Ad Hoc Committee on Plus/Minus Grading

Final Report
Respectfully submitted, April 27, 2012

Members:
Mandi J. Lopez, Veterinary Medicine (Chair), Don Chance, Business (Resolution Sponsor), Warren Waggenspack (STEM disciplines and the associate deans), Gabriel Beavers (arts disciplines), William Boelhower (humanities disciplines), Robert Doolos, Registrar, Gerald Knapp (ASH member)

Academic Year 2011-2012
Background

Resolution 11-20 “A Plus and Minus Grading System for LSU” was introduced by Professor Don Chance at the November 3, 2011 Faculty Senate meeting (Appendix A and Faculty Senate Minutes). Following the second reading at the Faculty Senate meeting on January 19, 2012, the senate voted to table the resolution and establish a task force for further study (Faculty Senate Minutes). A Committee was formed in February 2011. At the first meeting on February 28, 2012, the committee determined that there were four points central to a decision about a change in the current grading system (Appendix B). The points were as follows:

1. To assess consistency with current standards, those grading systems in place in current “peer” and research institutions will be determined.

2. The potential to influence the grade point average (GPA) of incoming students will be assessed to determine if GPAs are altered following conversion in the LSU system by removal of grade suffixes. (For example, will an incoming student with a GPA of 1.7 be raised to a 2.0 by removal of the “-“ suffix from the grade?)

3. Potential influence on credentialing/certification programs will be determined.

4. The cost reflected in the number of programmer hours required to convert the current system will be estimated.

Methods

All committee members were encouraged to research and provide input on each point in question. In addition, each point was assigned to a specific committee member. The outcomes were discussed at a second meeting on April 3, 2012, and the results compiled into a final report. The report was distributed to committee members for input. Following finalization of the report, a motion was passed to provide individual votes on the resolution.

Results

Point 1 – Peer and research intensive university grading systems. Validated results were available from 18 universities (Table 1). Thirteen of those surveyed use the suffix grading system.

