



**Assessment Literacy in Light of Teachers' Discipline:
hard sciences, soft sciences, and ELT**

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Abstract

The current study attempted to investigate and compare the perceptions of Iranian in-service hard disciplines, soft disciplines, and English teachers of their prognostic, formative, and summative assessment literacy. To this end, a total number of 282 high school teachers (94 teachers from each disciplinary groups) were asked to complete the modified and validated version of Rahimi and Rastgoo's (2017) questionnaire. To enrich the quantitative phase, 90 teachers (30 ones in each group of disciplines) were also interviewed. The results of one-way ANOVA and multiple comparisons revealed a significant difference between hard disciplines and English teachers in terms of their prognostic and summative assessment literacy. However, no significant difference was found among the three groups in terms of their formative assessment literacy. The content analysis of the interviews cast light on the commonalities and discrepancies of assessment perceptions and practices depending on the teachers' disciplines. The findings can be transferred to teacher education programs to enhance the teachers' subject-specific assessment competencies.

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Introduction

Assessment literacy is the essence of teachers' professional identity (DeLuca, LaPointe-McEwan, & Luhanga, 2015). Given the current global accountability framework of public education, developing and promoting the educators' assessment literacy is conceived as a must (Popham, 2013) and an onerous professional responsibility for the teachers within the twenty-first century (Fulcher, 2012). It entails the teacher competency in devising and administering reliable and valid assessment tools and evaluating the learners' performance to expedite the fulfillment of the educational objectives and standards (Popham, 2013).

Since the teachers spend almost half of their time on assessment practices which, in turn, exert an immediate effect on other teaching routines (Brookhart, 1998), well-organized and well-founded assessment procedures enhance the quality of both teaching and learning experiences (Stiggins, 1999). Indeed, the high quality of assessment practices leads to increased motivation and heightened degree of learning among the students (Brookhart, 1999). However, despite the significance attached to developing the teachers' assessment skills, they seem to be not adequately primed for assessing the students' performance (Mertler, 2004; Zhang & Bury-Stock, 2003).

Generally, research on assessment literacy in the educational settings has remained in its infancy (Fulcher, 2012). As a new concept, it needs a more meticulous scrutinization in order to be fully understood (Salimi & Farsi, 2020) due to its tremendous role in settling the fate of the educational programs and participants. Since the social and academic consequences may ensue from assessment-based decisions (Messick, 1989; Popham, 1997; Stiggins, 1992), the teachers' competency in designing and implementing fair testing procedures to check the learners' achievements rises to prominence as a vital concept in the educational settings.

Notwithstanding the available literature on the teaching practitioners' perceptions of assessment literacy, no sufficient research has been allocated to exploring the possible impact of discipline on it. Assessment practices are at the core of the instructional modus operandi of the teachers. Considering the essentially distinct instructional challenges the teachers of various disciplines face as well as their idiosyncratic teaching modes (Lawson, Çakmak, Gunduz, & Busher, 2015), it might be speculated that perceptions of assessment skills are influenced by the subject they teach. The teachers' understanding of the required assessment skills might fall under the influence of the specificities of each discipline. Embedded in the purpose of the study is the premise that teachers' self-perceived assessment skills might be impacted by the subjects they teach (Adams & Hsu, 1998; Stiggins & Conklin, 1992).

With this in mind, the current study aimed to investigate the perceptions of in-service hard disciplines, soft disciplines, and ELT teachers of their assessment literacy to unravel the commonalities and peculiarities resulting from this occupational feature. Our fundamental aim in conducting this study was to provide a starting point for future research to cover the broad spectrum of assessment literacy and assessment practices in Iranian educational settings in light of teachers' occupational characteristics, namely discipline. Further research in this regard would strengthen the current existing literature on assessment literacy. In fact, the study addressed the following questions:

1. How do Iranian in-service hard disciplines, soft disciplines, and ELT teachers perceive their assessment literacy (AL)?
2. Is there any significant difference among Iranian in-service hard disciplines, soft disciplines, and ELT teachers in terms of their self-perceived assessment skills?

