Improving Freshman Retention and Graduation Rates through a Two-Tier Tenure Track System

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***Abstract*-This Innovative Practice Work in Progress proposes that if the goal of institutions of higher education is to graduate students who are independent learners, then excellent teaching is as worthy of hire, promotion, and tenure as is scholarship.**

At NYIT, student retention is lowest in the first year. We believe that instructors who teach the freshman courses must be those who use the effective teaching practices associated with active learning or high impact teaching methodologies. At present, most of freshman courses are taught by adjunct faculty, who for a number of reasons, are unable to effectively engage students inside/outside of the classroom.

As administrations are increasingly focusing on improving graduation rates then those factors that address freshman retention are essential to that goal.

To meet this goal, our institution has created full-time Teaching Faculty Lines (TFLs). These new full-time faculty hires are expected to demonstrate quality teaching, dedication to undergraduate education, with an emphasis on freshman classes along with developing innovative teaching practices as a criterion for contract renewal.

In anticipation of higher retention and graduation rates, this WIP will examine and assess those undergraduate courses, which are presently being taught by the adjunct faculty with similar courses being taught by these new TFLs. The expectation is that the results of this assessment will demonstrate that there is a concomitant increase in retention and graduation rates between these two groups. This will the basis for a two-path tenure track system.

Keywords—(tenure, teaching faculty lines, adjunct faculty, first year retention, graduation rates, business model, return on investment)

I Introduction

The Institute is a non-profit independent private institution of higher education that offers 90-degree programs, including undergraduate, graduate, and professional degrees, in more than 50 fields of study. These include architecture and design; arts and sciences; education; engineering and computing sciences; health professions; management; and osteopathic medicine. There are 12,000 students attending at its local and global campuses, as well as online[1].

The mission of NYIT is to provide career-oriented professional education and to support applications-oriented research. An individual who is being considered for hire, reappointment, promotion, or tenure as a full-time faculty member must present a portfolio documenting their teaching, scholarship, and service activities and accomplishments for consideration by the tenured faculty, the dean, and the upper administration.

The School of Engineering and Computing Sciences (SoECS) acknowledges that scholarship, at present, has the highest priority, as scholarship activities enrich the faculties' teaching with valuable elements of professional practice**.**

The Institute does not have a large endowment and is heavily dependent on student enrollment, and the corresponding tuition revenue. Changing student demographics [2, 3, 4] and transformative technological change that provides new means of student access to open online courses, at nontraditional universities, has resulted in significantly lower net tuition revenue at the Institute.

Moreover, the federal government is holding post-secondary education to a higher standard of "business intelligence" through its emphasis on the "Return on Investment" (ROI) initiative for cost accountability. Together with national and regional accreditation agencies, they are focusing on graduation rates as another measure of ROI[5, 6].

The School of Engineering & Computing Sciences (SoECS) accounts for approximately 25% of the undergraduate and graduate enrollment at the Institute. To make informed decisions that track closely with these new demographic and technological changes, the SoECS using data from the Office of Institutional Research has found that overall enrollment in the engineering and computer science programs declines most adversely in the first year. It is essential that the retention rate in the first years of the programs be increased if NYIT is to meet its enrollment and tuition targets. As many as 33% of first year students will not return for the sophomore year[2]. The reason for their leaving is usually academic struggles and not lack of money. This figure is in line with the national average for retention in Higher Education.

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II Teaching Faculty Positions

For the 2017/2018 academic year, the SoECS established non-tenure track "Teaching Faculty Lines (TFLs)" with ranks commensurate with the educational and instructional qualifications of the applicants. These positions are limited in number and departments may decline to consider having any such positions. While the positions, now, are non-tenure track, the AAUP at our institution looks forward to converting these positions to tenure track positions, without an attendant decrease in future scholarship-intensive-tenure track lines. To alleviate the concerns of the full-time (FT) faculty, that these positions are not a substitute for the continued hiring of tenure-track positions, the number of TFLs are limited to no more than 10% of the total number of FT tenured and tenure-track faculty in the School.

Similar to the responsibilities of the regular FT faculty, the faculty filling these TFLs are required to:

1. Maintain weekly office hours
2. Provide academic advising as assigned by the Chair
3. Participate in all departmental/school activities that advance the goals of the department/school, i.e., Open House, Preview Days, registration, recruitment, service on departmental and college-wide committees, curriculum development, visits to high schools and college fairs, etc.
4. Travel between both campuses, as needed

The initial appointments will be for two (2) years, and subsequent reappointments in years 3 and 6 will be for three (3) year and five (5) year appointments, in all future years. These reappointments and promotions will be through a process of review similar to that of the tenured and tenure-track , and are subject to final approval by the Dean and the Provost.

