



College and University Journal

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Founded in 1910, AACRAO is a nonprofit, voluntary, professional education association of degree-granting postsecondary institutions, government agencies, higher education coordinating boards, private educational organizations, and education-oriented businesses. The mission of the Association is to provide leadership in policy initiation, interpretation, and implementation in the global educational community. This is accomplished through the identification and promotion of standards and best practices in enrollment management, instructional management, information technology, and student services.

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■ *College and University* is available on microfilm through UMI/Periodicals, P.O. Box 1346, Ann Arbor, MI 48106-1346; phone (734) 761-4700.

POSTMASTER: Send address changes to *College and University*, One Dupont Circle, NW, Suite 520, Washington, DC 20036-1135. Copyright © 2006 American Association of Collegiate Registrars and Admissions Officers.

College and University (USPS 121460) is published four times a year (summer, fall, winter, spring) by the American Association of Collegiate Registrars and Admissions Officers, One Dupont Circle, NW, Suite 520, Washington, DC 20036-1135. The annual index appears in the summer issue. The cost of the publication is included in the AACRAO membership fee. For information on subscriptions and package rates, please visit www.aacrao.org/publications/candu/. Back issues are \$30 each (price includes shipping). ISSN: 0010-0889.

INDEXES: *College and University* is indexed in Current Index to Journals in Education (ERIC), Education Index, Higher Education Abstracts and Contents Pages in Education.

Editor's Note

Is there a common definition and an optimal organizational structure for enrollment management? David Kalsbeek, DePaul University, examines the four orientations to enrollment management that have emerged over the past 30 years, along with an analysis of their strengths and shortcomings.

Most institutions seek to enroll a talented and diverse class using a limited amount of financial aid, which has resulted either in the use of standard predictive models or the development of econometric models to predict enrollment. Instead of calculating price sensitivity for the average student in the admissions pool, Linda Siefert and Fred Galloway, University of San Diego, have developed an econometric model that allows price sensitivity to vary by student, allowing admissions and financial aid professionals to maximize the value of each additional scholarship dollar to achieve their enrollment goals.

George V. Govan, Spangdahlem Air Base, Germany, Sondra Patrick, George Mason University and Cherng-Jyn Yen, The George Washington University, examine high school student decision-making strategies based on student characteristics, college information sources, and financial aid packaging and recommend the development of a college information grid that can be used to help students find the institution that will best meet their needs.

How can postsecondary institutions assist students by recruiting them for majors and careers offered by the institution that are a good fit for the student? Cam Cruickshank and Perry Haan, Tiffin University, review Holland's theory of

vocational choice using two fictitious case studies to illustrate how postsecondary institutions can use his theory in the recruitment of prospective students.

In the Forum section, Travis Reindl, AACSC, presents two policy analyses. The first discusses federal student aid for college students; the second discusses the state of the college presidency.

Kevin W. Sayers, Capital University, discusses the planning process in higher education.

Janet Ward, Seattle Pacific University, writes about methods for turning data into meaningful information for senior administrators to inform their decision making.

To continue its tradition in providing one-stop service to its constituents, Ferris State University created an Enrollment Services Communication Center. Penny Bouman, Gerri Gomber, Ronnie Higgs, and Craig Westman, Ferris State University, discuss the process to implement the center and its impact on the University.

Tom Watts, Oregon State University, describes how non-credit courses have been incorporated into their student information system.

Rita Owens, Boston College, reviews the new AACRAO publication, *A Guide to Successful Implementations*, written by Sharon Cramer of Buffalo State College.



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Louise Lonabocker, *C&U* Editor-in-Chief, Director, Student Services, Boston College, Lyons 102, Chestnut Hill, MA 02467; Tel: (617) 552-3318; E-mail: lonabockerl@aacrao.org

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Some Reflections on SEM Structures and Strategies

(Part One)

The following is a pre-conference paper prepared for participants at AACRAO's Fifteenth Annual Strategic Enrollment Management Conference (SEM XV), held November 13–16 in Chicago, Illinois. It is the first of a three-part series to appear in *C&U*. In this series of papers, David Kalsbeek introduces a four-fold construct for differentiating and comparing institutional approaches to SEM, four broad but distinct orientations that characterize how SEM structures and strategies are designed in colleges and universities.

by David H. Kalsbeek

Around the large mahogany table in its Centennial Conference Room, the president of Alpha University is meeting with his cabinet and the executive committee of the board of trustees in their annual update of the institution's strategic plan. Item C on the agenda: "Securing our preferred enrollment future." This item was placed on the agenda by the board chairwoman herself, since in each of the past two years, Alpha's enrollment profile and tuition revenue fell short of expectations.

"I've been reading about 'enrollment management' in some of the literature I receive from the Association of Governing Boards" the chairwoman says in opening the discussion on this item. "I also heard that Beta University recently created an enrollment management organization, and their freshman class reportedly exceeded all goals this year, which certainly had a negative impact on us. Have we considered such an approach? What would 'enrollment management' look like here at Alpha?"

"We have begun discussing that in our weekly cabinet meetings and it's an important question," the president replies. "Perhaps each of the vps can comment on what they see as the appropriate focus of an 'enrollment management' strategy and organizational structure here at Alpha."

The vice president for administration begins. "From what I've read and seen, the key to successful enrollment management is to integrate and streamline all of our enrollment-related processes and systems. We have many redundancies and disconnects and inefficiencies in our systems, staffing, and structures. All of that adversely affects students and surely negatively impacts our enrollment. Improving those will help us manage the complex processes that support students moving to, through, and successfully out of this institution. An enrollment management initiative would focus our attention on exactly that outcome."

"I agree that it's important to address all of the so-called administrative 'silos' that fragment our enrollment process

and services," reacts the vice president for student affairs, "but Alpha is all about students, meeting their expectations, satisfying their needs, and putting them first. Our admission, orientation, registration, and billing processes certainly need to be better integrated. But 'enrollment management' is really about putting the needs of each student at the center of our efforts, not the administrative processes of the university. When we focus on putting the needs of each student first and creating a student experience that fully engages students in and out of the classroom, we will improve our enrollment through better recruitment and certainly improved retention."

The academic vice president then weighs in. "Both of my colleagues have identified some opportunities for improvement, but if our enrollment is to support the core academic mission of the institution, it needs to be fused with the development of our academic programs. We are, first and foremost, an academic institution and so our enrollment and all that's involved in managing it needs to be inseparable from our academic goals and academic programs. The outcome of improving our enrollment has to be the development of academic programs that enrich students' lives, and that serve this region by meeting its educational needs."

"That's all quite interesting" the board's vice chairman responds. "But in my business, for example, strategic planning doesn't focus on our internal administrative processes or our customer services, or even on improving what we'd consider our core functions—though that's all critical. Our primary strategic focus is on our current and future competitors and our competitiveness, our position in our various markets, and the external factors and trends that determine our viability and shape our future strategic opportunities. I guess I expected that would be the kind of thing 'enrollment management' would be about at a university, particularly since enrollment accounts for over 80 percent of our institutional revenue and since we draw our students from such an

intensely competitive region. I would assume that would be the focus of enrollment management at Alpha.”

The chairwoman concludes: “So it seems to me that in trying to organize for ‘enrollment management’ here at Alpha, we have several alternative approaches to organizing our efforts depending on what we see as the primary focus. Just in our brief discussion here, what I’ve heard is that we could focus either on improving our administrative processes, on better meeting the needs of our students, on developing our academic programs, or on understanding market dynamics. If we look for examples of ‘enrollment management’ organizations at comparable universities, I imagine that we could probably find examples that represent each of these perspectives—and then some. So, how could we organize for enrollment management? What organizational or structural options might best support successful enrollment management? Is there one that’s best for Alpha? How should we go about considering our alternatives?”

Beginning A Review of Structural Alternatives

“Organizational structure continues to be one of the primary ingredients of any institution’s successful enrollment management effort” (Huddleston 2001).

The evolution of enrollment management (EM) in higher education has been marked by a growing appreciation of its expansive breadth of activity and the depth of the concept. Yet the absence of a uniform practice or singular professional model is evident in the considerable variation in how EM is defined, developed, organized, and implemented in colleges and universities. From the outset, the persistent questions on our nation’s campuses have been like those posed by the board chairwoman in the opening vignette: How do we organize for EM? What organizational or structural options might best support successful EM? Is there one that’s best for a particular institution? How should we go about considering our alternatives?

To find answers to these questions we naturally turn first to the emerging professional literature and then to the evolving practice of EM in American higher education.

VARIATION IN THE LITERATURE

Since its initial emergence in the professional literature in higher education administration, definitions and discussions of EM have addressed how colleges and universities could organize or structure themselves to better achieve their enrollment goals. But in that literature, the perspectives on optimal organizational structure vary widely.

For example, Jack Maguire’s first definition of EM framed EM as an approach that structurally organizes a wide range of institutional processes related to student enrollment. And through the 1980s, the seminal work of Don Hossler served to further refine our professional perspective on EM, offering definitions that reflected the ever-expanding breadth of the EM enterprise. Hossler’s definitions focused broadly on those elements of higher education administration that were at the core

Figure 1. Evolving Definitions of Enrollment Management

- ▶ Enrollment Management is a process that brings together the often disparate functions having to do with recruiting, funding, tracking, retaining, and replacing students as they move toward, within, and away from the university.
—Maguire (1976)
- ▶ EM is “a process or activity which influences the size, shape, and the characteristics of a student body by directing institutional efforts in the areas of marketing, recruitment, and admissions as well as pricing and financial aid. In addition, the process exerts a significant influence on academic advising, the institutional research agenda, orientation, retention, and student services.”
—Hossler (1986)
- ▶ EM is an organizational concept and systematic set of activities designed to enable educational institutions to exert more influence over their student enrollments. Organized by strategic planning and supported by institutional research, enrollment management activities concern student college choice, transition to colleges, student attrition and retention, and student outcomes.
—Hossler and Bean (1990)
- ▶ SEM is a comprehensive process designed to help an institution achieve and maintain the optimum recruitment, retention, and graduation rates of students, where ‘optimal’ is defined within the academic context of the institution.
—Dolence (1993)
- ▶ SEM is the systematic evaluation of an institution’s competitive market position, the development of a research-based definition of the desired or preferred strategic market position relative to key competitors, and then marshalling and managing institutional plans, priorities, processes, and resources to either strengthen or shift that market position in pursuit of the institution’s optimal enrollment, academic, and financial profile.
—Kalsbeek (2003)

of an EM structure and also the administrative functions to be influenced as part of an EM strategy, if not directly managed under an explicit EM organizational umbrella. Both Hossler and Maguire called attention to EM as an approach to the organizational integration of administrative processes. (See Figure 1.)

Since the 1990s, AACRAO’s Strategic Enrollment Management (SEM) Conference has provided the professional forum wherein the evolving nature of enrollment management has been gauged. Like an annual sounding of the changing depth of higher education’s embrace of EM concepts and practices, the SEM conference—much like a professional journal—has become an arena for the comparative and critical review of structural responses to EM. As one example, it was through the SEM conferences that Michael Dolence offered the profession a valuable perspective for appreciating the critical convergence of the strategic and structural dimensions of SEM. He noted that across the landscape of higher education, the way in which EM was evolving could be seen in several stages, and that EM becomes strategic when it’s synonymous with institutional strategic planning and it

becomes inextricably linked with the academic program planning and management (see Figure 1).

At the 13th Annual SEM Conference, AACRAO asked me to reflect on defining SEM for the future. I offered an alternative framework, suggesting that EM becomes strategic when it focuses not on organizational structures at all but rather on the structures of the market, not on managing the activities and processes and functions within an institution but on how the marketplace for higher education functions and creates the overall climate within which institutions exist and compete—whether for students, for resources, for attention, or for prestige. In contrast to Dolence’s construct, I suggested that what puts the “S” in SEM is not its academic orientation, but rather its market orientation. I proceeded to offer a definition of SEM that focuses on the higher education marketplace and an institution’s competitive market position as the foundation for enrollment management and strategic planning (see Figure 1).

These definitions, and many others that would be cited in a more comprehensive review, illustrate the divergence in views of SEM that is apparent in the professional literature and in the AACRAO SEM Conference presentations over the years. They are suggestive of equally divergent approaches to organizational structures. This observation led Stan Henderson at SEM XIV in 2004 (and in a subsequent *College and University* article) to offer a valuable commentary on the so-called “structural debate” in the evolution of the professional literature. He suggests that SEM structures and strategies should reflect the institutional, and more specifically, the academic context of a college or university. True enough. So can the variety of EM structures currently in place in various institutional contexts offer answers to the chairwoman’s inquiry?

VARIATION IN INSTITUTIONAL PRACTICE

Just as there are examples of the contrasting perspectives, concepts, and definitions of EM in the literature as the profession has matured, likewise, the structures by which colleges and universities attempt to organize their EM effort have also evolved. EM organizational structures vary considerably in both breadth and depth as do the strategies deployed, as illustrated by Tom Huddleston (2001) in *The SEM Revolution*. What accounts for this variation? Without an exhaustive review, let me just note two observations from the vantage point of an EM veteran:

First, both Henderson and Huddleston note how important it is to have EM reflect the institution’s mission and values. This is true in process and strategy but what about structure? One finds institutions with similar missions varying widely in their EM organizational models and one also finds identical EM structures across institutions with widely varying missions and values. This may be a reflection of a practice that is still “on the brink of a profession” as Henderson has described EM in his previous work. Clearly, mission and values are critical in guiding EM strategy but aren’t likely to be sufficient ingredients in evaluating alternative EM structures.

One is also tempted to look directly to strategy as the rationale for structural differences. As the saying goes, ‘structure follows strategy’ in the same way as ‘form follows function.’ An institution that has an enrollment strategy that places retention on an equal plane as recruitment likely organizes its EM functions differently from one that has an enrollment strategy focused almost exclusively on new student goals. An institution that places as high a strategic priority on its enrollment of graduate students is likely to have an EM effort structured in a way that reflects that orientation. Aligning structure with strategy is important since, as Huddleston also notes: “Primary operational units achieve a strategic enrollment management direction by integrating and sharing a vision that results in a larger sphere of influence than any single office might enjoy.”

But is the interrelationship of structure and strategy sufficient to account for the variation in EM structures one finds in American higher education? It seems not. Just as with mission and values, institutions with similar enrollment strategies have widely varying EM structures; institutions with identical EM structures can have widely varying strategic purposes and priorities.

And so begins our search for the answer to the board chairwoman’s question. First, the variety of definitions of SEM that have emerged in the professional literature and at AACRAO’s SEM Conference suggest distinctly different organizational or structural orientations. Likewise, the variety of organizational structures currently in place across the landscape of American colleges and universities do not seem to be directly tied to or explained by differences in institutional mission, values, strategy, or type. These questions remain: How best to understand the variety of options and alternatives in organizational structure among which institutions can choose? How should we go about considering alternatives?

Understanding Organizations: Three Approaches

Since there appears to be no uniform organizational structure to be found in either the professional literature or professional practice, any reflection on contrasting EM models and structures must start somewhere else.

■ *Mental Models*: Peter Senge (1990) has noted that organizations are the way they are because of how people think. So we can begin a review of EM structures by exploring the ‘mental models’ that dominate our field—the deeply ingrained and embedded assumptions and perspectives on the nature of organizations that dictate what we perceive as relevant versus irrelevant, what we envision as possibilities versus obstacles, what we consider to be information versus noise. Those mental models are reflected in many things—including the language that we use in our work, the role definitions we create for staff positions, and the metrics we adopt for measuring progress or success. They are also reflected in the organizational structures we design and develop to achieve our goals and purposes.

There is merit, then, in starting by considering what various mental models frame our outlook on what EM is and what EM does, how some basic conceptual frameworks about EM underlie and account for the various ways in which EM is structured organizationally and executed strategically in American colleges and universities. The dominant mental models about EM are worthy of critical and comparative exploration as a starting point for this exercise; what this requires is a process for surfacing them and making them explicit.

- *Organizational Metaphors:* In a provocative text entitled *Images of Organizations*, Gareth Morgan (1986) introduced the power of *metaphors* as a way of understanding complex organizations and making explicit these mental models. It is through metaphors that humans come to understand new things by taking something familiar and applying it to the unfamiliar (*e.g.*, defining automobiles as ‘horseless carriages’). We appreciate things that are new or foreign by using terms with which we are more comfortable. Morgan shows how we can delineate the similarities and dissimilarities between organizations and more familiar phenomenon (*e.g.*, organizations as machines, organizations as cultures, organizations as organisms) and thereby arrive at new insights and understandings about complex organizations, their purposes, functions, structures, challenges, and potential.

A deliberate approach to contrasting different metaphors for a common reality in order to explore what might be otherwise taken for granted or unapparent can be generative of new and radically different insights. A specific application of such an exercise can be found in a chapter I wrote in Schroeder and Mable’s (1994) text *Realizing The Educational Potential of Residence Halls*, where I outline six alternative metaphors for campus housing (*e.g.*, residence halls as consumables, communities, classrooms, cultures, climates, or catalysts), each sparking divergent and contrasting insights into students’ experiences and educational outcomes, and each orienting administrators to alternative approaches to the assessment of the residential experience.

- *Ideal Organizational Types:* There is a rich literature on how organizations can be compared and contrasted via the stories that permeate them. Mitroff and Kilmann (1975) in their article “Stories Managers Tell,” talk about how stories of an organization capture the distinct and unique qualities of that organization and help define what makes the organization special, what makes it tick. But they go on to suggest that stories managers tell about their ideal organizational structures tend to parallel basic personality constructs developed by C.G. Jung; managers of certain personality types tend to have similar concepts of an ideal organization and managers of opposing personalities have drastically different concepts of that orga-

nization. Moreover, Mitroff and Kilmann (1978) in their fascinating text *Methodological Approaches to the Social Sciences*, use the same construct to differentiate fundamental modes of inquiry. Mitroff and Kilmann’s four-fold typology can be applied directly to a methodical comparison and contrast of different approaches to organizational structures that grounds these approaches in an epistemological and psychological foundation.

Moving Forward

The challenge and purpose of this reflection paper is to explore and contrast alternative approaches to SEM structures and strategy. Given the variety of approaches in our literature and in our practice, I begin this reflection instead with these questions:

- Can divergent approaches to EM structures and strategies be elucidated and understood by first exploring, comparing, and contrasting the basic assumptions or *mental models* about EM?
- Do alternative approaches to EM structures become clearer as we *metaphorically* define EM in terms of organizational approaches in higher education that are more familiar to us? If EM is a relatively new approach to higher education administration, and one for which there is not one dominant organizational paradigm, can EM be understood by articulating its similarities and dissimilarities with other more familiar dimensions of the higher education enterprise?
- Is there value in comparing and contrasting structural approaches to EM as idealized constructs reflective of some fundamental psychological preferences that characterize those who design these organizational structures?

Introducing Four Orientations to EM

THE ADMINISTRATIVE ORIENTATION

From its inception, EM has been defined as a way of organizing a wide range of *administrative processes* related to student enrollment in institutions of higher education. Maguire’s (1976) initial definition of EM, noted at the outset of this paper, is a process-focused one; and as EM has evolved and matured over 30 years, the scope of the administrative processes related to enrollment has broadened, expanding from an initial focus on just admissions and financial aid to orientation and advising, course scheduling and curriculum planning, financial payment and employment, career services and placement, and so on. And as that scope has broadened, the magnitude of the institutional challenge in coordinating all of the processes, practices, and policies related to enrollment has become increasingly apparent. So too has the evidence of the institutional benefit that is realized when such coordination achieves efficiencies and improved effectiveness.

But regardless of how the scope of EM has broadened, the fundamental concept or definition of EM can be seen as remain-

ing constant. We can understand EM via its parallels with the more familiar function of process administration and operations management in colleges and universities. And conceiving EM as this type of coordination, better yet the integration, of varied enrollment-related processes at an institution reflects what may be called an *administrative orientation*.

THE STUDENT-FOCUSED ORIENTATION

It may at first seem odd to distinguish and differentiate a student-focused orientation to EM as one independent of other perspectives, as if 'enrollment' is some disembodied reality that can exist independent of the individual students who constitute that enrollment. But this exercise is intended to define and contrast broad approaches to EM, and a student-focused orientation can be differentiated by the primacy of its focus on the student as an *individual* person.

From its earliest emergence, EM has embraced a student orientation, seeking to maximize student satisfaction with services, to promote a more student-friendly, student-focused institutional climate, and to shift institutional priorities to be more student-centered. In contrast with an administrative orientation that focuses on the coordination of processes, a student-focused orientation can be characterized as one focused on the care for the individual person who is the beneficiary of or a participant in those same processes.

This orientation toward the individual student is typically associated in American higher education with the student affairs profession, a more familiar administrative function with a much longer history and better established professional foundation than EM. Grounded in a history of colleges and universities serving *in loco parentis*, student affairs has evolved today to include developmental outcomes, student engagement, leadership development, and experiential learning. There has been a long, nearly symbiotic relationship between EM and student affairs (see Rebecca Dixon's *Making Enrollment Management Work*; Alan Galsky's *The Role of Student Affairs in Institution Wide Enrollment Management Strategies*; Peter Garland's *Serving More than Students*). And today, EM functions are often organizationally structured with student affairs. So it may be useful to differentiate a broad orientation to EM that is understood in terms of its student-focus, in terms that are most commonly associated with the more familiar student affairs perspective.

THE ACADEMIC ORIENTATION

Since its unveiling at AACRAO's SEM Conference, Michael Dolence's four-fold concept of EM's evolutionary stages has served as an important reminder for the profession of the centrality of EM's linkage with academic planning, priorities, and programs. His argument is that at a strategic level, the practice of EM is inextricably fused with academic administration, both being inseparable components of institutional strategic planning. Bill Ihlandfeldt, Tom Huddleston, Don Hossler, and most recently Stan Henderson have all also focused over the years on the strategic importance of EM's

academic alignment. The point is that EM can be understood in terms of its parallels with the more familiar activity of academic program development, planning, and administration.

An academic orientation to EM focuses attention primarily on the development and integrity of academic programs, on the primacy of teaching and learning, recognizing that the development and delivery of academic curricula is higher education's core enterprise. Colleges and universities often have been criticized for their preoccupations and biases in planning processes that focus more on programs than on students, more on teaching than on learning, more on curriculum than on the customer. But an academic orientation to EM is one that embraces such tendencies of faculty and academic administrators and connects these academic concerns to enrollment-focused outcomes.

With an academic orientation, the development and delivery of a current, compelling, and competitive curriculum is the institution's primary focus. The EM challenge includes ensuring that the institution's enrollment strategy brings to each academic program the optimal enrollment size, mix, quality, and revenue required for each program's success, since optimal is defined within the academic context and by the academic vision for the future of the institution. Conversely, it also includes ensuring that the institution effectively brings its academic programs to the student, thereby including curriculum planning, course scheduling and sequencing, and the design and delivery of alternative modes of instructional delivery. It also includes ensuring that the institution, through its academic programs, meets the educational needs of the community, the region, and industry or society at large via an educated citizenry and educated workforce.

THE MARKET-CENTERED ORIENTATION

The inclusion of market perspectives in EM can be traced back to its earliest days, grounded in part in Tom Huddleston's, Bob Lay's and Bill Ihlandfeldt's innovative and comprehensive understanding and application of marketing in higher education. Many tactical innovations over the last fifteen years that purport to be 'enrollment management' are fundamentally *marketing* activities, borrowing heavily from disciplines and practices that have matured in consumer products marketing, brand marketing, and other non-profit marketing. (See the work by Philip Kotler, Larry Lauer, Bob Johnson, Tom Hayes, etc.) For the past fifteen years, the American Marketing Association has sponsored the Annual Symposium on Marketing in Higher Education; it is now a professional conference that has content sessions virtually indistinguishable from AACRAO's SEM conferences. All in all, in American higher education today, enrollment management and institutional marketing are now conceptually, strategically, tactically—and increasingly structurally—inseparable.

But while marketing and enrollment management activities and tactics have long been intertwined, what is distinctive about a market-centered approach is not the prevalence of marketing activities but rather the prominence of a *market*

perspective. What distinguishes a market orientation to EM is the focus on the external realities of the marketplace that prescribe parameters and possibilities and position for each college and university.

Rather than a focus on internal realities of administrative processes, or on the personal goals and needs of students, or on the cultivation of academic programs, the focus of a market-centered SEM effort is on the structure and symmetry of the higher education marketplace, the institution's particular and empirically demonstrable position within that market, and on its competitive performance within that market. The focus of a market-centered orientation is the market (not marketing) on the institution's competitive position (not positioning) on its differentiating brand identity (not on branding activities). Such a market orientation turns EM's attention to the institution's market position relative to other institutions of higher education. The goal is to ensure the competitiveness of the institution's academic programs and to enhance or elevate its position within its targeted audiences or markets.

The first principle of a market-centered orientation to EM is that higher education in America can in fact be understood by market dynamics and market realities. Among the earliest reflections of this orientation was the work by Bob Zemsky and Penney Oedel (1983) in *The Structure of College Choice* over 20 years ago, which called attention to market dynamics shaping student enrollment. Zemsky and his colleagues have pushed this thinking further in their recent work *Higher Education as Competitive Enterprise: When Markets Matter* (2001). This research has focused attention on understanding the structures of the higher education marketplace through an analysis of what others may call the "pecking order" or the "food chain" of colleges and universities arrayed by variables related to prestige and reputation and student mix.

A prominent element in a market-centered orientation is the understanding of an institution's market position and that of its various academic programs. Position in the market relative to primary competitors both shapes and is reflected in student demand, yield, student mix, price, and so on. One important reminder that market-centered EM brings is that "Position is a noun, not a verb." Position is not something an institution does to and for itself; it is something that exists in the eyes and mind of key audiences such as prospective students, alumni, philanthropic and civic leaders, etc. An institution can and must invest in intentional strategies to clarify, solidify, strengthen, improve, or elevate its position within its competitive niche. That, in essence, is the task of a market-centered EM orientation.

The emergence of the concept of *brand* in higher education marketing is further evidence of a market-centered perspective, recognizing that institutions of higher education have an identity—a set of attributes and promises and purposes that are associated with it in the mind of various audiences, an identity that both differentiates it from and aligns it with other institutions based upon their brand identities.

Developing an understanding of an institution's brand, assessing any gaps that exist between the perceived brand promise and the reality of the experience of key stakeholders (especially students), and leading the institution's efforts to realize its brand promise in the lives and minds of its key constituents becomes the EM goal.

Strengths and Shortcomings of the Four Orientations

The purpose of this paper—this thought experiment, if you will—is to identify broad perspectives which tend to color our discourse of optimal EM organizations. As Morgan (1986) points out in his text on metaphors, the key thing to remember is that metaphors offer a uniquely one-sided view of a reality, and therein lies their heuristic value. As he puts it, by calling attention to and highlighting the importance of particular features, each orientation pushes other characteristics into the background. Our ability to get a full, comprehensive picture of EM depends upon our ability to see how all of these various perspectives may "coexist in a complementary or even paradoxical way." Perhaps by considering different orientations to EM and their relative strengths and shortcomings, we can better understand this complex enterprise and then better design our organizational structures and strategies accordingly.

For example, viewing EM through the filter defined here as the administrative orientation focuses unrelenting attention on both improving administrative efficiencies and creating for the student a streamlined, seamless experience in all of the complex activities that are part of the enrollment process in today's colleges and universities. Both the institution and the student benefits as a result.

An administrative orientation forces administrators to understand how intertwined these processes are and to overcome the fragmentation and disintegration that often exists when the core functions of admissions, financial aid, bursar, orientation, registrar, and housing are managed independently of each other. In today's colleges and universities, it is not uncommon to have some of these processes reporting to the academic vice president, some to the student affairs vice president, and some to the financial affairs vice president. Similarly, at larger universities, it is not uncommon to have some of these processes directly managed in a decentralized manner in academic schools or colleges, while others are managed centrally at the university level. The lack of coordination and integration that almost inevitably results is exactly what an EM strategy with an administrative orientation focuses on fixing.

This bias toward improving administrative processes, however, can often be blind to the student reality. Focusing on how such processes and information systems need to work for the institution's efficiency, without assessing those processes as students actually experience them, is a common pitfall. Registration processes, billing processes, and Web sites for requesting information, to name just a few examples, are not infrequently designed primarily to meet institutional

needs, streamline data processing tasks, and integrate with underlying data systems. The primary risk of the administrative orientation at its extreme is failing to balance that bias by assessing and designing these processes from the user's perspective or to meet the student's needs.

That's the strength that a student-focused orientation brings to EM, and its benefits are apparent when implemented in institutions that have a culture where students and their concerns are not given appropriate attention or priority. At such institutions, EM can elevate the importance of the student experience, of student services, and of student satisfaction.

One shortcoming of that student orientation, however, is that its focus on the needs of the individual person can introduce inefficiencies and redundancies into the constellation of services offered. A student-focused orientation that spawns different support services for minority students, adult students, commuter students, and the like, may be appropriate if the concerns addressed and needs met are unique across those segmented populations. But to whatever degree the needs addressed are similar (academic support, career guidance, financial planning, etc.), then these services targeted to discrete student groups may be less than optimally organized, an efficiency valued in an administrative orientation but perhaps sacrificed in a student-centered model in favor of personalized and segmented services. At its extreme, designing services and processes around discrete student populations in

order to respond to their personalized needs leads to a balkanization of services and the very loss of integration that the administrative orientation seeks to achieve.

At the same time, aligning EM functions with either an administrative or a student-focused orientation may distance EM from the core academic purposes of the institution. It is not uncommon to hear faculty criticism of EM services, like that levied against student affairs, that the sideshows occasionally overshadow the center ring of the university circus. One potential limitation of the student-focused orientation is that it can marginalize the EM effort at institutions where academic programs are clearly the center ring.