Literature Review

Classroom assessment encompasses a wide range of techniques to measure and interpret the learners' performance (Zhang & Burry-Stock, 2003). Assessment practices should conform to the various objectives and instructional approaches (Airasian, 1994). As a result, a systematic planning and a meticulous implementation of the scoring protocols should be considered to put the learners on the right learning track drawing on their strengths and weaknesses (Zhang & Burry-Stock, 2003). Interpreting the results of the assessment and making the subsequent decisions also require professional skills. All these place a heavy burden on teachers and urge them to become highly skilled in developing, administering, and choosing the most appropriate methods and tools, scoring the tests, and interpreting the results to reach a clear understanding of the learners' achievements during an academic year. However, the teachers of various subjects differ in their concerns about the quality of their assessment practices (Stiggins & Conklin, 1992). For example, the mathematics and science teachers were found to place more importance on increasing the efficiency of their assessment techniques and procedures (Adams & Hsu, 1998).

To meet the requirements of the teaching profession, the educators must be assessment literate (Razavipour, 2013). Assessment literacy enables the teachers to evaluate the students' learning experiences and their own teaching routines. The concept came to the fore by the pioneering works of Stiggins (1991) who put forth the essential skills for developing and enhancing assessment literacy. Assessment is an inalienable dimension of the educational programs (MacBeath & Galton, 2004). Iranian educational system is no exception in this regard. However, the concept of assessment literacy has not been given its deserved attention and many educators are still unaware of the constituent skills of their assessment literacy (Salimi & Farsi, 2020).

Stiggins (1999) defined assessment literacy as teachers' understanding of appropriate assessment methods to gather reliable information about the students' achievements at the right time by the right means. He also referred to the effective interpretation and communication of the results to the students, their parents, and other educational staff as an ability constituting assessment literacy. Inbar-Lourie (2008) described it as the ability "to ask and answer critical questions about the purpose for assessment, about the fitness of the tool being used, about testing conditions, and about what is going to happen on the basis of the results" (p.339). Ng, Xie, and Wang (2018) defined assessment literacy in terms of understanding the regulations and routines of a fair assessment.

Assessment literacy entails familiarity with the development and administration of assessment methodologies and standards of quality in assessment (Paterno, 2001). Stiggins (1995) asserted that assessment literate educators "know the difference between sound and unsound assessment" (p.2.0). It is conceived as the key concept in The Standards for Teacher Competence in the Educational Assessment of Students (Brookhart, 2001). Resulting from the

joint effort of the American Federation of Teachers, the National Council on Measurement in Education, and the National Education Association, seven principles were presented as the constituents of assessment literacy including the ability to choose and develop appropriate assessment methods for making instructional decisions, taking advantage of the results of the assessment in modifying, changing, or rearranging the instructional procedures, developing valid peer assessment techniques, communicating the assessment results to the relevant sources, identifying unethical and inappropriate methods and interpretations of assessment results (Plake & Impala, 1996).

These criteria highlighted the significance of professional development in planning, implementing, and monitoring the classroom assessments (Brookhart, 2001). However, Brookhart (2001) argued that the 1990 standards failed to account for the current conceptions of assessment practices for learning and overlooked the changing technical and social issues in educational settings. In fact, teachers are inevitably involved in an ongoing process of making judgements about the individual learners' performance and their assessment literacy plays a determining role in this regard (Fulcher, 2012). To rise to the emerging educational challenges, the teachers must be competent to recognize the valid and reliable means of assessment (Nikmard & Zenouzagh, 2020). The changing nature of assessment and the growing divergence from the traditional testing approaches call upon the teachers to update their bulk of knowledge on relevant issues and their assessment practices are otherwise perceived as presumably lacking adequate credibility.

To cast light on the teachers' assessment literacy in educational contexts, numerous studies have been conducted. Alsarimi (2000) explored the classroom assessment practices among teachers in Oman and observed no significant differences resulting from the years of teaching experience. In another study, Zhang and Burry-Stock (2003) probed into the teachers' assessment skills across their teaching levels and content areas and showed that an increase in the grade level led to more reliance on objective classroom tests as well as more concern for enhancing the quality of assessment. Furthermore, the subjects they taught influenced their assessment perceptions and practices.

Moreover, King (2010) noticed no significant differences among the teachers and administrators in the state of Alabama and Mississippi considering the criterion-referenced tests in light of their teaching experiences. In Phillipines, Hailaya (2014) demonstrated that the elementary and secondary school instructors were lowly literate in assessment principles and practices. Moreover, Xu and Brown (2017) investigated the Chinese university instructors' level of assessment literacy with regard to their demographics and found out no statistically significant impact. Abbasiyan and Koosha (2017) also compared the English and non-English instructors' perspectives about their assessment literacy in English for academic purposes classes and found out that English instructors were more assessment literate than their non-English counterparts. They further pointed to the low level of assessment literacy among the instructors in both groups regardless of their major. Deygers and Malone (2019) examined the assessment literacy among the university admission officers and policymakers via conducting interviews. More recently, Kim, Chapman, Kondo, and Wilmes (2020) investigated the educators' assessment literacy with regard to their perceptions of the usefulness and

meaningfulness of the scores. In addition, Salimi and Farsi (2020) compared two groups of EFL native and non-native speaker teachers in terms of their assessment literacy and found out palpable differences. Nevertheless, their study revealed no significant differences between male and female teachers considering their perspectives towards this notion.

