



# **Student and Faculty Views of Plus-Minus Grading Systems**

**Working Paper Series—07-11 | December 2007**

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## Introduction

Many colleges and universities have adopted or are considering adopting a grading system that provides a larger number of marking choices than the A through F whole-letter system. This usually takes the form of a plus-minus (+/-) grading system in one version or another. While a variety of reasons have been put forth for the move to +/- grades, a key motivation is the belief that a +/- grading system can either reverse the progression of grade inflation or counter its effects by establishing more grade choices so that performance can be more effectively differentiated. This paper first reviews studies of the prevalence in American colleges and universities of +/- grading systems and, perhaps more importantly, the prevalence of schools not using +/- systems who could potentially benefit from a shift to use of this form of grading system. Because of limitations found in available data, a targeted analysis of grading systems of a selected set of universities has been conducted. The results of this secondary research are briefly reported in the second section below. Results of the first two sections indicate that there remains a substantial set of schools that do not currently utilize +/- grading and might be considering a shift to this form of grading system. Next the paper reviews literature dealing with faculty and student perceptions of +/- grading systems and the effects of these systems on the level and distribution of grades and on student effort. Substantial differences in the perceptions of the two groups are found.

The major focus of this paper is the analysis of how faculty and student perceptions of the benefits of a +/- grading system differ and what the motivations for these differences might be. The technique used to explore these questions is a survey of both faculty and student reactions to a hypothesized change to a +/- grading system at a mid-size public university in the Southwest. The results indicate that the faculty is much more supportive of a change than are students. Insights as to why each group views the effects of the hypothesized change differently are explored in the paper with possible explanations for the differences found in expectancy theory, a popular theory of human motivation that suggests students and faculty will each react to the change in a way that is likely to produce positive benefits for them, and in resistance to change theory which seeks to identify the factors causing resistance among groups affected by a change. Our study shows that each group perceives the effects of the change differently and that some students and faculty members have very strong commitments to their views.

## Examination of the Extent of Use of +/- Grades

A study by the American Association of College Registrar and Admissions Offices reported that 36% of institutions (both 2 and 4 year) in 1992 used pluses or minuses in grading whereas 56% of such institutions did so in 2002 [Brumfield, 2005]. Thirty-two institutions moved to a +/- system over the ten year period. Private schools were much more likely to use a +/- system than public schools. This continues the trend noted in the prior ten year period when a 12% increase in institutions using a +/- system was noted [Riley, Checca, Singer, & Worthington, 1994].

In order to further evaluate the use of +/- and other extended category grading systems, on-line catalogs of a representative sample of one fourth of all AACSB accredited business schools were reviewed to determine each school's undergraduate grading policy. A total of 99 schools were surveyed, 71 of them public and 28 private. Table 1 shows the distribution of grading systems used. Three basic grading systems were identified: systems using pluses-minuses, systems using a single intermediate grade and traditional whole-letter grading systems of A, B, C, D, and either E or F. Note that about one third of the schools continue to use whole-letter only grading systems.

Among public schools, 30 of 71 (42.5 percent) use only whole-letter grading. Plus-minus grading systems are clearly the most prevalent type of grading system among this group of schools. To clarify the notation used below, the A+ to C+ system would use the grades A+, A, A-, B+, B, B-, C+, C, D, F, while an A+ to D- system would use A+, A, A-, B+, B, B-, C+, C, C-, D+, D, D-, F and so on. The plus or minus typically raises (lowers) the grade by .3 or .33 grade points. As the table indicates, many schools

do not allow pluses and minuses across their full range of grades. The grade of A+ creates the possibility of a GPA greater than 4.0 and, probably for this reason; only 9 of the 60 schools with a +/- system include an A+. Four of the 9 schools using the A+ resolve the GPA problem by recording the A+ as a 4.0 when calculating GPAs, so that the A+ becomes just a notation on individual course grades. Schools also differ with respect to the bottom of the +/- range. Most frequently, pluses and minuses are used all the way down through the D-, however, due to issues relating to transfer grades and determining the grade required for satisfying prerequisites, a number of schools terminate the use of pluses and minuses with the D+ (they do not use a D-) and others stop at the C+ or even C- level.

