Student assessment in Higher Education: a review of thesis carried out in Portuguese public universities

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Abstract

Student assessment has become, over the past years, an important and complex issue about higher education pedagogy. This paper aims to present a systematic review of empirical studies (Master and PhD thesis), carried out in Portuguese public universities, focused on the topic of student assessment in higher education, from the year 2010 to 2020. The research methodology followed a qualitative approach, using e PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) model to develop the systematic review. Findings show a trend of change in the assessment practices of students in higher education, whose direction points to an increase of formative assessment centered on students. A strong trend of innovation in assessment practices with the use of technologies also emerges from the studies.

Keywords: student assessment; higher education; formative assessment; systematic review; thesis in Portugal.

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Práticas de avaliação no ensino superior: uma revisão de estudos realizada em universidades públicas portuguesas

Resumo

A avaliação dos estudantes no ensino superior tornou-se, ao longo dos últimos anos, uma questão importante e complexa no contexto da pedagogia universitária. Este artigo tem como objetivo apresentar uma revisão sistemática de estudos empíricos (dissertações e teses), realizados em universidades públicas portuguesas, centrados na temática da avaliação no ensino superior, no período compreendido entre 2010 a 2020. A metodologia de investigação seguiu uma abordagem qualitativa, utilizando o modelo PRISMA (*Preferred Reporting Items for Systematic Reviews and Meta-Analyses*) para desenvolver a revisão sistemática. Os resultados do estudo revelam uma tendência a mudança nas práticas de avaliação no contexto do ensino superior, sendo de realçar uma maior ênfase em práticas de avaliação de natureza formativa, centrada nos alunos. Emerge, também, uma forte tendência para o uso de tecnologias no âmbito da inovação das práticas de avaliação.

Palavras-chave: avaliação dos alunos; ensino superior; avaliação formativa; revisão sistemática; teses em Portugal.

La evaluación de los estudiantes en la enseñanza superior: una revisión de las tesis realizadas en las universidades públicas portuguesas

Resumen

La evaluación de los estudiantes se ha convertido, en los últimos años, en un tema importante y complejo dentro de la pedagogía de la educación superior. Este artículo tiene como objetivo presentar una revisión sistemática de estudios empíricos (tesis de maestría y doctorado), realizados en universidades públicas portuguesas, centrados en el tema de la evaluación de estudiantes en la educación superior, desde el año 2010 hasta 2020. La metodología de investigación siguió un enfoque cualitativo, utilizando el modelo e PRISMA (*Preferred Reporting Items for Systematic Reviews and Meta-Analyses*) para desarrollar la revisión sistemática. Los hallazgos muestran una tendencia de cambio en las prácticas de evaluación de los estudiantes de educación superior, cuya dirección apunta a un aumento de la evaluación formativa centrada en los estudiantes. De los estudios también surge una fuerte tendencia de innovación en las prácticas de evaluación con el uso de tecnologías.

Palabras clave: evaluación de los estudiantes; educación superior; evaluación formativa; revisión sistemática; tesis en Portugal.

Introduction

Assessment is an integral part of teaching and learning processes. However, since the mid-nineteenth century, a view of assessment as a measurement oriented towards the accountability of schools and students has prevailed (AFONSO, 2009; AMANTE; OLIVEIRA, 2016). This view emphasizes the need to carry out standardized tests, placing assessment more at the service of the management of the school system than of the students' learning in the classroom context.

But, since the mid-sixties of the last century, with the foundational contributions of Scriven (SCRIVEN, 1967) and Bloom, Hastings and Madaus (1971) as well as (ALLAL; CARDINET; PERRENOUD, 1979), another view of assessment has been gaining strength, based above all on a conceptual and practical shift that consists of the following principle: assessment is an intrinsically pedagogical process. This change of view on assessment has several consequences, but the most important is that the central role of assessment is to promote student learning collecting information that allows regulation, step by step, of difficulties, problems and obstacles that arise, on the basis of a dialogical relationship between teacher and student (BLACK; WILIAM, 2009). The traditional separation between assessment and curriculum, between assessment and pedagogy, between assessment and learning, no longer should exist.

It is in this context that the founding concepts of the current theory of learning assessment emerge: formative assessment and summative assessment. In both cases, we are faced with different functions of learning assessment, but both aim at the same end and, therefore, should be seen as complementary.

In relation to summative assessment, the main characteristic pointed out is that, unlike formative assessment, it is intended to carry out a situational point or a balance of learning after the conclusion of an instructional unit or a training module. In this sense, summative evaluation appears related to the attribution of grades, although summative assessment does not necessarily mean grading. The summative assessment focuses on the products of learning and aims to verify how students achieve their learning goals. In higher education, there is a tendency to privilege summative assessment with the purpose of assigning grades, as demonstrated by several studies on assessment literacy and fairness (BAZVAND; RASOOLI, 2022; FLORES; BROWN; PEREIRA; COUTINHO; SANTOS; PINHEIRO, 2020; PEREIRA; FLORES; BARROS, 2017; PEREIRA; FLORES; NIKLASSON, 2016). In this regard, Chaleta and Entwistle (2011) reinforce that summative assessment, which is limited to punctual completion of

frequencies and exams, favors a more superficial approach to learning, centered on processes of memorization and mechanical reproduction, while a formative and continuous assessment with systematic feedback promotes critical thinking and deeper learning, more focused on understanding and comprehension.