So the value of an academic orientation is that it brings EM's attention back to the core academic purposes of the college and university. Its strength is integrating the EM process with the mission-critical functions of teaching and learning, ensuring that EM is embraced as integral to strengthening the institution's academic core, not an ancillary process of bringing enrollments in, through, and out of academic programs. Embedding EM in academic program development, and recognizing its pivotal role in realizing fundamental academic purposes and priorities is a strategic (and typically political) strength of an academic orientation.

At its extreme, however, that academic orientation, like both the administrative and student-focused orientations, tends to focus too narrowly on realities at the institutional

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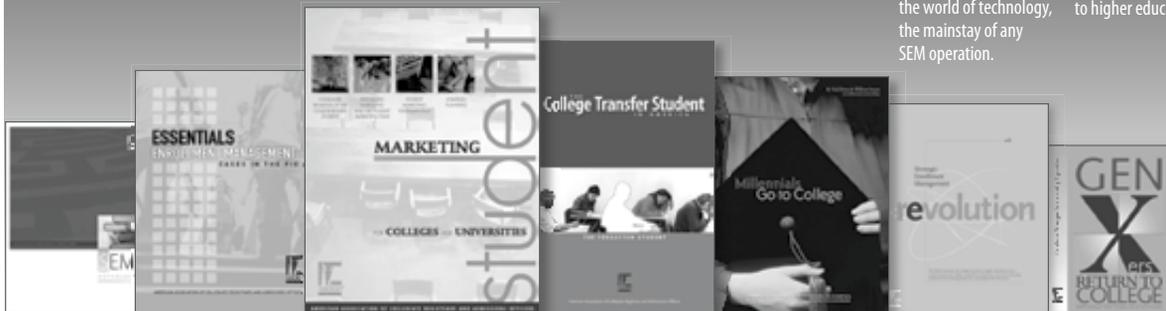
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level, often independent of any appreciation of broader external realities. The value of a market-centered perspective is its reminder that no institution exists independent of the marketplace that defines what the institution is and what it can hope to be.

Of course, on the downside, a market-centered orientation introduces a new (and often bothersome) vernacular to the development of academic programs and EM strategies, borrowing liberally from a mature marketing industry outside higher education. Concepts such as brand, market share, competitive position, academic programs as product, students as consumers, and the like are all instructive elements of a market-centered orientation; but they bring a jargon to the academic enterprise that frequently sparks controversy and paints EM as an unwelcome (though perhaps necessary) evil in the evolution of higher education.

It is obvious that each orientation brings with it different and distinct inclinations and tendencies toward the enrollment management effort. Part Two of this three-part series of reflections will explore further how each of these four orientations shapes not only EM's structure but its practice, framing distinctly different approaches to institutional research, systems development, retention strategies, and so on.

Concluding Postscript

Arguments about how EM functions can be structurally organized and aligned for optimal outcomes began immediately as this field emerged in American higher education and continue to this day; that's because the provocative question posed by our board chairwoman in the opening vignette is being asked with increasing frequency. Since there is no one prescriptive response to that question, I offer in this paper a descriptive approach to comparing and contrasting broad conceptual orientations that seem to underlie the many varied approaches to EM that surface in any review of our professional literature or our professional practice. These orientations may be understood as prevailing mental models for EM; they may be understood in terms of their similarity and dissimilarity to other dimensions of higher education administration. They may even reflect some deeply seated organizational archetypes related to some fundamental functions of human consciousness—an insight that will be explored in Part Three of this three-part series of articles. At the very least they offer a potentially valuable heuristic for considering alternative approaches to SEM strategies and structures, alternatives that have no inherent superiority one over another but which orient and focus attention in very different directions, with different priorities and different outcomes.

References

- Dixon, Rebecca R. 1995. *Making Enrollment Management Work*. San Francisco, CA: Jossey-Bass.
- Dolence, Michael G. 1993. *A Primer for Campus Administrators*. Washington, D.C.: American Association of Collegiate Registrars and Admissions Officers.
- Galsky, Alan. 1991. *The Role of Student Affairs in Institution Wide Enrollment Management Strategies*. NASPA Monograph Series. Washington, D.C.: NASPA.
- Garland, Peter H. 1985. *Serving More Than Students: A Critical Need for College Student Personnel Services*. Washington, D.C.: Association for the Study of Higher Education.
- Henderson, Stanley E. 2005. Refocusing enrollment management: Losing structure and finding the academic context. *College and University*. 80(3): 3–8.
- Hossler, Donald. 1986. Managing College Enrollments. *New Directions for Higher Education*. No 53. San Francisco, CA: Jossey-Bass
- Hossler, D. and J.P. Bean. 1990. *The Strategic Management of College Enrollments*. San Francisco, CA: Jossey-Bass.
- Huddleston, Tom. 2001. Building the enrollment management model. In *The SEM Revolution*, edited by J. Black. Washington, D.C.: American Association of Collegiate Registrars and Admissions Officers.
- Kalsbeek, D.H. 2003. *Redefining SEM: New Perspectives & New Priorities*. Keynote presentation at AACRAO's SEM XIII, Boston MA.
- Maguire, John. Fall 1976. To the organized, go the students. *Bridge Magazine*. Vol. XXXIX(1).
- Mitroff, I. and R.H. Kilmann. 1975. Stories managers tell: A new tool for organizational problem solving. *Management Review*. July: 18–28.
- . 1978. *Methodological Approaches to Social Science: Integrating Divergent Concepts and Theories*. San Francisco, CA: Jossey-Bass.
- Morgan, Gareth. 1986. *Images of Organizations*. Thousand Oaks, CA: Sage Publications.
- Schroeder, Charles C., Phyllis Mable, & Associates. 1994. *Realizing the Educational Potential of Residence Halls*. Hoboken, NJ: John Wiley and Sons.
- Senge, Peter. 1990. *The Fifth Discipline: The Art and Practice of the Learning Organization*. New York, NY: Currency Doubleday.
- Zemsky, Robert, and Penney Oedel. 1983. *The Structure of College Choice*. New York, NY: College Entrance Examination Board.
- Zemsky, Robert, Susan Shaman, and Daniel B. Shapiro. 2001. *Higher Education as Competitive Enterprise: When Markets Matter*. San Francisco, CA: Jossey-Bass.

ABOUT THE AUTHOR

David H. Kalsbeek serves as Vice President for Enrollment Management at DePaul University in Chicago, Illinois. His responsibilities at DePaul encompass enrollment planning, admissions and financial aid, student registration and records, career center and student employment, university and media relations, and university marketing. A frequent AACRAO keynote speaker, Dr. Kalsbeek's innovative models and approaches have been highlighted by numerous professional associations as "best practices." Dr. Kalsbeek holds a Ph.D. in Public Policy Analysis.

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New Look at Solving the Undergraduate Yield Problem: The Importance of Estimating Individual Price Sensitivities

Although colleges and universities interested in the most cost-effective way of diversifying their entering class or meeting enrollment targets have an array of analytical techniques to choose from, issues of accuracy, scope, and usability continue to slow their widespread use. To address these issues, this article develops an institutional enrollment probability model using logistic regression that explores the use of an alternative measure of average price sensitivity, one which produces and takes into account each individual student's price sensitivity. When the model was applied to the more than 13,000 students admitted over a four-year period to a private university located in the southwestern United States, the resulting average price sensitivity was significantly lower than that found in the empirical literature, which is hardly surprising given the non-linearity of the logistic distribution. In the final section, the full set of student-specific price sensitivities is used to describe how financial aid and admissions professionals can work together to maximize the value of each additional scholarship dollar.

by Linda Siefert and Fred Galloway

For the last 30 years, the rapid growth in informational technologies has led to an absolute explosion in the production and diffusion of statistical software, which in turn has spawned the development of a set of analytical techniques known as enrollment management. For colleges and universities interested in the most cost-effective way of diversifying their entering class or meeting enrollment targets, this set of techniques—which includes the ability to predict the likelihood of an admitted individual enrolling in the institution—requires institutions to either construct their own predictive models or base their admission packaging decisions on the coefficients derived from some national or regional model. Although these models offer great promise when used effectively, issues of accuracy, scope, and usability continue to slow their widespread use (St. John and Somers 1997).

For example, for institutions forced to rely on estimates of price sensitivities derived from other institutions, there is always the issue of how relevant or accurate a national or regional estimate is for that particular institution. Furthermore, since there are a wide range of price sensitivities represented in the empirical literature (Heller 1997; Jackson and Weathersby 1975; Leslie and Brinkman 1987), the choice of any particular one as a basis for institutional policy is a decision wrought with peril—use an estimate too high and end up with empty seats, use an estimate too low and end up with too many students. Similarly, for those constructing their own institution-specific model, issues of aggregation and model specification make estimating price sensitivity a difficult and time-consuming exercise.

In addition to the difficulty in deciding which particular price sensitivity to use, there is also the very real problem of using this information easily and efficiently within an institution. Although the unit of analysis may vary from different groups of students (*e.g.*, all early admits or all African-

Americans males) to the individual students themselves, these price sensitivities need to be available to institutional policymakers in an easy-to-use manner that allows them to effortlessly target their limited supply of scholarship dollars. Unfortunately, since many administrators that work in the financial aid and admissions offices are often the most overworked on campus, developing a highly coordinated and easy to use interface between these two offices is rarely, if ever, accomplished. As a result, many admissions and aid decisions are made in a less than an optimal fashion.

In an effort to address these issues, we present results from an institution-specific predictive model that was built to solve the undergraduate yield problem at a private, religiously-affiliated university located in southwestern United States. We begin with a discussion of the theoretical context that surrounds this work, and then move on to a brief overview of the predictive model itself. After this background, we introduce a more mathematically correct method for calculating average student price sensitivity than has been used in the literature; in fact, we find that by calculating price sensitivities for each student and then taking the average over all students—rather than calculating price sensitivity just for what amounts to the average student—the resulting price sensitivity is about half as large. We then use our full set of student-specific price sensitivities to describe how financial aid and admissions professionals can work together to maximize the value of each additional scholarship dollar.

Theoretical Overview

Over the last two decades, the price of attending a four-year undergraduate college has increased faster than family income (The College Board 2004a). At the same time, the federal government has shifted its pattern of financial support for higher education from grants to loans and individual tax

incentives. To mitigate this unwelcome trend, many universities have been forced to increase institutional grants in order to make enrollment at their institution more affordable for the students they want to attract, with institutional grants now the largest category of non-loan student aid (The College Board 2004b).

In fact, there is a rich history in this country of institutions providing scholarships to “needy and deserving” students. Bowen and Breneman (1993) argue that institutional financial aid serves two purposes. For some institutions, this type of aid works as a price discount, a financial tool for increasing enrollment and net tuition revenues. For other institutions, it is an investment in the composition of the student body. In other words, less selective colleges can use this tool to fill their classrooms, while the most selective colleges can use it to create a diverse student body. Of course, other institutions use these techniques as well; in fact, the practice has become so institutionalized that it led McPherson and Shapiro (1998) to comment that, “differential treatment of students within the aid-eligible population is very common” (p.96).

Given that differential treatment is often necessary to attract particular students, institutions need information to help them develop both efficient *and* equitable financial aid policies. As early as the 1970s, researchers began looking at the relationship between higher education enrollment and the price of attendance, and have used gross tuition, grants, loans, and net tuition as price variables that affect the probability of enrollment (see Heller 1997; Jackson and Weathersby 1975; Leslie and Brinkman 1987; St. John 1991). Research findings support the theory that reductions in net price (tuition minus financial aid) positively affect enrollment decisions.

An important consideration for university administrators is the size of the effect of a change in net price. In economic terms, this is analogous to the relative slope of the demand curve, since the slope illustrates the extent to which enrollment demand responds to changes in price. This price sensitivity, also known as the price elasticity of demand, is affected by a number of things, including the ease of substitution of other goods. For example, if a student regards several universities as more or less desirable for the satisfaction of his education needs, the demand for each school will be highly elastic, that is, small changes in price will have a big effect on a student’s likelihood of enrolling. However, if a particular school has some quality, such as prestige, location, or a unique major that cannot be found at another institution, the demand for that school will be highly inelastic: small changes in price will have little effect on a student’s likelihood of enrolling. Other factors that affect elasticity are the prices at other institutions, expectations about future prices, and family income. To measure this, some authors (Jackson and Weathersby 1975; Leslie and Brinkman 1987) have calculated a student price response coefficient (SPRC), which reports the change in college enrollment for a group as a result of a \$100 (or \$1,000) price increase. Other authors (Somers 1992; St. John 1990) have calculated delta-P (change in probability),

which also estimates the change in enrollment as a result of a \$1,000 net price increase.

Although the earliest research in this area was generally related to the effects of federal policies on enrollment (Jackson and Weathersby 1975; Leslie and Brinkman 1987, 1988), during the last decade or so researchers have begun developing institution-specific models to aid college and university administrators (Moore, Studenmund, and Slobko 1991; Sinha 1998; Somers 1992; St. John 1992; St. John and Somers 1997). Still, more refined techniques are needed, especially when it comes to selecting the institution-specific variables and estimating price sensitivities. For example, one particularly vexing problem is that most of the existing research provides either a single, national estimate for all students, or for institution-specific models, a single price sensitivity measure calculated at the point of means for what amounts to the average student admitted to that particular institution. However, each student possesses a unique combination of characteristics, and will be affected differently by a change in the amount of financial aid offered. As such, institutional policymakers need an analytical tool that can assess how the same change in financial policy will not only affect different groups of students, but individual students as well. To address this issue, in the next section, we present a model for what Hossler and Gallagher (1987) call the “choice phase” of the admissions process, that answers the following two questions: (1) What is the probability of enrollment for each admitted student based on net price and assorted student characteristics? (2) How would changes in net price affect each student’s probability of enrollment?

Creating the Model

To develop a model that addressed the above questions, we used a two-part research methodology. In the first part, we used three years (1998–2000) of data from the admissions and financial aid offices at the institution¹ to specify and estimate a series of enrollment probability models. After the best-fitting model was identified through a series of predictive tests on the previously unused 2001 data, this model was then re-estimated with the 2001 data so that our final model was constructed with four years worth of data (1998–2001), representing all 13,308 admitted students over this period.

Since the enrollment probability function uses a dichotomous dependent variable (*i.e.*, the student either enrolled or did not enroll), logistic regression was used in the analysis.²

¹ In addition to the university being a private, religiously affiliated four-year institution in southwestern United States, it is classified as more selective and, in 2000, received 6,780 freshman applications for an entering class of 1,000. Over 65% of undergraduate students at this institution currently receive either need- or merit-based financial aid.

² Our choice of logistic regression analysis, rather than traditional regression analysis, allows individual price sensitivities to vary throughout the entire range of net price. In other words, our modeling strategy recognizes that a change in net price from \$30,000 to \$29,000 may have little effect on the probability of enrollment (with the probability at both prices being close to zero), while a change in net price from \$15,000 to \$14,000 may have a significant effect on the probability of enrollment.

We began by reviewing theory and literature to determine the general types of variables needed for our modeling effort, and once these were identified, we then spent time with admissions officers at the particular university to determine exactly how these variables might be measured. Based on our review of the literature, we used the following three types of general variables: the net price each student is offered, his or her level of academic preparedness, and select socio-economic and demographic characteristics. Based on our discussions with admissions officers, we made sure to include, but not limit our analysis to, the following specific socio-economic and demographic variables: gender, religious affiliation, ethnicity, distance from home, need, and legacy, as well as the following three academic preparation variables: high school GPA, SAT scores, and admission officer's application rating. To measure net price, we took the Consumer Price Index-adjusted tuition, room, board, and other expenses figure and subtracted all grant aid that the student received. We also added dummy variables for three of the four years (1998, 1999, and 2000) to control for annual differences in the performance of the domestic economy, which, of course, can affect the enrollment calculus of students.

Model Estimation

The second step in the methodology was to estimate the effects of the various independent variables on the probability of enrollment, using our final model from the first stage. Although we report the results from the entire model, our focus will be on the estimation of the individual price sensitivities, defined as the change in the probability of enrollment based on a \$1,000 change in the price of attendance, since we argue that the methodology we use more accurately captures the inherent variation in individual student price responsiveness than does the traditional approach.

To understand why our methodology represents an improvement over what is currently found in the literature, it is important to realize that historically, researchers have calculated price sensitivity for what amounts to the average student in the admissions pool (Cabrera 1994; Petersen 1984; Somers 1992; St. John 1992). However, since sensitivity to price is not constant in the logistic model as it would be in a linear model, this allows price sensitivities in our model to vary by student. Furthermore, since Crown (1998) has shown that sensitivities calculated at the point of means on a non-linear function can easily overstate the true values if there are many cases at the tails of the distribution (see Figure 1), this suggests that a more refined methodology may be appropriate.³ As such, we first calculate the price sensitivity for each admitted student based on a \$1,000 decrease in the net price of attendance—using the formula suggested by Petersen

³ As shown in Figure 1, the steepest slope of the logistic probability function occurs at the midpoint, so that calculating price sensitivity at this point could easily overstate the true mean if there are a significant number of individuals in the tails of the distribution, as is typically the case in a pool of admitted students.

(1984)—and then take the average of all of the individual price sensitivities to arrive at our overall value. In other words, we calculate average price sensitivity for all students, rather than the price sensitivity of the average student.

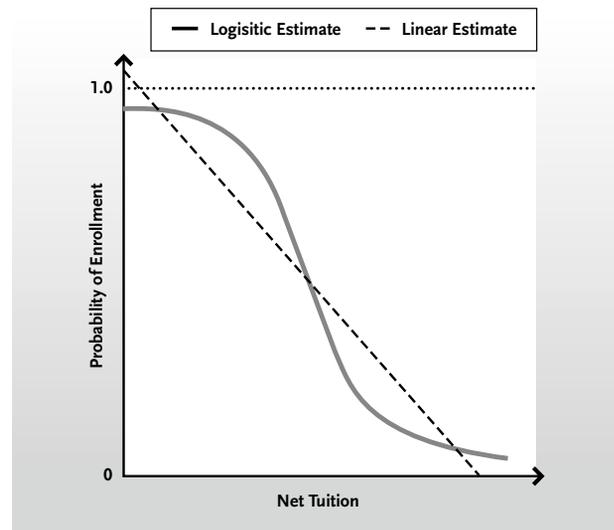


FIGURE 1: COMPARISON OF LOGISTIC AND LINEAR ESTIMATES OF PROBABILITY

However, before presenting the results of our modeling efforts, one other important methodological consideration needs to be addressed. In determining which particular model produced the most accurate set of predictions, we were first required to select an appropriate “cut-point” that could be used to determine when a student is more likely to enroll than not. Of course, in real life the observed value of the dependent value is either one or zero (signifying that a student either did, or did not, enroll), but since the logistic model provides a probability estimate that is between zero and one,⁴ some sort of cut-point needs to be identified. For both empirical and theoretical reasons, we used the historical yield at the institution (30 percent) as our cut-point, so that individuals with a predicted probability of enrollment below 30 percent were classified as non-enrollers, while those with a predicted probability either at or above 30 percent were classified as enrollers.⁵

⁴ To construct the probability estimates, the estimated coefficients from the final model were combined with the unique characteristics of each individual student to obtain the logit, which was then substituted into the logistic probability distribution. To calculate the change in the probability associated with a \$1,000 change in net price, this process was repeated with the new net price so that a new probability of enrollment was determined, and the difference between the two probabilities then calculated.

⁵ Since the historical yield represents the average probability of enrollment at the institution, this “full information solution” can be shown to maximize the probability of predicting enrollment when the individual actually enrolls, and to minimize the probability of the individual not enrolling given that he was predicted to enroll (thanks to Ed Bowen for the proof). However, in the absence of such historical information, a value of .5 is typically used as the cut-point, since individuals more likely than not to enroll get classified as enrollers, and those less likely than not to enroll get classified as non-enrollers.

Results

Although the focus of our study is on the estimation of the price sensitivities, Table 1 summarizes the logistic regression results for the model using 1998–2001 data. Examination of this table shows that in addition to the net price variable, a number of other variables were significant predictors of the enrollment decision. For example, we found that admitted African Americans, Asians, Filipinos, and Hispanics were all less likely to enroll than Caucasians, while admitted legacies were, not surprisingly, more likely to enroll. We also found that admitted low-need students were most likely to enroll, followed by no need, with high-need students least likely to enroll. This is not surprising given the relatively modest financial aid budget available to the institution. Distance from home also mattered at this institution, with those living in-state less likely to enroll than all of the out-of-state admits, with this likelihood decreasing with distance. This last result is hardly surprising since the two biggest competitors for this institution are both local, in-state public institutions with significantly lower costs for attendance.

In terms of the effects of high school grade point average, we found that a cubic specification worked the best, suggesting that as grade point average (GPA) increases, the probability of enrollment first increases, then decreases, and at some sufficiently high level, increases again. In addition to being consistent with the findings of Sinha (1998), this finding makes sense for the institution under study since the probability of enrollment for admitted students increases fairly rapidly with GPA until reaching the level at which prospective students are also likely to be admitted to one of the highly selective and less costly state institutions, at which time the probability of enrollment begins to decline. After declining through most of the high end GPAs, the probability again begins to increase at the very top end where students are often awarded scholarships that extend well beyond the cost of attendance.

In addition to modeling high school GPA as a cubic function, we also found that the net price variable worked best as a cubic function, although throughout almost the entire region the relationship is negative, which is consistent with economic theory. We speculate that the two small regions where the relationship is positive, namely at very low and very high values on the net price continuum, may have more to do with the behavior of those on full-ride athletic scholarships and those initially placed on waiting lists than anything else. In other words, given the competition for star high school athletes, who may receive full-ride athletic schol-

Table 1a: Regression Results for 1998–2001 Data (n=13,308)

Variable	Logit		
	B	Standard Error	t-statistic
Net Price	0.23356 ^b	0.04689	4.98085
(Net Price) 2	-0.02518 ^b	0.00302	-8.32892
(Net Price) 3	0.00049 ^b	0.00006	8.47969
Low need	0.56528 ^b	0.07285	7.75945
High need	-0.15014 ^a	0.07358	-2.04047
Early Action	0.63915 ^b	0.04954	12.90240
App. Rating	-0.17018 ^b	0.01719	-9.89946
HS GPA	2.40551 ^a	0.96741	2.48654
(HS GPA)2	-0.98133 ^b	0.33265	-2.95008
(HS GPA)3	0.10564 ^b	0.03693	2.86080
Combined SAT	-0.00150 ^b	0.00024	-6.32150
Gender (male)	0.05148	0.04481	1.14883
Catholic	-0.04562	0.04803	-0.94978
Jewish	-0.24680	0.16127	-1.53037
Other Religion	-0.13907	0.07379	-1.88455
African American	-0.79529 ^b	0.16109	-4.93686
Asian	-0.52134 ^b	0.09546	-5.46125
Filipino	-0.48201 ^b	0.14146	-3.40743
Hispanic	-0.23809 ^b	0.07012	-3.39564
Native American	-0.26330	0.17432	-1.51042
Other ethnicity	-0.06850	0.11121	-0.61602
Less than 1000 miles	0.35931 ^b	0.05803	6.19226
1000 to 2000 miles	0.20043 ^b	0.05995	3.34304
Over 2000 miles	0.17431 ^a	0.08076	2.15848
International	0.50857 ^b	0.15850	3.20871
Legacy	0.68281 ^b	0.06380	10.70263
1999	0.07823	0.06243	1.25304
2000	0.11241 ^a	0.06495	1.78521
2001	0.22016 ^b	0.04954	3.38946
Constant	2.48329 ^a	0.99179	2.50385

^a Significant at 0.05 level

^b Significant at 0.01 level

Table 1b: Model Significance

		Df	Sig.
Pearson Goodness-of-Fit	13,218.186	13,278	0.642
Model Chi-square	2,376.558	29	0.000
-2Log Likelihood	13,980.284	—	—
Cox & Snell R ²	0.164	—	—
Nagelkerke R ²	0.231	—	—

arships (in other words, a zero net price) from a number of other institutions, it is not surprising that their probability of enrollment is lower than that of those students who may not be athletes but merely high-need students. Similarly, at the very highest levels of net price, students may be those admitted off the waiting list, where little if any aid is ever offered, but these students are nevertheless anxious to enroll.

Regardless of the reasons for the cubic specification for net price, our final model tracks exceedingly well in that all of the independent variables displaying significance have the expected sign, and agree with either the empirical literature

Table 1c: Likelihood Ratio Tests for Categorical Variables for 1998–2000 Data

Variable Group	$-2\log$ Likelihood _R	$L_R - L_U$	df	Critical χ^2	Significance
Need	14052.948	72.664	2	5.991	0
Religion	13985.623	5.339	3	7.815	-0.150
Race or ethnicity	14045.965	65.681	6	12.592	0
Distance from Home	14028.572	48.228	4	9.488	0

or the competitive situation that characterizes this particular institution. More importantly, our findings were empirically validated by all three goodness-of-fit statistics that we used, since we were unable to reject the null hypothesis ($p=0.64$) for the Pearson goodness-of-fit statistic, suggesting that there was no difference between the number of observed and the number of predicted students that enrolled, and our two pseudo- R^2 measures—the Cox & Snell R^2 and Nagelkerke R^2 —were consistent with the results of other models in the literature (Sinha 1998; Somers 1992).

To estimate the average price sensitivity for the more than 13,000 students admitted between 1998 and 2001, recall that our methodology required us to first calculate the price sensitivity for each admitted student, based on a \$1,000 decrease in their particular net price of attendance.⁶ As expected, there was wide variation in the price sensitivities across students, and Figure 2 shows the change in probability for all students in the sample. Note the quadratic relationship between the maximum sensitivities and net price, with the greatest sensitivity to change in the \$15,000 to \$20,000 price range. That is, students who are already receiving moderate financial aid are the most sensitive to price changes, as expected.

When these price sensitivities were averaged to produce the overall average for all the students admitted during the 1998–2001 period, the resulting mean price sensitivity was 0.02, considerably less than found by others in the literature. We also found that our 0.02 estimate was robust with respect to the way in which we modeled net price, since when we ran our model with net price entered in the traditional linear way, our estimate was unchanged. More importantly, when we used our data to calculate the average price sensitivity using the methodology that previous researchers have used (the delta-P for the mean student), we found an overall value of 0.03, which is 50 percent higher. This is hardly surprising, since as Crown (1998) suggests, the existence of many students in the tails of the net price distribution almost guarantees an overestimate of the average price sensitivity, and this was certainly true for the institution under study. However, this was still lower than the findings of other researchers who have used delta-P estimates of price sensitivity. We conjecture that the reasons for this include the fact that most other studies

⁶ In other words, an admitted student with a net price of \$5,000 would have their price sensitivity calculated between \$5,000 and \$4,000, while an admitted student with a net price of \$20,000 would have their price sensitivity calculated between \$20,000 and \$19,000.

use national data sets or are conducted for public institutions, where there may be more students in the high-need end of the distribution, whereas our students are heavily weighed in the full-price, no-need end of the distribution. Regardless of the reasons for our overall lower magnitudes, we strongly urge researchers to pay attention to the enrollment behavior of all of their admitted students, since our methodology allows institutional policymakers the ability to fine-tune their enrollment management policy.

Translating this New Methodology into Policy

The fact that our average price sensitivity is significantly lower than other empirical estimates is consistent with the previous discussion that showed that when dealing with non-linear functions, statistics calculated at the point of means can easily overestimate sensitivities. The implication for policymakers is that they need to look at specific students, or groups of similar students, when estimating the effect of policy decisions, and not rely solely on one average estimate. But how can these student-specific price sensitivities be used in a way that allows financial aid and admissions professionals to maximize the value of each additional scholarship dollar?

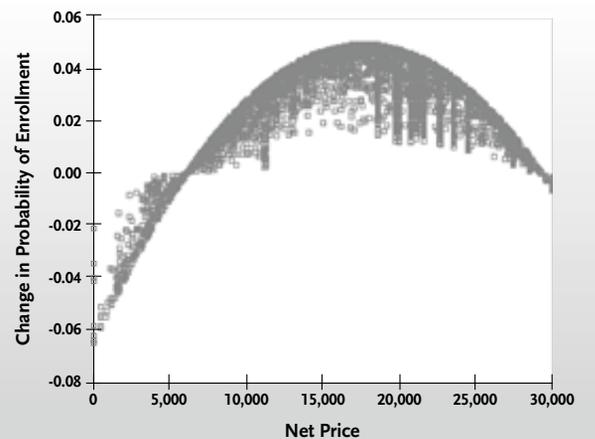


FIGURE 2: STUDENT PRICE SENSITIVITY AGAINST NET PRICE

Before describing exactly how these individual price sensitivities can be used to formulate institutional policy, it is important to understand the implications of selecting a cut-point for classifying admitted students as enrollees or non-enrollees. Since in our model we used the historical yield at the institution (30 percent), this meant that whenever our model generated a predicted probability of less than 0.30, the admitted student was classified as a non-enrollee, and when this probability was equal to, or exceeded 0.30, we classified them as an enrollee. In other words, 0.30 was the classification threshold, and as we'll see shortly, our suggested policy works by simply allowing administrators to call up the appropriate

Table 2: Examples of Effects of Pricing Policy Changes

Examples	Initial Probability	New Probability	Probability Delta	Enrollment Decision Change
1 \$1,000 scholarship for a Caucasian, Protestant male, with average preparation, from within state, with no financial need (initial net price=\$29,908), regular admission, no legacy	0.15	0.15	0.00	No
2 \$1,000 increase in financial aid for an African American, Protestant female, with above average preparation, from within state, with low financial need (initial net price=\$20,000), regular admission, no legacy	0.18	0.21	0.03	No
3 \$1,000 increase in financial aid for an Hispanic, Catholic male, with above average preparation, from within state, with low financial need (initial net price=\$20,000), regular admission, no legacy	0.28	0.32	0.04	Yes

information from a student record, feed it into the final logistic regression model, calculate their predicted probability of enrollment, and then see how much institutional aid would be required to lower the net price by enough to bring their predicted probability of enrollment to the 0.30 threshold.