<table>
<thead>
<tr>
<th>University</th>
<th>Grading Scale</th>
<th>Date Implemented</th>
<th>Registrar Office Phone #</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clemson</td>
<td>Straight</td>
<td>Don't Know</td>
<td>(864) 656-3311</td>
<td><a href="http://www.registrar.clemson.edu/publicat/catalog/2011/acadreg.pdf">http://www.registrar.clemson.edu/publicat/catalog/2011/acadreg.pdf</a></td>
</tr>
<tr>
<td>Kansas State</td>
<td>Straight</td>
<td>Don't Know</td>
<td>785-532-6254</td>
<td><a href="http://www.k-state.edu/registrar/a_r/">http://www.k-state.edu/registrar/a_r/</a></td>
</tr>
<tr>
<td>Oregon State</td>
<td>+/-</td>
<td>Since Opening</td>
<td>(541) 737-4331</td>
<td><a href="http://catalog.oregonstate.edu/ChapterDetail.aspx?key=75#Section2885">http://catalog.oregonstate.edu/ChapterDetail.aspx?key=75#Section2885</a></td>
</tr>
<tr>
<td>University of Colorado Boulder</td>
<td>+/-</td>
<td>Don't Know</td>
<td>303-492-6970</td>
<td><a href="http://www.registrar.colorado.edu/catalog/catalog11-12/download/files/GeneralInfoCatalog11-12.pdf">http://www.registrar.colorado.edu/catalog/catalog11-12/download/files/GeneralInfoCatalog11-12.pdf</a></td>
</tr>
<tr>
<td>University of Georgia</td>
<td>+/-</td>
<td>(2010-2011)</td>
<td>706.542.4040</td>
<td><a href="http://www.reg.uga.edu/grades">www.reg.uga.edu/grades</a></td>
</tr>
<tr>
<td>University of Idaho</td>
<td>Straight</td>
<td>Since Opening</td>
<td>(208) 885-6731</td>
<td><a href="http://www.uiweb.uidaho.edu/schedule/catalog/2011/rights-reserved-to-the-university.htm#4842">http://www.uiweb.uidaho.edu/schedule/catalog/2011/rights-reserved-to-the-university.htm#4842</a></td>
</tr>
<tr>
<td>University of Mississippi</td>
<td>+/-</td>
<td>Fall 2011</td>
<td>662-915-7792</td>
<td><a href="http://www.olemiss.edu/info/grading.html">www.olemiss.edu/info/grading.html</a></td>
</tr>
<tr>
<td>University of Missouri</td>
<td>+/-</td>
<td>Fall 2011</td>
<td>573-882-7881</td>
<td><a href="http://www.registrar.missouri.edu/policies/plus-minus.php">www.registrar.missouri.edu/policies/plus-minus.php</a></td>
</tr>
<tr>
<td>University of North Carolina at Chapel Hill</td>
<td>+/-</td>
<td>(Spring 2012)</td>
<td>(919) 966-3621</td>
<td><a href="http://www.registrar.unc/AcademicServices/Grades/CCM3_031357#gradsyst">www.registrar.unc/AcademicServices/Grades/CCM3_031357#gradsyst</a></td>
</tr>
<tr>
<td>University of Tennessee</td>
<td>+/-</td>
<td>Fall 2008</td>
<td>865-974-2101</td>
<td><a href="http://registrar.utk.edu/records/grades/gpa.shtml">http://registrar.utk.edu/records/grades/gpa.shtml</a></td>
</tr>
<tr>
<td>University of Virginia</td>
<td>+/-</td>
<td>Don't Know</td>
<td>434-924-4122</td>
<td><a href="http://records.ureg.virginia.edu/content.php?catoeid=25&amp;navoid=606#grad_syst">http://records.ureg.virginia.edu/content.php?catoeid=25&amp;navoid=606#grad_syst</a></td>
</tr>
</tbody>
</table>
Point 2 – Influence on grade distribution. Information from one outside institution (Table 2) and 10 years of grade data from an LSU faculty member (Professor Donald Chance) collected under a +/- system at another university (Table 3) were used to evaluate grade distribution. Additionally, responses from Lupe Lamadrid, Associate Director of the Office of Admission & Student Aid, to questions posed by Robert Doolos on behalf of the committee were considered (Fig. 1). The change in grade distribution and GPA was negligible upon conversion from the suffix system to the current grade system when converted as described by the Office of Admissions and Student Aid. Specifically, the grade suffix is dropped and associated partial grade points are collapsed into a single value. For example, C+= 2.7 and C= 1.7 both become equal to C = 2.0. Numerous independent studies have reached comparable conclusions including that by Andrew Bressette at Berry College (Appendix C, Bressette, A. Arguments for Plus/Minus Grading: A Case Study, Educational Research Quarterly, 253:29-40, 2002). On the issue of how a +/- system might influence student admission to post-baccalaureate programs, students are generally evaluated based on the program standards in their baccalaureate institutions (class standing, GPA, etc), so the new system would potentially provide better resolution among LSU applicants to graduate programs.

Table 2. Grade distribution information from another university (non-LSU source, anonymity requested by donor) using +/- grading scale upon grade conversion to LSU system.

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>A+</th>
<th>A</th>
<th>A-</th>
<th>AU</th>
<th>B+</th>
<th>B</th>
<th>B-</th>
<th>C+</th>
<th>C</th>
<th>C-</th>
<th>D+</th>
<th>D</th>
<th>D-</th>
<th>F</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent</td>
<td>1%</td>
<td>20%</td>
<td>15%</td>
<td>0%</td>
<td>12%</td>
<td>13%</td>
<td>7%</td>
<td>5%</td>
<td>6%</td>
<td>8%</td>
<td>1%</td>
<td>2%</td>
<td>1%</td>
<td>2%</td>
<td>94%</td>
</tr>
<tr>
<td>If LSU Xfer</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.65</td>
</tr>
<tr>
<td>&quot; +/- Avg GPA</td>
<td></td>
<td>40.980</td>
<td>29.229</td>
<td>C</td>
<td>11.718</td>
<td>D</td>
<td>3.230</td>
<td>F</td>
<td>1.632</td>
<td>95.137</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSU Avd GPA</td>
<td></td>
<td>3.03</td>
<td>3.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3. Grade distribution information from LSU faculty member (Professor Donald Chance) collected under a +/- system at another university.

