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## Assessment literacy in the higher education context: A systematic review

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**Abstract:** The present article reports a systematic review of the assessment literacy concept in the higher education field. The purpose of the review is to provide an updated overview of theory and research on this topic. Despite the recent changes in culture and practice in the higher education field, assessment literacy is frequently defined as a concept in its infancy. While the K-12 education and teacher training sectors have produced a consistent amount of research, assessment literacy seems to be under-conceptualized in the higher education sector. The imprecise conceptualization, ambiguous language, circularity, and lack of definitions have considerable implications for educational research and faculty members' assessment practices. Despite the limitations of a systematic review study, this article provides a critical conceptual framework that can inform further research on assessment literacy in higher education.

**Keywords:** *assessment literacy, higher education, quality education, pedagogical innovation*

## Introduction

Assessment is a core professional request across the higher education systems. It has a strategic role in teaching and learning processes. Closely linked to the enhancement of student learning outcomes (Evans, 2013; Eubanks, 2019; Havnes & Prøitz 2016; Maki, 2017), assessment represents a complex responsibility for faculty members because it is related to the collection of robust, valid, and meaningful evidence of learning. Policy-driven reforms (such as the Bologna Process in the European Union area or the growing attention to universities' external accountability in the U.S.) have heavily impacted higher education institutions by putting remarkable pressure on faculty, staff and administrators to enact effective policies and processes to ensure the quality of their educational programs.

The pressing need for accountability in higher education (Caspersen & Smeby, 2018; Liu et al., 2012; Scholl & Olsen, 2014), the movement toward outcome-based education (Adam, 2004; Coates, 2016; 2014; Singh, & Ramya, 2011), and changes in quality assurance and accreditation (Williams, 2016), have led to a renewed emphasis on assessment competence in the higher education field (Biggs & Tang, 2011; Dann, 2014; Eubanks, 2019; Wolf et al., 2015). In this perspective, how educators effectively design the assessment process and use data in the assessment process represents a '*sine qua non*' condition for their instructional practice, as well as for their professionalism. Thus, the need for assessment literacy is widely spread.

The literature on the assessment of student learning outcomes in higher education is extensive in terms of principles and practice. However, despite the policy recognition of the importance of

assessment literate educators, the discourses on assessment literacy have been limited to practical aspects (e.g., how to ensure sound assessment of student learning or how to link student learning assessment practice to quality improvement requirements). Few definitions of assessment literacy can be found in the contemporary literature on higher education assessment. While some studies (Medland, 2019; Price et al., 2012) have tried to identify the core constituent elements of assessment literacy, other studies have pointed out the nuanced and multifaceted nature of this concept (Deeley & Bovill, 2017; Jackel et al., 2017). More specifically, these studies emphasize that assessment literacy, linked to policy requirements and institutional processes (e.g., quality assurance), changes its characteristics based on the users (e.g., students, university staff, and administrators).

No systematic analysis has been performed on evidence gathered from studies on assessment literacy. Therefore, the present article aims to fill this gap by reporting a systematic review of assessment literacy definitions. Three specific research questions guide our review:

1. How is assessment literacy defined in the higher education field?
2. What are the main components of assessment literacy in this context?
3. To what extent are the definitions of assessment literacy in K-12 and higher education aligned?

This article, in summary, intends to offer a comprehensive framework to carefully analyze issues, criticalities, and opportunities for the assessment literacy of academic staff. At the same time, the article addresses new research paths in the higher education assessment domain.

## Assessment in higher education: The review study rationale

Assessment is a leading force in education. Radical transformations of higher education systems around the world (e.g., the widespread of the new public management paradigm, the liberalization and privatization of higher education in many countries, the reduction of expenditure on higher education, and the introduction of competitive funding to maximize the return on investment on education) over the last 20 years have deeply impacted assessment (Broucker et al., 2018; Dorothea & Pruiskens, 2015; Pricopie et al., 2015). New educational policies and practices have contributed to the development of a different kind of assessment in universities. The main changes relate to:

- The students' role. The active participation and engagement of students are crucial in the assessment process (Carless & Boud, 2018; Henderson et al., 2019; Jungblut et al., 2015).
- The recognition of self-assessment as a key strategy to foster the development of self-regulated learners (Biggs & Tang, 2011; Boud, 2006; Sambell et al., 2013; Zeng et al., 2018).
- The widespread use of alternative assessment methods and strategies (e.g., portfolio, projects, self and peer-assessment, simulation, collaborative assessment) as an effective way to assess student learning outcomes (Dawson, 2017; Maki, 2017; Sadler, 2017; Yorke, 2003).
- The emphasis on feedback as a quality assurance mechanism (Evans, 2013; Sadler, 2017; Singer-Freeman & Robinson, 2020).