Since something like this is more easily demonstrated than explained, Table 2 provides a look at how the effect of a \$1,000 decrease in net price might work for three potential students. As can be seen in the table, the \$1,000 drop only affects the enrollment decision of the third individual, since before their probability of enrollment was 0.28, but with their net price lowered by \$1,000, the probability of enrollment is now 0.32. As a result of crossing the threshold, this individual becomes classified as an enrollee. However, for the first two students this was not the case, since the \$1,000 drop in net price had no effect whatsoever on the first potential student, and although the probability of enrollment increased by 3 percentage points for the second individual, it was still not enough to get them classified as an enrollee.

This last point is critically important since almost all financial aid and admissions officers operate under very real spending constraints, and are obviously interested in extracting the biggest bang possible from their limited institutional dollars. For this reason, offering a potential student more institutional grant aid than they need to make up their mind to enroll can be viewed as wasteful, since the extra scholarship dollars could otherwise be spent persuading other potential students to enroll. As such, we urge enrollment managers looking to diversify their entering class to first agree on a set of institutional priorities for admitted students (*e.g.*, enroll more Native American students or more African-American males), and then, starting with the students at the very top of the list, award just enough institutional aid to have the model classify them as enrollees. By doing this, institutions can be assured that their increased institutional commitment to diversity is being done in the most efficient manner possible.⁷

⁷ Of course, for those institutions with less-binding spending constraints, we urge the awarding of as much and as many institutional grant dollars as possible; however, we recognize that for many institutions, spreading these dollars out may allow them to reach their diversity goals faster and more equitably.

Of course, for those institutions interested in filling seats, enrollment managers may want to pursue an alternate approach to maximize the value of their institutional awards. Specifically, these institutions may first want to order all of their admitted students by their predicted probability of enrollment, and then concentrate on those students whose predicted probabilities lie just below the cut-off point. For each of these students, the model could be used to calculate how much additional institutional aid would be required to bring their predicted probability up to the threshold value, and then the students could be reverse-ordered by the amount of additional aid they required, with those requiring the least at the top of the list. The institution could then simply work its way down the list until its entire supply of institutional dollars had been exhausted, knowing that its dollars had been spent in a way that maximized total enrollment.

Conclusions and Implications

Consistent with past research, this study confirmed that the net price of attendance is a significant factor in the decision to enroll in a university. However, rather than assume that the relationship between net price and enrollment is constant, we have taken advantage of logistic regression analysis—which allows price sensitivities to vary across students—to calculate price sensitivities for each student. Additionally, we have shown that when a true average price sensitivity is calculated, rather than one simply calculated at the point of means, the resulting value is about one-third lower. Given the enormous policy implications for universities that miss their enrollment targets, we hope that this methodological improvement will help create greater internal efficiencies for those institutions involved in enrollment management.

In fact, perhaps the easiest way to achieve these greater internal efficiencies is to use our methodology to focus on individual student price sensitivities, which allows enrollment managers to call up an individual student record, plug the requisite values into the final logistic regression model, and then estimate the probability of enrollment for that particular student. After this probability has been calculated, and depending on the desirability of the student and whether or not his or her estimated probability of enrollment is below the threshold, more institutional grant aid can be entered

into the model to see how much additional aid would be required to classify the student as an enroller. In this manner, the value of each additional institutional scholarship dollar can be maximized in an easy to use format for both admissions officers and financial aid administrators.

Taken together, these two approaches provide an easy to follow policy for institutions interested in either diversifying their entering class or filling seats. And for those institutions interested in doing a little of both, a mixed solution can be easily implemented, with institutions first allocating monies towards each of the goals, and then applying the appropriate strategy. However, regardless of which approach is used, institutions will be better able to maximize their limited supply of institutional dollars than many are now doing in the absence of student-specific price sensitivities.

References

- Bowen, W.G. and D.W. Breneman. 1993. Student aid: Price discount or educational investment? *Brookings Review*. Winter: 28–31.
- Cabrera, A.F. 1994. Logistic regression analysis in higher education: An applied perspective. In *Higher Education: Handbook of Theory and Research*, Vol. X, edited by Smart, J.C. pp. 225–256. New York, NY: Agathon Press.
- The College Board. 2004a. *Trends in College Pricing*. Washington, D.C.: The College Board.
- . 2004b. *Trends in Student Aid*. Washington, D.C.: The College Board.
- Crown, W.H. 1998. *Statistical Models for the Social and Behavior Sciences: Multiple Regression and Limited-Dependent Variable Models*. Westport, CT: Praeger Publishers.
- Heller, D.E. 1997. Student price response in higher education. *Journal of Higher Education*. 68(6): 624–659.
- Hossler, D. and K. Gallagher. 1987. Studying student college choice: A three-phase model and the implications for policymakers. *College and University*. 62(3): 207–221.
- Jackson, G.A. and G.B. Weathersby. 1975. Individual demand for higher education. *Journal of Higher Education*. 46: 623–652.
- Leslie, L.L., and P.T. Brinkman. 1987. Student price response in higher education: The student demand studies. *Journal of Higher Education*. 58(2): 181–204.
- . 1988. *The Economic Value of Higher Education*. New York, NY: American Council on Education and Macmillan Publishing Company.
- McPherson, M.S. and M.O. Shapiro. 1998. *The Student Aid Game: Meeting Need and Rewarding Talent in American Higher Education*. Princeton, NJ: Princeton University Press.
- Moore, R.L., A.H. Studenmund, and T. Slobko. 1991. The effect of the financial aid package on the choice of a selective college. *Economics of Education Review*. 10(4): 311–321.
- Petersen, T. 1984. A comment on presenting results from logit and probit models. *American Sociological Review*. 50(1): 103–131.
- Sinha, K.W. 1998. *Estimating First-Time Enrollment for the Private, Highly Selective, National University: A Market Demography Application of Logistic Regression-Based Price Sensitivity Analysis*. Unpublished doctoral dissertation, Bowling Green State University.
- Somers, P.A. 1992. *A Dynamic Analysis of Student Matriculation Decisions in an Urban Public University*. Unpublished doctoral dissertation, University of New Orleans.
- St. John, E.P. 1990. Price response in enrollment decisions: An analysis of the high school and beyond sophomore cohort. *Research in Higher Education*. 31(2): 161–176.
- . 1991. The impact of student financial aid: A review of recent research. *Journal of Student Financial Aid*. 21(1): 18–31
- . 1992. Workable models for institutional research on the impact of student financial aid. *Journal of Student Financial Aid*. 22(3): 13–26.
- St. John, E.P., and P. Somers. 1997. Assessing the impact of student financial aid on first-time enrollment decisions. In *Student Aid Research: A Manual for Financial Aid Administrators*, edited by J.S. Davis. pp. 101–126. Washington, D.C.: National Association of Student Financial Aid Administrators.

ABOUT THE AUTHORS

Linda Siefert is currently Director of Assessment in the School of Leadership and Education Sciences at the University of San Diego. Her areas of research interest include higher education institution-level and program-level evaluation, assessment of student learning, and university/practitioner collaborative action research.

Fred Galloway is currently Associate Professor in the School of Leadership and Education Sciences at the University of San Diego, where he has also served as Associate Dean and Director of Strategic Programs. His areas of interest include the economics of education, higher education policy, and econometrics.

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How High School Students Construct Decision-making Strategies for Choosing Colleges

This study examined how high school seniors construct decision-making strategies for choosing a college to attend. To comprehend their decision-making strategies, we chose to examine this process through the theoretical lens of bounded rationality, which brings to light the complexity in constructing a college choice decision-making strategy because students make their college selections with relatively limited information and computational abilities. Using data from the College Board's Admitted Student Questionnaire Plus™ (ASQ Plus™) survey for the 2003–2004 school year, 20,722 responses from students admitted to liberal arts colleges in the United States were used to examine college decision-making strategies.

by George V. Govan, Sondra Patrick,
and Cherng-Jyn Yen

Over the past few decades, college enrollment has been increasing despite rising tuition levels and increasingly insufficient financial aid. Perna (2000) found through her analysis of the Integrated Postsecondary Education Database that African-American and Hispanic undergraduates' enrollment in four-year colleges increased 42 percent and 161 percent, respectively. These undergraduates most likely lack the ability to afford higher education (Advisory Committee on Student Financial Assistance 2001). In a report on the affordability of higher education, Gladieux (2002) reported tuition and financial aid trends that would suggest a decline in enrollment. Gladieux reported that tuition more than doubled at both public and private four-year colleges, whereas median family income rose only 27 percent. As tuition increases and family income combined with financial aid fail to cover annual school costs, enrollments would be expected to decrease. However, the opposite is reality. To understand the incongruity between increasing enrollment and rising college costs, educational researchers, institutions, and government policymakers have focused on the issue of where students are enrolling (The Institute for Higher Education Policy 2002).

The process of choosing where to attend college is highly complicated and requires an understanding of students' college choice decision-making strategies. Besides tuition and family income, other factors impact the college choice process. McDonough (1997) stated that college enrollment patterns depend on a self-selection process that takes into account many factors to narrow the range of colleges that a student considers. Other factors, such as academic ability, preparation for college, educational expectations (Alexander, Pallas, and Holupka 1987; Hearn 1984, 1991), subject of study, institutional admissions practices, family or work responsibilities, and family or societal expectations (Choy and Ottinger 1998) have primary or secondary impacts on students' college choices. The importance of accurately predicting the colleges

students choose to attend, students' decision-making processes, and numerous related factors cannot be overstated. Boatright, Ouimet, and Middleton (1999, p.23) report that, "Given past and current research on interests in the area of college choice, one might expect a relatively refined system for accurately predicting the number of students who will attend a given college/university. However, no such system has yet been devised based on our review of the literature."

For most high school seniors and their parents, selecting a college has become an arduous task. Astin *et al.* (1997) discovered that students today are applying to more colleges as a group as compared to students 30 years ago. These students are inundated with college attributes to weigh and numerous sources of information to digest (Galotti 1995; Jorgensen 1994). Adding to these complications in the college decision-making process, students must search for and choose a college within a specified time period (Hossler, Braxton, and Coopersmith 1989). Prospective college students who experience these difficulties may be unable to compare colleges effectively or develop decision-making strategies to select colleges that are presumed to be important based on enrollment behavior. The complexity of students' decision-making processes is multiplied by the lack of understanding by institutions and government entities that make policy or perform research affecting college choices. In order for these organizations and agencies to recognize, define, and create policies on students' college choice behavior that helps to predict where students will enroll, more research is needed to understand how students move through a self-defined decision-making process to select a college or university to attend.

Purpose of the Study

This study examined the decision-making process high school seniors used to select a college or university to attend. We hypothesized that students use less complex decision-making

strategies because of the limited amount of information they have available to them and their lack of computational abilities to make choices. We investigated the effects of student characteristics, college information sources, and financial aid packaging on students' college selection processes to comprehend the types of decision-making strategies they used. Each effect identified whether students used more or less complex decision-making strategies to select colleges.

Review of Literature

The theoretical framework for this study is based on Simon's (1955, 1956, 1957, 1959) concept of bounded rationality. Simon (1957) empirically argued that decisionmakers generally construct a simplified model of the world and act according to it. Decisionmakers behave in this manner because they have limited informational and computational capacities (Simon 1955). Therefore, decisionmakers process only a subset of the information available to them such that the nature of the subset is strongly affected by the structure of the task at hand (Simon 1957). Simon (1959) introduced the notion of bounded rationality as a decision-making alternative to the utility maximization hypothesis put forth by economic theorists on the behavior of making choices. According to Simon (1959),

The classical theory is a theory of a man choosing among fixed and known alternatives, to each of which is attached known consequences. But when perception and cognition intervene between the decisionmaker and his objective environment, this model no longer proves adequate. We need a description of the choice process that recognizes that alternatives are not given but must be sought, and a description that takes into account the arduous task of determining what consequences will follow on each alternative (p.272).

To predict decisions, Simon (1959) argued that one must understand how a decision-maker's simplified model is constructed.

A variety of studies have examined how students constructed decision-making strategies for choosing colleges. In his research focusing on improving high school guidance services for facilitating educational-vocational choices, Gelatt (1962) uncovered two requirements of "good" decision making: (a) adequate information and (b) an effective strategy for analyzing, organizing, and synthesizing information to arrive at a choice. From Gelatt's work, four categories of information were identified to inform decision making: (a) possible alternative actions, (b) possible outcomes, (c) probabilities linking actions with outcomes, and (d) relative preferences. Three years later, however, Clark, Gelatt, and Levine (1965) discovered two limitations to the 1962 study after testing Gelatt's educational choice theoretical framework on secondary school students living in Palo Alto, California. The two limitations were centered on a student's ability to (a) determine objective criteria to evaluate strategies for choosing a college and (b) develop a value system to determine preferences for alternatives.

Hills's (1964) study on college choice was one of the first studies using a quantitative design. Hills proposed that institutions could predict enrollment choices of students through actuarial procedures. He postulated that student alternatives or courses of action regarding where to enroll could be determined by placing value on their choices based on standardized test scores and average high school grades. Multiple regression analyses using the Scholastic Aptitude Test (SAT) scores and high school grade point averages served as predictors of the probability of attending a particular institution. Even though the study provided high school counselors with a framework for advising students in the college selection process, limitations in methodology constrained the magnitude of advice that could be provided. Hills found that the decision-making process became very cumbersome when more than three colleges were involved. The investigation also assumed that a high school counselor was very familiar with the student and the colleges the student was interested in attending. Furthermore, Hills revealed how students' differentiation of grades derived for each college alternative varied little as compared to students' differentiation of college alternatives. Despite these limitations, counselors were able to estimate the probability of academic success at various colleges to determine which alternative produced the best fit for the student.

In a more direct approach to examining students' college selection processes, Berl, Lewis, and Morrison (1976) applied decision models to the problem of college selection to determine how students make choices. According to the authors, the characteristics of college selection that relate to decision making are (1) the importance of outcomes, (2) criteria used to evaluate alternatives, and (3) information about alternatives. The study was the only investigation that directly assessed students' decision-making strategies based on the relationship with students' ratings of college characteristics to decision models. However, the study had many limitations that weakened assertions about college choice behavior. The decision models used incurred modeling errors that produced highly erroneous predictions of where students planned to attend. In addition, what looked like missing data to researchers were not missing data to students who were interviewed. To complete the analysis, Berl, Lewis, and Morrison made assumptions that provided calculated data for information students did not consider missing. Besides missing data, the study had student recall and coding problems. Lastly, the researchers did not take into account subject differences in the data analysis.

In more recent college choice research, Galotti (1995) studied the college decision-making process to describe certain measures of decision-making performance, such as how students generate criteria, weigh the importance of those criteria, consider alternatives, and integrate information about alternatives and criteria. Galotti discovered that college choice decisions require students to gather information, process it, and choose alternatives, with each process requiring a multitude of decisions. These college decision-making activities

are contingent on task demands (Payne 1982). In other words, the processes by which college decisions are made are heavily influenced by factors associated with a particular decision (Galotti 1995). In essence, when selecting a college, students may use a different set of thought processes that are impacted by particular factors that apply to a different set of choices.

Information-processing Model

The approach for studying students' decision-making strategies used to select colleges was based on an information-processing model. An information-processing perspective helps determine what information to provide to students, how much to provide, and how to provide that information in order for students' to process, interpret, and integrate information in making college choices. The information-processing paradigm originated primarily from Newell and Simon's (1972) work on human problem solving. When an individual is faced with a decision, such as choosing a college, an information-processing model (See Figure 1) provides a means for understanding the processes for making college choice decisions. The student acts as an information-processing agent that must construct decision-making strategies to achieve a task because of limited information and processing capacities. The student's task can be represented in the context of a problem space—the student's representation of the situation. Within that problem space are the decision-making strategies students use to achieve the task. However, the structure of the environment that affects the task determines the possible structures of the student's problem space and the decision-making strategies the student uses for achieving the

task. According to Newell and Simon (1972), "only aspects of the task environment that are relevant to solving the task are used by individuals" (p.824). An information-processing model can be used as a representation for determining the students' structures for making college choice decisions.

Variables

Using the information-processing model within a bounded rationality framework, this study investigated what decision-making strategies students used to select colleges through students' self-reported ratings and rankings of college alternatives and characteristics. The outcome—level of bounded rationality—represented a decision model symbolizing a student's college decision-making strategy for selecting a college. The decision-making strategy was characterized by the complexity of the decision model. Two methods of integrating information to form a decision-making strategy that was used in this study were (a) formal linear models (Dawes and Corrigan 1974) and (b) heuristics (Bettman 1979; Newell and Simon 1972). Linear models represented more complex strategies because of the rigor in use as compared to heuristic models that were less complex since they were based on rules of thumb. A college decision-making strategy was found to represent low levels of bounded rationality when the decision model used was linear. In contrast, the college decision-making strategy stood for higher levels of bounded rationality when the decision model used was more heuristic.

Five decision-making models were selected based on frequent use in other research (Berl, Lewis, and Morrison 1976; Bettman Luce, and Payne 1998; Galotti 1995; Hogarth 1987;

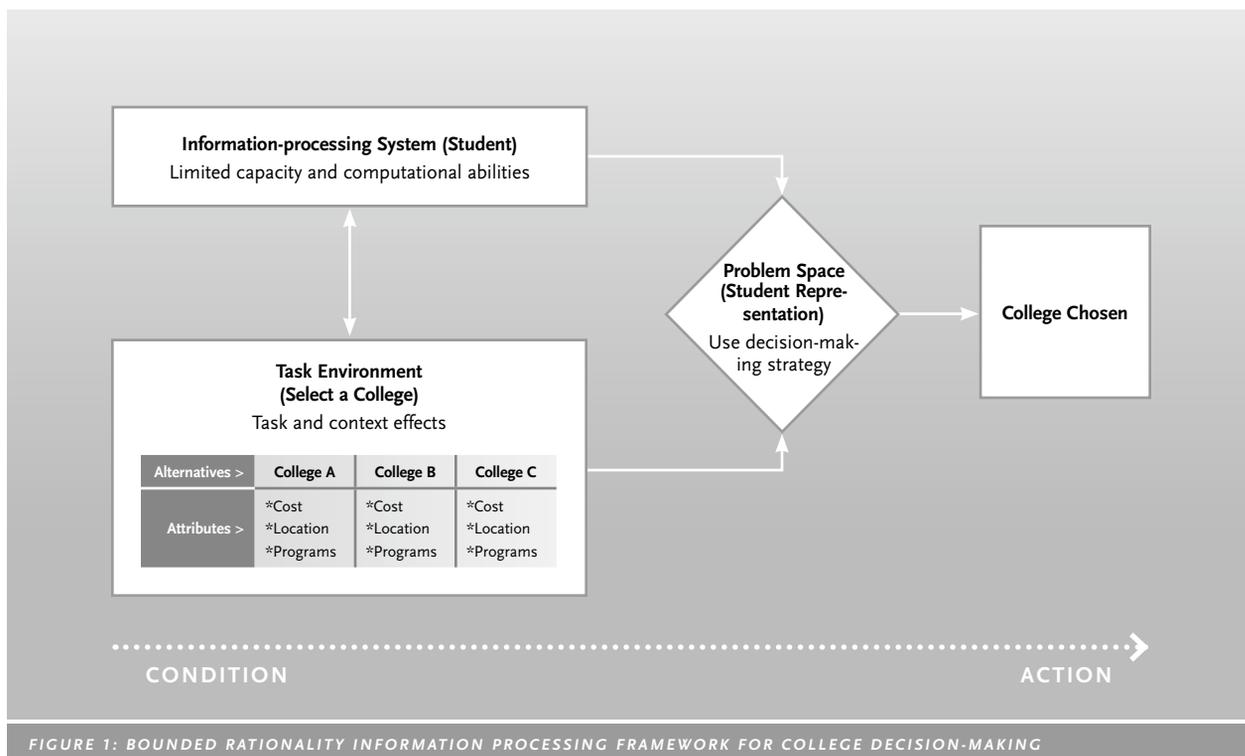


FIGURE 1: BOUNDED RATIONALITY INFORMATION PROCESSING FRAMEWORK FOR COLLEGE DECISION-MAKING

Payne, Bettman, and Johnson 1988; Slovic, Lichtenstein, and Fischhoff 1988) using an information-processing perspective. The models are described as follows:

- **Weighted-Adding (linear model):** assumes that the student can assess the importance of each attribute for all alternatives by assigning a value to each possible attribute for alternatives.
- **Equal-Weight (linear model):** considers all of the alternatives and all of the attribute values for each alternative without applying an importance weight.
- **Satisficing (heuristic model):** assumes that alternatives are considered in the order of the choice set in which they occur, thus value of each attribute for the alternative under consideration is compared against a predetermined cut-off for that attribute, and if any attribute fails to meet the cut-off, processing is terminated for that alternative.
- **Elimination by Aspects (heuristic model):** eliminates the alternatives that do not meet a minimum cut-off value for the most important attribute.
- **Lexicographic (heuristic model):** assumes that attributes can be ordered in terms of importance within alternatives and if one alternative is preferred over all others based on importance of attributes, that alternative is chosen.

To determine the relationship of student characteristics, college information sources, and financial aid packaging on students' decision-making strategies, variables included that have a positive correlation with college selection or have been theorized as a correlate of college choice (Hossler, Braxton, and Coopersmith 1989; Hossler and Gallagher 1987; Paulsen 1990) were used. These variables were: (a) race/ethnicity, (b) gender, (c) academic achievement, (d) family income, (e) type of high school, (f) college information sources, and (g) financial aid packaging (see Appendix A on page 29 for coding of variables).

Data and Methods

DATA SOURCE AND PARTICIPANTS

Data for this study were taken directly from a file containing coded Admitted Student Questionnaire™ (ASQ Plus™) survey responses delivered from the database maintained by the College Board's enrollment management solutions department. Participating colleges perform initial data-gathering efforts and forward results to the College Board for processing and reporting. Participating colleges were classified into categories based on *The Carnegie Classification of Institutions of Higher Education* (The Carnegie Foundation for the Advancement of Teaching 2001). Therefore partici-

Table 1: Student Demographic Information (Adjusted N = 20,722)

Demographic	Number	% of Total Respondents
Race/Ethnicity		
African American	787	3.8
White	16,370	79.0
Other ¹	3,565	17.2
Gender		
Female	12,803	61.8
Male	7,919	38.2

¹ Other category includes Hispanic (students who reported their ethnicity as Mexican American or Chicano, Puerto Rican, or Latin American, South American, Central American, or other Hispanic); Asian/Pacific Island; and American Indian/Alaskan Native.

Table 2: Academic Achievement Information (Adjusted N = 20,722)

Demographic	SAT Combined Score			ACT Combined Score		
	N	Mean	SD	N	Mean	SD
Race/Ethnicity						
African American	700	1203.3	149.6	87	23.6	3.7
White	14,375	1307.7	146.9	1,995	26.5	3.9
Other ¹	3,320	1319.2	158.7	245	25.4	4.1
Gender						
Female	11,270	1296.2	148.7	1,533	26.4	3.9
Male	7,126	1320.9	153.2	793	26.1	3.9

¹ Other category includes Hispanic (students who reported their ethnicity as Mexican American or Chicano, Puerto Rican, or Latin American, South American, Central American, or other Hispanic); Asian/Pacific Island; and American Indian/Alaskan Native.

Table 3: Family Annual Income Information (Adjusted N = 20,722)

Demographic	Low (less than \$39,999)		Middle (\$40,000–99,999)		High (at least \$100,000)	
	N	%	N	%	N	%
Race/Ethnicity						
African American	277	35.2	353	44.9	157	19.9
White	1,320	8.1	7,751	47.3	7,299	44.6
Other ¹	876	24.5	1,496	42.0	1,193	33.5
Gender						
Female	1,665	13.0	6,059	47.3	5,079	39.7
Male	808	10.2	3,541	44.7	3,570	45.1

¹ Other category includes Hispanic (students who reported their ethnicity as Mexican American or Chicano, Puerto Rican, or Latin American, South American, Central American, or other Hispanic); Asian/Pacific Island; and American Indian/Alaskan Native.

Table 4: Type of High School Attended (Adjusted N = 20,722)

Demographic	Public		Private	
	N	%	N	%
Race/Ethnicity				
African American	452	57.4	335	42.6
White	11,342	69.3	5,028	30.7
Other ¹	2,292	64.3	1,273	35.7
Gender				
Female	9,012	70.4	3,791	29.6
Male	5,074	64.1	2,845	35.9

¹ Other category includes Hispanic (students who reported their ethnicity as Mexican American or Chicano, Puerto Rican, or Latin American, South American, Central American, or other Hispanic); Asian/Pacific Island; and American Indian/Alaskan Native.

Table 5: Financial Aid Information (Adjusted N = 20,722)

Demographic	% Received Only Grants	% Received Only Loans	% Received Only Workstudy	% Received at least Two Forms of Aid	% Received No Aid
Race/Ethnicity					
African American	15.0	3.7	0.4	67.2	13.7
White	18.2	4.8	0.4	45.9	30.7
Other ¹	13.2	3.9	0.5	54.3	28.1
Gender					
Female	17.0	4.5	0.4	49.8	28.3
Male	17.6	4.8	0.3	45.4	31.9

¹ Other category includes Hispanic (students who reported their ethnicity as Mexican American or Chicano, Puerto Rican, or Latin American, South American, Central American, or other Hispanic); Asian/Pacific Island; and American Indian/Alaskan Native.

Table 6: Summary of Decision-Making Strategies Listed in Descending Order of Complexity, in terms of Bounded Rationality, by Student Characteristics (Adjusted N=20,722)

Demographics	Weighted adding		Equal weight		Satisficing		Lexicographic	
	N	%	N	%	N	%	N	%
Race/Ethnicity								
African American (3.8%)	194	24.7	32	4.1	554	70.4	7	0.8
White (79.0%)	3,247	19.8	792	4.8	12,192	74.5	139	0.9
Other ¹ (17.2%)	716	20.1	166	4.7	2,652	74.4	31	0.8
Gender								
Female (61.8%)	2,570	20.1	623	4.9	9,504	74.2	106	0.8
Male (38.2%)	1,587	20.0	367	4.6	5,894	74.4	71	0.9
Academic Achievement								
High (74.5%)	3,085	20.0	740	4.8	11,474	74.4	131	0.8
Med (25.4%)	1,065	20.2	248	4.7	3,905	74.2	46	0.9
Low (0.1%)	7	25.0	2	7.1	19	67.9	0	0.0
Family Income								
High (41.7%)	1,640	19.0	386	4.5	6,541	75.6	82	0.9
Med (46.4%)	1,979	20.6	482	5.0	7,062	73.6	77	0.8
Low (11.9%)	538	21.8	122	4.9	1,795	72.6	18	0.7
Type of High School Attended								
Public (68.0%)	2,880	20.4	660	4.7	10,434	74.1	112	0.8
Private (32.0%)	1,277	19.2	330	5.0	4,964	74.8	65	1.0
Overall Decision-making Total	4,157	20.1	990	4.8	15,398	74.3	177	0.8

¹ Other category includes Hispanic (students who reported their ethnicity as Mexican American or Chicano, Puerto Rican, or Latin American, South American, Central American, or other Hispanic); Asian/Pacific Island; and American Indian/Alaskan Native. There were no entries for the elimination by aspects (EBA) decision-making strategy.

pants' survey responses are coded and grouped by institution and institution type.

The participants of this study included 30,969 possible responses from admitted prospective freshmen to 47 baccalaureate liberal arts colleges that administered the College Board's ASQ Plus™ survey during the 2003-2004 academic year. Of the 30,969 possible responses, only 20,722 responses (67 percent response rate) were analyzed due to missing data. Even after accounting for missing data, a population of this size makes statistical power issues less significant when tests on the null hypotheses are made. Survey responses are summarized by demographic, academic achievement, family income, type of high school attended, and financial aid in Tables 1-5.

METHOD OF ANALYSIS

This study used descriptive statistics to determine students' decision-making strategies, in terms of bounded rationality, used to select colleges. In addition, relationships between students' decision-making strategies and student characteristics, ratings of college information sources, and financial aid packaging received were examined using a multivariate technique known as multinomial logistic regression.

To determine what type of decision-making strategies were used by students to select colleges, descriptive statistics were applied. Categorical scores for levels of bounded rationality were obtained by applying decision models to rated college characteristics to predict final college choice selections. Specifically, optimum scores were calculated for each college alternative in students' consideration sets identified in survey

responses. The score for each college alternative in the consideration set was calculated by applying each decision models' rule set to each college alternative. These scores were ranked to determine which decision-making strategy for a specific college alternative produced the highest score and final choice from the consideration set.

Multinomial logistic regression was used to answer whether a relationship existed between the derived decision-making strategies and student characteristics, ratings of college information sources, and financial aid packaging received. This technique was suitable for this study because of the categorical outcome.

LIMITATIONS

This study utilized a combination of linear models and heuristics to derive an expected value for college options. The expected value measures the overall weight a given college ought to have (Galotti 1995), given a particular way of combining college ratings on various characteristics given. However, other different decision strategies can be used providing they demonstrate primary aspects that characterize choice strategies: (a) the total amount of information processed, (b) the selectivity in information processing, (c) the pattern of processing (whether by alternative or attribute), and (d) whether the strategy is compensatory or noncompensatory (Bettman, Luce and Payne 1998). In addition, students who have selected a particular college tend to view that college through "rose-colored glasses" (Erickson 1982). Marshall and Delman (1984) showed that enrolling students reduce "dissonance" by considering the college they have selected as their best possible choice. Thus, ratings of enrolled students could be artificially inflated or lack quality and usefulness in determining college choice behavior.

Despite these limitations, this study provides value to educational research in the area of college choice. Very few, if any, studies have provided enough information on students' decision-making strategies used to select colleges. Statistical evidence has indicated that students make their college choices and build decision-making strategies from a set of institutions they compare, not just by examining an individual institution or institutions in isolation (Litten 1991, p.25).