**TABLE 1 Distribution of University Grading Systems**

	Number of Schools Using	
Plus and Minus Grades	60	
A+ thru C+		1
* A+ thru D-		8
A- thru C+		4
A- thru C-		3
A- thru D+		16
A- thru D-		27
B+ thru D-		1
Single Intermediate Grade	7	
AB, BC & CD		4
AB and BC		3
Whole-letter Only	32	
A thru F		32

\* The A+ grade is counted as a 4.0 for 4 of the schools using an A+

Systems using a single intermediate grade are far less prevalent than the +/- systems. The single intermediate grade is typically listed either as the concatenation of the two grades it lies between, such as AB for the grade between an A and a B, or as a plus without a corresponding minus. In these systems the grade points awarded for the intermediate grade are half way between the two related whole-letter grades (a 3.5 for an AB or a B+).

### **Why the Movement to +/- Grading?**

The proportion of institutions using +/- grading systems increased by 12 percent from 1982 to 1992 [Riley, Checca, Singer, & Worthington, 1994] with the trend continuing. There are three reasons typically cited as motivation for universities to change to a +/- grading system. They are concerns over grade inflation, ability to differentiate between students and ability to motivate students to aspire to learn more.

A substantial body of literature details the existence of grade inflation in American colleges and universities. One study [Levine, 1994] surveyed 4,900 college graduates from 1969 to 1993 and found that the number of A's awarded had quadrupled and the number of C's had dropped by two thirds. +/- grading shows some promise in reducing grade inflation. In a recent article the author cites evidence of other studies plus his own analysis of the experience of Berry College to conclude that the implementation of a +/- system halts and in some cases produces a minor reversal in grade inflation [Bressette, 2002]. This effect is not equal over all majors. Majors that traditionally have low GPA's are affected less by a change to a +/- system than majors in a high GPA major [Bressette, 2002]).

Proponents of a +/- system also believe it better differentiates students and that it is fairer or more precise. Researchers have found that grades are more reliable indicators of student performance as the width of a grade interval is narrowed [Singleton & Smith, 1978]. The existence of grade inflation in combination with the traditional A-F grading system effectively reduces the grades available and widens the range of student performance represented by each grade. The introduction of +/- grades increases the grades available and narrows the interval for each grade. In majors where grading is more holistic however, faculty believe the additional grade choices create less precision in student evaluations [Quann, 1987].

It is also argued that students are motivated to work harder under a +/- system. Anecdotal evidence in the form of student quotes indicates that they must continue to work through the entire semester to earn a grade under the more refined +/- system. The chance of earning a higher grade may be a motivator (plus) but the risk of earning a lower grade (minus) might be an even stronger motivator according to one study [Cullen et al., 1975]. Evidence to the contrary is present in a study of economics classes at a mid-size Midwestern university that concluded students who chose +/- grading were not significantly more motivated than students who did not [McClure & Spector, 2005].

### **Student and Faculty Attitudes Toward +/- Grading**

As noted above, the momentum is toward adoption of a +/- grading system. However, fully one third of all schools currently use a whole-letter grading system. As these schools contemplate a change to their grading system it will be important for them to recognize the differing perceptions of benefits and costs that major stakeholders have. The major focus of this paper is the analysis of how faculty and student perceptions of the benefits of a +/- grading system differ.

A recent study of business school faculty and students identified a substantial gap between the expectations and perceptions of the two groups with respect to grading and academic rigor [McKendall et al., 2006]. In addition, articles and editorials in student newspapers of universities considering adopting +/- grades suggest that this type of change in grading policies is always controversial. Such changes are typically proposed by the faculty and often opposed by students [Brown Daily Herald, 2006]. Students have noted that the use of a +/- system that does not include an A+ grade tends to lower the GPAs of the best students since they potentially have many current A grades that could become A minuses, but relatively few B and lower grades that could be raised by the plus grade [Storelli-Castro, 2006; Daily Athenaeum, 2006].

Perhaps the clearest evidence of how students view +/- grading versus traditional grading occurs when students have a choice in a particular class. Humboldt State University made the +/- system optional. Student choices were tracked in six introduction to programming classes. Students overwhelmingly chose the traditional grading system over the +/- system, although students who chose the +/- system earned more pluses than minuses [Dixon, 2004]. Students from another university were quoted as arguing that the +/- system would increase the intrinsic value of an 'A' and help in identifying the very best students [Bressette, 2002].

A survey of faculty documenting their actual use of a voluntary +/- grading system conducted at Ball State University provides evidence of variation in faculty support for such a grading system [Malone, Nelson & Nelson, 2000]. The survey asked graduate faculty how extensively they used the +/- system. Seventy-six percent indicated it was used considerably with assistant professors and those at the university for 1-4 years indicating the heaviest usage. Full professors use it less as did those with over 15 years service. The colleges that used it most were Architecture, Communication Sciences and the Humanities. The colleges that used it the least were Business, Life Sciences, Physical Sciences and Psychology. Business used the +/- system far less than any other unit in the University. No explanation was proffered for the differences by college. The differing perceptions of faculty by disciplines were noted in another study that concluded "Faculty believed that the meaning of a grade varies more across disciplines than across institutions" [Ekstrom & Villegas, 1994].

