Formative Assessment with eRubrics: an Approach to the State of the Art

Today there is no longer any doubt about the benefits of technology for university teaching, especially in relation to the socialisation of knowledge, communication and partnerships, among other important goals. Clearly, technology increasingly represents equipment and services that are crucial for teaching. However, despite the current general impact of technology, there are certain teaching areas, such as the evaluation of learning, where teachers cannot be replaced by technology (e.g. evaluating texts). The role of teachers in creating quality-learning environments, together with the students' commitment in every stage of their learning process, is essential in order to make the most of technology. The present case study aims to promote the use of technology in general assessment and sets the following specific objective: to share successful practice and research on the use of eRubrics (i.e. electronic rubrics) in the field of assessment of university learning. The starting point is the need to strengthen certain skills among teachers and students, while building communities of practice on their use.

Evaluation and learning are interdependent elements of university education. Both aspects are very "sensitive" areas when combined (i.e. evaluation of learning) and may pose problems when teachers and students share the same "view" of the process. One of the strategies used to solve the above differences has been to strengthen communication, by searching for techniques and methods that would elicit a more clear and correct interpretation of human communication. In this light, Evans (2013) conducted a review of research on the evaluation of learning and its positive relationship with interaction and feedback among users. This is one of the reasons why eRubrics emerged as a methodology able to provide feedback and communicative interpretation. The ultimate aim is to find objective criteria in relation to proof of achievement of learning. However, despite achieving more objective criteria, students may show difficulties in internalising such criteria; hence the importance of studying and analysing the scope of eRubrics as a methodology for communicative interaction. This is especially the case today, as interactive and multimedia possibilities are covered by technology.

There is proof that eRubrics can guide student learning, while allowing teachers to supervise this stage. Thus, assessment with eRubrics rests on a conception of formative assessment; and it represents an assessment methodology and an evaluation technique or tool at the same time. However, it is not always possible to carry out a fully formative assessment, due to the number of students in groups and the different teaching contexts. As a result, different methods and techniques (such as the eRubric) need to be tested in different contexts and groupings.

Assessment with eRubrics has recently experienced a boom in our academic field [1] because of two main reasons:

On the one hand, *methodological changes* in the European convergence have centred the teaching process on student learning (Blanco, 2009). This has opened the

gateway to an important scientific production that analyses the evaluation of university learning (Brown & Glasner, 2003; López-Pastor, 2009). This model gives greater prominence to students, as they are responsible for the learning assessment. Meanwhile, teachers have to deal with this new modality that requires methods, techniques and resources to help them with their daily tasks, especially in the evaluation process that takes place through competences and eRubrics.

On the other hand, the *virtualisation* and *digitalisation* of university education have resulted in the emergence of various technologies and resources that improve learning assessment. This paper will especially focus on eRubrics, which are increasingly becoming a common practice in universities, be it in external services or integrated in virtual platforms (LMS) (Rodríguez-Gómez & Ibarra-Sáiz, 2011). eRubrics are being implemented in teaching at the same pace as other technologies, allowing for collaborative learning in virtual environments - Computer Support for Collaborative Learning (CSCL) - where technology has proven to be particularly useful (Prins, et al.2005), and facilitates the globalisation of higher education (Lefrere, 2007). This has encouraged the sharing of criteria and standards among universities and companies worldwide, while developing training programmes from a global perspective, where federated eRubrics play a prominent role.

The knowledge derived from eRubrics incorporates this experience to new technological developments, producing a vast literature with great possibilities but also limitations in many contexts and at several educational levels (Andrade, 2005; Campbell, 2007; Panadero & Alonso-Tapia, 2013; Martínez-Figueira, Tellado-González, and Raposo-Rivas, 2013). This technological development is constantly offering users new services and tools, thus generating new opportunities for different educational contexts. eRubrics provide faster communication among users, while allowing interaction between users and learning objectives and competences. Digital tools undoubtedly open up new possibilities for learning. Additionally, and together with the latest developments of artificial intelligence, they improve the process of search, communication and information management among users.

This situation has led to a two-way journey between technological innovation vs. educational innovation: on the one hand, new learning environments are created thanks to technological innovations; on the other, these technological environments are adding teaching advantages to eRubrics. Such is the case of the incorporation of eRubrics to open resources, personal learning environments (PLE), or, more recently, mass courses (Mooc) [2]. The above circumstances facilitate the emergence of new models of mass learning and teaching, learning communities, etc. where we can keep testing the assessment of learning and examining how self-regulation occurs in these new environments (Carneiro, Lefrere & Steffens, 2007).

