Caveat Emptor: Is There a Relationship between Part-Time Faculty Utilization and Student Learning Outcomes and Retention?

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Abstract
One important factor neglected in the literature involves an investigation into whether the increased utilization of part-time faculty impacts student retention. Are part-time faculty, who are employed primarily to teach introductory courses, having an adverse affect on student retention? Are universities recognizing and studying the potential issues that might arise when a substantial portion of incoming freshmen receive the majority of their instruction from part-time faculty? This paper presents the results of an ongoing study of the relationship between faculty status and student retention at a comprehensive Midwestern university. Of particular interest is the degree to which first-time full-time freshmen are exposed to part-time faculty and whether there are ways to determine if faculty status, defined here as part-time versus full-time, has a discernable and direct impact on student retention.

Introduction
The growing number of part-time personnel used as teaching faculty in the academy is an issue of increasing concern. Recent data (NCES, 1999), suggest that in 1997 42.5 percent of the professorate were employed part-time. In 1970, just under 22 percent of the instructional corps in higher education were employed in a part-time capacity. Clearly, the utilization of part-time faculty is increasing at an alarming rate, and this 25-year trend has serious implications for faculty work and institutional vitality.

Does the mere change in these proportions cause major concern? Should greater attention be focused simply on the number of part-time versus full-time faculty?

Or, should we be concerned with the broader issues surrounding the use of part-time faculty?

An important factor neglected in the literature involves an investigation into whether the increased utilization of part-time faculty impacts student retention. Are part-time faculty, who are employed primarily to teach introductory courses, having an adverse affect on student retention? Are universities recognizing the potential issues that might arise when a substantial portion of first-time full-time freshmen receive the majority of their instruction from part-time faculty?

This paper presents the results of an ongoing study of the relationship between faculty status and student retention at a comprehensive public Midwestern university. Of particular interest is the degree to which first-time freshmen are exposed to part-time faculty and whether faculty status, defined here as part-time versus full-time, has a discernable impact on student learning outcomes and student retention.

The authors chose to focus on student retention as the principle outcome over other academic outcomes, such as course grades, course success, or time-to-degree for a number of important reasons. Namely, based upon a preliminary analysis of faculty instructional assignments, it was determined that part-time faculty taught disproportionately larger numbers of freshmen-level survey courses. Furthermore, a number of previous studies alluded to the possible impact of part-time faculty instruction on student retention (Johnson, 1996; Iadevaia, 1991; Pisani and Scott, 1996; Lowther et. al, 1990). However, none were successful in substantiating such claims.
Current Knowledge

The starting point for understanding issues involving part-time faculty is the 1993 study *The Invisible Faculty*, by Judith Gappa and David Leslie. Subtitled, “improving the status of part-timers in higher education,” the authors based their analysis on data from the 1988 National Study of Post-Secondary Faculty (NSOPF) and personal interviews conducted at 18 campuses across the country during the 1990-91 academic year. As the subtitle indicates, this study represented a call for change; to more fully understand and improve the plight of those described as “unrecognized, unrewarded, and invisible.”

Major changes have taken place since Gappa and Leslie’s initial call to action, not all of which may be viewed by academe as positive. First, the use of part-time faculty has continued to increase at a pace surpassing the employment growth among full-time tenure track faculty (NCES, 1999). Furthermore, institutions are finding more and varied ways to justify the reliance on part-timers. The roles and responsibilities once the sole purview of the full-time faculty, including academic advising, remedial instruction, committee assignments, and curriculum development are increasingly being assigned to part-time and temporary faculty.

Concerns about the usage level of part-time faculty in September, 1997, led 10 academic associations to hold perhaps the first major joint conference on the Growing Use of Part-Time and Adjunct Faculty (AAUP, 1997). The resulting joint policy statement called for limitations on the usage of part-time faculty and issued an appeal for dramatic increases in the number of new tenure-track openings.

That same year, the Alfred P. Sloan Foundation supported a conference on the increasing use of part-time and adjunct faculty. David Leslie, in writing the conference report, coined a new phrase when he posited that part-time and adjunct faculty constituted “a new majority” on America’s college campuses (Leslie, 1998). To reach this conclusion, Leslie grouped full-time but temporary faculty members with part-timers. By adding individuals not eligible for tenure with part-time and adjunct faculty, Leslie arrives at a combined total of 57 percent. The heavy use of graduate teaching assistants pushes this percentage even higher.

