

Pereira, D.; Flores, M. A. & Barros, A. (2017) Perceptions of Portuguese undergraduate students about assessment: a study in five public universities, *Educational Studies*, 43(4), pp. 442-463

**Perceptions of Portuguese undergraduate students about assessment:
A study in five public universities**

Abstract: This paper draws upon a broader piece of research on assessment in higher education, particularly focusing on issues regarding the fairness and effectiveness of the assessment methods and their implications for the learning process. The perceptions of undergraduate students are analysed taking into account the effectiveness and fairness of both traditional and learner-centred assessment methods, as well their influence on the learning process. In total, 624 students participated in this study in five Portuguese Public Universities in different areas of knowledge and programmes. Data were collected through questionnaires. Findings suggest that assessment is seen as more effective and fairer when it is done through the use of learner-centred assessment methods rather than by traditional assessment (e.g. written tests or exams). The students also claim that they devote more time to study when assessment is performed through learner-centred assessment methods than by traditional ones. The most used assessment methods are written tests and oral presentations in group. However, differences in the programmes were identified as well as differences according to gender. Implications of the findings for assessment and for the teaching and learning process are discussed.

Keywords: assessment, higher education, learner-centred assessment

Introduction

The assessment of the students' learning has been an issue widely debated in higher education (Sambell, McDowell, and Brown 1997; Black and Wiliam 1998; Struyven, Dochy and Janssens 2005). Different perspectives suggest that a shift in the assessment paradigm has occurred, based on the transition from an instruction paradigm to a learning paradigm (Barr and Tagg 1995), from a summative 'testing culture' to an integrated 'assessment culture' (Birenbaum 1997), or, in other words, from a teacher-centred approach towards a learner-centred approach (Huba and Freed 2000; Kahl and Venette 2010). Higher education contexts have faced challenges in regard to more learner-centred assessment after the implementation of the Bologna process (Webber 2012; Myers and Myers 2014; Sin 2015) which implies that the student is at the centre of the learning process through active knowledge construction. Overall, in European Universities the

policy agenda of the Bologna Process also pointed to the need for a more learner-centred assessment.

Although there are studies on particular assessment methods (Scouller and Prosser 1994; Birenbaum and Feldman 1998; Brinke, Sluijsmans, and Jochems 2010; Turner, Roberts, Heal and Wright 2013; Pereira, Flores and Niklasson 2016) and studies based on a comparison perspective of different methods (Gleaves, Walker, and Grey 2007; Tian 2007; Huxham, Campbell, and Westwood 2012), more empirical research is needed on the students' perceptions of traditional and learner-centred assessment methods in different contexts and programmes (Segers, Gijbels and Thurlings 2008; Pereira et al. 2016).

This study seeks to contribute to fill in the gap in existing research literature on assessment in higher education. It examines learner-centred and traditional assessment methods through the perceptions of undergraduate students. Issues of effectiveness, fairness and ideas associated with assessment are discussed.

Assessment methods in Higher Education

In contrast to a teacher-centred approach that focuses on the teacher and on instruction (Kahl and Venette 2010) and in which students are seen as passive learners (Altay 2014), a learner-centred approach focuses on the learner who is seen as an active individual and in which assessment is effective if it enhances motivation and learning (McCombs and Whistler 1997; Huba and Freed 2000; Karolich and Ford 2013). Earlier literature shows that the learner-centred approach emerges from the influence of the humanist perspectives (Bailey and Colley 2015) and the constructivism theories, which emphasise the active role of the student in the process of learning and assessment (Struyven, Dochy and Janssens 2003). Back in 1990, a learner-centred approach was discussed in American colleges and universities (Webber 2012) and as a result the American Psychological Association (APA) produced a special task which is based on an integrated perspective of research and theory regarding the school systems. The task entitled *The Learner-centred Psychological Principles* describes a learner-centred approach regarding teaching, learning and assessment (APA 1990; 1997). This framework suggests that learners should have strategic thinking approaches to be capable of problem solving and reflecting on their learning process through feedback and instruction. The tasks provided to the students should promote the intrinsic motivation to learn, should be based on real-