As the review of literature indicates, most of the inquiries focused on assessment literacy so far have availed themselves of mere quantitative or qualitative measures (Coombe, Vafadar, & Mohebbi, 2020). Furthermore, no direct reference has been made to the possible impact of the teachers' discipline on their perceptions of assessment literacy to see if the subjects they teach would affect their perspectives. Assessment literacy has been viewed as "a dynamic context-dependent social practice" (Willis, Adie, & Klenowski, 2013, p.242), and thereby, the social, contextual factors related to the teaching and testing requirements, namely the teachers' discipline, may influence the practitioners' perceptions of the assessment procedures. Accordingly, the current study benefitted from a mixed-methods design and included teachers of various disciplines in the sample to fill this void. In one study (DeLuca & Klinger, 2010), Canadian teachers were considered and shown to be more literate in conducting summative assessment while they lacked the adequate familiarity with and skills at implementing formative assessment techniques. Adopting the seemingly similar approach and extending this concern to the Iranian high school teachers' assessment literacy, the present study looked into this concept in terms of prognostic, formative, and summative assessment literacy which covers almost all assessment practices throughout the educational curricula.

Method

Being situated within a mixed-methods design, the study took advantage of both quantitative and qualitative methods to investigate the in-service hard disciplines, soft disciplines, and ELT teachers' perceptions of their assessment literacy.

Participants

The sample of the current study embodied a total of 282 teachers (94 hard disciplines, 94 soft disciplines, and 94 ELT teachers) from public high schools throughout Iran. They were selected on the basis of a combination of convenient sampling and snowball sampling procedures. They were 144 male and 138 female teachers whose age ranged from 22 to 55 (M= 49) with different profiles of teaching experiences from 3 to 30 years (M= 12). They held various educational degrees, namely BA (95 teachers), MA (148 teachers), and PhD (39 teachers). Furthermore, 90 teachers (30 teachers from each group) voluntarily took part in the interviews. Table 1 provides the demographic information about the participants.

Table 1. *Demographic Information of the Participants*

Groups	Hard disciplines	Soft disciplines	ELT
Number	94	94	94
Gender	54 males and 40 females	48 males and 46 females	42 males and 52 females
Age range	22- 55	22- 53	22-42
Experience	3-20	5-28	4-19
Degree	BA(35),MA(48),PhD(11)	BA(25),MA(56),PhD(13)	BA(35),MA(44),PhD(15)
Majors	physics(21),algebra(15), math(32), biology(26)	theology(33),history(32), literature(18), sociology(11), psychology (11)	ELT(94)

Instrumentation

A research questionnaire is used for eliciting personal information on attitudes, beliefs, and behaviors of participants' self-report. Following this tradition in the field, the researchers used a 22-item questionnaire on five-point Likert scale ranging from 1 (very low) to 5 (very high). It was the adapted and modified version of the questionnaire used in Rahimi and Rastgoo's (2017) study to explore the primary school teachers' perceptions of their assessment literacy. To validate the instrument for the current study, it was given to five experts in the field of applied linguistics who were active researchers and university instructors and familiar with the topic of the study and then, it was modified according to their suggestions. The modified version was given to the same experts and were finalized. The final questionnaire included three major sections eliciting the participants' perceptions of their prognostic assessment literacy (4 items), formative assessment literacy (12 items), and summative assessment literacy (6 items). The reliability was calculated and the Cronbach's alpha coefficient was 0.92 for the questionnaire while the coefficients for the subsections were calculated as .89 (prognostic), 0.90 (formative), and 0.87 (summative). As a valid and reliable instrument, the questionnaire was distributed to probe into the perceptions of assessment literacy among teachers of various disciplines. It is worth noting that the questionnaire was written in Persian, the participants' native language, due to ease of comprehensibility and clarity.

