DOCUMENT RESUME

ED 382 274 JC 950 259

AUTHOR Clagett, Craig A.
TITLE Implementing Successful Enrollment Management: A Conceptual Framework and Two Examples.
PUB DATE 19 Jun 95
NOTE 29p.; Paper presented at the Annual Summer Institute on Institutional Effectiveness and Student Success (7th, Tacoma, WA, June 18-21, 1995).
PUB TYPE Reports - Descriptive (141) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Community Colleges; *Enrollment Influences; *Enrollment Management; *Environmental Scanning; *Information Systems; Longitudinal Studies; Minority Groups; *Policy Formation; Predictor Variables; School Holding Power; School Policy; Student Recruitment; Two Year Colleges

ABSTRACT

Successful enrollment management depends on an information base that is comprehensive, targeted, and continuously updated to inform enrollment management policies and monitor their effectiveness. Institutions implementing enrollment management programs need to establish an initial information infrastructure, including a longitudinal student tracking system and a set of performance monitoring indicators (PMI's) covering each stage of student involvement with the institution. Prince George Community College (PGCC) has developed a system using 31 PMI's which are supplemented by a periodic, formal environmental scanning process. The PMI's, environmental scanning insights, and informal feedback from students, faculty, and staff constitute the data for continuous evaluation of the enrollment management program. These data will identify areas in need of further analysis, detailed analyses may suggest policy revisions. The impact of revised policies will be monitored by subsequent PMI compilations, in a continuous improvement cycle. At PGCC, PMI's and scanning data prompted in-depth analyses of policies relating to minority student retention and of policies relating to non-credit continuing education recruitment. These analyses led in turn to major policy changes. Adopted in its entirety, this approach: (1) establishes a comprehensive framework for studying student-college interaction; (2) encourages development of enrollment targets, performance monitoring systems, and longitudinal tracking files; (3) identifies areas of student behavior poorly understood by the college; (4) integrates institutional research into enrollment management policy formation; and (5) promotes continuous improvement through the data-analysis-policy cycle. (KP)

Implementing Successful Enrollment Management

A Conceptual Framework and Two Examples

Craig A. Clagett
Director of Institutional Research and Analysis
Prince George's Community College
301 Largo Road K-231
Largo, Maryland 20772
301-322-0723

Paper presented at the Seventh Annual Summer Institute
on Institutional Effectiveness and Student Success
Tacoma, Washington
June 19, 1995

Implementing Successful Enrollment Management: A Conceptual Framework and Two Examples

Successful enrollment management depends upon an information base that is comprehensive, targeted, and continuously updated, to inform enrollment management policies and monitor their effectiveness. Institutions implementing enrollment management programs need to establish an initial information infrastructure, including a longitudinal student tracking system and a set of performance monitoring indicators (PMIs) covering each stage of student involvement with the institution. These internal monitoring mechanisms, supplemented by a periodic, formal environmental scanning process, provide the data for continuous evaluation of the enrollment management program. These data will identify areas in need of further analysis; for example, a PMI may show an undesired trend or failure to meet a target, or the scan may reveal a changed governmental policy or socio-economic shift with implications for an institution's enrollment outlook. Detailed analyses may suggest policy revisions. The impact of revised policies will be monitored by subsequent PMI compilations, in a continuous improvement cycle.

Two applications of this model at a large, suburban community college are described: policies relating to minority student retention and policies relating to noncredit, continuing education recruitment. The examples show how PMIs and scanning data prompted in-depth analyses, which in turn led to major policy changes.

Introduction

Enrollment management can be defined as a coordinated effort to influence the size and characteristics of an institution's student body, through marketing, recruitment, admissions, pricing, financial aid, advising, and other policy choices. Success is measured not just in terms of the number and mix of new students, but

also by the proportion who become well-adapted, achieving students and productive alumni. An active enrollment management program, with specific targets and well-grounded strategies to achieve them, will be fully integrated into an institution's planning process. This is in contrast to more passive planning that relies on mathematical projection techniques for forecasting rather than managing enrollment. Indeed, a fully implemented, comprehensive enrollment management program can serve the same campuswide function as Total Quality Management (TQM) or Institutional Effectiveness (IE) management regimes. Institutions that are reluctant to adopt TQM or IE may find they can achieve many of the same results through the now conventional and non-intimidating enrollment management concept.

Some, however, are skeptical of an institution's ability to influence its enrollment in any substantial way. Constrained by mission, resources, geography, competitive position, and tradition, they see their institution as largely unable to attract and retain the number and type of students they might desire. Instead, they perceive their campus as having an established market largely impervious to marketing or other strategies. In contrast, this paper argues that it is possible to influence enrollment in desired ways through the appropriate policy choices. But an essential ingredient is timely, focused information. As Claffey and Hossler (1986, p. 106) have argued,

> Planning and evaluation are at the heart of an enrollment management system, but the single most critical element in all of this effort is accurate, timely, usable information. Thus, our ability to influence our enrollments to any degree is a direct function of the information...available.

This paper presents a conceptual framework for organizing the information necessary to support a successful enrollment management program. First, establishment of an initial information infrastructure is described. Then a continuous monitoring, evaluation, and improvement cycle is proposed. Two examples of the model as applied at large, suburban community college are described. The use of performance indicators and longitudinal tracking systems is highlighted. The paper concludes with a summary of the approach and its benefits.

