education sciences

MDPI

Article

Educational Assessment Knowledge and Skills for Teachers Revisited

Susan M. Brookhart

School of Education, Duquesne University, Pittsburgh, PA 15282, USA; suebrookhart@gmail.com

Abstract: In this article, I provide an update to a previous list of Educational Assessment Knowledge and Skills for Teachers. I argue that recent work in classroom assessment suggests expanding the list in several ways, adding additional statements about formative assessment's connection to student learning and statements about assessment practices in their various contexts. This view of educational assessment knowledge and skills for teachers as contextual and situated was absent from the original 2011 list.

Keywords: educational assessment knowledge and skills for teachers; classroom assessment; assessment literacy

check for updates

Citation: Brookhart, S.M. Educational Assessment Knowledge and Skills for Teachers Revisited. *Educ. Sci.* **2024**, *14*, 751. https://doi.org/10.3390/educsci14070751

Academic Editor: Menucha Birenbaum

Received: 1 May 2024
Revised: 3 July 2024
Accepted: 6 July 2024
Published: 10 July 2024

Copyright: © 2024 by the author. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

In 2011, I [1] published an article entitled "Educational Assessment Knowledge and Skills for Teachers". Its purpose was to propose a set of assessment knowledge and skills for teachers that would update the 1990 *Standards for Teacher Competence in Educational Assessment of Students* [2]. To that end, I reviewed the 1990 Standards and their impact on the field, described some other lists of assessment knowledge and skills that had appeared since 1990, and then proposed a list of assessment knowledge and skills that reflected current (in 2011) teacher assessment needs. For this special issue, I have been asked to reflect on the changes I have seen in perspectives over the decade or so since that time.

This article will consider several questions. First, one of the major changes since 2011 has been the decided upswing in research on assessment literacy. Therefore, the first question is whether assessment literacy is the same thing as assessment knowledge and skills for teachers. If not, how are the two related? Second, what other lists or specifications for assessment knowledge and skills for teachers have appeared since 2011? Finally, how might these changes update a list of assessment knowledge and skills that might inform teachers, teacher supervisors, professional developers, teacher educators, and others?

1. Assessment Literacy vs. Assessment Knowledge and Skills for Teachers

"Assessment literacy" and "assessment knowledge and skills for teachers" sound like similar ideas, and they are. However, there are some differences between the two terms that are important for this update. The purpose of the 2011 article was to identify a set of assessment competencies or capabilities that, like the 1990 *Standards* before them, could serve as the basis for a course or textbook in educational assessment. That, in fact, was how I used them ([3] and previous editions). The concept of assessment literacy is broader and serves a broader purpose, typically described as an effort to understand and potentially meet teachers' needs as they practice assessment and including both the assessment competencies and the personal and contextual factors around them that affect teachers' assessment practice, as the next section shows.

1.1. Assessment Literacy

When Stiggins [4] coined the term "assessment literacy", he described it in terms of what educators know and can do, for example (p. 535): "Assessment literates know what constitutes high-quality assessment. They know the importance of using an assessment method that reflects a precisely defined achievement target. They realize the importance of

sampling performance fully. They are aware of extraneous factors that can interfere with assessment results. And they know when the results are in a form that they understand and can use".

In the intervening years, and especially in the years since 2011, the term resonated with the field and grew to be used in different ways [5–11]. Pastore [9] completed a systematic review of research on teacher assessment literacy over 2013–2022, aiming to describe how teacher assessment literacy has been defined and identify its foundational components. She posited [9] (p. 2) that by this point, "a unique definition of assessment literacy is not tenable, given the recognized contextual, cultural, and social nature of assessment". Recently, Wylie and Heritage [12] (p. 133) wrote that "assessment literacy is the ability to engage in a chain of reasoning from evidence. . .A chain of reasoning begins with identifying learning goals—what is to be assessed—followed by a means to elicit evidence of learning in relation to the goal and ends with interpreting evidence to guide asset-based and future-oriented actions to benefit student learning and development". This broad perspective situates assessment literacy in the process of classroom instruction and ambitious teaching.

Pastore's [9] review included 42 studies, which used several different terms. Teacher assessment literacy was by far the most frequent (30 out of 42 studies). Other terms used included teacher assessment capability (five studies, generally located in New Zealand and Australia), teacher assessment approaches (four studies, all using the Approaches to Classroom Assessment Inventory [13]), teacher assessment competence (two studies), and teacher assessment knowledge and skills (one study). Therefore, she chose to use the term "assessment literacy" in the review, and I will do the same here.

Interestingly for this update, different authors included different components in assessment literacy and based their studies on different theoretical frameworks. Some focused on the required knowledge and skills needed to inform sound classroom assessment practice. This professional standards or professional requirement approach comports with the approach taken by the 1990 *Standards* and by my 2011 [1] list of statements that update them. Other authors took a more sociocultural and contextual approach (e.g., [14] (p. 242)): "Assessment literacy is a dynamic context dependent social practice that involves teachers articulating and negotiating classroom and cultural knowledges with one another and with learners, in the initiation, development and practice of assessment to achieve the learning goals of students". Pastore and Andrade [10] defined assessment literacy in terms of three dimensions: knowledge (the conceptual dimension), skills (the praxeological dimension), and dispositions (the socioemotional dimension). Other authors extended assessment literacy into a model of teacher assessment identity, which, whether the model is hierarchical [11] or not [8], encompasses teachers' knowledge, beliefs about learning and assessment, feelings about and confidence in assessment, understanding of context and compromise in assessment, and one's own role or identity as an assessor in one's own educational context.

1.2. The Place of Assessment Knowledge and Skills in Assessment Literacy

Whatever one's conception of teacher assessment literacy, assessment knowledge and skills for teachers are always described as a foundational part of it. The standards-based or competency-based approach is useful for framing teacher education courses and textbooks, which is the original purpose of my 2011 article [1]. As assessment literacy broadened into a field of inquiry focused on teachers' practice in context, sociocultural contexts and teachers' beliefs—especially their self-efficacy or confidence about their assessment practices—became part of the mix. In every case, however, these additions are layered upon (e.g., [11]) or considered simultaneously with (e.g., [8,10]) a core of assessment knowledge and skills for teachers. In other words, as the purpose has broadened from simply answering the question of what to teach teachers about assessment (e.g., [1,2]) to how to understand teachers' implementation of their assessment knowledge and skills in complex school and community contexts (e.g., [10,14]) to how to understand teachers personally as learners of assessment and as assessors (e.g., [8,11]), components have been

added to assessment literacy to serve those broader purposes. Nothing, however, has been taken away, and we are still left with the idea that some assessment knowledge and skills are important.