While the studies noted above point to a variety of student and faculty attitudes toward +/- grading, for the most part these studies have not examined the conceptual bases for student and faculty attitudes. There are at least two theoretical perspectives that may be useful in explaining these attitudes. The first is *resistance to change theory* and the second is *expectancy theory*.

Resistance to change theory is quite intuitive and simply states that affected parties tend to resist change to their environment, work or otherwise. Literature describing reasons for resistance to change is well established and many of the major elements cited today were identified many years ago. A 1966 American Management Association keynote presentation identified a number of factors that cause people to resent and resist change [Burns 1966]. While this presentation dealt with the work environment, many of the factors identified also apply to the type of change dealt with here. Here in paraphrased form, is a partial list of the factors identified:

1. The change was poorly communicated and the parties involved do not understand the purpose of the change.
2. The parties involved lacked any involvement in planning the change.
3. The belief that the cost of the change is too high versus the potential benefits to be received from the change.
4. The pervasive belief that the current way of doing things is perfectly adequate.
5. The fear that the new system will fail.
6. The failure to consider the habit patterns of those affected by the change and the impact of the change on those habit patterns.

In a more recent study, Goltz and Hietapelto [2002] found that employees (or students in our most likely case) resist change when it decreases their power or degree of control over stimuli affecting them.

A second theoretical explanation of why evolution to a +/- grading system would be resisted can be found in *expectancy theory*. Expectancy theory, first conceptualized by Vroom [1964] and relying on the work of earlier scholars such as Tolman [1932], Rotter [1954], and Atkinson [1956], represents a cognitive approach to explaining human behavior. The models picture human beings as active, thinking, learning and predicting creatures. People learn to perform certain behaviors (or at least increase the chance of performing the behavior) that they expect would lead to positive outcomes. Consequently, humans are not just products of their environment but they are active in attempting to understand the environment in terms of threats and opportunities.

For example, students may perceive a change to +/- grading as a threat. Some of the studies cited above suggest that +/- systems not including an A+ grade do tend to reduce the grades of the best students. More generally, students may believe that +/- grades serve to reinforce the importance of grades, that lower overall GPA's will result from the change and that higher levels of incremental study time will be necessary to prosper under a +/- system. The expectations of lower GPA's, also carries with it graduate school acceptance concerns as well. Finally, the issue of +/- grading is much more personal to students as they rightly understand that the effect of the change applies directly to them.

Faculty, on the other hand, do not take the change nearly as personally. Faculty may perceive greater flexibility and greater justice in grading with a +/- system and they might also expect that the +/- system would be more motivational to students which would cause them to have a favorable attitude toward a +/- grading system.

## **Survey Methodology**

This section describes a survey of student and faculty opinions about the introduction of a +/- grading system at a mid-sized university in the Southwest. The university currently uses a whole-letter grading system with only the grades A, B, C, D, and F. The variant of +/- grading system being considered is one that adds grades of A-, B+, B-, and C+ to the set of potential grades with + grades being recorded at .3 points higher than the base grade (e.g. 3.3 for a B+) and - grades being recorded at .3 points less than the base grade.

Respondents were asked whether they Favored, Opposed or Didn't Know About or Care About a change to the grading system that would utilize the +/- grading scheme described above. Those who either Favored or Opposed were then asked to rate the strength of their opinions as either: care only slightly, care somewhat strongly or care very strongly. The results of these two questions were combined to produce a 7 point scale with values ranging from Very Strongly Support to Very Strongly Oppose (see Table 2). Respondents were also asked to describe the reasons for their support or opposition. Results of this open ended question were recorded and categorized with up to two reasons being recorded for each respondent. In addition respondents were asked to provide additional information that might be related to their views of the proposed system. Students were asked to indicate their class standing, their GPA, and the college of their major. Faculty members were asked to indicate their college and their length of service at the university.

The survey of students opinions was collected by a group of Marketing students who randomly solicited responses from students entering and leaving commonly used buildings across the campus. The survey of faculty was collected on-line through an e-mail solicitation. Examination of the demographic distribution of responses suggests that the respondents are broadly representative of the students and faculty respectively. The 1433 student responses represent just over 10 percent of the count of student on the surveyed campus, while the 433 faculty responses represents over 50 percent of the eligible pool of faculty members.