The vast majority of the existing research on the subject has concentrated on the number of part-time faculty, their qualifications, and their job market goals and motivations. In considering the principle findings of these various studies and reports, it is clear that, regardless of how one measures or defines part-time faculty, higher education is using more part-time and temporary faculty than full-time faculty to educate students. Yet, little has been done to explore the impact of the use of part-time faculty in higher education on student learning outcomes and retention.

There is a void in the literature relative to the relationship between part-time faculty utilization and student learning outcomes, namely student retention. In a national study conducted by the authors, issues of where part-time faculty are being utilized was studied. We found that institutions most frequently use part-time and adjunct faculty in lower level undergraduate courses, particularly survey courses. Especially heavy part-time utilization was found in the disciplines of English Literature and Writing, and Mathematics (Reid, et. al, 1999). Furthermore we asserted that because of the transitory nature of their academic appointments, part-time faculty are not readily available to provide much needed faculty-student contact outside of the classroom. This contact is especially important for new college freshmen as well as the adult student returning to college. Faculty who teach freshmen must also be able to properly identify at-risk student behavior, but most often part-time faculty do not possess the skills necessary to identify such students. Furthermore, part-time faculty are usually not sufficiently knowledgeable with reference to available institutional services when referrals are warranted. Once on campus, large numbers of at-risk students are increasingly being educated by part-time faculty, a group who historically have few if any formal ties to the institution, and for all intents and purposes teach their courses and then leave campus— no office hours, no contact with students outside of the classroom, no consultation with those teaching remedial courses (be they full-time or part-time), and little if any opportunity for the much-needed professional development requisite to handle the multifaceted and complex challenges that faculty face when remediating students.

Data Analysis

In order to study the relationship between faculty status and student retention, a data set was constructed containing both faculty and student characteristics. The data set included all first-time, freshmen entering a midsized public comprehensive Midwestern university in each fall semester from the fall of 1997 to the fall of 2000 (a total of 7,174 students). For each entering student, information was gathered on their cohort membership (age, race, gender, and ethnicity), baseline ability or human capital measures (SAT composite, SAT math, SAT verbal, ACT comp., and course grades), and academic profile (school of their declared major, hours attempted in each semester, hours completed in each semester, course instructor, and the student’s residency status (on or off-campus)). The student information was then matched with instructor characteristics (department of residence, and status (full versus part-time) on a course by course basis.

For the purposes of our work, part-time faculty were defined as all non-tenure eligible faculty teaching nine or fewer semester credit hours (three courses) per academic term. Anyone teaching remedial or non-academic credit courses were excluded from the analysis.

The first step in analyzing whether faculty status might
have an effect on student retention is to determine the degree to which incoming freshmen were exposed to full-and part-time faculty and then to compare that information to student retention information. Table 1 shows the extent to which the incoming freshmen were exposed to part-time faculty in their first semesters (fall of 1997 through fall of 2000). Preliminary descriptive analysis of the data reveals several interesting results.

Table 1
Exposure of First-time Freshmen to Part-Time Faculty in their First Semester

<table>
<thead>
<tr>
<th>Percent of Courses</th>
<th>Cum. %</th>
<th>Cum. %</th>
<th>Cum. %</th>
<th>Cum. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taught by Part-time</td>
<td>Fall 97</td>
<td>Fall 98</td>
<td>Fall 99</td>
<td>Fall 00</td>
</tr>
<tr>
<td>Faculty</td>
<td>Cohort</td>
<td>Cohort</td>
<td>Cohort</td>
<td>Cohort</td>
</tr>
<tr>
<td></td>
<td>n=1818</td>
<td>n=1661</td>
<td>n=1810</td>
<td>n=1885</td>
</tr>
<tr>
<td>0% (none)</td>
<td>4.7%</td>
<td>3.6%</td>
<td>4.5%</td>
<td>6.3%</td>
</tr>
<tr>
<td>25% or less</td>
<td>22.5%</td>
<td>16.4%</td>
<td>19.6%</td>
<td>24.3%</td>
</tr>
<tr>
<td>50% or less</td>
<td>55.0%</td>
<td>44.3%</td>
<td>53.3%</td>
<td>59.7%</td>
</tr>
<tr>
<td>75% or less</td>
<td>80.9%</td>
<td>73.1%</td>
<td>81.5%</td>
<td>84.5%</td>
</tr>
<tr>
<td>100% (all)</td>
<td>7.5%</td>
<td>12.9%</td>
<td>7.2%</td>
<td>6.9%</td>
</tr>
</tbody>
</table>

First, as Table 1 reveals, between 73% and 81% of all first-time freshmen had at least 75% of their first semester coursework taught by part-time faculty. More surprisingly, between 7% and 13% had their entire course load taught by part-time faculty during their first semester on campus while only 4% to 6% of the freshman class encountered no part-time faculty instruction. Overall, first-time freshmen at the institution took an average of 48% of their first semester coursework with part-time instructors. Campus-wide, an average of 40% of undergraduate courses were taught by part-time instructors during the four-year period.

