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ABSTRACT

Potential factors affecting grading practices were studied at an urban college. Altogether, there were 31,916 grades/grading events recorded in fall 1997. Overall, excluding grades considered "nonjudgmental," close to 50% of the grades were "B" and above and only 8% were failing. By mean quality points per credit, there were no significant differences between junior and senior faculty in assigning grades. Full-time and part-time faculty did grade differently, however. Results suggest that attention should be paid to upper level courses, courses offered in the humanities and social sciences, and courses taught by part-time faculty. (Contains 7 tables and 21 references.) (SLD)

FACTORS AFFECTING GRADING PRACTICES

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INTRODUCTION

The current research interest in grading practices was triggered by a mounting concern over grade inflation in American educational system (Zangenehzadeh, 1988; Summerville et al., 1990; Franklin et al., 1991; Agnew, 1993; Hensley, 1993; Farley, 1995; Arenson, 1997; Yardley, 1997). A common understanding of the definition of grade inflation is that "students receive higher grades than their predecessors without a corresponding rise in achievement" (Yardley, 1997).

This definition seems to have set the tone for most of the studies on grade inflation: first, many researchers went after the trend of grading patterns, trying to decide whether grades indeed increase over time; second, many researchers have focused their attention on the question of whether students actually learn more to deserve higher grades than their predecessors (Zangenehzadeh, 1988; Franklin et al., 1991; Agnew, 1993; Hensley, 1993; Arenson, 1997; Scocca, 1998; Marklein, 1997a; Mullen, 1995). As a result, many have provided ample evidence to have successfully validated (e.g., Summerville et al., 1990; Farley, 1995) or dismissed (e.g., Adelman, 1995; Olsen, 1997) the public suspicion of grade inflation. These research efforts have laid a solid foundation for further studies on this subject.

However, a careful review of literature lead us to believe that there are at least two conceptual issues that have not been sufficiently addressed. First, the term grade inflation is problematic in a context that an objective standard is absent. Grades are measures of educational achievements, but they only make sense on a comparative basis. Comparisons can be made under unified or standardized conditions. The problem is, except for some nationally or internationally standardized tests (e.g., GRE and TOEFL) and various state-administered professional license examinations, classroom and non-classroom assessments are not standardized. Second, considerable amount of time and energy has been devoted to examine the correlation between student performance and their grades while they do not even participate in this measurement activity known as grading. In other words, since autonomy is a highly regarded value in higher education, grading will remain a faculty prerogative. The grading criteria and the factors affecting them would vary from campus to campus, from department to department, and even from classroom to classroom. Strictly speaking, what the grades tell us applies only to the students who are taught and tested exactly the same way.

Therefore, this study was not designed to add another piece of testimony to the existing literature dismissing or validating the accusation of grade inflation. Nor do the authors of this study have any intention to prove how well our students have done to deserve the higher grades, for the absence of absolute criteria will make this kind of arguments sound powerless. Instead, this study was designed to probe into the issue by asking what are the potential factors that would affect faculty grading practices. The purpose is to provide some necessary knowledge for public understanding and faculty awareness of the problem, and for policy intervention if this is ever deemed desirable.

RESEARCH QUESTIONS

In early 1998 in response to the request of a Board Committee of a large urban university system, the University Chancellor sent a memo to all the colleges asking for information regarding patterns of grading and grade distribution. Administrators at one of the

University's colleges responded by conducting a series of formal and informal interviews with department chairs and faculty members and compiling grading data over the past ten years. Two conclusions were drawn from this preliminary probe: 1) grades have increased over the past ten years at the College, and 2) faculty grading practices, instead of student academic preparation or performance, are the source of the problem that needs to be addressed (Springer, 1998). Consequently, some key factors were extracted from both grading data and interview results for an in-depth analysis.

Since grading has always been considered to be a faculty prerogative (Kimmich, 1998), it is natural to ask directly how instructors would evaluate students. Many faculty members interviewed indicated that they generally do not grade on a curve but rather mastery of the subject matter and performance of the students. "Experience over time determines faculty judgment of what constitutes mastery of subject matter and, consequently, the assignment of grades according to levels of performance within college grading policies" (Mirrer, 1998). Therefore, it seems to be a reasonable assumption that faculty experience or seniority affects grade distribution. But we are not too sure about the direction of this hypothesis, since experience may help prevent grade inflation while the sense of security associated with tenure may also lead to ignoring college grading policies.