## **Hypothesized Relationships**

Based upon the literature reviewed in the previous sections, the following hypotheses about faculty and student attitudes toward the introduction of +/- grades are proposed.

### **H<sub>1</sub> - Faculty are more supportive of a +/- system than students.**

There is some evidence that a move to a +/- grading system may reduce the progression of grade inflation or perhaps reverse it. Therefore, faculty who are concerned about the effects of grade inflation would be expected to be supportive of a +/- grading system. Based upon expectancy theory. Both students and faculty may have resistance to change reasons for opposing the new system, but these reasons are likely to be stronger for students. Students may view any change in the grading system imposed by faculty as a potential threat to their GPA. Students also are likely to feel less involved in the change and have less understanding of the purpose for the change. Thus, students would be expected to resist the change to a +/- grading system.

### **H<sub>2</sub> - Freshmen will be more supportive of +/- grades than upperclassmen.**

Class standing can also be expected to affect student responses to a change in grading system. Upperclassmen have more experience with the current grading system. They may feel that they have learned how to work within that system effectively to optimize their grades. Resistance to change tends to increase, as individuals have more experience with and more of a stake in an existing system. Thus, we hypothesize that freshmen will be more favorable toward +/- grades than upperclassmen.

### **H<sub>3</sub> - As a student's GPA increases, support for +/- grades decreases.**

Since most +/- grading systems, including the one described to our respondents, do not include an A+ grade, expectancy theory suggests that students with very high GPAs have a rational reason to believe that +/- grades are more likely to lower than raise their GPAs. For example, consider a student who has earned As in 80 percent of her/his courses and Bs in the other 20 percent leading to a 3.8 GPA. For that student, the new grading scheme could only lower and not raise 80 percent of her grades while, for the remaining 20 percent, the grade could be either higher (a B+) or lower (a B-). On the other hand, since the system proposed in this survey does not include a C-, a student who has earned 80 percent Cs and 20 percent Bs under the whole-letter system has 80 percent of his/her grades that could only be increased by

the +/- grading system. Therefore, we hypothesize that students with higher GPAs will be less favorable toward the use of +/- grades than student with lower GPAs.

**H<sub>4</sub> - As the average grade issued in a student's college increases, support for +/- grades decreases.**

The average grade in the college where a student is majoring can also be expected to affect responses to +/- grading. Students in colleges where a very high proportion of As are currently given would have reason to fear that +/- grades would lower average GPAs issued in their unit. In a college with a 3.2 average grade we might expect that 40 percent or more of the grades issued are As and that 40 percent of grades could not increase, but could only be lowered by the introduction of a typical +/- grading system. By comparison, a college with a 2.7 average grade would be expected to be issuing much fewer As, so that use of +/- grades could potentially either raise or lower nearly all of that unit's grades. In addition, at least one empirical study [Bresette, 2002] found this type of effect as discussed above. For this reason, we hypothesize that students, in keeping with the predictions of expectancy theory, will be less favorable toward +/- grades the higher the average grade issued by their college.

**H<sub>5</sub> .Faculty support for +/- grades will become less favorable as tenure at the school increases.**

Faculty views of +/- grades might be expected to vary with the length of time that a faculty member has taught under the current grading system. As a faculty member's experience with using the existing grading system increases, they, like students, may become comfortable with that system and therefore may be more resistant to change. In addition this type of effect was found in one of the empirical studies cited above [Malone, Nelson, & Nelson, 2000].

**H<sub>6</sub> . Faculty support for +/- grades will be more favorable as average grades issued in their college increase.**

The grading culture of the college in which a faculty member teaches may also impact their views of +/- grades. Faculty in colleges with high average grades might logically feel a greater need for additional grading options to better reflect student performance, whereas faculty in colleges with lower average grades might feel that the current system provides adequate assessment of student performance. On the other hand, since faculty are responsible for issuing grades, differences in current grading practices across colleges tend to reflect the grading preferences of the faculty in those colleges. Faculty in colleges with high average grades may be less likely to feel that grade inflation is an important issue. Thus, faculty support for +/- grades may be either stronger or weaker in colleges with high average grades. We believe the desire for additional grading options will be the stronger of the two effects.