Establishing the Information Infrastructure

Successful enrollment management depends on an adequate information base. Two types of information are needed: performance monitoring indicators and in-depth policy research and analysis. Both types are needed for all six stages of a student's involvement with an institution: from initial inquiry through application, enrollment, persistence, completion, and alumni activities. Establishing the initial information

infrastructure to support enrollment management requires careful planning. Three examples from the literature provide especially informative discussions concerning the establishment of an information base for enrollment management. Glover (1986) describes several analytical projects that undergird an enrollment management decision-support system. Davis-Van Atta and Carrier (1986) stress that the information needed at each stage can be best analyzed in terms of understanding student decision processes. Dolance, Miyahara, Grajeda, and Rapp (1987-88) describe in detail a strategic planning process for establishing a comprehensive enrollment management program. For institutions new to enrollment management, a five-step process (Clagett and Kerr, 1993b) is recommended: (1) review the literature on college choice, student-institution fit, and student retention; (2) construct longitudinal cohort tracking files; (3) develop a performance monitoring indicator system; (4) identify patterns in aggregate student behavior; and (5) conduct survey and focus group research to better understand student decisionmaking.

Upon conclusion of the five-step process, an institution will be able to launch an enrollment management program grounded in local information with established benchmarks for monitoring its effectiveness. A full discussion of the implementation of the initial enrollment management information infrastructure is available elsewhere (Clagett and Kerr, 1993a, 1993b). Two key components, longitudinal student tracking systems and performance monitoring indicators, are briefly discussed in the following sections.

Longitudinal Student Tracking System

Since enrollment management encompasses student experiences with an institution from inquiry to post-graduation, data systems paralleling this student flow are most useful. In place of discrete files established for other purposes, most institutions will benefit from construction of separate longitudinal cohort tracking files (Ewell, Parker, and Jones, 1988). Free-standing tracking files for selected entering cohorts of students preserve key data values and facilitate data analysis. The data elements comprising these files will include student attributes at entry (typically collected as part of the application process), student progress variables updated each term (for example, credits attempted and earned), and follow-up indicators such as employment and subsequent education (transfer or graduate school attendance). It is usually sufficient to track cohorts entering every third fall, though if major changes in policy or mission are occurring an institution might want to track successive cohorts. Summer or spring entering cohorts warrant tracking only if substantial in number and notably different in characteristics from fall students (Clagett, 1992).

Performance Monitoring Indicators

Performance monitoring indicators, or PMIs, are needed for each stage of student contact with the institution. Developed by consultation and negotiation among all offices with enrollment management responsibilities, the PMIs serve both planning and evaluation roles. Typically simple counts or ratios that describe student status at a particular point in time, the indicators are used by the enrollment manager to evaluate the performance of each unit as well as to oversee the broader institutional enrollment picture. Such sets of critical success factors or key success indices are essential for the continuous improvement of enrollment strategies (Dolance, 1989-90; Sapp, 1994). Like dashboard indicators (Bregamn and Grumbles, 1994), PMIs alert program managers when enrollment outcomes vary from anticipated or desired values. Since enrollment management goals should include successful student outcomes while enrolled and after, the PMIs will incorporate many if not all of the "core indicators of effectiveness" developed by the Community College Roundtable (1994). To illustrate indicators for each stage of student interaction with an institution, the complete set of 60 PMIs used at Prince George's Community College (MD) is appended.

In addition to identifying the indicators, benchmarks or targets should be established for each. These may simply be last year's figures, or forecasts based on formal modeling or professional judgment. They may be targets based on peer institutions or system averages. Or they may be explicit goals, reflecting the vision and aspirations of the institution. Whatever their genesis, the benchmarks or targets are the standards against which actual indicator values are judged.

The D-A-P Cycle for Continuous Improvement

Once an established information infrastructure is in place and initial policies implemented, the focus shifts to monitoring, evaluating, and improving enrollment management policies. The performance of the enrollment management plan is routinely monitored through the systematic updating of the PMIs explicitly developed for this purpose. The PMIs constitute the primary *data* used for keeping track of the success of existing policies. They are supplemented by insights derived from formal environmental scanning processes, and from informal feedback from students, faculty, staff, and others. These data will indicate where the enrollment reality is diverging from that desired, prompting in-depth *analysis*. The analysis stage is critical; this is where a fuller understanding of what is really going on is gained. Analysis will reveal if the situation described by the PMIs is acceptable or problematical. It is at the analysis stage that potential improvements are often identified, which may result in suggested *policy* revisions. The results of changed policies will be monitored in subsequent PMI reviews, in a continuous *data-analysis-policy* or *D-A-P cycle*.

Example 1: Minority Student Retention

Prince George's Community College (PGCC), a comprehensive, open-admissions two-year college in the Maryland suburbs of Washington, D.C., has experienced a rapid change in the racial composition of its student body. Like the county it serves, its student population has gone from less than 15 percent minority in 1970 to 70 percent minority presently. African-Americans account for nine out of ten minority students at the college. The college's faculty and staff, due to low turnover and funding constraints on new hires, has changed more slowly. Minorities currently constitute 55 percent of the staff, and 20 percent of the full-time teaching faculty.