2. Assessment Knowledge and Skills for Teachers Revisited

With all of this as prologue, I can proceed to revisit the knowledge and skills for teachers that I listed in 2011 in light of the changes in research and practice. Understanding that we are trying to define the knowledge base, not the broader concepts of teacher assessment literacy or teacher assessment identity, let us start with the eleven 2011 statements [1] (p. 7):

1. Teachers should understand learning in the content area they teach.
2. Teachers should be able to articulate clear learning intentions that are congruent with both the content and depth of thinking implied by standards and curriculum goals in such a way that they are attainable and assessable.
3. Teachers should have a repertoire of strategies for communicating to students what achievement of a learning intention looks like.
4. Teachers should understand the purposes and uses of the range of available assessment options and be skilled in using them.
5. Teachers should have the skills to analyze classroom questions, test items, and performance assessment tasks to ascertain the specific knowledge and thinking skills required for students to do them.
6. Teachers should have the skills to provide effective, useful feedback on student work.
7. Teachers should be able to construct scoring schemes that quantify student performance on classroom assessments into useful information for decisions about students, classrooms, schools, and districts. These decisions should lead to improved student learning, growth, or development.
8. Teachers should be able to administer external assessments and interpret their results for decisions about students, classrooms, schools, and districts.
9. Teachers should be able to articulate their interpretations of assessment results and their reasoning about the educational decisions based on assessment results to the educational populations they serve (student and his/her family, class, school, and community).
10. Teachers should be able to help students use assessment information to make sound educational decisions.
11. Teachers should understand and carry out their legal and ethical responsibilities in assessment as they conduct their work.

Looking back at these from the perspective of a dozen or so years, I would not delete a thing. Statements 1 through 3, knowledge and skills not represented in the 1990 *Standards* but intensely relevant in 2011 to address the increased importance of the twin momentums of classroom formative assessment strategies and standards-based reform, are even more important now than they were then. Shepard and colleagues [15] have created a set of classroom assessment principles that foreground sociocultural learning theory and asset-based pedagogy, and these principles also emphasize that teachers need to understand learning and how to foster student engagement with content, from formative assessment through summative assessment. Statements 5 and 6, about questions for students—all assessment processes are dependent on the prompts that elicit student thinking—and feedback go to the heart of teachers' daily classroom assessment work. Statement 7, concerning quantifying performance, is particularly important as schools move towards standards-based grading and teachers are given the task of constructing grading (proficiency) scales. Statement 11, considering legal and ethical responsibilities in assessment, resonates loudly today with the renewed emphasis on fairness in assessment.

I might, however, add some things to this list. Since 2011, other standards or lists of competencies have been published, and the assessment literacy research has described teacher assessment knowledge and skills and their place in assessment literacy. Both of these are sources of information for updating assessment knowledge and skills for teachers,

although both leave open some questions of context that I think are important to consider in an update.

2.1. Standards for Teacher Assessment Knowledge and Skills

The 2011 list was intended to be at a grain size useful for framing a textbook or a course syllabus, with details to be filled out in chapters or lessons, respectively. Since then, several other sets of standards for teacher assessment knowledge and skills have been published, some of which I review here. I should note a major difference in process between these standards and the 2011 list. My list was generated from a review of research, interpreted and reported by an individual author. The standards described below are all products of some form of group process and vetting procedure.

The Michigan Assessment Consortium has produced a detailed compendium of assessment knowledge and skills for teachers and other role categories (students and families, building administrators, district administrators, and policymakers) for the purpose of professional development that would maximize the benefits and minimize the negative consequences of student assessment [16] (p. 4). The Michigan Assessment Literacy Standards describe knowledge; skills (which they call "performance"); and what they call dispositions, which are statements of what assessment-literate people in the various role categories believe. Some of the belief statements could be recast as things teachers need to know about learning, for example, "Teachers who are assessment literate believe. . .effective feedback is critical to support learning (p. 8)". However, many of them are clearly statements of belief (in the sense that some may believe otherwise), for example, "Teachers who are assessment literate believe. . .all educators must be proficient in their understanding and use of assessment (p. 8)". Thus, the MAC adds both a level of detail and another component (beliefs) that my 2011 list does not have.

The Council of Chief State School Officers (CCSSO) created the Interstate Teacher Assessment and Support Consortium (InTASC) standards for teaching [17]. Standard #6, Assessment, lists performances (skills), essential knowledge, and critical dispositions. The standards for the Council for the Accreditation of Educator Preparation (CAEP), which accredits teacher preparation programs, reference these standards as well. Again, the purpose is professional development, and again, dispositions are added to assessment knowledge and skills for teachers. The dispositions in the InTASC standards are phrased as commitments and responsibilities the teacher takes on board, not as beliefs; in that regard, they are more truly dispositions in the sense of a propensity to do something.

The Joint Committee on Standards for Educational Evaluation (JCSEE) produced *Classroom Assessment Standards for PreK-12 Teachers* [18] for use by individual teachers, groups of teachers, building and district administrators, colleges of education, staff developers, and educational researchers. They address only classroom assessment and not, for example, interpretation of standardized test results. These standards are grouped into three categories (foundations, use, and quality), and each category has five or six subcategories. For example, under Quality are listed cultural and linguistic diversity, exceptionality and special education, unbiased and fair assessment, reliability and validity, and reflection.

The National Board for Professional Teaching Standards (NBPTS) situates their assessment standards in subject areas (https://www.nbpts.org/certification/standards/, accessed on 5 July 2024). All of the subject area standards address assessment in some way, typically as a standard in its own right (e.g., Mathematics [19]; English Language Arts [20]) but sometimes as part of another standard. For example, the Social Studies–History standards address assessment within a standard called Instruction [21]. Each subject area describes its assessment standard somewhat differently. Beliefs about assessment are a part of these standards. For example, the ELA Assessment standard says the following [20] (p. 83): "Accomplished English language arts teachers firmly believe that the ultimate goal of assessment is to improve student learning, and they expertly use assessment results to guide instruction". The Mathematics Assessment standard says [19] (p. 41) "Accomplished teachers view ongoing assessment as an integral part of their instruction, benefitting both

the teacher and the student". The purpose for these standards about assessment knowledge, skills, and beliefs is to support National Board Certification for teachers.