Therefore, summative assessment, is mainly understood as a merely grading practice, focused on the acquisition of information without developing a deep understanding of the contents. In that sense, summative assessment sometimes develops superficial learning, where students memorize information without understanding the underlying concepts. Superficial learning is often associated to short-term retention for testing purposes, without active engagement with the material, critical thinking, and the ability to apply knowledge in new situations. This superficial approach to learning is "characterized by the fact that the contents are learned without a comprehensive and integrative purpose" (LOURENÇO; PAIVA, 2015, p. 51). However, argues "that learning [only] takes place when it is meaningful for the student and he/she is able to perceive and transform information proactively in a continuous process of acquiring knowledge and developing skills" (ALMEIDA, 2007 apud CALIATTO; MENDES; ALMEIDA, 2022, p. 110).

In turn, formative assessment is understood as the set of processes, of a pedagogical nature and integrated in the curriculum, which help students to learn and overcome their learning difficulties in a systematic and continuous way (ISMAIL; RAHUL; PATRA; REZVANI, 2022; FERNANDES, 2019). In this sense, the main focus of the formative assessment is the improvement of student learning, which must occur in a fluid and permanent way, in the daily life of the classroom, while learning is taking place. Formative assessment implies a collaborative and active approach of students and teachers, based on constructive dialogue to ensure the use of the information collected to make continuous adjustments (FERNANDES; ALVES; UEBE-MANSUR, 2021; MOSS; BROOKHART, 2019).

According to Black and Wiliam (2009), the first studies on formative assessment identify five main activities, taking into account their potential effectiveness and developed by teachers in the classroom (BLACK; HARRISON; LEE; MARSHALL; WILLIAM, 2003; BLACK; WILIAM, 2009): (BLACK; HARRISON; LEE; MARSHALL; WILLIAM, 2003) sharing success criteria with learners, classroom questioning, comment-only marking, peer- and self-assessment and formative use of summative tests. Towards the construction of a theory of formative assessment, Wiliam and Thompson (2007)

consider three fundamental formative assessment processes: establishing where the learners are in their learning, where they are going and what needs to be done to get them there. This vision of formative assessment is based on the importance given to the effectiveness of feedback in promoting learning by the literature (HATTIE; CLARKE, 2019; HATTIE; TIMPERLEY, 2007; KLUGER; DENISI, 1996; RAMAPRASAD, 1983; RUIZ-PRIMO; BROOKHART, 2018; SADLER, 1989).

Indeed, research over the years has collected a firm body of evidence that shows that formative assessment improves outcomes and promotes learning (BLACK; WILIAM, 1998; LANE *et al.*, 2019; ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, 2005) giving the important impact on the two most important players in the teaching and learning process: in relation to teachers, it improves the quality of teaching because it allows the gathering of information, step by step, to make the necessary adjustments to increase the effectiveness of the strategies used (FERNANDES; ARAÚJO; MIGUEL; ABELHA, 2023); in relation to students, it allows them to learn the contents, but also to learn how they learn, emphasizing autonomy, confidence and capacity (MOSS; BROOKHART, 2019). This is a vision that, more recently, has given rise to the concepts of "assessment for learning" and "assessment as learning", highlighting the idea of assessment as a process that should be based on the following characteristics (EARL; KATZ, 2006; EARL, 2003; ISHENGOMA, 2017; FERNANDES, 2019): operationalization with a tendency to be continuous; definition of assessment criteria and learning objectives; linkage with teaching and learning; emphasizing the distribution of high-quality feedback to all students; use of a variety of information gathering processes; and promotion of regulation and self-regulation dynamics, as well as self-assessment, co-assessment and peer assessment (LOUREIRO; GOMES, 2023).

Student assessment has become, over the past years, an important and complex issue about higher education pedagogy (BENAVIDES MORENO; REYES-ARAYA; GONZÁLEZ SOTO, 2022; FERNANDES; ARAÚJO; MIGUEL; ABELHA, 2023). The shift from teacher centered learning to student centered learning, driven by the implementation of the Bologna process (EUROPEAN COMMISSION, 1999; RAMOS; AFONSO; CRUCHINHO; DELGADO; RAMOS; SAPETA, 2015; VEIGA; AMARAL, 2009), can explain some of the changes in conceptions and practices regarding the topic of student assessment in European higher education institutions (FLORES, 2019; GAEBEL; ZHANG; BUNESCU; STOEBER, 2018; PEREIRA; FLORES; NIKLASSON, 2016).

As a matter of fact, the Bologna Declaration's pedagogical guidelines emphasize the importance of assessment as a tool for supporting student learning and development and for ensuring that students are meeting the learning outcomes of their program. Therefore, assessment should be aligned with learning outcomes and students should be assessed on their achievement of these outcomes-based, as well formative assessment should provide feedback to students on their progress towards learning outcomes and help them to identify areas for improvement. Moreover, as the European Commission (1999) states, assessment should emphasize the use of authentic assessment to support the development of skills and competencies that are relevant to the workplace and society, keeping in mind the need of transparency and fairness with clear criteria and standards that are communicated to students.