Data. Most performance monitoring indicators for student achievement at the community college include breakouts by racial/ethnic category. These consistently revealed African-American performance significantly below that of white students. For example, African-American graduation and transfer rates had been less than half those of whites, and the percentage of African-Americans earning passing course grades each term had been six to ten percentage points below that of white students. Placement testing in English, reading, and mathematics revealed that four out of five African-American students entering the college each fall needed remediation in at least one area. Dissemination of these PMIs focussed the administration's concerns about minority student performance at the college. In addition, the Maryland Higher Education Commission had identified minority achievement as a statewide priority, and annually requires all public colleges to submit *Minority Achievement Reports* analyzing a number of minority student progress variables.

Analysis. Several analyses were undertaken to learn more about African-American student progress. Four will be discussed: longitudinal cohort analysis of student outcomes after four years, examination of developmental studies coursetaking and completion, geo-demographic analysis of outcomes, and a survey and focus group study of the campus racial climate.

The longitudinal student tracking system developed by the Office of Institutional Research and Analysis (OIRA) at PGCC facilitated creation of a student outcomes typology that has proven quite useful. Federal and state governments, accrediting agencies, college guidebook publishers, and others have focused on college graduation rates as a primary accountability measure. At open-admissions community colleges, with large proportions of students attending part-time, having goals other than degree completion, and needing remediation, such rates are often quite low. In addition, many students with goals of baccalaureate degrees and above transfer to senior institutions prior to completion of their community college programs. "Leaving early" for a senior institution does not represent a community college retention failure but often a rational advancement toward the student's ultimate goal. Community college assessment measures that focus exclusively on graduation rates are misleading, as is increasingly recognized. For example, transfer to "a higher level

program for which the prior program provided substantial preparation" has been included as a "completion" in Student-Right-to-Know calculations.

Inclusion of transfer in summary outcomes measures is not sufficient, however. What is needed is an outcomes typology that (1) is comprehensible and accepted as legitimate by legislators, accrediting agencies, the public, and all others colleges are appropriately accountable to; (2) takes into account the full range of student goals in attending college; (3) acknowledges student enrollment behavior patterns, including part-time and stop-out attendance; and (4) provides a meaningful summary of student accomplishment that is useful to campus policymakers. The research office at Prince George's Community College developed the following student outcomes typology for both external accountability and internal decision support:

1. **Award and transfer.** The percentage of degree-seeking students in an entering cohort who have earned a degree or certificate from the community college *and* transferred to a four-year college or university within the study period. Depending on where and how the transfer information is obtained, transfer rates may be underestimated. This is likely for colleges relying on state reporting systems since student transfer to independent colleges or colleges outside the state are often not including in state-mandated reporting systems.

2. **Transfer/no award.** The percentage of degree-seeking students identified as transferring to a senior institution without having earned an award from the community college.

3. **Award/no transfer.** The percentage of degree-seeking students earning a degree or certificate from the community college for whom there is no evidence of transfer. At institutions conferring a large number of certificates, a separate count for degrees and certificates might be warranted.

4. **Sophomore status in good standing.** The percentage of degree-seeking students who have not graduated from the community college but who have earned at least 30 credits with a cumulative grade point average of 2.0 or above, and for whom we have no evidence of transfer. Given the large proportions of entering students needing remediation and/or attending part-time, reaching sophomore status in good standing represents a notable academic achievement. Probably included in this category are a number of students who have transferred to independent and out-of-state colleges or universities.

5. **Achievers.** A summary measure of the preceding four categories.

6. **Persisters.** The percentage of degree-seeking students still enrolled at the community college (as of the last term of the study period) who do not fall into

any of the above "achiever" categories. They have not graduated or transferred, nor have they earned 30 cumulative credits with a 2.0 grade point average. The outcome for these persisters is yet to be determined.

7. **Other exiters.** The percentage of degree-seeking students exiting the community college without graduating or earning 30 credits in good standing for which we have no evidence of transfer. Included in this group are the true "dropouts" who have not succeeded in reaching their goals within the study period. Some of these students may have transferred early (before accumulating 30 credits) to independent or out-of-state colleges, but most students in this group are appropriately considered as unsuccessful in achieving their academic goals at the college.

8. **Special motive.** Students who had indicated short-term, non-degree goals of personal enrichment or job skill upgrading *and* who attended only during the first two terms of the study period. Note that inclusion in this category requires both a stated short-term intention and behavioral evidence supportive of the stated student goal. Never intending to enter a curriculum or transfer, these students are properly excluded from attrition statistics.

Students may be classified using the above typology at any point in time beginning with the term following initial enrollment. But the classification becomes most meaningful when a substantial majority of the cohort has attained their ultimate community college outcome. While this argues for a fairly long study period, say six years or more, another consideration supports a shorter time span. Reporting on cohorts that entered many years ago runs the risk that student characteristics and institutional practices may have changed, so that the findings may not be useful guides for current policymaking. At Prince George's, students are classified according to the above typology at the end of three, four, five, and six years, with the four-year analysis the benchmark included in reports to our Board of Trustees and our state higher education commission. Four-year outcomes for the fall 1990 entering class are reported in this paper.

A total of 2,643 first-time college students entered Prince George's Community College in fall 1990. Of these, 256 indicated they had no intention of earning credits toward a degree, but instead were enrolled for short-term enrichment or specific skill upgrading reasons. Among the 2,387 degree-seeking students, 137 or less than 6 percent had earned an award from PGCC by the end of spring 1994. Another 214 (or 9 percent) had transferred to a four-year public college in Maryland. Thus 351 or nearly 15 percent had earned a degree or transferred within four years of entering the community college. An additional 314 students, or 13 percent, had earned at least 30 credits at PGCC with a cumulative grade point average of 2.0 or above. Including these sophomores in good standing with the graduates and transfers, the total proportion of fall 1990 entrants classified as achievers within four years was 28 percent.