<table>
<thead>
<tr>
<th>Grade Point Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class level</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>Undergraduate</td>
</tr>
<tr>
<td>Graduate</td>
</tr>
</tbody>
</table>

Figure 1. Summary of Office of Admissions and Student Aid responses to indicated questions.

Q: How does Undergraduate Admissions treat plus/minus grades of transfer students?
A: We do not factor them in. If a student has a C+ or C- it is converted to a C.

Q: If a transfer student has a C- average (i.e., 1.700) from his or her previous institution, would Undergraduate Admissions convert the average to 2.000?
A: Yes, the student in your example would have a 2.0 as that is what the C- would be converted to by our staff.

Q: Do we store students’ plus/minus grades electronically so that they can be compared to the grades to which they are converted?
A: No. We do not have the fields to store.

Q: What feeder/transfer schools use plus/minus grading?
A: I do not have a list. We do have many high schools that have +/- grading as well as colleges.
Point 3 - Potential influence on credentialing/certification programs will be determined. Responses from Patricia Exner, Associate Dean, College of Education, to questions posed by Gabriel Beavers on behalf of the committee were considered (Summarized in Fig. 2). There should be little to no effect on credentialing based on this information.

**Figure 2.** Summary of College of Education responses to indicated questions.

<table>
<thead>
<tr>
<th>Q: Are there potential certification issues with +/- grading?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: A plus-minus system would not be problematic for certification. They look exclusively for C’s or better in specified courses, regardless of whether C+, C-, C. Also, state requirements include 2.50 LSU &amp; cumulative GPAs for admission to teacher education programs and for graduation. If grade points for C drop to lower than 2.0, then conceivably some students in teacher certification programs would be affected negatively.</td>
</tr>
</tbody>
</table>

Point 4 – The cost of implementing the grading system. Based on information provided by the Registrar, the cost (mainframe and web processes along with database work) would be between 240 and 320 man hours ($15 - 20K) to retrofit a suffix grading scale into current systems (Fig. 3). The new student information system is scheduled to launch in 2015. Notably, a three year window would allow time for current students to graduate prior to implementation of the new system.

**Figure 3.** Response from the Registrar’s office regarding the estimated man hours to implement a suffix grading scale in the current systems.

“How much implementing plus/minus grading will cost with respect to man hours of analyst time needed to enhance MOODLE, Web applications (e.g., mid-term/final grade reporting) and the SRR database, depends on a policy decision that is yet to be made. The policy in question is related to the database tables that are used to store minimum required grades for degree requirements and prerequisites. The issue is whether minimum grades will continued to be specified as A, B, C or D with plus/minus grades being equated to A, B, C or D. For example, C+ and C- would be considered a C for the purposes of the minimum grade requirement. If this is the case, the cost in man hours will be 120-160 hours. If this is not the case, and minimum grades are specified with pluses and/or minuses, the cost would double (i.e., 240-320 man hours). The reason for the doubling of the cost is the tables that store minimum required grades for degree requirements and prerequisites would need to be enhanced to accommodate the pluses and minuses along with modifying the processes that check these requirements.”

**Summary**

The majority of comparable Universities considered currently employ suffix grading scales. Based on available information, use of a suffix grading scale would have negligible effects on GPA, grade distribution and credentialing. The total cost of retrofitting a suffix grading scale into current systems would be between 240 and 320 man hours ($15 - 20K). There is no cost associated with implementation of the grading scale into the new student information system currently scheduled to launch in 2015. Implementation of the new system in AY 2015 would limit the effect on current students.