Several reports discuss the implications of the Bologna Process on higher education in Europe (EUROPEAN COMMISSION, 2018; GAEBEL; ZHANG; BUNESCU; STOEBER, 2018), including the impact on learning and teaching, quality assurance, mobility of students and staff, and the challenges and opportunities for the future. They provide comprehensive analyses of the progress made and the challenges addressed with the implementation of the Bologna Process (CURAJ; MATEI; PRICOPIE; SALMI; SCOTT, 2015). The bologna process also influenced higher education systems in other regions of the world, including the Mercosul countries of Argentina, Brazil, Paraguay, and Uruguay. These changes include, for example, changes in higher education policy and the structure of higher education systems, the adoption of credit-based systems and quality assurance frameworks, and the promotion of internationalization in higher education (DE WIT; DECA, 2020). Evidence of the challenges and opportunities for assessment practices has also been published in reference journals in the field (ARANDA; MOREIRA, 2013; BENAVIDES MORENO; REYES-ARAYA; GONZÁLEZ SOTO, 2022; BOLZAN; FERNANDES; ANTUNES, 2019; SANTOS; OLIVEIRA; RODRIGUES; ALMEIDA, 2022).

A report published by the European University Association (EVANS, 2020), developed under the topic of student assessment, refers that many institutions still rely on traditional examination methods in order to assess a learner's success in meeting the intended learning outcomes. Such summative, one-size-fits-all assessment method does not, however, ensure that every student has an equal opportunity to demonstrate attainment of learning outcomes. This kind of summative assessment also results in encouraging surface rather than deep learning (HOUGHTON, 2004;

STRUYVEN; DOCHY; JANSSENS, 2005; TANG, 1992). Research from Sambell, McDowell and Brown (1997) shows that students believe that traditional assessment methods negatively affect their learning process and, on the other hand, new and alternative assessment methods enable a better quality of learning, promoting understanding rather than memorization (SANTOS; OLIVEIRA; RODRIGUES; ALMEIDA, 2022). The use of student centered assessment practices (FERNANDES; ALVES; UEBE-MANSUR, 2021) is viewed positively by students who engage in active learning environments, such as those who are based on project-based learning (FERNANDES; FLORES; LIMA, 2012; LIMA; DINIS-CARVALHO; SOUSA; ALVES; MOREIRA; FERNANDES; MESQUITA, 2017; PEREIRA; BARRETO, 2016), self- and peer-assessment practices (LOUREIRO; GOMES, 2023; UEBE-MANSUR; ALVES, 2018), insofar as they stimulate deep learning and critical thinking (EARL; KATZ, 2006; SAMBELL; MCDOWELL; MONTGOMERY, 2012).

Assessment influences the process of learning and what a student interprets to be the important learning goals for a course (BROWN UNIVERSITY, 2020). Bearing this in mind, to design assessments that promote student learning, that is aligned with the course goals and that engages students with different learning styles, the use of feedback is one of the key issues. Providing sufficient, detailed and timely feedback that can be used by the student to improve future performance is an important guideline for teachers when assessing student learning (BROWN; RACE; SMITH, 1996; GIBBS; SIMPSON, 2005).

More recently, this topic was again under great discussion due to the COVID-19 pandemic situation, as one of the main concerns shared by higher education institutions all over the world was exactly on how to assess learning during the emergency remote learning period (ALMOSSA, 2021; BENHURA; VENGANAI; ZENGENI; MUNODAWAFA, 2022; GONZALEZ; RUBIA; HINCZ; COMAS-LOPEZ; SUBIRATS; FORT; SASCHA, 2020; TUAH; NAING, 2020). Findings from a systematic review of the literature on the impact of assessment in higher education during the pandemic (MONTENEGRO-RUEDA; ROSA; SÁNCHEZ-SERRANO; FERNÁNDEZ-CERERO, 2021) indicate that faculty and students faced numerous challenges in moving to virtual environments, such as the lack of training in online assessment techniques felt by faculty and the issues of student dishonesty and misconduct. To overcome these problems, continuous and formative assessment, avoiding assessment practices not focused solely on exams, appears as the best way to assess at a distance (CÁRDENAS CABELLO; LUNA NEMECIO, 2020; DÍEZ GUTIÉRREZ; GAJARDO ESPINOZA, 2020).

The topic of student assessment in higher education has not only gained interest amongst the scientific research community but has also been the focus of several research projects carried out within the development of Master and PhD theses. The studies have different aims and follow different research approaches, which can lead to different results and conclusions. An analysis of findings from thesis published over the last decade on the topic of student assessment in higher education can bring forward the current trends, challenges and future directions of assessment processes for effective student assessment in higher education institutions.

This paper aims to present a systematic review of empirical studies (Master and PhD thesis), carried out in Portuguese public universities, focused on the topic of student assessment in higher education, from the year 2010 to 2020. To achieve this goal, the following research questions were defined:

- What is the focus of thesis (Master and PhD), published from 2010 to 2020, on the topic of student assessment in higher education?
- What are the main issues that emerge from them?
- What do findings tell us about current trends, challenges and future directions of assessment practices for effective student learning?

Methodology

This an exploratory study with a qualitative approach, using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) model to develop the systematic review (SHAMSEER; MOHER; CLARKE; GHERSI; LIBERATI; PETTICREW; SHEKELLE, 2015). The PRISMA model was used as it provides a methodological framework to report systematic reviews and meta-analyses. With PRISMA, authors can transparently report why the review was done, what they did, and what they found. The flow diagram shown on Figure 1 (page 4) elucidates the steps carried out during the search phases in the databases.