## **Survey Results**

In analyzing the survey results, we will first look to see whether student and faculty opinions about the use of +/- grades differ. Table 2 below shows summary data about student and faculty opinions. There is a strong divergence between student and faculty opinions about the proposed use of +/- grades. Over half of faculty respondents support +/- grades at least somewhat strongly while only 15 percent of students share this level of support. Almost half of the student respondents oppose +/- grades at least somewhat strongly, and many of the remaining students are relatively indifferent to, rather than supportive of, +/- grades. A Chi-squared test of the null hypothesis that the distribution of faculty opinions and student opinions do not differ has been conducted and the null hypothesis is rejected at the .0001 level, indicating that there is a significant difference between the opinions of the two groups thus supporting hypothesis one.

**TABLE 2: Distribution of Opinions of Students and Faculty About Use of +/- Grades**

	Students		Faculty	
	Count	Percentage	Count	Percentage
Support Very Strongly	64	4.4%	126	27.0%
Support Somewhat Strongly	148	10.3%	123	26.4%
Support Slightly	145	10.1%	48	10.3%
Don't Know / Care	289	20.0%	26	5.6%
Oppose Slightly	129	8.9%	18	3.9%
Oppose Somewhat Strongly	332	23.0%	57	12.2%
Oppose Very Strongly	336	23.3%	68	14.6%
	1443	100.0%	466	100.0%
<i>Chi-Square test p-value</i>	0.0001			

The next set of tables provides an analysis of the degree to which student opinions about +/- grades vary across different categories of students. First we look at the effect of class standing, that is, do views differ between freshmen, sophomores, juniors, and seniors. Table 3 presents these results. The Chi-square test indicates that the distributions are significantly different and inspection of the table shows very clearly that sophomores and juniors tend to be most strongly opposed to use of +/- grades. Freshmen and seniors do not support use of +/- grades, but are less strong in their opposition and more likely to be indifferent or care only slightly about the grading alternatives. Sophomores and juniors may feel comfortable with the current grading system and be more reluctant to change, while freshmen have less familiarity with the existing system and seniors feel that they would not be personally affected by any change providing support for hypothesis two.

**TABLE 3: Student's Class Standing vs Student's Opinion of Use of +/- Grades**

	Freshman	Sophomore	Junior	Senior
Support Very Strongly	5.4%	3.2%	5.3%	4.1%
Support Somewhat Strongly	11.6%	10.3%	8.2%	11.5%
Support Slightly	13.2%	10.6%	7.4%	9.9%
Don't Know / Care	22.1%	20.1%	15.6%	22.1%
Oppose Slightly	7.8%	7.1%	10.3%	9.9%
Oppose Somewhat Strongly	19.8%	28.0%	22.5%	21.9%
Oppose Very Strongly	20.2%	20.6%	30.7%	20.7%
Students in Category	(258)	(339)	(417)	(416)
<i>Chi-Square test p-value</i>	0.0045			

Table 4 summarizes the distribution of opinions among students in different grade point average categories. Since, the +/- grading system does not include an A+, students with very high GPAs might rationally assume that they personally have more to lose (through A-s and perhaps B-s) than they have to gain (through B+s), and thus oppose the change. The results of Table 4 support this idea, the Chi-square test indicates that students with differing GPAs do differ in their views of +/- grades and students with higher GPAs are systematically more inclined to oppose using +/- grades thus supporting hypothesis three.

Student respondents were asked to indicate the college of their major. Since the classification of colleges differs substantially across universities this information is not directly comparable to other



universities. However, it would be of interest to know whether the grading rigor of a student's college affects student opinions about +/- grading. Students in colleges which currently give many high grades may feel that they have more to lose from the use of +/- grades than students in other colleges. The university in question has six colleges. Two of them have issued grades which, on average, were below a 2.8 over the last 3 academic years, two issued grades which were on average between 2.8 and 3.1 over that period, and two issued grades which were on average above a 3.1 for that period.

**TABLE 4: Student's GPA vs Student's Opinion of Use of +/- Grades**

	2.00 or Less	2.00-2.49	2.50-2.99	3.00-3.49	3.50 or More
Support Very Strongly	8.7%	5.8%	4.3%	4.7%	3.5%
Support Somewhat Strongly	8.7%	9.1%	10.6%	10.7%	9.8%
Support Slightly	13.0%	9.1%	11.1%	9.4%	9.5%
Don't Know / Care	39.1%	33.9%	24.7%	15.6%	15.0%
Oppose Slightly	0.0%	10.7%	10.6%	8.4%	8.1%
Oppose Somewhat Strongly	13.0%	16.5%	20.1%	24.8%	26.6%
Oppose Very Strongly	17.4%	14.9%	18.5%	26.4%	27.5%
	100.0%	100.0%	100.0%	100.0%	100.0%
Students in Category	(23)	(121)	(368)	(572)	(346)
<i>Chi-Square test p-value</i>	0.0001				

Table 5 shows the distribution of student opinions across these categories. The Chi-square test for equal distribution does indicate that there is a significant difference in the distribution of responses. Opposition to +/- grades is strongest and support for them weakest among students in colleges issuing the highest average grades thus supporting hypothesis four. This result should be interpreted somewhat cautiously however, because of the natural correlation of average grade with the student's own GPA examined in Table 4. That is, in general, students in colleges issuing high grades are more likely to have high GPAs.