Results

DECISION-MAKING STRATEGIES USED TO SELECT COLLEGES

Overall, the results demonstrated that students' level of bounded rationality overwhelmingly centered on a satisficing decision-making strategy (74.3 percent). Percentages of other decision-making strategies used were weighted-adding (20.1 percent), equal weighting (4.8 percent), and lexicographic (0.9 percent). No elimination by aspects strategy was chosen (see Table 6 on the previous page).

The findings from descriptive statistics lent support to the hypothesis that students choose less complex decision-making

strategies to select colleges. The satisficing strategy has been classified as a heuristic decision-making strategy in previous research that used the decision model (Bettman, Luce, and Payne 1998). Simon (1990) tied heuristic decision-making strategies as a frequent choice for individuals because of their limited information and processing capacities. However, if this study was further characterized by the amount of information students processed, the potential for other decision-making strategies being used to select colleges could be revealed.

FACTORS SUPPORTING COLLEGE DECISION-MAKING STRATEGIES

After controlling for race/ethnicity, gender, family income, and type of high school attended, students with high academic achievement are more likely to use more complex decision-making strategies associated with low levels of bounded rationality relative to students with low academic achievement. The result of the Wald test for the logistic regression coefficient associated with dummy variable representing membership in high academic achievement group (Academic Achievement 1) was statistically significant at the 0.10 level for more complex decision-making strategies tested: weighted-adding, $W(1)=369.548$ at $p=0.000$; and equal-weight, $W(1)=149.810$ at $p=0.000$. Additionally, the sign of the logistic regression coefficient was positive for relevant decision-making strategies (weighted-adding: $B=9.154$, equal-weight: $B=9.362$), signifying high-ability students were more likely to use more complex decision-making strategies associated with low levels of bounded rationality relative to low-ability students. (See Table 7.)

Students who rated college financial aid information as very good or excellent are more likely to use more complex decision-making strategies associated with low levels of bounded rationality relative to students who did not rate any college sources of information as very good or excellent. Although results of the Wald test for the logistic regression coefficient associated with dummy variable representing membership in college financial aid information (CIS3) rated by students as very good or excellent was statistically significant for more complex decision-making strategies tested (weighted-adding: $W(1)=906.573$ at $p=0.000$; equal-weight: $W(1)=446.776$ at $p=0.000$), the sign of the relevant logistic regression coefficient was negative for both decision-making strategies (weighted-adding: $B=-9.545$; equal-weight: $B=-10.012$). Therefore, students who rated financial aid information very good or excellent were less likely to use more complex decision-making strategies associated with low levels of bounded rationality relative to students who did not rate any college information sources as very good or excellent. (See Table 8b on page 26.)

Students who rated college visits and meetings as very good or excellent are more likely to use more complex decision-making strategies associated with low levels of bounded rationality relative to students who did not rate any college sources of information as very good or excellent. The result of

the Wald test for the logistic regression coefficient associated with dummy variable representing membership in college visits and meetings (CIS4) rated by students as very good or excellent was statistically significant at the 0.10 level for more complex decision-making strategies tested (weighted-add-

ing: $W(1)=12.224$ at $p=0.000$; equal-weight: $W(1)=2.880$ at $p=0.090$) relative to students who did not rate any college information sources as very good or excellent. Additionally, the sign of the logistic regression coefficient was positive for relevant decision-making strategies (weighted-adding:

$B=2.488$, equal-weight: $B=1.248$), signifying students who rated college visits and meetings very good or excellent were more likely to use more complex decision-making strategies associated with low levels of bounded rationality relative to students who did not rate college visits and meetings very good or excellent. (See Table 8b on the next page.)

Students who received grants are more likely to use less complex decision-making strategies associated with high levels of bounded rationality relative to students who received no financial aid. Even though results of the Wald test for the logistic regression coefficient associated with dummy variable representing membership in financial aid grants (FAP1) received by students was statistically significant at the 0.10 level ($W(1)=3.271$ at $p=0.071$), the result was associated with a more complex decision-making strategy—equal-weight—thus signifying that students who received grants were less likely to use less complex decision-making strategies associated with high levels of bounded rationality relative to students who did not receive grants (See Table 9b on page 27.)

In examination of descriptive and correlational statistics, data supporting hypotheses were tested. Taken as a whole, the study confirmed that students do use some form of decision-making strategy to select colleges. However, the findings from this study illustrated that the complexity of decision-making strategies used by students to select colleges are dependent on the amount of information processed and the cognitive ability of the students to process information.

Discussion

CONSTRUCTING PREFERENCES

The results lent support that students within this study primarily use less complex decision-making strategies to select colleges. Less complex strategies, such as satisficing, are less extensive in information processing, selective, and noncompensatory

Table 7: Analysis of Maximum Likelihood Estimates for Student Characteristics by Levels of Bounded Rationality (Adjusted N=20,722)

Levels of Bounded Rationality ¹	B	SE	Wald	Df	P
Weighted Adding (WAD)					
Intercept	-6.249	0.744	70.462	1	0.000
Race/Ethnicity					
RACE1 (Aframer)	-0.113	0.402	0.078	1	0.779
RACE2 (other)	0.055	0.207	0.071	1	0.790
Gender					
GENDER1 (male)	0.051	0.157	0.106	1	0.744
Academic Achievement					
ACADEMIC ACHIEVEMENT1 (high)	9.154	0.476	369.548	1	0.000
ACADEMIC ACHIEVEMENT2 (mid)	9.229	0.444	431.931	1	0.000
Family Income					
FAMILY INCOME1 (high)	0.393	0.275	2.046	1	0.153
FAMILY INCOME2 (mid)	0.157	0.272	0.332	1	0.564
Type of High School					
HIGH SCHOOL1 (public)	-0.251	0.161	2.433	1	0.119
Equal Weight (EQW)					
Intercept	-8.423	0.984	73.268	1	0.000
Race/Ethnicity					
RACE1 (Aframer)	0.299	0.436	0.471	1	0.493
RACE2 (other)	0.116	0.221	0.279	1	0.598
Gender					
GENDER1 (male)	0.110	0.168	0.429	1	0.512
Academic Achievement					
ACADEMIC ACHIEVEMENT1 (high)	9.362	0.765	149.810	1	0.000
ACADEMIC ACHIEVEMENT2 (mid)	9.450	0.747	160.177	1	0.000
Family Income					
FAMILY INCOME1 (high)	0.411	0.290	2.008	1	0.156
FAMILY INCOME2 (mid)	0.125	0.287	0.190	1	0.663
Type of High School					
HIGH SCHOOL1 (public)	-0.114	0.171	0.443	1	0.506
Satisficing (SAT)					
Intercept	-4.795	0.590	66.134	1	0.000
Race/Ethnicity					
RACE1 (Aframer)	0.134	0.398	0.113	1	0.736
RACE2 (other)	0.052	0.204	0.065	1	0.799
Gender					
GENDER1 (male)	0.059	0.155	0.147	1	0.702
Academic Achievement					
ACADEMIC ACHIEVEMENT1 (high)	8.879	0.175	2588.140	1	0.000
ACADEMIC ACHIEVEMENT2 (mid)	8.938	0.000	0.000	1	0.000
Family Income					
FAMILY INCOME1 (high)	0.239	0.271	0.779	1	0.377
FAMILY INCOME2 (mid)	0.107	0.269	0.158	1	0.691
Type of High School					
HIGH SCHOOL1 (public)	-0.182	0.158	1.328	1	0.249

¹ The reference category is Lexicographic (LEX).
p < 0.10

models. This evidence implies that students use less complex decision-making strategies to select colleges, not because it is better to do so but because it may be simpler and more comfortable to do so. Beach and Mitchell (1978) contend that simple rules do serve as decision strategies, especially when they apply to specific tasks; rules are acquired to deal with specific tasks through experiences. Students that used the satisficing decision-making strategy may have used a set of rules or conditions to make decisions that were predetermined when students went through the college choice process. Students who may not have used a more rigorous college decision-making strategy may not have had all the information available to make the most optimal decisions. Thus, students' decisions were not the basis of a complete comparison of all the options available. Bettman, Luce, and Payne (1998) described such action as constructing preferences. Students construct preferences for two reasons: (a) lack of cognitive resources required to generate well-defined decisions and (b) individuals often having multiple goals for a given situation.

INFORMATION DIFFERENTIATION AND INTEGRATION

Another contribution of this study to the body of literature on college choice behavior from an information-processing paradigm is the finding that students with different decision-making strategies for selecting colleges apply sources of information differently. Higher education institutions, in their competitive haste to grab the best students, or in some cases the most students, deliver sources of information that may apply to one group and not to another (Ray 1992). In addition, Galotti and Kozberg (1996) concluded that students need help in sorting through the volume of available information. In Hamrick and Hossler's (1996) study on the techniques used by high school seniors and parents for gathering information about colleges, they discovered that students act as either "highly or less diversified searchers" (p.190). Highly diversified searchers used four to five different information-gathering methods, whereas less diversified searchers used one to three information-gathering methods. High diversification was positively

Table 8a: Summary of Decision-Making Strategies Listed in Descending Order of Complexity, in terms of Bounded Rationality, by Sources of Information

Sources of Information Rated Very Good or Excellent	Weighted Adding		Equal Weight		Satisficing		Lexicographic	
	N	%	N	%	N	%	N	%
College materials only (n=387)	92	23.8	9	2.3	285	73.6	1	0.3
Communication with college only (n=40)	7	17.5	3	7.5	29	72.5	1	2.5
Communication on financial aid only (n=61)	13	21.3	5	8.2	43	70.5	0	0.0
College visit/meeting only (n=57)	6	10.5	5	8.8	43	75.4	3	5.3
On-campus visit/admissions interview only (n=244)	47	19.3	7	2.9	187	76.6	3	1.2
Contact with college personnel only (n=245)	45	18.4	9	3.7	187	76.3	4	1.6
All sources only (n=86)	23	26.7	6	7.0	55	64.0	2	2.3
No sources only (n=816)	161	19.7	33	4.0	611	74.9	11	1.4

Table 8b: Analysis of Maximum Likelihood Estimates for Sources of Information by Levels of Bounded Rationality (Adjusted N=1,936)

Levels of Bounded Rationality ¹	B	SE	Wald	Df	P
Weighted Adding (WAD)					
Intercept	8.415	2.022	17.326	1	0.000
College Information Sources					
CIS1 (COLMAT)	-1.341	1.009	1.767	1	0.184
CIS2 (COMMCOL)	1.235	1.072	1.328	1	0.249
CIS3 (COMMFINAID)	-9.545	0.317	906.573	1	0.000
CIS4 (COLVISTMTG)	2.488	0.712	12.224	1	0.000
CIS5 (ONCAMP SRC)	0.430	0.601	0.511	1	0.475
CIS6 (CONTWP ER)	0.761	0.528	2.077	1	0.150
CIS7 (COMMALL)	0.739	0.742	0.993	1	2.093
Equal Weight (EQW)					
Intercept	7.783	2.213	12.373	1	0.000
College Information Sources					
CIS1 (COLMAT)	-0.439	1.057	0.172	1	0.678
CIS2 (COMMCOL)	0.660	1.158	0.325	1	0.569
CIS3 (COMMFINAID)	-10.012	0.474	446.776	1	0.000
CIS4 (COLVISTMTG)	1.248	0.735	2.880	1	0.090
CIS5 (ONCAMP SRC)	0.911	0.695	1.718	1	0.190
CIS6 (CONTWP ER)	0.948	0.607	2.438	1	0.118
CIS7 (COMMALL)	0.660	0.821	0.646	1	0.421
Satisficing (SAT)					
Intercept	9.939	1.914	26.977	1	0.000
College Information Sources					
CIS1 (COLMAT)	-1.160	1.005	1.332	1	0.249
CIS2 (COMMCOL)	1.126	1.020	1.217	1	0.270
CIS3 (COMMFINAID)	-9.430	0.000	0.000	1	0.000
CIS4 (COLVISTMTG)	1.830	0.602	9.234	1	0.002
CIS5 (ONCAMP SRC)	0.360	0.587	0.377	1	0.539
CIS6 (CONTWP ER)	0.648	0.511	1.606	1	0.205
CIS7 (COMMALL)	1.179	0.724	2.650	1	0.104

¹ The reference category is Lexicographic (LEX).
p < 0.10

Table 9a: Summary of Decision-Making Strategies Listed in Descending Order of Complexity, in terms of Bounded Rationality, by Financial Aid Packaging

Financial Aid Packaging	Weighted Adding		Equal Weight		Satisficing		Lexicographic	
	N	%	N	%	N	%	N	%
Grants only (n=3,270)	630	19.3	134	4.1	2,471	75.6	35	1.1
Loans only (n=1,070)	200	18.7	51	4.8	807	75.4	12	1.1
Workstudy only (n=88)	18	20.5	5	5.7	64	72.7	1	1.1
All sources of aid only (n=7,249)	1,537	21.2	356	4.9	5,304	73.2	52	0.7
No sources of aid only (n=9,045)	1,772	19.6	444	4.9	6,752	74.6	77	0.9

Table 9b: Analysis of Maximum Likelihood Estimates for Financial Aid Packaging by Levels of Bounded Rationality (Adjusted N=20,722)

Levels of Bounded Rationality ¹	B	SE	Wald	Df	P
Weighted Adding (WAD)					
Intercept	2.572	1.147	5.028	1	0.025
Financial Aid Packaging					
FAP 1 (FINGRANT)	0.246	0.209	1.381	1	0.240
FAP 2 (FINLOAN)	0.323	0.319	1.022	1	0.312
FAP 3 (FINWORK)	0.246	1.034	0.056	1	0.812
FAP 4 (FINALL)	-0.250	0.183	1.874	1	0.171
Equal Weight (EQW)					
Intercept	1.066	1.224	0.759	1	0.384
Financial Aid Packaging					
FAP 1 (FINGRANT)	0.410	0.226	3.271	1	0.071
FAP 2 (FINLOAN)	0.305	0.344	0.788	1	0.375
FAP 3 (FINWORK)	0.143	1.102	0.017	1	0.897
FAP 4 (FINALL)	-0.172	0.193	0.791	1	0.374
Satisficing (SAT)					
Intercept	3.828	1.126	11.567	1	0.001
Financial Aid Packaging					
FAP 1 (FINGRANT)	0.217	0.205	1.116	1	0.291
FAP 2 (FINLOAN)	0.265	0.313	0.721	1	0.396
FAP 3 (FINWORK)	0.315	1.014	0.096	1	0.756
FAP 4 (FINALL)	-0.151	0.180	0.702	1	0.402

¹ The reference category is Lexicographic (LEX).
p < 0.10

related to a student's perception of having adequate information with which to choose colleges and certainty of identifying a pool of colleges for application. Hamrick and Hossler's research suggests that information and information-gathering activities can lead to desirable outcomes, such as certainty that the student chose the "right" college.

Borrowing Neimeyer, Nevill, Probert, and Fukuyama's (1985) proposal on how differentiation (different dimensions of judgment) and integration (level of interrelationships among dimensions) could be used to explain the effect of students' vocational schemas on their information-processing abilities, the same concepts could be used to show the effect of different sources of information on college selection. This study provided evidence that students use different decision-

making strategies to select colleges. However, different strategies cater to different levels of complexity that students can handle in information and calculation on options to choose. Hence, some students who use more heuristic decision-making strategies, as this study discovered, may be low diversified searchers. Using the framework posed by Neimeyer *et al.*, these students would have cognitive structures consisting of low differentiation and low integration capabilities.

Summary

Further research in this area is needed to address students' decision-making strategies to select colleges. This review supports the notion that a bounded rationality information-processing paradigm can be used to examine college choice behavior. By using an information-processing model for college decision making, students are seen as information-processing agents. As information-processors, students' task to choose colleges is impacted by the environment in which they choose. To understand that environment, students construct a representation that helps them build a decision-making strategy to select colleges.

To minimize the complexity in constructing a college decision-making strategy and help build students who are highly differentiated, integrated decision-makers, an information-processing survey could be administered. The survey would collect data necessary for the researcher to develop a "college differentiation grid." The grid could be used to test students' knowledge of colleges and their attributes based on the amount of information they already have or are provided. Additionally, the grid could be used to build a schematic of the type of decision-making strategies recommended to the students for use in selecting colleges based on survey responses. College officials could administer the survey to high schools as part of their recruitment program.

Once the results of the college information grid are obtained, higher education institutions can use the data to find the right fit between students and colleges, by developing comprehensive plans that integrate and transition high school students into college students. The plan would initiate at high school levels through the counselors and last at least a year. The plan would be instituted in high schools through a college prep program that would meet periodically every semester. As students constructed preferences, their goals

would be channeled through the plan. The plan would include (a) visits to campuses to learn about colleges; (b) interaction time between counselors, students, and parents; and (c) exercises that cultivate the students' ability to evaluate colleges based on a collection of different sources of information. By implementing the college information grid and then using the data to develop comprehensive plans to integrate high school students into college, high school seniors have a better chance to find the right colleges that meet their educational needs at the right costs.

References

- Advisory Committee on Student Financial Assistance. 2001. *Access Denied: Restoring the Nation's Commitment to Equal Educational Opportunity*. Washington, D.C.: Advisory Committee on Student Financial Assistance.
- Alexander, K.L., A.M. Pallas, and S. Holupka. 1987. Consistency and change in educational stratification: recent trends regarding social background and college access. *Research in Social Stratification and Mobility*. 6: 161-85.
- Astin, A.W., S.A. Parrot, W.S. Korn, and L.J. Sax. 1997. *The American Freshman: Thirty Year Trends 1966-1996*. Los Angeles, CA: University of California, Higher Educational Research Institute.
- Beach, L.E., and T.R. Mitchell. 1978. A contingency model for the selection of decision strategies. *The Academy of Management Review*. 3(3): 439-49.
- Berl, J., G. Lewis, and R. Morrison. 1976. Applying models of choice to the problem of college selection. In *Cognition and Social Behavior*, edited by J.S. Carroll and J.W. Payne. pp. 203-86. Hillsdale, NJ: Lawrence Erlbaum.
- Bettman, J.R. 1979. *An Information Processing Theory of Consumer Choice*. Reading, MA: Addison-Wesley.
- Bettman, J.R., M.F. Luce, and J.W. Payne. 1998. Constructive consumer choice processes. *Journal of Consumer Research*. 25: 187-217.
- Boatwright, M.A., J.A. Ouimet, and T. Middleton. 1999. Can high-choice college set be linked to college of enrollment? *College and University*. 75(1): 23-29.
- The Carnegie Foundation for the Advancement of Teaching (Ed.). 2001. *The Carnegie Classification of Institutions of Higher Education*, 2000 Edition. Menlo Park, CA: The Carnegie Foundation for the Advancement of Teaching.
- Choy, S.P., and C. Ottinger. 1998. *Choosing a Postsecondary Institution*. Washington, D.C.: National Center for Educational Statistics (Report No. 98-080).
- Clark, R., H.B. Gelatt, and L. Levine. 1965. A decision making paradigm for local guidance research. *Personnel and Guidance Journal*. 44: 40-51.
- Dawes, R.M., and B. Corrigan. 1974. Linear models in decision making. *Psychological Bulletin*. 81: 95-106.
- Erickson, D.A. 1982. Disturbing evidence about one best system. In *The Public School Monopoly*, edited by R.B. Everhart. pp. 393-422. Cambridge, MA: Ballinger.
- Galotti, K.M. 1995. A longitudinal study of real-life decision-making: Choosing a college. *Applied Cognitive Psychology*. 9: 459-84.
- Galotti, K.M., and S.F. Kozberg. 1996. Adolescents' experience of a life-framing decision. *Journal of Youth and Adolescence*. 25(1): 3-16.
- Gelatt, H.B. 1962. Decision-making: A conceptual frame of reference for counseling. *Journal of Counseling Psychology*. 9(3): 240-45.
- Gladieux, L.E. 2002. *Low-Income Students and the Affordability of Higher Education*. Potomac Falls, VA: Century Foundation.
- Hamrick, F.A., and D. Hossler. 1996. Diverse information-gathering methods in the postsecondary decision-making process. *The Review of Higher Education*. 19(2): 179-98.
- Hearn, J.C. 1984. The relative roles of academic, ascribed, and socioeconomic characteristics in college destinations. *Sociology of Education*. 57(1): 22-30.
- . 1991. Academic and nonacademic influences on the college destinations of 1980 high school graduates. *Sociology of Education*. 64(3): 158-71.
- Hills, J.R. 1964. Decision theory and college choice. *Personnel and Guidance Journal*. 43(1): 17-22.
- Hogarth, R.M., (Ed.). 1987. *Judgment and Choice*. 2nd ed. New York, NY: John Wiley.
- Hossler, D., and K.S. Gallagher. 1987. Studying student college choice: A three-phase model and the implications for policymakers. *College and University*. 62(3): 207-21.
- Hossler, D., J. Braxton, and G. Coopersmith. 1989. Understanding student college choice. In *Higher Education: Handbook of Theory and Research*, edited by J.C. Smart, pp. 231-88. New York, NY: Agatha Press.
- The Institute for Higher Education Policy. 2002. *The Policy of Choice: Expanding Student Options in Higher Education*. Washington, D.C.: The Institute for Higher Education Policy.
- Jorgensen, D. 1994. Colleges overwhelm most students with massive recruiting efforts. *The Chronicle of Higher Education*. March 2.
- Litten, L.H. 1991. *Ivy Bound: High Ability Students and College Choice*. New York: The College Board.
- Marshall, J.F., and J.M. Delman. 1984. Researching institutional image: The development of a market research plan for educational institutions. *College and University*. 50(4): 316-33.
- McDonough, P.M. 1997. *Choosing Colleges: How Social Class and Schools Structure Opportunity*. Albany, NY: State University of New York Press.
- Neimeyer, G.J., D.D. Nevill, B. Probert, and M. Fukuyama. 1985. Cognitive structures in vocational development. *Journal of Vocational Behavior*. 27: 191-201.
- Newell, A., and H. Simon. 1972. *Human Problem Solving*. Englewood Cliffs, NJ: Prentice-Hall.
- Paulsen, M.B. 1990. *College Choice: Understanding Student Enrollment Behavior* (ASHE-ERIC Higher Education Report No. 6). Washington, D.C.: The George Washington University.
- Payne, J.W. 1982. Contingent decision behavior. *Psychological Bulletin*. 92: 382-401.
- Payne, J.W., J.R. Bettman, and E.J. Johnson. 1988. Adaptive strategy selection in decision-making. *Journal of Experimental Psychological: Learning, Memory, and Cognition*. 14: 534-52.
- Perna, L.W. 2000. Racial and ethnic group differences in college enrollment decisions. *New Directions for Institutional Research*. 107 Fall: 65-83.
- Ray, M.S. 1992. *The College-Choice Process for High School Students: An Evaluation of High School Counselor Intervention and Strategies*. (ED350541).
- Simon, H.A. A behavioral model of rational choice. 1955. *The Quarterly Journal of Economics*. 69(1): 99-118.
- . 1956. Rational choice and the structure of the environment. *Psychological Review*. 63: 129-38.
- . 1957. *Models of Man: Social and Rational*. New York, NY: Wiley.
- . 1959. Theories of decision making in economics and behavioral science. *American Economic Review*. 49: 253-83.
- . 1990. Invariants of human behavior. *Annual Review of Psychology*. 41: 1-19.
- Slovic, P., S. Lichtenstein, and B. Fischhoff. 1988. Decision making. In *Stevens' Handbook of Experimental Psychology. Vol. 2, Learning and Cognition*, edited by R. J. Herrnstein, R. C. Atkinson, G. Lindzey, and R. D. Luce. pp 673-738. New York, NY: John Wiley & Sons.

ABOUT THE AUTHORS

George V. Govan, Ed.D., is Commander, 52nd Comptroller Squadron at Spangdahlem Air Base, Germany.

Sondra K. Patrick, Ph.D., is Director of Operations (Loudoun Campus) at George Mason University.

Cherng-jyn Yen, Ph.D., is Assistant Professor of Research, Department of Educational Leadership, at The George Washington University.

Appendix A: List of Variables

Variable	Description
Dependent Variable	
Levels of bounded rationality (LBR)	A category of decision-making strategies: 1=Weighted adding (WAD); 2=Equal weight (EQW); 3=Satisficing (SAT); 4=Elimination by aspects (EBA); 5=Lexicographic (LEX)
Independent Variables	
Student Characteristics	
<i>Race/Ethnicity</i>	
RACE1 (Aframer)	A dummy variable equal to one if student is African American.
RACE2 (other)	A dummy variable equal to one if student is other than African American or White.
<i>Gender</i>	
GENDER1 (male)	A dummy variable equal to one if student gender is male.
<i>Academic Achievement</i>	
ACADEMIC ACHIEVEMENT 1 (high)	A dummy variable equal to one if student academic achievement is high.
ACADEMIC ACHIEVEMENT 2 (mid)	A dummy variable equal to one if student academic achievement is mid-level.
<i>Family Income</i>	
FAMILY INCOME1 (high)	A dummy variable equal to one if student's family income is high.
FAMILY INCOME2 (mid)	A dummy variable equal to one if student's family income is mid-level.
<i>Type of High School Attended</i>	
HIGH SCHOOL1 (public)	A dummy variable equal to one if student went to a public high school.
College Information Sources	
CIS1 (COLMAT)	A dummy variable equal to one if student rated media and printed materials (college website, publications, videos, and CD-ROMs) very good or excellent.
CIS2 (COMMCOL)	A dummy variable equal to one if student rated communication with college very good or excellent.
CIS3 (COMMFINAID)	A dummy variable equal to one if student rated communication on financial aid very good or excellent.
CIS4 (COLVISTMTG)	A dummy variable equal to one if student rated college visit to high school or college sponsored meetings very good or excellent.
CIS5 (ONCAMP SRC)	A dummy variable equal to one if student rated on-campus visit or admission interview very good or excellent.
CIS6 (CONTWPER)	A dummy variable equal to one if student rated contact with college after admissions, or contact with faculty, coaches, graduates, and students very good or excellent.
CIS7 (COMMALL)	A dummy variable equal to one if student rated all college sources of information very good or excellent.
Financial Aid Packaging	
FAP1 (FINGRANT)	A dummy variable equal to one if student received only grants.
FAP2 (FINLOAN)	A dummy variable equal to one if student received only loans.
FAP3 (FINWORK)	A dummy variable equal to one if student received only workstudy aid.
FAP4 (FINALL)	A dummy variable equal to one if student received all forms of aid.

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Using Non-Cognitive Assessment in College Recruiting: Applying Holland's Self-Selection Assumption

This article reviews Holland's theory and describes how it can be used to recruit prospective students. Two fictitious case studies illustrate how postsecondary admissions departments can use this theory to improve their recruitment results. It will also explain how the theory can help admissions counselors sell benefits of the institution; specifically, how the student's interests, skills, and abilities will be matched with the values, roles, and opportunities of the college environment.

by Cam Cruickshank and Perry Haan

Institutions of higher education are looking for new ways to market themselves to prospective students. Marketing techniques such as market segmentation, differentiation, promotion, and positioning are practiced regularly in the recruitment of prospective students (Pate 1993). Many schools, and especially the more prestigious institutions, are using branding strategies to help market themselves (Moore 2004). In addition, more institutions are utilizing enrollment management techniques such as predictive modeling, tuition discounting, and web-based recruitment strategies.

Holland's theory of vocational choice (Holland 1966, 1973, 1985, 1997) is a popular tool used by high school guidance counselors and college career counselors that attempts to match students with careers and/or majors that are a good fit for them. This article applies Holland's theory to a different area: recruiting students to a college or university. The authors make recommendations to admissions representatives and administrators about how to use the theory to better target and recruit students to their college or university, and present limitations of the study and suggestions for future research.

Holland's Theory of Vocational Choice

While serving as a personnel clerk in World War II, John L. Holland discovered that soldiers could be classified into a few types based on their occupational histories, and that similar people tended to be attracted to the same jobs (Weinrach and Srebalus 1990). After the war, Holland began a classification system as a doctoral student at the University of Minnesota and continued to refine his thoughts as a college instructor and vocational counselor at Case Western Reserve University in the 1950s (Savickas and Gottfredson 1999).

Later, while working for the National Merit Scholarship Corporation, Holland (1959) published the first rendition of his theory of vocational choice. During the 1960s, he served as the vice president for research at the American College

Testing (ACT) program (American College Testing 2004; Holland 1999). While at ACT, Holland and his associates refined and developed aspects of his theory, including the Holland hexagon of occupational types and the vocational interest inventories, which were precursors to the interest inventory (UNIACT) being considered in this article.

INDIVIDUALS: THE SIX PERSONALITY TYPES

Holland argued that a person's vocational personality develops through the interaction between biological and environmental factors. Factors such as heredity, activities, interests, competencies, and disposition interact with a person's environment, resulting in the development of his or her vocational personality. Holland's first postulate states that there are six different vocational personality types: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C). A short summary of the types is offered next.

The 'R' type prefers occupations or situations that entail working with his or her hands, tools, machines, and technology. This type of person is averse to intellectual and educational pursuits and has relatively low self-esteem. 'R' types have a narrow range of interests and possess a very closed system of beliefs and values. In problem solving, 'R' types prefer practical and structured solutions.

The 'I' type prefers activities that entail working with ideas, and observing, understanding, and controlling processes. This type of person is averse to persuasive, social, and business activities. 'I' types have a wide range of interests and have liberal goals and values. To solve problems, 'I' types rely on thinking, gathering data, and making careful analyses.

An 'A' type person would rather perform activities that are ambiguous, unsystematic, and creative. 'A' types are averse to systematic, orderly, or monotonous activities. Self-expression and equality are highly valued. Problem solving usually involves creative and artistic competencies.

The 'S' type person prefers manipulating others in an attempt to heal, cure, educate, develop, or train them. This type of person is averse to manual and technical competencies. Values include helpfulness, forgiveness, and equality. Human interaction and social competencies dominate the problem-solving process.