As a first step (identification phase), the RCAPP portal (*Repositórios Científicos de Acesso Aberto de Portugal*, [S.d.]) was chosen as the main database to develop the systematic review and identify the existing thesis based on our research topic. The choice was made based on the scientific rigor, transparency, and inclusiveness that this source could provide the review. RCAAP portal aggregates scientific contents from Portuguese institutional repositories. We searched for thesis published from 2010 to 2020, with the keywords "student assessment" and "higher education". These

keywords were chosen because the purpose of this article was to find out what kinds of themes and conclusions emerge from recent research in this field. The results of this search were more than 1320 records and after a careful review of the titles and abstracts of the thesis selected, we concluded that we needed to narrow our search, as most of the theses identified were not related to our research topic. This output led to the decision of considering in our search only the thesis carried out in Portuguese public universities (13). Based on this fact, we decided to search directly in the repositorium of each one of the public universities included in our study. The search was done independently by the three researchers.

Search phases and eligibility criteria

The search and selection processes were carried out following four phases: identification, screening, suitability, and inclusion of thesis (see Figure 1). The search was developed in July 2021.The initial search (identification phase) identified a total of 48 records through the Universities repositories. The next stage (screening phase) involved a review by title and abstract of the 48 records, excluding 23 thesis that did not meet the inclusion criteria. The remaining 25 studies were reviewed in full text to ensure that the studies should be included in the review. Based on tis, 10 studies were eliminated (eligibility phase), which did not focus on the topic of student assessment in higher education in depth or were not published in open access at the University repositorium.

As seen in Figure 1, which presents the PRISMA flowchart, the following eligibility criteria were established to select the most relevant studies to develop our study. The inclusion criteria were: (1) Master and PhD thesis available in Portuguese public university repositories included in RCAPP (2) published between the years 2010 and 2020, (3) addressing the topic of student assessment in higher education. Studies were excluded if the thesis: (1) referred to a non-Portuguese context (2) referred to a level of education which was not higher education (e.g. basic and secondary education) (3) were not published in open access at the University repositorium and (4) did not focus on the topic of student assessment in higher education with in depth.

Figure 1 - Reporting Items for the Systematic Review (Adapted Prisma Statement)
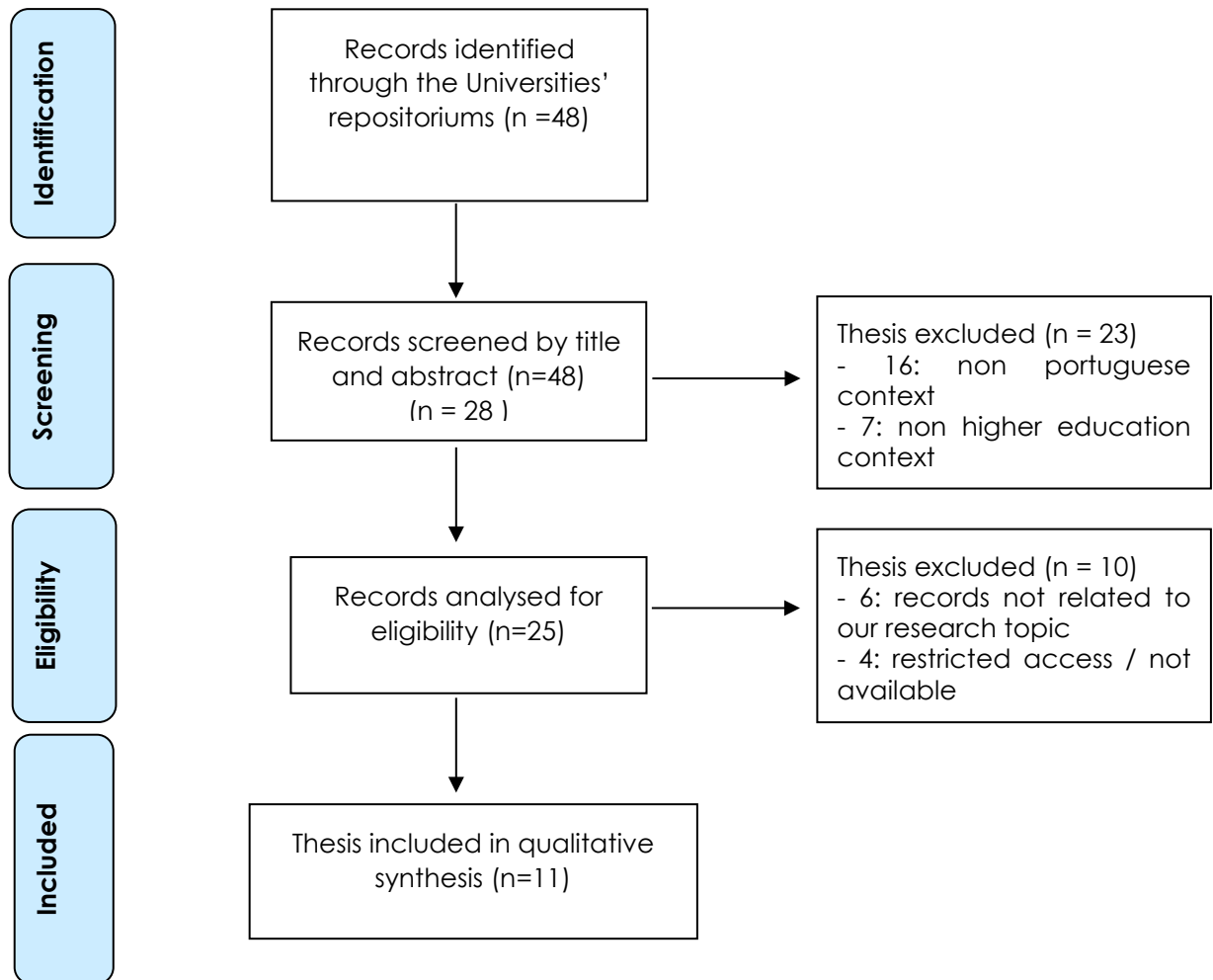
Source: The authors (2021).