Table 2
One Semester Retention of First-Time Freshmen

<table>
<thead>
<tr>
<th>Retained in the Spring Semester</th>
<th>Fall 97</th>
<th>Fall 98</th>
<th>Fall 99</th>
<th>Fall 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>275</td>
<td>285</td>
<td>308</td>
<td>348</td>
</tr>
<tr>
<td>Yes</td>
<td>1543</td>
<td>1376</td>
<td>1502</td>
<td>1537</td>
</tr>
<tr>
<td>Retention Rate</td>
<td>84.9%</td>
<td>82.8%</td>
<td>83.0%</td>
<td>81.5%</td>
</tr>
</tbody>
</table>

The data in Table 3 reveals an inverse relationship between one-semester retention rates and exposure to part-time faculty. Students who were retained into the spring semester took a lower proportion of their previous fall semester coursework from part-time faculty.

Table 3
One-semester Retention Rates for First-time Freshmen by Quartile Exposure to Part-Time Faculty

<table>
<thead>
<tr>
<th>Percent of Courses</th>
<th>Fall 97</th>
<th>Fall 98</th>
<th>Fall 99</th>
<th>Fall 00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taught by Part-time</td>
<td>Cohort</td>
<td>Cohort</td>
<td>Cohort</td>
<td>Cohort</td>
</tr>
<tr>
<td>Faculty</td>
<td>n=1818</td>
<td>n=1661</td>
<td>n=1810</td>
<td>n=1885</td>
</tr>
<tr>
<td>0% (none)</td>
<td>87.2%</td>
<td>81.4%</td>
<td>86.4%</td>
<td>83.1%</td>
</tr>
<tr>
<td>25% or less</td>
<td>87.8%</td>
<td>87.9%</td>
<td>86.5%</td>
<td>84.1%</td>
</tr>
<tr>
<td>50% or less</td>
<td>88.9%</td>
<td>86.1%</td>
<td>85.1%</td>
<td>83.4%</td>
</tr>
<tr>
<td>75% or less</td>
<td>80.0%</td>
<td>84.2%</td>
<td>82.2%</td>
<td>80.7%</td>
</tr>
<tr>
<td>100% (all)</td>
<td>80.9%</td>
<td>74.9%</td>
<td>76.7%</td>
<td>74.7%</td>
</tr>
<tr>
<td>Overall Retention Rate</td>
<td>84.9%</td>
<td>82.8%</td>
<td>83.0%</td>
<td>81.5%</td>
</tr>
</tbody>
</table>

Figure 1 illustrates the various quartiles of first semester exposure to part-time faculty. In three of the four years under consideration, second quartile (26 – 50% exposure) was the largest. Of particular interest was the increase, following a drop in the second year of the study, in the numbers of students falling into the first quartile and the decrease in the size of the fourth quartile. Apparently, the exposure to part-time faculty, as measured by proportion of courses taught, is diminishing in relative terms at the study institution.

Figure 1
First Semester Exposure to Part-Time Faculty--Quartiles
Table 4 presents the results of cross tabulations between the quartiles of first semester exposure to part-time faculty and whether a student was retained in their second (spring) semester. The null hypothesis for these tests was that there was no relationship between the exposure of students to part-time faculty in their first semester in college (represented in quartile form) and their retention into their second semester.

The results presented in Table 4 show that the null hypothesis of no relationship was rejected for each of the cohorts at the 0.01 level of significance. Furthermore, the Pearson Correlation coefficients reveal that there is a linear, negative and significant relationship between exposure and retention. Higher levels of exposure to part-time faculty in a student’s first semester in college lower the retention rate in the student’s second semester.

Another consideration was to what extent students’ themselves influenced their quartile membership. How were students who fell into the first quartile of low exposure to part-time faculty different from those who were members of the fourth quartile? Table 5 shows several basic descriptive statistics for the quartiles taken from the data on students entering in the fall of 2000 (fall 1997 through fall 1999 showed exactly the same characteristics).