In addition, to conduct a thicker and deeper analysis of the participants' perceptions and experiences (Robinson & Lai, 2006), interviews were utilized. In this regard, the relevant literature was comprehensively reviewed and the available instruments were checked, and six interview questions were formulated accordingly. The questions were given to the experts who were involved in validating the questionnaire since they were well aware of the purpose of the study and the intended group of participants. The questions were revised, rechecked, and finalized. Hence, a semi-structured interview was conducted in qualitative phase of the study to examine the similarities and differences among the hard disciplines, soft disciplines, and ELT teachers in terms of their perceptions of assessment literacy in their classes.

Data Collection Procedures

The questionnaires were sent via Google Form on WhatsApp groups involving the high school teachers in Tehran. A total of 300 questionnaires were received. However, 18 questionnaires were omitted from the data due to being incomplete or following a pattern in their completion. Hence, 94 completed questionnaires remained for each group of the participants, namely hard disciplines, soft disciplines, and ELT teachers. The researchers set a time with those teachers who granted permission to be interviewed by leaving their mobile numbers or email addresses at the end of the questionnaire. Among the volunteer participants, 30 ones from each group were randomly interviewed via WhatsApp video calls. The data were gathered through WhatsApp due to the school closures resulting from the outbreak of COVID-19. The teachers were ensured of the confidentiality of the data.

Data Analysis Procedures

The questionnaires were gathered and interviews were transcribed. In order to analyze the data, SPSS (26.00) was used. Descriptive statistics was used and the teachers' perceptions of their

assessment literacy were reported by referring to the mean and standard deviation values. In order to answer the second research question, that is exploring the possible significant differences among the hard disciplines, soft disciplines, and ELT teachers in terms of their self-perceived assessment skills, ANOVA was run. Following that, Tukey HSD was conducted to spot the areas of difference among the three groups in terms of their prognostic, formative, and summative assessment literacy. The content analysis of the transcribed data from the participants' responses to the interview questions was also conducted. The common and recurrent themes were extracted for each interview questions and reported. Some sample quotations from each group of the participants were also included in the report.

Results

Quantitative Results

The purpose of the study was to explore the way Iranian in-service hard disciplines, soft disciplines, and ELT teachers perceived their assessment literacy. Table 2 displays the descriptive statistics for the participants' perceptions of their assessment literacy in general and their prognostic, formative, and summative assessment literacy in particular.

Table 2. Descriptive Statistics for the Assessment Literacy of Iranian In-service Hard, Soft, and ELT Disciplines Teachers

Disciplines	Literacy	N	Min.	Max.	Mean	SD
Hard	Prognostic	94	4.00	20.00	12.38	3.88
	Formative	94	23.00	59.00	42.92	7.78
	Summative	94	16.00	30.00	23.87	3.27
	Total	94	44.00	108.00	79.180	13.51
Soft	Prognostic	94	4.00	20.00	13.42	3.33
	Formative	94	29.00	58.00	45.13	7.09
	Summative	94	15.00	30.00	24.48	3.11
	Total	94	55.00	106.00	83.15	11.82
ELT	Prognostic	94	4.00	20.00	13.42	3.33
	Formative	94	29.00	58.00	45.13	7.09
	Summative	94	15.00	30.00	24.48	3.11
	Total	94	55.00	106.00	83.15	11.82

According to Table 2, Iranian in-service hard disciplines teachers had almost average degree of prognostic assessment ($M = 12.38$, Median = 12, $SD = 3.88$), a high degree of formative assessment ($M = 42.92 > \text{Median} = 39$, $SD = 7.78$), and a very high degree of summative assessment ($M = 23.87 > \text{Median} = 15$, $SD = 3.27$). Generally, Iranian in-service hard discipline teachers had a very high degree of total assessment literacy ($M = 79.18 >> \text{Median} = 66$, $SD = 13.51$).

Moreover, Iranian in-service soft discipline teachers possessed a high degree of assessment literacy in terms of prognostic assessment ($M = 13.42 > \text{Median} = 12$, $SD = 3.33$), a high degree of formative assessment ($M = 45.13 > \text{Median} = 39$, $SD = 7.09$), and a very high degree of summative assessment ($M = 24.48 >> \text{Median} = 15$, $SD = 3.11$). In general, Iranian in-service

soft discipline teachers showed a very high degree of total assessment literacy ($M = 83.16 \gg$ Median = 66, $SD = 11.83$).

Furthermore, Iranian ELT teachers had a high degree of prognostic assessment ($M = 13.83 >$ Median = 12, $SD = 4.69$), a high degree of formative assessment ($M = 44.22 >$ Median = 39, $SD = 6.49$), and a very high degree of summative assessment ($M = 25.70 \gg$ Median = 15, $SD = 4.39$). Totally, Iranian ELT teachers revealed a very high degree of total assessment literacy ($M = 83.92 \gg$ Median = 66, $SD = 10.71$).