**Committee Conclusions**

There was general agreement that use of a suffix grading system is consistent with current standards in the majority of peer Universities considered and that the suffix grading system provides greater resolution in student grades that is relevant to some, but not all courses. Further, there is no conclusive evidence of negative effects on student GPAs, credentialing, or admission to post-baccalaureate programs. The committee feels that use of grade suffixes should be the prerogative of individual instructors and not mandatory. Additionally, it was agreed that the cost of retrofitting the grading scale into existing student information systems may not be justified and that it should instead be implemented in the new information systems. Further, the committee agreed that a voluntary exercise to evaluate the effects of suffix grading within different programs and colleges may be warranted to provide data on which to base decisions surrounding use of the suffix systems within them. A Faculty Senate vote on the measure next semester will
provide time for such exercises as well as distribution and consideration of the report among and within departments.

**Final Vote**

For: Lopez, Chance, Beavers, Boelhower

Against: Waggenspack, Knapp

Note: The votes represent the opinion of individual committee members, not necessarily the department or discipline they represent.
APPENDIX A
Proposal to the Faculty Senate
to Change the LSU Grading System and Computation of Grade Point Average
Proposed by Don Chance, Flores Chair and Professor of Finance,
Department of Finance
October 14, 2011

Background

LSU currently uses the grading system of A, B, C, D, and F, which provide for 4, 3, 2, 1, and 0 points, respectively. This proposal recommends that LSU convert to a system that permits the faculty member to assign + (plus) and minus (-) grades. The proposed system would allow for grades of A, A-, B+, B, B-, C+, C, C-, D+, D, D- and F.

The number of quality points for a given letter grade is obviously an important question. To provide some guidance, a survey was conducted of about 80 schools, which include LSU’s peers as specified in the updated Flagship agenda program and essentially all of the most prestigious public and private research schools in the United States.

Alternative Systems

Quite a few systems were identified. Some, such as MIT’s five-point system, Brown’s no-grade system, Maryland’s system of awarding plus/minus grades but not reflecting these variations in the grade point average calculation, and Wisconsin’s A, AB, B, BC system are quite unconventional and were disregarded. Of the remaining schools, 69 use some variant of the plus/minus system while thirteen use the traditional system.

The variants of the plus/minus system include

1. \( A = 4.0, A^- = 3.7, B^+ = 3.3, B = 3.0, \) etc. (39 schools)
2. \( A = 4.0, A^- = 3.67, B^+ = 3.33, B = 3.0, \) etc. (14 schools)
3. \( A = 4.0, A^- = 3.75, B^+ = 3.25, B = 3.0, \) etc. (1 school)
4. \( A = 4.0, A^- = 3.667, B^+ = 3.333, B = 3.0, \) etc. (3 schools)
5. \( A = 4.0, A^- = 3.666, B^+ = 3.333, B = 3.0 \) (1 school)

Some schools give A+. The following such systems were identified:

6. \( A^+ = 4.33, A = 4.0, A^- = 3.67, \) etc. (9 schools)
7. \( A^+ = 4.3, A = 4.0, A^- = 3.7, \) etc. (2 schools)

Some schools allow the awarding of an A+ or an A with both worth 4.0 points, although B+ is worth more than a B. This system is still treated as a plus/minus system.

Along with LSU, the schools that use the traditional system are Auburn, Georgia Tech, Carnegie Mellon, Ohio State, Texas A&M, Arkansas, Oklahoma, Oklahoma State, West Virginia, Arizona, Kansas State, Nebraska, and Oregon.

The schools that use a variant of the plus/minus system are Clemson, Duke, Emory, Indiana, Johns Hopkins, Mississippi State, New York University, Northwestern, Oregon State, Princeton, UCLA, and the Universities of Alaska at Fairbanks,

Proposal

It is recommended that LSU adopt the most-widely used system, which would provide for the following grade points:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4.0</td>
</tr>
<tr>
<td>A-</td>
<td>3.7</td>
</tr>
<tr>
<td>B+</td>
<td>3.3</td>
</tr>
<tr>
<td>B</td>
<td>3.0</td>
</tr>
<tr>
<td>B-</td>
<td>2.7</td>
</tr>
<tr>
<td>C+</td>
<td>2.3</td>
</tr>
<tr>
<td>C</td>
<td>2.0</td>
</tr>
<tr>
<td>C-</td>
<td>1.7</td>
</tr>
<tr>
<td>D+</td>
<td>1.3</td>
</tr>
<tr>
<td>D</td>
<td>1.0</td>
</tr>
<tr>
<td>D-</td>
<td>0.7</td>
</tr>
<tr>
<td>F</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Benefits and Costs

