

Report to
Faculty, Administration, Trustees, Students
of
New Jersey Institute of Technology
University Heights, Newark, New Jersey

Prepared following analysis of the institution's
Periodic Review Report

First Reviewer:

Dr. Katherine Mayberry
Vice President for Academic Affairs
Rochester Institute of Technology
21 Lomb Memorial Drive
Rochester, NY 14623-5603
(585) 475-2607
(585) 475-4460 - Fax
kjmgpt@rit.edu

Second Reviewer:

Dr. Herman A. Berliner
Provost and Senior Vice President for Academic Affairs
Hofstra University
200 West Library Wing
Hempstead, NY 11549-1440
(516) 463-5402
(516) 463-6505 - Fax
herman.berliner@hofstra.edu

August 7, 2007

I. Introduction

The New Jersey Institute of Technology has submitted a thorough and useful Periodic Review Report. The Report does an excellent job setting a (recent) historical context, summarizing its current status regarding Middle States standards, and projecting its near-term future. The Report is clear, well-written, and transparently organized. While some assertions might have been more fully documented, overall the information provided is thorough and informative.

The institutional trajectory summarized within the PRR is both innovative and true to the university's history. Successful realization of NJIT's goal will benefit all of higher education.

II. Responses to Recommendations from the Previous Decennial Evaluation

The direction of NJIT since its re-accreditation in 2002 has in large part been shaped by a new Strategic Plan (2004) developed under the leadership of a new President. (While this External Review of the PRR will not address explicitly the suggestions of the 2002 report, we note that modification of NJIT's former Strategic Plan was a suggestion of that Review.) Two of the three recommendations contained in the 2002 Evaluation Report are addressed through implementation of Strategic Objectives substantially similar to the evaluation team's recommendations.

Recommendation 1: The team recommends a systematic revision of the Faculty Handbook, with particular focus on ensuring that tenure and promotion policies are rigorous, clear, and consistent across all colleges and departments.

According to the PRR, the most salient instance of unevenness within the Handbook's treatment of tenure and promotion policies was omission of the role of college deans in the tenure and promotion processes. In effect, except in cases where the deans acted as department chairs (Schools of Management and Architecture), college deans had no formal role in tenure or promotion decisions.

In partial response to the recommendation, NJIT has revised the Handbook to specify the deans' roles in tenure and promotion decisions. The changes were developed by and ultimately approved by the Faculty Council and the upper administration. The appendices accompanying the PRR do not contain any part of the revised Handbook, and the only substantive change cited refers to the role of the deans. According to the PRR, "deans may provide a written evaluation to be included in the candidate's dossier." The word "may" suggests that the creation and inclusion of a dean's evaluation is optional, which seems curious and perhaps less than "rigorous...and consistent."

The 2002 evaluation team review also cites the need for attention in the revised Handbook to the shifting research expectations for faculty tenure and promotion. No specific reference is made in the PRR to such a revision.

According to the PRR, “the more general problem with the Faculty Handbook” was its inconsistent style. The problem has been addressed through the hiring of an outside consultant, who is about one quarter of the way through this revision process.

It would have been useful to have had the revised policies available for review.

Recommendation 2: The team recommends that NJIT examine its plans for the Office of Research and Development and consider increasing its funding and staffing.

The bases for this recommendation were 1) a recent upturn in funded research (at the time of the 2002 decennial review); and 2) anticipated declines in state support. The growth noted by the evaluation team has continued to be strong, and state appropriations have declined, as anticipated. A priority of NJIT’s 2004 Strategic Plan is to “improve national rankings in research and intellectual property development”—a goal making implementation of this second recommendation inevitable.

The PRR contains a comprehensive overview of the many changes put in place regarding research and development, and of the impressive gains in funded research resulting from this attention. Among the many changes of the past five years are an increase in the number of support staff within the Office of Research and Development (ORD); expansion and reorganization of research-related functions within ORD; and reorganization of research and development at the faculty committee level.

Further, the Strategic Plan identifies five priority research areas that are likely to have high impact on funding levels, are in keeping with the university’s mission, and are of keen importance to the state of New Jersey and the nation. These areas are 1) Healthcare Systems; 2) Homeland Security; 3) Information and Communication Technology; 4) Nanotechnology; and 5) Sustainable Systems Technology. In choosing to focus on these strategic research areas, the university is clearly working from its strengths.

