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## EXAMINATION REFORMS AND METHODOLOGIES FOR ASSESSMENT IN TECHNICAL EDUCATION: PARADIGM SHIFT IN GRADING

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### **ABSTRACT:**

*Performance evaluation of students is an important component of the education system. Grading is a difficult aspect of teaching and different philosophies available about grading results in different methods of evaluating students. We make a summary of existing evaluation system and further discuss elements of grading system along with traditional method of evaluating student performance. One method of relative grading is developed and explained along with its results.*

**Keywords:** Examination reforms, assessment, relative grading, Bell curve, standard deviation.

### **1.0 INTRODUCTION :**

**Grades** in the realm of education are standardized measurements of varying levels of comprehension within a subject area. Keith Hoskin argues that the concept of grading students' work quantitatively was developed by a tutor named William Farish and first implemented by the University of Cambridge in 1792.<sup>[8]</sup> Hoskin's assertion has been questioned by Christopher Stray, who finds the evidence for Farish as the inventor of the numerical mark to be unpersuasive.<sup>[4]</sup> Stray's article elucidates the complex relationship between the mode of examination (testing), in this case oral or written, and the varying philosophies of education these modes imply both to teacher and student. As a technology, grading both shapes and reflects many fundamental areas of educational theory and practice.

### **2.0 GRADING IN INDIA :**

There are several universities and recognized school boards in India which makes an *objective* comparison of percentage grades awarded by one examination difficult with those for another, even for an examination at the same level. At the school level percentages of 80-90 are considered excellent while above 90 is exceptional and uncommon. At the university level however percentages in between 70 to 80 are considered excellent and are

quite difficult to obtain. The percentage of marks at university varies from one to another which makes direct comparison of percentages obtained at different universities difficult. Indeed, the differential between universities in terms of marking scale can be as much as 20%, with some of them requiring a 85% plus for the award of distinction while yet others would award distinction at anything above of 70%. In instances like the latter, a score close to 90% can be very rare or virtually impossible. Much of this can be reconciled in the backdrop of the minimum pass score. In a university with a 90% plus for distinction, 60% may be the minimum passing mark. The university awarding distinction at 70% may have a passing mark of 40 or 45%. This makes the comparison of GPA quite difficult for Indian students elsewhere. A student with 95% will be close to 3.9 on the GPA scale. So should a student with a 75% from a 70% cut-off-for-distinction institution, Delhi College of Engineering, University of Delhi is example of this type marking which gives distinction above 75%. The best yardstick seems to be, apart from the base passing mark, the very classification of the awarding university as to where a given range would fall (distinction, first class, second class, or fail).

That being said, attempts to move to a GPA system have been made by most modern universities, but older ones tend to continue to rely on percentage marks. Some of these institutions have an obvious disinclination to marking generously at the 90s and continue to keep the threshold for distinction quite difficult at the early 70s. Especially, universities like these tend to narrow the gap between the minimum passing mark and distinction so as to make it difficult for every student to pass a course in the first place, and making distinction all the more tougher.

### **3.0 ABSOLUTE GRADING:**

This is how absolute grading works. >75% you get an A. 60-75 it is B. 50-60, it is C and so on. What makes absolute grading different from relative grading is the difficulty of the question paper and how lenient have the papers been corrected. If all the students screw the exam, they end up getting a D or even F and may have to repeat the course. The onus is more on the teachers to set a balanced paper. They might be compelled to set straight forward questions. Sometimes directly from text or reference books and expect text book stuffs in answer sheets. Most of the US universities follow this grading system. Where this system works efficiently?

### **4.0 RELATIVE GRADING:**

Relative grading is dynamic, no fixed passing marks. Basically gives the faculty more flexibility, but also more responsibility in deciding how to grade, how to consider the continuous assessment scores of the students. The

highest score in the class/department is considered as a baseline. Rest of them is graded taking the ratio of their respective score to highest score.

Now beauty of this is, it hides your score. Say you get 35 in Math and you are the highest you get an A. It is always better to tell your parents that you got A, rather than telling you got 35 and say “just pass amma”, like in the case of absolute grading. Relative grading is a continuous assessment of your performance. Your sessional scores are as important as your end semester scores. Now problem with relative grading is inconsistency. It all depends on the faculty, on how they interpret the performance. This is the reason why students often find relative grading stupid.

**Example:** Say the ratio of your score to highest score is 8.99. Now you may get A- (9) or B+(8.5), depends on teacher. Coming to continuous assessment, will the faculty consider best of three quizzes?, or assignments? Again can't say. The student's score should reflect his performance and also his understanding of the subject. The teacher should take care of such stuff. Its hell lot complicated than we think it is.

#### 4.1 Pros and Cons of Typical Grading Practices:

Courses are typically graded on a point or percentage system (absolute grading method) or a curve (relative grading method), depending on the need for grades to serve as a competitive filter.<sup>[5]</sup> Because grades are almost always used at some point for some sort of competitive evaluation (scholarships, entrance into degree and graduate programs) even absolute grading systems are normed so that they fall generally within the standard of grading practices of the institution. Most grading practices at the UW incorporate aspects of the absolute and relative grading methods.