An 'E' type person prefers manipulating others in an attempt to attain organizational goals or economic gain. This type of person is averse to scientific and intellectual tasks. 'E' types value controlling others while being free of control, and have a rather closed belief system. Problems are usually approached from a social influence perspective.

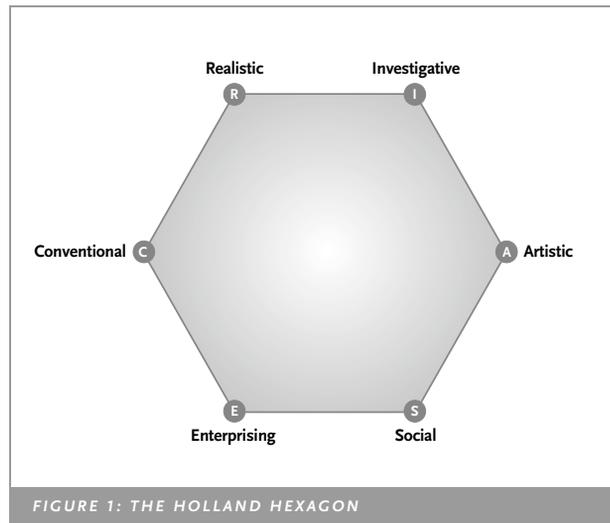
The 'C' type prefers dealing with data, performing systematic activities, and organizing things. Artistic, ambiguous, or exploratory tasks are avoided. A very closed belief system is accompanied by a value for business and economic achievement. To solve problems, 'C' types follow established rules and seek advice or counsel.

Holland's Hexagon (Holland, Whitney, Cole, and Richards 1969) was originally developed in order to visually depict the psychological resemblances and differences of the personality types (see Figure 1). Each corner of the hexagon represents a personality type; the order in which the types appear was important because adjacent types were thought to be most similar and opposite types least similar. For example, the 'S' type was more similar to the 'A' type and had opposite interests to the 'R' type.

Vocational interest inventories can be used to determine an individual's personality pattern. A personality pattern is a profile of a person's resemblances to the six personality types. These patterns may consist of between two and six variables or types. For example, a person's two-type personality pattern could be described as SE, which represents his or her scores on the two highest scales of one of the vocational interest inventories. Meanwhile, that same person's six-type personality pattern could be described as SEAIRC for all six scales on one of the vocational interest inventories. The various personality patterns can be distinguished further with additional constructs that have been formulated by Holland. The three secondary constructs relating to personality patterns will be discussed here.

The vocational personality assessment instrument that is used in this article is the UNIACT. The UNIACT is completed by approximately five million people each year (Prediger 2002) and is a component of the ACT assessment. There are

90 items on the UNIACT, with six scales of fifteen items corresponding to each of the Holland personality types. Students are directed to indicate how much they would like doing activities such as building furniture, writing payroll checks, or teaching people a new hobby. A three-choice response format is used: *like*, *indifferent*, and *dislike* (American College Testing 2003). The UNIACT can provide researchers with a standard score and percentile ranks for each of the Holland types. This allows researchers to determine the one, two, three-letter (most common), or even six-letter Holland type.



ENVIRONMENTS: THE SIX MODEL ENVIRONMENTS

The second postulate in Holland's (1997) theory is that there are six model environments that parallel the six Holland personality types. The 'R' environment is characterized by environmental demands and opportunities to manipulate materials, tools, machines, and animals. People in this environment are encouraged to see the world in simple and traditional terms and to see themselves as having mechanical ability while lacking interpersonal skills.

The 'I' environment possesses environmental demands and opportunities to observe and investigate physical, biological, or cultural phenomena. It encourages people to see the world in complex and abstract ways and to see themselves as possessing quantitative skills and scientific ability while lacking in leadership ability.

The 'A' environment stimulates creative activities and innovative intellectual endeavors. People in this environment are encouraged to have a complex, independent, and unconventional worldview and to see themselves as having aesthetic values and unconventional ideas.

The 'S' environment provides environmental demands and opportunities to manipulate others in a helpful or facilitative manner. People who find themselves in this type of environment are encouraged to see the world in a flexible way and to see themselves as being understanding, cooperative, sociable, and concerned about the welfare of others.

The 'E' environment is characterized by environmental demands and opportunities to manipulate others to attain organizational, personal goals. Individuals in this environment are encouraged to possess a world view in which power, status, and responsibility are viewed in simple, stereotyped terms and to see themselves as having leadership skills and as being aggressive, popular, and self-confident.

The 'C' environment promotes activities with things, numbers, or machines according to a prescribed plan to meet organizational requirements or standards. It encourages people to see the world in a simple, constricted, and dependent manner and to see themselves as being conforming, orderly, and non-artistic.

CONGRUENCE: INTERACTION BETWEEN INDIVIDUALS AND ENVIRONMENTS

The third postulate in Holland's (1997) theory is that persons are most likely to flourish when their personality type and the model environment match. Further, when activities, opportunities, tasks, and roles of a person's environment are congruent with the competencies, interests, and self-perceptions of his or her personality type, then higher levels of stability, satisfaction, and achievement will result.

INTERACTIONS DETERMINE BEHAVIOR

The final key aspect of Holland's (1997) theory is that if a person's personality pattern is known, and the pattern of an environment is known, then it is possible to forecast (or predict) behavior and outcomes resulting from the pairing of personality types and environments. Examples of predictable behavior include choice of vocation, competence, educational behavior, and vocational behavior.

Holland (1997) identifies three specific positive outcomes that result from a successful fit between a person and an environment: stability, achievement, and satisfaction. Many higher education studies have used persistence as a proxy for stability. Others have used grade point average and degree completion as the academic achievement outcome. Of course, student satisfaction has been used as an outcome of congruence as well.

Overall, there are mixed findings with regard to the outcome of stability (persistence or retention). Smart, Feldman, and Ethington (2000) acknowledge that the findings from the research (Bruch and Krieshok 1981; Spokane, Malett, and Vance 1978) show a weak positive relationship between congruence and stability. On the other hand, Spokane Meir, and Catalano (2000) identified two studies (Lent, Brown, and Larkin 1987; Swanson and Hansen 1986) in which congruence was not related to academic stability or persistence. Earlier, Spokane (1985) identified three studies (Bruch and Krieshok 1981; Holland 1963; Southworth and Morningstar 1970) that did report a positive relationship between congruence and persistence.

In this review of the literature, other more recent studies (Feldman, Smart, and Ethington 1999; Leuwerke *et al.* 2004; Schaefer, Epperson, and Nauta 1997) have demonstrated more evidence linking congruence to retention. Further, some older studies (Laing, Swaney, and Prediger 1984; Villwock, Schnitzen, and Carbonari 1976) also found a relationship between congruence and retention.

With respect to the outcome of satisfaction, there have generally been stronger and more positive findings with the

congruence assumption. Smart and his colleagues (2000) pointed to a series of their own studies (Elton and Smart 1988; Smart 1987; Smart, Elton, and McLaughlin 1986) and a series of studies by Walsh and his colleagues (Frantz and Walsh 1972; Walsh and Lewis 1972; Walsh and Russel 1969; Walsh, Spokane, and Mitchell 1976) that illustrate how satisfaction was positively associated with congruence. Smart, Feldman, and Ethington (2000) also point to studies in which the results weren't reported as positive (Assouline and Meir 1987) or the results varied for males and females (Holland 1958; Morrow 1971).

Spokane (1985) and Spokane, Meir, and Catalano (2000) also identified several studies (Holland 1968; Nafziger, Holland, and Gottfredson 1975; Rand 1968; Spokane 1979; Spokane and Derby 1979; Walsh *et al.* 1973; Williams 1972) investigating satisfaction that were not reviewed by Smart, Feldman, and Ethington (2000). Holland (1997) and Walsh and Holland (1992) also assert that there is evidence demonstrating that congruence leads to satisfaction.

Achievement has been the least studied outcome resulting from congruence. In addition, the findings in this area of congruence research are perhaps the weakest (Assouline and Meir 1987; Smart, Feldman, and Ethington 2000; Walsh and Holland 1992).

Student Self-Selection: Applying Holland in the Admissions Office

Self-selection refers to the phenomenon in which students "actively search for and select academic environments that encourage them to develop further their characteristic interests and abilities to enter (and be successful in) their chosen career fields" (Smart, Feldman, and Ethington 2000, p. 52). This self-selection assumption in educational settings comes out of Holland's (1997) assertions that persons prefer environments or situations in which they can engage in the activities, roles, competencies, and interests that parallel their personality types and that people will avoid circumstances that are incongruent with their personality types.

Research has demonstrated how students select academic environments that are congruent with their career goals and aspirations (Huang and Healy 1997) and perceive themselves as having strong abilities and interests associated with their intended major (Smart and Feldman 1998). In addition, results from the Smart, Feldman, and Ethington (2000) study also suggest that students initially select college majors that are assumed to reinforce and reward their stronger self-perceived abilities. More recently, Umbach and Milem (2004) found that students select majors that are congruent with their attitudes and beliefs about diversity.

While the Holland (1997) model has been used to help high school and college students choose careers and majors, it has been underutilized by college and university admissions offices. The information collected about students through the UNIACT can be applied to match students with institutions that meet their interests, needs, and wants, both

in and out of the classroom. It can also help students identify a potential major, as well as match them with extra- and co-curricular activities that will engage them in the campus community.

To show how the Holland model can be used, we present two hypothetical case studies that illustrate how to attract and recruit prospective students by using the UNIACT and the Student Profile Section of the ACT to match students with the appropriate school and/or major at that school. The cases are based on actual ACT assessment data received by a small midwestern university, but the student names are fictitious. In the remainder of this article, the university will be referred to as Small Independent University (SIU).

CASE STUDY 1: ABBY ACCOUNTANT

Abby Accountant grew up in a small rural community in northwest Ohio. She attended a small high school (500 stu-

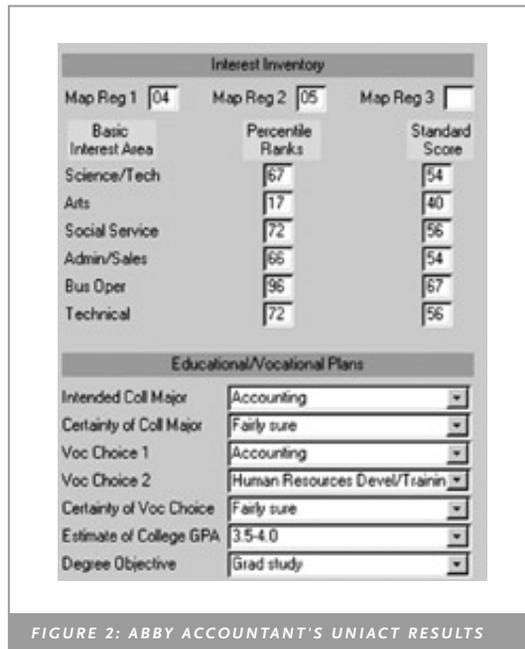


FIGURE 2: ABBY ACCOUNTANT'S UNIACT RESULTS

dents) and participated in varsity basketball, track and field, the drama club, and the choir. She earned a 3.88 GPA in high school and scored a 26 composite on the ACT assessment. Abby enjoys the subjects of math and science and enjoys spending time taking care of the livestock on the family farm.

When Abby completed the UNIACT and the Student Profile Section of the ACT assessment she indicated that she would major in accounting in college and she also identified accounting as her first choice among vocations. She indicated that she was fairly sure of both choices. Abby's UNIACT results (Figure 2) indicate that she has chosen her college major and her occupation well. Abby scored in the 96th percentile for Business Operations

(Conventional), the 72nd percentile for Technical (Realistic), and the 67th percentile for Science/Technology (Investigative). Thus, her Holland type is a CRI. Interestingly, the *Dictionary of Holland Occupational Codes* (DHOC) lists the Holland type for Accountants and Auditors as CEI (Gottfredson and Holland 1996). Therefore, based on a three-letter comparison,

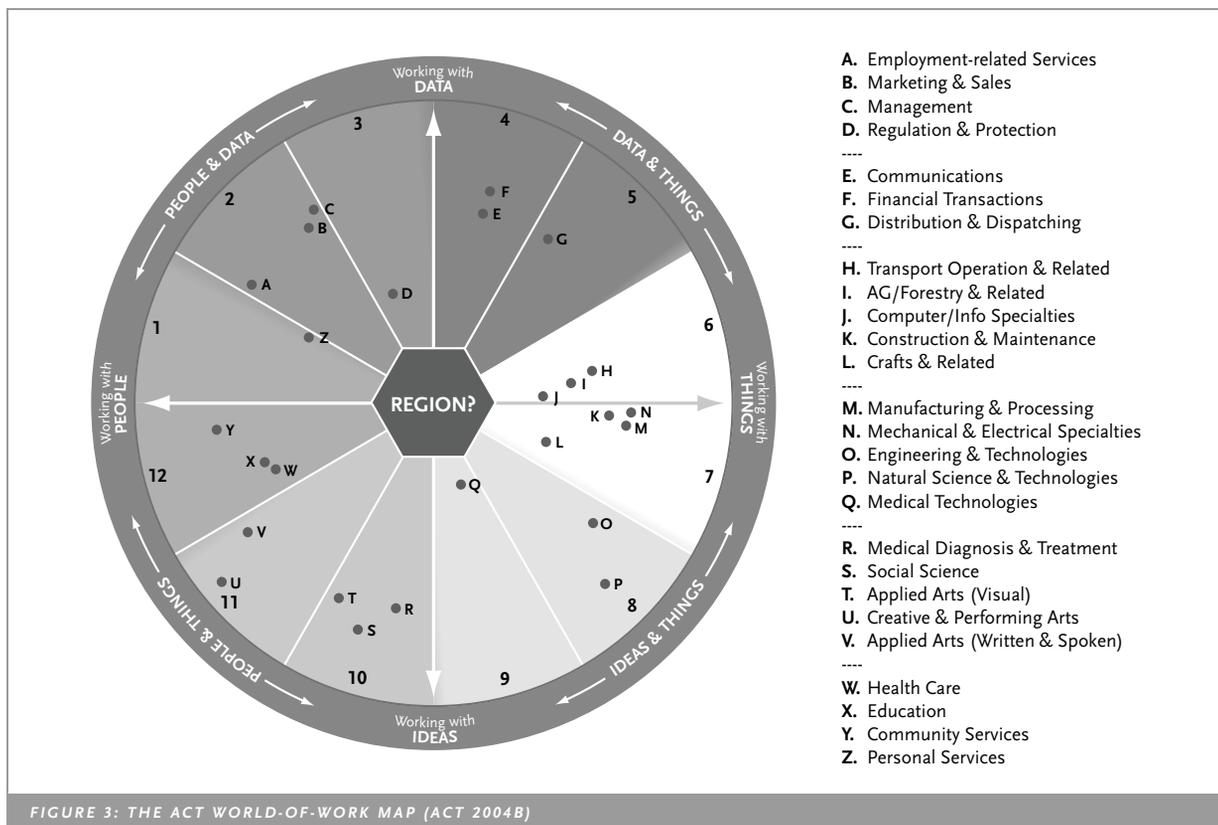


FIGURE 3: THE ACT WORLD-OF-WORK MAP (ACT 2004B)

there is a strong fit between her personality and the required skills and abilities of her occupation of choice.

In addition, the UNIACT indicated that Abby's interests place her in Region 4 of the World-of-Work Map (see Figure 3). One of the career areas in Region 4 is Financial Transactions, which includes occupations such as accountant, bank teller, tax preparer, or ticket agent (American College Testing 2004a). Clearly, Abby's major and career choice are congruent with her vocational personality as measured by the UNIACT. In addition, her academic ability as measured by the ACT assessment and her high school GPA is certainly strong enough for her to perform well in an accounting curriculum.

Since Abby has done well in selecting a college major and a career, an admissions professional should look to the other factors that Abby has identified as important in her choice of a college. Abby indicated that the top five most important factors in her choice of a college were the type of institution (she wants a private, four-year college), the cost, staying in Ohio, field of study, and an "other" factor. In addition, Abby listed Small Independent University (SIU) as her second choice college. (See Figure 4.)

The admissions staff should therefore demonstrate how SIU can meet Abby's needs and match her preferences. They can do this by illustrating how SIU is a small, private, four-year college that is close to her home. They can also discuss the low tuition and merit scholarships, which will make college affordable for Abby and her family. They should also determine the nature of the "other" important factor. Figure 5—Abby's extracurricular interests—hints toward involvement in varsity athletics, student government, and departmental clubs as possible factors in her college decision; these should be investigated further by the admissions staff.

Most importantly, due to the fit between Abby's choice of major and her vocational person-

College Selection	
College Choice	2nd
Distance from Home	25-100 miles
Preferences Rank	
Institution Type	Priv-4yr
Student Body	Coed
1st Pref State	Ohio
2nd Pref State	Indiana
3rd Pref State	Michigan
4th Pref State	
5th Pref State	
Max Tuition	
College Size	1-5,000
Field of Study	Accounting
Other Factor	
	First
	Fourth
	Second
	Sixth
	Fifth
	Third

FIGURE 4: COLLEGE SELECTION FACTORS FOR ABBY ACCOUNTANT

ality as measured by the UNIACT, the admissions staff should focus on the features, benefits, and outcomes of the accounting program at SIU. In addition, in an attempt to develop a heightened level of comfort and familiarity with the institution, the SIU admissions officer should facilitate Abby's introduction to accounting faculty and students who have similar vocational personalities. In doing so, Abby may discover the similarity in interests, skills, and values between her and the accounting community at SIU. Finally, after investigating the "other" important factor, the admissions representative may wish to facilitate a discussion or meeting with the coach or advisor of the extracurricular activity that is of interest to Abby.

CASE STUDY 2: STEVE SCIENCE

Steve Science grew up in suburban Cleveland, Ohio, where he attended a large high school (2,000 students). Steve scored a 24 composite on the ACT assessment and earned a 3.57 GPA in high school. Steve enjoys biology, physics, and math. He also enjoys reading and watching the Discovery Channel. During high school Steve played basketball and worked part-time as a clerk at the local public library.

Category	Count	HS	Col
Leadership	1	No	Yes
Writing	2	No	No
Music	3	Yes	No
Speech	1	No	No
Act	0	No	No
Athletics	6	Yes	Yes
Common Service	1	Yes	Yes
Other Activities		No	Yes

FIGURE 5: ACTIVITIES AND ACCOMPLISHMENTS FOR ABBY ACCOUNTANT

Steve is very unsure about his educational and occupational future. When he completed the UNIACT and the Student Profile Section of the ACT assessment, he indicated that he intended to study something in the field of health science or allied health and that he would pursue a career in the same field. However, Steve also indicated that he was not sure about his choice of major or occupation. One thing that Steve is sure of is that he wants to attend SIU, and he has listed SIU as his first choice of institution.

Steve's UNIACT results (see Figure 6) indicate that he has no reason to be unsure of his chosen college major and occupation. Steve scored in the 93rd percentile for Science/Technology (Investigative), the 76th percentile for Technical (Realistic), and the 54th percentile for Social Service (Social). His Holland type is therefore IRS. The DHOC lists the Occupational Classification of a physician as IRS. In addition, the Classification of Instructional Program code for medicine is also IRS. Therefore, if Steve pursued a career in medicine there would be a strong fit between his intended occupation and his personality as determined by his vocational interests on the UNIACT.

However, the UNIACT placed Steve in Region 7, 8, and 9 of the World-of-Work Map (see Figure 3 on page 34). Career areas in these regions include Construction and Maintenance, Mechanical and Electrical Specialties, Crafts and Related Occupations, Manufacturing and Processing, Natural Science and Technologies, Engineering and Technologies, and Medical Technologies.

Although there are some differences between the three-letter comparisons using the DHOC and the World-of-Work Map, it is clear that Steve is primarily an Investigative type, and would be best served pursuing a career involving gaining knowledge and insight, while working with ideas and things. Since SIU doesn't have any Investigative majors in the field of health sciences, natural sciences, engineering, or any of the other career areas as identified by the World-of-Work Map, Steve and SIU would both be best served by Steve attending some other institution.

Since Steve has listed SIU as his first choice, the suggestion that he attend elsewhere might be difficult for some admissions professionals to propose. The likelihood of enrolling a student who has listed your institution as the first choice is much higher than enrolling a student who has not. What makes the suggestion even harder is the fact that Steve's top three college choice factors of staying in Ohio, cost of attendance, and college size are all easy to demon-

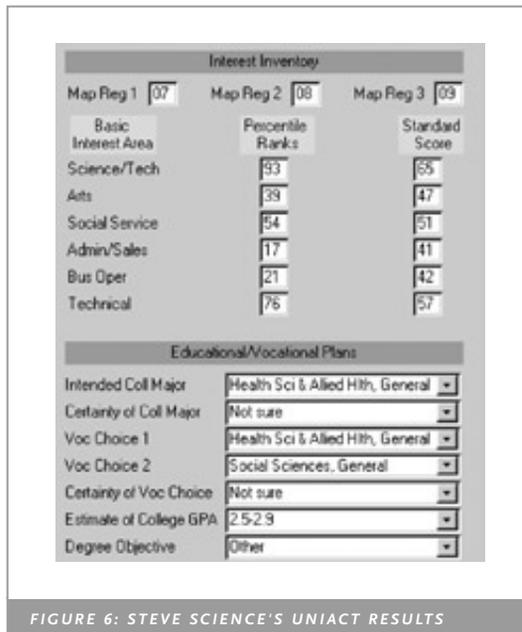


FIGURE 6: STEVE SCIENCE'S UNIACT RESULTS

strate at SIU. However, the ethical responsibility to do what is best for the student should be the driving force in the decision to influence the young man to attend an institution where he can study a major and pursue a career that is conducive to him pursuing his vocational interests, skills, and abilities.

Discussion and Recommendations

As demonstrated by these two cases, Holland's theory of vocational choice (Holland 1959, 1966, 1973, 1985, 1997) can be applied in the recruitment process of colleges and universities. The information provided by UNIACT and the Student Profile Section of the

ACT assessment are valuable for helping admissions personnel in matching students with the benefits of their institutions, which is an important aspect of the marketing process being practiced by admissions offices (Berger and Wallingford 1996). There are several steps institutions should consider in order to take advantage of this recruitment tool.

First, if they are not already doing so, colleges and universities need to obtain the results of the ACT assessment, which includes the UNIACT and the Student Profile Section. While many schools have access to this information, the use of it as presented in the two scenarios in this article may prove to be helpful in recruiting students. Second, admissions staff should be trained to understand and use the information provided in these reports. Although not complicated, this process could be time consuming. Perhaps the best way to use the information provided by the UNIACT is to help students select a major. At many colleges the percentage of undecided applicants that enroll is smaller than the percentage of applicants who have selected a major, especially if that major has a strong reputation for quality at that particular institution. Skilled admissions representatives could improve their yield by demonstrating to undecided students the specific majors that fit the student's vocational personality.

The information from the ACT assessment will also be useful after the student enrolls at the institution. Career counselors can use it to help guide students into appropriate sub-disciplines and career paths. Advisors and tutors can use this to identify which students may need help with study skills, discipline-specific assistance, or other counseling. Academic administrators responsible for outcomes assessment will also likely be interested in the cognitive and non-cognitive assessments included in the ACT record. Further, student affairs professionals may be able to use this information to identify extracurricular activities that may be of interest to students. It



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Additionally, helpful reference information can be found in the book's five appendices, including: a key to system-related acronyms; listings of the UK's higher education institutions and further education colleges; details on the National Qualifications Framework; and a comprehensive listing of professional bodies and learned societies.

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can even be used to match up roommates with similar personalities.

The concept of using non-cognitive assessments to help determine possible matches of students and careers, or students and institutions is not new. While the Holland (1997) model has been tested in a number of environments, other constructs such as intrinsic motivation, personal values, and toleration of others could be used to help match prospective students with a college or university. In this competitive struggle to attract students, enrollment managers and admissions representatives should be looking for tools that may provide a competitive advantage and help them meet their enrollment objectives more efficiently and effectively.

Limitations and Future Research

While this article has shown that Holland's (1997) model can be used as an admissions tool, the two cases are anecdotal. Making major decisions concerning admissions policy and practice based on the results of this non-empirical article is not recommended. Institutions should explore the tools available through ACT and determine if these are appropriate for that college.

Institutions should determine if the utilization of the Holland model actually helps to increase yield, guide students into appropriate majors, and attract the type of students that they covet. As with any contemporary enrollment management tool, if it can be used to improve the efficiency and effectiveness of the recruitment process and help an institution meet its enrollment objective, then the practice should be retained, improved, and perfected.

Perhaps the only way to tell if the Holland (1997) model really is a good tool for admissions departments and the students they recruit are longitudinal studies that attempt to measure the success of students who were recruited to an institution using this approach. Studies need to look at outcomes such as graduation rates, retention rates, and grade point averages of these students. However, the ultimate test of the success of the use of this model will be to track the long-term career satisfaction and success of students whom the institution recruited using the Holland approach.

As the competition for undergraduate students continues to increase, colleges and universities need to find new and different ways to improve their ability to attract students who are likely to persist, graduate, and go on to obtain gratifying careers. It appears that Holland's theory of vocational choice may be one of those ways.

References

American College Testing. 2003. *Student Information*. Iowa City, IA: American College Testing Program.

———. 2004a. *The ACT Assessment Information System*. Retrieved November 3, 2004, from <www.act.org/aap/infosys/index.html>

———. 2004b. *ACT Average Composite Scores by State: 1998 ACT-tested Graduates*. Retrieved October 16, 2004, from <www.act.org/news/data/98/98states.html>

———. 2004c. *ACT's World-of-Work: Underlying Research*. Retrieved October 16, 2004, from <www.act.org/www/research.html>

Assouline, M., and E.I. Meir. 1987. Meta-analysis of the relationship between congruence and well-being measures. *Journal of Vocational Behavior*. 31: 319-332.

Berger, K.A. and H.P. Wallingford. 1996. Developing advertising and promotion strategies for higher education. *Journal of Marketing for Higher Education*. 7(4): 61-72.

Bruch, M.A., and T.S. Krieschok. 1981. Investigative versus realistic Holland types and adjustment in theoretical engineering majors. *Journal of Vocational Behavior*. 18(2): 162-173.

Elton, C.F., and J.C. Smart. 1988. Extrinsic job satisfaction and person-environment congruence. *Journal of Vocational Behavior*. 32(2): 226-238.

Feldman, K., J.C. Smart, and C.A. Ethington. 1999. Major field and person-environment fit: Using Holland's theory to study change and stability of college students. *Journal of Higher Education*. 70: 642-669.

Frantz, T.T., and E.P. Walsh. 1972. Exploration of Holland's theory of vocational choice in graduate school environments. *Journal of Vocational Behavior*. 2: 223-232.

Gottfredson, G.D., and J.L. Holland. 1996. *Dictionary of Holland Occupational Codes*. (3rd ed.). Odessa, FL: Psychological Assessment Resources.

Holland, J.L. 1958. A personality inventory employing occupational titles. *Journal of Applied Psychology*. 42: 336-342.

———. 1959. A theory of vocational choice. *Journal of Counseling Psychology*. 6: 35-45.

———. 1963. Exploration of a theory of vocational choice and achievement: I, a four-year prediction study. *Psychological Reports*. 12: 547-594.

———. 1966. *The Psychology of Vocational Choice: A Theory of Personality Types and Model Environments*. Waltham, MA: Blaisdell.

———. 1968. Explorations of a theory of vocational choice VI: A longitudinal study using a sample of typical college students. *Journal of Applied Psychology*. 52(1, pt. 2): 1-37.

———. 1973. *Making Vocational Choices*. Englewood Cliffs, NJ: Prentice-Hall.

———. 1985. *Manual for the Vocational Preference Inventory*. Odessa, FL: Psychological Assessment Resources.

———. 1997. *Making Vocational Choices: A Theory of Vocational Personalities and Work Environments*. Odessa, FL: Psychological Assessment Resources.

———. 1999. Resume. *Journal of Vocational Behavior*. 55: 5-14.

Holland, J.L., D.R. Whitney, N.S. Cole, and J.M. Richards. 1969. *An Empirical Occupational Classification Derived from a Theory of Personality and Intended for Practice and Research*. (ACT research report no. 29.) Iowa City, IA: American College Testing.

Huang, Y., and C. C. Healy. 1997. The relations of Holland-typed majors to students' freshman and senior work values. *Research in Higher Education*. 38(4): 455-477.

Laing, J., K. Swaney, and D.J. Prediger. 1984. Integrating vocational interest inventory results and expressed choices. *Journal of Vocational Behavior*. 25: 304-315.

Lent, R.W., S.D. Brown, and K.C. Larkin. 1987. Comparison of three theoretically derived variables in predicting career and academic behavior: Self-efficacy, interest congruence, and consequence thinking. *Journal of Counseling Psychology*. 34(3): 293-298.

Leuwerke, W.C., S. Robbins, R. Sawyer, and M. Hovland. 2004. Predicting engineering major status from mathematics achievement and interest congruence. *Journal of Career Assessment*. 12(2): 135-149.

Moore, R.M. 2004. The rising tide. *Change*. 36(3): 56-61.

Morrow, J.M., Jr. 1971. A test of Holland's theory. *Journal of Counseling Psychology*. 18(5): 422-425.

Nafziger, D.H., J.L. Holland, and G.D. Gottfredson. 1975. Student-college congruency as a predictor of satisfaction. *Journal of Counseling Psychology*. 22(2): 132-139.

Pate, W.S., Jr. 1993. Consumer satisfaction, determinants and post-purchase actions in higher education: A model to guide academic managers. *College and University*. VOI & NO: 100-107.

Prediger, D.J. 2002. Abilities, interests, and values: Their assessment and their integration via the world-of-work map. *Journal of Career Assessment*. 10(2): 209-232.

Rand, L.P. 1968. Effect on college choice satisfaction of matching students and colleges. *Personnel and Guidance Journal*. 47: 181-189.

