

Environmental Scanning for Strategic Planning at Higher Educational Institutions: A Literature Review for Engineering and Technology Faculty

Mr. George Ford, P.E.¹ and Dr. Ron Miers²

Abstract - Since the 1980s, strategic planning at higher educational institutions in the United States has become more common in response to the “foundational stress fractures in public support for higher education [Dooris, 6, p.7]. Money is tight nationwide. A well conceived strategic plan will provide all constituents of a university with a vision of the magnitude of assets needed, such as manpower and finances, to support mission attainment. University presidents must create environments on their campuses which promote efficient spending and utilization of available funds to support their institutional missions. These typically include construction of new buildings, programs to directly support teaching and learning, and accreditation. The strategic planning process for engineering program administrators may be initiated with environmental scans of issues which may affect the core values of the institution. An environmental scan is an assessment of internal and external issues and factors which potentially may impact an educational institution. This paper addresses five common themes for higher education environmental scans.

Keywords: strategic planning, environmental scanning, university planning, environmental scan

INTRODUCTION

Recent examinations of student enrollment growth in four-year engineering and two-year engineering technology programs in the United States show some very minor improvements. Enrollment in medical service programs has increased substantially in proportion to population growth. However, engineering-related program enrollments have been on a general decline for the last decade [Engineering technology enrollments, 7]. Educational budgets for all levels of the educational system including K through 12; technical, community colleges; and universities also seem to be declining. In addition to reduced enrollments and decreased budgets, four-year engineering and engineering technology educational programs typically lack diversity among their student bodies [National Science Foundation, 13]. In the Physics and Engineering undergraduate fields in the United States for instance, women make up only 20% of the population, and in graduate programs, the gap is even wider [Sealy, 15]. Reduced enrollments, declining budgets, and lack of diversity create a challenge for engineering and technology program faculties. Engineering and engineering technology educational program administrators and faculty members are under pressure to find ways to increase enrollment and graduation rates in spite of budgetary constraints.

Engineering and technology program faculty and administrators must think and plan strategically. There are many models of strategic planning, but planning models at higher educational institutions are not as well represented in the literature as are planning models for economic and industrial organizations. Educational administrators must formulate a framework for their plans which fit their organizations. The Dolence model provides a flexible structure for strategic plans. The ten steps of the Dolence process are:

1. Develop key performance indicators.
2. Perform external environmental assessment.
3. Perform internal environmental assessment.
4. Perform strength, weakness, opportunities and threats (SWOT) analysis.
5. Conduct brainstorming.

¹ Western Carolina University, Belk 211, Cullowhee, NC 28723, gford@wcu.edu

² Western Carolina University, Belk 211, Cullowhee, NC 28723, rmiers@wcu.edu

6. Evaluate the potential impact of each idea on each strength, weakness, opportunity, and threat.
7. Formulate strategies, mission, goals, and objectives.
8. Conduct a cross-impact analysis to determine the impact of the proposed strategies, mission, goals, and objectives.
9. Finalize and implement strategies, goals, and objectives.
10. Monitor and evaluate actual impact of strategies, mission, goals, and objectives.

The Dolence process provides a detailed step-by-step approach to strategic planning. After developing key performance indicators, steps two and three of the Dolence process requires a review of internal and external issues and factors that might affect an institution or program. This review is frequently referred to as environmental scanning, and may be done at any level of the organization.

Current higher education literature includes several common themes pertinent to environmental scanning. There are five recurring categories of interest which provide a framework for an environmental scan which are: Demographic, Economic, Political, Social/ lifestyle, and Technology [University of North Carolina, 21]. This discussion addresses these five categories of interest in the context of higher educational institutions.

DISCUSSION

Market demographics need to be known when considering student recruiting and retention, and other aspects related to student enrollment. Census information and forecasts often will provide helpful information to utilize in an external scan. Race and ethnicity issues fall into this category. The Hispanic population of the United States is growing. Universities must consider how to provide service to this growing sector of the population with a median age of 27.4 years [US Census, 19]. International students must also be considered by university officials as potential paying students [University of North Carolina, 21]. The demographic make-up of the existing student body of an institution provides material for an internal scan.