Next we examine how faculty opinions about +/- grades vary across different faculty categories. First the length of service at the university is examined. Much like the situation described for students, it might be hypothesized that faculty who have been at the institution for a long period of time will be less likely to support a change in a grading system that they are used to and comfortable in using.

**TABLE 5: Average GPA Issued in Student's College vs Student's Opinion of the Use of +/- Grades**

	Average GPA Issued in Student's College		
	< 2.8	2.8-3.1	>3.1
Support Very Strongly	6.0%	3.8%	2.6%
Support Somewhat Strongly	11.6%	10.5%	8.5%
Support Slightly	9.6%	11.7%	7.6%
Don't Know / Care	19.8%	22.0%	16.3%
Oppose Slightly	9.1%	10.5%	5.8%
Oppose Somewhat Strongly	24.9%	19.8%	27.1%
Oppose Very Strongly	19.1%	21.7%	32.1%
Students in Category	(450)	(640)	(343)
<i>Chi-Square test p-value</i>	<.0001		

Table 6 presents the results for this category. Hypothesis five is only weakly supported. The Chi-square test for equal distribution cannot be rejected for these categories, although faculty with more than 20 years at the institution do have the lowest rate of support and highest rate of opposition to +/- grades.

**TABLE 6: Faculty Member's Length of Service at the Institution vs Faculty Member's Opinion of the Use of +/- Grades**

	5 Years or Less	6-10 Years	11-20 Years	More Than 20 Years
Support Very Strongly	26.8%	27.7%	27.0%	25.0%
Support Somewhat Strongly	23.8%	33.0%	27.7%	21.9%
Support Slightly	14.3%	7.4%	9.5%	6.3%
Don't Know / Care	6.5%	5.3%	4.4%	4.7%
Oppose Slightly	6.0%	4.3%	1.5%	3.1%
Oppose Somewhat Strongly	13.7%	7.4%	13.1%	14.1%
Oppose Very Strongly	8.9%	14.9%	16.8%	25.0%
Faculty in Category	(168)	(94)	(137)	(64)
<i>Chi-Square test p-value</i>	0.1914			

Table 7 examines the relationship between the average grade issued in the faculty member's college and the faculty member's views of the use of +/- grades. Grades might tend to be higher in colleges where most faculty members are not very concerned with grades or the possibility of grade inflation. On the other hand, faculty in colleges with high average grades might see a greater need for additional grading categories. Thus, there is no clear hypothesis about how average grades in the college should impact opinions about the use of +/- grades. The results of Table 7 indicate that the null hypothesis of equal distribution cannot be rejected. There appears to be no clear link between the average grade issued in a college and the views of faculty members about +/- grading rejecting hypothesis six.

**TABLE 7: Average Grade Issued in faculty member's College vs faculty member's Opinion of Use of +/- Grades**

	Average GPA Issued in Faculty Member's College		
	< 2.8	2.8-3.1	>3.1
Support Very Strongly	21.0%	28.6%	31.5%
Support Somewhat Strongly	35.3%	21.4%	23.8%
Support Slightly	11.8%	11.4%	8.8%
Don't Know / Care	2.5%	5.7%	7.2%
Oppose Slightly	3.4%	4.3%	3.9%
Oppose Somewhat Strongly	16.8%	12.1%	9.9%
Oppose Very Strongly	9.2%	16.4%	14.9%
Faculty in Category	(119)	(140)	(181)
<i>Chi-Square test p-value</i>	0.1329		

The reasons given by students and faculty members for supporting or opposing use of +/- grades are summarized in Tables 8 through 11. These tables were assembled by categorizing open-ended responses. In the case of respondents opposing +/- grades, there were a number of somewhat distinct

responses that were still logically related in an overall category. In those instances the overall number of occurrences in the general category is presented, but the distribution of responses within the subcategories is also presented.