Student Outcomes After Four Years Outcomes as of the End of Spring 1994 of Students Entering in Fall 1990		
Outcome	Number	Percent
Award and transfer	54	2%
Transfer, no award	214	9%
Award, no transfer	83	4%
Sophomore w/2.0+ GPA	314	13%
Achievers	665	28%
Enrolled Spr 94 <30 credits/2.0	175	7%
Dropouts	1,547	65%
Total degree-seeking students	2,387	100%
Special motive (excluded from above)	256	

These outcome patterns varied by race/ethnicity, with Asian-Americans, white Americans, and international students achieving at higher rates than African-Americans and Hispanic-Americans. African-American and white students accounted for nearly nine in ten students in the cohort. Their four-year outcomes, further broken down by sex, are displayed in the table on the next page. As shown in the table, white females had the highest achievement levels among the four groups. Forty-two percent of the white women had either graduated, transferred, or attained sophomore status in good standing within four years of entry to PGCC. This was slightly better than the white men, 38 percent of whom were classified as achievers according to the typology. In contrast, the achievement rates of African-American men and women were lower. Nineteen percent of the African-American women were classified as achievers. Only 13 percent of the African-American men had graduated, transferred, or attained sophomore status in good standing within four years.

Student Outcomes After Four Years, by Race/Ethnicity and Sex Outcomes as of the End of Spring 1994 of Students Entering in Fall 1990				
Outcome	African American Males	African American Females	White American Males	White American Females
Award and transfer	1%	1%	4%	4%
Transfer, no award	4%	4%	15%	15%
Award, no transfer	2%	3%	3%	7%
Sophomore w/2.0+ GPA	6%	11%	16%	17%
Achievers	13%	19%	38%	42%
Enrolled Spr 94 <30 credits/2.0	7%	10%	5%	5%
Dropouts	79%	71%	57%	53%
Total degree-seeking students (100%)	463	718	400	496
Special motive (excluded from above)	30	88	40	73

The next step in the longitudinal cohort analysis involved an examination of student patterns of attendance, to see if they were associated with student outcomes four years after entry. As expected, students attending in fall 1990 and at most only one other term were unlikely to attain achiever status as defined in the OIRA typology. Only four percent of these short-term attenders were classified as achievers, almost all through early transfer to a senior institution in Maryland. Among those students attending at least three terms, however, a substantial difference was found. Students who attended the first three major terms (fall 1990, spring 1991, and fall 1991) were more than twice as likely to be achievers than students who were absent in either the spring or fall of 1991. A majority of those getting off to a "good start" had graduated, transferred, or attained sophomore status in good standing within four

years of entry, compared to only 22 percent of those who attended three or more terms but did not enroll in all of the first three major terms. Students with the "good start" attendance pattern of enrolling in at least the first three terms without interruption had higher rates of graduation, transfer, and sophomore attainment:

Outcomes After Four Years, by Attendance Pattern
Degree-seeking Students Entering in Fall 1990

Outcome	"Good Start" (First 3 Terms)	3 or More Other Terms	1 or 2 Terms
Award and transfer	5%	1%	0%
Transfer, no award	16%	5%	4%
Award, no transfer	7%	4%	0%
Sophomore w/2.0+ GPA	26%	13%	<1%
Achievers	54%	22%	4%
Enrolled Spr 94 <30 credits/2.0	8%	23%	2%
Dropouts	38%	55%	94%
Total degree-seeking students (100%)	1,030	309	1,048

The benefits of getting off to a good start, at least as measured by the OIRA outcomes typology four years after entry, held for African-American students. While overall achievement levels were below collegewide averages, students attending all of the first three major terms had an achievement rate three times that of students attending three or more terms but sitting out either spring 1991 or fall 1991. Further analysis is needed before attributing too much to this "good start" phenomenon, especially controls for full- and part-time attendance, but it does appear, at least tentatively, that consecutive-term attendance at the beginning of a college career promotes achievement of the conventional goals of graduation, transfer, or credit accumulation.

Outcomes After Four Years, by Attendance Pattern African-American Students			
Outcome	"Good Start" (First 3 Terms)	3 or More Other Terms	1 or 2 Terms
Award and transfer	3%	1%	0%
Transfer, no award	7%	3%	2%
Award, no transfer	5%	3%	0%
Sophomore w/2.0+ GPA	22%	6%	0%
Achievers	37%	12%	2%
Enrolled Spr 94 <30 credits/2.0	11%	32%	2%
Dropouts	52%	56%	96%
Total degree-seeking students (100%)	461	153	567

The last component of this initial use of the longitudinal outcomes typology was to examine the impact of the need for remediation on four-year outcomes. Earlier OIRA studies had found that mathematics ability was a key predictor of success, a finding consistent with much national literature. Exploratory studies at PGCC had suggested that students needing remediation in mathematics and at least one other area--reading or English composition or both--were at greatest risk of not succeeding. This proved true for the fall 1990 cohort. Only 11 percent of the students identified as needing developmental courses in mathematics and at least one other area were classified as achievers after four years. In contrast, students with no developmental needs achieved at a rate of 45 percent. Adding in persisters--students enrolled at PGCC the last term of the study period--found half of the students not needing remediation successful, compared to only 20 percent of the "developmental math plus" group. Among full-time students, 56 percent of the non-developmental group--compared to 17 percent of the developmental math plus group--had graduated, transferred, or attained sophomore status in good standing within four years.