At the same time, the strong influence of outcomes-based education (Adam, 2004; Eubanks, 2019; Maassen & Stensaker, 2019; Zlatkin-Troitschanskaia, Pant, & Coates, 2016) and the implementation of policy-driven outcome reforms (i.e., the comprehensive and transformative nature of large-scale policies, such as the Bologna Process, and the resulting growing attention to universities' external

accountability, to the quality and efficiency of the resources used) have led higher education institutions to reconsider assessment practice to improve educational quality, determine institutional effectiveness, and provide awareness raising information to different stakeholders (faculty members, students, policy-makers, families, etc.). As a result, faculty members and students are dealing with a range of different assessment practices responsive to students' learning needs and aligned with the quality assurance process (Biggs & Tang, 2011; Maassen & Stensaker, 2019; Maki, 2017). However, despite the recognition of the importance of assessment, some research studies have pointed out the lack of modernization in higher education (Coates, 2016; Kuh, Ikenberry, Jankowski, Cain, Hutchings, & Kinzie, 2015) and underscored that assessment has not materially changed for a long time (Havnes & Prøitz, 2016; Hadjanastasis, 2017). Furthermore, evidence from the ground shows that assessment core practices remain problematic, both at the theoretical and methodological level (e.g., using educational research to improve assessment and feedback practice): an aspect that emerged during the pandemic period.

The unprecedented COVID-19 pandemic continues to have a relevant impact on higher education. Europe and the United States have diversely experienced the pandemic, with different degrees of severity and different solutions (e.g., remote instruction, blended approach, etc.). Educational assessment represented one of the most evident criticalities. Assessment has always represented a challenging task in faculty members' professional practice (Jankowski & Marshall, 2017; Medland, 2019; Sadler, 2017). However, the difficulties related to the implementation of remote instructional activities have made more evident how educators struggle to navigate old and new circumstances in their assessment practice (Carless et al., 2017; Evans et al., 2018; Sambell et al., 2013). As the pandemic offers an opportunity to reflect on new problems and to review old practices and educational policies, this article will provide an updated overview of theory and research on assessment literacy in higher education.

## The review study

The next sections describe the method used to conduct the review and present the main results corresponding to the research questions, which consider:

- Dimensions and components of assessment literacy.
- Variations in definitions in the K-12 and higher education contexts.

## The review study method

The terms "assessment literacy" and "assessment competence" are often used synonymously in the literature and therefore appeared in a wide range of studies. The search, run in December 2020, followed the approach of Petticrew and Roberts (2006) used in systematic reviews in social studies. This method encompasses multiple steps: posing research questions, identifying the search terms and strategy (i.e., selection of databases), conducting the literature search, formulating inclusion criteria, selecting relevant studies, and, finally, extracting data.

Key terms (i.e., assessment literacy, assessment competence, K-12 education, higher education) were searched within ERIC and PsychINFO databases. The past decade has seen increased attention on assessment practice: higher education systems transformations around the world, as reported above, indeed, have framed a new scenario for assessment (Broucker, De Wit, & Verhoeven, 2018; Dorothea & Pruisken, 2015; Pricopie, Scott, Salmi, & Curaj, 2015). Therefore, the search was limited to the last 10 years' publications.

We used the following criteria for the definition of assessment literacy in the literature scan:

- The definition was in a scientific, peer-reviewed English-language journal.
- The definition included the main elements/components of the assessment literacy.
- The definition referred to either K-12 or higher education. With the growing interest in assessment practice, the concept of assessment literacy has been progressively framed. However, while in the K-12 education sector, assessment literacy has a long history (in terms of conceptualizations, models, and research practice), in the higher education sector, it seems underdeveloped. A comparison of assessment literacy definitions in these two sectors matters to detect prominent differences, as well as common aspects, main criticalities, and issues. Moreover, the contrastive analysis of assessment literacy will be useful to foster the debate within the university context.

Following these criteria, two main clusters of assessment literacy definitions were made: the first for K-12 education (1,236 articles) and the second for higher education (944 articles).

Based on the relatively broad inclusion criteria, the assessment literacy definitions in this review tended to be redundant and overlap because of their similarity. Given that the review aimed to provide a better understanding of assessment literacy, only the most meaningful and representative definitions have been examined. More specifically, the selected definitions of assessment literacy are characterized as follows:

- A clear explanation of the concept of assessment literacy.
- Identification of the core consistent elements of assessment literacy.
- Reference to the K-12 or higher education context.