#### Relative Grading Methods (Grading on the Curve)

##### Typical Methods

- Normal, Bell-Shaped Curve level
- Distribution Gap Method
- Standard Deviation

### Benefits

- Allows for screening students according to their performance relative to their peers.
- Useful for competitive circumstances where students need feedback as to how they compare to their peers.

### Drawbacks

- Does not provide feedback as to actual content mastered by student.
- Curve arbitrary (and thus meaningless) unless tied to program needs and goals, i.e. the number of students that can eventually be accepted into higher levels of the program or a norm established over multiple years.
- Curve grade based on single class meaningless unless provided in relation to group student is being scored against.

### 5.0 CURVE:

A curve is a relative grading procedure, based on the overall performance of the class as a whole. A teacher or professor may decide to curve a grade if the majority of students performed below what was expected, which may imply that an assignment or test was out of range in either scope or difficulty. There are several methods for curving grades, some more abstract and/or mathematically complex than others.

In university education, **grading on a curve** (also known as **curved grading** or simply **curving**) is a statistical method of assigning grades designed to yield a pre-determined distribution of grades among the students in a class. The term "curve" refers to the bell curve, the graphical representation of the probability density of the normal distribution (also called the Gaussian distribution), but this method of grading does not necessarily make use of any specific frequency distribution such as the bell-shaped normal distribution.

One method of applying a curve uses these three steps: First, numeric scores (or possibly scores on a sufficiently fine-grained ordinal scale) are assigned to the students. The actual values are unimportant as long as the ordering of the scores corresponds to the ordering of how good the students are. In the second step these scores are converted to percentiles (or some other system of quantiles). Finally, the percentile values are transformed to grades according to a division of the percentile scale into intervals, where the interval width of each grade indicates the desired relative frequency for that grade.

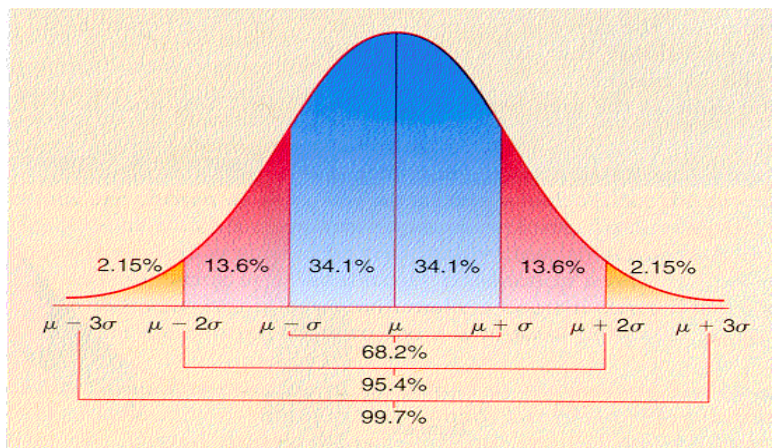
For example, if there are three grades, A, B and C, where A is reserved for the top 10% of students, B for the next 20%, and C for the remaining 70%, then scores in the percentile interval from 0% to 70% get grade C, scores from 71% to 90% get grade B, and scores from 91% to 100% get grade A.

The grading method can thus be tuned to determine the frequency distribution of the grades in advance, and if the intervals are already fixed at the beginning of a course, then so is the number of students who will receive each Grade.

### 5.1 BELL CURVE:

What is this ‘bell curve’ all about?

In probability theory, the normal distribution is a continuous probability distribution that has a bell-shaped probability density function, known as the Gaussian function, or informally, the bell curve. The normal distribution is the most prominent probability distribution, because many large sets of data are approximately normally distributed.



### Grading and Moderation

Module requirements may encompass different modes of assessment such as tutorial presentations, laboratory reports, projects, essays, as well as mid-term and final examinations. Grading may be based on absolute performance, relative performance, or a combination of the two. Higher-level modules with small enrolments typically grade a student based on his absolute performance; larger lower-level modules take into account a

student's performance vis-à-vis the other students in the same module. Where necessary, the final grade which a student receives for a module may be subject to moderation.

One important reason for grade moderation is that examiners come from diverse academic backgrounds and may be accustomed to different marking regimes. While we do make every effort to make sure modules are designed with clear learning outcomes, and professors are responsible to ensure their exams are pitched at the right level, grade moderation will prevent grade inflation or deflation, and helps to achieve consistency in assessment grading across modules.

### CONCLUSION:

In the new competitive world, it is not important to be perfect. All you need is to be better than the rest. This forms the basis of the relative grading system. In my work I have made an attempt to convert the already declared results of the Autonomous (4<sup>th</sup> semester class of Computer Science students) into equivalent relative grading approach. I found different methods in relative grading and it varied from subject to subject. Some grading includes grading of the curve, distribution gap method and standard deviation method.

I am of strong opinion that this has given us a better picture of how the bell curve works and hopefully this helps to alleviate some bell curve anxiety.

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