Economic aspects include “trends in institutional budgeting practices and financial resource development, national and state education budgeting, financial aid, tuition, as well as global economic issues” [Society for College and University Planning, 16]. A recurring theme in the literature states that many universities “should rethink how they manage operations and work on streamlining their efforts to raise money. Universities must change from traditional non-profit fund-raising techniques, but avoid the pitfalls of the for-profit industries” [Strout, 17, p. 32].

Funding to support institutional missions is likely the most discussed issue in the current literature [Society for College and University Planning, 17; Macneil, 12]. The federal government is expected to continue reducing funding for all educational programs [Fong, 8], including university programs, while increasing accountability programs such as No Child Left Behind. Funding resources at the state level are also likely to decrease. For instance, although tax revenues from the state of North Carolina are anticipated to increase, anticipated revenue shortfalls will still remain a serious cause of concern [NCCCS Strategic Plan 2007-2009, 14]. Innovative revenue raising methods such as a cost-based fee structure that charges fees based upon program costs, and a program to assess academic units based upon generated revenue are two methods discussed in the literature [Claggett, 4; Hearn, et al, 10].

Political aspects for an environmental scan include any local, county, state and federal governmental considerations. A new state law affecting an institution might be a good example. Homeland security and legal compliance related to diversity are current issues in the political category found in recent literature. “Hundreds of colleges around the country have created programs on those [homeland security] issues” [Carnevale, 2, p. 34]. These programs include on-line and distance formats, undergraduate and graduate courses. National Guard and military personnel are student recruiting targets. Recruiting qualified instructors for these programs may also prove to be challenging for program administrators.

Diversity is often mentioned in current literature [Cavanagh, 3; Garcia, 9]. Supreme Court rulings in 2003 allow the limited use of race in student admissions [Cavanagh, 3]. It is recommended that college and university mission statements reflect a consideration of diversity. In addition, hiring policies and practices should reflect diversity. “An institution can gain a strong competitive advantage by creating a

campus environment where the students from diverse populations believe and feel that they fit in, where they are welcomed like family, and where there are no biases against their ability to achieve academic excellence” [Jordan, 11, p.50].

“The social/lifestyle area focuses on trends related to changing individual values and their impact on families, job preferences, consumer decisions, and educational choices, and the relationship of changing career patterns and leisure activities to educational choices” [University of North Carolina, 21]. Recent information in the literature concerning societal trends is unclear as to their impact on higher educational institutions. The Hispanic population is growing as previously discussed, and the current domestic population is aging [US Census, 19]. There is a statewide shortage of public school teachers which will be exacerbated by any population growth. The aging population is cited as a primary cause of the health care worker shortages, and this trend is expected to continue [Adams, 1]. An environmental scan of societal issues related to a specific higher education institution should consider these trends.

Technology aspects include issues related to technology on an institution’s campus or within a classroom. The trend in higher education towards student self-service for enrollment and registration is one example of a technological issue. The use of technology in the classroom is an obvious example of a technological issue, but there does not appear to be a clear and consistent definition of technology among institutions of higher education. For some universities, technology is having instructors use a computer PowerPoint presentation for lectures. For other universities technology relates to on-line and distance courses and programs. Future fossil fuel shortages and transportation, sustainability, and green construction issues are mentioned in current literature as factors that will trigger increased reliance on technology for instructional delivery [Urstadt, 22].

CONCLUSION

The common environmental scanning themes discussed in literature and outlined in this paper will provide a starting point for analysis. A strength, weakness, opportunities and threats [SWOT] format might be used to analyze the data collected from the environmental scan. Issues internal to an institution may be used to summarize the strengths and weaknesses of an institution. Issues external to the institution may present opportunities or pose threats to the institution. The Dolence Strategic Planning Process [Dolence, 5] will provide guidance related to the required additional steps needed to complete the planning process. SWOT analysis should generate a short list of “issues of greatest concern to the institution” [University of North Carolina, 21, p. 5]