The Australian Council for Educational Research [22] developed a framework for teacher assessment literacy and assessment design competency to use in professional development in International Baccalaureate programs. They enumerated seven elements of assessment literacy: assessment knowledge and skills, formative assessment, assessment identity, professional development, school environment, engagement of learners, and integrating digital assessment. Each element has multiple, more specific components and objectives. As for the MAC [16] standards, the grain size of these specific components is small enough to support the design and delivery of professional development for teachers and other educators.

The standards or other statements of teacher assessment knowledge and skills described above are all for the general purpose of professional development for pre-service and/or in-service teachers and procuring the benefits to students that applying these skills will attain. These are closest in purpose to my 2011 list, and largely repeat the same ideas—similar to each other and to my own list.

The major finding from this review of recent standards statements is that, in addition to knowledge and skills, dispositions—or beliefs or commitments—are seen as necessary elements to describe an assessment-literate educator. This is a valid point. I have heard elementary school teachers say it does no good to teach children to read if, in the process, they also learn that they never want to read anything they do not have to. Similarly, it does no good for teachers to develop assessment knowledge and skills that they do not use, whether it is because they do not want to or because they do not believe that assessment will benefit their students' learning or help with their instruction. Thus, while dispositions are not strictly the same kind of constructs as others in the knowledge base, it seems they are necessary for teachers to be able to use their assessment knowledge base [8,11], and in that regard require some application skills. As any learning theorist will tell you, using knowledge is the main reason for developing it, and one of the main differences between my 2011 list and current calls for teacher competency in assessment is an increased emphasis on assessment practice. Therefore, I accept, with all the others cited above, that dispositions have a place in any list of assessment knowledge and skills for teachers. Empirical evidence for the importance of teacher beliefs and dispositions has a strong history, beginning with Berman and McLaughlin's [23] finding that teachers who believe that all children can learn challenging content, and that they can make a difference for these children, do in fact make a difference in student learning. In the next section, I turn to the question of whether recent research suggests any additions to the 2011 list beyond dispositions.

2.2. Research Descriptions of Assessment Knowledge and Skills for Teachers

The purpose of the standards described in the previous section was to support teacher learning. The new wave of assessment literacy research has a different purpose, to describe the practice of assessment literate teachers and other educators; to understand how assessment literacy looks in different contexts; and, for some, to explore teachers' assessment identity. Nevertheless, in this quest to update 2011 thinking, it seems useful to describe the conceptions of the core assessment knowledge and skills that are a foundational part of the models put forth in this research. In a word, they are similar to the lists of knowledge and skills reviewed in the section above on current standards for teacher assessment literacy. A brief overview of assessment knowledge and skills from some of those reviews and studies illustrates this point.

Pastore and Andrade's [10] three-dimensional model of assessment literacy included a conceptual (knowledge) dimension and a praxeological (skills) dimension, plus a socioemotional dimension. They listed teacher knowledge for assessment as knowing what assessment is, why one does assessment, what to assess, and how to assess, plus understanding of data analysis and reporting/communication. They listed teacher skills for assessment as including defining learning targets and assessment criteria, differentiating

assessment strategies, collecting and interpreting evidence of student learning, using that data to adjust instruction and give feedback to students, supporting students in using assessment information to regulate their learning, and engaging and communicating with stakeholders.

Xu and Brown [11] created the Teacher Assessment Literacy in Practice (TALiP) framework as a hierarchical model. It is diagrammed as a seven-layer pyramid, with the knowledge base for assessment literacy as the foundation of the pyramid. In this knowledge base, they list the following [11] (p. 155): disciplinary knowledge and pedagogical content knowledge (PCK); knowledge of assessment purposes, content, and methods; knowledge of grading; knowledge of feedback; knowledge of peer and self-assessment; knowledge of assessment interpretation and communication; and knowledge of assessment ethics.

DeLuca and Bellara [5] used curriculum alignment methodology to analyze the congruence among two policy documents, two professional standards documents, and ten course syllabi. The categories they looked for comprised assessment purposes, assessment processes, assessment fairness, measurement theory, assessment for learning, communication, and classroom environment impact. The categories were generated by thematically grouping the comprehensive list of assessment content categories generated from these documents. In other words, these seven categories were empirically derived from assessment policy, standards, and course documents.

Looney et al. [8] (pp. 463–464) used a three-fold coding scheme to classify the items on 28 self-report assessment literacy scales, which is another way of empirically investigating what may be considered elements of assessment literacy. Classification 1 categorized the dimension(s) referenced in the scale: knowledge, skills, and practices; confidence; and disposition. Classification 2 categorized aspects of assessment: conceptual/theoretical framework, purpose and use of outcomes (validity), design and implementation, interpretation and use of information, collaboration, connections between assessment and instruction/curriculum, and developing classroom assessment environments for students. Many of these aspects included subcategories, for example, three subcategories under developing assessment classroom environments included sharing and negotiating goals and expectations, student self-assessment, and peer assessment. Classification 3 categorized assessment purpose: formative, summative, diagnostic, or unspecified.

Wylie and Heritage's [12] purpose for defining knowledge and skills for assessment literacy was a bit different from the other scholarly lists of assessment knowledge and skills presented in this section. Their purpose was to present assessment knowledge and skills that would support teaching in a balanced assessment system and be part of creating that system. To that end, they described competencies in three components of reasoning from evidence: learning goals, eliciting evidence, and interpretation and action [12] (pp. 134–144). For each of these three components, they listed specific knowledge and skills in detail at a grain size intended to inform professional learning for teachers.

The major take-away from this overview of assessment literacy aspects and elements as defined by researchers for research purposes is that the assessment knowledge and skills for teachers described are very similar to the standards documents reviewed in the previous section. These researchers have gone beyond knowledge and skills to emphasize assessment contexts and teachers' assessment practices in those contexts, but the knowledge base seems to have remained fairly stable. In accordance with the previous section (reviewing other recent standards), what is new is the acknowledgement that knowing how to apply knowledge in context (whether it be the disciplinary context or the classroom sociocultural context) is part of the knowledge base. Prior lists of standards emphasized factual and conceptual knowledge, while more recent thinking emphasizes procedural knowledge and application in practice. In the next section, I take up the question of context(s) for assessment and how that affects the knowledge base.