In general, the results of descriptive statistics indicated that ELT teachers perceived themselves as highly literate in the prognostic and summative assessment while soft disciplines teachers considered themselves as highly literate in the formative assessment compared to their counterparts. The results further indicated the higher degree of assessment literacy among the ELT teachers, followed by soft disciplines and hard disciplines ones.

The second purpose of the study was to investigate whether there was a significant difference among Iranian in-service hard disciplines, soft disciplines, and ELT teachers in terms of their perceptions of assessment literacy. Analysis of variance (ANOVA) and multiple comparisons were performed to address this research question.

The results of Levene's test of equality of error variances for the assessment literacy ($p = 0.34$) and its three components in the study, namely prognostic ($p = 0.13$), formative ($p = 0.76$), and summative ($p = 0.32$) showed that the assumption of homogeneity of variance was not violated for the obtained scores. Table 3 illustrates the results of ANOVA.

Table 3.
ANOVA Results for the Three Group of Teachers' Assessment Literacy

		Sum of Squares	df	Mean Square	F	Sig.
Prognostic	Between Groups	111.518	2	55.759	3.426	.034
	Within Groups	4541.362	279	16.277		
	Total	4652.879	281			
Formative	Between Groups	223.177	2	111.589	2.177	.115
	Within Groups	14300.415	279	51.256		
	Total	14523.592	281			
Summative	Between Groups	150.326	2	75.163	5.706	.004
	Within Groups	3674.979	279	13.172		
	Total	3825.305	281			
Total	Between Groups	1173.702	2	586.851	4.012	.019
	Within Groups	40813.436	279	146.285		
	Total	41987.138	281			

According to Table 3, the results revealed a significant difference among Iranian in-service hard disciplines, soft disciplines, and ELT teachers in terms of prognostic assessment ($F_{(2, 279)} = 3.43$, $p = .03$, $p < .05$) and summative assessment ($F_{(2, 279)} = 5.71$, $p = .004$, $p < .05$). Conversely, ANOVA was not statistically significant in terms of formative assessment ($F_{(2, 279)} = 2.18$, $p = .11$, $p > .05$). Besides, ANOVA results showed that there was a significant

difference among three groups of teachers regarding their perceptions of their total assessment literacy ($F_{(2, 279)} = 5.71, p = .004, p < .05$).

However, as Pallant (2013) argued, ANOVA fails to spot the exact locus of difference; hence, multiple comparisons were conducted (see Table 4) and Tukey HSD was conducted since the sample size was the same for each group (Hatch & Lazaraton, 1991).

Table 4

Multiple Comparisons for In-Service Soft Discipline, Hard Discipline, and ELT Teachers Regarding Prognostic, formative, and Summative Assessment

Dependent Variable	(I) MAJO	(J) MAJO	Mean Differenc e(I-J)	Std. Error	Sig.	95% Confidence interval		
						Lower Bound	Upper Bound	
Prognostic	Tukey HSD	ELT	Soft	.404	.588	.771	- .982	1.790
		Hard	Hard	1.489	.588	.032	.102	2.876
			SOFT	-1.085	.588	.157	-2.481	.301
Formative	Tukey HSD	ELT	Soft	-.914	1.044	.656	-3.375	1.545
		Hard	Hard	1.255	1.044	.453	-1.205	3.716
			Soft	-2.170	1.044	.096	-4.630	.290
Summative	Tukey HSD	ELT	Soft	1.212	.529	.059	-.034	2.460
		Hard	Hard	1.744	.529	.003	.497	2.992
			Soft	-.531	.529	.574	-1.779	.715
Total	Tukey HSD	ELT	Soft	.765	1.764	.901	-3.391	4.9230
		Hard	Hard	4.659	1.764	.024	.502	8.8166
			Soft	-3.893	1.764	.072	-8.050	.2634

According to the results laid out in Table 4, Tukey HSD test indicated that there was a significant difference in prognostic assessment between the in-service hard discipline and ELT teacher ($p = .03, p < .05$). Contrarily, no significant difference was observed in formative assessment of all possible pairs of in-service hard and soft discipline teachers and ELT teachers. As regards the summative assessment literacy, the results revealed a significant difference between the in-service hard disciplines and ELT teacher ($p = .003, p < .05$). On the whole, the results of multiple comparisons unfolded a significant difference between in-service hard disciplines and ELT teachers ($p = .03, p < .05$).