Table 5 reveals that students who take a higher proportion of courses from part-time faculty in their first semester of college are more likely to be male, have lower SAT or ACT scores and have lower GPAs following the completion of their fall 1999 showed exactly the same characteristics). Another consideration was to what extent students entered in the fall of 2000 (fall 1997 through fall 1999 showed exactly the same characteristics).

Finally, in order to discern the true impact of exposure to part-time faculty on student retention accounting for academic preparation, a logistic regression was developed using the entire four-year database. Logistical regression was employed because of the presence of a dichotomous dependent variable for student retention. The utilization of this technique in higher education and social science research is widely accepted and is typically used as an alternative to ordinary least squares with dichotomous dependent variables (Menard, 1995; Dey & Astin, 1993; DesJardins, 2001). Table 6 presents the results of the logistic regression model of one-semester retention during the four years.

The Hosmer and Lemeshow’s goodness of fit test (which yields a test statistic significance level above 0.05) leads to a failure to reject a null hypothesis for the model that there is no difference between the observed and model predicted values of the dependent variable. Thus, the model’s estimates are acceptable (Menard, 1995).

Table 6 reveals that both SAT Math and a student’s attempted hours have a positive and significant impact on one-semester retention. A 100 point increase in a student’s SAT Math score increases the odds of that student being retained by 1.22 (the odds ratio associated with a 100 point change is $e^{0.002 \times 100}$) times. A student who attempts

### Table 4
First Semester Exposure in Quartiles to Spring Semester Retention

<table>
<thead>
<tr>
<th>Quartile</th>
<th>Fall 97 Cohort</th>
<th>Fall 98 Cohort</th>
<th>Fall 99 Cohort</th>
<th>Fall 00 Cohort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>22.51</td>
<td>28.93</td>
<td>14.47</td>
<td>12.83</td>
</tr>
<tr>
<td>Q2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Q3</td>
<td>0.000</td>
<td>0.000</td>
<td>0.002</td>
<td>0.005</td>
</tr>
<tr>
<td>Q4</td>
<td>-0.91</td>
<td>-1.20</td>
<td>-0.85</td>
<td>-0.75</td>
</tr>
<tr>
<td>Appr. T</td>
<td>-3.87</td>
<td>-4.92</td>
<td>-3.65</td>
<td>-3.29</td>
</tr>
<tr>
<td>p-value</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.001</td>
</tr>
</tbody>
</table>

### Table 5
Quartile Demographics for the Fall 2000 Cohort (n = 1885)

<table>
<thead>
<tr>
<th>Quartile</th>
<th>Gender (0=female, 1=male)</th>
<th>SAT Comp</th>
<th>ACT Comp</th>
<th>F00 Attempted Hours</th>
<th>F00 Earned Hours</th>
<th>F00 GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>0.40</td>
<td>1013</td>
<td>22.4</td>
<td>13</td>
<td>10</td>
<td>2.39</td>
</tr>
<tr>
<td>Q2</td>
<td>0.37</td>
<td>975</td>
<td>20.7</td>
<td>13</td>
<td>10</td>
<td>2.46</td>
</tr>
<tr>
<td>Q3</td>
<td>0.43</td>
<td>920</td>
<td>18.9</td>
<td>13</td>
<td>8</td>
<td>2.23</td>
</tr>
<tr>
<td>Q4</td>
<td>0.49</td>
<td>855</td>
<td>18.4</td>
<td>11</td>
<td>6</td>
<td>1.36</td>
</tr>
</tbody>
</table>

### Table 6
Logistic Regression Model of One-semester Student Retention (n = 7174)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Sq</th>
<th>Pr &gt; Chi-Sq</th>
<th>Odds Ratio</th>
<th>Inverse Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-0.547</td>
<td>0.325</td>
<td>2.821</td>
<td>0.093*</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>SAT Verbal</td>
<td>0.000</td>
<td>0.001</td>
<td>0.238</td>
<td>0.626</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>SAT Math</td>
<td>0.002</td>
<td>0.001</td>
<td>11.377</td>
<td>0.001**</td>
<td>1.002</td>
<td>1.002</td>
</tr>
<tr>
<td>Hours Attempted</td>
<td>0.122</td>
<td>0.011</td>
<td>119.700</td>
<td>0.000**</td>
<td>1.13</td>
<td>1.13</td>
</tr>
<tr>
<td>Gender (1=male)</td>
<td>-0.285</td>
<td>0.086</td>
<td>10.860</td>
<td>0.001**</td>
<td>0.752</td>
<td>1.33</td>
</tr>
<tr>
<td>Exposure (2nd)</td>
<td>-0.185</td>
<td>0.128</td>
<td>2.090</td>
<td>0.148</td>
<td>0.831</td>
<td>1.20</td>
</tr>
<tr>
<td>Exposure (3rd)</td>
<td>-0.255</td>
<td>0.133</td>
<td>3.707</td>
<td>0.054*</td>
<td>0.775</td>
<td>1.29</td>
</tr>
<tr>
<td>Exposure (4th)</td>
<td>-0.382</td>
<td>0.141</td>
<td>7.318</td>
<td>0.007**</td>
<td>0.683</td>
<td>1.47</td>
</tr>
</tbody>
</table>