REFERENCES

1. Adams, B. [2005]. 2007-2009 NCCCS Planning Assumptions. North Carolina Community College System. Retrieved on March 3, 2007 from: <http://www.ncccs.cc.nc.us/>
2. Carnevale, D. [2005]. A degree you hope you never need. *Chronicle of Higher Education*, 51[24], 33-34.
3. Cavanagh, S., [2004]. Colleges get help on admissions rulings. *Education Week*, 23[22], 6.
4. Clagett, C. [2004]. Applying ad hoc institutional research findings to college strategic planning. *New Directions for Institutional Research*, 123[Fall], 33-48.
5. Dolence, M. & Norris, M. [1995]. *Transforming higher education*. Ann Arbor, MI. Society for College and University Planning.
6. Dooris, M., Kelly, J., and Trainer, J. [2004]. *Successful strategic planning*. San Francisco: Jossey-Bass.
7. Engineering technology enrollments. (2002). Engineering Workforce Commission
8. Fong, B., [2005]. The economics of higher education. *Liberal Education*, 90[1], 42-47.
9. Garcia, J. [1997]. The educational horizon shifts for US border colleges. *Black Issues in Higher Education*, 14[1], 8.
10. Hearn, J., Lewis, D., Kallsen, L., Holdsworth, J., and Jones, L., [2006]. Incentives for managed growth: A case study of incentives-based planning and budgeting in a large public research university. *The Journal of Higher Education*, 77[2], 286-316.
11. Jordan, R., [2007]. Diversity & the AAC&U statement on academic freedom and educational responsibility. *Liberal Education*, Winter, 2006.
12. Macneil, W. [2001]. Socked in the pocketbook, N.C. colleges dread season of discontent. *Community College Week*, 13[20].
13. National Science Foundation (2002). *Higher Education in Science and Engineering*. Retrieved 11/18/2003 <http://www.nsf.gov/sbe/srs/seind02>
14. North Carolina Community College Strategic Plan 2007-2009. Retrieved on March 3, 2007 from: <http://www.ncccs.cc.nc.us/>
15. Sealy, C. (2002). The leaky pipeline, *Materials Today*, August 2002, 4
16. Society for College and University Planning, [2006]. Updated trends in higher education. Retrieved June 3, 2007 from <http://www.scup.org/>.
17. Strout, E., [2006]. Survey outlines fund raiser's concerns. *Chronicle of Higher Education*, 53[7], 32.
18. Williamson, J. (2004). Chief academic and finance officers' perceptions of the effectiveness of strategic planning in Minnesota community and technical colleges. Doctoral dissertation. University of South Dakota.
19. United States Census Bureau, [2007]. Annual estimates of the Hispanic or Latino population by age and sex for the United States: April 1, 2000 to July. Retrieved on June 3, 2007 from <http://www.census.gov/population/www/projections/popproj.html>
20. United State Department of Labor [2006, June 8]. *Bureau of Labor Statistics*. [On-Line]. Available: <http://www.bls.gov/>.
21. University of North Carolina, [2007]. The stages of the strategic planning processes. Retrieved June 3, 2007 from <http://horizon.unc.edu/projects/seminars/futuresresearch/stages.html>
22. Urstadt, B [2005, October]. The get-ready men. *Technology Review*, 110[10], 72-74.

Mr. George D. Ford

George Ford, P.E. is a Visiting Assistant Professor in the Kimmel School of Construction Management and Technology at Western Carolina University. Professor Ford has a B.S. in Mechanical Engineering from Clemson University [1984], an M.B.A. from Clemson University [1990], and a Master of Engineering degree in Environmental and Civil Engineering from the University of South Carolina [1999]. He is a licensed professional engineer [mechanical] in both North Carolina and South Carolina. He worked for over fifteen years in the corporate world in plant engineering and environmental engineering positions and for four years at Spartanburg Technical College before joining Western Carolina University in 2004.

Dr. Ronald Miers

Ron Miers is a Visiting Assistant Professor in the Kimmel School of Construction Management and Technology at Western Carolina University. Dr. Miers has a B.S. from Syracuse University and a M.S. and Ph. D from SUNY. Dr. Miers worked for many years in the construction industry at various capacities, starting as a carpenter and progressing to estimator and eventually project manager. He also worked in the asbestos abatement field as estimator and project manager.