world situations and should enhance the learner effort. Assessment should include the phase of diagnostic, process and outcome, as an integral part of the learning process, through feedback and continuous assessment (APA 1997). A learner-centred assessment, or *authentic assessment* (Fook and Sidhu 2010; Mueller 2005) emerges from current movements that see no longer the traditional assessment as suitable to higher education purposes, since it focuses on factual knowledge. Thus, an assessment approach that fosters the students' learning and is centred on the learner is advocated (Webber and Tschepikow 2013). The current higher education context is in line with this approach as it requires that students develop skills other than technical ones, higher-order thinking (Gulikers, Bastiaens and Kirschner 2004) and autonomy and motivation to learn (Bailey and Colley 2015). If the students are given the opportunity to develop such skills in higher education they are more likely to have the necessary and appropriate tools to perform their roles when they enter the professional world. An extensive body of research on assessment suggests the influence of the nature of assessment methods (Scouller 1998; Flores, Veiga Simão, Barros and Pereira 2015; Pereira, Flores and Niklasson 2016) on students' performance (Brown and Knight 1994; Birenbaum and Feldman 1998; Sambell and McDowell 1998; Gibbs 1999; Light and Cox 2003; Biggs 2003; Boud and Falchicov 2007) and on their approaches to learning (Marton and Saljo 1997; Scouller 1997). Although the traditional methods of assessment (paper and pencil test/exam) are widely used in higher education contexts (Sambell, McDowell and Brown 1997; Scouller 1998; Pereira and Flores 2012; Lesage, Valcke and Sabbe 2013) a growing body of research on assessment shows that the use of these methods may not be suitable for higher education purposes (Wen and Tsai 2006; Price, Carroll, O'Donovan and Rust 2011; Goubeaud and Yan 2004; Duncan and Buskirk-Cohen 2011). In fact, the traditional methods used alone may limit the scope of assessment and learning process. Since the goal is to train future professionals and since these methods imply mostly an act of memorisation, certain aspects are not eligible to be assessed in this manner, for example, some skills that can not be demonstrated through paper and pen test. In addition, the traditional methods of assessment present some gaps concerning the learning process; they do not inform how learning is carried out (Flores et al. 2015), they do not promote the knowledge construction (Struyven et al. 2005) and they encourage surface approaches to learning (Scouller 1998). However, these methods are suitable to the traditional instruction process that is based on students as passive subjects that receive information and promote memorisation of basic knowledge rather than understanding (Dochy 2001).

The emergence of different methods and modes of assessment in higher education (Struyven et al. 2005; Sambell et al. 1997) followed an *assessment culture* rather than a *testing culture* (Birenbaum and Dochy 1996; Birenbaum 1997). They are characterised by the integration of the assessment, learning and teaching processes (Dochy 2001; Rust 2007). Practices such as project work or portfolio are identified (Webber 2012; Huba and Freed 2000) as learner-centred assessment methods that enable knowledge construction, skills' development such as autonomy, reflection and collaborative work (Sambell and McDowell 1998; Myers and Myers 2014), increasing feedback and students' motivation (Gasiewski, Eagan, Garcia, Hurtado and Chang 2012; Huba and Freed 2000). Feedback being one of the key features of a learner-centred approach is an essential component of the assessment process and contributes to the quality of the students' learning (Nicol and Macfarlane-Dick 2006; Price, Handley, Millar, and O'Donovan 2010). In addition, feedback is an opportunity for students to learn enabling the regulation of the learning process (Poulos and Mahony 2008; Pereira, Flores, Simão, and Barros 2016). However, for the feedback to be effective it is expected that it addresses the following questions: "Where I am going to?"; "How am I going" "Where to next?" (Hattie and Timperley, 2007:86). According to Hattie and Timperley (2007), these key questions are related to different feedback stages: feed up; feed back and feed forward. For instance, the summative test as a terminal assessment do not allow that students receive feedback in order to improve a future performance, hindering the feed forward stage to occur (Blair, Wyburn-Powell, Goodwin, and Shields 2014). Once again the weaknesses of traditional assessment methods are identified (e.g. assessment test) when used as the sole method to assess students' learning. Self- and peer assessment are also good examples which meet the purposes of learner-centred assessment. Self-assessment involves the student on the learning process (Orsmond and Merry 2013) and develops critical thinking skills (Fitzpatrick 2006). Peer assessment enables students' interaction (van den Berg, Admiraal, and Pilot 2006; Vickerman 2009) and produces formative feedback (Patton 2012). As opposed to traditional assessment, the learner-centred assessment promotes the active role of the students and enables them to know how learning occurred (Webber 2012; Flores et al. 2015). Furthermore, it is increasingly required that university prepares the students for real life, promoting the development of skills that are appropriate to the future professional context. Problem based learning, as an example of a learner-centred assessment allows the development of these skills in real-life contexts (Dochy, Segers, and Sluijsmans 1999; Boud 2000). Therefore, all these examples of assessment methods