Qualitative Results

To supplement the results of the quantitative phase, a semi-structured interview was conducted with 90 hard disciplines, soft disciplines, and ELT teachers who left their phone numbers or email addressed at the end of the questionnaire.

The first question elicited the methods, used by teachers, to assess students' performance during an academic year. Almost all teachers (27 soft (36%), 23 hard (30.66%), and 25 (33.33%) ELT teachers) implemented some regular activities for gaining evidence on students'

learning such as question-and-answer techniques, written and oral exams, portfolios, quizzes, and micro tests, assignments, classwork, peer feedback, and some blended activities.

I prefer to have a quick revision of the previous sessions. In this case, students are measured informally without conscious attention of being assessed. S2

Students' performance, during the course, is gathered and recorded to show evidence to students, parents, and stakeholders. S4

One of the best ways to assess students continuously, without taking a great length of time, is to implement short quizzes which can be planned or unplanned. H49

There are a variety of opportunities teachers can use to measure the potential success of learning, before moving on to the next new stage, from oral informal test to formal written one. ELT54

While teaching and engaging students into tasks and exercises during class time, I can constantly monitor students closely. ELT63

Having homework and assignments each session let teachers build a bridge between lessons' objectives and students' performance; also it can a great source for assessing regularly. H67

I try to create a condition in which all students teach, support, help, and give feedback collaboratively. ELT70

However, when teachers were compared from different disciplines as hard, soft, and ELT teachers, the analysis revealed noticeable differences in their formative assessment practices. Considering soft-discipline teachers (23 (37.72%)), it was discerned that they mostly employed more oral assessment such as having conferences, exchanging opinions, reasons, and ideas along with concepts and experiences, writing reflective journals, conducting topical research, and creating a learner-centered atmosphere.

Students learn best when they individually extract knowledge, understand, apply, analyze, and evaluate for presenting a valid presentation towards the class. S5

As soft science is quite elusive and concepts need further expansion subjectively, students are welcomed to critically look at their thoughts to express by words. S9

Teaching can be mixed with research and reflection; consequently, students perceive their real roles as knowledge seekers not as consumers. S13

Students are at the center of learning, but it requires courage from teachers along with risk-taking attempts from students. S19

On the other hand, hard-discipline teachers (20 (32.78%)) reported using written exams at the end of each learning cycle, assessing the students' performance objectively, and using continuous assessment. Some teachers believed that they could utilize limited variations to suit the nature of the class; therefore, it was more product-based than the process-based ones.

I assess students' progress through quizzes and power tests to prepare them for their final exams. H3

The same as soft-discipline teachers, ELT teachers (18 (29.50%)) had more and stronger learner-centered classes by applying group works, competitions, authentic tasks, role plays, self-assessment, dictation, skill-based activities, and process-based learning. Due to the nature

of language learning, formative assessment during class could be more interactive and meaningful.

When students are paired and grouped, they can scaffold each other's learning by relying on other students rather than the teacher, correcting selves and others, helping others to grow faster, and creating a learning community. ELT6

Students can have more game-like activities that can lead to higher motivation. ELT7

Students can experience more performance and skill-based activities in their continuous assessment. ELT14

The product of any assessment practices can come from processes that focus mostly on learning aspects than mere assessment. ELT18

The results of qualitative phase confirmed those of the quantitative analysis in that the teachers were assessment literate in conducting formative assessment regardless of their disciplines. This was supported by the relevant means of assessment they reported to apply in their assessment practices.

The second question included information on the summative approaches used to assess the students' achievements in final exams. Almost all teachers admitted that since their choices were controlled by the policymakers and stakeholders, they conformed their plan to the rules by assessing in written format with various predefined question forms. Also, students' portfolios, classroom performance, projects, and assignments were taken into account formatively along with the former standardized tests. However, there were some differences found among different disciplines.

Seventeen Soft (44.74%) and six hard (15.79%) disciplines teachers could adapt some aspects of their final tests like adding oral performance, having only projects, relying on students' performance, and standardizing the assessment according to some criteria.

My students can be orally judged through their lectures and projects; in this way, students can value their classwork as precious. S1

Making test with different question types and formats is vitally important. To reach high validity and reliability, a great deal is required on teachers' parts. H16

However, 15 ELT teachers (39.47%) considered more performance-based assessment such as assessing four skills, setting tasks to check the language use, and measuring performance on different topics.