There is another question as to whether the increased use of adjuncts may affect grading patterns (Mirrer, 1998). Specifically, there is a belief that adjuncts grade higher (Cheng, Hartman, Podell, & Zeldin, 1998). We would like, therefore, to examine the academic data as to whether there has been a difference between full-time and adjunct faculty in grading practices.

For students, increases in grades may have to do with the pattern of course-taking (Kimmich, 1998). It has been suggested that students understand and are adept at "using the system" (Kimmich, 1998): grading patterns may be skewed when greater numbers of students opt for courses in which grades tend to be higher, or where the grading tends to be more subjective, such as those in the humanities, as opposed to courses in math and science, where the measures are more objective (Mirrer, 1998). In other words, grading patterns differ by discipline or department (Summerville et al., 1988; Cluskey et al., 1997). This is the third potential factor to be tested in the present study.

With grading data broken down by course levels (e.g., lower, upper, and graduate divisions), different grading patterns emerge. Therefore, the fourth factor we want to test is whether higher course levels associated with higher grades.

There are many other hypotheses that are also worth formulating and testing. However, given the fact that most research projects on grade inflation are driven by the practical need of administrators to address concerns from their constituencies, this type of study is often *ex post facto* with data drawn from administrative databases. Oftentimes institutional researchers do not have the luxury of time and resources to conduct in-depth surveys. The present study was to demonstrate an institutional research effort that focuses on utilizing existing institutional data that can explain grading practices. Specifically, this article examines the following four research questions:

(1) Do adjunct faculty award higher grades than full-time faculty?

(2) Do junior faculty award higher grades than senior faculty?

(3) Are grades generally higher in the humanities and social sciences than in science and technology disciplines?

(4) Are grades generally higher in upper division courses?

METHODS

Data Sets

Using one college as a case study, the empirical data were obtained from the campus-wide student information system. A working data set was constructed by extracting and combining data from different academic and administrative databases. The two main sources of data were the Course Masters File and the Course Card File.

Designed as a preliminary study of the complex issue, the project was conducted as a cross-sectional study of various potentially important factors associated with grade distributions within the College. To validate the research results, this kind of "snapshot" approach to one semester's data should be repeated for a number of times. The data analyzed in this study covered the fall semester of 1997.

Recognizing the fact that students normally do not participate in grading decisions (with such exceptions as W's, i.e., withdrawals), student identification and other characteristics are removed from the database. Meanwhile, the data file containing faculty characteristics such as their full-time/part-time status and ranking was merged with the main grade file. Using the summary function of database software (in our case, PARADOX), each grade is recorded as a separate "grading event" and summarized as "counts," or the number of events. In the actual analyses, the variable "count" served as a "weight," which is available in both SPSS and SAS.

Analytic Procedures

First, bivariate analytic procedures used in the study included Cross-tabulation and T-Test. Second, the techniques of "quasi-multivariate analysis" or elaboration (Chen, 1998) were performed by applying statistical control where a relationship was suspected to be spurious in order to clarify the net effect of a potential causal influence. Finally, a multiple regression was conducted to verify the findings from the previous two steps.

Since we included all the grading events on the roll of the Fall semester of 1997, we did not need to make any statistical inference using these procedures. The inferential results would only make sense when the data were supposed to constitute a random sample. Yet in research practices, tests of significance are widely used to analyze nonrandom data, and some argue that significance at least points to the presence of a relatively considerable effect (Chen, 1998). The inferential results included in the following should only be interpreted in such a manner (i.e., for a hypothetical random sample of a larger population).

RESULTS

Collegewide Grade Distribution

Altogether, there were 31,916 grades/grading events recorded for the Fall of 1997 at the College. Table 1 breaks these grading events into three distinctive groups: (1) regular grades ranging from A to F, grouped into high, medium, and low/failing grades; (2) the grades of official and unofficial withdrawals and "incomplete;" and (3) Non-judgmental grades. Overall, excluding non-judgmental grades, close to 50 percent of the grades awarded in Fall 1997 were on the higher end of the grading spectrum (B and up), nearly one-quarter of the grades, medium (C to B-), and 8 percent, low/failing (D and F).