and methodologies based on a learner-centred approach present features that enable a more formative and continuous assessment, as well as the regulation of learning process. In fact, learner-centred methods are preferred by students who demonstrate deep approaches to learning as they enable practical demonstration of the knowledge (Gijbels and Dochy 2006). This approach is also related to Shepard's (2000) principles of curriculum, psychological and assessment theory, consisting of promoting challenging tasks, high-order thinking, active learning, self-assessment activities and continuous and formative assessment.

Traditional assessment methods continue to be widely used in higher education contexts (Exeter, Ameratunga, Ratima, Morton, Dickson, Hsu and Jackson 2010; Duncan and Buskirk-Cohen 2011). However, there are few studies explaining the reasons for this to happen. For instance, this is explained in Myers and Myers' study (2014) which found that teachers who have larger classes and heavy workload are less likely to use learner-centred assessment methods.

If assessment is to be seen as a tool for learning promoting the engagement of the students in a continuous process that does not end only with a final assessment method (Dochy and McDowell 1997; Dochy 2001), thus the learner-centred approach is more suitable for these kinds of purposes. Issues such as the effectiveness and fairness of the assessment methods (Sambell et al. 1997; Carvalho 2013; Flores et al. 2015), their utility, validity and reliability as important criteria for the assessment process to be effective and fair (Sluijsmans and Struyven 2014) have been discussed in the literature. In general, students show positive attitudes towards assessment if they perceived assessment as fair (Segers, Dochy, and Cascallar 2003; Struyven et al. 2003) and if the assessment effectiveness is reflected on their learning and motivation (Gulikers, Bastiaens, Kirshner 2004). More recently, the study by Pereira, Niklasson and Flores (in press), based on a comparative perspective between Portuguese and Swedish undergraduate students, investigated the issues of fairness and effectiveness of assessment. The authors found that for both groups the assessment is fairer when teachers use at least two different assessment methods and when it is done individually even if it promotes teamwork. However, the main difference between Swedish and Portuguese students relates to the fairness of self-assessment that is ranked higher by Portuguese students and lower by their Swedish counterparts. Concerning the effectiveness of assessment, the authors found that both groups agree that assessment contributes to the deepening of learning, allowing students to develop technical and soft skills simultaneously. Also, both groups considered tests the less

effective method. However, more studies are needed on fairness and effectiveness of assessment methods in order to compare and contrast students' perceptions in regard to traditional and learner-centred methods in Higher Education (Pereira, Niklasson and Flores in press).

In this study, the learner-centred assessment versus traditional assessment dichotomy is used as the main goal is to understand students' perceptions regarding traditional assessment and learner-centred assessment based on previous studies (Pereira, Flores, Simão and Barros 2016; Flores, Veiga Simão, Barros and Pereira 2015). However, in existing literature on assessment similar denominations related to the concept of "learner-centred assessment" are used such as "alternative assessment" (Light and Cox 2003; Struyven et al. 2005). Furthermore, it is possible to find in extant literature other ways of distinguishing the nature of assessment methods, such as "mixed methods" (Flores et al. 2015) which combine aspects of traditional assessment and learner-centred assessment, instead of just place the assessment at the poles of this dichotomy.

Methods

This paper draws upon a wider piece of research within the context a PhD in Educational Sciences, with a grant from the Portuguese Foundation for Science and Technology - (SFRH/BD/76175/2011). It aims to contribute to understanding the assessment process in higher education by analysing data collected in different contexts and in different areas of knowledge. The study was carried out in five Portuguese Public Universities with year 3 undergraduates. The following questions are addressed in this paper:

- How do undergraduate students perceive assessment in terms of effectiveness and fairness in regard to traditional and learner-centred methods?
- How do undergraduate students perceive assessment through learner-centred methods and their impact on the quality of learning?
- How do undergraduate students perceive the moments and modes of assessment?
- What kinds of assessment methods are most used? Are there any differences in different programmes?
- What kinds of associations with assessment do undergraduate students identify? Are there any differences between programmes? Are there any differences between learner-centred methods and traditional methods?

- Are there any significant differences on students' perceptions taking into account the issue of gender?