The Impact of eRubrics on Learning

There is an extensive literature - not without contradictions - in reviews conducted so far on the impact of eRubrics on learning (Jonsson & Svingby, 2007; Blanco, 2010). Some of these studies show student satisfaction with the use of technologies, their positive impact on learning in general, and the different ways to use eRubrics to improve performance and self-regulation (Panadero and Jonsson, 2013). However, some critics raise the need to seek greater rigour, reliability and validity in eRubrics (Reddy & Andrade,

2010). The positive effects on learning may be due to student motivation and satisfaction with the use of technology in general, whereas the relationship with learning performance would need more rigorous methodological procedures to be proven.

Lapham, A. & Webster, R. (2003) remind us that the application of assessment criteria differs according to whether it is interpreted by teachers or students. eRubrics seek for students to understand and internalise evaluation criteria and quality standards, and for teachers to understand the practices that have actually led to successful learning. It makes sense for the understanding of standards to take place within the teaching context, that is, before students can actually apply such standards in professional contexts. Furthermore, eRubrics become an ideal ally for the following types of formative assessment:

On the one hand, *collaborative assessment*, shared assessment, peer assessment etc. count on a wide literary tradition (Falchikov, 2005; Hargreaves, 2007; Bretones Román, 2008) that is enhanced by the use of eRubrics. This type of assessment facilitates peer correction, information feedback and peer analysis of the processes involved. Such features are present in most eRubrics, although in some cases they need certain elements to create real opportunities, especially with regards to new forms of collaborative learning. This was noted by Søndergaarda, H. and Mulder, R. (2012) in their research project on technologies, which, together with the revision of tools and technological support carried out by Luxton-Reilly (2009) represent technological developments that can foster digital environments that would allow for shared assessment.

On the other hand, *self-assessment* with eRubrics facilitates students' understanding of their learning process, contrasting their achievements against objective proof presented by eRubrics (Tella-González & Raposo-Rivas, 2013). It also allows for a dialogue between teachers and students that prioritises learning achievement and tasks performed in the course. As a consequence, students' ability of internalising eRubric criteria translates into a methodology for learning to learn, i.e. learning for life. Students will be able to use these acquired competences later on in their professional life.

Peer assessment and self-assessment are an innovative methodology for many teachers and students (Orsmond; Merrys & Reiling, 1996; Vickerman, 2008). This methodology facilitates assessment and collaborative work between students and teachers. Here it is worth remembering that this should not involve students carrying out their final evaluation, which is the teachers' exclusive responsibility.

Presenting the Experiences of this Case Study

Two particular aspects encouraged us to coordinate this case study: on the one hand, there are successful practices and strategies for using eRubrics that have reported clear advantages, and which emerged thanks to the promotion of educational innovation projects in universities. Some think that reconsidering assessment can be interesting. They defend the premise: "tell me how you assess and I will tell you how you teach". On the other hand, technological innovations are developing fast, and they offer new opportunities to create new environments and processes in teaching and learning. These innovations allow for the creation of new teaching innovation projects and new objectives for experimental studies and educational research.

Based on the above two aspects, there are some elements to be considered in

the present case study, namely:

A first section, which addresses the starting model underlying self-regulated learning with eRubrics in students, coupled with the need to seek greater reliability in content creation, while taking into account eRubrics experience with design and technological support. This is the context where Gabriela de la Cruz Flores and Luis Felipe Abreu Hernández (Mexico) have put forward a great opening chapter entitled: "eRubrics and Self-regulation: Standards for the Promotion of Autonomy in Professional Training". Next, the need for eRubrics to seek greater reliability, rigour and quality is addressed in the article: "The Use of eRubrics for Assessing Competence in University Students: Study on the Reliability of the Tool", superbly presented by Jesús Valverde Berrocoso and Adelaida Ciudad Gómez. To close this first block of articles, the tool's development and technological functionality are tackled in the study: "Evolution in the Design and Functionality of eRubrics: from Square eRubrics to Federated eRubrics", where the design of eRubrics is analysed and their functions presented, by Manuel Cebrián de la Serna and Juan José Monedero Moya.

The second block of articles is striking due to the wide range of different contexts allowed by eRubrics, which are presented in articles such as the following: A first chapter entitled: "An International Experiment with eRubrics: An Approach to Educational Assessment in Two Courses of the Early Childhood Education Degree", by María Bergman, who exposes the scope and limitations of eRubrics in international projects. This is followed by an interesting experiment in the field of engineering: "Implementation of an eRubric System for Assessing Module Projects in the Engineering Degree in Industrial Design and Product Development" by Ana Serrano Tierz. Next, a creative and innovative contribution is presented: "The Role of eRubrics in Assessing Digital Materials for Language Teaching in Virtual Teaching Environments", by Esteban Vázquez-Cano, Elena Martín-Monje and Miguel Fernández-Álvarez. To close this block of articles, the experience of using eRubrics combined with other technologies is addressed in: "Assessing Online Learning through Blogs and eRubrics: Complements or Suplements?", by Esther Martínez-Figueira, Antonio Bartolomé and Fernando Tellado-González.

