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**EDUCATIONAL ASSESSMENT & EVALUATION | RESEARCH ARTICLE**

# Assessment literacy components across subject matters

Fatemeh Zolfaghari[1]* and Alireza Ahmadi[2]

**Abstract:** This study aimed at discovering general and specific assessment literacy components from the perspective of Iranian high school teachers. To this end, 32 humanities, science, English language, and non-English language teachers were interviewed. The interviewees referred to teachers' ability to identify the worth assessing contents, familiarity with the assessment process, emotional understanding of the learners, and ethical knowledge as the general components of assessment literacy. Regarding the course-specific assessment literacy components, the participants talked of the teachers' ability to assess the main course contents in that each course has its own exclusive contents. In particular, English language teachers highlighted teachers' psychological knowledge and science teachers referred to content mastery as other course-specific assessment literacy components. Altogether, it is recommended that teacher training organizations consider these findings in training more qualified teachers as assessors. Further, teachers can consider assessment literacy components to correctly identify learners' strengths and weaknesses and to assist the students' future study and job choices.

**Subjects: Education; Humanities; Language & Literature**

**Keywords: assessment literacy; subject matter; Iranian teachers**

## ABOUT THE AUTHORS

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## PUBLIC INTEREST STATEMENT

Assessment literacy refers to familiarity with factors that affect the quality of assessment. Teachers should have assessment literacy to identify their students' learning strengths and weaknesses properly. Further, students' interests in specific areas of study and work at universities and later in society are shaped based on their performances at high school. If the learners have access to highly assessment literate teachers who give them a realistic picture of their abilities, they can guarantee the future technological, cultural, and social developments of society. Otherwise, the responsible parties should gain an awareness of the teachers' assessment knowledge and practices and then train them accordingly. In this study, high school teachers referred to course-specific and general factors affecting assessment practices. Emotional and ethical issues such as fairness were the general factors and knowledge of the most significant learning contents was viewed as a course-specific assessment component.

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## 1. Introduction

The need for activating human potentials in various areas calls for assessment literacy. Teachers should increase their assessment literacy to accelerate their further professional development (Bachman, 2000; Brindley, 1998; Popham, 2009). Teachers' assessment literacy exerts apparent influences that guarantee students' successful learning achievements. Highly assessment literate teachers are able to select the best alternatives and options for assessing their students (Popham, 2009). Besides, assessment literacy assists learners' academic progress as it makes them aware of their actual and potential abilities (Scarino, 2013). Therefore, as long as teachers are assessment literate, their teaching practices will be successful (Jabbarifar, 2009). Further, curriculum and materials development programs which consider assessment literacy are highly expected to meet the teachers' and other stakeholders' needs (Fulcher, 2012).

Scholars have focused on assessment literacy as a relatively recent area of investigation and they have proposed their definitions of it. According to Popham (2009), teachers' familiarity with basic assessment issues and their classroom events constitute their assessment literacy. Literacy is considered as the quality dimension of assessment, as well (Eyal, 2012). In another sense, assessment literacy is used to practice power (Fulcher, 2012).

Assessment literacy is not limited to a specific subject matter. All the teachers need to develop assessment literacy appropriate to the contexts where they teach. The stakeholders' experiential knowledge should be connected to the proposed scientific conceptualizations to raise their awareness of assessment literacy components (Johnson, 2009). This is a process of re-conceptualization whereby individuals monitor their knowledge repertoires and attempt to transform their everyday beliefs through scientific concepts. During this process, what teachers and learners bring to the assessment context (their inner worlds) and the basic theory-driven components of assessment procedure should be integrated (Inbar-Lourie, 2013).

Few studies have been conducted on assessment literacy components of different subject matter courses. This calls for exploring the conditions under which the assessment knowledge demands of different subject matter assessors and instructors are satisfied. This gap can be addressed by identifying general and course-specific assessment literacy components (strategies and skills) of different subject matter courses. To this end, the following research question was investigated in the present study:

(1) How do Iranian teachers with different academic backgrounds (humanities, science, English language, and non-English languages) view assessment literacy? How do the components of assessment literacy differ across different subject matters?

## 2. Literature review

The ultimate goal of every subject matter course of learning is to help learners achieve acceptable levels of knowledge. This goal may not be met unless rich assessment procedures that provide opportunities for learning enhancement are followed in learning courses (Abell & Siegel, 2011). Without assessment-directed learning contexts, learning of any subject matter is constrained. A useful starting point for promoting assessment-directed learning is identifying assessment literacy components having influence on teachers' assessment practices. This in turn, calls for determining teachers' assessment literacy levels.

Convergent supports (e.g. Sadler, Sonnert, Coyle, Cook-Smith, & Miller, 2013; Schwerdt & Wuppermann, 2008) exist for the claim that teachers have great influence on learning. Hence, research studies should primarily focus on the teachers to satisfy the assessment literacy needs of each specific learning context. To do so, studies should consider the cognitive and affective dimensions of teachers' professional development. Affective aspects involve teachers' conceptualizations of learning and teaching that are rooted in their degrees of self-awareness and identity formation (Scarino, 2013). Then, focus should be on the cognitive aspects of teachers' professional

development. Linguistic, cultural and pragmatic resources and pedagogical knowledge of how to put them into practice for different functional purposes should be considered to assist teachers' cognitive development (O'Loughlin, 2013).

