Studies in Educational Evaluation 51 (2016) 55–66

Contents lists available at ScienceDirect

Studies in Educational Evaluation

journal homepage: www.elsevier.com/stueduc

The way students' internalize assessment criteria on inquiry reports

Inês Bruno[a,*], Leonor Santos[b], Nilza Costa[c]

[a] Escola Secundária José Saramago, Avenida Cidade de Leiman, 2640-470 Mafra, Portugal
[b] Instituto de Educação e Centro de Investigação em Educação, Universidade de Lisboa, Alameda da Universidade, 1649-013 Lisboa, Portugal
[c] Departamento de Educação e Psicologia, Centro de Investigação em Didática e Tecnologia na Formação de Formadores, Universidade de Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal

ARTICLE INFO

Article history:
Received 12 March 2016
Received in revised form 9 September 2016
Accepted 12 September 2016
Available online xxx

Keywords:
School-based evaluation
Evaluation methods
Student evaluation
Assessment criteria
Self-regulated learning
High school

ABSTRACT

This paper, based on two case studies, presents an interpretative research on the processes used by high school students to internalize the assessment criteria of Physics and Chemistry inquiry reports. Findings support that understanding the assessment criteria is complex, mainly because of its terminology. However the discussion of exemplars can have a crucial role in this process. In order to operationalize the assessment criteria, students used strategies stemming from the social context (teacher, peers and other didactic sources) as well as from their individual experience (errors made, engagement in critical thinking and the creation of a favorable environment). However it also showed that some differences in operationalizing the assessment criteria were related to different students' profile. The results point to a multi-strategy pedagogical approach to enhance students' internalization of assessment criteria. Nevertheless reducing the tension between teachers' expectations and students' own standards of quality showed to be a complex process.

1. Introduction

Modern societies require individuals, and therefore students in particular, to be able to continuously acquire new knowledge and competences. It is very unlikely that students succeed unless they reflect on themselves, on what and how they are doing (Dann, 2002). Thus, students need to have an active and constructive role in the learning process (Nunziati, 1990; Zimmerman, 2002). In this sense, self-regulation is an essential competence because it includes "the mechanisms of orientation, control, and adjustment of the cognitive, affective and social activities that promote the transformation of students' competencies" (Allal, 2007, p. 9). The assessment criteria play a crucial role in this process because they can guide students to achieve the objectives of a task (Nunziati, 1990).

However, each individual establishes his/her own standards, criteria or self-representations, so it is essential to use a pedagogical approach that fosters the internalization of assessment criteria, as suggested by Andrade and Du (2007), Santos and Gomes (2006) and Semana and Santos (2010). According to Vygotsky (1934/1978), the internalization of the assessment criteria means that students integrate them in their own knowledge. In other words, it implies that they: i) interpret the criteria, understand their meaning, reach a common understanding and appropriate the teacher's expectations (Vial, 2012), and ii) operationalize the criteria, in other words putting them into practice, because "criteria assume meaning only when used" (Woolf, 2004, p. 488).

In this article we assume that understanding an assessment criterion presupposes that the student gives the proper meaning to all the content of the criterion statement (matching the teacher's interpretation) and can explain it in his/her own words. Operationalization of a criterion means that students use it in specific situations.

According to several studies (e.g. Kirby & Downs, 2007; Rust, Price, & O'Donovan, 2003; Tillema, 2014), informing students about their assessment criteria is usually insufficient for internalization to occur. In fact, the internalization is a complex process (Andrade & Du, 2007; Clark, 2012). For this reason, and according to several studies (e.g. Tierney, 2013), the internalization process needs to be deeply investigated. The present paper aims to fill a gap in studies focusing on this process. The research was undertaken in order to understand how high school students internalize assessment criteria. It was guided by the following research questions:

* Corresponding author.
E-mail addresses: inesbruno@gmail.com (I. Bruno), mlsantos@ie.ul.pt (L. Santos), nilzacosta@ua.pt (N. Costa).

http://dx.doi.org/10.1016/j.stueduc.2016.09.002
0191-491X/

1. How do high school students understand the assessment criteria of Physics and Chemistry inquiry reports?
2. Which strategies do students use to support the operationalization of assessment criteria when they develop Physics and Chemistry inquiry reports?
3. What is the role of the pedagogical approach in the internalization of the assessment criteria?

2. Conceptual framework

Self-regulation can be defined as "a multilevel, multicomponent process that targets affect, cognitions, and actions, as well as features of the environment for modulation in the service of one's goals" (Boekaerts, Maes, & Karoly, 2005, p. 150). Therefore, it assumes that students are actively involved in the learning process. According to the model proposed by Zimmerman (2002), self-regulation includes three phases: the forethought (where students define specific goals and plan strategies), the performance (where students monitor their performance) and the self-reflection phase (where students reflect on the methods, knowledge acquired and the importance of the process they used to achieve the goals).