Characteristic of studies included

The total number of studies included in our review were 11 thesis (DUARTE, 2010), (PEREIRA, 2011), (FERNANDES, 2011), (TORRES, 2012), (AZEVEDO, 2012), (MORAIS, 2013), (JESUS, 2014), (PEREIRA, 2016), (PEDROSA, 2017), (AZEVEDO, 2017), (ARAÚJO, 2020).

The years with more studies that entered our search were 2011, 2012 and 2017, with a total of two thesis published in each of these years under this topic. Regarding the type of document, the majority of the studies are PhD thesis (n=8), including only three Master thesis (ARAÚJO, 2020; DUARTE, 2010; PEREIRA, 2011). The majority of the studies were published in the University of Minho (FERNANDES, 2011; JESUS, 2014; MORAIS, 2013; PEREIRA, 2011, 2016).

A summary of the characteristics of the each of the studies included in the review is presented in table 1.

Table 1 - Summary of the characteristics of the studies included in the review

Code	Year	Author	Title	Document	University
E1	2010	Duarte	PT - Diferentes modalidades de avaliação e desempenho de alunos do ensino superior ENG – Different assessment practices and student achievement in higher education	Master	University of Coimbra
E2	2011	Pereira	PT - A avaliação das aprendizagens no ensino superior na perspectiva dos estudantes: um estudo exploratório ENG – Assessment of learning in higher education from students' perspective: an exploratory study.	Master	University of Minho
E3	2011	Fernandes	PT - Aprendizagem baseada em projectos no contexto do ensino superior: avaliação de um dispositivo pedagógico no ensino de engenharia ENG - Project-based Learning in Higher Education: A case study in Engineering Education.	PhD	University of Minho
E4	2012	Torres	PT - Modos de trabalho pedagógico e de avaliação da aprendizagem no ensino superior: um estudo na Universidade do Porto ENG – Pedagogical work modes and assessment of learning in higher education: a study in the University of Porto.	PhD	University of Porto
E5	2012	Azevedo	PT - Avaliação das aprendizagens no ensino superior: estudo de um sistema de avaliação nas unidades curriculares de projeto de simulação empresarial ENG – Assessment of learning in higher education: study of the assessment system of the curricular units of Business Simulation Project.	PhD	University of Aveiro
E6	2013	Morais	PT - O processo de Bolonha e a avaliação das aprendizagens: um estudo de práticas em mudança ENG – The Bologna process and the assessment of learning – a study of practices in change	PhD	University of Minho

Continua

E7	2014	Jesus	PT - Conceção, implementação e avaliação de uma metodologia blended-learning no ensino da farmacoterapia, baseada em casos clínicos ENG – Design, implementation and evaluation of a blended learning approach in pharmacotherapy education based in clinical cases	PhD	University of Minho
E8	2016	Pereira	ENG - Assessment in higher education and quality of learning: perceptions, practices and implications	PhD	University of Minho
E9	2017	Pedrosa	PT - Autorregulação e corregulação das aprendizagens no ensino superior: estratégias adotadas por alunos de programação de computadores ENG – Self regulation and coregulation of learning in higher education – strategies adopted by students from computer programming	PhD	University of Trás-os-Montes e Alto Douro
E10	2017	Azevedo	PT - Avaliação sumativa em matemática no Ensino Superior com recurso a questões de escolha-múltipla: uma abordagem utilizando a metodologia investigação-ação ENG – Summative assessment with multiple choice questions in Mathematics in higher education: an approach using action-research method	PhD	University of Beira Interior
E11	2020	Araújo	PT - A influência dos métodos de avaliação nos resultados dos alunos do ensino superior ENG – The influence of assessment methods on student performance in higher education	Master	University of Lisbon

PT – Portuguese language; ENG – English language
Source: The authors (2021).

These 11 studies were carefully analysed, based on a thematic content analysis (BARDIN, 2011), in order to identify the emerging categories and describe and interpret the results. The 11 thesis were analysed concerning the aims of the study, the focus, the methodology and their major findings. The results from the review of the thesis resulted in the identification of three main subtopics, which are the following: 1) assessment perspectives and practices; 2) impact of assessment on student learning; and 3) impact of pedagogic innovation in assessment practices.

Results

In this section, the results are presented according to the three main subtopics identified, namely: 1) assessment perspectives and practices; 2) impact of assessment on student learning; and 3) impact of pedagogic innovation in assessment practices.