2.3. The Question of Context(s)

All of the recent research into assessment literacy mentions context or situatedness in some way or other, usually citing sociocultural learning theory [9]. Different authors have treated context differently, however. Most treatments of context have mentioned the learning and/or cultural context in the classroom and school, and the community, as described in this section below. We should also not forget the disciplinary context (e.g., "in the content area they teach", [1]; learning goals and their assessment differ by content area, [24]).

2.3.1. The Treatment of Contexts in Assessment Literacy Reviews

Fulmer et al. [6] created a multi-level model of contextual factors that affect teachers' assessment practices. They begin with the micro level (p. 480), where they consider individual teachers' assessment practices, values, conceptions, and knowledge of assessment, as well as teacher background variables and the interplay among those factors—that is, the micro level pertains to factors personal to the teacher. The meso level (p. 484) "involves factors that are external to the classroom, but that have immediate influences upon it", for example, characteristics of the school, including its leadership, school-level views of instruction and assessment, and other elements of school climate or school culture. The surrounding community is mentioned as a meso-level factor as well, and the example given is the community's economic status and its effect on teachers. The macro-level context (p. 485) "focuses on broad national and cultural influences on teachers and their classroom practices". Culture here is listed as part of the context for assessment practice in the same level as national policies on curriculum and accountability, for instance.

Yan et al. [25] took a different approach to identifying factors influencing teachers' intentions and implementations of assessment, focusing specifically on formative assessment. They grouped factors that have been studied as comprising either personal or contextual factors. They found studies of personal factors influencing teacher intentions or implementation of formative assessment that included teachers' attitude, self-efficacy, education, skill, and the opinions of others. Contextual factors included characteristics of a particular classroom school, community, or society.

Pastore and Andrade's [10] socioemotional dimension acknowledged that assessment is a social practice, and they focused their description mostly on the social context of the classroom. The two reviews that built a case for teacher assessment identity [8,11] treated the question of context differently as well. Looney et al. [8], like Pastore and Andrade [10], focused on the teachers' socioemotional orientations toward assessment, for example, their feelings, beliefs, confidence, or role. Xu and Brown [11], by contrast, and similar to Fulmer et al. [6], mentioned factors at different levels, from national policies and mandates through workplace (school) relationships to personal assessment identities. One of the layers in their TALiP framework is the "macro socio-cultural and micro institutional contexts" (p. 155).

On balance, since 2011, there has been more attention paid to the context(s) in which teachers practice assessment than was the case then. Context has generally been studied as national policies and the pressures and mandates they create, school culture and workplace dynamics, classroom culture and climate, and sometimes characteristics of the community. To the question of context(s) raised in this section, then, we can adduce various studies and models that predict that teachers' actual classroom assessment practices are influenced not only by their knowledge and skills but also by these various elements of context. Although more research is needed—and has been called for in all the reviews and studies cited—about the various effects of context on teachers' assessment practices, it seems that there is enough evidence to conclude that context, in fact, does matter; therefore, teachers need to know something about it.

This leaves me with at least two questions regarding the question of context for updating the 2011 list of knowledge and skills for teachers. First, if any, what additional assessment knowledge and skills are needed in order to navigate, negotiate, and practice

assessment in school contexts? That is, are there things teachers need to know or be able to do in order to be successful assessors in school and classroom contexts, beyond the assessment content listed in most standards? The next section takes up this question.

Second, in many education writings, "context" means cultural context. My second question is what, if any, additional knowledge and skills are needed in order to practice culturally relevant assessment? The reviews and studies mentioned above sometimes used the term "community" in a general way, but none of them addressed with more than a mention the question of whether and to what extent assessment practices require cultural competence in the sense of "culturally relevant pedagogy" [26] or addressing race/ethnicity, class, gender, sexual orientation, and other issues now commonly considered part of the cultural context in schools. I did find three exceptions to this generalization. Klinger et al. [18] include standard Q1, Cultural and Linguistic Diversity, which reads (p. 42) "Classroom assessment practices should be responsive to and respectful of the cultural and linguistic diversity of students and their communities" and gives brief guidelines for doing this. Shepard et al. [15] mention "asset-based pedagogy" and include in their classroom assessment principles many things recommended for culturally relevant assessment. Wylie and Heritage [12] emphasize the importance of teachers developing sociocultural consciousness in order to support both assessment literacy and ambitious teaching. In the second section below, I will need to move briefly from the assessment literacy literature to literature on culturally relevant assessment to explore this aspect of context.

2.3.2. Knowledge and Skills for Assessment Practices in the School Context

Additional knowledge and skills are needed to be successful assessors in school and classroom contexts, beyond the assessment content listed in most standards. We may need to clarify whether we would call these assessment knowledge and skills or use a broader term, perhaps borrowing from one of the many social–emotional learning frameworks (see http://exploresel.gse.harvard.edu/, accessed on 9 July 2024, for a summary and comparison of 40 different SEL frameworks). For example, a teacher may understand the assessment climate in her school to favor one kind of assessment over another and, therefore, makes "compromises in assessment decision-making and action-taking" [11] (p. 155). The knowledge and skills required to understand the school climate may be more like the 21st century Social and Cross-cultural Skills "interact effectively with others" and "work effectively in diverse teams" [27] (pp. 6–7) than assessment-specific content. Similar knowledge and skills would be needed to negotiate one's place in the school climate regarding instruction or classroom management as well.

To the extent this is true, and I believe it is, these skills are a necessary addition to the teacher's repertoire but are not assessment knowledge and skills per se. However, because they are necessary to assessment practice, as currently understood to be a sociocultural act, such skills need to be handled in some way. One approach to augmenting a list of assessment knowledge and skills for teachers might be to add an additional domain to the list. This is the approach taken by the National Council on Measurement in Education in its "Foundational Competencies in Educational Measurement" [28], which is mostly targeted for those who work in large-scale assessment. They list Communication and Collaboration as a foundational competency domain separate from other educational measurement knowledge and skills domains. Perhaps we could do something similar for teacher assessment competencies, or perhaps we could recognize that assessment literacy goes beyond individual traits and is also part of an assessment system. The simplest solution may be to just add a skill to the list of assessment knowledge and skills. However, before we decide this issue, there is another question of context to consider.

2.3.3. The Cultural Context of Assessment

Discussions of culturally responsive assessment [29–31] arose as calls for culturally responsive or culturally relevant [32] pedagogy appeared. Aronson and Laughter [33] have

found evidence that culturally relevant education has positive outcomes for students in terms of academic skills, motivation, and engagement.

