FLEXIBLE E-RUBRICS "ON-LINE / OFF-LINE" FOR THE EVALUATION OF COMPETENCES

Beatriz Urbano[1], Ana María Bartolomé[1], Deiyalí A. Carpio[1], Fernando González-Andrés[2]

[1]University of Valladolid (SPAIN)
[2]University of León (SPAIN)

Abstract

The European Higher Education Area promotes a competency-based evaluation using varied and innovative assessment tools. In this line, at the Universidad de Valladolid in Spain, the reports of the evaluation of the Master in Agricultural Engineering and the Degree in Agricultural and Rural Engineering aimed to improve the competency-based learning. For this, rubrics are valuable tools aligned with competences and highly recommended in a competency-based learning. Additionally, in previous projects we have verified that students need to strengthen the G15 competence of critical thinking and social networks are a familiar instrument for students that allows strengthen this competence. After having tested the Rubrics and CoRubrics software in the evaluation of competences in previous projects, we intuit that we can simplify the assessment process using the institutional Moodle platform, widely used by students and teachers at the University of Valladolid. In addition, the loss of face-to-face teaching on March 14, 2020 due to the pandemic COVID-19 requires, at this time, to look for flexible instruments in the teaching-learning process, including the evaluation. The aim of this teaching innovation project is to design a flexible evaluation itinerary (off-line/on-line), developing learning objects (e-rubrics) and their application in the evaluation of the competences of the agricultural students at the University of Valladolid with special attention to the G15 competence of critical thinking utilizing social networks and comparing the use of Moodle with respect to Rubrics and CoRubrics software. The methodology includes, i) the design of the evaluation itinerary, ii) the elaboration of e-rubrics, iii) its implementation in Agricultural Degrees and Masters at the University of Valladolid, iv) the comparison of the assessment tools functionalities and v) the evaluation and dissemination of the results. The expected results are, the alignment of the evaluation with the competences, the student's follow-up of his own activity, favouring their responsibility of the learning and the self-evaluation of the quality of their work and the ways in which it could be improved.

Keywords: Innovation, competency-based assessment, critical thinking, social media, rubrics tools.

1 INTRODUCTION

The European Higher Education Area (EHEA) promotes competency-based assessment using varied, diverse and innovative assessment instruments [1]. In this sense, for the agricultural qualifications of the University of Valladolid, the report on the proposal to modify the Official Title of the Master in Agronomic Engineering issued by the President of the ACSUCYL Qualifications Evaluation Commission on June 21, 2017 and the report on the renewal of the accreditation of the Degree in Agricultural and Rural Engineering issued by the Degree Evaluation Commission of the Agency for the Quality of the ANECA University System, on April 29, 2016 recommended to insist on learning and evaluation based on the competences that students must acquire. In previous projects we have also verified that the students of the agricultural degrees of the CEI Triangular E[3] need to strengthen the G15 competence of critical thinking and that social networks are a familiar tool and widely used by students that allows them to strengthen this competence knowing the sector in which they will carry out their activity and issuing their critical judgment on the activities they carry out [2].

The rubrics are instruments that allow align the evaluation in higher education with the competences that the student must acquire [3; 4]. The rubrics allow the participation of all those involved in the evaluation process, the alignment of the evaluation with the teaching-learning model, the student's monitoring of their own activity, favouring their responsibility of learning and self-evaluation of the quality of their work and the ways in which it could be improved [5] in line with the EHEA.

However, the loss of presence in teaching decreed by R.D. 463/2020, of March 14, which declares the state of alarm for the management of the health crisis situation caused by COVID-19 requires us at this time, look for flexible instruments for the entire teaching-learning process with validity in face-to-face

(off-line) and non-face-to-face (on-line) teaching scenarios, including evaluation. In this sense, various authors [6; 7; 8] have already tested the evaluation of students online and the reliability of the use of e-rubrics. Furthermore, for our part and after having tested in previous projects the Rubrics and CoRubrics programs for the evaluation of competences through rubrics and compared their suitability for the evaluation of competences, we see the need to try to simplify the evaluation even more and we think that achieve using tools already incorporated in the virtual teaching platforms that we use, Moodle, without having to incorporate additional tools for evaluation.

The aim is to incorporate the assessment of competences through rubrics in the teaching-learning process in the simplest and most manageable way possible. In this context, the present teaching innovation project aims to design a flexible evaluation itinerary (off-line / on-line), marking evaluation milestones in each of these scenarios, developing learning objects (e-rubrics) valid for each scenario and its application for the evaluation of the competences that students of agricultural degrees of the CEI Triangular E^3 must acquire with special attention to the G15 competence of critical thinking using social networks and with tools already used such as the Moodle platform and comparing their utility over Rubrics and CoRubrics.