The concepts of assessment and testing have different underlying theoretical bases. Testing is a positivist concept, whereas assessment is within the realm of critical theory (Fulcher, 2012; Popham, 2009). Accordingly, the scope of goals and applications of testing and assessment procedures differs to the extent that their methods of interpretation (i.e. positivism versus critical theory), conduction, and analysis are distinguished. Fulcher (2012) believes that assessment and testing are two incompatible cultures. Each of these cultures or contexts of practice has its specific principles which can be implemented using various skills, strategies, and components.

As opposed to the objectivist position of positivism, critical theory and socio-cultural perspectives acknowledge all the possible and alternative interpretations and meanings (either subjective or objective) that can be derived from an assessment (Johnson, 2009). This implies that not only test developers, but also other people including test users, test takers, administrators, materials developers, and even learners' parents are involved and connected to the assessment process (Jeong, 2013; Malone, 2013). During assessment both cognitive (learning) and affective (attitudes, beliefs, interests, etc.) concerns of the learners, teachers and other responsible people are considered. Investigating assessment literacy makes stakeholders aware of where they stand with regard to their assessment knowledge and skills (Scarino, 2013).

The provision of the assessment literacy is directly connected to the approaches that aim to satisfy stakeholders' various needs (Fulcher, 2012; Malone, 2013; Pill & Harding, 2013; Taylor, 2013). The needs analysis approaches may differ according to how they can reliably address different gaps. They can incorporate a variety of traditional and novel approaches such as the use of printed questionnaires to interviews and interventionist approaches. A fruitful combination of these different needs analysis approaches may yield applications for first identifying the gaps and then planning to perform different activities. Part of needs assessment procedures is limited to identification of the teachers' backgrounds. Examples of these backgrounds include teachers' preexisting knowledge on some subject matters such as classroom evaluation, statistics, and test theory (Jeong, 2013). Teachers' different background and ability levels underlie their need for various kinds and levels of knowledge. According to O'Loughlin (2013), learning courses may differ based on their instructors' backgrounds. This shows that various external and internal issues can influence the content and construction of assessment practices.

Identifying the main components of assessment literacy, one can assist teachers to achieve appropriate levels of assessment competence. The assessment literacy components can be discovered through interviewing stakeholders or using questionnaires and then analyzing the participants' responses while putting context at the center of attention. Context involves the conditions whereby different learning and testing programs are offered at the discretion of the responsible stakeholders (Jeong, 2013). Teachers can achieve assessment literacy based on their preferences, their familiarity with sources such as textbooks, workshops, narrative accounts, and their evaluations of the existing textbooks (Taylor, 2013). They can, further, benefit from various traditional programs, distance learning, blended learning, and self-access approaches (Taylor, 2013). Hence, the instructors', materials developers' and experts' views are useful for determining how much assessment literacy is needed for any context.

Because of their strong tendency for focusing on context in promoting and addressing assessment literacy, scholars are unable to prescribe some agreed-upon components for all the situations, stakeholders and subject matters. As Malone (2013) maintains, testing and teaching experts have different ideas regarding aspects of assessment literacy. From the perspective of testing experts, standards and criteria, test development processes, interpretations and analyses of test scores and focus on needs are the main components of assessment literacy. However, teaching experts favor

selection and application of appropriate tests as the general components of assessment literacy (Malone, 2013). Even non-language and language testing experts may have different ideas regarding assessment literacy components. As Jeong (2013) argues, unlike language testers, non-language testers have low tendency to use textbooks, because textbooks on assessment have been written by language testers and are very technical. Accordingly, the non-language testers tend to focus on every day learning and teaching activities inside the classroom contexts rather than the specialized textbooks provided by testing scholars (Jeong, 2013).

## 3. Method

### 3.1. Participants
The participants of the present study included 32 Iranian high school language (English, and non-English) and non-language (humanities, and science) teachers. There were eight teachers in each group. Non-English language teachers were teachers of Arabic and Persian languages. The age range of the teachers was between 25 and 40 and their experience of teaching at public high schools ranged from 1 to 11 years. Twenty-one point nine percent of the participants had BA/BS degrees, 65.6% had MA/MS degrees and the rest (12.5%) were PhD candidates. Furthermore, all the teachers were native speakers of Persian.

### 3.2. Instruments
The main instrument of the present study was a semi-structured interview (Appendix A) which was carried out in Persian, the dominant language of the Iranian context, so that the participants would not be constrained by their probable lack of English knowledge. The initial questions were related to the personal profiles of the participants such as their names, genders, mastered languages, teaching experiences, and educational degrees. Fourteen other questions addressed different aspects of assessment literacy. The interview questions were mainly prepared based on the assessment literacy components discussed in the related literature. The questions were then piloted with three teachers to determine their degree of understandability and clarity. As the discussions continued with the interviewees further questions were raised, as well.