### Assessment literacy definitions analysis

In this review, assessment literacy definitions are reported and analyzed separately for K-12 and higher education contexts. K-12 teacher assessment literacy, generally, corresponds to a set of knowledge and skills required to ensure appropriate design, selection, interpretation, and use of assessment for instructional practice. More specifically, Popham (2017; 2009) has defined assessment literacy as the teacher's understanding of the principles and main concepts of a valid and reliable assessment. Thus, an assessment literate teacher can:

- Identify teaching priorities.
- Define and implement effective instructional strategies.
- Identify strengths and weaknesses in student learning.
- Decide how to adjust and align instructional strategies.

In the K-12 context, assessment literacy conceptualizations initially focused on practical aspects of assessment (Popham, 2009; Shepard, 2000) and moved progressively towards more complex definitions (Table 1).

Stiggins (1999) and Popham (2017; 2009) identify assessment literacy, over time, becoming a fundamental component of teacher professionalism. Recognition of teacher professionalism as a key component of national educational systems has, therefore, triggered a distinct interest in assessment literacy and teacher professional development. From a socio-cultural perspective, educational research suggests a more nuanced working definition of assessment literacy that is linked to the social identity of the teachers as assessors, as well as to

their assessment dispositions, assumptions, and conceptions (Chan & Luo, 2020; DeLuca & Klinger, 2010; Looney et al., 2017; Willis et al., 2013; Xu & Brown, 2016). Moreover, recent attempts to re-conceptualize teacher assessment literacy have addressed the importance of data use and decision-making (Cowie & Cooper, 2017; Mandinach & Jimerson, 2016; Schildkamp, 2019). However, this recognition, especially in some school systems (e.g., in the U.S., the Netherlands, and Australia) has provoked an increased overlapping of the assessment literacy concept with data literacy and statistical literacy. Therefore, it is still difficult to clearly define assessment literacy in K-12 education, even though some components have been definitively identified and acknowledged as fundamental:

- The educational assessment rudiments.
- The ability to identify and differentiate the assessment purposes.
- The ability to analyze data to adapt teaching strategies and improve student learning (DeLuca et al., 2016; DeLuca & Johnson, 2017; Smith et al., 2013).

**Table 1***Definitions of Assessment Literacy within K-12 Context: A Selection*

Reference	Definition
DeLuca & Klinger (2010)	The understanding and appropriate use of assessment practices along with the knowledge of the theoretical and philosophical underpinnings in the measurement of students' learning.
Willis et al. (2013)	A dynamic, context-dependent social practice that involves teachers articulating and negotiating classroom and cultural knowledge with one another and with learners in the initiation, development, and practice of assessment to achieve the learning goals of students.
Xu & Brown (2016)	<p>Teacher assessment literacy consists of three levels of mastery.</p> <p>First is a basic mastery of educational assessment knowledge, which includes the fundamental principles of the 'what', 'why', and 'how,' without which teachers cannot engage with assessment at a deeper level.</p> <p>Second is an internalized set of understanding and skills of the interconnectedness of assessment, teaching, and learning. Unlike the "should-do" knowledge indicated by the first level, this is a more personal perception of how assessment should be, formed among the tensions between theoretical knowledge and teachers' conceptions of assessment.</p> <p>The third is a self-directed awareness of assessment processes and one's own identity as an assessor. Such awareness allows teachers to accommodate and translate assessment policies and principles into their classroom realities and institutional contexts while driving them to reflect on their assessment practices and gain new insights.</p>
Cowie & Cooper (2016)	A subset of data literacy which requires knowledge and use of a broader range of data and factors than is typically the focus of assessment.

Looney et al. (2017)	[Teachers] may know what is deemed effective practice, but not be confident in their enactment of such practice. They may know, and have confidence, but not believe that assessment processes are effective. Most importantly, based on their prior experiences and their context, they may consider that some assessment processes should not be a part of their role as teachers and in interactions with students.
Herppich et al. (2018)	First, a competent teacher should be able to master a wide range of assessment situations. In line with other models of teachers' competencies [...], we assume that inter-individual differences in performance across situations can largely be explained by differences in cognitive disposition.