2   METHODOLOGY

This project developed a linear methodology that included,

1   The design and evaluation of an off-line / on-line evaluation itinerary of competences in agricultural qualifications of the CEI Triangular E^3 with special attention to the G15 competence critical spirit among students through activities in which students must make their own and innovative recommendations using social media.

2   The develop of e-evaluation rubrics, learning objects (LO) that help to interpret the progress and development of student competencies in the evaluation of competences in degrees and masters of agricultural engineering for the alignment of the evaluation with the teaching model- learning present in the EHEA.

3   The exploration and comparison of the functionality of the rubrics in the Moodle platform for the management of the information of i) the self-evaluation by the students, ii) the evaluation by the teacher and iii) the student-teacher co-evaluation of the competences of learning regarding CoRubrics and Rubrics freeware software.

3   RESULTS

3.1   Itinerary of evaluation of competences off-line / on-line

In the first step of the project, a flexible evaluation itinerary off-line / on-line was developed that took into account the contingency of a possible total or partial loss of face-to-face teaching. The itinerary defined the milestones of the evaluation and proposed the tools to be used in the case of off-line / on-line evaluation.

The flexible off-line / on-line evaluation itinerary used a combination of tools that would allow at any time to change the evaluation from face-to-face to online (Fig. 1). In doing so, for the presentation of the instructions, criteria and levels of evaluation of the rubric, face-to-face classes were proposed and, failing that, due to total or partial confinement, Webex sessions would be organized to make it possible to publicize the evaluation criteria.

To follow-up the evaluation, resolve doubts and unify criteria and evaluation levels, a classroom session was proposed. In the event of total or partial confinement, in the on-line evaluation, it would be replaced by a Blackboard collaborate and/or Webex sessions to resolve questions and doubts of the students.

The presentation of the students' projects would be face to face in the off-line evaluation. In the event of total or partial confinement, in the online evaluation, it would be through the Blackboard Collaborate platform where the students would present their projects.

Finally, the evaluation of the teacher, the students and the co-evaluation would use the e-rubric placed on the Moodle platform of the University of Valladolid, so it could be used in both offline / on-line evaluation modalities.
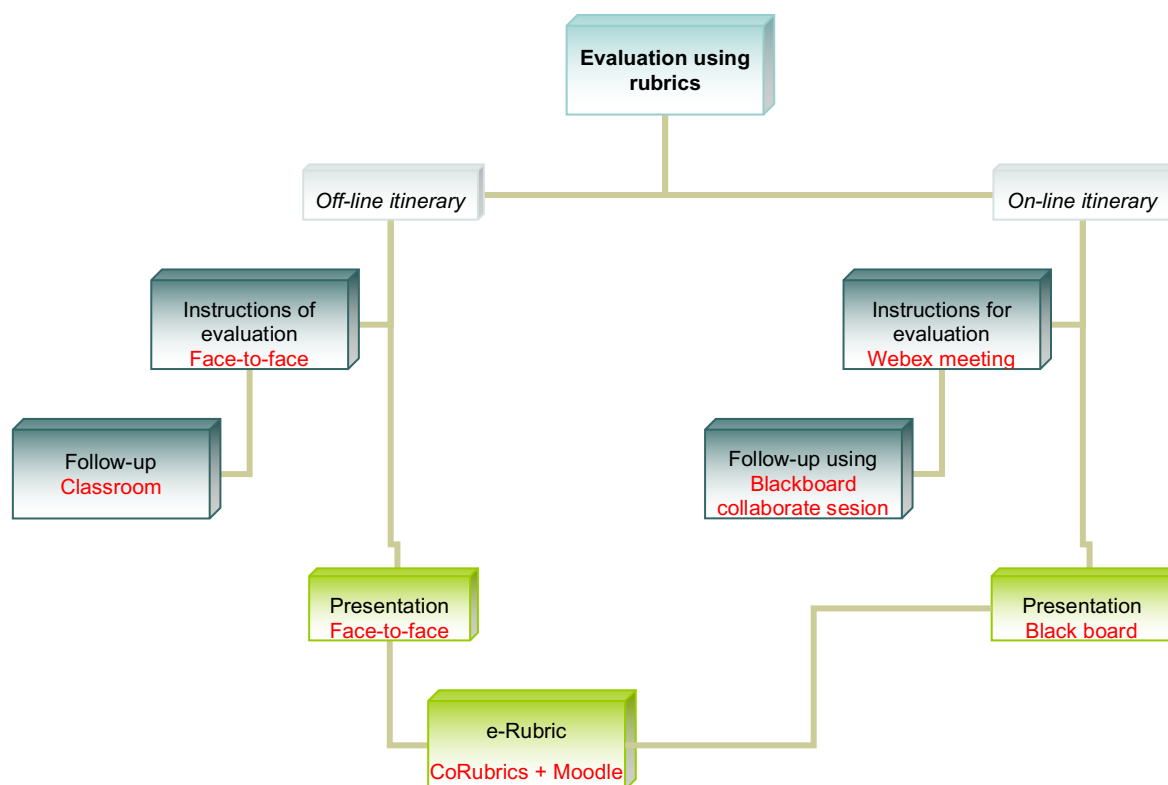
Figure 1. Flexible itinerary of evaluation of competences on-line /off-line.