The last block of contents closes this case study with two articles on the final user, which focus on the students' evaluation of the usability and satisfaction of eRubrics. The first article in this block - "Usability and Satisfaction of eRubrics", presented by author José Serrano Angulo and creator Daniel Cebrián Robles -, represents an excellent research exercise and a methodological tool to evaluate eRubrics the same way as other tools or technological services. Students close this case study by expressing their views on the satisfaction experienced with eRubrics, where they are both subjects and objects of the study. María-Jesús Gallego-Arrufat and Manuela Raposo-Rivas address an interesting topic in their chapter: "Student Commitment and Perception of the Assessment Process Based on eRubrics", where they combine the commitment required from students when assessing with their personal satisfaction.

General Conclusions

Somehow, users' new practices are promoted by the new regulatory frameworks in Europe and Latin America (EEES and ALCUE), which add to ongoing technological development and its immediate translation into new practices. Thus, there is a constant influence between these two fields of innovation - education and technology -, which

feedback into each other. On the one hand, innovative teachers are constantly opening new strategies and methods in the use of eRubrics, thus creating new teaching environments and self-regulating learning processes; and on the other, the ease and speed of technology transfer mark an unstoppable trend towards educational change.

To sum up, eRubrics are a good source of information but should not be the only methodology or resource for the final evaluation. They represent a highly significant educational practice to improve communication between teachers and students. In the future, it will be easy to find eRubrics in new developments, technology platforms and virtual learning environments. Since their functionality is also increasing, eRubrics are also becoming essential for creating quality ePortfolios.

While new practices achieve success and gain followers - now even more so due to the rise of technology -, their impact on teaching and learning will still remain a mystery unless experimentation, research and pedagogical knowledge contribute to design teaching practice. The experience acquired from this case study sets an example of such knowledge. However, we need to know more about how students internalise and apply criteria through eRubrics. At the same time, it would be desirable to count on a larger database on eRubrics, as examples to share and discuss competences, indicators and proof of learning to be used in different areas of university education.

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[1] Within the literature in Spanish and English, we have selected the following books and useful links for a first dive in depth on this subject:

Bujan, K, Rekalde, I. y Aramendi, P. (2011). *La evaluación de competencias en la educación superior.* Sevilla. MAD.

Quinlan, A. (2010). *A complete guide to rubrics. Assessment made easy for teacher of K-College*. Rowman & Littlefield education: United Kingdom.

Rodríguez-Gómez, G. & Ibarra-Sáiz, M.S. (2011). *E-Evaluación orientada al e-aprendizaje estratégico en educación superior*. Madrid: Narcea.

Stevens, D. & Levi, A. (2005). *Introduction to rubrics. An assessment tool to save gradind time, convey effective feedback and promote studiente learning*. Stylus Publishing: Virginia. IBN http://www.introductiontorubrics.com/overview.html

http://erubrica.org Learning community on the use of eRubrics for learning assessment.

http://gtea.uma.es/rubric Service of federated eRubrics created by national and international research projects. eRubrics are constantly upgraded in the learning community by the contributions of its members. All international and partner institutions associated to RedIRIS through eduGAIN can access RedIRIS through their institutional passwords. This federated access enables the coordination of collaborative projects on eRubrics by teams of students and teachers from different universities. It also has a database with free access and eRubric examples.

http://gtea.uma.es/congresos/?page_id=17 II International Congress on "Assessment of Learning with eRubrics" held on 24-26 October 2012 in the Faculty of Education at the University Malaga. The link includes recorded conferences and published reports.

http://www.sined.mx/rubrica.html Centre for the Design of eRubrics. National Distance Education - Mexico. Objectives: 1.- Provide institutions, teachers and students with a federated eRubric tool for competence assessment, easy technology integration, rapid design and content creation by users. 2.- Establish strategies and online spaces for the exchange of experiences and use of eRubrics applied to all contexts of distance education. It also offers a free eRubric service or federation service and free access materials by means of "micro-seminars", which deal with the application of eRubrics in practical contexts (such as peer-assessment, group evaluation, self-assessment, self-regulation of learning, etc.) It has a free-access base with eRubric examples and references related to this topic.

[2] http://gtea.uma.es/congresos The 3rd International Workshop on MOOC Creation with multimedia notes, held at the University of Malaga on 5-7 March, 2014. Presentation of the multimedia project aimed at editing integrated eRubrics in the edX Mooc.

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