Insert Table 1 here

Bivariate Analysis

Full-Time vs. Part-Time (Adjunct) Faculty. A total of 594 faculty members were involved in grading and included in the study. Of the 594 faculty members, 218 (36.7%) were full-timers, and 376 (63.3%) were adjuncts (part-timers). Full-time faculty were responsible for 15,440 grades/grading events, which account for 46.8% of the total. Adjunct faculty were responsible for 17,544, or 53.2% of the total grades/grading events.

Table 2 clearly indicates that, measured by mean quality points per credit, adjunct faculty gave average grades 0.107 point higher than full-time faculty. Table 3 shows that adjunct faculty gave more high grades than full-time faculty (52.1% vs. 46.7%), and they gave fewer low grades than full-time faculty (7.4% vs. 8.6%). Row percentages are used in Table 3 to facilitate such comparisons. The results indicate that adjunct faculty give higher grades than full-time faculty.

It is noticeable that while students withdrew officially from full-time faculty's classes at a higher rate than that from adjuncts' (10.3% vs. 8.1% of W's), a higher proportion of students received a grade of unofficial withdrawal (WU) from adjuncts. In addition, full-time faculty seemed to be more willing to give an incomplete grade (5.4%) than adjuncts (3.8%).

Insert Tables 2 and 3 here

Faculty Rank/Seniority. Of the 218 full-time faculty members, 69 were full professors, 71 associate professors, 67 assistant professors, and 11 under other titles such as lecturers. Senior faculty (full and associate professors) were responsible for 9,116 grading events, which account for 60.2% of the all the grades given by full-time faculty. Junior faculty (assistant professors and faulty with other titles) were responsible for 6,016, or 39.8%, of the subtotal of grades/grading events.

Table 2 shows that, measured by mean quality points per credit, there was no significant difference between junior and senior faculty in assigning grades. In Table 3, a chi-square test confirmed the fact that no significant difference existing between junior and senior faculty in grading practices.

Disciplinary Difference. Academic disciplines or departments at the College are organized in two broad divisions: the Division of Humanities and Social Sciences (H&SS) and the Division of Science and Technology (S&T). In Fall 1997, 19,069 grading events took place in the Division of H&SS and 11,649 in S&T. The T-Test in Table 2 points to the fact that, measured by mean quality points per credit, student average grades were 0.113 point higher from the courses in the Division of H&SS than those in S&T. Table 3 shows that the H&SS Division was responsible for 51.0% of the high grades awarded, whereas S&T, 46.8%. On the other hand, H&SS's low grades accounted for 7.4% of the total, while S&T's accounted for 9.6%. The results show that grades are higher in the humanities and social sciences than in science and technology disciplines.

It is interesting that, while the faculty in the H&SS Division gave more unofficial withdrawals (WU's) and incomplete grades (I's) than S&T faculty did (6.0% vs.5.1% and 5.2% vs. 3.1%, respectively), the latter received far more W's from the students (7.4% vs. 12.2%). It seems that, though S&T faculty is less likely to "inflate" grades, it might be of greater concern in terms of a need for pedagogical improvements to help students overcome

the difficulties.

Course Levels. Given the fact that the College's academic offerings range from associate degree programs all the way to the Masters, the frequencies of grades/grading events by course level are pyramidal: the higher the course level, the fewer the students/grades. Table 4 displays an unambiguous pattern: the higher the course level, the higher the average grades.

Insert Table 4 here

With undergraduate courses selected, a chi-square test was performed and the result (see Table 3) confirms a significant grading difference between lower level courses (100- and 200-levels) and upper level courses (300- and 400-levels; 500-level courses are excluded for a more rigorous test). Upper level instructors gave out 62.9% high grades, as opposed to the lower level, 46.3%. Meanwhile, upper level instructors gave less than one-half of low grades as compared with lower level instructors (4.0% vs. 8.9%). What is especially intriguing is that while upper level instructors seemed to be more prepared to award incomplete grades (6.6% vs. 4.0%), they assigned or received by far the fewer WU's and W's (5.2% vs. 10.0% and 2.6% vs. 6.3%, respectively). This suggests an important difference between incompletes and withdrawals.