Hosmer / Lemeshow Chi-sq. = 9.722 with 8 df (sig. = 0.285)
-2 Log Likelihood = 3830.8
Nagelkerke R2 = 0.075
**significant at the 0.01 level, *significant at the 0.10 level.
an additional hour has 1.13 higher odds of being retained than a student taking one fewer hour.

In order to interpret the odds ratios when the logistic regression coefficients are negative, the inverse odds ratio suggested by DesJardins (2001) is utilized. The inverse odds ratio allows for a simplification of the interpretation of negative coefficients through a simple change of the base reference group. In this case the reference group for the inverse coefficients becomes students not retained.

Table 6 reveals that being male has a statistically significant negative impact on student retention in our sample. The inverse odds ratio suggests that being male increases a student’s odds of not being retained by 1.33 times.

The exposure variables represent dummy variables for the 2nd through 4th quartiles of exposure to part-time faculty. Table 6 reveals that a student who is exposed to between 50% and 75% part-time faculty in their first semester has 1.29 times higher odds of not being retained than students whose exposure is between 0 and 25% (the reference group). Additionally, students whose exposure is between 75% and 100% part-time faculty in their first semester have 1.47 times higher odds of not being retained than the reference group. Clearly, holding academic preparation constant, exposure to part-time faculty at levels above 50% during their first semester on campus has a direct and significant negative impact on student retention into the second semester.

**Suggestions**

The implications of these preliminary research findings indicate that institutions should give more thoughtful consideration to where part-time faculty are utilized on their respective campuses, and the potential effects of such usage on students during the freshman year experience. Institutions would be wise to focus on the professional development of their part-time and adjunct teaching faculty, paying particular attention to the development of part-timers teaching first-semester introductory courses.

Each academic year, institutions spend millions of dollars on research, restructuring, and professional development of staff, all in the name of student retention. Academic conferences are flush with papers, panels, and other various presentations discussing, in detail, how institutions engineer new student retention programs in student development, residence life, multicultural, learning communities, honors programs, freshmen year initiatives, adult learners, and the sundry milieu of college student characteristics. Great pronouncements are made about the anticipated levels of success of these programs; however, true project effect has been more difficult to identify. Very few retention programs, if any, concern themselves with part-time faculty.

Retention research on part-time faculty may, in fact, be the least expensive and most revealing research that an institution can undertake. The most elementary analysis of part-time faculty on student learning and retention can be completed in a matter of a few short days and with little to no cost.

During their collegiate lifetime, many if not the majority of undergraduate students are exposed to instruction delivered by part-time and adjunct faculty. This exposure to part-timers is particularly acute for first-year freshmen, who encounter a higher proportion of part-time instruction in the survey courses in which virtually all freshmen enroll. As is well documented in the literature, the freshman year yields the single greatest impact on individual academic success, as defined by student retention and eventual graduation.

One problem is that part-time faculty may not typically provide the first year student with the academic integration opportunities necessary to permit students to feel connected to faculty. Part-timers usually do not have office hours (or even an office), conduct research with students, meet with students on an informal basis on campus, advise student organizations and groups, or participate in the academic life of the campus. Because of their transient professional lifestyles, part-time faculty can pose a significant challenge to the at-risk student.

For institutions that profess an earnest desire to critically analyze student learning on their campus with an eye toward improved retention rates, a small investment in evaluating the affect of part-time faculty on student retention, particularly during the freshman year, could yield significant dividends. Greater attention to how institutions use and support part-time and adjunct faculty should have a direct, and positive effect on retention and student learning outcomes.
References


American Association of University Professors. (1997). Statement from the Conference on the Growing Use of Part-time and Adjunct Faculty. AAUP.


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