As part of culturally relevant pedagogy, assessment was sought that was relevant to, and built upon, students' own cultural experiences and helped them become aware of the cultural experiences of others. Hood [29] and Lee [30] specifically suggested performance-based assessment as a means to do this, because cultural referents can be built into performance tasks. Qualls [31] called for mixed-format assessments, including but not limited to performance-based assessments, in order to effectively measure a variety of learning goals and support a diversity of learning strategies. Scenario-based items and tasks [34] in various formats besides performance assessment can incorporate cultural references as well.

Hood [29] and Qualls [31] both discussed validity implications for using performance-based assessment, with its attendant issues of task sampling and construct representation. Solano-Flores and Nelson-Barber [35] proposed that including cultural referents in assessment would enhance cultural validity: "To attain cultural validity, the process of assessment development must consider how the sociocultural context in which students live influences the ways in which they make sense of science items and the ways in which they solve them. These sociocultural influences include the values, beliefs, experiences, communication patterns, teaching and learning styles, and epistemologies inherent in the students' cultural backgrounds, as well as the socioeconomic conditions prevailing in their cultural groups". Further, Poe and Inoue [36] (p. 122) write that "A sociocultural model of validity points to agents who make decisions", not just the decisions—the use of assessment information—that are made, as in conventional validity theory. Taken together and applied to the classroom, these perspectives remind us that teachers need to consider not only what assessment questions and tasks mean to the students who respond to them but also what students' responses mean in terms of teachers' educational decisions, for example, what feedback to provide, what instructional follow-up to perform in the case of formative assessment, and what grade to assign in the case of summative assessment. Kang and Furtak [37] further show how decisions made throughout the classroom assessment system, including the assessment materials and tools as well as the processes designed for students and teachers to engage with them, can be shifted to better support minority students' learning and describe some tensions that can emerge when teachers attempt to do that.

Scholars are beginning to compile lists of principles or elements of culturally relevant assessment [34], culturally responsive assessment [38,39], or socioculturally responsive assessment [40]. I will use the acronym CRA to refer to all of these. All the works cited in this section use similar definitions for CRA. For the sake of brevity, I have selected two. I do not mean to imply that one of these is better than the other or that definitions I did not cite do not have anything to contribute. My intent here is to define CRA briefly in order to then apply these current ideas to the article's purpose, updating assessment knowledge and skills for teachers.

The first definition [34] shows explicitly how the idea and definition of CRA are based in scholarship on culturally relevant pedagogy. O'Dwyer et al. [34] (p. 289) write the following:

> We define culturally relevant assessments as those assessments which are intentionally designed to affirm students' cultural identities [41]; emphasize asset-based, rather than deficit-based perspectives on students [42]; recognize and embrace cultural and linguistic differences [42,43]; link learning to students' home and community cultures [32,41]; place content within a meaningful context to leverage students' funds of knowledge [44,45]; and empower students by positioning them as active contributors and agents of change [41,42,46].

The second definition [38] is simpler and explicitly connected to the assessment process. Montenegro and Jankowski [38] (p. 10) write the following:

> Culturally responsive assessment is thus thought of as assessment that is mindful of the student populations the institution serves, using language that is appropriate for all students when developing learning outcomes, acknowledging students' differences in the planning phases of an assessment effort, developing and/or using assessment tools that are appropriate for different students, and being intentional in using assessment results to improve learning for all students.

Two of the published sets of principles for CRA are intended for use in large-scale standardized testing [39,40]. More relevant for this article are recent studies that have enumerated principles for CRA in classroom assessment [34,47]. Both of these studies concerned classroom assessments designed externally to the classroom. Evans [47] described design principles for CRA in curriculum-embedded classroom summative performance assessments (p. 275): cultural identity, assets, student engagement, relationships, rigor, and vulnerability. O'Dwyer et al. [34] described design principles for integrating CRA into the design of scenario-based tasks (ETS testlets), designed to be used formatively before or during a unit, to inform instruction (pp. 294–296): 1—Community-based learning; 2—Student-led action; 3—Incorporating multiple diverse perspectives; 4—Familiarity, novelty, and engagement (tradeoffs in creating scenarios with enough familiarity for comfort and enough novelty for engagement); and 5—Visual representation (of different kinds of people). Again, there is much overlap between the two conceptualizations of design principles for classroom CRA. An additional resource [15] proposes classroom assessment principles to support teaching and learning, organized as eleven principles to address the question "What should teachers and their students do to enact assessment as part of an equity-focused learning culture?" (p. 4) and six principles to address the question "What can school and district leaders do to support this vision?" (p. 9). These principles are based on sociocultural learning theory and asset-based approaches to instruction and assessment.

The literature on culturally responsive teaching has not yet been well linked to studies of assessment literacy, but there are a few beginnings. For example, Lew and Nelson [48] showed in a qualitative study of twelve new teachers that culturally responsive teaching, classroom management, and assessment literacy are interrelated issues for new teachers. They identified gaps between the teacher education curriculum and these new teachers' real-world classroom experiences. Especially important for our purpose here is their argument about how these three issues are related—a relationship not often discussed in assessment literacy—and the finding that each participant seemed to develop their own understanding of assessment even though they had the same training, which at minimum calls into question the relevance of their assessment training and perhaps suggests that more contextualized assessment training is in order.

As this section shows, work on culturally relevant assessment is taking off, but what has been published so far are lists of principles for externally developed assessments, not what teachers need to know and be able to do in order to participate in that development. When culturally relevant classroom assessment is externally developed [34,47], the developers can design and enact processes involving communication and consultation with students and community members. If the assessment designers do not have the specific cultural competence needed for developing a specific assessment, they can obtain it.

What about when a classroom teacher seeks to develop culturally relevant classroom assessment? What cultural knowledge and skills do classroom teachers need to negotiate assessments with their students on a daily and even minute-by-minute basis? Following the published advice, I suggest that classroom teachers need to have some knowledge of the cultural experiences of the students they teach and of how those experiences impact the way their students set and pursue learning goals and how they are able to show what they know. For some if not many, this will entail extended conversations with their students and listening attentively [49], especially if the teacher's cultural background is different from that of their students. I also suggest that classroom teachers need to have the knowledge and skills to support valid use of differentiation and choice in assessment design, and

the knowledge and skills to support valid use of performance-based and scenario-based assessment formats in particular.