Clearly such a change is not without cost to the university. Registrar software would need reprogramming, and it is likely that some forms would need to be re-designed. Some re-indoctrination of faculty and students would be required, although the change is not particularly complex and most everyone should catch on quickly. Another subtle cost, however, is that by having more grade cutoffs, there will be more students who will be close to the next highest grade. With quality points on the line, appeals could potentially be more frequent. On the other hand, as an example, some students who might ordinarily have gotten a B might now get a B+ and will benefit.

Indeed the main advantage would be that it would provide more flexibility to the faculty member, which should be particularly valuable in graduate classes, where there is a tremendous difference in the highest and lowest A’s and highest and lowest B’s. It also seems likely that some graduate student grades that might have been B’s will be B- or C+ or A’s might become A- or B+.

Because the old system is subsumed within the new system, any faculty member could continue to use the old system.
Minutes

Ad Hoc Committee on +/- Grading

Date: February 28, 2012

Time: 7:40 am

Location: Dean’s Conference Room, School of Veterinary Medicine

Present: Mandi Lopez, Chair, Don Chance, Robert Doolos, Warren Waggenspack, Gabriel Beavers

Absent: William Boelhower

1. Meeting called to order at 7:40 am.

2. Lopez summarized committee directive.

3. Four points decided upon for investigation:
   a. To assess consistency with current “feeder” institutions, the grading schemes in place in those institutions with the highest student applications to LSU will be determined. – R. Doolos.
   b. Currently, “+” and “-” are removed from transfer credits and graduate school applications (to be confirmed by R. Doolos, please) for purposes of GPA calculations. Hence, it is possible that GPA’s are altered. R. Doolos will provide W. Waggenspack with grade distribution reports to compare GPAs before and after the conversion.
   c. The potential effects on teacher certification was raised. G. Beavers will provide a report on this point.
   d. The cost of implementing the new system depends on the number of programmer hours required which in turn depend on the number of systems that will be affected. R. Doolos will provide a broad estimate.

   I. Potential systems affected – Registrar database, Student aid/admission, Athletic Certification, Scholarships,

4. It was noted that the earliest point at which a new grading scale could be implemented is 2013.

5. Another point to consider is faculty opinion/vote. The need for an unbiased survey following this discovery phase was mentioned.

6. Adjourned 8:40 am.

Next Meeting – Tuesday, April 3, 7:30 am, Dean’s Conference Room, School of Veterinary Medicine.
APPENDIX C

 Arguments for Plus/Minus Grading: A Case Study
 Andrew Brezina, Berry College

 The issues of grading systems and policies continue to be a highly debated topic in higher education. One central issue is whether faculty and students are better served by the adoption of plus/minus grading systems. The present paper addresses the following four major reasons to use plus/minus grading: reduced grade inflation, better differentiation among students, increased student motivation, and enhanced image of grades and an undergraduate degree. Additionally, using grade data collected, the impact of plus-minus qualifiers on student grade point averages (GPAs) was predicted in light of the major reasons. Ultimately, the faculty concluded that the adoption of plus-minus grading would have a positive impact in each of these areas. It is expected that the summary and statistical analyses presented here will be of great benefit to anyone considering such a change.

 Since the 1960s, the issues of grading systems and policies have been a topic of great debate in undergraduate higher education. One of the issues central to this debate is grade inflation. A 1992 study conducted by the American Association of College Registrars and Admission Officers (AACRAO) has indicated that grade inflation continues to be a problem in higher education (cited in Riley, Checa, Singer, & Worthlington, 1984). Because of grade inflation, researchers have suggested that this has become increasingly difficult to distinguish good and poor work in academia (e.g., Cole, 1995). In addition, many have suggested that grade inflation devalues the work of exceptional students and an undergraduate degree, perhaps making it more difficult for students to gain admission to graduate and professional schools (Bohm, 1975; Davidson, 1975).