3.2 Evaluation of competences using the e-rubric

In the first stage of the evaluation, the competences needed to be acquired by the students were identified. In doing so, the group of teachers of the project agreed the competences. After the selection of the competences and skills, a e-rubric was developed using CoRubrics in order to assess the acquisition of competences by the student in two ways, i) by the rest of the students in the classroom, co-evaluation and ii) by the teachers. The table 1 presents the competences to be assessed and competences codes according to the Degree and Master codification, within the skills description. A specific activity of analysis using social media was included into the subject's practices in order to assess the students' critical thinking and motivation with the use of social media in the context of subjects practices.

Table 1. Competences assessed by Teaching Innovation Project 2020-21.

Competence code	Competence description	Skill code	Skill description
G15	Critical thinking	I0011	Economic feasibility
G3	Summarise and synthesise	I0010	Technic feasibility
G5	Communicate in expert and non-expert forums	I0002	Oral presentation
G15	Critical thinking	I0020	Social media analysis

A sample of Higher Education students participated in the assessment using rubrics and social media. A total of 67 students from Agriculture Degrees and Masters assessed the competences to be acquired using the rubric created by CoRubrics (Table 2).

Degree/Master	Subject	Male	Female	Total	Valid sample
Degree in Agricultural Engineering (GIAMR)	Commercialisation	10	1	11	11
Degree in Oenology (DO)	Marketing	3	6	9	9
Degree in Oenology (DO)	Management	13	11	24	24
Master of Food Quality/Development (MCDA)	Marketing	2	9	11	11
Master in in Agricultural Engineering (MIA)	Marketing	5	4	9	9
Degree in Agrifood Industries Engineering (GIIAA)	Commercialisation	3	0	3	3
Total		36	31	67	67

The rubric was delivered to the students at the beginning of the trimester using the University of Valladolid Moodle platform. Once, the students presented their projects to the classroom, all the students and the teachers were invited to give marks using CoRubrics template. CoRubrics output the students´ co-evaluation and the teacher's evaluation for each student. Fig. 2 shows the evaluation by teacher, students' self-evaluation and co-evaluation.
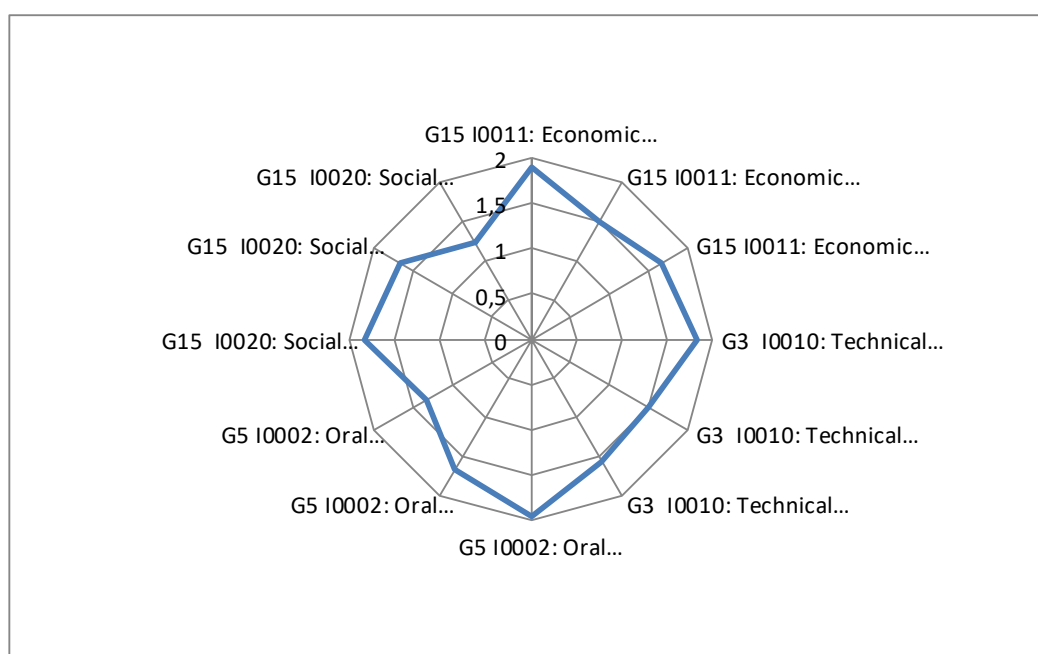

Figure 2. Evaluation by teacher, students' self-evaluation and co-evaluation.