3. Assessment Literacy in a Better Assessment Future

A while ago, I was asked to predict what assessment literacy needs might look like in a better assessment future [50]. I used evidence from current research on assessment to inform teaching and learning to identify six future assessment trends, then discussed implications for assessment literacy. This mostly entailed identifying knowledge and skills that will need more or less emphasis in future assessment practice. Briefly, I noted that assessment-literate teachers in the future will need more of the following: emphasis on knowledge and skills about the use of assessment information, not merely its interpretation; understanding of student learning and the regulation of learning; skill at interpreting student work in terms of student thinking more than correctness; skill at integrating assessment with instruction and other aspects of teaching; knowledge and skill in strategies that foster equity, including using learning targets and success criteria with students (the foundation for student regulation of learning and student involvement in assessment), fostering student motivation and engagement with assessment, using universal design principles, and de-coupling grading from punishment; and, as technology facilitates, skill at sharing classroom assessment with external partners. I am pleased to see that, a year later, this list converges with the update I provide in this chapter, even though I came about it through studying a different literature. Perhaps the biggest difference between this 2023 update of assessment knowledge and skills for teachers and the current one is a stronger emphasis here on the knowledge and skills needed to practice culturally relevant assessment, and that is one of the reasons I have emphasized that in this update.

4. Updated Knowledge and Skills for 2023 and Beyond

Table 1 presents an updated list of assessment knowledge and skills for teachers. The table design allows readers to compare the new and original lists and to recall the references reviewed above in support of new additions. I arrived at this list by synthesizing the original list ([1] in the table); research on assessment to inform teaching and learning ([50] in the table); and recently published standards, research, and reviews of assessment literacy as discussed in this article (marked with the various references cited above).

Table 1. Educational Assessment Knowledge and Skills for Teachers 2024.

1.	Teachers should understand learning in the content area they teach [1] #1.
2.	Teachers should be able to articulate clear learning intentions that are congruent with both the content and depth of thinking implied by standards and curriculum goals, and with students' cultural identities, in such a way that they are attainable and assessable [1] #2. Addition of cultural identities [15,18,29–38,47].
3.	Teachers should have a repertoire of strategies for communicating to students what achievement of a learning intention looks like [1] #3.
4.	Teachers should understand the purposes and uses of the range of available assessment options and be skilled in using them [1] #4.
5.	Teachers should have and use a repertoire of strategies for classroom formative assessment and be able to interpret student work in terms of student thinking, not just correctness [1] #10; [50].

Table 1. *Cont.*

6.	Teachers should be able to select or create engaging classroom assessments that are relevant to their students' cultures, identities, experiences, and funds of knowledge [15,18,29–38,47].
7.	Teachers should be able to differentiate assessment for different students [18,50].
8.	Teachers should have the skills to analyze classroom questions, test items, and performance assessment tasks to ascertain the specific knowledge and thinking skills required for students to do them [1] #5.
9.	Teachers should be able to help students use assessment information to regulate their learning [15,50].
10.	Teachers should have the skills to provide effective, useful feedback on student work [1] #6.
11.	Teachers should be able to construct scoring schemes that quantify student performance on classroom assessments into useful information for decisions about students, classrooms, schools, and districts. These decisions should lead to improved student learning, growth, or development [1] #7.
12.	Teachers should be able to administer external assessments and interpret their results for decisions about students, classrooms, schools, and districts [1] #8.
13.	Teachers should be able to articulate their interpretations of assessment results and their reasoning about the educational decisions based on assessment results to the educational populations they serve (the student and their family, class, school, and community) [1] #9.
14.	Teachers should understand and carry out their legal and ethical responsibilities in assessment as they conduct their work [1] #11.
15.	Teachers should be able to interact and work effectively with others in school (including students) and in the community as they apply assessment knowledge and skills in context [6,8–11,25].
16.	Teachers should believe that high-quality assessment practices make a difference for children's learning and that they (teachers) can make a difference when using them [16,17,19–21,23].

The list has grown from eleven statements to sixteen. Some of the extension happened in statements 5 through 7 and 9, which previously may have been understood as details under statement 4 about understanding and using the range of available assessment options, similar to the way statement 8 did in the 2011 list. Statements 5 through 7 and 9 call out elements of classroom assessment, especially formative assessment, that have received emphasis in recent advances in research and practice and may not have been assumed by many readers of statement 4. Additionally, some of the extension happened with the addition of statements about assessment practice in its several contexts, for me an inescapable conclusion from recent theorizing about both teacher assessment literacy and student learning as contextual and situated—a view that was not reflected in the 2011 statements. Because of the increased number of assessment goals, teacher educators with limited course time available may have to prioritize these statements based on the context of their own program and students. However, I can envision assessment courses that at least touch on all of them, and certainly all 16 statements are worthy of attention over the course of pre-service teacher preparation and in-service teacher professional development.

It is worth repeating that this is a list of assessment knowledge and skills for teachers. It is not the whole of assessment literacy or assessment identity as currently conceived [8,10,11]. However, it seems worthwhile to present such a list, for several reasons. First, this content is core in all views of assessment literacy. Second, this content is needed to support courses and course materials for teacher preparation in assessment and in-service training in assessment.

Third is the argument from the recent (last decade) primary sources reviewed in this article: obviously, many people think such lists are needed because many such lists have been created. Nevertheless, it is important to note that this material is not, and is not intended to be, definitive of the whole of assessment literacy.

5. Conclusions

In this article, I reviewed selected standards for assessment literacy and reviews of the assessment literacy studies that have been published since 2011, with an eye toward updating a list of assessment knowledge and skills for teachers that could be used to support teacher learning in the area of assessment. The result is an expanded list (see Table 1) that includes some knowledge and skills less emphasized or not included in the 2011 list.

I undertook this as a single-researcher project, as requested by the editors of this special issue. As I write this, I am aware of at least one multi-researcher project [51] that is working to develop a "guiding framework for effective, equitable classroom assessment for teacher practice and student success" using Delphi and other techniques for summarizing the views of many classroom assessment experts. This collaborative effort may well result in a yet more expanded list.

One final suggestion, implied but not explicit in Table 1, may be important for those who work in the fields of classroom assessment and teacher assessment literacy. Classroom assessment is not conducted in a vacuum. It is not only a social activity [40] and contextual in that sense, but is also contextualized with other aspects of teaching [48,52]. Therefore, effective use of any list of assessment knowledge and skills for teacher development will be enhanced by helping teachers make connections among assessment knowledge and skills, and knowledge and skills regarding educational psychology, subject matter content, instructional methods, and classroom management.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Data Availability Statement: The original contributions presented in the study are included in the article, further inquiries can be directed to the author.