 In response to the growing problem of grade inflation as well as the changing demands of students and faculty, many colleges and universities are re-evaluating their grading systems. In recent years, there has been an increasing trend away from grading systems with fewer and smaller marking categories (e.g., 6, plus, minus) and toward grading systems with a larger number of marking categories (Quinn, 1997). Specifically, the 1992 AACRAO study indicates that there has been a 12 percent increase in the number of institutions using plus (+) and minus (-) qualifiers to their traditional letter grade system. As a result, the number of institutions using the traditional letter grade system has dropped (cited in Riley et al., 1994).

 Jacobson (1978) noted that faculty are under great pressure to give borderline students the higher of the two letter grades. Take, for example, six students, five of which lie on the A-B border. If five students are assigned As and the sixth student a B, the average GPA would be 3.83. But, if three of those students were given A's and the remaining two a B's, then the average GPA would fall to 3.43, thus contributing less to grade inflation (see Jacobson, 1978, for a similar analysis). In fact, many studies have indicated that the use of +/- grading has played an important role in curtailing grade inflation. However, this statement is only valid when institutions do not include an A+ in their marking system (Quinn, 1987). Although several studies have reported a reduction in grade inflation using +/- grading, other institutions have reported that the use of + and - qualifiers have no effect on curbing the problem (e.g., Jacobson, 1978).

 Additionally, a drawback to relying on these earlier conclusions is that many of the same authors also claimed that by 1980, the rational system of grade inflation was coming to an end (Quinn, 1987). Because of this contradictory evidence, coupled with a continued and perhaps accelerated upward trend in grades, we conducted our own study based upon data presented in earlier publications and data collected from the faculty at Berry College. Reports by Quinn (1987) and Consilin (1997) each summarized the distribution of letter grades assigned in all undergraduate courses both before and after the implementation of +/- grading systems. While both studies used this data to examine the effect of +/- grading had on grade distribution, a major deficiency of their reports is that neither study used data to measure the effect implementation of the +/- system had on grade inflation.

<table>
<thead>
<tr>
<th>Year</th>
<th>+/- used GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>2.81</td>
</tr>
<tr>
<td>1971</td>
<td>2.86</td>
</tr>
<tr>
<td>1972</td>
<td>2.86</td>
</tr>
<tr>
<td>1973</td>
<td>2.80</td>
</tr>
<tr>
<td>1974</td>
<td>2.77</td>
</tr>
<tr>
<td>1975</td>
<td>2.75</td>
</tr>
<tr>
<td>1976</td>
<td>2.72</td>
</tr>
<tr>
<td>1977</td>
<td>2.72</td>
</tr>
<tr>
<td>1978</td>
<td>2.71</td>
</tr>
</tbody>
</table>

In order to calculate GPAs, each traditional letter grade reported was converted to a 4.0 (i.e., A = 4.0, B = 3.0, C = 2.0, D = 1.0, and F = 0.0).

For the letter grades with +/- and a, 2 was added and 3 subtracted from each value, respectively, e.g., A = 3.5, B = 3, C = 2.5, D = 2, E = 1.5, F = 0.5. An overall GPA was then calculated for each year that grade distribution data was reported.

Quinn (1987) reported data from Washington State University for the years 1970 - 1985. Before the implementation of +/- grading in 1979, the overall GPA increased on average by 0.02 or 0.7% each year (i.e., with the exception of 1976 where it actually increased by 0.8%). More importantly, after the implementation of +/- grading, the overall GPA essentially decreased on average by 0.012 or 0.4% each year (Table 1). While the overall change in measured GPA is small, it is significant to note that the implementation of +/- grading system reversed the trend towards a higher GPA every year. Interestingly, in the first year of +/- grading, the overall drop in GPA was 0.062, nearly 1% drop in GPA.