### 3.3. Procedures
The national language of Iran is Persian due to the number of its speakers. Iranian students with diverse mother tongues pass through already established learning programs held via the medium of Persian language to be prepared for university entrance examination. Teachers in their pre-service or early in-service teaching missions teach common textbooks in the regions assigned by the ministry of science and education. Therefore, it is assumed that Iranian teachers spend a few years of their teaching profession in places other than their places of residence. Another issue regarding research in Iranian context is that no organization has been established yet to give the researchers permission to conduct their research studies in educational settings. Hence, the present researchers invited high school teachers to take part in this research. Then, only those teachers who accepted the researchers' invitations were interviewed. The time and place of interviews were also determined at the teachers' discretion. The interviewees were citizens of different cities representative of different cultures and experienced in teaching in different contexts.

This study followed a qualitative research design using interviews for data collection. The interview consisted of 14 questions. However, the researchers raised further questions for clarifying the points, increasing validity of the findings and avoiding biased interpretations when the interviewees provided ambiguous, unclear and general answers. The additional questions ranged from tag questions to questions asking for further explanations and examples. For example, the first interview question was uttered for an Arabic language teacher using more precise sentences. The original form of the question was: What methods do exist for assessing the courses that you teach? What scientific methods do you yourself use to assess your students? In answer to this question, the teacher talked about the historical background of assessment. As a reasonable way of preventing the interviewee from verbosity, the researchers tried to paraphrase the prompts in simpler words.

Examples included (a) to what extent are you familiar with the existing methods for assessing Arabic language? (b) Are there any well-established or usual procedures? (c) What are the ways to assess Arabic? Further, in some other interviews, the teachers talked about a concept vaguely. In these cases, without asking the teachers to provide examples, the researchers could not ensure whether the person was aware of the assessment issues theoretically, practically, both or none.

The interviews were conducted objectively without leading the participants to talk about the assessment literacy issues that the researchers had in their minds. This was done by applying equity rather than equality while providing interview prompts to the participants. The researchers simplified, repeated or elaborated the questions depending on teachers' levels of attention, personality factors, and external variables such as noise level.

Before conducting the interviews, the decision was to collect data from as many teachers as possible with consideration of their different teaching, learning and cultural backgrounds. Participants were selected through purposive and convenient sampling procedures. If the fields and backgrounds of the instructors allowed, the sampling procedure was purposive. However, due to the limited access to the participants and the existing constraints, sampling was mainly based on the availability of the participants.

The interview sessions were conducted in Persian and recorded by a voice recorder. After reaching the point of data saturation, interviewing was stopped. Then, the researchers including a native speaker of Persian and a PhD student of English Language Teaching transcribed the interviews. They coded the data based on open coding procedures to come up with some categories of assessment literacy components based on the recurrent themes and issues mentioned by the participants. The native speaker of Persian who had expertise in second language assessment rechecked the recorded interviews, the transcripts, and the identified themes. The problematic cases were then discussed and resolved.

## 4. Results

### 4.1. Assessment methods
Table 1 portrays the main sub-themes obtained from answers to the first interview question asking about the assessment methods that the Iranian high school teachers employ.

Drawing on what the teachers expressed about assessment and its different methods of practice, one could conclude that the teachers' assessment knowledge was of tacit nature. Teachers repeatedly referred to continuous and final assessment methods, and believed that they had a good command of these kinds of assessment. They were familiar with their native language technical equivalents of final and continuous assessment methods. Nevertheless, through detailed attention to the answers, one could understand that the teachers had low familiarity with and shallow knowledge of how these notions are put into practice.

A further issue, besides teachers' familiarity with the technical terminology of assessment, was that they viewed their different practices as either final or continuous assessment methods. It was as if, it had been imprinted in their minds that only two assessment methods (i.e. final and

| Table 1. Teachers' ideas on assessment methods | | | | |
|---|---|---|---|---|
| | Teachers | | | |
| | English (%) | Non-English (%) | Humanities (%) | Science (%) |
| Using only continuous/diagnostic assessment | 50 | 12.5 | 37.5 | – |
| Using a combination of final and continuous assessment | 50 | 87.5 | 62.5 | 100 |

continuous) existed and thus, other practices of assessment had to be viewed as varieties of these two methods. The teachers had developed some criteria for assigning their different practices of assessment into final and continuous assessment categories. Their main criterion seemed to be the time of practice and the possibility for repetition. If assessment was conducted at the end of the semester, the teachers called it final assessment. Some teachers referred to oral and written exams as different representations of final assessment method. The teachers considered other assessment methods such as end of chapter exams, midterm exams, oral exams, written exams, oral questions, class activities, group activities, homework assignments, quizzes, lab experiments, peer-assessment, and qualitative scorings which occur during the semester and can be used more than once in the category of continuous assessment. Most of the teachers who had developed such mental categorizations, answered the first interview question on methods of assessment by just referring to continuous assessment. The interviewer's requests for further explanations indicated that the teachers had in reality practiced some other assessment methods such as peer-assessment.