These strategies have proven quite successful in the past five years, with a 29% increase in Federal funding between 2002 and 2006. Projections for 2007 numbers exceed \$40m, as compared to \$27.5M in 2002. Other measures of research and development activity are similarly promising: patent applications and issuances are growing, and revenue obtained through licenses and option agreements has leapt from \$16K in 2003 to \$315K thus far in 2007.

In short, NJIT has approached the strategic goal of R&D growth by developing a comprehensive and truly supportive infrastructure that has already proven to be highly effective. The increased focus on research seems not to have compromised the institution’s sense of its core strengths, its multiple constituents, nor its educational mission.

Recommendation 3: It is strongly recommended that: a) the library staff draw up a plan for adding 5,000-7,000 new book titles annually and present it to the faculty and administration for their consideration and possible implementation.

In its response to the 2002 review team report, NJIT agreed that it should increase the number of book titles in its libraries, but it questioned the team's seeming reliance upon quantity of book titles as a central measure of library effectiveness: "We do not agree that library books are any longer the sole standard of library excellence, and we believe it is inappropriate to establish a specific, prescribed book acquisition level" (PRR, 16).

Nevertheless, NJIT has taken this recommendation seriously, creating and presenting to the Provost in 2003 a plan for increased book purchases. While the Middle States goal of 5,000-7,000 new titles annually has not been met, between FY 2003 and FY 2006, an average of 3,446 books per year have been purchased—a 58% increase in the number of books purchased per year. Decisions about which titles to purchase were made by faculty, graduate students, and librarians; new titles included "retrospective published titles" of use to NJIT but not purchased at the time of publication.

As well as expanding its book collection, NJIT has also significantly increased electronic journals and databases—sources that faculty and students identify as critically important to their studies. These additions were funded both internally and externally.

Closely related to the issue of owned books, but not cited within the evaluation team's recommendation, have been the addition of an Information Literacy Librarian to the library staff and the physical expansion of library space.

Taken together, the improvements made to the university library appear to justify the PRR's conclusion that "the NJIT library has made great strides in meeting the informational needs of students and staff. Through electronic materials, targeted investments, and improved information literacy, library objectives in tight fiscal times within the state are being met" (PRR, 19). Nevertheless, the library cannot afford to take its eye off the ball; efforts at enhancing both its collection and staff must continue.

It is not within the scope of this Report to comment on the institution's response to the many Suggestions made throughout the 2002 Team Report. But because the PRR does address—in some detail—each of these suggestions, and because progress on these suggestions is commendable, we cite here a short list of the impressive developments issuing from some of the suggestions.

- Development of an exemplary Strategic Plan that drives resource development and allocation.
- Expansion of pre-college programs, particularly those intended to enrich science and technology instruction within urban schools;
- Enhancement of the Honors College.

III. Major Challenges and/or Opportunities

Doubtless the most daunting challenge faced by NJIT is decline in the level of state funding. Recognizing that it must look elsewhere for a reliable and robust revenue base, the institution, led by President Altenkirch, developed a Strategic Plan designed to put such a base in place through growth and improvement on multiple fronts. The five mutually supportive strategic priorities and their supporting objectives—whose progress are being systematically and continually assessed—promise not only to relieve NJIT from reliance upon dwindling state resources, but to launch the institution onto the national stage through the realization of astutely identified strategic opportunities.

The set of Strategic Priorities combines such “big-ticket” goals as enhancement of the physical plant; moving the athletics program to Division 1; and building academic programs to national prominence with the revenue enhancement activities necessary to achieve these goals.

Taken together, NJIT’s Strategic Priorities represent both the university’s biggest challenges (increasing funding from non-state resources) and its most exciting opportunities.