Similar analysis of the 1960 - 1977 data from North Carolina State University (Gosselin, 1997) showed that before +/- grading, the overall GPA increased on average 0.029% or 0.4% per year before the implementation of +/- grading, the overall GPA increased on average only 0.01 or 0.3% per year (Table 2). While +/- grading did not eliminate the upward trend in grades at North Carolina State University, it is significant to note that the implementation of +/- grading produced a massive 2.8% reduction in the rate of grade inflation, certainly a profound impact. Similar to the Washington State University data, a significant 0.027 or 1% drop in overall GPA occurred in the first year +/- grading was in effect.

<table>
<thead>
<tr>
<th>Year</th>
<th>+/- used GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>2.35</td>
</tr>
<tr>
<td>1981</td>
<td>2.35</td>
</tr>
<tr>
<td>1982</td>
<td>2.63</td>
</tr>
<tr>
<td>1983</td>
<td>2.63</td>
</tr>
<tr>
<td>1984</td>
<td>2.65</td>
</tr>
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<td>1985</td>
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Table 1: GPAs Calculated from Washington State University data, 1970 - 1985

Table 2: GPAs Calculated from North Carolina State University, Fall Semesters 1986 - 1996
For comparison, the committee collected a random sample of numerical grades from the previous academic year (1998-1999) from varied disciplines across campus. Although Berry College uses a traditional A-F grade system for recording course grades, many faculty maintain numerical grades which are later converted to the standard A, B, C, D, or F scale. The use of raw numerical grades was necessary in order to predict the possible impact +/− grading could have on letter grade distribution and overall GPA.

Upon examination of the Berry College data we obtained, the committee found a 0.062 or 2.1% drop in the mean GPA across disciplines when a +/- grading scale was applied. This result correlates well with our earlier analyses suggesting that the adoption of a +/- grading scale would have a significant effect on grade inflation. Upon further examination of the individual means for each school within Berry College (i.e., Education & Psychology, Mathematical and Natural Sciences, Humanities and Social Sciences, and Business), it was found that there was a direct relationship between the amount of grade inflation in each school and the magnitude of the predicted reduction. Thus, schools with higher GPAs were associated with larger predicted reductions in overall GPAs while schools with lower average GPAs tended to have lower predicted reductions in their average GPAs.

Since the data collected from the faculty did not include all grades assigned during the 1998 - 1999 academic year, one further analysis was performed. The committee took the official GPA that was reported by the registrar for the spring 1999 semester and applied the predicted change we calculated if +/- grading system were adopted. This analyses suggested that the overall institutional GPA is predicted to drop by 0.15, a 4.7% reduction.

The results of these analyses are significant for several important reasons. First, they clearly demonstrate that the adoption of +/- grading is likely aid in reversing or at least significantly reducing the rate of grade inflation. The finer distinctions available from a +/- grading scale add a better representation of a student's level of performance reducing the likelihood that faculty will bump students up to the next grade level. Since the choice of a particular grading scale is not the sole contributing factor to the continued trend in grade inflation, a switch to +/- grading cannot be expected by itself to end grade inflation. It does, however, appear to have a significant impact on that issue.

Second, the results of our study demonstrated that students involved in majors that traditionally have lower GPAs would be less affected by adoption of a +/- grading system. This latter point is especially important given that several students, especially in the sciences where lower average GPAs are frequent and admissions standards to medical, veterinary, dental, and graduate schools are rigorous, felt adoption of the +/- grading system would severely disadvantage them. Thus, while the average GPA of each school would decline, those with lower GPAs to begin with would experience a smaller drop, bringing down the average student GPA less than other schools within the college.

BETTER DIFFERENTIATION

Many faculty who are proponents of +/- grading assert that the addition of more grading categories would allow faculty to make finer distinctions among students. For example, in the traditional letter grade system, a student who has an 88 average would most likely receive the same grade as a student who has an 80 average (i.e., a B). This scenario produces a dilemma for many faculty who feel that student receiving the 88 has performed more superior to the one receiving the 80. Ironically, it is this exact situation that often produces grade inflation as pressure mounts on faculty to reward harder working students.