Savickas, M.L., and G.D. Gottfredson. 1999. Holland's theory (1959-1999): 40 years of research and application. *Journal of Vocational Behavior*. 55: 1-4.

- Schaefer, K.G., D.L. Epperson, and M.M. Nauta. 1997. Women's career development: Can theoretically derived variables predict persistence in engineering majors? *Journal of Counseling Psychology*. 44: 173-183.
- Smart, J.C. 1987. Student satisfaction with graduate education. *Journal of College Student Development*. 28: 218-222.
- Smart, J.C., C.F. Elton, and G.W. McLaughlin. 1986. Person-environment congruence and job satisfaction. *Journal of Vocational Behavior*. 29(2): 216-225.
- Smart, J.C., and K. Feldman. 1998. "Accentuation effects" of dissimilar academic departments: An application and exploration of Holland's theory. *Research in Higher Education*. 39(4): 385-418.
- Smart, J.C., K.A. Feldman, and C.A. Ethington. 2000. *Academic Disciplines: Holland's Theory and the Study of College Students and Faculty*. Nashville, TN: Vanderbilt University Press.
- Southworth, J.A., and M.E. Morningstar. 1970. Persistence of occupational choice and personality congruence. *Journal of Counseling Psychology*. 17: 409-412.
- Spokane, A.R. 1979. Validity of the Holland categories for college women and men. *Journal of College Student Personnel*. 20(4): 335-340.
- . 1985. A review of research on person-environment congruence in Holland's theory of careers. *Journal of Vocational Behavior*. 26: 306-343.
- Spokane, A.R., and D.P. Derby. 1979. Congruence, personality pattern, and satisfaction in college women. *Journal of Vocational Behavior*. 15: 36-42.
- Spokane, A.R., S.D. Malett, and F.L. Vance. 1978. Consistent curricular choice and congruence of subsequent changes. *Journal of Vocational Behavior*. 13(1): 45-53.
- Spokane, A.R., E.I. Meir, and M. Catalano. 2000. Person-environment congruence and Holland's theory: A review and reconsideration. *Journal of Vocational Behavior*. 57: 137-187.
- Swanson, J.L., and J.C. Hansen. 1986. A clarification of Holland's construct of differentiation: The importance of score elevation. *Journal of Vocational Behavior*. 28: 163-173.
- Umbach, P.D., and J. Milem. 2004. Applying Holland's typology to the study of differences in student views about diversity. *Research in Higher Education*. 45(6): 625-649.
- Villwock, J.D., J.P. Schnitzen, and J.P. Carbonari. 1976. Holland's personality constructs as predictors of stability of choice. *Journal of Vocational Behavior*. 9(1): 77-85.
- Walsh, W.B., and J.L. Holland. 1992. A theory of personality types and work environments. In *Person-Environment Psychology: Models and Perspectives*, edited by W.B. Walsh, K.H. Craik and R.H. Price. (pp. 35-69). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Walsh, W.B., P.R. Howard, W.F. O'Brien, M.L. Santa-Maria, and C.J. Edmunson. 1973. Consistent occupational preferences and satisfaction, self-concept, self-acceptance and vocational maturity. *Journal of Vocational Behavior*. 3(4): 453-463.
- Walsh, W.B., and R.O. Lewis. 1972. Consistent, inconsistent and undecided career preferences and personality. *Journal of Vocational Behavior*. 2(3): 309-316.
- Walsh, W.B., and J.H. Russel. 1969. College major choice and personal adjustment. *Personnel and Guidance Journal*. 47(7): 685-688.
- Walsh, W.B., A.R. Spokane, and E. Mitchell. 1976. Consistent occupational preferences and academic adjustment. *Research in Higher Education*. 4(2): 123-129.
- Weinrach, S.G., and D.J. Srebalus. 1990. Holland's theory of careers. In *Career Choice and Development: Applying Contemporary Theories to Practice* (2nd ed.), edited by D. Brown and L. Brooks. pp. 37-67. San Francisco, CA: Jossey-Bass.
- Williams, J.E. 1972. *Conflict Between Freshman Male Roommates* (Research Report no. 10-67). College Park, MD: University of Maryland, Counseling Center.

ABOUT THE AUTHORS

Cam Cruickshank, Ph.D., is the Vice President for Recruitment and Admissions at Tiffin University. In his current role he oversees the recruitment of traditional-aged undergraduates at the Tiffin, Ohio campus, as well as graduate and accelerated degree students online and at Tiffin's eight academic centers throughout the state of Ohio.

Perry Haan (DBA, University of Sarasota) is Associate Professor of Marketing at Tiffin University, Tiffin, Ohio. His work has appeared in the *Journal of Marketing Communications* and the *Journal of Modern Marketing*. Haan's research interests include marketing in higher education, ethical issues in marketing—especially puffery—and sports marketing.

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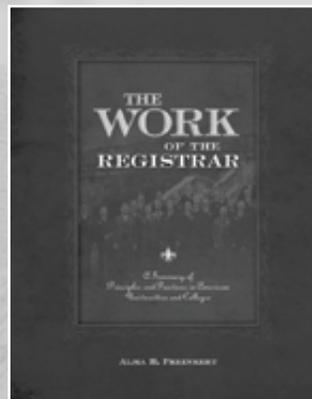
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Student Aid Trend Data Represent a Wake-Up Call, But Who's Listening?

by Travis Reindl

The growing focus on college affordability expanded further in the fall of 2005, with the naming of a National Commission on the Future of Higher Education (convened by the Secretary of Education) and the launch of a national initiative on college costs (underwritten by the Lumina Foundation). Given that the United States' position as a world leader in educational production is under challenge, such high-profile attention is in some respects welcome. At the same time, however, these windows of opportunity will become missed opportunities unless those leading the conversation focus attention and policy action on the factors—especially student aid—that most significantly impact students' ability to attend and complete college. The competitiveness clock is ticking, and the nation will continue to fall behind until and unless our “blue ribbon” efforts move from exhortation to implementation.

The latest edition of The College Board's *Trends in Student Aid* series provides important—and sobering—observations about the current state and future direction of federal efforts to financially assist postsecondary students. While many of the key findings in the 2005 report are not surprising to veteran higher education experts and analysts, they nonetheless underscore patterns that leaders in the latest round of reform conversations should digest and think carefully about as they work their way toward recommendations for action. Issues that stand out include:

■ **Slowed growth and eroded purchasing power of need-based aid.** After significant expansion in the mid- and late-1990s, the Pell Grant program has now hit a plateau in terms of inflation-adjusted total funding (\$13.09 billion in 2003–04 and 2004–05). (See Figure 1.) The combination of slowed funding and increasing participation in the program has caused the inflation-adjusted grant per student

to fall (from \$2,564 in 2002–03 to \$2,469 in 2004–05). Add in price increases, and the result has been a significant erosion in purchasing power. In 2001–02, just under half (42 percent) of the total cost of attendance at a public four-year university could be covered with a maximum Pell Grant; by 2004–05, that share had shrunk to just over one-third (36 percent).

These directions are troubling, because projections of postsecondary enrollment for the next decade show a substantial influx of populations that have tended to demonstrate higher financial need (e.g., first-generation and minority students). Absent a shift in policy direction, such as increased investment and/or a change in program formulas, more and more students will be eligible for less and less money, thus widening the unmet need gap.

■ **Dramatic increases in non-federal (“private label”) student borrowing.** While much attention has been focused in recent years on the movement from grants to loans as a means of financing higher education, change in the nature of that borrowing bears more careful attention. From 1995–96 to 2004–05, student borrowing in non-federal loan programs has soared 734 percent in inflation-adjusted dollars, from \$1.7 billion to \$13.8 billion. Moreover, non-federal loans as a share of total student aid has also jumped significantly. (See Figure 2.) Because these loans typically do not offer borrower benefits found in the federal programs (interest subsidies, flexible repayment, deferment/forbearance), they are a source of great concern to consumer activists and many aid experts, who fear that too many students and families are taking on debt that they are not equipped to repay. Perhaps more importantly, such a jump suggests that there is demand not being met

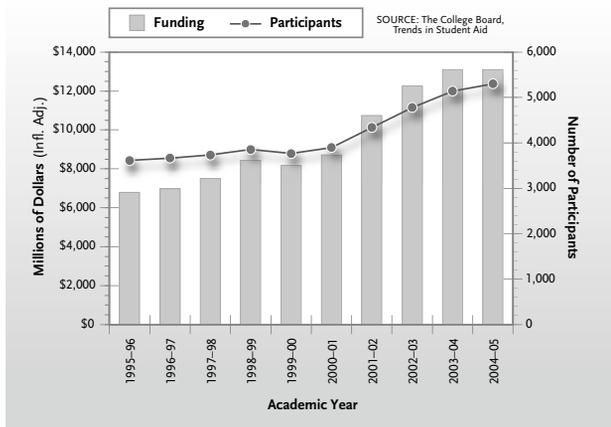


FIGURE 1: PELL GRANT FUNDING AND DEMAND, 1995-96 TO 2004-05

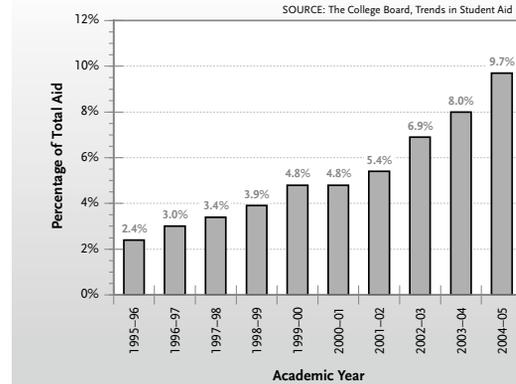


FIGURE #: NON-FEDERAL LOANS AS A SHARE OF TOTAL STUDENT AID, 1995-06 TO 2004-05

in the existing federal programs, a question that Congress should seriously engage.

■ **Growth in the use of federal tax benefits for education.**

Over the past decade, various tax credits and deductions have been developed as a means to assist students and their families in paying for college, and they are becoming a significant part of the overall aid picture. From 1998-99 (the first year of data for the HOPE and Lifetime Learning Tax Credits) to 2004-05, total education tax benefits jumped 104 percent in inflation-adjusted dollars, from \$3.9 billion to \$8 billion. Because nearly half of the benefits associated with these programs go to middle and upper income taxpayers/families (*i.e.*, \$50,000 and above), some question whether this is an appropriate federal investment, given sagging investment levels in the need-based programs. As a result, lawmakers on Capitol Hill should consider possible changes in current tax benefits that would make them friendlier to high-need students

and families, including removal of the offset against Pell Grants received, expansion to non-tuition expenses, and refundability for individuals without tax liabilities.

The trends outlined above reflect a small part of a much larger—and more complex—picture, but they are important harbingers of a collision in the works. It is a collision between the near universal expectation of education beyond high school, and the capacity to fulfill that expectation for millions of Americans. Such a collision will have profound economic, social, and political consequences, and will severely hamper the nation’s competitive position. It can be avoided, but only if policymakers and higher education leaders take developing trends seriously and do something about them.

ABOUT THE AUTHOR

Travis Reindl is Director of State Policy Analysis and Assistant to the President at the American Association of State Colleges and Universities.

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Follow the Leader? The State of Higher Education Through Presidential Eyes

by Travis Reindl

Among all the positions in academe, that of president or chancellor is perhaps the most widely recognized and least understood. The leader of a campus or system is, after all, usually the most visible representative of the institution (except for, perhaps, the football or basketball coach), but has one of its most vaguely defined job descriptions. The university leader is a unique blend of booster, scholar, and CEO—an embodiment of the multiple directions in which today's colleges and universities are simultaneously tugged. For that reason, the state of the college presidency serves as an important bellwether for the state of higher education at large. Current research and dialogue exploring the academic presidency and its interaction with key issues and constituencies bear careful examination, as they provide insight into what lies ahead.

Two initiatives bring the state of the presidency into sharp focus—*The Chronicle of Higher Education's* first-ever survey of college and university leaders, and the Association of Governing Board's (AGB) Task Force on the State of the Presidency in American Higher Education. The survey, which garnered responses from 57 percent of CEOs of four-year institutions, included a range of personal, professional, and political questions. The task force, headed by former Virginia governor Gerald Baliles, is charged with exploring “issues bearing on how the presidency is evolving in an increasingly competitive global environment, what challenges lie ahead, and how governing boards can select and sustain effective leaders.”

The *Chronicle* survey points to a set of core issues that the task force, individual presidents, and academe at large must be prepared to face in the near term. These include:

■ **The Money Pit.** Anyone who has observed a college or university president recently knows first-hand the claim that fundraising has on their professional life. Indeed, John Maguire, head of the firm that conducted the *Chronicle*

survey, speaks of “an obsession, day in and day out, with things related to finance.” The survey boldly underscores this, with more than half of respondents (53 percent) indicating that they attend to some aspect of fundraising on a daily basis, and just over 90 percent reporting that they engage in fundraising activities at least once a week. A similar number of presidents (88 percent) responded that they deal with budget and finance issues on a daily or at least weekly basis. Similarly, the survey reports that the campus leaders with whom the CEO meets most frequently are those related to fiscal/resource matters: the chief financial officer and the director of development/advancement (well ahead of student affairs, enrollment/admissions, and general counsel).

So what does the increasingly intense pursuit of private support mean for presidents and the institutions they serve? First, such a trend can—and does—have an impact on *what* decisions are made regarding campus planning and priorities and *how* those decisions are made. Consequently, educators, boards, and policymakers must work harder to maintain focus on institutional mission and direction. Second, growing external demands on presidents require increased internal responsibilities for provosts and other senior leaders on the campus, which in turn calls for greater planning and coordination. Finally, such a trend demands more intentional preparation of presidents for the rigors of development and advancement, as respondents to the *Chronicle* survey singled out fundraising as the aspect of the presidency that they were least prepared to tackle, and the largest continuing challenge of their job.

■ **The Winds of Change.** Despite the well-worn clichés about colleges and universities as bastions of the status

quo, the attitudes of campus leaders on crucial but contentious issues suggest that real debate and even real change are on the horizon. The *Chronicle* survey found that:

- ▶ Two-thirds of presidents (67 percent) disagree with the opinion that campuses can do little to contain costs.
- ▶ A majority of respondents (53 percent) believe that tenure for faculty should be replaced with a system of long-term contracts.
- ▶ Most presidents surveyed (75 percent) feel that colleges and universities should be held more accountable for their students' educational outcomes.

What is the significance of these sentiments? On one level, they suggest that the gulf between higher education leaders and policymakers may not be as wide as it is typically portrayed, and that differences may be more in language than substance. On another level, such findings indicate that the environment is perhaps more conducive than ever for change in areas such as labor relations and student assessment. The key for turning sentiment into action, though, will be supportive boards and policymakers that provide real incentives for calculated risk-taking and some modicum of protection for risk-takers.

- **Covering the Bases.** With each passing year, colleges and universities and their leaders find themselves pulled in a growing number of directions, which is the result of two primary developments. One is the diversification of institutional revenue streams, which has expanded the number of external constituencies to be courted and nurtured. The other is the explosion in the availability of information and the emergence of the 24x7x365 news cycle through the Internet and other means. The convergence of these trends makes it extremely important—and sometimes extremely difficult—for the institution to get its messages into the public domain, to deal with issues of public interest proactively, and to stay on message in the face of distraction and controversy. While the *Chronicle* survey does

make some reference to the importance of external relations (other than fundraising) as a core presidential responsibility, almost no mention is made of media relations. In light of the recent debacles at American University, the University of Colorado, and other institutions, this seems to be a critical oversight.

Campuses and their leaders must be prepared to take a number of steps for an effective response to these trends. First, the institution should have a broad, comprehensive external relations strategy that includes roles and expectations for the president/chancellor and other members of the senior leadership team. This will help the university community to be more proactive in identifying and addressing issues, particularly those that are sensitive, controversial, or even catastrophic. Moreover, colleges and universities must be equipped to monitor and harness emerging messaging technologies (*e.g.*, blogs, podcasts, etc.) to expand and boost their presence in an increasingly crowded information marketplace. All of this centers around data—gathering feedback from primary constituencies about where and how they get their information about the institution.

Given all of the pressures and stresses on today's college and university leaders, it is perhaps surprising that nearly all (94 percent) of the CEOs responding to the *Chronicle* survey said that they would do it all again. At the same time, less than half (41 percent) felt that they were "very well" prepared for the job. The continued health of the college presidency, and by extension that of the institutions they serve, depends on boosting that level of preparedness. The Task Force on the State of the Presidency and similar initiatives are a good place to start.

ABOUT THE AUTHOR

Travis Reindl is Director of State Policy Analysis and Assistant to the President at the American Association of State Colleges and Universities.

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Information and Inattentiveness in Higher Education Planning

by Kevin W. Sayers

For planners in higher education, the commonly perceived role of information is to instill stakeholder confidence in planning processes and to reduce ambiguities for decision-making. Then why is so much of change in higher education superficial and only tangentially tied to the masses of information and data collected? Could there exist hidden roles of information and ambiguity in stakeholder roles in traditional planning exercises that actually undermine systemic efforts at change and progress?

There is much that the higher education community can learn about the hidden roles of information in planning from other disciplines and fields. Political scientists claim that many of the decisions made in contemporary politics and planning are based solely on a series of misjudgments and misinformation. The following article tests this premise and applies it to the higher education planning and management paradigm. The majority of studies on planning and agenda-building in higher education analyze how issues are placed on agendas. This article identifies ways in which planning issues sometimes drift from the agenda to the periphery. This discussion moves beyond simple descriptions as to how planning is done, toward ways in which planning goals are sometimes redefined by subversive, hidden roles of information and stakeholder groups.

Information

In his book *Academic Strategy*, George Keller (1983, p.121) titled one of his chapters “Before Planning: Information, Quality, People.” Information and people are vital to the success of planning efforts in higher education, and excellence is achieved when a symbiotic relationship between the two is purposefully designed. In today’s higher education management and planning environment, an integrated information and knowledge effort is necessary if planning issues are to obtain formal

agenda status and achieve measurable results. As prescribed in many theories of continuous improvement and quality in higher education, the stories and experiences of institutional stakeholders are equally as valuable as is the interpretation of data. Moreover, transformational issues within colleges and universities are only recognized and reach formal agenda status when the sound collection and interpretation of data and information are tightly coupled with the experiential knowledge and intelligence of stakeholder groups.

Information is not only data or numbers; it can appear in many forms. In organizational settings, information includes public forum discussions, office memoranda, meeting minutes, or committee reporting. Information is any mechanism that is created or used to reduce uncertainty within an organization (Stinchcombe 1990). In *Participation in American Politics*, Cobb and Elder (1972) describe information creation processes (in agenda-setting) as a series of organizational conflicts between expected and perceived behaviors. As perceived behaviors travel further and further away from expected behaviors, stronger conflicts develop and generate more issues that in turn demand formalized organizational or public awareness.

The production of information and data for a large, diverse, multi-functional organization such as a college or university is a monumental task. Traditionally, the volatile and politicized higher education environment does not fit well with the creation of concise, targeted information that has widespread mutual meaning and a bearing on rational decision-making and policy development. In fact, so many points of view are combined in higher education planning that in order to reach agreement, information creation and dissemination are invariably watered down (Feldman 1989).

Nevertheless, planning participants depend on information in many different ways. At its most basic level, information

identifies a problem. Information provides a context or sets the stage for decision-making. Information is used to support rationality in decision-making approaches by providing details on various solution alternatives and their consequences. Information can persuade action (although it is rarely used in this manner). It can alleviate tensions between an issue's proponents and opponents. Information can also legitimize decisions post facto and protect the authority of leaders in the planning process (Ewell 1989). The statement that is often heard in planning and decision-making is "the information made me do it."

Quality information is a prerequisite to sound strategic choice. It is inarguable that the credibility of a planning process depends on the existence of quality information; but equally as important is the sharing of information with individuals. Of course, disparities in intent and focus between proponents and opponents of a planning issue are common. Each party tries to shape planning to support its unique stance. Information routinely appears to be the tool of choice for downplaying alternative viewpoints and avoiding consensus. Opponents of planning issues will frequently, in a serial nature, highlight the weaknesses of information and choose to dismiss it altogether. Many planning outcomes illustrate stakeholder inability to agree upon a single course of action. This lack of consensus diminishes the value of stakeholder input in the process. When proponents and opponents fail to recognize the value of collective action that is based on information and data (Olson 1965; Ostrom 1990), their lack of agreement is evident in the all too common incremental approach to institutional change—an approach that fails to fully address the respective agendas of proponents or opponents.

Engaging institutional stakeholders in information creation and dissemination creates knowledge and organizational intelligence. A college or university that engages in planning without adequate information sharing and knowledge development lowers the value of the process to all those involved and impairs the validity of planning outcomes. When combined with stakeholder interpretations, information works to produce knowledge and intelligence on issues that far exceed simple anecdotal sharing. "Good information not only facilitates more rational decision-making; it also motivates toward more strategic decision-making" (Keller 1983, p.133). Information serves as the basis for change management in planning discussions, for it helps to identify institutional needs and ultimately links problems with strategic solutions. At a minimum, viable information allows for organizations to interpret problems and choices; this is a kind of organizational framing or self-adjustment.

Cultures of Misinformation

In today's planning environment, information is highly susceptible to becoming skewed by the political interactions of planning stakeholders, especially in a higher education setting that includes broad and diverse constituencies. For instance, the media can play a dominant role in the emer-

gence of planning issues and contribute to the development of misinformation. Individuals involved may lack a broad understanding of planning and policy development issues given their natural focus on specific and specialized work roles instead of institutional priorities. As a result, individual planning actors often rely on secondary sources, which typically focus on celebrity and power, and ignore the data-related or technological traits of an efficient and ethical planning process. These phenomena can play a major role in the production and spreading of misinformation.

The culture that is created by misinformation is self-perpetuating. Once misinformation is practiced, it spreads.

Disagreement respecting policies and proposed policies evokes discussions as well as thought that are shaped far more effectively by the incentive to win support for whatever actions the group in question favors than by concern for accuracy and for recognizing uncertainties. And whenever one party to a political dispute begins to indulge in misrepresentations, the incentive is strong for all others to do the same (Edelman 2001, p.8).

People on both sides of an issue often resort to the constant slinging of misinformation back and forth in support of their cause, while losing sight of the real issues at hand. No matter the strength of information that may exist and the validity of the problem that it highlights, actors will deliberately sacrifice one issue for another.

Needless to say, the fostering of misinformation in planning is dangerous. It ultimately leads to gross fragmentation of planning technologies and weakens linkages between information and decision-making. The risks of misinformation also lie with individuals. Repetitive development and presentation of misinformation becomes cyclical and ritualistic, which then directly translates into frustration and powerlessness in individual behavior. "We are often unable to see the whole picture and so make decisions that are based on a small part of the relevant total" (Edelman 2001, p.2).

Hidden Roles in Planning

Accepting that information can be used in planning as a tool for the commonweal or as a weapon of deception, how can the institutional planner recognize the true intention of information that is being used? How can planning leadership ensure that information provides a sensible, strong context for further stakeholder interpretation and decision-making? Did it aid in reducing ambiguities in planning, or did it only politicize the process more? Answers may be found by looking more closely at stakeholder interactions and roles in planning, and the ways in which too little or too much information can lead to inattentiveness in planning exercises.

INFORMATION POOR

Too often planning processes are altogether information poor, meaning that little new information is created to reduce the ambiguities that are created in the course of planning

discussions. Recurring actions by individuals or groups and perceptions that devalue information in the planning process severely limits the legitimacy of outcomes. Planning participants progressively become aware of this and begin to exhibit irrational behavior.

The devaluing of information in a planning process can become cultural. A work culture placing little emphasis on the proactive development of strong information is conducive to an environment where when information is actually collected and analyzed, its value is strongly questioned and routinely discounted. The planning process then quickly devolves into one that places little value on information's role, thus limiting its usefulness in the recommendations that follow. As presented earlier, cycles of misinformation can become ritualistic. This practice makes the process a superficial exercise that is most likely aimed at controlling public relations and the way reports look rather than the issues at hand. Even worse, an information-poor or misinformation climate excludes closure from the process of planning.

SUBVERSIVE STAKEHOLDER ROLES

Simply gathering information on a particular issue to help it reach agenda status is not a singular step. "Ambiguity...cannot be resolved simply by gathering information" (Feldman 1989, p.5). Interpreting an issue, or giving it meaning and relevance, is a common next step in planning. Feldman (1989, p.9) describes issue interpretation by an organization's stakeholders as "a process of agreeing about how to perceive an issue."

In planning, the flow of information does not in itself create a trusting relationship among all participants, especially when misinformation plays a prominent role. "Decisions depend on who participates and to what degree" (March 1994, p.111). In many cases, new initiatives identified through the information collection process are met with extreme resistance. Only when highly effective leadership involves diverse constituencies of faculty, staff, and students, is it possible to formulate appropriate responses to concerns about planning directions.

Stakeholder politics nearly always distorts planning and limits its usefulness. For example, stakeholder groups (e.g., presidents, academic deans, administrative leaders, faculty, students) may have a vested interest in either: 1) building an issue into a broader, collegial process that gains a greater public consciousness; or 2) narrowing the scope of an issue to only a small group of constituents, thus limiting public awareness. When combined with a culture of misinformation, hidden sets of actors, especially those in roles of power or authority, can be tempted to exert undue influence over stakeholder groups because of their close relationship with planning technologies and information collection methods.

IRRATIONALITIES OF LEADERSHIP AND DECISION-MAKING

Another key theoretical principle that should be examined when studying planning efforts is the complex and some-

times tenuous relationship between information and decision-making. Feldman and March (1981) contend that an organization systematically gathers more data than it can use in rational decision-making because organizational expectations of the process require it.

Decision-making in organizations is more important than the outcomes it produces. It is an arena for exercising social values, for displaying authority, and for exhibiting proper behavior and attitudes with respect to a central ideological construct of modern western civilization: the concept of intelligent choice (Feldman and March 1981, p.177).

Information cannot be viewed as a means to an end. The role of information to reduce uncertainty is equal to its responsibility to provide a symbolic sense of legitimacy in framing issues and problems. It plays a major role in the identification of the political, social, and economic ramifications of outcomes.

As Feldman (1989) points out, the end and means are not closely linked in organizational leadership and decision-making because problems and solutions are not themselves rational. Ambiguity of problems and solutions causes organizations and its stakeholders to seek by-product action to support rationality in final decision-making. Information helps to frame discussions, build interpretations, and identify problems across the greater community to reduce ambiguities. It does so by combining with stakeholder knowledge to form intelligence. The use of misinformation or the burdensome influence of leadership often perpetuates the status quo or creates a planning environment that could most accurately be characterized as an exercise of serial monologues.

It is also helpful to note that the relationship between information, stakeholder knowledge, and leadership's decision-making is at best loosely connected and highly susceptible to containment and control tactics. In *Educational Organizations as Loosely Coupled Systems*, Karl Weick (1976) introduces an alternative to bureaucratic theory which challenges more traditional organizational theories that label education institutions as formal bureaucratic structures. March and Olsen (1976), who described education systems as *organized anarchies*, have created a body of research that stands to categorize education systems as loosely-coupled systems. Loose-coupling focuses on the disconnectedness of behavior and outcomes in education organizations and argues that subsystems within an education institution are tacitly linked, with coordination occurring infrequently and with little interdependence—a poor structure for integrated and participatory planning processes.

The negative effects of loose-coupling are substantial. Higher education institutions working in a loosely-coupled environment often suffer from ambiguity in goals, unclear working technologies, fluid stakeholder participation, coordination problems, and an organizational structure disconnected from educational outcomes (Cohen and March 1974). However, in times of dwindling resources and cries for decentralization

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in higher education governance, leaders recognize that loosely-coupled approaches are very popular among constituencies for their reflexivity and inexpensive maintenance. However, Weick (1976) points out that in loosely-coupled organizations, intention is not a good gauge for action. While subsystems may initiate change with the best of intentions, actions, whether positive or negative, may be unattainable or unknown for a number of political or hidden reasons.

Inattentiveness in Planning

Simon's (1997) theories of bounded rationality reveal that human nature makes decision-making fallible. Not every person can be fully engaged in planning. Not every constituency can be satisfied with a single solution. Hence, planning models, the successful ones at least, become efforts to gauge the level of attention that should be given to an issue and the degree of decision it demands.

Attention is key. The process of identifying problems, collecting information, seeking interpretations, and selecting solutions becomes irrational when inattentiveness creates problems.

Time and capabilities for attention are limited. Not everything can be attended to at once. Too many signals are received. Too many things are relevant to a decision. Because of those limitations, theories of decision-making are often better described as theories of attention or search than as theories of choice. They are concerned with the way in which scarce attention is allocated (March 1994, p.10).

Inattentiveness results in planning outcomes and decisions that are fraught with conflicts of interests. "Attention plays an important role, because inconsistency depends on which preferences and which identities are salient at a particular time" (March 1994, p.106). Inattentiveness precludes consensus and consistency in the interpretation of problems and preferences. When this occurs, powerful actors are more prone to define problems that are altogether separate from group input.

Higher education planning is best characterized as multiperson decision-making. "Multiperson decision-making procedures such as exchange, bargaining, coalitions, and power achieve some of their success by being embedded in a system of limited attention" (March 1994, p.230). Therefore, a slight degree of inattentiveness in planning is a necessary evil. If complete attention were devoted to all issues, agreeable solutions to problems could never be reached. Vast degrees of competing interests and conflicting interpretations would be evident, causing inevitable gridlock in decision-making. Inattention in planning is further facilitated by the loosely coupled nature of educational institutions. However, an excessive amount of inattention elicits a lack of ownership and a powerlessness ethos. The absence of information, deployment of misinformation, and irrational involvement (or exclusion) of stakeholders can precipitate a complete failure of attention in higher education planning. Again, it is important to understand that inattentiveness can be purposefully employed. For

instance, by cultivating inattention during planning exercises, opponents to issues are able to limit the visibility of alternative agendas and undermine their integrity.

