Oral vs. Written Evaluation of Students

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Abstract—In this short paper we discuss the advantages and drawbacks of oral and written evaluation of students. First in more general terms and then followed by details of what we did in our course and our experience. Finally, we outline some topics for further study and discussions.

I. WRITTEN AND ORAL EXAMINATION

Many different forms of student evaluation exist and are practised at LTH, both during the courses and at the end during the examination week. Some examples are "labförhör", "kontrollskrivning", traditional written, traditional oral, lab exercises, and projects. These different forms of examination can be classified into two groups - written and oral exams. In this short paper we will discuss general pros and cons of both written and oral examination and present our experience of using mixed written and oral examination in an optional undergraduate course.

One important aspect when deciding which form of examination to use is the purpose of the evaluation related to Bloom's taxonomy for levels of understanding [1]. Bloom defined six levels: (1) knowledge, (2) comprehension, (3) application, (4) analysis, (5) synthesis and (6) evaluation. Generally, written examination is best suited evaluating level 1 to 3, which often can be made cost effective. For the higher levels, however, it is hard to create questions possible to answer with a reasonable number of words (possible to correct). During an oral examination, on the other hand, the number of words is not crucial allowing for a discussion and follow-up questions, which easily can evaluate also level 4 to 6.

Essentially, the goal of an evaluation is to, for each student, find out his/her level of knowledge – preferable for all important topics of the course. As depicted in Fig. 1, this is hard to do using a written evaluation. Each question evaluates not only a specific topic but also a specific level of knowledge. An advantage of oral examination is its flexibility and adaptability which makes it possible to "find" the students level of knowledge for each topic, for example by starting with a hard question and then giving hints until the student can answer it sufficiently.

A typical drawback of oral examination is its sensitivity to

personal bias from the evaluator. It can also create logistic problems, especially if many students have to be evaluated in a short time.

Some of the general advantages of written evaluations are that the students have time to think, multiple choice questions are easy to evaluate, all students get the same questions, students can be anonymous, (nervous) students do not have to face the teacher, and logistically the evaluation is easy to schedule (2-5 hours). Drawbacks are that they are boring to correct, it is difficult to construct a good written test, and that
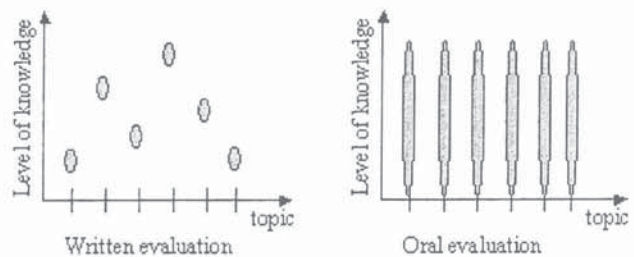

Fig. 1. Typical levels of knowledge that are being evaluated.

answers have to be short (in number of words) to facilitate correction.

II. OUR EXPERIENCE

For the past two years we have given a course on Software Configuration Management (SCM). For this course we have used both written and oral evaluation of the students. The purpose of the course is to provide the students with a set of basic SCM techniques and methods. They then have to discuss open problems that can be related to SCM and construct possible solutions to these problems – furthermore, they have to single out situations where the provided solutions are not sufficient and therefore more knowledge is needed.

The course has both practical and theoretical aspects. For the practical aspects, the students have to implement some standard SCM processes. Furthermore they have to explore and compare the two tools that are used. The practical aspects are evaluated passed/failed based on discussions of their results and experiments during the computer labs.

Students work in small groups of 3-4 persons for the exercise sessions and during the computer labs. Furthermore, each group has to write parts of an SCM plan as a mini project (3-5 pages) during the final week of the course. Their work during the exercise sessions is group discussions of open problems where part of their task is to define a more precise context for the problem(s). The most important results of the group discussions are presented and discussed at the start of

the following lecture.

We decided to do the final evaluation of the students as an oral examination in groups based on the written mini project and with individual grades (failed, 3, 4, or 5).

The reason for choosing group evaluation is that they work in groups for most of the course. The final mini project is written in group and is an extension on what they have discussed during the exercise sessions. Furthermore, being a group reduces the focus and pressure on the single student, as does the fact that we can have discussions between students instead of between teacher and student only. Finally, evaluating the students in group gives us more time to evaluate in breath and depth than if we were evaluating single students.

Oral evaluation was chosen because we want to discuss with the students. The written part of the evaluation (the SCM plan created in the mini project) describes one possible solution. However, in the space and time allocated it is not possible to state the precise context of the solution nor to state and discuss the several possible solutions. Furthermore, during the oral evaluation we can ask the students "what if…" to change the context and hear how they analyse the new problem and synthesise a new solution. Finally, we can provide them with an alternative solution and ask them to evaluate the two solutions.

The mini project is a kind of written evaluation. We do not evaluate the project directly, but it is evaluated indirectly through the discussions during the oral exam based on what they have written. Another purpose of including the project is to make the students more at ease with the examination situation as they are very familiar with their project.

The experience we have with this type of student evaluation is that the students are very happy with it. They find it a good change from the written evaluation they are used to. They find support in the group in the examination situation and the fact that they can take turns in answering and discussing and can be inspired by what the others say. It is also our impression that they appreciate the immediate feedback we can give them to their answers and that in some cases they even learn during the evaluation.

The oral evaluation also gives us feedback from the students on how they see the relative importance of the different topics. We are aware that we have to allow time for the "slow thinkers" to take part in the discussions. That is done by possibly having a pause after the question if necessary and by allowing them to continue and carry on the discussion. We also prepare the students by carefully explaining what is going to happen and what is the purpose and goal of the evaluation. We encourage the students to disagree by stressing that it does not exist only one single possible solution. We allocate 20 minutes per student, but could have done with less time if the grading had been passed/failed.

III. DISCUSSION TOPICS

One or more of the following topics could be discussed:

1) Number of students – is it too time consuming or does oral examination scale the same way as written with the number of students?

2) Bloom's lower levels of understanding - is oral examination impossible or difficult for simple knowledge and comprehension type examination?

3) Bloom's higher levels of understanding - could we have had a written examination for our course (being analysis and synthesis type knowledge)?

4) Which type of examination is best suited for single point and continuous evaluation respectively? Can we avoid mixing teaching and evaluation using continuous oral examination?

5) How do we handle aspects of evaluator bias – it is not possible for students to be anonymous at oral examinations. Is it necessary/enough to have an external censor to maintain student justice?

6) Which form is most efficient (time per student)?

7) Using oral examination there are no old (written) exams to study and practise on. Do we have any substitute for "extentor"?

REFERENCES

[1] B. S. Bloom, *Taxonomy of Educational Objectives. Handbook 1: Cognitive Domain*, Addison-Wesley, 1984.