Participants

In total, 624 undergraduates participated in this study (see table 1). The undergraduates were in their year 3 in different programmes in different fields of knowledge in five Portuguese Public Universities. Their age ranged between 20 and 40 years old. The mean age was 21.81 years old, with a median of 21. Out of the 624, 405 (65%) are female and 219 (35%) are male. In this study the four scientific fields of research identified at the Portuguese Foundation for Science and Technology were used: *Social Sciences and Humanities* (SSH), *Life and Health Sciences* (LHS), *Natural and Environmental Sciences* (NES) and *Sciences and Engineering* (SE). Different programmes were selected in each field: SSH: (Educational Sciences, Basic Education, Economics and Law); LHS: (Nursing, Medicine, Pharmacy); NES: (Biology) and SE: (Mechanical Engineering).

[Table 1 near here]

Data collection

Data were collected through a questionnaire which was administered in the classroom by the first author between October 2012 and June 2013 in five Portuguese Public Universities. A research protocol was sent to the Presidents of Faculties / Schools / Institutes and to the Presidents of the Pedagogical Council of each Faculty / School / Institute in order to ask for permission to conduct the study. Directors of the different programmes were contacted in order to obtain the email addresses of the university teachers who were teaching in the year 3 of each programme. The university teachers were contacted by email and asked to provide support for the administration of the questionnaire in their classroom. In other cases the university teachers were asked for supporting this study directly by the director of the programme or by the administrative

staff via email. Informed consent was obtained and confidentiality of the data was granted to all participants.

The design of the questionnaire was based on a previous study by Flores et al. (2015) as well on other studies on assessment (Hadji 1994; Sambell et al. 1997). The questionnaire was developed to look at the perceptions of the undergraduate students concerning several dimensions of assessment: effectiveness and fairness of assessment methods; modes and times of assessment; issues of learning and assessment; assessment methods most used and ideas associated with assessment.

The group of questions was organised by scales allowing a single response by the students.

In the scale 1, 2, 3 and 4 a five point Likert-scale was used, ranging from 1 = strongly disagree to 5 = strongly agree. In scale 5 a four point Likert-scale was used, ranging from 1 = not at all to 4 = very much and in scale 6 also a four point Likert-scale was used, ranging from 1 = not at all to 4 = always.

Scale 1 assessed the perceived effectiveness/fairness of learner-centred methods, compared to traditional methods. It includes 8 items (e.g. 'portfolios, projects and reflections allow a more effective assessment') and 5 are inverted to avoid acquiescence tendency. A higher result means that participants consider that learner-centred methods are seen as more effective and fairer than traditional ones. Reliability analysis through alpha Cronbach's coefficient reveals good indicators (.83).

Scale 2 assessed the perceptions of the impact of the assessment methods in the quality of learning. It includes 5 items (e.g. 'assessment is most effective when it encourages me to apply the knowledge in real contexts / situations) and has a coefficient alpha of .70. A higher result means the recognition of the positive impact of learner-centred assessment methods on student learning.

Scale 3 consists of 7 items (e.g. 'in general, assessment is performed over the semester', or 'in general I am asked to perform self-assessment') and assesses the way in which undergraduate students perceive the times and modes of assessment. Cronbach alpha of the scale is 0.74. A higher result means that participants consider that the assessment is usually carried out in several times and through several methods and modes, including peer assessment.

Scale 4 includes 3 items (e.g. 'usually, I forget much of the subject knowledge studied after the exam / test') and relates to assessment through tests and its perceived impact on

learning with a Cronbach's alpha of .66. A higher result means that students consider that being assessed only by tests or exams has a negative impact on the quality of study process and on their learning.

Scale 5 includes the ideas associated with assessment; 13 concepts were presented such as grades, verification of knowledge, reflection, learning, conflict, unfairness, help and anxiety. Students had to identify the extent to which they associated assessment with these ideas, using 1 = not at all to 4 = very much.

Scale 6 concerns the methods of assessment; 14 items were presented (e.g. 'tests, examinations' or 'portfolios', 'project work in teams'). A four-point Likert scale was used ranging from 1 = not at all to 4 = always, in order to identify the frequency of the methods in the different programmes. Data were analysed using IBM SPSS software 22.