Further attention to the teachers' accounts indicated that they had familiarity with some other methods of assessment, without any knowledge of what they are technically called. For example, one of the teachers stated that "I ask my students to assess each other's learning achievements". This indicated her practice of peer-assessment, but the teacher was not familiar with what this practice is called in language testing and assessment. According to the interviewees, teacher training courses provide general theoretical information about assessment terms (such as final/summative and continuous assessment methods) without preparing the teachers for the actual practice of them. Thus, in practice, the teachers increasingly put more emphasis on their own experiences, and correspondingly less on theories.

English language teachers' ideas regarding final and assessment methods differed from other teachers' opinions (Table 1). Half of the English language teachers believed in the possibility of using only continuous assessment. In contrast, all the science teachers believed in using a combination of final and continuous assessment methods. This may indicate that English language teachers were more concerned with successive changes in the learners' performances due to assessment effects. Such a difference between English language and other subject matter teachers may distinguish assessment practices of instructors with testing and non-testing backgrounds.

## 4.2. Necessity of promoting assessment literacy

The second interview question was concerned with the teachers' beliefs about the necessity of improving assessment literacy. Participants provided similar responses to the question. They expressed their tendency for improving their assessment literacy and highlighted its importance. They believed that every teacher should achieve assessment knowledge because "assessment is the final step in teaching and if one wants to have a successful teaching, one should pay attention to assessment, as well" and "insofar as teaching methods and the applied textbooks have changed, one should … correspondingly change assessment methods". A psychology teacher, further, maintained that "teachers should learn about assessment, because assessment gives feedback to the teachers of how much their students have learned the lessons". Another teacher referred to assessment as "the complement of teaching that can increase learners' abilities to learn".

## 4.3. Factors enhancing quality of assessment

The third interview question enquired factors that could enhance the quality of assessment. The participants' responses showed that assessment features, teachers' and learners' attributes and a combination of them could contribute to high quality of assessment. Nevertheless, a number of teachers had no knowledge of assessment-enhancing factors and did not provide any answers to the question (Table 2).

Teacher attributes included the emergent characteristics that could arise and underpin teachers' successful practice of assessment. For example, a teacher held that "I think … teachers' education levels should be increased". Another teacher referred to "teachers' up-to-datedness". An English

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| Table 2. Factors enhancing quality of assessment | | | | |
|---|---|---|---|---|
| | **Teachers** | | | |
| | **English (%)** | **Non-English (%)** | **Humanities (%)** | **Science (%)** |
| Teacher attributes | | 37.5 | 50 | – |
| Learner attributes | 25 | – | – | 12.5 |
| Assessment attributes | 12.5 | 25 | – | 12.5 |
| Teacher and learner attributes | 12.5 | – | 37.5 | 12.5 |
| Assessment and teacher attributes | 37.5 | 25 | 12.5 | 25 |
| Assessment and learner attributes | 12.5 | – | – | – |
| Teacher, learner and assessment attributes | – | – | – | 12.5 |
| No answer | – | 12.5 | – | 25 |

language teacher maintained that "… the teacher should have sufficient knowledge to diagnose students' scientific levels and this raises the quality of assessment". A physics teacher further noted that "… the teacher should have some knowledge of psychology in order to establish effective communication with her students"; and according to a psychology teacher "… [The teacher] should [also] have general understanding of each student's mental state". Altogether, the interviewees referred to teachers' knowledge and education, experiences, goals, abilities to apply different assessment methods and the like as instances of teachers' required attributes. Learner attributes, on the other hand, consisted of "students' abilities to present their learned materials", "students' emotions", "students' awareness of teachers' expectations of assessment", and "students' learning progress". Finally, the category of assessment attributes included "having rich assessment contexts", "having specified goals", "applying conversation-based assessments", "using conceptual questions", "using standardized questions", "using various classroom activities", and "conducting regular evaluation".

Table 2 shows differences among different groups of the teachers, as well. The most noticeable difference is seen in rows 1 and 2 where many non-English language and humanities teachers focused on the significance of teachers attributes, whereas English language and science teachers highlighted the significance of learners attributes.

### 4.4. Assessment standards

Standards as the agreed levels of attainment in various assessment practices were also addressed in a separate interview question. Most of the interviewees believed that assessment standards could be described in terms of learners' performance factors and applicable educational policies. Their statements, however, were based on the belief that standardized assessment should direct the teachers' attention to learners' performance factors. Besides, 25% of English and 25% of science teachers preferred not to answer this question because of their inadequate knowledge (Table 3).

The teachers also provided some examples to allow the researchers a proper understanding of learners' performance factors and educational policies. Learners' "levels of learning and interest", "verbal abilities", "long-term performances", "scores", and "efforts" were frequently highlighted as the learners' performance factors. Further, teachers referred to "compliance with human values", "teacher's feedback on learners' performances", and "criteria approved by the Ministry of Education" as instances of educational policies.