As English learned in class through interaction and negotiation, we should assess the same as how students learned. ELT22

The analysis of the interviews corroborated those of the statistical analysis of the questionnaires in that teachers of various disciplines referred to different assessment tools.

The third question asked teachers to state their status quo of their assessment literacy. Almost all (26 soft (29.21%), 23 hard (25.84%), and 27 ELT (30.34%)) pointed out that they had a very good level of assessment as they came from a teacher training university, participated in different related workshops, studied related books and articles, had decent

relevant experience, and other developmental factors. These were in line with the quantitative findings.

I learned a lot from my testing course that I had at university. I became familiar with the theories and technical items. ELT8

Experiencing a real class can lead to more practical knowledge of assessment. Although I did not have any formal training, I learned through my real practices. H12

There are plenty of books on the topic of assessment that can help teachers to individually create a continuous learning path for themselves. S21

Still, 9 hard (10.11%) and 4 (4.5%) soft disciplines teachers illustrated a poor or moderate level of assessment literacy since they experienced no formal training and/or practical experiences.

I am a novice teacher. So, I am not confident enough in my assessment practices. H10

Having formal education on this topic, as I assume, is a must. I cannot perform well due to my limited training. S57

Teachers are not enough motivated on implementing different assessment activities as they are restricted by standardized tests, managers, and policymakers. H69

The fourth question called for different components of assessment literacy from teachers' point of view. Considerably, they mentioned some aspects for their assessment literacy including academic knowledge from university, familiarity with relevant conferences, theoretical knowledge from books and articles, pedagogical and relevant assessment knowledge and experiences, and knowledge of assessment components, technical terms and assessment designs, expectations and goals, administration and procedures, construct and development, scoring and interpretation, and feedback and evaluation. More importantly, some soft disciplines, hard disciplines, and ELT teachers declared a need to use technological advancements, tools, and facilities effectively to enhance their assessment practices.

Theoretical knowledge, from courses, books, and workshops, can select, modify, and develop our assessment practices more meaningfully and reliably. ELT17

Real assessment practices in class are more tangible and practical rather than an in-text guide. H34

Teachers should be familiar with different assessment methods and designs to appropriately fit their practices in line with their pedagogical approaches and instructional contents. ELT38

Meaningful and real expectations and goals from students is a key to sustain their motivation to make regarded efforts to master learning materials for assessment purposes. ELT26

To minimize error score, teachers not only need to prepare tasks appropriately but also to implement and administer them wisely and professionally. ELT52

The interpretation and scoring must be ethical and reliable. In this case, the feedback students receive would be meaningful, purposeful, and effective. S65

Students' styles and interests are as well important for more authentic exam situation. ELT73

I need to utilize different forms of technological facilities, sites, apps, and others selectively and purposefully. S82

Using experts' and other teachers' opinions is fruitful to reach higher reliability and validity. H85

The fifth question asked teachers' opinions on the degree of perceived differences that exist among soft disciplines, hard disciplines, and ELT teachers. Almost all teachers (27 soft (35.08%), 23 hard (29.87%), and 24 ELT (31.16%) teachers) confirmed high differences among disciplines, but 3 teachers (3.89%) looked for their similarities. To come up with some differences, we can highlight the different content, and materials, different teachers' and students' expectations and goals, and different assessment formats and schedules. This was in line with the quantitative analysis.

There are many variations found among teachers, as their contents, materials, knowledge, instructions, learners, goals, aims, and other aspects are different. H3

We cannot deny differences; However, same disciplines and approaches apply to all subjects. S19

In the last question, the teachers were expected to state some ways to improve their assessment literacy. They (21 soft (33.33%), 15 hard (23.80%), and 27 ELT (42.87%) teacher) based their improvements on different sources like participating in higher education courses, conferences, and workshops, reflecting on their experiences, cooperating with their colleagues, having facilities, updating their information, learning from other educational systems, familiarizing themselves with technological assessment tools, knowing students' styles and limitations, heightening teachers' motivation, and analyzing standardized exam samples.

