data may be generated. Further, no random sampling was attempted and the study describes the environment for the entire population of students who met the conditions for enrollment which, in itself, may be biased in some unforeseen way. As a result, although participation in the PWAY Program appears to be related to increased student success, it remains unknown which, if any, features of the program actually caused student success.

Next, although the PWAY Program manipulated variables such as mandating attendance, advising, and tutoring, the variables should be better defined and quantified so that both the quantity and quality of the services rendered are addressed. Even though research-based best practices were followed in designing and implementing the program, fixed institutional resources such as limited personnel, space, and financial resources resulting in increased class sizes may have affected success and retention rates.

Lastly, developmental English composition, the orientation course, and college reading were graded on a pass/no credit basis in Spring 2004 prior to the PWAY Program's initiation and therefore not calculated into the student's GPA. However, in Spring 2009, all courses figured into the GPA. How this affected the 2004, non-PWAY data is unclear as there is no way to predict if a passing grade was really an A, B, or C and whether a no credit grade was a D or F.

Limiting course load…is a strategy that proved useful.

Implications for Practice

Based on the findings of this study, several implications for practice are recommended. First, institutional officials should gather information on the academic, nonacademic, and personal needs of students in order to target the areas of greatest need for their student population. This type of needs assessment will inform decisions regarding which individual program components may positively influence student success and retention at other institutions. Targeting a smaller student group and implementing one or two elements may effectively increase success and retention depending on the institution's situation (Boylan, 2009). It should also be noted that the implementation of any program element that allows for increasing student engagement and interaction with institutional personnel will promote the development of a relationship with the institution as a whole and positively affect retention (Brown & Rivas, 1993; Kramer, 2000; McPhee, 1990; Tinto, 1990).

The next major implication for practice is a word of caution regarding dealing with an "enforceable attendance policy." When designing an attendance policy the central issue is whether it really is enforceable given the student situations that occur. Although a significant portion of the actual attendance process may take place through electronic means, the process, along with the other program elements, is labor intensive. Moreover, provisions should be made for events that are beyond the control of the students including weather related, medical, and family emergencies.

Another implication that arises from implementing a program such as PWAY is the impact it is likely to have on personnel employing a collaborative approach with other departments. As personnel expand their experience and skill in networking, this may assist in eliminating the notion of "we cannot do that because…." Developmental education administrators may also need to involve personnel from academic advising, counseling, accommodated services, student affairs, student support services, admissions, and information technology services. There is no doubt that involving so many people can be a daunting task, so developmental education personnel may wish to implement changes slowly collaborating with one department at a time. However, inherent in the collaborative model is that developmental education personnel must also broaden their thinking about what a developmental education program is. This study suggests a comprehensive developmental program should include a major emphasis on academic advising, orientation to the institution, and transition coursework in addition to the traditional developmental education coursework.

Next, a program such as Pathways could not exist on any campus without the support of the central administration, faculty, and staff. Communication and collaboration among constituents is key. Constantly updating all involved, even dissenters, on what is (and what is not) working in such an initiative can prevent small issues from becoming time consuming problems for everyone, assist in securing necessary resources, and garner overall support from top administrators to participating students.

Finally, it is important to note that some students will refuse to help themselves despite any support they may be offered. Although faculty and staff have an obligation to assist every student to the best of their ability, attempting to guarantee student success or satisfaction for every student is a lesson in futility. In fact, the degree to which students will be accommodated should be discussed prior to implementing such a program given that program guidelines actually place limitations on student choice (and therefore satisfaction). As a result, some students will undoubtedly be unhappy about a

class schedule or a program policy. However, all students have to work within the confines of the academic structure and limiting developmental students' choices may help them avoid making the same poor choices they made in the past.

Conclusion

A structured developmental education program that identifies, focuses on, and addresses students' academic, nonacademic, and personal factors can positively affect student success and retention. The results of this study suggest that students who require developmental education coursework in all subject areas do indeed benefit from such an approach. With government agencies at the local, state, and federal levels along with researchers and individual institutions showing renewed interest in developmental education and boosting educational attainment for all citizens, continued research regarding such promising approaches in varied settings is crucial. Developmental educators and higher education officials should take time to study their own students and decide what elements of such a program may be appropriate for their students, gather data on student outcomes, and share findings with the educational community.

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