Related to the issue of finer distinction among students is grouping error. Psychometricians have found that the traditional 5-letter grading scale allows too many errors due to measurement and grouping (e.g., Ebel, 1969; Singleton & Smith, 1978). Grouping error occurs when the width of a class interval is made too narrow or too broad. In general, researchers have found that the reliability of grades increases as the number of marking categories also increases, as in the case of adding +/- qualifiers (Singleton & Smith, 1978). Ebel (1969) reported that if data have a reliability of .95, reporting scores using 15 grading categories reduces reliability to .94, 10 categories to .92, 5 categories (e.g., A-F) to .85, and 2 categories (e.g., pass/fail) to .63. Given these findings, the committee concluded that there was a distinct advantage to adopting a grading system that had at least 10 categories (most +/- scales have 11 categories) since that increases the reliability of the assigned grades.

While many faculty believe that the ability to make finer distinctions, discussions among our faculty demonstrate that several feel it is very difficult to distinguish between such fine levels of student performance. Indeed, Quinn (1987) reports that especially in the social sciences where grading is much more holistic not only do faculty report difficulty differentiating between finer categories, but often feel any attempts to do so simply create less precision in student evaluations.

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studies demonstrated that the addition of points to a grade was a strong incentive providing students motivation to complete assignments. By parallel, the addition of \quad \overset{\circ}{\hat{A}}\quad \text{to the traditional A-F grading system would serve as an} \\
excite \hat{A} \quad \text{an excellent motivator for students to continue} \\
\overset{\circ}{\hat{A}} \quad \text{on assignments. In addition, Cullen's research suggests that} \\
\quad \overset{\circ}{\hat{A}} \quad \text{higher one (i.e., a} \quad \overset{\circ}{\hat{A}} \quad \text{compared to a} \quad \hat{B} \quad \text{is not a strong} \\
\quad \overset{\circ}{\hat{A}} \quad \text{to no movement is a lower grade (i.e., a} \quad \overset{\circ}{\hat{A}} \quad \text{to lower effort might be an even more} \\
\quad \overset{\circ}{\hat{A}} \quad \text{motivating factor. Hard working students will have the opportunity to map} \\
\quad \overset{\circ}{\hat{A}} \quad \text{their extra efforts, while at the same time, other students} \\
\quad \overset{\circ}{\hat{A}} \quad \text{will have the motivation to diligently apply themselves to their assignments throughout the semester.}

\textbf{Enhanced image of grades and an undergraduate degree}

While studies were nearly split on whether a \overset{\circ}{\hat{A}}\quad \text{grading system should be implemented, surprisingly, most of the student opposition dissipated when students were given the option of having the new system applied only to future students. The committee discussed a lengthier option for} \\
\overset{\circ}{\hat{A}} \quad \text{for grandfathering current students with the college registrar. For example, one option was to} \\
\overset{\circ}{\hat{A}} \quad \text{the choice of graduating under the old grading system. But it became apparent to the committee that given} \\
\overset{\circ}{\hat{A}} \quad \text{the limited resources of the college registrar, such a system would be a logistical nightmare. Since the academic policies listed in the official} \\
\overset{\circ}{\hat{A}} \quad \text{enrollment system would be the primary tool for providing the students with a perfect grade at a college level. This is a clear indication that} \\
\overset{\circ}{\hat{A}} \quad \text{is the only way to ensure that the same grade is awarded to the same student in different courses.}

\textbf{Further discussion with students indicated that they felt the adoption of} \overset{\circ}{\hat{A}} \quad \text{grading was beneficial. While most of the student concerns have} \\
\overset{\circ}{\hat{A}} \quad \text{been addressed, the students raised one further benefit of the} \\
\overset{\circ}{\hat{A}} \quad \text{students felt the adoption of} \overset{\circ}{\hat{A}} \quad \text{grading system was implemented. Moreover, most of the student opposition dissipated when students were given the option of having the new system applied only to future students. The committee discussed a lengthier option for} \\
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\textbf{Acknowledgments}

\textbf{References}

\textbf{Appendix}

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