The best source of assessment literacy can be testing courses which are offered by teacher education programs, conferences, and workshops. ELT12

Teachers' experiences can turn useful, mainly, through reflective practices. S28

My colleagues help me with my practices; collaboratively, we can learn by sharing. ELT35

High-quality assessment can be of high cost for teachers; therefore, teachers need more facilities, devices, and equipment. H47

Different educational systems may have some positive aspects to offer for others. So, we can update our knowledge. ELT54

When teachers externally and internally become motivated, they perform better. S58

Discussion

The current study aimed to investigate Iranian hard disciplines, soft disciplines, and ELT teachers' self-perceived assessment skills. The results revealed the hard disciplines and ELT teachers' higher levels of literacy in prognostic and summative assessment and soft disciplines teachers' higher level of literacy in formative assessment. The analysis also unfolded a significant difference among three groups of teachers in terms of prognostic and summative assessment literacy. The difference was particularly considerable between hard disciplines and

ELT teachers. The results of the interviews supported the findings of the quantitative phase of the study. The results were commensurate with those of previously conducted studies in which the teachers' assessment literacy was shown to be influenced by their content areas (Adams & Hsu, 1998; DeLunca & Klinger, 2010; Stiggins & Conklin, 1992; Wilson, 2012; Zhang & Burry-Stock, 2003). Although the teachers were bound to given final exams in predefined formats, the type of questions and the variety of items they could include in the exams were reported to fall under the influence of the particular subjects. This is specially noticed in the language-specific items (e.g. reading comprehension questions, listening and speaking sections, etc.) utilized by the ELT teachers and the problem-solving approaches to assessment in hard sciences. Indeed, teachers' and students' expectations vary across different classes, and thereby, distinct instructional approaches, guided by the teachers' disciplines, result in distinct assessment practices. This mutual effect of teaching and testing procedures has been accentuated in the existing literature (Lawson et al., 2015).

The findings also showed that the teachers of various disciplines rated their assessment literacy as high and attributed this to their occupational and pedagogical background formed in teacher training contexts. This conception has been corroborated in previously provided insights on the role of consciousness-raising and knowledge-developing nature of the university courses (Gullickson, 1984). In fact, backing up the assessment practices with the massive discipline- and teaching- relevant bulk of knowledge would lead to adopting more efficient and sound approaches to check the students' achievements (Stiggins, 1995). Assessment literate teachers can take advantage of ample opportunities to assess the students' performance.

Furthermore, despite the high level of assessment literacy perceived by the participants who teach various disciplines, the soft and ELT teachers were shown to apply more process-based assessment approaches whereas their hard disciplines counterparts asserted their inclination to take product-based procedures. This might originate from the teachers' understanding of the requirements of their own content areas. Studying soft sciences and ELT as one of its branches might be perceived as gradual accumulation of knowledge which must be reflected in the testing routines (Inbar-Lourie, 2008). This might be inferred that language-specific features of assessment practices in ELT classes might account for the significant differences between this group of teachers and those of basic sciences. In this sense, the teachers' discipline is assuredly part of their professional identity which seems reasonable to exert a dramatic impact on assessment literacy (DeLunca et al., 2015).

Conclusion

The study attempted to explore the teachers' self-perceived assessment literacy in light of the subject they teach at school. The results of analyzing the quantitative and qualitative data revealed a significant difference among hard disciplines, soft disciplines, and ELT teachers. the teachers evaluated their assessment literacy as high and linked it to their educational background and receiving adequate training in the university courses. Furthermore, their discipline was shown to make an impact on their assessment practices.

The findings may lead to this conclusion that assessment literacy is defined according to the content areas, and thereby, the instructional specificities of each discipline necessitates their

own assessment means. This has been reflected in the available studies on assessment literacy in various educational contexts (Lawson et al., 2015). Accordingly, the teacher training curricula must provide subject-relevant and content-oriented assessment education to enable the teachers of various disciplines to adopt appropriate testing and assessment approaches in their classes. Hence, the teacher educators in teacher training universities are recommended to take heed of both the common ground of assessment to develop the core qualifications and substantial discrepancies to address the discipline-oriented requirements.

Furthermore, the teachers of various disciplines are advised to update and upgrade their assessment perceptions and practices in order to account for the principles of efficiency in teaching. Accordingly, they are better to develop assessment literacy skills combined with subject-specific competencies (Inbar-Lourie, 2008).

The current study addressed the assessment literacy perceptions and practices of Iranian high school teachers across various subjects they teach. Future studies can be conducted to unravel the self-perceived assessment literacy among teachers in other countries to see if the dominance assessment policies in educational settings would influence their assessment knowledge and practice. Moreover, teachers' assessment literacy can be investigated in light of their critical thinking skills since a critical analysis of the assessment results and their accurate interpretation are conceived as the essential components of assessment literacy. In addition, more studies are needed to probe into the hard disciplines, soft disciplines, and ELT teachers' long-term assessment practices are shaped, challenged, and modified during time.

Abbreviations

ELT (English Language Teaching);

H (Hard);

S (Soft).

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