Student Outcomes After Four Years, by Developmental Need Outcomes as of the End of Spring 1994 of Students Entering in Fall 1990				
	No Developmental Needed		Developmental Math Plus	
Outcome	Total	Full-time	Total	Full-time
Award and transfer	4%	7%	<1%	1%
Transfer, no award	17%	24%	2%	4%
Award, no transfer	5%	6%	1%	2%
Sophomore w/2.0+ GPA	18%	19%	7%	9%
Achievers	45%	56%	11%	17%
Enrolled Spr 94 <30 credits/2.0	5%	4%	9%	7%
Dropouts	50%	40%	80%	76%
Total degree-seeking students (100%)	861	536	628	281
Special motive (excluded from above)	24	2	53	5

Given these findings, and the large proportion of African-American students needing remediation, an analysis of student enrollment and completion in developmental courses was undertaken. It found that nearly three in ten of the Fall 1990 entrants identified as needing remediation had not enrolled in an appropriate developmental course as of the end of the Spring 1994 semester. And many of those who enrolled in developmental courses had not completed the remediation necessary for entry into credit classes. Only 62 percent of the 872 students needing remediation had taken developmental reading within four years of entering the college. Less than three-fifths of those, or only 35 percent of the total identified as needing remediation at entry, had successfully completed remediation in reading. Three in ten of those needing remedial English had completed it within four years. Only 13 percent

of the 933 students identified as needing developmental math at entry had completed remediation and were eligible for a credit math class within four years. A fourth of those identified as needing math remediation had test scores indicating initial placement in a basic arithmetic course.

Developmental Needs, Coursetaking, and Completion Fall 1990 Entrants as of the End of Spring 1994						
	Reading		English		Mathematics	
	Number	Percent	Number	Percent	Number	Percent
Developmental needed	872	100%	832	100%	933	100%
Developmental course(s) taken	541	62%	587	71%	629	67%
Developmental completed	306	35%	250	30%	120	13%

Another study employed the college's custom lifestyle cluster, geo-demographic analysis system *PG-TRAK*. Similar to national cluster systems employed in corporate America, PG-TRAK identifies a set of neighborhood types or clusters based on statistical analysis of Census and other data at the tract level. By developing a custom system internally, the college avoided large licensing fees and created a typology based solely on the local data, with an emphasis on variables especially pertinent to educational planning. The clusters or neighborhood types vary in socio-economic status, ethnic composition, type of housing, family life cycle, and other ways. Residents of these neighborhoods have different lifestyles, aspirations, and educational needs. By geo-coding student address lists--identifying which tract and thus in which cluster each student resides--the college gained a powerful new variable for interpreting student performance. For example, student outcomes, in terms of graduation and transfer rates, were analyzed by cluster. The three largest primarily African-American clusters had substantially different outcome patterns. The upscale "Enterprise" cluster had below average graduation rates but transfer rates a third higher than the college average. The predominantly blue collar African-American cluster had graduation and transfer rates near the college average. The relatively poor "Downtown PG" cluster had graduation and transfer rates considerably below average. The analysis confirmed the heterogeneity of the African-American student body, and suggested that performance was related to socio-economic factors.

Following national literature that suggested that social integration was a key factor in persistence in college, the research office then designed and conducted a comprehensive campus racial climate study (Boughan, 1992). Detailed written surveys of faculty, staff and students were supplemented by several focus groups. The major findings presented a mixed picture. When asked to rate campus race relations overall, nine in ten in each group gave positive ratings. Overwhelmingly, respondents said that people got along, that diversity was a college strength, and that the institution was committed to fairness. Opinion was split, however, over two major issues: affirmative action in employment, and multicultural education initiatives. African-American respondents were much more likely to support both than white respondents. Of particular interest, given the institution's evolution into a campus with a majority white faculty teaching a majority African-American student body, was how each group in this relationship perceived the nature of their relationship. The survey found seven in ten white faculty saying their relations with minority students were good. Only four in ten minority students agreed. Finally, one third of the student respondents said they had been subject of a racial incident on campus. African-American students were most likely to assert that they had been discriminated against in the classroom, while white students more typically cited incidents involving other students outside the classroom.

Policy. The analyses and subsequent discussions led to several major policy decisions at the community college. Several successful student support services, such as mentoring and tutoring programs, had been developed and funded using grants. The administration decided to continue funding these programs on the operating budget as grant monies expired, a significant resource allocation given the tight fiscal situation. The findings concerning developmental coursetaking led to a new policy that mandated completion of remediation prior to attempting more than 12 credits. The low pass rates in developmental courses led to enforcement of a 30-hour laboratory requirement in each course. Students would be required to spend an average of two hours weekly in the developmental learning lab. To further enhance remedial instruction, the college hired two additional full-time faculty and six new laboratory assistants to help students fulfill the new 30-hour lab requirement. The campus climate study findings influenced policy as well. A new three-credit cultural diversity graduation requirement was instituted. All candidates for associate degrees must complete a three-credit course exploring other cultures from an approved list. A graduate-level, full-semester seminar on "Understanding Cultural Pluralism" was designed and offered to college faculty and staff. Finally, following up on a successful eight-month-long lecture and performance series, the college established an annual "Bluebird Blues Festival" celebrating this uniquely American art form. The inaugural festival had brought together campus students and staff from all races in a successful, enjoyable day. The college hopes the good feelings of the first festival will carry forward into an annual event anticipated campuswide.