The over-production of assessment literacy definitions in K-12 education contrasts with the paucity of definitions in higher education. Following Price et al. (2012), the concept of assessment literacy is in its infancy. For these authors, assessment literacy encompasses:

- “an appreciation of assessment’s relationship to learning.
- a conceptual understanding of assessment [...].
- understanding of the nature, meaning, and level of assessment criteria and standards.
- skills in self-and peer assessment.
- familiarity with technical approaches to assessment [...].
- possession of the intellectual activity to select and apply appropriate approaches and techniques to assessed tasks” (pp. 10-11).

No studies, over the years, have substantially reviewed this first definition (RQ1). In the very few definitions reported in journal articles selected for this review, the components of assessment literacy are not sufficiently differentiated (RQ2). The more practical assessment dimensions, such as those related to the accuracy and soundness of assessment practice, conflate with the more social and relational dimensions, such as dialogue, empowerment, or student engagement. While Jackel et al. (2017) define assessment literacy as a fundamental concept and advocate it to understand the language of assessment and the assessment processes, higher education discourses seem to subsume the concept of assessment literacy. A vague conceptualization (Forsyth et al., 2015; Mendland, 2019) and, sometimes, the use of circular language are the main traits of these definitions, which lack an explanation of what assessment literacy for higher education is, why it is needed, and how it influences assessment practices (Table 2).

Compared to K-12 assessment literacy definitions, the constituent elements of assessment literacy in higher education appear like a mix of different aspects (from conceptual knowledge of educational assessment to practical skills; from social abilities to quality assurance and accreditation technicalities) with no coherence or cohesion (RQ2).

**Table 2***Definitions of assessment literacy within higher education context: A selection*

Reference	Definition
Deeley & Bovill (2017)	Conversant with not only academic language in the subject discipline...but also the language of assessment'
Medland (2019)	<p>Six constituent elements should ideally characterize the concept of assessment literacy:</p> <ol style="list-style-type: none"> <li>1. Community: this comprises the program stakeholders and focuses on whether local assessment practice, standards, and criteria are shared: i.e., the 'collective consciousness.</li> <li>2. Dialogue: the emphasis here is on the interaction between staff and students, between students and other students, etc., and the role of feedback in developing assessment literacy.</li> <li>3. Knowledge and Understanding: these involve an understanding of the basic principles of assessment and feedback, familiarity with the pertinent assessment and feedback skills, and an ability to apply these appropriately to practice</li> <li>4. Program-Wide Approach: a broad overview of an entire program is required for this subtopic to evaluate how well aligned the assessment is with the overall curriculum, and to consider the slowly learned literacies and complexity of the learning process.</li> <li>5. Self-Regulation: this focuses primarily on the ability to make judgments about the quality of work without access to others' perspectives through post-assessment feedback, for instance.</li> <li>6. Standards: these represent the standards underpinning professional judgment (i.e., institutional, disciplinary, and national standards/benchmarks) and focus on the development of shared understanding.</li> </ol>

Over the last years, higher education institutions have provided academic staff with different opportunities to develop assessment and feedback practices. However, assessment literacy still represents an area in need of improvement. The recent interest in the concept of feedback literacy led to carefully considering students' roles and strategies to ensure their active participation and their engagement in the learning process. If feedback literacy is considered linked to the broad concept of assessment literacy, the nature of the relationship between the two remains blurred. Several studies have tried to understand what feedback literacy is and how feedback practice can foster student learning (Carless & Bound, 2018; Chong, 2021; Tai Ajjawi et al., 2018). However, the debate is unbalanced: it is difficult to understand how faculty, staff, and students can develop feedback literacy if they are not assessment literate. Moreover, few empirical studies have been realized on assessment



literacy in higher education, and fewer studies have compared or contrasted the impacts of educational policies on university staff assessment practices.

Given the widespread acceptance of the role of assessment in the quality assurance process, it is not surprising that policymakers on the international scale have turned to regulatory standards as a lever for educational improvement through enhanced assessment literacy. In the UK, for example, the Quality Code for Higher Education Institutions states that institutions are expected to have “sufficient appropriately qualified and skilled staff to deliver a high-quality academic experience. In practice, this means that providers ensure that recruitment, progression, and development of staff involved in teaching and assessment includes consideration of their knowledge and expertise in the assessment” (QAA, 2018: 3).