Given the data provided in Table 3, teachers of all four groups signaled the highest contribution of learners' performance factors in determining the assessment standards. This was the only factor mentioned by humanities and science teachers in response to the fourth interview question. Nevertheless, 37.5% of English and 25% of non-English language teachers referred to educational

| Table 3. Assessment standards | | | | |
|---|---|---|---|---|
| Standards (including national and local standards) | Teachers | | | |
| | English (%) | Non-English (%) | Humanities (%) | Science (%) |
| Learners' performance factors | 37.5 | 75 | 100 | 75 |
| Educational policies | 12.5 | 12.5 | – | – |
| Integration of learners' performance factors and educational policies | 25 | 12.5 | – | – |
| No knowledge | 25 | – | – | 25 |

policies and integration of learners' performance factors and educational policies, as well. This indicated that language teachers had developed ideas on the role of educational policies in assessment.

### 4.5. Assessment principles and ethics

Most of the teachers (62.5% of English language and science teachers, 75% of non-English language and 50% of humanities teachers) believed that while assessing the students, both ethics (i.e. moral issues) and principles (i.e. technical issues) should be taken seriously. Among those who referred to either ethics or principles, more referred to ethics (25% of English and non-English language teachers, 50% of humanities and 37.5% of science teachers) than principles (12.5% of English language teachers). English language teachers were the only interviewees who considered the importance of principles alone. This could be another difference between teachers with testing and non-testing backgrounds.

Teachers stated that assessment principles incorporate issues such as "attention to the content", "use of different assessment methods", and "consideration of students' efforts". On the other hand, teachers believed that "fairness", "good communication with students", "building on one's trust to learners", "compassion", "understanding learners' mental and emotional states", "respecting the learners", "empathy", "patience", and "flexibility" were the main ethical issues.

### 4.6. Assessment resources

Teachers asserted that the Internet, contact with partners, experience, books, workshops, university courses, and their various integrations were the main assessment resources (Table 4).

As Table 4 shows, the teachers generally preferred a combination of different resources. Further, the teachers of all four groups had convergent views on the role of experience in increasing assessment knowledge. However, teachers had different ideas regarding other sources. Non-English language and humanities teachers were the only interviewees who mentioned the Internet as a resource. English language and science teachers were the only interviewees who called books as resources for attaining assessment knowledge. Finally, as Table 4 shows, science teachers were the only group who mainly emphasized on the important roles of university courses in increasing assessment literacy.

| Table 4. Assessment resources | | | | |
|---|---|---|---|---|
| | Teachers | | | |
| | English (%) | Non-English (%) | Humanities (%) | Science (%) |
| Internet | – | 25 | 37.5 | – |
| Experience | 12.5 | 12.5 | 25 | 12.5 |
| Books | 25 | – | – | 25 |
| University courses | – | – | – | 37.5 |
| Integration of various resources | 62.5 | 62.5 | 37.5 | 25 |

### 4.7. Necessity of familiarity with test formats and items

All non-English language, science and humanities teachers and most of the English language teachers (87.5%) maintained that a teacher should know about the unique properties of each test. An English teacher believed that "knowledge of the test format is a true representative of the teacher's level of literacy". Another teacher stated that "if a teacher is not aware of the ways to answer the test items, she cannot expect her students to provide the best answers to the test items". Similarly, an Arabic language teacher referred to teachers' knowledge of how to answer test items and their familiarity with types of items as "one of the main criteria for successful practice of assessment".

### 4.8. Main issues in assessment

Teachers believed that ethical and contextual issues should be prioritized in any assessment process. The principal assessment issue from the perspective of almost all the teachers (87.5% of English language and science teachers, and 100% of non-English language and humanities teachers) was contextual consideration. Nevertheless, unlike non-English language and humanities teachers who did not consider any space for ethical considerations, English language and science teachers (12.5%) highlighted the ethical factors. Fairness was the main ethical factor highlighted by the teachers. On the other hand, teachers believed that contextual considerations included attention to the number of learners, mental and emotional conditions of the learners, occupation and education of learners' parents, learners' life goals and objectives, learners' learning and knowledge levels, learners' individual differences, classroom context, applied question types, and the course contents.

### 4.9. General components of assessment literacy

The interviewees were asked to provide a description of the general assessment literacy components that teachers of every subject matter should know. They referred to the ability to identify the worth-assessing contents, familiarity with the assessment process, emotional understanding, ethical knowledge, and their various integrations as the general components of assessment literacy (Table 5).

The teachers stated that identifying, planning, and ordering the main contents help them to discern the worth-assessing contents. They further clearly explained "familiarity with the assessment process" by drawing the researchers' attention to different abilities including the ability to develop standardized questions, ability to determine students' learning levels, ability to use different assessment methods, and ability to deal with issues of validity and reliability. Besides, "consideration of the mental conditions of the students", "focus on individual differences", and "good interactions with the students" were emphasized as various aspects of teachers' emotional understanding. Then, the teachers characterized ethical knowledge by features such as familiarity with moralities and ethics of teaching and fair decision-making.

