

Promoting creativity through collaborative assessment

Miguel Romá¹, Montse Farreras², Pau Bofill², Jesús Armengol²

¹ Universitat d'Alacant, Spain.

² Universitat Politècnica de Catalunya, BarcelonaTech. Spain.

Email: miguel.roma@ua.es, mfarrera@ac.upc.edu, pau@ac.upc.edu, jesus.armengol@upc.edu

Abstract

We propose an online hands-on session that will tackle the following objective: How to assess a reflective activity using rubrics: rubrics are good for formal aspects and small/guided projects but when we want to leave room for creativity it is more difficult to provide the rubric because it gives too much guidance. Rubrics are widely used to evaluate the formal part of the projects. But...can we build a rubric to evaluate those other characteristics (creativity, elegance in the solution ...) that are important in academic thesis? Participants will discuss and share experiences about the convenience (or not) of using rubrics when we want to promote creativity in our students.

Keywords: Active Learning; Engineering Education; Conference Information; Project Approaches.

1 Introduction

Rubrics have been widely used as a tool to facilitate the process of self, peer and instructor based assessment in general engineering education, as in Zow et al. (2012) and in PBL schemes in particular, as in Saunders et al. (2003) and Martínez et al. (2011). Rubrics are defined by Chan (2015) as aids for teachers to assess students' work objectively and effectively. From a general point of view, as stated by Rogers (2003), rubrics can: (a) offer ways to define expectations, especially in dealing with processes or abstract concepts, (b) provide a common language to help teachers and students discuss about the expected learning, (c) increase reliability of the assessment when using multiple assessors, and (d) provide feedback to students on various forms of assessments.

Agreeing with the general utility of rubrics, maybe firstly we should ask ourselves if objective assessment is something we really need to achieve or not, as we did in Romá (2007), as this aspect will define the role of the rubric in our course.

Rubrics can be clearly designed to be used in the assessment of instrumental competences (Wagenaar, 2020), in which clear goals can be defined and categorized, so it will be easy to evaluate (and grade) the degree in which they are fulfilled. In fact, a rubric can be understood as teachers' expectations about students' performance, and students themselves feel comfortable because they know how they are going to be assessed and graded. This fact tends to lead to results that are more homogeneous as more detailed the rubrics are. Chapman & Inman (2009) describes through a clear example the dichotomy between rubrics and creativity showing the risk of using rubrics when trying to leave no doubts regarding the assessment:

- An eleven-year old girl had a science assignment to complete as homework. Her parent, attempting to help, offered several suggestions for enhancing the project. The child's response to each suggestion was: *"No, that's not on the rubric. Here's the rubric, Mother. This is all we're supposed to do."* Leaving aside the inherent possibility that the child might have misrepresented her teacher's intent slightly, we were struck by a child's veracity about the restrictions a rubric-oriented teaching force places on our learners. Such restrictions may be real: the students must adhere strictly to prescribed criteria with no deviations, per the teacher's instructions, or student culture may impose restrictions (i.e., "Those criteria represent all I have to do in order to have a 'perfect' assignment.")
- The rubric referred to here has a table format. To achieve a set number of points, each cell on a row includes specific elements that are either absent or present. To construct such a tool, a teacher needs to anticipate various possible responses to the given assignment and delineate what is acceptable and

unacceptable. In the real world that degree of thoroughness and anticipation by most classroom teachers is the exception, not the norm.

- That leads to several questions: Is the teacher merely requiring identical or nearly identical artifacts from the students to grade “fairly”? If so, do the teachers recognize broader ramifications? Moreover, are students involved in a rubric paradigm that makes them see such guidance as the way school and society should operate?

But, when it comes to evaluate life skills, as defined by Wurdinger & Qureshi (2014), even though rubrics have been designed with this purpose (Lutnaes, 2018), grading will always have a certain level of subjectivity.

With these ideas in mind, we are concerned about how to design rubrics to use in the assessment of reflective activities and, more precisely, when we want to promote (and evaluate) creativity in the activity. This leads to two questions that will be guiding the hands-on session:

- Can a rubric really be used to promote creativity or the rubric itself leads to homogenous results?
- Does it make sense to use rubrics with activities in which there will not be a clear result, such as reflective activities?

2 Activities

- Presentation of the goals of ‘Plant a seed for the future’ previous hands-on session.
- Introduction to the topic: designing rubrics to promote creativity.
- Short introduction of free online and collaborative rubric tools: CoRubrics, Co-Rubric, RubiStar.
- Debate in small rooms, and design a rubric for the evaluation of the outcomes of a reflective activity when we want to promote creativity.
- Presentation of rubrics in the main room.
- Debate to discuss encountered difficulties and agree in common criteria for designing rubrics encouraging creativity.
- Final thoughts and conclusion.

3 Expected results

After completion of the activity, two main questions are expected to be answered:

- Can creativity be promoted and assessed using rubrics?
- In case of having a non-negative answer to the first question, how rubrics can be designed to promote creative results in PBL environments?

Besides, it will be interesting to reflect about the potential benefits of involving students in the design process of the rubrics.

4 Acknowledgment

This work has received a grant from the Networks-I3CE Program for research in university teaching of the Institute of Education Sciences of the University of Alicante (2020-21 edition). Ref.: [5000]

5 References

- Chan, CKY (2015). Rubrics for Engineering Education. Engineering Education Enhancement and Research Asia (E3R Asia).
- Chapman, V. G., Inman, M. D. (2009). A conundrum: Rubrics or creativity/metacognitive development?. *Education Digest: Essential readings condensed for quick review*. v75 n2 p53-56.
- Lutnaes, E. (2018). *Creativity in assessment rubrics*. International conference on engineering and product design education. Dyson School of design engineering. Imperial college, London.
- Martínez, F., Herrero, L- C-, de Pablo, S. (2011). Project based learning and rubrics in the teaching of power supplies and photovoltaic electricity. *IEEE transactions on education*, vol. 54, no 1. doi: 10.1109/TE.2010.2044506.
- Rogers, G. (2010). Developing rubrics. Retrieved from

http://www.abet.org/uploadedFiles/Events/Webinars/Developing_Rubrics.pdf

- Romá, M. (2007). *Does it make sense to look for an objective assessment in PBL?*. Experience and reflection on active learning in engineering education (7th ALE international workshop). Eds. Moore G., Hernandez, A.
- Saunders, K. P., Glatz, C. E., Huba, M. E., Griffin, M. H., Mallapragada, S. K., Shanks, J. V. *Using rubrics to facilitate students' development of problem solving skills*. Proceedings of the 2003 American Society for Engineering Education Annual Conference & Exposition.
- Wagenaar, R. (2020). Defining, promoting and measuring transferable skills, social and civic competences: trends and challenges in higher education. *ET2020 working group on modernisation of higher education: peer learning activity (PLA)*.
- Wurdinger, S., Qureshi, M. (2015). Enhancing college students' life skills through project based learning. *Innov High Educ* 40:279-286. doi: 10.1007/s10755-014-9314-3
- Zou, XT; Ko, E; Li, C; Zhou, C (2012). *The Systematic Development of Rubrics in Assessing Engineering Learning Outcomes*. Proceedings of I E E E International Conference on Teaching, Assessment and Learning for Engineering, 2012, p. T1A-1 - T1A-5.