Conflicts of Interest: The author declares no conflict of interest.

References

1. Brookhart, S.M. Educational assessment knowledge and skills for teachers. *Educ. Meas. Issues Pract.* **2011**, *30*, 3–12. [CrossRef]
2. American Federation of Teachers; National Council on Measurement in Education; National Education Association; Standards for Teacher Competence in Educational Assessment of Students. National Council on Measurement in Education. 1990. Available online: https://buros.org/standards-teacher-competence-educational-assessment-students (accessed on 5 July 2024).
3. Brookhart, S.M.; Nitko, A.J. *Educational Assessment of Students*, 8th ed.; Pearson: New York, NY, USA, 2019.
4. Stiggins, R. Assessment literacy. *Phi Delta Kappan* **1991**, *72*, 534–539. Available online: https://www.jstor.org/stable/i20404445 (accessed on 5 July 2024).
5. DeLuca, C.; Bellara, A. The current state of assessment education: Aligning policy, standards, and teacher education curriculum. *J. Teach. Educ.* **2013**, *64*, 356–372. [CrossRef]
6. Fulmer, G.W.; Lee, I.C.H.; Tan, K.H.K. Multi-level model of contextual factors and teachers' assessment practices: An integrative review of research. *Assess. Educ. Princ. Policy Pract.* **2015**, *22*, 475–494. [CrossRef]
7. Gotch, C.M.; French, B.F. A systematic review of assessment literacy measures. *Educ. Meas. Issues Pract.* **2014**, *33*, 14–18. [CrossRef]
8. Looney, A.; Cumming, J.; van Der Kleij, F.; Harris, K. Reconceptualising the role of teachers as assessors: Teacher assessment identity. *Assess. Educ. Princ. Policy Pract.* **2018**, *25*, 442–467. [CrossRef]
9. Pastore, S. Teacher assessment literacy: A systematic review. *Front. Educ.* **2023**, *8*, 1217167. [CrossRef]
10. Pastore, S.; Andrade, H.L. Teacher assessment literacy: A three dimensional model. *Teach. Teach. Educ.* **2019**, *84*, 128–138. [CrossRef]
11. Xu, Y.; Brown, G.T.L. Teacher assessment literacy in practice: A reconceptualization. *Teach. Teach. Educ.* **2016**, *58*, 149–162. [CrossRef]
12. Wylie, E.C.; Heritage, M. Assessment literacy and professional learning. In *Reimagining Balanced*; Marion, S.F., Pellegrino, J.W., Berman, A.I., Eds.; Assessment Systems; National Academy of Education: Washington, DC, USA, 2024; pp. 132–166.