Increasing the revenue base will depend upon increases in student tuition, in externally funded research, and in corporate and private giving. Since incoming students have consistently identified “affordable tuition” as a main reason for attending NJIT, substantial tuition hikes would be risky and might stand in the way of the enrollment increases projected to support the Strategic Plan. A recent decline in undergraduate enrollment—at a time when the SP was calling for enrollment increases—could have seriously jeopardized tuition dollars as a source of revenue growth. But a set of multi-front strategies has not only reversed the enrollment decline, but brought the institution very close to its enrollment goal of 9,500. Among the notable strategies deployed was the creation of an Enrollment Management Committee. This committee, with its cross-campus membership, appears to have bridged the gap between enrollment and instructional delivery—between admissions and academics—that is typical of large universities.

Known for its service to non-traditional student populations, NJIT nonetheless faces challenges in composing a diverse university community. As a technological institute, it must deal with the paucity of women and minority faculty and students in engineering, the sciences, and computing. A number of committees and programs designed to improve gender and ethnic diversity have been put into place. Among the most promising areas for long-term diversification of the STEM academic and professional workforce is K-12 outreach—notably the Center for Pre-College Programs and the Murray Center.

NJIT has significantly improved the graduation rate in recent years—from 37% in the late 1990’s to the current 57% (the Strategic Plan cites a graduation rate goal of 55% by 2010, so they are ahead of schedule). But even a 57% graduation rate will discourage many students from choosing NJIT over other research universities with similar academic

program portfolios. Students and their parents are savvy about the implications of a school's graduation rate, and the fact that more than 40% of the students who enroll as first-year students at NJIT do not complete their degrees will dissuade many from attending. We suggest that the institution continue to raise its graduation rate goal until it is graduating at least 70-75% of its undergraduate students. Achieving this goal will depend in part on NJIT's ability to raise the quality of its incoming students.

New initiatives intended to increase student satisfaction and retention include "The Connections Program," which will be implemented this coming fall (2007). As its name suggests, this program will focus on developing connections and a sense of community among first-year students. Students will be assigned to major-based clusters and introduced to college life and the university within these clusters.

While considerable attention is paid in the PRR to enhancing academic programs and teaching and learning, student retention appears largely to be viewed within the contexts of campus environment and campus community. The single most important factor affecting undergraduate student success at any institution is student learning. Students who know they are learning are far more likely to stay and graduate than students who struggle academically, are disconnected from faculty, and are unclear about the "point" of their studies. Community engagement *must* include academic, intellectual engagement. While NJIT performs well on the National Survey of Student Engagement (NSSE), it should not assume that with the current graduation rate, enough of its students are sufficiently academically engaged.

The cluster concept of "The Connections Program" could be extended to include students taking multiple courses as a group. This is essentially the Learning Community model, which has—in all its variations—been enormously successful at other schools with low retention and graduation rates.

Overall, progress towards reaching the strategic and enabling goals of the Strategic Plan is excellent. NJIT applied its considerable experience in assessment to the design of a detailed progress assessment plan for the Strategic Plan, a summary of which is available in "The Balanced Scorecard" in the Appendix. Review of these materials supports the PRR's claim that "in the summary areas of community and engagement the university is well ahead of the strategic planning targets. In education, research, and resources, the university is moving well toward achieving or surpassing the final targets" (PRR, 21).

IV. Enrollment and Finance Trends and Projections

As noted in the previous section of this report, NJIT faced an enrollment decline between 2002 and 2005—largely at the undergraduate level. The university carefully analyzed the situation, identified multiple causes for the downturn and addressed each of them in creative and effective ways. As a result, enrollment is currently only 1500 students short of the 2012 goal. As is usually the case with growth, reaching the 2012 goal will require additional facilities. While it would be fairly easy to bring more students into the School

of Architecture, limited studio space will require careful balancing of the benefits of growth with the expansion of expensive studio facilities.

Overall, despite the recent enrollment decline and decreases in state support, NJIT is in a stable financial position and continues to be financially well-managed. Achieving current revenue enhancement goals will be critical to realization of its strategic goals.

V. Assessment Processes and Plans

Decision-making at NJIT is clearly driven by continuous assessment of institutional effectiveness at multiple levels, including comprehensive coverage of student learning outcomes. The thorough assessment mechanism that evaluates progress on all components of the Strategic Plan is but one instance of the thorough-going culture of evidence that characterizes the institution. More generally, NJIT lives the principle that policy and strategy should be continuously reviewed and improved through ongoing assessment.