The understanding of the rules surrounding assessment, as well as the emphasis on assessment fundamental knowledge and skills, the language of assessment, the purposes of assessment, and strategies to monitor and document student learning, are common traits in all the assessment literacy definitions analyzed in this review (RQ3). These aspects are necessary to ensure a sound assessment practice. Feedback practice, furthermore, represents one of the most relevant aspects both in the K-12 and higher education fields. A relevant difference, instead, occurs in the ability to work with guidelines and illustrate the way standards are communicated. It has to be noted, in fact, a substantive shift (more relevant in the K-12 education) from a one-dimensional perspective of assessment literacy to a multidimensional perspective that resulted in an emphasis on “teacher capabilities to plan and implement quality assessment tasks, to interpret evidence and outcomes appropriate to the assessment purpose and type, and to engage students themselves as active participants in the assessment of their own learning” (Looney et al., 2017, p. 2).

The changing nature of higher education in terms of raised expectations of assessment methods, larger classes, and diverse populations has led to considering assessment literacy only in terms of practice. The analysis, interpretation, and use of assessment data (should) allow academic staff to make informed decisions about how to improve student achievement and educational quality in their institutions. However, these assessment literacy definitions tend to be strictly linked to the standards requirements of quality assurance, or the complex nature of judgment in a specific subject domain. Moreover, sometimes, assessment literacy definitions are not differentiated for all stakeholders involved in the assessment process (e.g., academic staff, students, external examiners, and auditors). Thus, a shared discourse on assessment literacy in the higher education context is necessary.

## Conclusions

Of all the articles initially found, few definitions of assessment literacy satisfied all the inclusion criteria (clear explanation of the concept of assessment literacy; identification of its consistent elements; reference to K-12 or higher education context) and therefore were pertinent to the aims of this review. As with every systematic review, it was impossible to include all relevant studies; these limitations must be considered in the interpretation of the present results. Further, the potential bias in the quality of this review was monitored and addressed: to reduce author and publication bias, for example, the clear inclusion criteria have been useful in the selecting literature phase.



Despite its limitations, the present study provides current evidence that the assessment literacy concept is not widely recognized in terms of its implications for practice and calls for further research in the higher education context. In the K-12 education field, instead, the debate is in great turmoil focusing on assessment literacy as a pivotal aspect of teacher professionalism (Chan & Luo; 2020; DeLuca & Johnson, 2017; Looney et al. 2017).

A clear and shared definition for assessment literacy, adaptable to local contexts, and a holistic framework needed to tackle common issues in the higher education field (e.g., adequacy of assessment, assessment design, feedback, and quality assurance mechanism) are crucial. In this perspective, the identification of what knowledge and skills, processes, and attitudes undergird assessment literacy is also fundamental. At the same time, a valid, reliable, equitable, and responsive assessment is equally important to ensure robust evidence for informed instructional decision-making and pedagogical innovations.

Assuming assessment literacy as an adaptive competence that requires the ability to apply knowledge and skills in a flexible, creative, and responsive way in different educational contexts, a definition of assessment literacy, following the three-dimensional model proposed by Pastore and Andrade (2019), should identify what academic staff need in terms of assessment (at conceptual, practical, and socio-relational level) to best respond to changing educational policy requirements (e.g., quality assurance, accreditation) and to benefit student learning.

This research path is relevant to compare different assessment practices in higher education systems around the world (Clegg, 2012; Daenekindt & Huisman, 2020; Macfarlane & Grant, 2012; Santos & Horta, 2018). Moreover, it offers the chance to explore, as framed within the Grand Challenge Project (Singer-Freeman & Robinson, 2020), the macro perspective affecting institutional processes and educational practices. Other research streams that this work identifies include those that impact the everyday work of academic staff. For example, understanding if, and how, professional development paths on assessment literacy are effective for faculty members, not only to deal with quality assurance and accreditation requirements but also to ensure responsive instruction to students' learning needs. In the pandemic-motivated environment of online and remote learning, the need for academic staff to effectively assess student learning is of paramount importance.

The results of this review have also practical implications. The lack, and sometimes the inefficacy of professional opportunities for assessment and feedback practice for academic staff represent a criticality in different higher education systems (Medland, 2019; Sadler, 2017).

Given the diversification of assessment methods and the importance of feedback, further work is required in this field. There is significant room for improvement in assessment. Its provision is under threat in contemporary higher education; when compared to other aspects of the curriculum, assessment represents a weak area. Academic staff members are often reluctant to provide adequate guidance for students through assessment and feedback (Sadler, 2017).

Related to this aspect is the understanding of the complex landscape in which the faculty members acquire, nurture, and sustain their assessment literacy. Finally, it will be crucial to understand which factors can enhance professional development and change assessment culture and practice. Higher education institutions should provide systematic formal and informal opportunities for academic staff to attend training on assessment and feedback practice.

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*Note. References indicated with an asterisk "\*" were used in the review.*

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