Table 8 summarizes reasons given by students supporting the use of +/- grades. The predominant reason given was that the system would provide grades that are more accurate and provide a more refined measure of performance. The second most prevalent reason – that +/- grades provide a more appropriate reward for the effort is somewhat related. Other rather frequent reasons given were the feeling that +/- grades will raise GPAs and the belief that they will increase incentives for students to work hard in classes.

In contrast to the 35 students who felt that +/- grades would raise GPAs, Table 9 indicates that 10 times as many students (352) believe that +/- grades will have a negative impact on grades. It seems clear that fear of lower grades was the most important factor in the overall negative view of students toward the +/- grading system. Just over 100 students indicated that they oppose +/- grades simply because they prefer the current system and either see no reason to change or do not like the new system. Students also criticized the new system as being overly complicated, increasing stress and placing too much focus on grades, requiring more work of them to receive the same grades, and having a potential negative impact on employment, scholarships, and/or getting into graduate school.

**TABLE 8: Students' Reasons for Supporting +/- Grades**

	Number of Comments
Grades are More Accurate/Refined	145
Provide More Appropriate Reward for the Effort	43
Will Raise GPA's	35
Increased Incentives to Work Harder	21
Will increase the Reputation of the School	7
Other Schools Use Them	5

Reasons for faculty support for +/- grades are summarized in Table 10. The two most prevalent reasons cited closely parallel the top two reasons for support provided by students. First, that grades will be more accurate and refined under a +/- system (identical to the students' top response) and second that they are fairer or better for the students (similar to the students' response of – provides more appropriate reward for effort). Other prominent reasons for support included the belief that +/- grades will help combat grade inflation, and that they will improve student motivation.

**TABLE 9: Students' Reasons for Opposing +/- Grades**

	Number of Comments	
	In Category	In Sub-Category
Negative Impact on Grades	352	
An "A" is an "A" (is difficult enough)		164
It will lower my GPA		145
Achieving 4.0 is More Difficult		32
Heard from ASU / Lower Grades		11
Prefer Current System	104	
Like current System / no reason to change		54
Don't like the change		50
System is more Complicated	38	
Too much pressure / stress	34	
Will require more study time for the same grades	21	
Puts too much focus on grades	16	
Negative Impact on Scholarships/Employment/Grad. School	15	
Doesn't motivate me more	9	
Like high School/Grade School	8	
Changes School's Atmosphere	5	

**TABLE 10: Faculty Reasons for Supporting +/- Grades**

	Number of Comments
Grades are More Accurate/Refined	173
Grades are Fairer/Better for Students	50
Will Combat Grade Inflation	26
Will Improve Student Motivation	23
Better / Easier for Faculty (Feel better about grades given)	12
Will Improve Student Feedback	10

Reasons for opposition to +/- grades among faculty were varied (see Table 11). Most commonly cited is the idea that the change poses more costs than the benefits it provides. The next most frequent concern was the belief that grade challenges and arguments over grades would be increased since more students would be near a boundary between grades. Somewhat related to this are concerns that grades will be more difficult (physically and emotionally) for faculty to construct and compute and that the particular grade given will be arbitrary. Interestingly almost as many faculty believed that +/- grades would have no impact on or would increase grade inflation (17) as believed that +/- grades would reduce grade inflation (26). Finally, 10 faculty members expressed concern that +/- grades would overemphasize grades.

**TABLE 11: Faculty Members' Reasons for Opposing +/- Grades**

	Number of Comments	
	In Category	In Sub-Category
Cost versus Benefit	39	
Current System is OK (no need for change)		14
No Benefit to Change		9
No Benefit to Students		9
High cost to change with Little Benefit		7
Will Increase Grade Challenges/Arguments	24	
Grading Will be More Difficult for faculty	21	
Grades are More Arbitrary	17	
Grade Inflation Impact	17	
Will Encourage Grade Inflation		10
Won't Reduce Grade Inflation		7
Overemphasis on Grades	10	
Emphasizes Grades versus Learning		6
Adds to Student Anxiety over Grades		4
Not used by Employers / recruiters	3	
May Hurt Student Grad School chances	2	

## Conclusions

This study examined the extent of use of +/- grades in AACSB accredited business schools by collecting data from 99 such schools. Sixty percent of the schools use some variant of a +/- grading system, 32 percent use only whole-letter grading and the remainder use a single intermediate grade.

A survey of faculty and student opinions about a move to +/- grading at a mid-sized university in the Southwest provides a number of interesting insights. There is a strong divergence between student and faculty opinions. Over half of faculty respondents support +/- grades at least somewhat strongly as compared to only 15 percent of students. Nearly half of student respondents oppose the change at least somewhat strongly.