**Table 5. General assessment literacy components**

| | Teachers | | | |
| --- | --- | --- | --- | --- |
| | English (%) | Non-English (%) | Humanities (%) | Science (%) |
| The ability to identify the worth-assessing contents | 37.5 | 37.5 | 25 | 12.5 |
| Familiarity with the assessment process | 12.5 | 25 | – | 25 |
| Emotional understanding | – | – | 12.5 | – |
| Ethical knowledge | – | – | 12.5 | – |
| Various integrations of emotional, assessment, ethical and content issues | 37.5 | 37.5 | 50 | 50 |
| No knowledge | 12.5 | – | – | 12.5% |

| Table 6. Specific assessment literacy components | Teachers | | | |
|---|---|---|---|---|
| | English (%) | Non-English (%) | Humanities (%) | Science (%) |
| Teachers' ability to identify the main course-specific contents | – | – | – | 25 |
| Teachers' ability to assess course-specific issues | 87.5 | 100 | 100 | 62.5 |
| Teachers' psychological assistance | 12.5 | – | – | – |
| Various integrations of the above | – | – | – | 12.5 |

### 4.10. Specific components of assessment literacy

Specific components of assessment literacy are those which are uniquely related to a specific subject matter. Teachers were directly asked to refer to the components of assessment literacy specific to their fields of expertise. They expressed different issues. For example, a science teacher held that "problem solving and reasoning power are specific to assessing Physics". An English teacher stated that "in assessing English language learning, skills should be integrated, and the words should be considered in their contexts of use". The researchers considered the specific assessment components of each subject matter to come up with the related categories. They indentified four components including teachers' ability to assess the main course-specific issues, teachers' ability to identify the main course-specific contents, teachers' psychological assistance, and integrations of these issues (Table 6).

As Table 6 shows, teachers' ability to assess course-specific issues was a highly agreed-upon component for all the subject matter courses. This factor incorporated "written ability"(for English and non-English languages), "oral ability" and "language skills" (for English language), "memory power" (for humanities), "rules" (for non-English languages), and "real life application of knowledge", "analytic power (e.g. problem solving, reasoning power, linking the issues together)", "lab experiments", "comprehension", "theoretical issues", "practical issues", "understanding figures, diagrams, and tables", as well as "laws and formulae" (for science). Psychological assistance as another factor covered issues such as "ability to solve psychological problems", and "ability to change the students' world views". Besides, science teachers' reference to teachers' ability to identify the course-specific contents may indicate the importance of teachers' knowledge, and not their skills alone in science courses.

### 4.11. Teacher training courses

All the teachers believed that teacher training courses are necessary for improving teachers' assessment knowledge. Fifty percent of the English language teachers, 37.5% of the non-English language teachers, 75% of the humanities teachers, and 62.5% of the science teachers had participated in teacher training courses. They stated that their teacher training courses had focused on either theoretical concepts or a combination of theoretical and practical issues. The rest of the teachers, however, remained silent on this question as they had no experience of attending teacher training courses (Table 7).

| Table 7. Teacher training course contents | Teachers | | | |
|---|---|---|---|---|
| | English (%) | Non-English (%) | Humanities (%) | Science (%) |
| Theoretical issues | 25 | – | 12.5 | – |
| Integration of theoretical and practical issues | 25 | 37.5 | 62.5 | 62.5 |
| No knowledge | 50 | 62.5 | 25 | 37.5 |

The participants mentioned that the theoretical aspects of teacher training courses revolved around academic courses including educational and public psychology, testing, counseling and philosophy of education that could underpin their conceptual knowledge about teaching and assessment. According to the interviewees, the practical part of teacher training courses had included monitoring sessions during which the teachers observed different assessment and teaching practices. Nevertheless, one of the complaints the teachers had about the existing teacher training courses was their greater emphasis on teaching than assessment practices.

## 5. Discussion

Research has suggested that teachers as the major stakeholders in the assessment process are not immune to the effects of assessment (Fulcher, 2012). The results of assessment are not restricted to the learners, but affect the teachers and other stakeholders, as well. Therefore, teachers should not simply go through the assessment process without being equipped with enough expertise in assessment. The present study was an attempt to address the general and specific components of assessment literacy that high school teachers of different subject matters are expected to have for successful conduction of assessment. To this end, issues related to assessment literacy were identified through interviews.

Most of the interviewees favored a combination of formative (continuous or diagnostic assessment) and summative (final) assessment methods. About half of the English language teachers believed that continuous assessment without using final assessment could be enough. Their higher preference for continuous assessment compared with other subject matter teachers is in line with what Swaffield and Dudley (2010) stated concerning the English language teachers' tendencies for formative assessment due to its beneficial roles. They referred to what has been much debated regarding the advantages of continuous assessment over traditional written tests. Provided with continuous assessment methods, teachers can validly assess learners' expertise and skills; something that is highly unlikely to be captured by traditional tests whose focus is on memory and written abilities of the learners (Swaffield & Dudley, 2010). Wiliam (2000) signified the importance of formative assessment and suggested that formative assessment approaches even those developed by teachers, if appropriately applied, can be more reliable representatives of learners' knowledge levels than do final assessment methods. Black and Wiliam (1998), further, provided evidence concerning the positive contribution of formative assessment to increasing students' learning achievements.

In response to the question asking their favorite kind of assessment, teachers favored continuous assessment over final assessment. They supported their views by referring to beneficial influences of continuous assessment including the possibility for compensation of one's mistakes, its reflection of the students' real abilities, increasing learners' opportunities for fixing their probable problems, and error reduction in the assessment process. The interviewees' expressed reasons confirmed Popham's (2009) claim concerning the role of formative assessment in adjusting learners' and teachers' academic performances.

