Formative and peer-to-peer evaluation using a rubric tool
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The current essay starts from the general set of issues related to assessment in education and the problems that students face in understanding assessment criteria. It will later introduce the results obtained from a work-in-progress research project that aims to improve assessment quality by testing new evaluation methods and technological tools such as formative evaluation and peer-to-peer evaluation using e-rubric tools.

Keywords: Peer assessment, formative evaluation and e-rubric

1. Introduction

The European Space for Higher Education (ESHE) gives special importance to student centred learning, so that they develop the required skills in a self-learning process conducted by teachers. This approach means that students need to start-up reflection and self-evaluation processes about their learning, and it requires thorough research on new methods as well giving students more prominence in the overall learning process.

Evaluation and learning are already intrinsically bound to university teaching activity. Peer-to-peer evaluation and self-evaluation appear as a teaching activity done with students; it is a method and an innovative model that provides professional skills to both, teachers and students [1].

In effect, technical knowledge traditionally remains under teachers’ control during the evaluation process because they are the only ones to establish, decide and apply the evaluation criteria students will use late during their professional life.

However, if we want students to reach a better, autonomous, professional criteria we will have to give them a greater participation quota on their own assessment, and we will need to provide them with the possibility of evaluating both themselves and their classmates, as if it were a preambule of what they will have to do some time in the future, during their professional life. Thorough research and a systematic methodology are required to provide students with this skill and a possible formula is formative evaluation using a rubric tool.

Objectives of the project that is in progress:

1. To experiment an assessment methodology based on peer-to-peer review using rubric tools.

2. To experiment a formative, skill-centred, evaluation model to be applied in virtual learning environments by means of sharing models and evaluation criteria together with teachers and students.

2  2. Formative evaluation and peer-to-peer review at the university

Evaluation is one of the most important learning activities to which more often than not both teachers and students devote much of their effort. Despite all this attention many misunderstandings and unsatisfactory situations take place on both sides. This is so even when students are provided with a clear and exact criteria on their course programmes, and there has been an ongoing assessment and formative evaluation during the whole course. Despite all this many students continue to have difficulties in understanding and internalizing assessment criteria.

These assessment problems are more likely to arise when our goal is a significant life-long learning. The kind of learning that allows students to apply what they have learnt to other experiences and in contexts which are different to those developed in the classroom. We also need to bear in mind communication problems in virtual spaces, which are increasingly important in education.

Formative evaluation favours significant with higher success rates than summative evaluation, and it allows teachers to better analyse the implications of that learning. But it is not always possible to carry out this formative evaluation, especially with large groups of students.

These and other reasons encourage us to test new methods and techniques that establish a better understanding between teachers and students, so that students understand assessment criteria and quality standards more
clearly. And at the same time teachers will know the real scope of their students’ learning. This could be carried out no matter how large or small groups are, and regardless of the nature of the skills implied. One of these techniques is peer-to-peer evaluation as an added methodological procedure and not to replace evaluation tasks for which the teacher is exclusively responsible.

In a methodological process where students are required to gain greater responsibility over their learning process, it would be logical to equally expect from students greater involvement in education, particularly in those processes that affect their learning directly. This is one of the reasons why it would be appropriate to get students involved in the assessment of their peers’ assignments.

The ability that students have to internalize peer-to-peer evaluation criteria is after all a method for learning to learn, for life-long learning, for acquiring and implementing standards to be used in their professional careers with other peers.

Thus, it would be interesting to conduct some research on understanding the process of criteria assignment and opinion formulation among professionals and students as a strategy to be able to understand how students acquire these skills. That research would also test new methodological models (such as peer-to-peer evaluation), techniques and tools (e-rubrics) that can assist in the process of evaluating professional skills.

### 3. E-rubrics

A rubric is a scoring tool that offers information to students about the skills they are expected to reach. It is a set of standards, criteria or evidences that inform them about what they have to do to acquire those skills. Thus, students, before starting the course, have detailed and exact information about assessment criteria. During the whole process students have a more immediate reference about their learning performance.

In the university context, new technologies and new virtual spaces are increasingly gaining an outstanding role. Technologies allow for personalized teaching and learning processes. They help teachers and students to carry out new methodological models within formative evaluation and peer review with specific techniques and tools such as e-rubrics. We still need to know more about the scope of the tools involved in significant learning processes with different groups of students and different subjects, however.

### 4. Peer review Project with an e-rubric

Specialized literature has evidenced the advantages of formative evaluation, peer-to-peer evaluation and the use of techniques and tools such as e-rubrics. [3][4][5][6][7]. However, we do not know thoroughly how students internalize evaluation standards and criteria and how student reflect on the process via internet.

This is why during the academic years of 2006-07 and 2007-08 we have used e-rubrics and peer-to-peer reviews in two class groups that were quite different in size, objectives and methodologies:

- a group of about eighty to one hundred second year students in a core subject as part of the Bachelor’s degree in Pedagogy. The methodology consists of several techniques (laboratory, practical exercises, readings, etc.) and a group of well defined and pondered skills to be rated by an e-rubric.