Self-regulation fosters an awareness of when and how students learn, or not (Black, Harrison, Lee, Marshall, & Wiliam, 2002; Swaffield, 2011). It implies they construct their own learning path also through the understanding of assessment criteria, self-assessment and self-correction (Nunziati, 1990). This is essential for understanding how successful their work was, as well as for identifying and correcting their mistakes and errors (Dann, 2002; Papaleoutiou-Louca, 2003; Zimmerman, 2002). But for this to happen, it is necessary to make explicit what usually is implicit, promoting the understanding of assessment criteria.

Assessment criteria are representations of various aspects of the task (Nunziati, 1990); therefore its significance must be interpreted so that students understand what is actually requested (Vial, 2012). This process can occur unilaterally or bilaterally, with the teacher either informing or negotiating assessment criteria with students, respectively. In fact, the usefulness of the assessment criteria depends not only on their understanding, but also on the degree of their acceptance (Hadji, 1989). It is crucial that, from the point of view of the students, they make sense, that is, they must be accepted as important and legitimate. So, the bilateral process has the advantage that responsibility in the assessment process is shared with the students (Gipps, 1999). As such, an open and constructive dialog between teacher and students can help them to understand and consider the task requirements (Woolf, 2004).

Although assessment criteria often refer to students' tasks, they are abstract (e.g. rigor, clarity), thus it is essential that students are aware about the qualities their work should have. A useful way of doing this is by using rubrics (Brookhart, 2013). These are documents that demonstrate the characteristics that are expected from a particular task, indicating what leads to a high mark and describing levels of quality, for example from excellent to poor (Andrade, 2000). Rubrics can be analytical, when the performance is described on each criterion separately, or holistic, if the criteria are treated together. They also can be generic when a general performance is described and in this way they can be used with a family of similar tasks or be task-specific if the description of the performance is specific to a single task. According to Brookhart (2013), using analytic rubrics is more advantageous for formative assessment because it can help students to identify what aspects of their work need attention. The highest level, which indicates the characteristics of an excellent work, makes students to engage in a process of constructive learning based on self-regulation (Hafner & Hafner, 2003).

As several studies point out (Andrade, 2001; Green & Bowser, 2006; Santos & Semana, 2015), it is necessary to explore rubrics with students in order to reach a shared understanding. A clear explanation of what is expected helps students to understand the more unclear or less obvious items (which would otherwise be ignored), and overcome the vague, imprecise and subjective parts of some indicators. In the case of more abstract criteria, it is useful to give concrete examples for discussion, such as previous assignments of the students or other students' assignments, as suggested by Andrade, Du, and Mycek (2010), as well as by Hendry, Armstrong, and Bromberger (2012). Sometimes students need to see how assessment criteria can be applied. This is a useful way to help them understand and operationalize those criteria, or in other words, to internalize them. However, it is important to dissuade students from using mechanistic strategies or thinking that these examples are standard (Norton, 2004).

Feedback can also be used to promote the understanding of the assessment criteria because ambiguities and misunderstandings may be diminished through this process (Taras, 2003). According to Nicol and Macfarlane-Dick (2006) and Nicol (2010), feedback, understood as a dialog process, may: i) help clarify what constitutes a good performance, which is crucial for students to set goals and guide them in the process of self-regulation; ii) encourage students to identify the criteria and standards that apply to their work and make judgments based on such standards; iii) give high quality information to students about their learning. This information should help them improve their own performance and correct possible mistakes. It should lead students to act so that discrepancy between intentions and results is diminished (Black, Harrison, Lee, Marshall, & Wiliam, 2003). In this way feedback can also foster students' operationalization of the assessment criteria. Therefore, it must be strictly related to the objectives, standards and criteria and students have to understand this relationship (Wharton, 2003).

Feedback also gives students the opportunity to engage in other ways of looking at the task, so that other paths can be considered (Taras, 2001). However, in the long run, the amount and detail of feedback should be minimized in order to promote an autonomous learning and the development of skills that enable the students to analyze their work independently (Black & Wiliam, 1998; Crisp, 2012; Santos & Pinto, 2009; Swaffield, 2011).

The dialog between peers can also be beneficial for the internalization of assessment criteria to occur (Price, Handley, Millar, & den Outer, 2007) since the language used by peers is easier to understand and the contact with other points of view and alternative strategies help students to review and build new apprenticeships (Black et al., 2003).

Previous studies considered the potential of enhancing the internalization of assessment criteria for increasing learning capacity. Students can identify more effectively the strengths and weaknesses of their processes and products, have better performances, be more motivated and less anxious and develop skills inherent to self-regulated learning (Andrade & Du, 2007; Dann, 2002; Rust et al., 2003).

3. Methodology

This study examines the processes used in the development of inquiry reports guided by assessment criteria. Therefore, and taking into account that the research questions are designed to address the understanding of the process of internalization of those criteria, we have chosen an interpretive paradigm (Lichtman, 2006). A qualitative case study was designed for this investigation. According to Merriam (1988), the qualitative case study 'is the ideal design for understanding and interpreting observations of educational phenomena' (p. 2). As a result, it was possible to