Teachers should adjust their perceptions of assessment literacy based on the assumption that assessment and testing are two different cultures (Shepard, 2000). The idea behind assessment process is the necessity of considering context and learners' performances continuously (Alvarez, Ananda, Walqui, Sato, & Rabinowitz, 2014; Dunphy, 2008). This implies that final assessment alone may not play any significant role in teachers' acts of decision-making. Hence, formative or continuous assessment which is in line with the assumptions of assessment literacy could be preferred over final or summative assessment. Swaffield and Dudley (2010) maintained that when the teacher has knowledge of the prerequisites of learning activities, formative assessment can cover summative purposes, as well.

All the interviewees believed that assessment literacy as an important issue is needed in educational processes. This supports Popham's (2009) claim concerning the fundamental role of learning about assessment in assisting teachers to overcome their problems. Moreover, teachers'

assessment literacy especially in foreign language contexts highly increases their readiness to face the existing challenges (Vogt & Tsagari, 2014).

The teachers further signaled the close interconnections of teaching, learning, and assessment as the main reason for their emphasis on assessment literacy. The link between these three educational concepts has been pinpointed by Cheng (2008), as well. Most of the interviewees believed that teachers need to have content mastery, the ability to identify the worth-assessing contents and knowledge of different forms of assessment. They maintained that in order to be a good assessor, the teacher should have realistic expectations. They meant that the teacher should expect the students to answer to only the questions asking for the already covered contents.

Teacher attributes and a combination of teacher and learner attributes were identified as the most important factors enhancing assessment quality. As Vogt and Tsagari (2014) claimed, teachers attribute especially their degrees of training in pre- and in-service courses contribute to their assessment literacy. Examples of teacher attributes are their attained expertise about different standardized tests and their psychological knowledge especially for playing their consultative roles in guiding the learners to explore the most effective and plausible learning options (Vogt & Tsagari, 2014). Closely connected to learners attributes are their learning performances. According to Popham (2009) learners' accomplishments in continuous assessments can act as a good index for quality enhancement of assessment. He believed that knowledge of assessment is pivotal for teachers' professional development. Further, Artelt, Baumert, Julius-McElvany, and Pescha (2003) maintained that the learning and academic aspects of learners' lives are highly affected by quality of the assessment process. Nevertheless, as most of the interviewees held and in line with what Fulcher (2012) argued, educational policies do not readily allow teachers to change the assessment issues. Assessment attributes such as standard assessments with well-specified rubrics depend on the educational policies that govern teachers' assessment practices. That is why, despite their creative views about the assessment process, the teachers could not operationalize what they have learned about assessment.

The interviewees stated that they frequently refer to learners' scores as the criterion for their assessment practices. They viewed learners' scores as an aspect of the contextual factors required to be considered for decision-making. This reflected teachers' lack of sufficient knowledge of assessment and indicated a contradiction between what they said and what they did. Careful attention to the words stated by the teachers indicated that unlike their emphasis on contextual issues, they could not clearly specify the components of context. This indicated the teachers' tendency to practice assessment based on traditional testing beliefs and thus, represented an anti-assessment culture in the educational context.

Although the majority of the teachers of all the four groups favored both ethics and principles as underlying issues in their assessment processes, some referred to either ethics or principles. This was unlike what Davies (2008) put concerning the nested nature of assessment principles that incorporate ethics within their broad category. Such arguments may direct one's attention to the rare number of materials especially books that according to Gipps (1994) are applicable to all situations. Simply put, the available ethical guidelines that have been provided to teachers have not focused on different learning situations. Hence, one main issue to be considered is the extent to which learning and teaching conditions that have been provided for the learners are similar to each other (Green, Johnson, Kim, & Pope, 2007). On the other hand, regarding the assessment principles, scholars have asked the stakeholders to focus on principles such as reliability (e.g. Bachman, 1990), validity (e.g. Messick, 1980; Van der Walt & Steyn, 2008), transferability, generalizability, and relevance.

The teachers, especially those who had passed teacher training courses, held that the available books have not been developed for a specific field of study or subject matter. Rather they are general and can only help teachers gain knowledge of the general issues regarding the assessment process. They believed that textbooks do not consider authentic and real learning situations. They provide technical information that rarely comes into play while conducting assessment. Teachers, who had

not passed teacher training courses, complained about the too much technicality of the available books. This is because due to their sole focus on technical issues with limited consideration of real-life situations, the textbooks are inappropriate sources to attain assessment knowledge (Taylor, 2009). Hence, most of the teachers maintained that to deal with the complexities of assessment in the learning contexts, they did not simply rely on textbooks. Rather, they used a combination of different resources especially their experiences and the Internet.

According to Fulcher (2012), assessment literacy consists of some components that have not been yet identified. The core components of assessment literacy according to the interviewees were a combination of emotional, assessment, ethical and content issues. Kahl, Hofman, and Bryant (2013) value skills and knowledge as the core components of assessment literacy which commonly challenge all the subject matter teachers. Nevertheless, they did not specifically identify the building block components of knowledge and skills. Inbar-Lourie (2013) believed that identifying the assessment literacy components of each specific course and those components which commonly play roles in all subject matter courses is very important. Participants of this study stated that the knowledge component of assessment literacy incorporates teachers' ability to identify the worth-assessing contents in any assessment process. They called this ability *content mastery*.

