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## **Double correction position paper - and comments on how to improve single-correction**

**Lecture notes**

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### **Summary**

It is important to identify sources of error in marking and take active steps to reduce them. One solution is double-correction, but this too has its problems, and there are several ways to do double correction, each with their strengths and weaknesses. It is not always possible to double-correct examination papers, and ways must be followed to reduce errors.

This paper assumes that a workable detailed mark scheme has already been written and agreed.

### **SOURCES OF ERROR IN MARKING**

**Note: I am assuming that electronic tagging of the examination papers does not exist.**

In some institutions the marks are typed directly from the paper onto the computer. In this case errors can be detected when the marks are typed twice. The problem is that unless the papers are electronically tagged so that the name of the student can speedily be identified eg by a bar-code wand, then it takes time to identify the student (typing in the student ID or similar) before a mark can be recorded. That is why teachers sometimes have to transfer marks from the examination papers to a list of names arranged alphabetically, so that the computer typist simply has to tab down the list and type in the marks.

- 1. Copying errors.** At all stages
  - a. Transfer of marks to the paper sheets ready for transfer to the computer. This is a potential source of error that is very difficult to check on later.
  - b. Typing marks into the computer.

### **SUGGESTED SOLUTIONS:**

- a. Two teachers work together in transferring mark information from the examination papers to the marks sheets
- b. Computer printouts of the marks are compared with the original marks lists.

## **2. Adding up errors**

- a. Within an examination paper
- b. Between examination papers, when combining marks.  
[Note that in some institutions an examination may comprise more than one subject, and each subject is independently marked. When collating the marks then two or more papers are united and the total or average mark calculated].

### **SUGGESTED SOLUTIONS:**

- a. As a minimum, all subjects should have a clear structure of marks so that they can be checked, and that another teacher should routinely double check adding up. This need not take a long time. When one teacher marks then adding up errors do occur and are hard to check for later. For single teacher marking then it would be wise for the teacher to double check the adding up at a later date ie NOT on the same day that papers are marked.
- b. In view of the way that marks are usually combined by two teachers working together, this is an unlikely source of errors.

## **3. Inconsistent marking**

- a. The marking scheme is not clear
- b. Tiredness of the marker, and marker mood
- c. Whenever the work is divided between two or more teachers. No matter how closely teachers work together, no matter how well specified the mark scheme is, there will be errors.
- d. Natural variation between teachers.

### **SUGGESTED SOLUTIONS:**

- a. Make sure the examination paper has at least two questions. Then instead of dividing 400 papers between two teachers, the work is divided so that one teacher marks all of question 1, the next teacher marks all of question 2. Then they exchange, but this time to check the adding up.

This solution assumes that there is more consistency within a teacher than between teachers. It is also fair in that there is no lottery as to which student gets which teacher: all get both teachers, and, a hard marker will be balanced out by a soft marker.

- b. Teachers mark papers together, in the same room, and discuss variations as they go along.
- c. Teachers mark together the first 30 or so scripts, then depart and mark their share, then compare papers.
  - 1) The quickest way to compare is to ask for the pass rate. But, this assumes that the papers are allocated to the two teachers totally randomly - in practice this is often hard to achieve - harder than those not knowledgeable in statistics usually appreciate. For instance, if there are four classes, and each teacher takes two classes, this would not be considered a totally random exercise, for reasons beyond the scope of this essay. Also, this works best when the number of papers is large - over 200 for instance.

I have frequently had over 100 papers to mark on my own, and the papers come to me in order in which the students have finished. Usually the first few papers are either extremely good (the student was competent and finished in record time) or appalling (the student exited as early as was permitted). Usually the last papers are those of the weakest students who were incapable of succinctly presenting a good answer so try to fill the paper with last minute ideas in the hope of scraping some marks.

Now, if the papers had been divided among two teachers to mark then the pass rates would not be roughly equal.

- 2) A slower method is to calculate the means. Re-marking is only needed if the means are more than one mark apart. In which case it is perfectly ethical to add marks to those papers marked too hard.

BUT. This solution takes no account of the spread of marks. If for instance you have the following scenario, what do you do?

Teacher A. Mean 8/20, range 5-13

Teacher B. Mean 9/20, range 7-11

This scenario can happen even for a short-answer paper.

Therefore it is much better to divide up the paper for marking so that each student benefits from the effects of both teachers as in solution a. above

## METHODS OF DOUBLE CORRECTION

1. Double checking of the adding up. I suggest this is a minimum, and is feasible.
2. Double checking the adding up, along with a more, or less, detailed look, and adjustment of the marks when needed.
3. The first teacher marks, and places the numbers on the paper, so that the second teacher when they mark can see the marks given by the first teacher.
4. The first teacher marks, and keeps an independent record of the figures, and only underlines the mistakes.
5. Each teacher marks, keeping independent records. Nothing is written on the actual examination papers. They then meet for the < confrontation >.

*Comment:* this is the traditional meaning of double marking, and in some circumstances is still the best. It works well for instance for essays, where there are around 70 papers, and where the essay format means there is low reliability in rater scores (high probability that raters will differ widely).

If it is insisted upon that the second teacher must not know the scores given by the first teacher, they should at least have their attention drawn to the mistakes. Writing on the papers to show mistakes is a bottom line major advantage I would not like to sacrifice.

## METHODS OF CONFRONTATION

1. **The traditional method:** All marks are discussed, followed either by one teacher agreeing with the other, or by the a mark in between the two ratings being given.
2. **For all total scores that are less than two marks apart:**
  - a. the lower (or higher) mark is automatically taken as the definitive mark, without discussion.
  - b. the mark is automatically split, without discussion. This method is very common, and serves to push marks towards the mean. It bunches marks, and makes it less likely there will be a good mark or a bad mark. Now this is highly undesirable. A good paper gives a good spread of marks, and clearly separates those who should pass and those who should fail. Therefore I prefer method a.
  - c. Only widely differing marks are discussed. If the marks are close, the average is automatically taken. This method is quick, but again means a bunching of the marks

towards the middle marks.

Note that in all the above scenarios, ONLY the total mark is discussed. There is no debate about each separate question. The breakdown of the marks is only referred to when discussion takes place, so as to pinpoint the exact area of disagreement.

3. **The impossibly difficult method:** in the cases where there are several questions, every single disagreement and discrepancy is debated.

### **REDUCING THE ELEMENT OF CHANCE**

The paragraphs below are taken from [www.scientificlanguage.com/linguistics/writingexaminations.pdf](http://www.scientificlanguage.com/linguistics/writingexaminations.pdf). They are relevant because there is a tendency in double marking to take the middle mark between the two graders, and this tendency reduces the differences between students and probably makes it harder for students to pass. This question of chance is a related problem.

Let us assume there are three exams, and each teacher gives either 9, 10, or 11. Let us further assume that you have 27 students who are all equal in ability and performance. The exams were all impression marked (even with double correction). But we know that there is a high element of chance. Let us assume there is an equal probability on each exam that a student will get a 9, 10, or 11. These are reasonable assumptions, to show the effect chance can have. Then, for 27 students, these are the scores:

27 marks 1 student  
28 marks 3 students  
29 marks 6 students  
30 marks 7 students  
31 marks 6 students  
32 marks 3 students  
33 marks 1 student

That means, 17/27 pass, solely on the basis of chance, ie 63%.

Under these circumstances, when there is impression marking and marking close to the average, then the decision as to pass or fail is largely a matter of chance. Double correction where the average mark between two correctors is taken only reinforces the trend to give a middle mark that does not clearly separate a good student from a bad student.