3.3   Comparison of functionalities of rubrics' tools

Three tools were compared, Rubric, CoRubrics and University of Valladolid Moodle platform rubric. The first of the two tools were tested in previous innovation teaching projects [2; 4]. In this project we wanted to test the Moodle rubric tool because it is the platform used and familiar at the University of Valladolid in order to simplifying the process and including all the evaluation in the same instrument. However, the Moodle rubric tool at the University of Valladolid has only allowed the rubric to be published to the students and incorporated into the assessment by the teacher, like Rubrics. But it has not allowed the students' self-evaluation and co-evaluation. It also does not calculate, weight, or graphs of the teacher and student evaluations. These functions are carried out by CoRubrics, which is concluded the most complete tool (Table 3).

Table 3. Comparison of functionalities of assessment digital tools using rubrics:
Rubrics, CoRubrics and Moodle rubric.

	Rubrics	**UVa Moodle rubric**	**CoRubrics**
Share with students	Yes	Yes	Yes
Presentation of ponderation	No	Yes	Yes
Evaluation by teacher	No	Yes	Yes
Self-evaluation	No	No	Yes
Co-evaluation	No	No	Yes
Evaluation processing	No	No	Yes
Evaluation ponderation	No	No	Yes
Graphics	No	No	Yes

4 CONCLUSIONS

The flexible off-line / on-line evaluation itinerary used a combination of tools that would allow at any time to change the evaluation from face-to-face to online.

For the presentation of the instructions, criteria and levels of evaluation of the rubric and follow-up of the evaluation, face-to-face classes were proposed and, failing that, due to total or partial confinement, Webex sessions were proposed be organized to make it possible.

The presentation of the students' projects is proposed to be face to face in the off-line evaluation. In the event of total or partial confinement, in the online evaluation, it would be through the Blackboard Collaborate platform where the students would present their projects.

Finally, the evaluation of the teacher, the students and the co-evaluation would use the e-rubric placed on the Moodle platform of the University of Valladolid, so it could be used in both offline / on-line evaluation modalities.

The CoRubrics tool allowed the rubric to be published to the students, the teacher evaluation, the students' self-evaluation and co-evaluation. It calculates weight and graphs the teacher and students' evaluations. Therefore, it is concluded the most complete tool.

This project contributes to the alignment of the evaluation with the competences, the student's follow-up of his own activity, favouring their responsibility of the learning and the self-evaluation of the quality of their work and the ways in which it could be improved

ACKNOWLEDGEMENTS

REFERENCES

[1]   EACEA, Education, Audiovisual and Culture Executive Agency, European Commission. "Modernization of Higher Education in Europe: Access, Retention and Employability: Eurydice Report". Luxemburg: European Commission Publications, 2014.

[2]   B. Urbano, D. Carpio, F. González-Andrés. "Strengthening the critical thinking competence G15 using Social Media and its assessment by CoRubrics", *Proceedings of EDULEARN20 Conference*, 2020.

[3]   M. Reddy, H. Andrade. "A review of rubric use in higher education", *Assessment & Evaluation in Higher Education*, vol. 35, pp. 435–448, 2010.

[4]   B. Urbano, D. Carpio, F. González-Andrés. "Validation of Rubrics to Assess Competences in Agricultural Engineering Higher Education", *Conference Proceedings 13th International Technology, Education and Development Conference INTED2019*, 2019.

[5]   E. Panadero, A. Jonsson. "The use of scoring rubrics for formative assessment purposes revisited: A review", *Educational Research Review*, vol. 9, pp. 129-144, 2013.

[6]   A. Bartolomé, E. Martínez, F. Tellado-González. "La evaluación del aprendizaje en red mediante blogs y rúbricas: ¿complementos o suplementos?", *REDU, Revista de Docencia Universitaria,* vol. 12 (1), pp. 159-176, 2014.

[7]   A. García-Barrera. "Evaluación de recursos tecnológicos didácticos mediante e-rúbricas", *RED-Revista de Educación a Distancia*, vol. 49, 2016.

[8]   J. Valverde, A. Ciudad. "El uso de e-rúbricas para la evaluación de competencias en estudiantes universitarios. Estudio sobre fiabilidad del instrumento", *Revista de Docencia Universitaria RedU*, vol. 12(1), pp. 49-79, 2014.