Elaboration

Table 3 suggests that full-time and part-time faculty graded differently while there was no significant difference between senior and junior faculty. These two findings were further tested under more controlled conditions to make sure that the differences found are not spurious. The logic is that if the said differences disappear or weaken after controlling for the other variables, then the differences may be to some degree spurious. If the differences stay unchanged after controlling for the other variables, then they are probably true or nonspurious (Chen, 1998).

For the categorical data presented in Table 3, statistical control was carried out via a partial- or sub-table approach. Tables 5 and 6 present the results of the elaboration. A consistent pattern of full-/part-timer difference in grading practices controlling for disciplinary difference and course levels suggests that the results of the bivariate analysis presented earlier are probably true (i.e., nonspurious). However, the conclusion regarding the difference between senior and junior faculty in grading practice can be partly attributed to the disciplinary difference because the finding is reversed for grades awarded in the H&SS lower level and S&T upper level courses. That is, senior faculty teaching lower level H&SS courses tended to award slightly more higher grades than their junior counterparts, while junior faculty teaching S&T upper level courses tended to do the same than their senior counterparts.

Insert Tables 5 and 6 here

Multivariate Analysis

A regression procedure was conducted to provide a comprehensive understanding through multivariate analysis (Table 7). The results reconfirmed the influences of course level and disciplinary differences on faculty grading, and course level had a greater impact than disciplinary difference. Adjunct faculty graded higher on average than full-time faculty, whereas junior faculty do not seem to have graded higher than their peers in senior ranks.

DISCUSSION

College administrators often find themselves caught in a dilemma when their college is being accused of grade inflation, especially when "hard" data over time seem to support the accusation. On the one hand, since grading is always a faculty prerogative, the administration is supposed not just to refrain from interfering faculty grading practice but to defend this basic academic freedom. On the other hand, institutions, especially the public ones, are increasingly held accountable for their performance and outcomes, and nothing serves as a more negative indication of a college's lack of academic standards than grade inflation. Therefore, to college administrators, this is not a matter of whether to intervene with faculty grading practices or not; it's a matter of how.

Past research has shown that to simply compile data or to go after the trend of change in grading patterns over time, as most researchers have done so far, does not help solve the problem at all. It is our belief that the judgment of whether there is grade inflation is more of a normative or political issue rather than an academic or scientific one. In other words, it is the lack of unified or standardized criteria in classroom grading that makes it impossible to speak about grade inflation in any absolute terms. Therefore, in the last analysis, to understand the potential factors contributing to the variation in grade distribution becomes a prerequisite for any effective policy intervention, currently represented by a desire to keep grades in check or to achieve grade deflation (Agnew, 1993).

The findings of this article suggest that greater attention should be paid to upper level courses, courses offered in the humanities and the social sciences, and part-time faculty grading practices. Faculty rank is generally not a concern, though senior faculty teaching lower level courses in H&SS and junior faculty teaching upper level S&T courses tended to grade higher. This is the approach that identifies possible problem areas without confirming or dismissing the accusation. The results provide administrators with very specific and in-depth knowledge about faculty grading practices at the college. A study of this nature is to guide college administrators in making policies that target specific areas of problem without having to come up with any sweeping changes that may hurt the innocent.

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Table 1. Grade Distribution and Grouping

Grades and Grouping		Quality Points per Credit	Frequency	Percent
Regular Grades				
High	A	4.0	5,115	16.50%
	A-	3.7	2,916	9.40%
	B+	3.3	3,362	10.80%
	B	3.0	3,970	12.80%
	Subtotal		15,363	49.60%
Medium	B-	2.7	2,267	7.30%
	C+	2.3	1,992	6.40%
	C	2.0	2,918	9.40%
	Subtotal		7,177	23.20%
Low	D	1.0	1,602	5.20%
	F	0.0	878	2.80%
	Subtotal		2,480	8.00%
Grades in Question				
	W - Withdrawal	N/A	2,827	9.10%
	WU - Unofficial Withdrawal	0.0	1,743	5.60%
	I - Incomplete	N/A	1,406	4.50%
	Subtotal		5,976	19.30%
Non-Judgemental Grades*		N/A	920	N/A
	Total		31,916	

* Including grades assigned to auditor, administrative withdrawal, etc.