Results

Concerning the ways in which undergraduate students perceive assessment in terms of effectiveness and fairness in relation to traditional and learner-centred methods, results reveal a mean of 3.27 and a standard deviation of .47, meaning that learner-centred methods are seen as more effective and fairer than tests or exams. The analysis of other quantitative data – statistic mode – enables to detail these results, showing that the majority of participants do not agree (mode 2 - disagree) with the statements that claim that tests are more effective, fairer and that lead to a better quality of the learning process or that imply more time for study. Thus, regarding effectiveness and fairness of assessment methods, results show that students devote more time to study when the assessment is performed through portfolios, projects or reflections than when they are assessed by tests or exams. Furthermore, portfolios, projects or reflections enable a more effective and fairer assessment process according to students' perceptions. Undergraduate students claim that tests or written examinations do not lead to a more effective and fairer assessment process. They do not feel more confident when they are assessed through tests or exams.

In relation to the perceived impact of the kinds of assessment on the quality of learning, participants strongly agree that the kinds of assessment have positive impact (mean- 4.20; SD – 0.46). Statistic mode – 4 – reveals that the majority of participants strongly agree that assessment is most effective when it encourages students to apply knowledge in real

contexts/situations (mode 5 – strongly agree), and when it allows the improvement of technical and scientific skills and simultaneously soft skills (mode 4 – agree). Assessment is also seen as effective when it contributes to deep learning and to the improvement of students' both technical and soft skills (mode 4 – agree). Assessment through learner-centred methods (e.g. portfolios, projects or reflections) is seen as contributing more to develop new learning (mode 4 – agree).

The analysis of the results of scale 3 (mean - 2.79; SD – 0.69) shows that participants do not recognise the existence of a diversity of modes, including peer assessment. Nevertheless, analysing the results in more detail, in the opinion of the majority of the students, assessment is carried out during the semester and it occurs every time they perform a task (mode 4 – agree). Concerning modes of assessment, the students consider the assessment process fairer when they perform peer and self-assessment. Nevertheless, they consider that, in general, they are not asked to perform self (mode 2 – disagree) - and peer assessment (mode 1- strongly disagree). The undergraduates also claim that the assessment methodology, in general, is not negotiated with them (mode 2- disagree).

The analysis of results of scale 4 reveal the negative impact of assessment based on tests upon the quality of learning (mean- 3.40; SD -.85). Participants consider that being assessed only by tests leads them to easily forget what they studied (mode 4- agree), to only study the contents that will be included in the exam (mode 4 – agree) and to limit their study to a short period of time before taking the test, instead of studying throughout the semester (mode 4 – agree).

In order to contrast the results of the two groups, defined by gender, independent-samples t-test procedure was carried out in relation to each scale. Levene test does not reject the null hypothesis, allowing us to assume the homogeneity of variances. The analysis of the differences in means of the two groups reveals significant differences in scales 2 and 3 (see table 2). These results point to the conclusion that female students see learner-centred assessment methods as having a more positive impact on the quality of learning than their male counterparts ($p < .05$). Female students also highlight more the importance of the existence of several times and sources of assessment in the learning process ($p < .01$) than male students. There are no differences between male and female concerning perceptions of fairness and effectiveness of learner-centred methods and the idea that an assessment process only through tests or exams has a negative impact on the quality of learning.

[table 2 near here]

To study what kinds of assessment methods are most used in higher education, students were asked to rate the frequency of the use of each type of method in their programme, using a scale from 1 = not at all to 4 = always. Table 3 identifies the frequency and percentage of each of the specified methods as well as the statistical mode.

[table 3 near here]

In the total sample, the most used assessment methods are written tests and oral presentations in group in classroom (statistical mode 4 – always used). The less used methods are portfolios in group (statistical mode 1 – never used).

To better explore the occurrence of different assessment methods in different programmes, the percentage of each of these methods in each of the 4 programmes was carried out (table 4) to identify, in each programme, the most used methods. In all of the programmes except Sciences and Humanities, the most used method is the written test. Oral presentations in group is also one of the most used assessment methods in all programmes and the most used method in Sciences and Humanities. Portfolio in group or individual portfolio are less used methods in all groups of students. The comparison of percentages among areas of knowledge reveal some other differences. In general, not surprisingly, individual written reflections, critical reviews of texts in group are methods used in Sciences and Humanities and less used in Sciences and Engineering.