These teaching faculties are not required to demonstrate the level of scholarship that is expected of the tenure-track faculty. Instead, these positions were created to hire faculty who will develop excellent pedagogical practices that highlight active and collaborative teaching strategies.

Collaborative learning is an educational approach that implies students working in small groups or students working with the instructor to discuss concepts or find solutions to problems.

Some examples of collaborative learning activities are:

1. Problem-based Learning
2. Guided Design
3. Case studies
4. Peer tutoring
5. Flipping the class[7]

This educational approach may use technology tools in the classroom to enhance a student's learning experience. Tools could include:

1. Computers, audio and/or video,
2. Distance Learning,
3. Internet
4. Blackboard
5. On-Line or Web-Enhanced courses
6. Equipment or computer models
7. Various graphic technologies

These teaching faculties are expected to integrate their professional experience into the classroom, which can be demonstrated by faculty:

1. Involving students in independent learning exercises,
2. Emphasizing the relationship of course content throughout the curriculum to real-life situations
3. Infusing their theoretical or applied research into the classroom

In short, these TFLs have been established for the purpose of having these faculties teach the first year engineering and computer science classes in order to improve student retention in the first year.

It is the authors' recommendation that in recognizing the necessity of HE institutions, to be effective learning communities, where excellent pedagogical practices are developed, implies that we must recognize that teaching is as worthy of tenure as is scholarship and service. In fact, it should serve as an alternative path to that of scholarship for granting a faculty member tenure.

This is intended to create institutions of higher education faculty, consisting of a community of both scholars and teachers, who by working alongside one another will create a more effective student-learning environment.

III Assessment

The "Fundamental of Logic Design"/"Computer Organization" classes EENG 125/CSCI 135 are offered every semester to the freshmen in the ECE and CS programs. There are three sections in the fall and spring semesters. Likewise, there are five sections of CSCI 125 "Programming I", offered every semester, for students in the first year of the ECE and CS programs. The size of the classes for each of these courses is approximately 25 students, and the syllabi for each section of EEENG 125/CSCI 135 are identical, as are the syllabi for each section of CSCI 125.

Historically, there has been little difference between students in the fall and spring semesters of these two courses, in terms

of their SAT scores, and their high school grade point averages so that the only real difference between the sections will be the instructors.

It is the authors' expectation that student performance in those sections taught by adjunct instructors will be poorer than those sections taught by the FT teaching faculty.

As a measure of student performance, in both fall and spring semesters, ECE/CS faculty members prepare a Faculty Course Assessment Report (FCAR) for each course that they teach. The FCAR requires the faculty member to identify course-specific learning outcomes (LO's) for his/her course, and to establish appropriate performance tasks (APTs), with appropriate documentation to assess to what extent the LOs are being met.

These APTs may be quizzes, exam questions, reports, projects, presentations, etc. Each student's APT is then scored with the rubric shown below, to create an EGMU vector for that specific LO and a corresponding assessment metric.

EGMU Rubrics

EGMU	Rubric	Score
E - Excellent	Fully demonstrates/accomplishes the attributes and behavior in the rubric	3
G – Good	Mostly demonstrates/accomplishes the attributes and behavior in the rubric	2
M – Minimal	Minimally demonstrates/accomplishes the attributes and behavior in the rubric	1
U - Unsatisfactory	Does not demonstrate/accomplish the attributes and behavior in the rubric	0

For example, the LOs for CSCI 125 are that, at the completion of this course, the students will be able to:

1. **Apply** design and development principles in the construction of software systems of varying complexity[8].
2. **Read** a problem description, **design** an algorithm to solve the problem and **document** their solution.
3. **Design, implement** and **document** applications using object-oriented programming concepts

A typical EGMU vector for a class with 19 students in which the APT was, for example, the third problem of the first exam might be (8, 9, 1, 1) which would signify that 8 students demonstrated a complete and accurate understanding, while 9 students applied appropriate strategies etc. The average score, in this case, being (8*3 +9*2 +1*1 +1*0)/19= 43/19 = 2.26 which is Good.

For each section of CSCI 125, there will be a composite EGMU score for each LO which will be a measure of student performance in that class.

For each section of CSCI 125, taught by the FT teaching faculty, we would then take the average of the EGMU scores for each LO. We would repeat the process for those sections taught by the adjunct faculty.

The authors will use a t-Test and their corresponding p values to determine the significance of differences in the mean values associated with each LO between the sections taught by FT teaching faculty, and those taught by adjunct faculty to determine if the mean values were significantly different.

Each section of CSCI 125, will use the same APTs for each, so that the measure of student performance will be uniform across the sections.

It will be necessary, to keep the same group of students in each section of EENG 125/CSCI 135 and CSCI 125 if we are to draw any conclusions with respect to retention.

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