Assessment perspectives and practices

The thesis included under this subtopic (n=4) focus on studies that are aimed to analyse assessment perspectives and practices, from different points of view, this is, including evidence collected from teachers (MORAIS, 2013; TORRES, 2012), from students (PEREIRA, 2011) or including both teachers and students perspectives (PEREIRA, 2016). Two studies belong to the same author (PEREIRA, 2011, 2016), corresponding to a Master and a PhD thesis.

The topic of the Bologna process is very present in the first three thesis (MORAIS, 2013; PEREIRA, 2011; TORRES, 2012), as the studies were developed in a period very close to the implementation of changes due to the demands of this restructure of higher education systems in Portuguese universities and in the European Area. One of the major implications of this process was the shift in the teaching and learning paradigm, from a teacher to a student-centered approach, which led to several and significant changes in the assessment process and practices.

The majority of the studies follow a qualitative research approach (MORAIS, 2013; TORRES, 2012), except for the studies of Pereira (2011, 2016) which were based on a quantitative research (PEREIRA, 2011) and a mixed methods approach (PEREIRA, 2016).

Findings form the studies indicate that students perceive assessment as learning and verification of knowledge (PEREIRA, 2011), conflict, fear and imposition are the aspects that students associate less with assessment (PEREIRA, 2011).

In regard to the perspectives about assessment practices, Torres (2012) reports that it was possible to verify some use of student centered teaching methods, with emphasis in active learning. Morais (2013) also confirms the effective introduction of innovative practices and greater involvement of students in the assessment processes, consistent with the Bologna model. Pereira (2011) concludes that the assessment practices most used are oral presentations in group, tests and group reports, according to students. Methods most used by the teachers are performed in group, and the less recurrent ones are done individually. However, in the study of Pereira

(2016), five years later, the major findings point out that the written test based on a summative assessment is the most used way to assess students. Besides this, both undergraduate students and university teachers perceived the learner-centred assessment more positive than the traditional assessment, one as it is fairer, more effective and more positive for the regulation of the learning process (PEREIRA, 2016). Table 2 presents a summary of the main results from thesis focused on assessment perspectives and practices.

Table 2 - Results from thesis focused on assessment perspectives and practices

Ref	Author / Year	Aim of the study	Focus	Methodology	Major Findings
(PEREIRA, D., 2011)	Pereira, 2011	to know higher education students' perspectives about assessment, particularly in regard to methods of assessment most used in higher education;	Assessment of student learning from students' perspectives	Quantitative (questionnaire with students)	The key aspects that students associate with assessment are learning and verification of knowledge. Oral presentations in group, tests and group reports are the most used according to students. Methods most used by the teachers are performed in group, and the less recurrent ones are done individually.
(TORRES, 2012)	Torres, 2012	to produce knowledge about the most common pedagogical work modes (PWM) and learning assessment (LA) in higher education teaching,	pedagogical work modes and student assessment in higher education, facing the challenge brought by Bologna Process	Qualitative (document analysis, exploratory interviews, questionnaires)	It is possible to verify some use of student centered teaching methods, with emphasis in the active learning. However, the continuity of a summative assessment is still evident, as despite the existence of formative assessment procedures, those allowing more emancipation are still not very usual.

Continua

<div align="right">Conclusão</div>

(MORAIS, 2013)	Morais, 2013	to understand the conceptions and practices of student assessment at a private institute of higher education in the health field area, in the context of change performed by the Bologna Process	changes in assessment practices performed by the Bologna Process	Qualitative (records of meetings of monitoring projects, interviews, records of teaching and self-reflection surveys of students and teachers)	It was possible to verify the change, embodied in the effective introduction of innovative practices considered by students in conceptions of assessment in the perceptions of teachers and students, and greater involvement of students in the processes, consistent with the Bologna model.
(PEREIRA, D., 2016)	Pereira, 2016	to understand how university teachers and undergraduate students perceive the assessment process in higher education to contribute to improving the quality of teaching, learning and assessment processes in higher education	Assessment perceptions, practices and implications in higher education and the quality of learning	Mixed method approach (face to face interviews and online open-ended questionnaires)	The written test based on a summative assessment is the most used method to assess students. The undergraduate students, as well as university teachers, perceived the learner-centred assessment more positive than the traditional assessment, one as it is fairer, more effective, and more positive for the regulation of the learning process.

Source: The authors (2021).

Impact of assessment on student learning

The thesis included in this subtopic (ARAÚJO, 2020; DUARTE, 2010) have similar purposes and focus on the impact of assessment on student learning. The study carried out by Duarte (2010) focuses on understanding the impact that changes in continuous assessment methodologies have had on student achievement and study (ARAÚJO, 2020) analyses the extent to which the assessment methods and instruments influence student's results in higher education as well as which methods that have the greatest impact on approval and quality of academic success. Both studies aim to understand the impact of assessment on student learning and the research methodology focused

both on quantitative and qualitative methods, such as document analysis and questionnaires.