Example 2: Continuing Education Recruitment

Enrollment management should not be restricted to degree-credit programs, particularly at institutions with substantia continuing education operations. At Prince George's Community College, in any given year as many students enroll in noncredit courses as attend credit classes. Noncredit, continuing education offerings account for 30 percent of total full-time-equivalent enrollment. And noncredit FTEs are paid at the same rate as credit FTEs in Maryland's community college funding formula. As a result, continuing education has been included in the college's enrollment management from the start.

Data. The PMIs for continuing education at PGCC include tracking course enrollments and state-aid-eligible FTEs bi-weekly for open enrollment courses, contract training (apprenticeship, government employment training, and private sector), and special populations such as senior citizens, talented and gifted youth, and a children's developmental clinic. Registrations and FTEs in open enrollment courses fell in fiscal year 1991. This decline, combined with an announcement by the state that it would no longer subsidize apprenticeship education, prompted continuing education administrators to review the marketing of open enrollment courses. Existing policy was to mail a complete noncredit class schedule to every household in the county three times a year.

Analysis. Continuing education officials asked the institutional research office to utilize its geo-demographic, lifestyle cluster analysis system *PG-TRAK* to examine open enrollment course registrations data to explore the possibility of neighborhood-targeted direct mail promotion. The analysis involved three steps (Boughan, 1991). First, continuing education enrollment penetration (the ratio of number of students per population residing in each cluster) was calculated, identifying clusters providing disproportionately more or fewer noncredit enrollments per population. The results were compared to penetration analyses done previously for credit courses, revealing a broad similarity but also some notable differences. Among the latter were clusters with large concentrations of elderly citizens who were much more likely to have enrolled in noncredit classes than credit classes. Similarly, residents of "Sophisticate Mix," characterized by highly educated, childless professionals, exhibited little interest in PGCC credit classes but did partake of noncredit offerings. In contrast, residents of "Fort George," a cluster dominated by a military base, were active in credit classes but were least likely among all 24 clusters to enroll in noncredit courses. In short, the first analysis identified the areas in the county that provided the most noncredit students, and the areas where noncredit courses were notably more popular than credit courses.

The next analysis attempted to reduce the massive set of noncredit enrollment data into manageable proportions. During the five years under study, the continuing education division offered over 2,000 different courses in 37 different interest areas. These offerings generated over 63,000 individual course registrations. How could the college make sense of this complex data set? The research office decided to employ factor analysis. Were there patterns in student enrollment behavior such that students grouped themselves into consumers of relatively distinct groupings of courses? If a student enrolled in one type of class (e.g., computer software training) were they also likely to enroll in another (television production)? A yes answer, and identification of such "product themes" among course enrollment behavior, would have obvious marketing implications. The factor analysis revealed seven course themes: *career exploration* (career planning courses plus management, job skills), *entrepreneurship* (small business, financial planning, communications skills), *high technology* (computer software, television production), *trades and crafts* (automotives, carpentry, police work), *home and office* (family and health issues, secretarial skills), *creative impulse* (photography, creative writing, "New Age" hobbies), and *lifestyle* (fashion, gourmet cooking, travel, foreign languages).

The third and final analysis related course enrollment behavior (in terms of product themes) to neighborhood (cluster) of residence. In other words, how did residents of the 24 clusters respond to the seven course themes? Fortunately, the clusters were easily grouped into eight "cluster blocks" due to similarities in coursetaking, so the analysis could be reduced to a matrix relating the eight cluster blocks to the seven product themes:

Cluster Analysis of PGCC's Non-Credit Market

	Course Theme						
Cluster Block	Explore Career	Entre-preneur	High Tech	Trade/ Crafts	Home/ Office	Creative	Life Style
Country Club	95	127	92	88	81	110	169
Sophisticate Mix	76	98	142	48	44	213	89
White Bread 'Burbs	106	100	95	103	89	101	119
Middle America	115	82	97	132	105	110	84
Rural Blues	154	151	68	87	68	95	50
Emerging Minorities	79	108	108	79	107	77	72
Minority Blues	94	88	128	117	137	64	55
Fort George	74	23	63	77	175	83	56

Numbers in the table reflect index scores: scores above 100 indicate that residents of a cluster were more likely than average to enroll in courses in the product theme grouping. Scores below 100 indicate below-average enrollment rates. For example, residents of the highly affluent "Country Club" cluster were more likely than average to participate in courses in the lifestyle and entrepreneurial categories, while the highly educated members of "Sophisticate Mix" were overrepresented in creative impulse and high technology courses. Interestingly, residents of "Rural Blues" neighborhoods, characterized by blue-collar workers in the crafts and trades, were unlikely to take craft and trade courses but were overrepresented in career exploration and entrepreneurial courses. Residents of working class, minority neighborhoods were enrolled in career-advancement courses in high technology, office skills, and trades, and rarely found in the creative impulse or lifestyle offerings.