Conclusion

Information is necessary for planning issues to achieve agenda status. It is used to identify that a problem exists. It suggests approaches to problems and the concerns of stakeholders. It sets the stage for decision-making. Yet, planning exercises can be inherently information poor. Although a wealth of information and data may be available, a lack of integrity in information collection, analysis, and reporting can exist. No shared language may be defined to deliberate on findings and discuss its shortcomings. As a result, no mutual understanding on the use of information is achieved, and from this a cultural devaluation of information and environment of inattentiveness is cultivated.

Higher education planning is simultaneously an information-based and a symbolic or cultural exercise. Throughout the process of planning, a battle for control over whose interpretation will be used exists. This struggle may be caused by practices of misinformation or irregularities in organizational structure; nevertheless the institutional planner functions in a heavily constrained and complex environment in which initiatives are preordained and employed only to exhibit the symbolic value of progress and change.

To build a more effective planning model, planners should practice exhaustive and paced information collection that rules out uncertainties and misinformation. Vast differences exist between gathering just enough information to make a decision versus gathering a critical mass of information to reach a conclusion. The level of information collection and interpretation required in planning is to reach a point where uncertainties in the evaluation of alternatives are minimal and an acceptable level of stakeholder attention is achieved. Planning is a systemic organizational response and deserves intelligibility in its evaluation. Never should information or data collected perpetuate a lack of consensus in decision-making. The absence of sound information and data opens the door for unhealthy political conditions of issue control and containment. A controlled pace of planning supports healthy deliberations and stakeholder attentiveness. Most important, commitment to change through planning is best cultivated by inclusion in all stages of the planning process—problem identification, information collection, and solution generation.

Assessment mechanisms not only monitor planning actions contemporaneously to gauge their usefulness, but they document final decision-making for many years to come. Assessment in planning endeavors provides clear linkages among the how, when, and why decisions are made by outlining preset lists of expected outcomes and resultant indicators. It is extremely important that planning models tightly bind together information, stakeholder knowledge, intelligence, leadership, and public awareness. This can only

be achieved through effective assessment of planning. Not only does assessment help an institution immediately enhance the credibility of planning but it also tests critical indicators for serving ever-greater public accountability demands. For planning processes to be of high quality, it is important to continuously monitor the attitudes of all stakeholder groups. The coherence and focus that it yields translates into high levels of attention, personal commitment, and minimal skepticism. Assessment tools: 1) slow down planning processes to keep all constituents up-to-date and involved; 2) test the viability and strength of decision support for or against planning concepts; and 3) invigorate outlier stakeholders and invite new stakeholders into the process.

Understanding that “planning is the guidance of future action” (Forester 1989, p.3) and that higher education will continue to be constrained by its environment, institutional planning exercises will be increasingly called upon as the primary mechanism for institutional decision-making. Rarely will planning be guided by material concerns or data findings more than political or symbolic representations. Those who are most deeply involved in planning must be made aware of the political conditions that grow from the interaction of planning stakeholders and the constraints that are placed on the effectiveness of planning outcomes. Maintaining an ethical and effective balance of stakeholder attention on information and possessing the ability to identify its hidden roles are necessary for planning issues to achieve measurable results—a daunting task and often a paradox. Well-defined, explained, and communicated information helps a community collectively move forward and improve. Today’s higher education planners must recognize the multifunctional nature of information. It is a mechanism not only to identify problems and solutions, but it addresses and engages the concerns of stakeholders in a dynamic process. It sets the stage for politics and decision-making. The ideal is that information should be employed in such a manner that creates a shared language for all stakeholders to discuss and deliberate freely and openly. Failing to acknowledge the hidden roles of information sustains a planning environment where the devaluing of information becomes cultural, severely limiting and threatening the legitimacy of any planning process and its outcomes.

Higher education planners should therefore: 1) avoid the limitations of formulas, understanding that the process is holistically about technologies, politics, materials and symbols; 2) beware of policy monopolies seeking by-product

action which use planning processes purely as a symbol of participation and progress; 3) avoid assertions but instead build arguments that use data and information to lessen unpredictability, skepticism, and repetition of action. Ultimately, if college and university planners ignore the political and power roles inherent in planning, they guarantee the failure of future efforts.

References

- Cobb, R.W., and C.D. Elder. 1972. *Participation in American Politics: The Dynamics of Agenda-building*. Boston, MA: Allyn and Bacon.
- Cohen, A.M., and J. March. 1974. *Leadership and Ambiguity*. New York, NY: McGraw-Hill.
- Edelman, M. 2001. The politics of misinformation. In *Communication, Society and Politics*, edited by W.L. Bennett and R.M. Entman. Cambridge, UK: Cambridge University Press.
- Ewell, P.T. 1989. Information for decision: What’s the use? *New Directions for Institutional Research*. 64 (Enhancing information use in decision making): 7–19.
- Feldman, M.S. 1989. *Order Without Design: Information Production and Policy Making*. Stanford, CA: Stanford University Press.
- Feldman, M.S., and J.G. March. 1981. Information in organizations as signal and symbol. *Administrative Science Quarterly*. 26: 171–186.
- Forester, J. 1989. *Planning in the Face of Power*. Berkeley, CA: University of California Press.
- Keller, G. 1983. *Academic Strategy: The Management Revolution in American Higher Education*. Baltimore, MD: Johns Hopkins University Press.
- March, J.G. 1994. *A Primer on Decision Making*. New York, NY: The Free Press.
- March, J.G., and J. Olsen. 1976. *Ambiguity and Choice in Organizations*. Bergen: Universitetsforlaget.
- Olson, M. 1965. *The Logic of Collective Action: Public Goods and the Theory of Groups*. Cambridge, MA: Harvard University Press.
- Ostrom, Elinor. 1990. Governing the commons: The evolution of institutions for collective action. In *The Political Economy of Institutions and Decisions*, edited by J.E. Alt and D.C. North. Cambridge, UK: Cambridge University Press.
- Simon, H.A. 1997. *Administrative Behavior: A Study of Decision-making Processes in Administrative Organizations*. 4th ed. New York, NY: The Free Press.
- Stinchcombe, A.L. 1990. *Information and Organizations*. Berkeley, CA: University of California Press.
- Weick, K.E. 1976. Educational organizations as loosely coupled systems. *Administrative Science Quarterly*. 21: 1–21.

ABOUT THE AUTHOR

Dr. Kevin W. Sayers is Assistant Provost and Assistant Professor of Education at Capital University. Dr. Sayers’ professional expertise and research interests are in institutional research, strategic planning, data-informed leadership, institutional culture, and legal issues in higher education. He has played important leadership roles in building integrated institutional research, planning, and assessment functions at several colleges and universities. Prior to joining Capital University, Dr. Sayers held posts at Brown University, Boston College, and the Berklee College of Music.

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Data-Driven Decisions: Using Data to Inform and Influence Decisionmakers

by Janet Ward

As enrollment professionals begin to climb the leadership ladder and move from assistant to associate to departmental director to dean/vice-president, the ability to provide and effectively interpret the data will increase. To achieve institutional business objectives, senior administrators depend on receiving reliable information from which to make critical decisions. This article is designed to provide an overview on the ways enrollment professionals (admissions, registrar, financial aid, advising, research, etc.) may inform and influence decisionmakers by taking data, turning it into information, and placing it into context to provide meaningful insights relevant to answering strategic business questions.

Why is data, its analysis, and interpretation important to your higher education organization?

Our campuses are flooded by data—by data stored in our legacy systems, data warehouses, as well as external sources, such as comparative statistics provided by NCEs and IPEDS. What administrators seek from enrollment leaders is their ability to utilize relevant data, and place it in context in order to create meaningful connections between the institution's current state and its business objectives. From an enrollment perspective, a thoughtful analysis that considers both internal (institutional) and external (competitors, local economy, etc) factors would shift the focus from data to creating meaning that actually informs decisions. Here is an example that shows the continuum from data to meaning.

- **Providing Data**—35 percent of the new students are men.

This data point on its own, while interesting, does not help administrators understand why this fact is important.

- **Providing Information Which Combines Sets of Data**—While 35 percent of the new students are men, a shift has

occurred in their program of interest; men have shifted their preference from business to preparing for medical school.

Information is the result of combining several sets of data and begins placing the data point into context.

- **Providing Meaning**—If this trend continues, additional entry-level and advanced science courses will be needed in the curriculum to meet emerging student demand, which may require additional faculty FTE and other resources.

It is at this stage when information may be used to influence key institutional decisions. When funding is involved, which may either be new investments or re-allocated resources, the following discussion should be considered a strategic business decision.

What institutional environmental factors contribute to using data to drive decisions?

Several institutional traits, if in place, are more likely to create an environment where data-driven decisions are the norm, rather than the exception. Among the desired institutional traits are that:

- *A clear institutional mission statement and strategic plan has been adopted and embraced by the leadership.* To understand what internal and external data points may be relevant for strategic planning, it is important to understand both a) the institution's aspirations and future goals, by first understanding b) the current state of specific key performance indicators. Without a strategic plan that charts the institution's course, it is difficult to determine what information needs to be gathered to support decision-making.

- *A comprehensive enrollment management plan has been adopted and goals approved.* The enrollment departments each provide goals and strategies that support the attainment of

the enrollment plan's goals. Typically, an enrollment management plan outlines the goals, strategies, and tactics related to:

- ▶ **Enrollment Size:** Total headcount; headcount by type of student; etc.
- ▶ **Enrollment Mix:** Gender; ethnicity; resident vs. non-resident students; undergraduate vs. graduate students; full-time vs. part-time students; etc.
- ▶ **New Student Profile:** For the entering class of undergraduates and/or graduate students, type of mix (see above) and student quality measures (*e.g.*, entering high school or transfer GPA; average entrance test scores, such as ACT, SAT, GRE, GMAT; etc.)
- ▶ **Enrollment Outcomes:** Based on students' experiences and interactions with the institution, the factors that demonstrate a level of learning achievement or student success.

- *An assessment process occurs routinely (annually and/or per term) and the information is used to inform and/or revise goals and strategies.* The key for assessment is selecting the most crucial elements within the plan that will influence goal attainment. Key performance indicators within the enrollment plan are monitored and improvements are shared with leadership and the community. Celebrate your achievements and refocus efforts to improve areas of weakness.

To support data-driven decisions, what are the strategic business questions that should be addressed?

While each campus has a unique mission statement and organizational structure, the strategic business questions that connect the institution's strategic plan with the enrollment plan are similar among institutions. It is the answers to the questions that will be unique for each campus.

The institution's strategic plan centers on five- and ten-year goals for the learning and business enterprise. The *learning enterprise* includes educational programs, research and scholarship, student learning outcomes, changes to technology and facilities to support the current and future learning environment, as well as student body composition. The *business enterprise* focuses on the elements that contribute to the institution's financial viability, which is demonstrated by overall student credits generated, the revenue generated by student enrollment (may be program specific), the financial aid discount (the percentage of tuition revenue used to fund institutional financial aid), plus services and facilities required to support the enrollment (*e.g.*, disabled student services, campus dining and housing, parking, etc.). A comprehensive enrollment management plan bridges these two enterprises, so it is important to understand where enrollment, learning, and business questions intersect.

Whether developing an institutional strategic plan or enrollment management plan, it is important to first identify and answer the business questions before focusing on the

data. The following questions are presented in hierarchical order; therefore, the answer to #1 must be understood before moving to #2. In question #1, the word "enrollment" may be substituted with various words, *e.g.*, institutional strategic plan, academic affairs, student life, facilities, etc.

STRATEGIC BUSINESS QUESTIONS

- 1 What kinds of decisions are made related to enrollment?
- 2 What information is needed to make good decisions?
- 3 What data are needed to create good information?
- 4 What is the best way to obtain the data?
- 5 Who should receive the information and in what format?

Table 1 provides an example of how these five questions may be addressed during the development of an enrollment management plan for admissions, registration and records, and financial aid. While the format might suggest that the individual departments develop responses to the questions in isolation from one another, this is furthest from the truth. In reality, the most effective plan will rely on building understanding about each department's unique contribution, along with identifying specific points where collaboration across departments will be required to achieve the enrollment plan's goals. This understanding will not occur unless the process for developing and annually reviewing the plan is a joint venture shared among enrollment leaders who are invested not only in their individual department's success, but are committed to the success of their colleagues.

It takes time to create a shared understanding of the strategic business questions related to enrollment—across enrollment departments and across administrative units. Throughout the process, a wise chief enrollment officer shares the contours of the emerging enrollment management plan with senior administrators from academic affairs, finance, and student life as each will have a unique perspective that the plan should take into consideration. These considerations will help identify other business questions and information that the enrollment plan may need to address to more fully support data-driven decisions from a broader institutional perspective.

The following illustration takes the first strategic business question, and looks at the question from multiple perspectives. The decision under discussion: whether or not to recruit and enroll more students with a stronger academic profile:

What kinds of decisions are made related to *enrollment*?

- ▶ **Chief Academic Officer** may say "Our faculty wants better academically-prepared students in the classroom, so increasing the student academic profile is highly desirable. This may result in changes in the learning environment, with a potential revision in our program for faculty development so we keep these students 'challenged.'"
- ▶ **Chief Finance Officer** may say "If we dramatically increase the academic ability of our new student profile, we need to have the financial aid resources to com-

Table 1: Strategic Business Questions—Enrollment

(Identify your strategic business questions, then determine what information needs to be gathered.)

Admissions	Registrar	Financial Aid
What kinds of decision do we make for enrollment? (Include student service/satisfaction)		
<ul style="list-style-type: none"> ▶ Student profile for incoming class ▶ Admission decisions—Who to admit, deny, or place on a wait list (selective admissions) ▶ Where to spend resources connected to marketing and recruiting decisions to achieve enrollment goals 	<ul style="list-style-type: none"> ▶ Class sections offered to meet new and continuing student demands ▶ Where to spend resources to improve services and to support student retention and graduation goals 	<ul style="list-style-type: none"> ▶ Financial aid awarding strategy based on student need ▶ Scholarship strategy to attract and retain new students ▶ Where to spend resources to improve services and to support student retention and graduation goals
What information do we need to make good decisions? (Determine what to measure)		
<p>For student profile decisions:</p> <ul style="list-style-type: none"> ▶ What has been the academic quality/strength of the incoming class? ▶ What other factors are key to consider—<i>e.g.</i>, gender, ethnicity, socio-economic status ▶ Based on the key factors, is there a distinction based on entrance information about a) who persists to their second year and b) graduates? 	<p>For class section decisions:</p> <ul style="list-style-type: none"> ▶ Based on the curriculum, are their specific courses which have a waiting list? ▶ Based on major, are there any sub-set of students finding it difficult to complete degree requirements on time due to lack of specific course offerings? ▶ Based on the class schedule, are there times when either a) rooms or b) seats in specific rooms are not fully utilized? 	<p>For financial aid decisions:</p> <ul style="list-style-type: none"> ▶ For the new student strategy, is it competitive such that the institution is able to attract and enroll students that meet student profile goals? ▶ Does the financial aid strategy support the first year retention goals? Graduation goals? ▶ Based on lower than projected new student yield rates or first-year retention rates, what areas of the strategy should be explored further?
What data is needed to create good information? (Need to consider data integrity—is it good data? Need to provide historical perspective [3–5 years] for your institution; Need to consider whether comparative data with national norms or key competitors is essential to improve understanding)		
<ul style="list-style-type: none"> ▶ New student funnel (numbers and conversion rates)—prospects, applications, admitted students and enrolled ▶ Entrance test scores and entering grade point averages: <i>e.g.</i>, SAT, ACT, GRE, GMAT, TOFEL, etc. ▶ Results from student satisfaction surveys ask questions tied tie specific departmental service goals. Are there changes in recent trends? If so, why? 	<ul style="list-style-type: none"> ▶ Term specific registration statistics by multiple variables (by class level, full-time vs. part-time, by regular tuition vs. special tuition), etc. ▶ What is the drop out rate by various student factors (<i>e.g.</i>, freshmen, sophomore, etc.) from the term's census date until the end of the quarter. Are there any changes in past trends? If so, why? ▶ Results from student satisfaction surveys ask questions tied tie specific departmental service goals. Are there changes in recent trends? If so, why? 	<ul style="list-style-type: none"> ▶ New student data that combines entering student profile with institutional financial aid (need based aid; scholarship; etc.). Are there any sub-set of students that did not yield as expected? ▶ Student data on loan defaults and average debt load per graduating class. Consider further detail by major, time to degree, etc. ▶ Results from student satisfaction surveys ask questions tied tie specific departmental service goals. Are there changes in recent trends? If so, why?
What is the best way to obtain the data? (Identify how to measure and how frequently)		
<p>There are basically four types of measurement to consider; dependent on the strategic question:</p> <ul style="list-style-type: none"> ▶ Effectiveness: Outcomes relative to purpose and mission ▶ Efficiency: Amount of output per resource expended ▶ Reliability/Satisfaction: Consistently produce quality ▶ Utilization: Amount of activity in business; consider volume or frequency a service is used 		
Who should receive the result? In what format? (Determine when and how to deliver results)		
<p>There are basically five factors to take into consideration when constructing a report:</p> <ul style="list-style-type: none"> ▶ Audience: Tailor the report to audience. Executives prefer a high level summary; have detailed documentation ready to respond to specific questions. ▶ Purpose: Will the report be used to inform, influence or both inform and influence others? ▶ Message: What do you want to say? What are the most important points? Prioritize. Deliver your message clearly and succinctly. The skill level of your audience will determine the delivery as you may need to avoid complex charts and jargon. ▶ Medium: Options: written report; power-point presentation; information on the web; combination. ▶ Timing: Determine best moment to deliver the report. Timing is sometimes the most critical factor on whether or not your message will be heard. 		

pete for the students. Can our institution afford to increase its financial aid expenditure in order to attract better students?"

- ▶ **Chief Student Life Officer** may say "While supporting the goal to admit and enroll better academically-prepared students, this is a longer term goal. In the short term we need to focus on improving the learning environment and learning support services to improve our

learning outcomes, student retention, and graduation rates."

- ▶ **Chief Enrollment Officer** may say "To attract higher academic ability students will require revisions to the enrollment plan and strategies. To attract better students will require new messages, a more selective admissions process, and improved merit and need-based aid if we want a chance to compete for them."

What do all the perspectives have in common? While all are supportive of the potential decision at the decision-making table, to choose this direction will require additional resources in some areas of the institution. The choice on where to invest or re-allocate resources will be one outcome connected to the decision. Hopefully, by understanding the strategic questions related to the business and learning enterprise, enrollment leaders will be able to provide the relevant information within an appropriate context that would both inform and influence campus decisions. It begins first by understanding the strategic business questions for your depart-

ment or institution, and then determining what information is needed to support meaningful and informed dialogue.

ABOUT THE AUTHOR

Janet Ward is Associate Vice President for Information and Data Management at Seattle Pacific University (WA), and has been at SPU since 1988. She has over 25 years of experience in higher education administration (community college and private four-year institutions), has been active in AACRAO since 1989, and is Past-President of the Pacific Association of Collegiate Registrars and Admissions Officers (PACRAO).

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The Next Step of One-Stop

by Penny Bouman, Gerri Gomber,
Ronnie Higgs, Craig Westman

At colleges and universities, the primary use of communication center technology in marketing and promotion is to field incoming calls from students who have learned of the institution through advertising, word-of-mouth referral, Internet search, or other means. Many universities accept volumes of queries from prospective students and their parents, and they in turn provide information about their programs, both educational and extracurricular. Communication centers are particularly effective; their genesis was in organizations that received large volumes of calls from customers who were experiencing uncertain results as they sought individuals/departments that could deal with their issue. Historically, frustrated staff spent considerable time volleying calls as they attempted to help in areas outside their experience. Ferris State University dealt with these same issues.

In their book, *AACRAO's Basic Guide to Enrollment Management*, Westman and Bouman (2005) discuss how Ferris State University established its one-stop student service center and created "a seamless, student-friendly environment in which (enrolled) students can complete their business transactions." However, the authors would be remiss to ignore the many transactions—or communications—that occur during the prospect-to-enrolled stage of the recruitment cycle and the impact this one component of an enrollment management plan can have on enrollment and retention successes at any institution. To bridge any communication issues with prospective and enrolled students, Ferris State University established its Enrollment Services Communication Center (also referred to as the ES Communication Center), which provides another way in which the institution can "connect" with its constituents. This article discusses how enrollment managers at Ferris chose elements of their one-stop student service center to migrate into the ES Communication Center.

In the past, Ferris directed calls to a centralized communication center, where agents handled queries in volume. For questions outside of their realm of expertise, agents referred callers to other departments. Today, database technology allows agents to handle a wide range of queries, and the ES Communication Center has become a collection point for organizational information. And as the expertise and information available to the ES Communication Center expands, it is able to handle more calls without referrals and call backs.

A centralized communication center is a powerful strategic asset for a university. It can strengthen customer relationships and enable the organization to learn more about its customers so as to serve them better. Ferris's ES Communication Center makes a strong case for using communication centers to improve an organization's ability to serve its customers. One of the key responsibilities of the staff is to maintain and enhance the reputation of the organization. Empowered managers and employees enhance customer service and each call is a touch-point in building relationships with an institution's constituents. In this ever-growing world of automation, the goal is to create a memorable (positive) experience during the interaction. After all, the institution's carefully developed customer service culture is at risk during every call. Empowerment reduces that risk.

Early Experiments

Early in the development of the enrollment management core team at Ferris State University, the dean desired to create a more encompassing telecommunications center. Ferris State University's ES Communication Center was originally the creative child of the vice president of student affairs. At the time of its inception, its core function was to serve as a recruitment outreach tool/center that would aid in curtailing

the University's multi-year declining enrollment through personal contact with admitted students.

The ES Communication Center employed a bevy of students during regular business hours to field basic calls (such as requests for phone numbers of local residents or enrolled students trying to locate fellow students) and route area-specific calls to requested departments within Enrollment Services. To this end, the ES Communication Center mirrored the University's Telecommunications Center, which operated under another division and was located elsewhere on campus. The Telecommunications Center supported the main 1-800-4-FERRIS line, while the ES Communication Center fielded calls coming into the University through specific 1-800 lines available to Admissions, the Business Office, the Financial Aid Office, and the Office of the Registrar.

At first, the ES Communication Center redirected many calls; however, many were lost and callers expressed frustration in their search for the right person to deal with their particular issue. The enrollment services core team took this situation to heart and incorporated a way to centralize knowledge about the University within the ES Communication Center. As a result, the frustration level among callers and ES Communication Center employees was greatly reduced, while the volume of calls increased exponentially.

Implementing the Change

Successful communication center implementations require the development of effective processes and policy, the implementation of appropriate technology, and effective human resource management processes. Colleges and universities can use the communication center concept to allocate and distribute workloads in the organization. Without such a center, highly paid staff often handle tasks that underutilize their expertise. A communication center with good call routing processes can distribute calls to the individuals or automated agents most qualified to handle them.

One full-time administrative staff member and two part-time employees directed the daily activity of the ES Communication Center. Because of the Communications Center's focus on recruitment, the enrollment management team strategically placed and promoted a clerical staff person from the Admissions Office to be the coordinator. This clerical staff person was at the forefront of the daily communications and contacts of the Admissions Office. The idea was to capture all the other forms of contact generated in the Admissions Office (e-mail, Saturday visitation days, daily counselor visits, etc.) and to weave these into the fabric of the daily duties of the Center.

The dean experimented with the responsibilities assigned to student employees, who at first only fielded phone calls for redirection. He provided training on the various tasks conducted in communicating with prospects and applicants—advising individuals where information pertinent to the situation could be found on the University's Web site; retrieving information from the various admissions screens in the

student information system in order to inform applicants of the status of their applications; determining what, if any, documentation was missing; or advising applicants of admissions decisions.

The enrollment services core team conducted regular assessment of the activities assigned to the ES Communication Center. They quickly realized providing inquirers with the answers they desired *without* transferring their calls was garnering positive feedback from both prospective students and their parents. So, another experiment quickly followed.

The student employees in the ES Communication Center participated in direct mail projects. They assisted the Admissions Office in the assembly of packets of information for direct mail campaigns and related mail distribution (acceptance packages, search pieces, view books, campus visitation days, brochures, etc.). Through their involvement in these projects and through their awareness of mail drop dates, these student employees learned of the various dates of campus prospective activities. They gained the knowledge needed to answer prospective student and parent questions concerning the mail they had received.

The enrollment services core team also knew they needed to track these mailings for effectiveness. They began to experiment by using unique 1-800 phone numbers on direct mail pieces. This practice provided the student employees with the big picture—they assembled the direct mail items so they had an intimate knowledge of what went out and when, and they answered the calls (responses) coming into the unique phone numbers that served as a tracking mechanism. As a result, they obtained a global understanding of this new system and developed a desire to track results accurately. Not by coincidence, a "systems-thinking" mindset resided within these student employees and that injected the Center with a new synergistic spirit. As administrators, staff, and student employees worked together on this recruitment initiative, they constructed risers to success, one step at a time.

These relatively simple and successful experiments laid the groundwork for more intense centralization. The Admissions Office began to laude the benefits of giving the ES Communication Center access to its student information screens to answer phone calls. Within Enrollment Services, other directors were aware of the dramatic statistical drop in the number of calls coming into the Admissions Office, thus freeing staff to enhance other areas of operation. The word spread fast. Thinking they might achieve similar success, directors of areas outside of Enrollment Services considered allocating access to their core student information screens to the Center and routing calls accordingly.

This dialogue caused the enrollment services core team to speculate about the potential benefits the ES Communication Center could bring to the University. Given the right environment, it could morph into something much more—a true one-call/stop area. All they needed was a final "push" to make the concept of a "University-wide one-call/stop area" a reality. Then in late 1999, the President's Office obliged with its

announcement that the University intended to renovate the old library to create a one-stop student service center.

One-Stop Shop Comes to Ferris State University

With a move-in date scheduled for a May/June 2001 timeframe, Enrollment Services along with Business Operations began a one and a half year venture to bring numerous offices into a true one-stop shop. They held meetings in early 2000 and assessed what they would move to a true one-stop counter.

AACRAO's Basic Guide to Enrollment Management (2005, pp.137–152) outlines in detail Ferris State University's implementation of its one-stop student services center. In brief, the University moved core front-counter services from 22 areas to the student services center front counter—radical in volume alone. Most institutions offer core enrollment services functions and/or business office functions (*i.e.*, transcript services, simple business office payments, basic financial aid assistance, etc.). However, Ferris envisioned a holistic approach.

Administrators agreed to integrate these areas into the student services center counter operation:

- ▶ College Bookstore Third-Party Contracts (including all credit and collections functions)
- ▶ Basic Academic Dean's Office Functions (register and adjust schedules, total withdrawals with financial impact due to Title IV regulations, basic drop-and-adds, class selection, etc.)
- ▶ Dining Services (meal assignments, account adjustments)
- ▶ Financial Aid (act as financial aid counselors in providing financial aid advances, financial aid packages analysis, cash advances, accepting tax forms, etc.)
- ▶ Health Center Assistance
- ▶ Housing (accept housing contracts and adjust student residential life accounts for credits)
- ▶ International Affairs (all aspects)
- ▶ Judicial Services
- ▶ Loan Disbursement (all aspects)
- ▶ Payroll
- ▶ Public Safety (accept payment for tickets, assist in verifying access or denial thereof to various University services including recreation center, racquet facility, residence halls, etc.)
- ▶ Records Office (enrollment verifications, release of information, issue both official and unofficial transcripts, handle all FERPA forms, name and address changes, etc.)
- ▶ Recreation Center (all payment-related aspects)
- ▶ Residential Network Services (Microsoft license agreements, and network access permissions and denials)
- ▶ Student Activities (all account-related activities)
- ▶ Student Employment
- ▶ Student Government (all account related activities)

- ▶ Telecommunications (phone changes, ID card generation, bill discrepancies, fraud investigation, account adjustments, etc.).

In short, Ferris designed its one-stop student service center to be as true a one-stop as possible. Traditionally, universities offer many of these core functions at their student counter; however, individuals from specific areas perform certain tasks. Ferris trained its student service representatives working the front counter in all of the above services, thus eliminating the need to shuffle a student from window to window or from one representative to another.

This formulation allowed the enrollment services core team to begin to construct an ES Communication Center that would embody the concept of its student service center: a one-stop communication center where any ES Communication Center student employee could aid a caller in the resolution of his or her issue.

From the Front Counter to the Telecounter

As noted in *AACRAO's Basic Guide to Enrollment Management*, the student service center was a quick success and worked to aid the University in its overall retention success (2005, p.151). The core team successfully created the one-stop call center when they trained the ES Communication Center staff in the most requested front-counter, service-related enterprises.

Admissions, Records, and Recruiting

Besides the direct mail operation, Enrollment Services moved other core admissions and recruitment activities to the ES Communication Center. They involved student employees in more recruitment activities such as assembling informational folders for Ferris's Saturday Visitation program—"Dawg Days"—and creating prospect folders for Ferris's daily visitation days. Having first-hand knowledge of the content of each of Ferris's visit program options, the students were allowed to conduct campus tours and to sit on student panels during Dawg Days.

Students learned to enter prospective students' data gathered from the prospect cards culled at college fairs and high school visits into Ferris's central enrollment management CRM system, *EMT Connect*. From the EMT Connect database, the Admissions Office generates a list of prospective students registered to attend for each Dawg Day. The student employees call these prospective students to confirm their reservation, provide driving directions, and even reschedule the date if necessary. Managing registration is easy using the EMT Connect database, and it allows student employees to create one-to-one connections with registered guests. Many times, the student employees meet their specific "callees" at that weekend's event. The fruit of this linkage is self-evident at each Dawg Day event as there is an immediate rapport between prospective students and ES Communication Center student employees.