[table 4 near here]

To study what kinds of associations with assessment undergraduate students make, 13 concepts were presented such as tests, grades, verification of knowledge, reflection, participation, learning, imposition, unfairness, help, success, fear and anxiety. Students had to identify the extent to which they associated assessment with each of these ideas, using a scale from 1=not at all to 4=very much.

In the total sample (N=624), the most recurring ideas associated with assessment (see table 8) are neutral (tests or exams and grades), with the mean 3.24 and 3.14, respectively, or positive such as learning (3.15) or verification of knowledge (3.19). In general, positive associations such as success (2.94) or reflection (2.89) have higher means than the negative ones such as unfairness (2.41), conflict (2.08) or imposition (2.41). Nevertheless, the negative associations such as anxiety (3.10) or fear (2.69) have also some of the higher means.

(table 5 near here]

To study if the students assessed with traditional methods or learner-centred methods make different associations with the idea of assessment itself, a t-test for independent samples was conducted. Significant statistical differences were found (see table 6) in the association with negative ideas (conflict, $p < .01$ and imposition, $p < .05$), but also with some positive ideas, such as reflection, participation or help ($p < .01$), with higher means in the case of students who are assessed through learner-centred methods (such as portfolios or project work), which corroborates earlier empirical work (Flores et al. 2015). The only association in which students assessed by traditional methods have higher means is the neutral association, namely tests or exams.

[table 6 near here]

When different programmes were compared in terms of the ideas that students associate with assessment, also significant differences were found in the association of assessment (see table 7 and 8) with the concepts of grades, verification of knowledge, reflection, fear and conflict ($p < 0.01$), participation and anxiety/stress ($p < 0.1$).

[table 7 near here]

[table 8 near here]

Post-hoc comparisons reveal that the means of students from the Social Sciences and Humanities in positive associations such as reflection are higher than the means of students of all the other programmes. Students from Social Sciences and Humanities have

also higher means in the verification of knowledge, grades and conflict than means of students from Sciences and Engineering. In regard to negative associations such as anxiety, fear or conflict, students from Life and Health Sciences have higher means than students from Sciences and Engineering, but they also have higher means in a positive association such as participation or neutral association such as grades.

Discussion

This paper presents findings from a broader piece of research focusing on Portuguese students' perceptions about assessment in five Portuguese public universities. It aims to contribute to the lack of research on the effectiveness and fairness of the non-traditional or learner-centred assessment methods (Pereira et al. 2016; Segers et al. 2008) on different contexts and programmes (Gilles, Detroz and Blais 2010), as well as on issues related to the quality of learning.

Taking into account the research questions of the present study, findings show that according to students' perceptions assessment is more effective and fairer when it is performed through learner-centred methods than by traditional methods. This finding is consistent with the study by Flores et al. (2015) which found that students perceive assessment as fairer and more effective when they are assessed by learner-centred methods than by traditional methods. Regarding their effectiveness, also earlier literature corroborate this finding, pointing to an effective pedagogy based on learner-centred assessment (Blumberg 2009; Zepke and Leach 2010) with benefits to the learning process (Hu and McCormick 2012) as well to getting higher scores (Kahl and Vennete 2010).

In relation to the perceived impact of the kinds of assessment on the quality of learning students recognise that traditional assessment (tests or exams) have a negative impact on the quality of the study process. This suggests that the respondents in this study see benefits of using assessment methods focused on the learner instead of using only the conventional test or exam. These findings are in line with earlier literature on assessment (Entwistle and Entwistle 1991; Tang 1992; Scouller and Prosser 1994; Sambell et al. 1997; Struyven et al. 2005; Gijbels and Dochy 2006) that associated with traditional

assessment surface approaches to learning and the assessment of low levels of cognitive processing.

Students felt less confident when they are assessed by tests. Assessment methods used by university teachers may have an impact on students' performance and attitudes towards learning and assessment. The Principles of Learner-centred approach (APA 1997) are in line with this finding, namely the principle of *Motivational and emotional influences on learning* which suggests that students' beliefs about themselves influence their motivation towards learning, so, if the students felt negative feelings such as insecurity or lack of confidence, this reduces their motivation and contributes to a poorer performance.

In general, students claim that they devote more time to study when they are assessed by learner-centred methods than traditional methods. These findings indicate that the assessment methods used are of paramount importance to the self-regulation process having an impact on the learning process. The students' effort and the time spent on the learning process depend on the ways in which students approach a given task. The study by Duncan and Buskirk-Coehen (2011) reveals that students devote more time to study when learner-centred assessment is performed. However, Asikainen, Parpala, Virtanen, and Lindblom-Ylännö (2013) found that the nature of the assessment does not have an impact on the students' approaches to learning and their motivation.