Policy. As a result of the cluster and factor analyses, the continuing education office decided to conduct a pilot test of a cluster-targeted direct mail campaign. The test case was a vocational center located at a county high school. For three years, the college had offered evening classes in automotives, printing, electronics, locksmithing, and similar trades, using the high school's state-of-the-art vocational education shops, but with disappointing results. Enrollment had remained below expectations, given the quality of the facilities and the center's location in a densely-populated, blue-collar area suffering from above-average unemployment. Officials hypothesized that the low enrollment was due to the community's lack of awareness of the center and its offerings. Based on a cluster analysis of past enrollment at the center, a targeted mailing to 5,000 households was conducted. A brochure describing the center and its offerings was mailed to 4,000 households in clusters that had historically provided a disproportionate share of the center's enrollment. The remaining 1,000 brochures were mailed randomly to serve as a control group. The campaign brought in 22 students above what would have been expected without the separate mailing. This modest improvement reflected poor targeting, as subsequent analysis of the return from the control group revealed. Selection of different clusters for targeting might have provided more response rate "lift." The lesson learned was that enrollment history may not be the best guide for contact selection. In addition to this pilot direct mail campaign, the analysis led to repackaging of courses (in subsequent continuing education publications) under the product themes identified by the factor analysis. Finally, consideration is being given to suspending the county-wide mailing of the class schedule. Instead, the schedule would be mailed to selected clusters and the money saved used for future targeted promotions.

Conclusion

Institutional planning and rational management require assumptions about

enrollment magnitude and characteristics. Whether planning new academic programs, estimating adjunct faculty needs, projecting dormitory utilization, building a budget--almost all planning in higher education requires enrollment forecasts. In turbulent times, when seemingly the only constant is change, making such assumptions can be difficult. As student bodies become more ethnically, culturally, and economically diverse, student needs multiply and institutions may find both recruitment and retention increasingly challenging tasks. Effective enrollment management can introduce some stability and predictability into the planning context, with the promise of increased efficiency and effectiveness in meeting both student and institutional goals. At institutions that resist total quality or institutional effectiveness regimes for managing change, due to leadership personalities or campus cultures, enrollment management can serve as an alternative organizing framework.

Successful enrollment management depends on an information base that is comprehensive, targeted, and continuously updated, to inform enrollment management policies and to monitor their effectiveness. Institutions implementing enrollment management programs need to establish an initial information infrastructure, including a longitudinal student tracking system and a set of performance monitoring indicators (PMIs) covering each stage of student involvement with the institution. These internal monitoring mechanisms should be supplemented by a periodic, formal environmental scanning process. The PMIs, environmental scanning insights, and informal feedback from students, faculty, and staff constitute the data for continuous evaluation of the enrollment management program. These data will identify areas in need of further analysis; for example, a PMI may show an undesired trend or failure to meet a target, or the scan may reveal a changed governmental policy or socio-economic shift with implications for the institution's enrollment outlook. Detailed analyses may suggest policy revisions. The impact of the revised policies will be monitored by subsequent PMI compilations, in a continuous improvement cycle. Adopted in its entirety, this approach:

1. Establishes a comprehensive framework for studying student-college interaction from initial inquiry onward.

2. Encourages development of enrollment targets, performance monitoring systems, and longitudinal tracking files.

3. Identifies areas of student behavior where institutional understanding is weak.

4. Integrates institutional research into enrollment management policy formation.

5. Promotes continuous improvement through the data-analysis-policy (D-A-P) cycle.

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PRINCE GEORGE'S COMMUNITY COLLEGE

Enrollment Management Performance Monitoring Indicators

	Indicator	Description	Source
		INQUIRY	
1	HS Intent	Number and percent of high school seniors indicating intent to attend PGCC	Recruitment Office survey of county high school seniors
2	Catalogs	Number of catalogs mailed during fall application period	Admissions Office
3	SAT Reports	Number and score distribution of SAT scores received	College Board student score report summary
4	C/CF Inquiries	Written requests for PGCC information completed at College/Career Fair	Office of Recruitment
		APPLICATION	
5	Special Test	Number of students participating in PGCC Special Testing and Advising Program	Testing Office
6	Applications	Number of applications for fall admission received	Admissions Office
7	Yield	Number and percent of applicants enrolling; by race/ethnicity	Information Systems report SAB 012
		ENROLLMENT	
8	**Headcount**	Credit student headcount (third week)	Third week freeze file
9	**Credit Hours**	Total student credit hours (third week)	Third week freeze file
10	**FTE**	Full-time-equivalent enrollment eligible for state funding	Registrar

11	**Average Load**	Mean student credit hour load	Third week freeze file
12	Load Distribution	Number of students by credit hours attempted	Third week freeze file
13	**FT/PT**	Number of full-time and part-time students	Third week freeze file
14	**Demographics**	Headcount distribution by age, race/ethnicity, sex, residence	Third week freeze file
15	First-time	Number of first-time college students attending; by FT/PT, race/ethnicity	Third week freeze file
16	High School	Number and percent of current-year graduates of county high schools enrolled; by high school	Third week freeze file; county school system
17	**Remedial Need**	Number and percent of entering students needing remediation; by basic skills area, by race/ethnicity	Third week freeze file
18	Admission status	Number of first-time students, readmits, new transfers from other colleges, and students continuing from prior term	Third week freeze file
19	Internationals	Number of international students on temporary visas; by country of origin, FT/PT, age, program, race/ethnicity, sex.	Third week freeze file
20	Schedule	Enrollment by class location, day, and time; headcount, credit hours, contact hours	Third week freeze file; ICLM-DECR/DECO
21	**Program**	Headcount enrollment by program/curriculum choice	Third week freeze file
22	Program hours	Credit hours generated by curriculum majors	ICLM-RGCR