Students and faculty supporting the +/- grading system cited very similar reasons for their support - the belief that grades will be more accurate and refined and the belief that grades will be fairer or better for students. Some students also indicated the change would provide incentive to work harder. Some faculty felt it would combat grade inflation and improve student motivation.

Students who oppose the change believe there will be a negative impact on GPA's (352 students believe this versus 35 who believe grades would improve). The next most prevalent student comment was that they prefer the current system and see no need for a change. Faculty who opposed the change commented most frequently that there is little benefit from the change and next that it will increase grade challenges or make grading more difficult for faculty.

Opposition to the change was strongest and support for +/- grades was weakest among students in colleges issuing the highest average grades. In addition, sophomores and juniors and students with higher GPAs tend to be most strongly opposed. This suggests that student opposition to a +/- grading system could be reduced by implementing it in a phased manner (starting with the freshman class) and by finding a way to incorporate a grade of A+. In addition, resistance to change theory suggests that it is important that the reasons why the use of +/- grades might be in the best interest of students be effectively communicated throughout the process and that students groups should be involved early in any proposal to institute +/- grades.

## References

- Atkinson, J. W. (1957) Motivational Determinants of Risk Taking Behavior. *Psychological Review*, Vol. 64, pp 359-372.
- Bressette, R. "Arguments for Plus/Minus Grading: A Case Study," Educational Research Quarterly, 25(No.3, 2002), 29-41.
- Brumfield, C. (2005) Current Trends in Grades and Grading Practices in Higher Education, AACRAO, Washington, DC,120 pages.
- Burns, J., "The Problem of Change," Industrial Management, March, 1966, p. 1.
- Brown Daily Herald, Staff Editorial, "An N/C for plus/minus," (2006, March 15).
- Cullen, F. T. et al. "The Effects of the Use of Grades as an Incentive," The Journal of Education Research, 68(No. 7, 1975), 277-9.
- Daily Atheneum, Staff Editorial, "Plus-Minus system has Pros/Cons," (2006, April 10).
- Dixon, Chip. "Plus/minus grading: If given a choice," College Student Journal, 38 (June 2004), 280-5.
- Ekstrom, R., Villegas, A.M. "College Grades: An Exploratory Study of Policies and Practices," College Entrance Examination Board, New York. (No. 94-1, 1994), 1-39.
- Goltz S. and A. Hietapelto, "Using the Operant and Strategic Contingencies Models of Power to Understand Resistance to Change," Journal of Organizational Behavior, Vol. 22(3), 2002, pp. 3-22.
- Levine, A. "To Deflate Grade Inflation: Simplify System," Chronicle of Higher Education, 40(1994, Jan. 19), B3.
- Malone, B., Nelson, J. S., Nelson C. V. "A Study of the Effect of the Implementation of the Plus/Minus Grading System on Graduate Student Grades," Paper presented at the Annual Meeting of the Midwestern Educational Research Association (Chicago, IL, October 25-28, 2000).
- McClure J., Spector L. "Plus/minus grading and motivation: an empirical study of student choice and performance," Assessment & Evaluation in Higher Education, Vol. 30(No. 6, 2005), 571-9.
- McKendall, M., Bhagwat, Y., Giedeman, D., Klien, H. & Lavenburg, N. "Identifying the Gap Between Student and Faculty Expectations: Report from a Business School," Journal of the Academy of Business Education, 7(Spring, 2006), 44-51.
- Quann, C. J. "Plus-Minus Grading: A Case Study and National Implications," Washington, D. C.: American Association of Collegiate Registrars and Admissions Officers. (1987), 1-17.
- Riley, H. J., Checca, R.C., Singer, T. S., & Worthington, D. F. "Current Trends in Grades and Grading Practices in Undergraduate Higher Education," The results of the 1992 AACRAO Survey, New York, (1994), 1-76.
- Rotter, J. B. (1954), *Social Learning and Clinical Psychology*, Englewood Cliffs, N.J.: Prentice-Hall.
- Singleton, R. Jr. & Smith, E. R. "Does Grade Inflation Decrease the Reliability of Grades?," Journal of Educational Measurement, 15 (No. 1, 1978). pp. 37-40.
- Storelli-Castro, L. "How the Plus-Minus System Stole Christmas," Rocky Mountain Collegian, (2006, March 8).
- Tolman, E. C. (1932), *Purposive Behavior in Animals and Men*, New York: Appleton-Century-Croft.
- Vroom, V. C. (1964), *Work and Motivation*, New York: John Wiley and Sons.