In a large group of students such as this it is very difficult, almost impossible, to fully carry out formative evaluation. However, the e-rubric tool provides valuable information before, during and after performing the assignments. Teachers can only evaluate a limited number of assignments and sample exercises during the academic year and for every topic. With an e-rubric, the quality and the application of evaluation criteria can be explained once sample exercises have been solved, thus offering an excellent tool to guide further learning.

After these examples, teachers can encourage class activities that resemble those previously solved and they can suggest that students evaluate their peers as a methodological exercise, practising the application of the criteria that they have studied in the sample exercises.

It is important to clarify that these peer-to-peer exercises will not affect their classmates evaluation, but rather they provide an opportunity to internalize the criteria that the teacher will apply in the evaluation activities. In this particular group we are comparing the evaluation results from those activities assessed by students as opposed to those done by the teacher. At the same time, we have sub-divided group A into smaller groups (A1 and A2). Only one of those groups had access to the e-rubric before doing the activity. Thus in comparing the results from each group we may notice the scope of the e-rubric as a tool that helps students perform their
assignments successfully.

a) A group of about twenty five to thirty five students in an elective subject as a part of the Bachelor’s degree in Pedagogy. This group develops a Project-Based-Learning methodology. There is only a group assignment with a pre-assessment rubric. For classroom activities and follow-up tutorials there was a second rubric. The first rubric assesses the group’s final assignment and the second rubric evaluates individual behaviour during the development of the project. At the end of the course each group is expected to make a 30 minute presentation of their projects. During their presentation they will be assessed by their peers and by the teacher with the first rubric.

In group B we compared the results obtained from peer-reviews with the results obtained by the teacher’s assessment in their presentations. And at the same time, unlike with group A, we can notice the scope of the e-rubric in a Project-Based-Learning environment with real formative evaluation.

5.- Results

There are experiences about the use of rubrics, mainly printed rubrics, but we do not find similar experiences about digital tools or e-rubrics. Given length constraints we will discuss only some of the most important advantages that we have encountered in this project:

- E-rubrics allow for a more interactive and dynamic communication between professors and students (see Figure 1).
- Teachers can know immediately both the scope of particular skill by all students and the scope of all the skills of a particular student (see Figure 2).
- Teachers know and can easily distinguish which skills are more/less problematically acquired by students.
- E-rubrics may be edited for a better understanding during the assessment process, and this can be done immediately.
- Students can readily have access to the evaluation of their skills, know which skills they have acquired and which are still to be developed.
- We found that e-rubrics were evidenced to be more successful in small groups with a Project-Based-Learning methodology, than in large groups.
- Students reflect upon evaluation and its reach. They analyse assessment criteria and standards further than they would do in a more traditional model. Then reflecting during the learning process and for the whole course influences positively on their final results.
- Occasionally peer reviews are harder and more critical than teachers’ assessment, particularly because of the wrong internalization and application of the criteria.

On the first year we did not find much difference between peer-review results and the results obtained from the teachers’ assessment. Among other things because the range of five descriptors for each skill did not offer many contrastive opportunities. This is why a one to ten scale was added to each of the descriptors. Thus, we changed from 5 marks to 50 marks for each skill.
Fig. 1. Example of rubric as viewed by students
6.- Discussion

We will have to somehow allow students’ participation in the evaluation process and we will need to share with them the comprehension and application of the assessment criteria to be able to reach a higher quality in virtually monitoring the learning process. If we want students to develop a better professional judgement that is independent and autonomous so that they can learn to self-evaluate and evaluate different assignments this will be for certain a preamble of what they will have to do in their future professional careers.

With this project we have proved the positive results of the use of an e-rubric and peer-to-peer evaluation. We also noticed a better class atmosphere about evaluation, provided that students knew more clearly and had a good command of the criteria by which they would be evaluated.

Thanks to this project we can test a new pedagogical concept and an innovative methodology, taking a step further in a new and different project that can go beyond classroom boundaries, beyond the academic institution. This project can increase standard and e-rubric collaboration between teachers and students from different university institutions, regardless the tools or technical resources that each institution has.

We believe that we can solve the two main problems that can be foreseen in a project like this: On the one hand, the issues revolving around the collaboration of different tools, in different institutions, and also on the other hand, a formative evaluation model that can be adjusted to the reality of different groups. We believe it is possible to solve both problems with two different actions:

On the one hand, the new development that Agora Virtual has achieved with identity and federation mechanisms (8) (9) (10) that allow us to consider the web as a platform and not the other way round (internet is the platform) (11), considering a specific framework for collaboration with different tools in different institutions. On the other hand, with the tested model that we have developed in this project on formative evaluation and peer-to-peer evaluation we are provided with a validated pedagogical model and a federated e-rubric tool.

References