23	Discipline hours	Credit hour distribution by discipline	Information Systems report SIBR030-UCA
24	Sections	Course sections offered and made; by discipline, location, day and time	Office of Instruction
25	FT/PT Faculty	Proportion of equated credit hours taught by full- and part-time faculty	Office of Instruction
26	Class size	Average class size; by discipline	Office of Instruction
27	**Charges**	Student tuition and required fees; per credit hour, for full-time load	Finance Office
28	Financial aid	Number of students receiving financial aid; by source, average award	Financial Aid Office
29	Market share	Proportion of county residents attending Maryland colleges and universities enrolled at PGCC; by FT/PT/first-time FT	MHEC Enrollment by Residence report
30	High school share	Proportion of current-year county high school graduates attending Maryland colleges and universities enrolled at PGCC; by race/ethnicity	MHEC SOAR High School Graduate System
31	PG-TRAK	Enrollment by PG-TRAK neighborhood cluster	OIRA PG-TRAK lifestyle cluster system
		PERSISTENCE	
32	Second term retention	Fall-to-spring retention of new students; by race/ethnicity	EOS and third week files
33	**Developmental progress**	Number and percent of students needing remediation taking developmental courses and completing remediation; by basic skills area	OIRA cohort files

34	**Course pass rates**	Percentage of initial enrollees passing courses; by discipline, age, first-time/continuing status, race/ethnicity, sex	Information Systems report SIBR032
35	**Term attendance**	Number and percent of fall entrants enrolled in subsequent terms	OIRA cohort files
36	**Cumulative credits**	Cumulative credits earned by fall entering cohort; by credit range, by term	OIRA cohort files
37	Probation	Number and percent of students on academic probation	Third week freeze file
38	Support services	Number and percent of students receiving academic support services; by service	Student support service supervisors
39	Activities	Number and percent of students participating in student activities; by type of activity, age, race/ethnicity, sex	College Activities Office
40	Satisfaction	Likert scale means of student satisfaction with college programs and services	OIRA current student surveys
		COMPLETION	
41	**Outcomes**	Number and percent of students graduating and transferring, transferring without award, graduating but not transferring, achieving sophomore status in good standing, still enrolled, with special short-term motives, and exiting without earning 30 credits with a 2.0 GPA or transferring; by race/ethnicity	OIRA cohort files

42	FT graduation rate	Percent of full-time degree-seeking students earning an Associate degree in four years; by race/ethnicity	MHEC EIS/DIS longitudinal analysis
43	FT MD transfer rate	Percent of full-time degree-seeking students transferring to a Maryland senior institution within four years of PGCC entry; by race/ethnicity	MHEC EIS longitudinal analysis
44	Success rate	Percent of degree-seeking students graduating and/or transferring; by race/ethnicity	OIRA cohort files
45	Progress rate	Percent of degree-seeking students who have earned 30 credits in good standing or who were enrolled in last term of study period but have not graduated or transferred; by race/ethnicity	OIRA cohort files
46	Exit rate	Percent of degree-seeking students who have discontinued study at PGCC without graduating, transferring, or attaining sophomore status in good standing; by race/ethnicity	OIRA cohort files
47	Goal achievement	Self-reported achievement of student goals	OIRA surveys
48	Graduates	Number of graduates; by award type, race/ethnicity, sex	DIS edit report
49	Awards	Number of degrees and certificates awarded; by program, age, race/ethnicity, sex	Information Systems report SPB072
50	Transfers	Number of transfers to Maryland colleges and universities; by receiving institution	MHEC EIS transfer matrix

51	**Transfer GPA**	Grade point average distribution of PGCC transfers at Maryland senior colleges and universities	MHEC SOAR Transfer Student System
52	**BA attainment**	Bachelor's degree attainment rates of PGCC students at Maryland institutions five years after transfer	MHEC SOAR Transfer Student System
		ALUMNI	
53	**Employment**	Percent of graduates employed in jobs related to their PGCC program; by program	OIRA graduate survey
54	**Licensure**	Pass rates of first-time candidates on licensure/certification exams; by program	Board reports obtained from Health Technology Division
55	**Career advancement**	Percent of graduates reporting PGCC helped in job attainment, promotion, skill improvement, and career preparation	OIRA graduate survey
56	**General education**	Likert scale means of self-reported achievement of general education goals	OIRA graduate survey
57	**Graduate satisfaction**	Percent of graduates rating PGCC preparation for transfer/employment good or very good (on five-point scale); percent who would recommend PGCC to person seeking a degree in same program	OIRA graduate survey
58	Continuing education	Percent of graduating class enrolling in PGCC credit or noncredit course(s) subsequent to graduation	OIRA annual unduplicated headcount analysis

59	Alumni Association	Percent of graduating class joining Alumni Association	Alumni Association
60	Alumni donors	Percent of graduating class contributing to Annual Fund drive	Development Office

Note: Indicators in **bold** typeface are *primary PMIs* included in routine reports to the college's Board of Trustees and/or in the annual *Student Learning Outcomes Assessment Report* to the Maryland Higher Education Commission.