Findings related to assessment by tests and the perceived impact on learning reveal that when students perform a test forget the contents studied, spent less time to study and only study what will be included in the written test and nothing beyond that. Traditional assessment promotes memorisation and for that reason students forget the subjects shortly after performing the test as there is no integration of knowledge. The review by Struyven et al. (2005) also explains that traditional examinations are designed for the students only to learn the purpose of assessment rather than to maintain the knowledge acquired.

Findings also indicate that assessment is more effective when it allows the development of both technical and soft skills and when it relates to a real practice in a real context or situation having a positive impact on the quality of learning. If the given tasks are based on real problems and the future professional context is brought into the classroom students are more likely to be engaged in the learning process and to develop skills for real life. These findings are broadly in line with the study by Libman (2010) whose research on performance assessment found that students appreciate to learn in classroom through real-life data collected by them, encouraging and involving them in the learning process and experiencing real situations. Also, studies found that learner-centred assessment promotes

real-world experiences (Duncan and Buskirk-Cohen 2011), authentic assessment through an active learning which implies the integration of skills to complex problem solving (Goubeaud and Yan 2004) and encouraging knowledge construction (Tagg 2003).

The undergraduates also perceive assessment as more effective when it promotes deep learning. In addition, the development of new learning is associated by the students to a learner-centred assessment. Research on assessment resonates these findings. Brew, Riley, and Walta (2009) claim that practices of assessment centred on the learner promote deep learning. Segers and Dochy (2001) also found that students have positive perceptions regarding learner-centred assessment as it allows the development of critical thinking and deep learning.

In regard to the times and modes of assessment, the students consider that the assessment is carried out during the semester and every time they perform a task. This goes beyond a mere final assessment. There appears to be an assessment dimension throughout the process. Despite this it is not possible to say whether this assessment is effectively continuous or even summative or formative in nature. Findings also show that in general there is no negotiation of the assessment methodology between students and university teachers.

In general, the students state that self- and peer assessment are practices seldom used but they also recognise that these modes will lead to a fairer assessment. This may be explained by the nature of these modes of assessment, since they allow giving voice to the students, involving them in the process and take the role of judges in regard to themselves and their colleagues. However, other studies are at least in part contradictory to these findings. Carvalho (2013) and McConlogue (2012) found that students perceive peer-assessment as an unfair process.

In regard to the ideas related to assessment, students associated more neutral ideas with assessment such as tests or exams and grades. In fact, this result shows that when the term assessment arises there is an immediate association with tests and grades. In general, the positive ideas were more associated with assessment than negative ones, although some negative ideas such as anxiety and fear present higher means. On the one hand, results indicate that students who are assessed by learner-centred methods present higher means on negative ideas such as conflict and imposition than students who are assessed by traditional methods. This finding is in line with the study by Flores et al. (2015), in which conflict emerges as a key feature associated with assessment by students assessed through learner-centred methods. On the other hand, some positive ideas such as reflection and

participation or help were indicated as most associated to assessment by the students assessed by learner-centred methods than by those assessed by traditional methods. The students who are assessed by traditional methods associated neutral ideas such as the test or exam with assessment. A link may exist between the type of the method used and the association that students make to assessment. Recent research found that undergraduate students who perform learner-centred assessment are more likely to have positive attitudes and behaviours regarding assessment (Myers and Myers 2014). Also, Duncan and Buskirk-Cohen (2011) found that students who develop a project consider the assessment task more enjoyable allowing them to see the assessment as a process instead of a product.

This study found differences regarding ideas associated with assessment and areas of knowledge. The students enrolled in the programme of Social Sciences and Humanities associated more positive ideas to assessment than the students from the other programmes. However, neutral and negative ideas such as grades and conflict, respectively are more associated with assessment by students from Social Sciences and Humanities than by students from Sciences and Engineering.

It is possible to highlight that negative ideas such as anxiety or fear are more associated with assessment by the students who are doing Life and Health Sciences than students who are doing Sciences and Engineering. These differences may result from the assessment methods used in each area, which may influence the attitudes of the student towards assessment.