Table 2. T-Test of Numbered Grades of "A" to "F"

Variable	Count	Mean	Standard Deviation	Mean Difference	F*
Part-Time	13,434	2.943	0.979		
Full-Time	11,586	2.836	1.018	0.107	34.478**
Senior	6,882	2.836	1.005		
Junior	4,704	2.838	1.037	-0.002	0.537
H&SS	15,016	2.930	0.976		
S&T	9,102	2.817	1.055	0.113	105.727**

* Levene's Test for Equality of Variance. ** p=.000.

Table 3. Chi-Square Tests of Grading Groups

	Grading Group							
	High	Medium	Low	W	WU	I	Total	Chi-Sq*
Part-Time	52.1%	22.5%	7.4%	8.1%	6.0%	3.8%	16,366	
Full-Time	46.7%	23.8%	8.6%	10.3%	5.2%	5.4%	14,630	159.29**
Senior	45.8%	24.3%	8.3%	10.7%	5.3%	5.5%	8,773	
Junior	48.1%	23.1%	9.1%	9.6%	4.9%	5.2%	5,857	15.23
H&SS	51.0%	23.0%	7.4%	7.4%	6.0%	5.2%	18,462	
S&T	46.8%	23.3%	9.6%	12.2%	5.1%	3.1%	11,426	328.308**
Lower	46.3%	24.5%	8.9%	10.0%	6.3%	4.0%	25,934	
Upper	62.9%	18.7%	4.0%	5.2%	2.6%	6.6%	4,248	592.083**

* DF=5. ** p<.01.

Table 4. Mean and Standard Deviation of Numbered Grades of "A" to "F"

Course Level	Count	Mean	Standard Deviation
100-Level	3,652	2.736	1.076
200-Level	7,025	3.006	0.879
300-Level	2,658	3.125	0.856
400-Level	979	3.188	0.798
500-Level*	125	3.689	0.498
600-Level	480	3.469	0.584
700-Level	84	3.607	0.560
800-Level	17	3.706	0.588
Total	25,020	2.894	0.999

* Including independent study, internship, and special topics.

Table 5. Grade by Faculty Full-/Part-Time Status Controlling for Course Level and Discipline

Course Level	Discipline	Grade	Faculty Status		Chi-Square
			Part-Time	Full-Time	
Lower	S&T	High	60%	51%	
		Medium	30%	32%	
		Low	10%	17%	82.967*
	H&SS	High	62%	55%	
		Medium	28%	34%	
		Low	10%	11%	59.220*
Upper	S&T	High	77%	66%	
		Medium	19%	25%	
		Low	4%	8%	17.306*
	H&SS	High	84%	70%	
		Medium	15%	26%	
		Low	1%	5%	61.388*

* p<.01.

Table 6. Grade by Faculty Junior/Senior Status Controlling for Course Level and Discipline

Course Level	Discipline	Grade	Faculty Status		Chi-Square
			Junior	Senior	
Lower	S&T	High	53%	50%	
		Medium	31%	33%	
		Low	16%	17%	2.221
	H&SS	High	53%	57%	
		Medium	34%	34%	
		Low	13%	10%	21.850*
Upper	S&T	High	75%	62%	
		Medium	15%	30%	
		Low	9%	8%	26.841*
	H&SS	High	70%	69%	
		Medium	24%	27%	
		Low	6%	4%	2.503

P<.01.

Table 7. Multiple Regression Results on Numbered Grades of "A" to "F"

	Beta	*t*	Coding Scheme
Course Level	0.173	26.527*	1=100-level, 4=400-level, 5=graduate
Adjunct	0.084	11.246*	1=adjunct; 0=not adjunct
Division	0.038	5.938*	1=H&SS; 0=S&T
Junior	-0.014	-1.928	1=junior faculty; 0=not junior
R^2	0.034		

* $p<.05$.

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