In regard to the findings and conclusions from these studies concerning the impact of assessment on student learning, they are both related to the use of formative assessment practices (which include continuous assessment, feedback, group and project work, oral presentations, participation in class) or summative assessment practices (which include final exams, frequencies and mini tests). According to the results emerging from study (DUARTE, 2010), continuous assessment, by itself, does not improve students' performance, this only happens when a change is made to make it more diversified, adapted to students' needs, with opportunities for improvement and feedback. Study (ARAÚJO, 2020) highlights that group and individual work, oral presentations, projects and participation in class are the assessment methods and instruments that have a more positive influence on students' academic results. On the other hand, written exams, frequencies, and mini tests have a more negative influence on students' academic results. Table 3 presents a summary of the main results from thesis focused on the impact of assessment on student learning.

Table 3 - Results from thesis focused on the impact of assessment on student learning

Ref	Author / Year	Aim of the study	Focus	Methodology	Major Findings
(DUARTE, 2010)	Duarte, 2010	To understand the impact that changes in continuous assessment methodologies have had on student achievement	continuous assessment and student performance	Mixed method approach (document analysis and questionnaire with students)	Continuous assessment improves students' academic performance when accompanied by systematic feedback mechanisms. Students' preference for continuous assessment over summative assessment (final exam)

Conclusão

(ARAÚJO, 2020)	Araújo, 2020	To analyse the extent to which the assessment methods and instruments influence student's results in higher education as well as which methods have the greatest impact on approval and quality of academic success	assessment methods and instruments and students' results	Quantitative method approach (structural equations modelling)	The results showed that: 1) group and individual work, oral presentations, projects and participation in class have a more positive influence on students' results; 2) written exams, frequencies and mini tests have a more negative influence on students' results.

Source: The authors (2021).

Impact of pedagogic innovation in assessment practices

All the studies included in this subtopic refer to the Bologna process and the paradigm shift to student-centred learning and assessment. This is a very evident finding in all the studies analysed. Pedagogic innovation appears, in all the five studies mentioned, focused on the implementation of different approaches to teaching, learning and assessment. These include, for example, project or problem-based learning, blended learning and simulation, SimProgramming approach, e-assessment practices among other approaches and methods used. The focus of the studies is centred on the impact of pedagogic innovation in assessment practices and results.

The majority of the studies are developed in the context of a specific course or field area (e.g. Industrial Engineering and Management programme (FERNANDES, 2011); Accounting and Management/Administration programme (AZEVEDO, 2017; AZEVEDO, 2012); area of Pharmacy and Pharmaceutical Sciences (JESUS, 2014); Informatics Engineering and Information & Communication Technologies (PEDROSA, 2017).

The studies aim to analyse the changes and implications, for the participants involved (mostly teachers and students), of the new teaching and learning approaches introduced in a specific curricular unit of an undergraduate programme. The results of the studies raise several issues related to the assessment process and on the way the 'new' assessment system develops a different role of students and teachers in the teaching and learning process. The studies bring forward the relevance

of new learning environments and strategies for students, as well as the development of new skills for learning and online collaboration, which may be relevant in the context of a networked knowledge society, and lifelong learning (JESUS, 2014).

The results of the different studies are expected to be extended to other management and administration bodies of the respective university, serving as a basis for increasing and inspiring the use of diverse pedagogic methods, distance learning activities, and other active learning approaches which may have a positive impact on student learning and assessment.

Formative assessment, self and co-regulated learning strategies, effective feedback, competences development, student motivation, are the most common and significant features related to the impact of pedagogic innovation on assessment practices pointed out by the studies analysed. Table 4 presents a summary of the main results from thesis focused on the impact of pedagogic innovation on assessment practices.

Table 4 - Results from thesis focused on the impact of pedagogic innovation on assessment practices

Ref	Author / Year	Aim of the study	Focus	Methodology	Major Findings
(FERNANDES, 2011)	Fernandes, 2011	To evaluate the impact of Project-Led Education (PLE) on students' learning, and its contribution to the improvement of teaching and learning in Higher Education	Impact of a project-based learning approach on student learning and teacher work	Qualitative (questionnaires, interviews, focus groups, participant observation and narratives)	Assessment is a big challenge for teachers who engage in PBL approaches and active learning. Formative assessment practices, monitoring student learning and providing feedback has strong implications for students' and teachers' workload. Both students and teachers identify positive results (student motivation, engagement, teamwork, interdisciplinarity) of their participation in the PBL experience.

Continua

(AZEVEDO, L., 2012)	Azevedo, 2012	To study the potential and constraints of the learning assessment system used in the curricular units of Business Simulation Project I and II	Impact of Business Simulation Project on student academic success and development of competences	Mixed methods (questionnaires and interviews to students, teachers and coordinators)	This assessment system allows students to self-regulate their learning process through continuous feedback. The individual and group work are presented as major factors in the development of generic (relational) and behavioral competences.
(JESUS, 2014)	Jesus, 2014	To determine the project's impact on student's performance, motivation and learning strategies level	Impact of a blended learning approach in pharmacotherapy education based in clinical cases	Quantitative	In terms of the final grade, the students on the blended learning approach, showed significant improvements. The results do not demonstrate significant changes in terms of motivation and learning strategies, but positive variations in intrinsic goals orientation, organization, time management and effort regulation have been reported.
(PEDROSA, 2017)	Pedrosa, 2017	To analyse self regulation and coregulation strategies used by students from computer programming (SimProgramming teaching approach)	Impact of SimProgramming approach in self regulation and coregulation of learning strategies adopted by students from computer programming	Qualitative (case study method, semi-structured interviews, document analysis)	Formative assessment has influenced the learning performance, and students have several ways of assessing their own work and the work of their colleagues. The results support the notion that the SimProgramming approach helps improve students' self-regulated learning strategies and co-regulated learning strategies.