13. DeLuca, C.; LaPointe-McEwan, D.; Luhanga, U. Approaches to classroom assessment inventory: A new instrument to support teacher assessment literacy. *Educ. Assess.* **2016**, *21*, 248–266. [CrossRef]
14. Willis, J.; Adie, L.; Klenowski, V. Conceptualising teachers' assessment literacies an era of curriculum and assessment reform. *Aust. Educ. Res.* **2013**, *40*, 241–256. [CrossRef]
15. Shepard, L.A.; Diaz-Bilello, E.; Penuel, W.R.; Marion, S.F. *Classroom Assessment Principles to Support Teaching and Learning*; Center for Assessment, Design, Research and Evaluation, University of Colorado Boulder: Boulder, CO, USA, 2020. Available online: https://www.colorado.edu/cadre/sites/default/files/attached-files/classroom_assessment_principles_to_support_teaching_and_learning_-_final_0.pdf (accessed on 5 July 2024).
16. Michigan Assessment Consortium. Assessment Literacy Standards. 2020. Available online: https://www.michiganassessmentconsortium.org/assessment-literacy-standards/ (accessed on 5 July 2024).
17. Council of Chief State School Officers. Interstate Teacher Assessment and Support Consortium InTASC Model Core Teaching Standards and Learning Progressions for Teachers 1.0: A Resource for Ongoing Teacher Development. 2013. Available online: https://ccsso.org/sites/default/files/2017-12/2013_INTASC_Learning_Progressions_for_Teachers.pdf (accessed on 5 July 2024).
18. Klinger, D.A.; McDivitt, P.J.; Howard, B.B.; Muñoz, M.A.; Rogers, W.T.; Wylie, E.C. *Classroom Assessment Standards for PreK-12 Teachers: Joint Committee on Standards for Educational Evaluation*; Kindle Direct Press: Seattle, WA, USA, 2015.
19. National Board for Professional Teaching Standards. *Mathematics Standards*, 3rd ed.; National Board for Professional Teaching Standards: Arlington County, WV, USA, 2010. Available online: https://www.nbpts.org/wp-content/uploads/2021/09/EAYA-MATH.pdf (accessed on 5 July 2024).
20. National Board for Professional Teaching Standards. *English Language Arts Standards*, 3rd ed.; National Board for Professional Teaching Standards: Arlington County, WV, USA, 2014; Available online: https://www.nbpts.org/wp-content/uploads/2021/09/EAYA-ELA.pdf (accessed on 5 July 2024).
21. National Board for Professional Teaching Standards. *Social Studies—History Standards*, 2nd ed.; National Board for Professional Teaching Standards: Arlington County, WV, USA, 2010. Available online: https://www.nbpts.org/wp-content/uploads/2021/09/EAYA-SSH.pdf (accessed on 5 July 2024).
22. Girgla, A.; Good, L.; Krstic, S.; McGinley, B.; Richardson, S.; Sneidze-Gregory, S.; Star, J. Developing a Teachers' Assessment Literacy and Design Competence Framework. Australian Council for Educational Research. 2021. Available online: https://www.ibo.org/globalassets/new-structure/research/pdfs/assessment-literacy-final-report-en.pdf (accessed on 5 July 2024).
23. Berman, P.; McLaughlin, M.W. Federal Programs Supporting Educational Change, Vol. VIII: Implementing and Sustaining Innovations. 1978. Available online: https://www.rand.org/content/dam/rand/pubs/reports/2006/R1589.8.pdf (accessed on 5 July 2024).
24. Heritage, M.; Wylie, E.C. *Formative Assessment in the Disciplines*; Harvard Education Press: Cambridge, MA, USA, 2020.
25. Yan, Z.; Li, Z.; Panadero, E.; Yang, M.; Yang, L.; Lao, H. A systematic review on factors influencing teachers' intentions and implementations regarding formative assessment. *Assess. Educ. Princ. Policy Pract.* **2021**, *28*, 228–260. [CrossRef]
26. Ladson-Billings, G. Culturally relevant pedagogy 2.0: A.k.a the remix. *Harv. Educ. Rev.* **2014**, *84*, 74–84. [CrossRef]
27. Partnership for 21st Century Learning. *In P21 Framework for 21st Century Learning Definitions*; Battelle for Kids: Columbus, OH, USA, 2019. Available online: https://www.battelleforkids.org/wp-content/uploads/2023/11/P21_Framework_DefinitionsBFK.pdf (accessed on 5 July 2024).
28. Ackerman, T.A.; Bandalos, D.L.; Briggs, D.C.; Everson, H.T.; Ho, A.D.; Lottridge, S.M.; Madison, M.J.; Sinharay, S.; Rodriguez, M.C.; Russell, M.; et al. Foundational competencies in educational measurement. *Educ. Meas. Issues Pract.* 2023; *early view*.
29. Hood, S. Culturally responsive performance-based assessment: Conceptual and psychometric considerations. *J. Negro Educ.* **1998**, *67*, 187–196. [CrossRef]
30. Lee, C.D. Culturally responsive pedagogy and performance-based assessment. *J. Negro Educ.* **1998**, *67*, 268–279. [CrossRef]
31. Qualls, A.L. Culturally responsive assessment: Development strategies and validity issues. *J. Negro Educ.* **1998**, *67*, 296–301. [CrossRef]
32. Ladson-Billings, G. Toward a theory of culturally relevant pedagogy. *Am. Educ. Res. J.* **1995**, *32*, 465–491. [CrossRef]
33. Aronson, B.; Laughter, J. The theory and practice of culturally relevant education: A synthesis of research across content areas. *Rev. Educ. Res.* **2016**, *86*, 163–206. [CrossRef]
34. O'Dwyer, E.P.; Sparks, J.R.; Oláh, L.N. Enacting a process for developing culturally relevant classroom assessments. *Appl. Meas. Educ.* **2023**, *36*, 286–303. [CrossRef]
35. Solano-Flores, G.; Nelson-Barber, S. On the cultural validity of science assessments. *J. Res. Sci. Teach.* **2001**, *38*, 553–573. [CrossRef]
36. Poe, M.; Inoue, A.B. Toward writing as social justice: An idea whose time has come. *Coll. Engl.* **2016**, *79*, 119–126. Available online: https://www.jstor.org/stable/44805913 (accessed on 5 July 2024). [CrossRef]
37. Kang, H.; Furtak, E.M. Learning theory, classroom assessment, and equity. *Educ. Meas. Issues Pract.* **2021**, *40*, 73–82. [CrossRef]
38. Montenegro, E.; Jankowski, N.A. *Equity and Assessment: Moving towards Culturally Responsive Assessment*; University of Illinois and Indiana University, National Institute for Learning Outcomes Assessment (NILOA): Urbana, IL, USA, 2017. Available online: https://www.learningoutcomesassessment.org/wp-content/uploads/2019/02/OccasionalPaper29.pdf (accessed on 5 July 2024).
39. Walker, M.E.; Olivera-Aguilar, M.; Lehman, B.; Laitusis, C.; Guzman-Orth, D.; Gholson, M. Culturally responsive assessment: Provisional principles (Research Report No. RR-23-11). *ETS* **2023**, *2023*, 1–24. [CrossRef]
40. Bennett, R.E. Toward a theory of socioculturally responsive assessment. *Eduational Assess.* **2023**, *28*, 83–104. [CrossRef]

41. Ladson-Billings, G. But that's just good teaching! The case for culturally relevant pedagogy. *Theory Into Pract.* **1995**, *34*, 159–165. [CrossRef]
42. Gay, G. Teaching to and through cultural diversity. *Curric. Inq.* **2013**, *43*, 48–70. [CrossRef]
43. Paris, D. Culturally sustaining pedagogy: A needed change in stance, terminology, and practice. *Educ. Res.* **2012**, *41*, 93–97. [CrossRef]
44. González, N.; Moll, L.C.; Amanti, C. (Eds.) *Funds of Knowledge: Theorizing Practices in Households, Communities, and Classrooms*; Lawrence Erlbaum: Mahwah, NJ, USA, 2005.
45. Moll, L.C.; Amanti, C.; Neff, D.; Gonzales, N. Funds of knowledge for teaching: Using a qualitative approach to connect homes and classrooms. *Theory Into Pract.* **1992**, *31*, 132–141. [CrossRef]
46. Ladson-Billings, G. *The Dreamkeepers: Successful Teachers of African American Children*; Jossey-Bass: San Francisco, CA, USA, 1994.
47. Evans, C. Applying a culturally responsive pedagogical framework to design and evaluate classroom performance-based assessments in Hawai'i. *Appl. Meas. Educ.* **2023**, *36*, 269–285. [CrossRef]
48. Lew, M.M.; Nelson, R.F. New Teachers' Challenges: How Culturally Responsive Teaching, Classroom Management, and Assessment Literacy Are Intertwined. *Multicult. Educ.* **2016**, *23*, 7–13. Available online: https://files.eric.ed.gov/fulltext/EJ1119450.pdf (accessed on 5 July 2024).
49. Hammond, Z. *Culturally Responsive Teaching and the Brain*; Corwin: Thousand Oaks, CA, USA, 2015.
50. Brookhart, S.M. Assessment literacy in a better assessment future. *Chin. J. Appl. Linguist.* **2023**, *46*, 162–179. [CrossRef]
51. Van Orman DS, J.; Riley-Lepo, E.E.; McMillan, J.H. A guiding framework for effective, equitable classroom assessment for teacher practice and student success [Organized Paper Session]. In Proceedings of the 2024 Annual Meeting of the National Council on Measurement in Education, Philadelphia, PA, USA, 11–14 April 2024.
52. DePascale, C.A. Teaching literacy: A wholistic reframing of teacher assessment literacy. In Proceedings of the 52th Annual Meeting of the New England Educational Research Association, Virtual, 28–30 April 2021.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.