In regard to what kinds of assessment methods are most used in higher education students state that the written test and the oral presentations in group are the methods of assessment most used and the portfolio in group or individual are the methods less used. Differences emerged between areas of knowledge. The group work is more used in Natural and Environmental Sciences and less used in Sciences and Engineering. The individual written reflections and individual work is less used in the areas outlined above than in other areas. The individual reports are more used in Life and Health Sciences and less used in Natural and Environmental Sciences. The project in teams is more used in Social Sciences and Humanities and less used in Sciences and Engineering. Earlier studies also show that learner-centred assessment is more used in soft disciplines (art and humanities) than in hard disciplines (sciences) (Yankowitz and Hahs-Vaughn 2007; Webber 2012). Goubeaud and Yan (2004) show that short-answers and multiple choice tests are more used in sciences such as Physics and Chemistry than assessments that provide feedback,

such written work or peer evaluation. Goubeaud (2010) also found that teachers in Education used a great variety of assessment and instructional practices that are learner-centred than other faculty. Furthermore, studies show that university teachers in soft sciences are more centred on learning than university teachers in hard sciences. In hard sciences they want to assess mainly the factual knowledge and therefore use more traditional assessment such as the written test (Lindblom-Ylänne et al. 2006; Lueddeke 2003).

In general, the results from this study also reveal differences in terms of gender. It was possible to conclude that female students see learner-centred assessment as having a more positive impact on the quality of learning than their male counterparts. The study by Adams, Thomas, and King (2000) can be related to this finding. Regarding the role of assessment, the authors found that males consider that the purpose of assessment is to receive an assessment mark while females consider that the purpose of assessment to receive feedback on their performance.

Female students also highlight, more than their male counterparts, the importance of the existence of several times and sources of assessment in the learning process. There are no gender differences on the perceptions about the limitations of the assessment through tests or exams and about the effectiveness and fairness of the learner-centred methods.

Concluding reflections and recommendations

Findings of this research provide some implications. It was possible to say that in general students associate positive aspects to learner-centred assessment and negative aspects to traditional assessment. On the one hand, according to students' perceptions learner-centred assessment promotes a more effective and fairer assessment, has a positive impact on learning process and implies approaches to the real world in the classroom context. On the other hand, traditional assessment is seen as a less effective and fairer process, related to surface approaches to learning, insecurity to perform the tasks and not encouraging of self-regulated learning. This study points to the impact of the nature of assessment methods on the learning process. The issue raised in the study by Webber and Tschepikow (2013) is in line with this. Although the learner-centred assessment is claimed by experts as a suitable assessment approach to higher education contexts, it is not possible to know to what extent this approach is employed in the classroom.

This study shows that positive aspects are associated by students to learner-centred assessment in the detriment to traditional assessment. However, the traditional test is claimed as the most used method to assess students' learning. Although there is research on the teachers' conceptions about the use of traditional assessment practices and learner-centred practices (Pereira and Flores 2016; Myers and Myers 2014), it would be important to look at university teachers' conceptions and practices in order to understand the reasons why traditional methods, mainly the written tests, continue to be the most widely used methods in higher education. This may be related to their conceptions of assessment, teaching and learning in higher education. Furthermore, although the learner-centred methods are not the most used by university teachers and are considered fairer by students, the idea of unfairness is not related to the assessment process by them and this should be investigated further.

From the results of this study further research is needed regarding the effectiveness of learner-centred methods during the learning process in order to enable self-regulation and motivation. However, although the learner-centred methods are considered more effective and fairer, the ways in which these methods are used by university teachers inside and outside the classroom will influence the learning process. If students are assessed in a summative way, the process of validity, utility and reliability may be too narrow for the purposes of a learner-centred assessment. Other issues related to the nature of the learner-centred assessment were highlighted, in so far as, in some cases, it promotes collaborative work. Although new methods of assessment based on a learner-centred assessment have been used in higher education contexts, research on their effectiveness needs to be further investigated (Segers et al. 2008). Further research is also needed on specific features of the learner-centred assessment as well on the factors that influence the use of this kind of assessment (Myers and Myers 2014). It is important to understand why teachers of certain areas of knowledge use more often the learner-centred assessment. This fact may be related to the very nature of the knowledge area or to the teachers' resistance to use learner-centred assessment. However, the use of the learner-centred assessment may have implications in various domains that sometimes inhibit their use, and therefore, research on these issues would be important. Also, studies on the students' and university teachers perceptions about assessment in different levels (graduate and undergraduate) and in different areas of knowledge are needed.

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