Continua

Conclusão

| (AZEVEDO, J. M., 2017) | Azevedo, 2017 | To see how e-assessment can affect the teaching and learning processes; define the best practices for the development of multiple choice questions (QEM) in mathematics; and find proper ways of analyzing QEM in order to foster an assessment as fair as possible | Impact of the implementation of an e–assessment strategy using tests with multiple–choice questions | Action research methodology (interviews to teachers and questionnaires to students) | Students - improvement in academic achievement of students, increase in their class attendance and a better appreciation of regular study. Teachers – teamwork and more attention on how they teach. e–assessment strategy allowed an adequate response to the need of adequately implementing continuous summative assessment with many students. |

Source: The authors (2021).

Discussion and conclusions

Despite its exploratory nature, our study has several limitations that must be taken into account when analysing the conclusions we present. First, although the sample is exhaustive for the period considered, it is not intended to be representative of European higher education institutions. In this sense, it would be important, in future studies, to consider the inclusion of other countries carrying out, for instance, multi-case studies. Second, due to its qualitative approach, our study does not support statistical generalizations, although it is in line with the literature on the assessment of learning in higher education institutions.

Nevertheless, the results obtained show a trend of change in the assessment practices of students in higher education, whose direction points to an increase of formative assessment centered on students. However, it appears that this trend is more driven, in the case of Portugal, over the last ten years, more by extrinsic factors (especially the Bologna Process and the so-called "digital revolution") than by intrinsic factors, mainly of a pedagogical nature. With regard to the Bologna Process (EUROPEAN COMMISSION, 1999), introduced in Portugal through Decree-Law 74/2006, of March 24th, a passage from teaching based on the transmission of knowledge to teaching based on the development of competences, for which it is natural that the

questions of student assessment have assumed increasing importance in higher education pedagogy.

Studies show that the increase of formative assessment has been translated mainly into an attempt to diversify the information gathering processes, avoiding the traditional predominance of tests, which constitutes a relatively limited change in formative assessment practices, according to the implications that the literature suggests. In this regard, the technological innovation of information gathering processes (oral presentations in group, tests and group reports) has assumed special importance, which have mainly reinforced the importance of feedback, student participation and self or co-regulation, which stems from the importance given to group work. Moreover, it has been through technological innovation that it is possible to identify changes in assessment practices, favouring formative assessment seen as a process eminently centered on supporting students' learning.

In any case, studies that consider the perceptions of students in relation to assessment show, nevertheless, a prevalence of assessment conceptions and practices centered mainly on merely classifying processes, within a logic that is more summative than formative. Which means a separation of curriculum and assessment, relatively poor and retroactive feedback, valuing the test or exam as a privileged or even unique way of collecting information. Despite the persistence of summative practices using tests and exams, the studies considered in our sample signal a positive perception of formative assessment among teachers and students.

Studies carried out in Portugal between 2010-2020 highlight the question of the effectiveness and impact of formative assessment on student learning. In this respect, the results are in line with what the literature has pointed out, namely a greater effectiveness of formative assessment in terms of results and equity (BLACK; WILIAM, 1998; LANE *et al.*, 2019; ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, 2005). The main conclusion is that formative assessment, as opposed to summative assessment, has a positive impact on student learning, especially when accompanied by continuous and systematic feedback, as has been emphasized in the literature (HATTIE; CLARKE, 2019; HATTIE; TIMPERLEY, 2007; KLUGER; DENISI, 1996; RAMAPRASAD, 1983; RUIZ-PRIMO; BROOKHART, 2018; SADLER, 1989). However, if we triangulate with other studies, it should be noted, nevertheless, that feedback practices are still infrequent and relatively incipient. On the other hand, the studies

also emphasize the effectiveness of resorting to the diversity of information collection processes, namely group work.

Finally, the strong trend of innovation in assessment practices with the use of technologies, the so-called e-assessment, should be highlighted. This is a significant trend in studies carried out in Portugal in recent data, and it should be stressed that technological innovation in the field of assessment appears to be strongly aligned with the perspectives of the literature regarding the assessment of learning: the importance of feedback, increased self-assessment and, above all, peer assessment. In this case, e-assessment appears to be closely associated with the promotion of learning autonomy through technological mediation, corresponding to learning more centered on the student than on the teacher, as determined by the Bologna Process.

From the review of selected studies, the main implications for the assessment of learning in higher education are as follows:

- emphasize effective feedback, as it is considered the most important and effective strategy in formative assessment;

- continue the diversification of information gathering processes, which has been enhanced by the use of technology;

- to frame the change in the field of learning assessment within a broader scope of pedagogy itself, in the development of competences and the centrality of students.

With regard to research, it will be very important to study feedback practices and their effectiveness, since it is recognized as the most important component of formative assessment, particularly with regard to its effectiveness. Another aspect that should be studied, following the studies carried out, is the impact of digitalization on assessment practices, namely at a distance, which also results from the problems identified during the Covid-19 pandemic. Finally, the assessment of learning needs to be investigated in a broader context of transformation of higher education pedagogy, in a more comprehensive and systemic way, in order to understand its integration in the *curriculum* and pedagogy.

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