Most of the teachers referred to teachers' ability to assess different course contents as the specific component of assessment literacy. According to Scarino (2013), this ability is crucial for improving the quality of educational and specially language courses. Every subject matter course should be assessed according to its students' learning needs. In this regard, the need for increasing teachers' knowledge of a contextually appropriate assessment is felt (Lantolf, 2000). Context by itself refers to the courses, situations, and environments and teachers' and learners' emotional and mental states—as maintained by the interviewees—that may constrain teachers' practices of assessment policies (Lantolf, 2000). Here, the word 'constraint' does not necessarily have negative connotations. It may refer to navigating the teachers to the issues particular to their fields of expertise instead of focusing on unimportant issues. In this sense, knowledge of the specific assessment literacy components may guide teachers toward the shortest and most appropriate routes toward their professional and performance development.

Almost all the teachers who had passed teacher training courses maintained that their course contents included a combination of theoretical and practical issues with a specific focus on teaching rather than assessment or testing. Most of the teachers thought that the existing programs need revisions as they do not meet the teachers' assessment-related needs. As Popham (2009) argued, most, if not all the teachers who participate in teacher training courses, have no special knowledge added to their assessment literacy.

## 6. Conclusion

The findings of this study can be best summarized in terms of the similarities and differences between the ideas of different subject matter teachers regarding the general and specific assessment literacy components. Science, humanities, and non-English language teachers put increasingly more emphasis on a combination of continuous and final assessment methods, and correspondingly less on continuous assessment alone. English language teachers, however, pinpointed the similar contributions of continuous assessment alone and a combination of continuous and final assessments.

All four groups of the teachers referred to the contribution of experience in attaining assessment knowledge. Science teachers considered a role for university courses, whereas language teachers referred to the beneficial effects of integrating different assessment resources. The teachers were similar in terms of their emphasis on contextual considerations as an important assessment issue. Nevertheless, science and English language teachers' ideas were to some extent different as they referred to roles of ethical considerations.

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Finally, all the interviewees stated that teachers' ability to assess subject matter course-specific issues was the specific component of assessment literacy. English language and science teachers referred to additional assessment components that could differentiate assessment literacy across different subject matter courses. In this regard, English language teachers highlighted teachers' psychological assistance to their students' emotions and science teachers signaled teachers' content mastery. Finally, most of the interviewees maintained that teachers' integration of emotional, assessment, ethical, and content issues was a general assessment literacy component which is required for all teachers.

This study discovered the general and specific assessment literacy components playing roles in teachers' practices of assessment. It is recommended that in-depth and well-designed empirical studies be conducted in the future to investigate the influence of each of these identified components in action. As the assessment literacy demands are context-bound, the researchers are suggested to extend this study to other contexts such as universities, middle schools, and elementary schools. Further, it may be suitable to develop questionnaires to check the importance and contribution of these components in other contexts of assessment practice.

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## Appendix A

**Interview questions**

Interview on the Core (gener.al) and Specific Components of Assessment Literacy across different subject matter courses

Personal information

Name (optional): _____

Gender: _____ Age: _____

Languages spoken/written other than Persian: _____

Experience to date in teaching: _____

What is your current educational degree?

How would you rate your familiarity with assessment process? (for example: very high, high, medium, low, very low)

Questions

(1) In your opinion, what methods do exist for assessing the subject matter that you teach? What scientific methods do you yourself use to assess your students?

(2) In your opinion, is it necessary for teachers to learn about methods of assessing students' learning?

(3) What can enhance the quality of assessment? In other words, are there any requirements and knowledge that are required for teachers to assess the students?

(4) What standards of measure do you think are required to assess the students' learning? Are you familiar with the state, national, or local standards?

(5) Are you familiar with ethical considerations in assessment? Do you think they should be in the list of required learning needs of teachers?

(6) Based on what principles, beliefs, and values do you do the process of assessment?

(7) Through what resources (e.g. books, internet …) do you grow your awareness of assessment process?

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(8) Is it necessary for a teacher to be familiar with the formats of the tests and the ways different tests should be answered?

(9) In your opinion, what kinds of issues or factors are more important and should take priority in students' learning assessment?

(10) Which type of assessment (e.g. end of term, continuous, or any other types) is preferred for your field of study and teaching? Bring some reasons to support it.

(11) In your opinion, what are the core components of assessment that the teachers of all the subject matter courses should consider or be aware of?

(12) In your opinion, are there any specific components of students' learning assessment that the teachers specialized in your area of teaching are required to consider and be aware of?

(13) In your opinion, is it important for teachers to have passed teachers training courses before students' learning assessment? Have you attended these courses? What was the content of these courses? Do you believe it is important for teacher educators to have field experience in order to teach the course?

(14) Do you have any other comments that have been missed about assessment and should be added to the current interview questions?

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