The practices that NJIT applies to learning outcomes assessment are varied, exemplary, and in some cases, unique. The School of Architecture (NJSOA) is the first school in the country to store all student design work electronically. These records of individual student work offer accessible repositories from which faculty and administrators can determine learning outcomes trends.

NJIT employs a portfolio approach to tracking student progress in writing, as demonstrated by evidence of writing-as-process, critical thinking, global perspective, and documentation skills. Such an approach is vastly superior to the more common practice of one-time, limited evaluation of students' writing ability.

In the College of Engineering, capstone evaluation is conducted by practicing engineers, who review the capstone projects according to a set of rubrics that reflect the learning goals of the program. This use of external evaluators actually practicing in the field the students have been educated for is exemplary. The evaluators serve the secondary function of a professional advisory group.

One of the most ambitious components of NJIT's multi-faceted approach to assessing learning outcomes is a university-wide course evaluation system. At the end of each semester, all NJIT students in all programs and colleges use the same evaluation form, which has been designed and tested to relate to identified learning outcomes. Results of the evaluations form the basis of faculty development and are used in tenure and promotion review. Unfortunately, the form was not included in the appendix material nor was it accessible online.

The PRR contains numerous examples of learning outcomes assessment methods, and accreditation letters included in the appendices (e.g., AACSB, ABET, Architecture) indicate that systematic outcomes assessment processes exist for the accredited programs.

However, there is no actual documentation within the PRR or its appendices of the clear articulation of academic program goals, objectives, and outcomes, or of the process by which outcomes are assessed and consequent and continuing improvements made. Academic Program Review materials found in the Appendix provide program goals and objectives, some grade distribution data, graduation rates, and student profiles—all of which are forms of outcomes. However, a summary at least of college goals, objectives, and outcomes, as well as the process by which outcomes are measured, analyzed and fed back into program improvement, would have been helpful.

Frequent measures of student satisfaction and expectations are taken of NJIT students, both by locally-developed instruments such as the “Enrolling Students Survey” and the “Student Satisfaction Survey,” and by nationally-normed surveys like the National Survey of Student Engagement. Reliance on longitudinally administered internally-developed surveys is sensible, both because of cost-effectiveness (national surveys are expensive) and institutional relevance.

Since the 2002 evaluation team review, the Office of Institutional Research and Planning has more regularly disseminated the results of research studies and assessment reports. IRP regularly updates a public website designed for this purpose and results of key studies are regularly reported to relevant committees.

Sufficient evidence exists in the PRR narrative, the Program Review Appendix, and the letters from professional accrediting organizations to demonstrate that outcomes assessment at NJIT is built into the fabric of the academic culture and drives continuous program and institutional improvement.

VI. Linked Institutional Planning and Budgeting Processes

Implementation of strategic priorities have the largest claim on annual budget allocations. University operating goals and objectives are developed and examined in terms of the degree to which they relate to supporting strategic objectives. Goals and objectives that are incorporated into the annual budget process are established by senior administration and the Board of Trustees. In FY 2004-07, 100% of re-investment funds (\$13.6m) were directed towards the five Strategic Priorities.

VII. Conclusion

New Jersey Institute of Technology has accomplished a considerable amount since its last decennial review. Through a new Strategic Plan and under new leadership, the university has set ambitious yet appropriate goals for itself that, if met, could take the school to new levels of excellence and visibility.

Implementation of the 2004 Strategic Plan appears to be on schedule, if not ahead in some areas. Decision-making at all levels is regularly conducted within the context of

concrete evidence (“data-driven management,”) and learning outcomes assessment seems to be robust.

Resource challenges are being approached on multiple fronts, and none of the strategies is at odds with a growing student-centeredness. New programs are in place that will build on this student focus, as will continuing assessment of student satisfaction and expectations. Much commendable work has been done in reviewing and enhancing academic programs and in advancing teaching and learning.

We do suggest that programs that build student community within a curricular and intellectual context be strongly considered, as such initiatives will be necessary to improve student quality, increase retention and graduation rates, and boost alumni affinity and giving.

In summary, NJIT’s 2007 Periodic Review Report describes a university that is refreshed, well-managed, ambitious, and increasingly student-centered.