When administrators moved the responsibility of responding to inquiries regarding basic admissions decisions to the ES Communication Center, they created a paradigm shift. In addition, the Center's coordinator joined the admissions review committee, which examines files and makes admissions decisions on applicants whose qualifications appear to be borderline. Student employees do not participate in the decision-making process; administrators train them in how the process works, so they may give voice to it during inquiries. Because of their training, they conceptually understand the reasoning behind admissions decisions. Under the direction of the ES Communication Center coordinator, they answer basic questions as to why a student did not gain admittance to the University. The student employee eases the rejection notification and gives hope to the caller by outlining the ways in which he or she may gain acceptance to the University. In situations where the admissions review committee was involved in the decision-making process, the ES Communication Center coordinator, who is knowledgeable about the situation, handles the query. In short, the ES Communication Center responds to admissions' decision inquiries without the need to transfer the caller.

Lastly, Enrollment Services trained the student employees to do program changes for admitted students and the Records Office authorized the ES Communication Center to change addresses and phone numbers on data records within the EMT Connect prospect management system.

Business Operations

Wishing to provide better services to telephone inquirers, the director of business operations worked with the ES Communication Center coordinator and trained student employees on the topic of credit payment collections. The director and coordinator designed payment forms to procure the basic information needed to process a payment. To facilitate, student employees retrieve account summary information and payment schedule information on the student information system. Business Operations employees devote the time they used to spend responding to these calls to other core student processes.

Another benefit of the Enrollment Services collaboration with Business Operations is a reduction in non-paying students. Just before the beginning of each semester, the University drops the class schedules of many students due to non-receipt of payments due. The director of business operations runs a report one week prior to the "drop for no-payment" date—the Friday night prior to Monday's first day of classes. The ES Communication Center student employees call all students on this report during the early part of the week prior to the start of the semester and offer to accept credit card payments over the phone. By the end of the week, the ES Communication Center often pares a list of 1,400 students who have not paid down to 200. This reduction is a huge cost savings, especially to the students who would have to go through the hassle of making late payments and work-

ing with the University to obtain a schedule of classes. In terms of time savings, Business Operations eliminates the need to respond to approximately 1,200 students wishing to make payment, and the Records Office does not need to re-establish class schedules for that same cohort.

Financial Aid

Through the collaboration with Business Operations, the ES Communication Center's student employees have the ability to look up financial aid information on certain select screens. That access enables student employees to troubleshoot certain issues regarding financial aid with callers. They can communicate that the University has not received required financial aid documents, or provide the caller with information on the remaining financial obligation after his or her financial aid award, or they can assist students in completing the FASFA. The dean of enrollment services authorized the ES Communication Center to reprint award notices for students upon request. Assisting callers with financial aid concerns again eliminates the need to transfer calls and allows financial aid employees the ability to concentrate on other core activities.

Student Affairs

Each semester, the ES Communication Center assists the vice president of student affairs by conducting telephone surveys on various topics. Soon after the beginning of the Fall semester, student employees conduct a first-semester survey. An effective retention tool, this survey provides the University with the opportunity to connect (once again) with new students and resolve any issues or complaints they may have.

When the University launched its social norming campaign, the student employees called enrolled students to inform them of the program. They shared background information about this initiative, told students they would send them a flyer with information about Ferris students and alcohol consumption, and advised them of the slogan for the program—*"Most Ferris students drink moderately, 0-4 drinks per week."* A week or so later, the student employees conduct a follow-up survey, calling students and asking them if they can remember the slogan. If they can, they receive a coupon for a free pizza from a local establishment.

Are We Successful?

The enrollment services core team established these objectives with the expansion of the ES Communication Center's responsibilities:

- ▶ to offer students a single high-tech point of contact for all their administrative transactions
- ▶ to alter, enhance, and streamline business processes
- ▶ to significantly improve the quality of service delivered to student customers
- ▶ to provide opportunities for increased professionalism and job satisfaction for staff.

Examples of business process improvements include the following:

- ▶ Transformation of tasks performed by staff to empowering students through web self-service
- ▶ Ability of student employees to track progress of caller requests via CRM portal (EMT Connect)
- ▶ Step-change in sophistication of telephone call handling through establishment of new ES Communication Center and use of industry-standard call center technology (*Symposium*)
- ▶ Integration of systems to provide summary information to staff, *e.g.* total debt position of student relative to the University as a whole
- ▶ Extensive use of electronic workflow to process tasks regardless of the origination channel
- ▶ Use of electronic document management to scan (input) and retrieve paper records in order to provide a better audit trail and improve service to inquirers by providing all information on the advisor on-screen.

Technology is transforming the traditional communication center, allowing staff to be in contact with customers in a number of different ways, including—but not limited to—e-mail, chat, Web browsing, voice mail, and instant messaging.

In the past two years, the University experienced a dramatic increase in the volume of e-mail inquiries. To speak to

this increase, Enrollment Services implemented an automated online FAQ system, called *EMT Answer*, to enable prospects and applicants (along with their parents) to visit the Ferris Web site, type in a question, and obtain answers to routine questions without intervention from a staff member. This technology has dramatically improved service and increased the efficiency of the University in providing important information to key constituents.

This year, Ferris implements its new student information system, which allows the University to retrieve students' records and histories of all previous contacts with the ES Communication Center. Callers do not have to "re-live" the experience of prior calls or in-person contacts. Not only is this feature powerful in assisting students in university-related business, but it serves as a powerful relationship-building tool as well. Here's a simple example. If the student caller engaged in a sidebar discussion during a prior call and mentioned that the family dog was sick, the employee taking that call may make a notation of such. During subsequent calls to the University, another student employee may take the call and inquire about the well-being of the caller's pet. Translation: Ferris even cares about Fido!

Ferris is keen to further improvements in the ES Communication Center. A recent upgrade of the telephone system enables calls to route automatically to appropriate teams. The Symposium telephone system, which logs all con-



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tacts with the Center, produces statistics on the level and date/time of activity. The enrollment services core team uses this data to adjust service provisions to meet student demands. Also, the team implemented a new student survey and will use the results along with the statistical data to review services and make improvements.

Customer service studies show that when customers receive the service they seek; they credit the individual employee who assisted them; however, when they do not receive the service they seek, customers usually blame the organization itself. This fact makes it crucial for any organization to have the right number of people, with the right skill sets, at the right place and the right time, ready to answer customer demands.

Clearly, recruiting and hiring staff, training and coaching that staff, and conducting ongoing assessment of the operation are very important to success. ES Communication Center staff are the front-line human element for the customer. In many instances, they create a first “human” impression of an institution. The staff need to feel they are a vital part of the school in order to promote the reputation of the organization. Selection of staff with customer service skills—excellent communication skills, writing skills, and a positive attitude—is very important. It is also important to recruit personnel with life experience appropriate to the customer, to ensure that they are capable of providing quality services to the customer.

The ES Communication Center at Ferris State University operates as a first point-of-contact with the University’s constituents (including prospective, admitted, and enrolled students and their parents; faculty; staff; alumni; and the general public). ES Communication Center staff field all incoming calls not directed to a private line or to one of the other telecommunication centers, and determine the purpose of the call. They are knowledgeable about the University’s services, programs and courses, and have access to a wide range of information. To this end, the enrollment services core team has met its established goals. Telephone communication with Ferris’s student customers through a single portal is a huge benefit to the University in terms of equipment costs, simplified implementation of new technologies, better control over service quality, reduced management staff requirements, and increased operational efficiencies. More importantly, the benefit to Ferris’s student customers is immense.

Imagine calling the customer service center of any organization. A human answers your call (not an automated phone system that takes several minutes to navigate). The customer service representative is friendly and professional (wow!), knows information about you, and provides an accurate response to your issue (no call transfers here!). This system streamlines communication, it builds your relationship with that organization, and it provides you with a moment that you are likely to share with friends and family. Now that is powerful!

References

Westman, C., and P. Bouman (Eds.). 2005. *AACRAO’s Basic Guide to Enrollment Management*. Washington, D.C.: American Association of Collegiate Registrars and Admissions Officers.

ABOUT THE AUTHORS

Penny Bouman is Manager of Enrollment Publications and Communications and creates multifaceted messages that engage gamer prospects and their parents in ongoing dialogue with Ferris State University. She also assists with incorporating marketing communications’ delivery systems that meet the demands of this audience while providing Ferris with easily accessible assessment and accountability mechanisms. Penny has twenty years of service to the University and previously served as Manager of Institutional Research and Testing.

Gerri Gomer is Coordinator of the Communications Center in Enrollment Services at Ferris State University and has served the University for six years. Gerri and her staff of 25 student workers respond to 6,000 incoming calls each month through four toll-free lines; conduct surveys of prospective, admitted, and enrollment students and their parents; and interact on a daily basis with high school counselors—all the while strengthening relationships between the University and its constituents.

Ronnie Higgs is the Assistant VP for Student Affairs and Financial Aid at Ferris State University. He is responsible for all areas impacting student services within the enrollment services unit. Ronnie joined Ferris as Director of Financial Aid. He served as Director of Financial Aid for over seventeen years within the University of Georgia and the University of Texas systems. He also served as an Interim Dean of Enrollment Services prior to coming to Ferris.

Craig Westman began his career in higher education at Florida State University where he served as Registrar for the University’s Center for Professional Development. At Ferris State University, he has served as University Registrar and Interim Director of Admissions and Recruitment. In his current position as Associate Dean, Craig assists with the overall operation of the division of Enrollment Services including Admissions and Records, Articulation, Enrollment/Recruitment Technical Services, and university-wide recruitment efforts.

Note: Copies of this publication can be purchased online at www.aacrao.org/forms/PublicationForm/, or by phone at (301) 490-7651.

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Incorporating Non-credit Curriculum into a Student Information System

by Tom Watts

Oregon State University (OSU) has held discussions over the past several years between Enrollment Services, Central Computing and the Finance Support Offices, and departments on campus that offer non-credit coursework, about the possibility of incorporating non-credit related records into the same information system that houses regular credit. Last year, OSU successfully incorporated the first instance of non-credit work into the OSU Banner information system. Shortly, we will begin detailed discussions with a second group that offers non-credit coursework. Our success with the first group—the Extended Campus K-12 program—was not surprising, but it did involve tackling new problems and collaborating on solutions that made the non-credit record processing system accurate, efficient, useful, and manageable. The second group that we will work with is the English Language Institute, and our goal is to duplicate the success of the ECampus K-12 program. This article describes what we encountered, how we managed the implementation process, and some of the significant issues in working with non-credit records.

Introduction

Non-credit courses at Oregon State University have existed in several departments for many years. Some departmental workshops and seminars have been offered as non-credit sessions, and some of the workshops as part of the University's distance education program are non-credit or have non-credit counterparts to the credit sessions. In addition, the Office of International Education's English Language Institute (ELI) offers non-credit language courses for students who come to the University specifically for intensive English language programs (typically in summer or short-term programs), or for international students who need to improve their English skills prior to acceptance to OSU programs (typically graduate programs).

In the past, the record-keeping for those courses has been done with information systems maintained by the departments. There have been conversations about the use of the university student information system (Banner) to record that information, but until recently, the discussions had been very informal and none of the non-credit coursework had been incorporated into the Banner system. That changed two years ago with the request from the OSU Extended Campus (ECampus) division to have the K-12 program data managed in the Banner system. The K-12 program required a detailed records system that ECampus could rely on to build schedules, complete registrations and billing, and to forward course results to participating K-12 school districts. That level of record keeping was beyond a departmental database, and the ECampus request was for Registrar's Office assistance, together with the other necessary offices, to provide records for the K-12 non-credit program.

The implementation was begun with information sessions that detailed the purposes and requirements of the K-12 program, and from there the support offices defined how the OSU student information system and finance system (Banner) would be used to incorporate the data, and how the various processes necessary to the project would be handled. The ultimate success of the project, both in terms of meeting the implementation deadline and in effectively creating the non-credit system, was based on identifying the implementation team, defining the requirements, assigning tasks and deadline dates, and effectively melding the work on several fronts into the final system product.

From Planning to Implementation

The most daunting aspect of the K-12 non-credit project was that this was our first foray into the arena of non-credit coursework and records in Banner. The unknown aspect—from how

to create a system to record non-credit information within Banner, to what exactly would be included in the non-credit records—was as puzzling as it was challenging. The elements of the implementation plan that made the project ultimately successful included: identifying and including the players in the implementation, defining the scope of the project, and creating a schedule as quickly as possible for the tasks that needed to be completed for the first term of implementation.

IDENTIFYING THE IMPLEMENTATION TEAM

The group that would become the implementation team was initially called together by the OSU registrar, who was the first and primary contact for the κ -12 program staff. The registrar called together a group that she knew would be required to develop the system for the κ -12 non-credit information in Banner. That implementation team would require the appropriate representatives from the ECampus κ -12 program, and would also require representatives from the appropriate support offices.

The implementation team was quickly established and included:

- ▶ ECampus κ -12 program (Director of κ -12)
- ▶ ECampus Student Services (Outreach Director, Director of Business Services, IT Systems Analyst)
- ▶ Enrollment Services (Registrar, Assistant Registrar, Registrar IT Manager, Admissions IT Manager, and Admissions Associate Director of Operations)
- ▶ OSU Business Affairs Office (Student Accounts Manager)
- ▶ OSU Central Computing (Manager of Administrative Computing, and Programmer/Analyst)

The registrar and the ECampus outreach director became the co-chairs of the implementation team. The registrar managed the support groups represented on the team, *i.e.*, Enrollment Services, Business Affairs, and Central Computing. The ECampus director managed the ECampus groups. The implementation team quickly became an excellent working group. The team gelled very nicely over the course of the implementation, making the planning meetings and information exchanges very useful and productive.

As the implementation progressed, the implementation team expanded to include smaller working groups within each area (Registrar's, Admissions, κ -12, and finance staffs), and the work of those groups was summarized and explained to the larger group at each meeting. These groups generally worked on the specific processes within each department, identifying how those processes would work and what further analysis needed to be done by the larger group.

The excellent working relationship of the implementation team became one of the most prominent successes of the project, and was recognized as such by all players on the implementation team.

IMPLEMENTATION MEETINGS

The first step of the implementation planning was an organizational and informational meeting that provided:

- 1 an overview of the κ -12 program,
- 2 an explanation of the courses and services that the ECampus κ -12 program would offer to students,
- 3 a general discussion of the enrollment services that ECampus would require from the Admissions and Registrar's Offices, and
- 4 a discussion of the fee assessment and collection issues.

The first meeting also allowed all players in the implementation to ask questions and submit ideas about the range of topics that we would need to address in the implementation. The first meeting provided context and a great deal of useful information; however, the most beneficial outcome of the first meeting was the consensus that regular, agenda-driven meetings would be required throughout the process.

From that first meeting, the full implementation group met on a regular basis, with intervals no longer than a month between meetings. Each meeting was organized around an agenda, which then became the framework for keeping track of tasks and completion dates. The minutes of each meeting were kept in sufficient detail to serve as a history of what was done and to record the agreements that were made on timelines, coding, deadlines, and other decisions. Reference to the minutes was consistent throughout the planning stage.

As the meetings progressed, the agendas became more specific, and the focus and progress of each meeting better defined. The full implementation team met about once each month, and after the first several meetings, smaller work groups were established and their work was reported in the full meetings on tasks completed, issues resolved, and items that surfaced that needed the full implementation team's attention.

The meetings were excellent opportunities to exchange information and for each office or department within the full implementation team to see the issues from each other's perspective. For example, the opportunity to understand why certain processes were needed, why information had to be created in a certain format, how and on what schedule the courses would be offered to the κ -12 students, and how the nuts and bolts of the scheduling, grading, and billing would work gave everyone a full appreciation for the complexity of the project.

TASK SCHEDULES AND DEADLINES

One of the interesting balances that had to be struck in this project was how to define the project parameters and enhance the final product, while at the same time meeting the project go-live date of Fall 2003. It was tempting to refine and to try to perfect the system from the outset; however, the project was also on a fast track, and the tasks necessary for the admission, course scheduling, registration and fee assessment for the first semester had to be completed.

One of the most important methods to meet the implementation timeline was to establish critical tasks and deadlines for completion. The first discussions for the project began in February 2003, and the start date was set for the Fall 2003 semester, beginning in early September 2003. Deadlines were established for:

- ▶ Banner coding guidelines
- ▶ admission Web site processes
- ▶ course scheduling
- ▶ tuition and fee rates
- ▶ fee assessment and billing processes
- ▶ other related tasks.

Those related tasks included K-12 processes for information release to parents, school district communications, and defining data warehouse information requirements and access, among others.

The various tasks presented the usual challenges, such as issues that arose that required testing, and additional requirements that surfaced that had to be included. In addition, all the staff members working on the implementation had other responsibilities, so time constraints and schedules were a formidable issue. There was a lot of cooperation and collaboration in the completion of most of the tasks, and all the necessary tasks were completed in time to meet all deadlines.

After the implementation deadline, there was continued work on enhancements and adjustments to the system that made processes, reports, and communication more effective; however, the implementation team put its energy into meeting the deadlines for the tasks that we defined as central to the initial implementation.

Issues Important to the Implementation of Non-Credit

One of the reasons that the K-12 non-credit project was interesting was that it presented a variety of issues that the implementation team had to resolve before the system could be implemented. There were issues related to the courses and services that the K-12 program wanted to offer students, and related issues that the support offices had to resolve in order to make the non-credit information useable in Banner. Both groups worked to resolve the issues and there were many instances of compromise in how processes would work, such as the timing of processes and how data would be entered. It was important in meeting the challenges that the full group concur on the solution, and in every instance that occurred.

Some of the more pressing and interesting issues included:

- ▶ how to effectively segregate the non-degree data in Banner,

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- ▶ how to structure the admit process and what level of assistance to allow school districts to have in the admit process,
- ▶ how to accommodate third-party billing and the timing for fee assessment,
- ▶ how to adapt processes for registration, registration changes, grading, and transcript request, and
- ▶ how to accommodate the requests from parents to have access to information.

EFFECTIVELY SEGREGATING NON-CREDIT DATA

The first major challenge was developing a way to segregate non-credit information from the other data on Banner. Our task was to devise a coding scheme to ensure that terms, courses, grade modes, student level, and instructors were all associated with the K-12 non-credit program.

The coding scheme was designed so that where appropriate, the coding could be used for other programs that we added to the non-credit portion of Banner. For instance, College and Student Level were coded as NC—for non-credit—and if other non-credit programs are added, those codes will be used for those programs as well.

For information that is K-12 related, the codes identify the K-12 program specifically. For instance, Student Type and Term codes identify the K-12 non-credit program. When the records for other non-credit programs are implemented into Banner, we will want to keep the data for the various non-credit programs segregated from each other, and the non-credit data segregated from credit information. Our coding guidelines for non-credit information were designed specifically with those levels of separation in mind.

STRUCTURING THE ADMIT PROCESS

The Office of Admissions worked closely with the K-12 program staff to identify an admit process that allowed students to apply for non-credit programs themselves, and that was also accessible to school districts if they wanted to assist students or admit students en masse for the program.

The admit process is web-based, and allows for Office of Admission intervention if necessary. Because some school districts were interested in the K-12 program for specific groups of students, or for students who would take specific classes (language or mathematics, for example), the school districts were interested in admitting groups of students at one time. The Admissions staff and K-12 program designed the admit process so that with the appropriate notification and access approval from K-12, school district administrative staff can assist students with the admit process, and the process can also accommodate school districts who want to absorb the cost of the admit fee rather than have the student pay the fee.

The flexibility in the admission processing is a very great benefit to the K-12 students, the school districts, and the OSU K-12 program.

FEE ASSESSMENT AND ACCOMMODATING 3RD PARTY BILLING

Fee assessment and third-party billing were very important considerations in the implementation. For fee assessment, the Business Affairs Office (BAO) worked with the accounts staff from Extended Campus and with the K-12 staff to determine the best timing for assessments, how to accurately assess tuition plus fees for the courses, and, perhaps most importantly, how to handle the processing for the school districts who wanted to pay as third-parties for the costs of the classes.

Because the K-12 courses are set up on eighteen-week semesters, rather than the OSU ten-week terms, the assessments follow a different schedule. The timing also factored in drop periods, when students could drop classes with varying levels of tuition reimbursement.

Central Computing also helped the Business Affairs Office (BAO) and K-12 staff with the mechanics of the billing processes, ensuring that the changes to the usual OSU fee assessment and billing cycles would work effectively for BAO and the ECampus K-12 staff members, and that the process to handle the third-party billing worked well for OSU and the school districts involved.

Fee assessment required a great deal of coordination between all the offices working on the implementation, and was one of the more complicated issues; however, it was resolved before the deadline date. There have been several adjustments to the process and the timing that have made the fee handling more efficient, but the initial process that was in place for fee assessment was a very good one.

PROCESSES FOR REGISTRATION, GRADING, AND TRANSCRIPT REQUESTS

Some of the central concerns for the program were the creation of a schedule, the process for student registration, course grading and grade distribution, and processing the requests for transcripts.

These issues were dealt with in large part through a small working group from the Registrar's Office. The registrar, assistant registrar, IT manager, records manager, and special programs manager all worked on the issues, with excellent support from central computing staff. The intent was to use technology as much as possible, and to use the processes for credit programs as the template for corresponding processes for the non-credit program.

This registration and records processes relied greatly on the effectiveness of the coding guidelines, and the working group worked smoothly through the issues on the different timetable for activities (eighteen-week semester versus ten-week term), and addressed the possibility that the younger student population might be less adept or comfortable with the web-based processes for registration and records request. Creation of the courses in a Banner catalog, and creation of the sections for the specific terms were coordinated with the K-12 staff.

The design of the transcript for non-credit coursework required a great deal of effort from the working group, and the transcript issues were dealt with by the assistant registrar and records manager, and the registrar's IT manager. *Display fields, online request processes, and legends* for the information were all issues that the working group resolved. The transcripts are tailored specifically for the non-credit programs, and can be used by other programs whose records are incorporated into Banner.

As ECampus K-12 completes its second year using Banner, the registration processes, grading cycles, and transcript request procedures are all working extremely well.

PARENT REQUESTS FOR INFORMATION

Increased parent involvement has made access to records a key issue. OSU's policy is restrictive, allowing only students access to academic records. There are virtually no exceptions to this policy, but BAO has procedures in place that allow parents to access fee and payment information, if parents and students request that access.

K-12 staff knew the interest that parents would have in their children's registration, grades, and fees. In order to ensure that information was available and confidentiality and appropriate disclosure were ensured, the implementation group agreed on two steps:

- **Parental permission for students to enroll.** ECampus and K-12 staff follow-up with parents after a student is admitted as a non-credit student so that parents understand what the student has done and what the expectations are.
- **Parental requests for information.** On the web admission application, there is a check box that the student can use to indicate that his or her parents have permission to request information related to K-12 registration and records.

The permission for parents to obtain information is stored in Banner, and before requests are answered, the core offices check that field to make sure that the parents have been granted access to information.

The K-12 program and the core offices (Admissions, Registrar's, and Business Affairs) have created procedures that accommodate parents' requests for information about their student's progress in the K-12 program.

Replicating the Success of the K-12 Project

This project required an innovative and creative approach to the use of the Banner system and the processes that support the K-12 program. All members of the team understood that the project would require some unique processing, and that the success would depend on collaboration and cooperation between the various offices involved. That is exactly what happened, with excellent information exchange, creative use of the Banner functionality, and effective processes for resolving issues.

The project has been a success from its initial implementation to the adjustments that have been made to fine tune the process and procedures. The successful work on the K-12 program also has made it a very useful template for the non-credit projects that will follow.

ABOUT THE AUTHOR

Tom Watts is the Assistant Registrar at Oregon State University. He works with dual enrollment, study abroad programs, National Student Exchange, and OSU collaborative programs with a variety of other schools.

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by Rita Owens

Student Information Systems: A Guide to Implementation Success

DR. SHARON F. CRAMER; 2005; AACRAO; PP. 336

It seems like a millennium ago that we were all consumed with the dreaded approaching Y2K and our fears that every computer program would malfunction at the stroke of midnight. Like those in other industries, many of us in colleges and universities were forced to replace our legacy administrative systems including our student information systems. Major implementation projects were spawned and with those came: software vendors, consultants, project managers, functional team leaders, technical team leaders, business and project plans, communication strategies, business process reengineering, and much change. Wouldn't it have been wonderful to have Sharon Cramer's *Student Information Systems: a Guide to Implementation Success* to help us weave through this maze? Fortunately we do now, and Cramer's book should be required reading for student services and higher education information technology professionals alike.

Employing a combination of extensive research, common sense, and sound logic, as well as actual experience, Cramer puts forth a variety of options that make up successful SIS implementations. The book is generally divided into four sections: a summary of an AACRAO survey administered in spring 2005 (Chapter 1); a detailed analysis of successful practices based on Cramer's experiences at Buffalo State College as well as those at fourteen other campuses (Chapters 2-6)¹; findings from Cramer's investigative research involving 74 people from 10 campuses (Chapter 7); and a collection of appendices. It must have been challenging to bring together

the vast amount of information (sometimes conflicting) that she collected, but Cramer does so in an interesting and informative way. She employs a variety of clever and effective techniques that make this sometimes dry material come alive. Readers will enjoy, for example, her subjects' direct quotes imbedded in the margins throughout chapters 1-6. These resonate with most of our own experiences or those we've heard other colleagues express. Who wouldn't identify with this quote from a first-time project manager:

"When I agreed to take the role of project manager, I thought it would be interesting and I would learn a lot. I had no idea how much more important my "people" skills would be than any other talent I had. I learned to listen, and that gave me credibility on campus" (p.83).

But perhaps the most useful elements within the chapters are the inserted "pointers" that provide specific advice on topics ranging from training to communication to buy-in strategies. These pointers are verbatim suggestions from AACRAO members who contributed their advice to colleagues about to begin implementation activities.

The most compelling information presented is around the unique challenges we all face when implementing systems in colleges and universities. Cramer continually reminds us that strong leadership, good communication, fostered collaboration, campus buy-in, and solid training are the keys to a successful SIS implementation. And throughout the text she raises these issues in a variety of ways and in great detail. We are exposed, in great depth, to all elements of an SIS implementation, especially those on the functional side.

Later, when discussing communications, she even reminds us to be sure our project Web sites are kept up to date. Cramer leaves no stone unturned. Because of this, a novice systems implementer can be assured that this text can be trusted, and

¹ Ten schools were part of the in-depth interview process, and four schools participated in the pilot research project.

the veterans will be reminded of the detail they might otherwise overlook. And while many texts simply include appendices as back-up material, this book's nine appendices support a reader in a very different way. They actually contain invaluable examples of documents and planning materials that others can use in their own projects. These might even provide the basis for a new project for Cramer—writing that SIS project team workbook we could all use.

In fact, if there are any gaps in this text they are those that Cramer herself mentions in her introduction. This is not a technology implementation guide. I suspect that a technologist would have a different perspective on SIS implementations and it would be nice to understand that view since striking a good balance between techies and non-techies on a project team is critical for success. Also, it would be useful to document the actual product acquisition stage in a project, as choosing the right approach and product is most critical to success. But these ideas are for others to research.

At the beginning of the book, Cramer tells us that she initiated the research initiatives and writing of her book when she took on the SIS project manager role at Buffalo State College, because she found very little written on the topic. She's right. While organizations like AACRAO and EDUCAUSE might give us the venues in which to publish, most of us involved in system implementations rarely take the time to document what we've learned. And, when we do write, we often see the world only from our limited perspective, saying, "Look at what I've done at my institution." Cramer's conclusions and advice are based on data gathering and analysis and only sprinkled with personal experiences. This does occasionally force Cramer into giving the reader too many options regarding an implementation—which might prove confusing—but overall it grounds the work in data rather than opinion, which is invaluable. The approach here is certainly a refreshing one and for more reasons than this.

There are many project management and change management texts on the market written by scholars and experts alike. But this text is unique in that it is written from the user perspective and a higher education user at that. More importantly, I believe it is Sharon Cramer's lack of history implementing student information systems that allows her to write such a useful text. She assumes nothing and questions everything. She's actually an end-user (faculty member, department chair, and researcher) who was plucked to lead an SIS implementation and did so very successfully. This unique perspective allows her to look at interview and survey data with an open mind, not one limited by personal experience. In

other words, there is no ego involved in her approach. I, myself, have implemented over ten student information systems and dozens of major upgrades over a 30-year period. I am so tainted by own experiences that I could never have produced such a thorough and objective resource.

Reading this book made me reflect on our current state of technology in student services.

As mentioned, this book came as a result of the very large SIS implementations that began in the 1990s. They were complex, expensive, time-consuming, and often demoralizing for our campuses. While Cramer reminds us that most who become involved in these implementations feel proud of their accomplishments at the end, there are also many stories of fine registrars and CIOs who left their professions rather than face these daunting projects. I can't help but hope there might be a better way. With the new modular services oriented architecture (SOA) platform both vendors and IT departments are now promising, there is some hope that we can install student systems in a less intrusive way. Instead of implementing mega-systems in very short order and under so much pressure, we might go back to the days where we could implement a single set of services—for example, web registration—over a reasonable period of time. Hopefully there will once again be a way to make continual improvement to our services and systems, rather than the massive, radical change most recent enterprise resource planning (ERP) systems have forced us into and with which we have so much trouble. Cramer's book, however, will stand the test of time even if projects do become more manageable. Her work stands as a fine reflection of how to engage an institution in change resulting in a successful implementation. We in the student services profession owe Sharon Cramer a debt of gratitude for conducting this research and writing her book.

ABOUT THE AUTHOR

Rita R. Owens is Associate Academic Vice President at Boston College, where she provides direction for student information systems as well as for eTeaching initiatives. She is currently leading the University Core Systems project to replace all student information and peripheral systems. Owens also oversees the department of Instructional Design and eTeaching Services. She previously directed academic technology services for the university. From 1996-2000, she was the Project Leader for Service Strategies at BC during which time she led the transformation of BC's student services by creating the Office of Student Services.

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