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Educational Assessment Attitudes, Competence, Knowledge, and Practices: An Exploratory Study of Muscat Teachers in the Sultanate of Oman

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Abstract

Educational assessment can be a powerful tool in enhancing classroom instruction and student performance. Yet, its effectiveness relies on the beliefs and knowledge of those who apply it on a daily classroom basis. This study explored attitudes, competence, knowledge, and practices of teachers about educational assessment. Participants were 165 in-service teachers teaching various subject areas in grades 5 to 10 randomly selected from Muscat educational governorate in the Sultanate of Oman. The study employed a descriptive survey research design. Results revealed that although teachers held a favorable attitude towards and perceived themselves as being competent in educational assessment, they demonstrated a low level of knowledge in educational assessment. Teachers used a variety of assessments in the classroom primarily for assigning grades and motivating students to learn, with some variations by gender, grade level, and subject area. Teaching load and teaching experience accounted for some of the variations in teachers' educational assessment practices. Implications for professional development of teachers in educational assessment as well as recommendations for future research were discussed.

Keywords: teachers' attitudes, teachers' competence, teachers' knowledge, teachers' practices, educational assessment

1. Introduction

1.1 Introduce the Problem

Educational assessment is an essential component of the teaching profession. It refers to the process used in the classroom by the teacher to obtain information about students' performances on assessment tasks, either as a group or individually, using a variety of assessment methods, to determine the extent to which students are achieving the target instructional outcomes (Gronlund, 2006). In this regard, Gronlund (2006) suggests that a sound educational assessment requires a clear conception of all intended learning outcomes of the instruction and a variety of assessment procedures that are relevant to the instruction, adequate to sample student performance, and fair to everyone. In addition, the American Federation of Teachers (AFT), the National Council on Measurement in Education (NCME), and the National Education Association (NEA) (1990) have jointly defined seven *Standards for Teacher Competence in Educational Assessment of Students*. The standards emphasized that teachers should competently be able to choose and develop assessment methods appropriate for instructional decisions; administer, score, and interpret results of externally produced and teacher-made assessment; use assessment results when making educational decisions; develop valid grading procedures; communicate assessment results to various audiences; and recognize unethical, illegal, and inappropriate methods and uses of assessment.

Recently, Brookhart (2011) argues that the *Standards for Teacher Competence in Educational Assessment of*

Students do not consider current conceptions of formative assessment knowledge and skills and teacher's assessment literacy required to successfully work in the standards-based assessment context. As such, she proposed a set of educational assessment knowledge and skills for teachers in reference to formative assessment and standards-based assessment systems. The set states that teachers should understand learning in the content area they teach, be able to set and apply learning intentions congruent with both the content and depth of the standards and curriculum goals, have strategies for communicating the expectation of the learning intentions to students, understand the purposes and uses of the various types of assessment and be able to use them, be skillful in analyzing assessment methods, be skillful in providing effective meaningful feedback on student work, have the ability to develop scoring schemes to quantify student performance for making informed educational decisions, be skillful in administering external assessments and interpreting their results for decisions making, be able to apply educational decisions made out from classroom assessments, be able to communicate assessment information to students to motivate them to learn, understand the legal and ethical issues in the classroom assessment practices.

Educational assessment can be a powerful tool in making improvements in educational systems (Koh, 2011). Yet, its effectiveness depends on teachers' attitudes, competence, knowledge, and practices due to the continual interaction between these dimensions (Calderhead, 1996). In the Sultanate of Oman, there has been a concern about the low achievement of students in standardized international tests such as TIMSS. The improvement of students' academic performance is considered essential if the country to be competitive in an international economy. These concerns for international competitiveness have promoted a search for means to enhance teachers' assessment practices. As such, there seems to be a clear imperative to significantly improve educational assessment outcomes as evidenced by the establishment of the National Center for Educational Evaluation in 2012. Thus, there is a need to fully understand teachers' attitudes, competence, knowledge, and practices about educational assessment. The present study aimed at addressing this need.

1.2 Teachers' Assessment Attitudes, Competence, Knowledge and Practices

Teachers are required to develop classroom assessment that aligns with practices recommended by experts of educational assessment. Unfortunately, findings from past and recent studies of classroom assessment practices have consistently expressed a concern about the adequacy of teachers' assessment practices (e.g., McMillan & Lawson, 2001; Zhang & Burry-Stock, 2003). These studies have showed that there are some contradictions between teachers' practices and recommendations of educational assessment experts regarding issues of classroom assessment. This lack of agreement between teachers' practices and experts' suggestions has been attributed to teachers' knowledge and attitudes about educational assessment (Mertler & Campbell, 2005; Siegel & Wissehr, 2011; Popham, 2006; Volante & Fazio, 2007).

Several studies have examined teachers' knowledge, attitudes, and practices about educational assessment. For example, Plake and Impara (1992) surveyed assessment knowledge of 555 in-service teachers in the United States using an instrument titled the "Teacher Assessment Knowledge Questionnaire (TALQ)" consisting of 35 items based on the "Standards for Teacher Competence in the Educational Assessment" (AFT, NCME, & NEA, 1990). The results indicated that the teachers were not well prepared to assess student learning as revealed by the average score of 23 out of 35 items correct, and as such teachers' assessment knowledge should deserve further recognition and investigation.

In his discussion of the assessment knowledge, Popham (2006) asserted the need for a continuous in-service assessment training aligned with the classroom assessment realities. In a survey of assessment knowledge of 69 teacher candidates, Volante and Fazio (2007) found that the self-described levels of assessment knowledge remained relatively low for the candidates across the four years of the teacher education program, and hence agreed with Popham's (2006) assertion about the need for in-service assessment training to ensure an acceptable level of assessment knowledge. Along similar lines, Wolfe, Viger, Jarvinen, and Linkman (2007) proposed that teachers' self-perceived competence in assessment should be a vital component in the professional development of in-service teachers.

As part of the educational assessment knowledge, teachers are required to understand the legal and ethical issues in the educational assessment practices (AFT, NCME, & NEA, 1990; Brookhart, 2011). In a related study, Pope, Green, Johnson, and Mitchell (2009) examined perceptions of 103 teachers on the ethical issues related to the educational assessment of students. Results indicated that the grading of students, standardized testing, and the assessment-related needs of special populations of students were the most frequently reported areas placing teachers in ethically difficult situations. Pope et al. (2009) argued that ethics of assessment should be part of the professional training of teachers in educational assessment. Confirming to Pope et al.'s (2009) argument, Mertler

(2009) examined the effectiveness of a two-week workshop on educational assessment for seven in-service teachers. Results showed that teachers' knowledge and skills in educational assessment including the ability to determine unethical assessment practices improved significantly after the workshop. Also, the teachers indicated that the training had a positive impact on their beliefs about educational assessment.

Using a paralled mixed-methodology approach, Ogan-Bekiroglu (2009) examined attitude towards and competence in educational assessment of 46 Turkish teachers who completed an educational assessment course. Results found that although teachers held constructivist views and had a high sense of competence about educational assessment, they had some difficulties related to their assessment practices. School policy and facilities were considered as difficulties negatively affecting teachers' use of alternative forms of assessments. Ogan-Bekiroglu (2009) concluded that teachers' knowledge and attitudes related to the educational assessment should be taken into account when introducing reforms in the educational systems.

Using a case study, Lyon (2011) described the alignment of teachers beliefs about educational assessment and their classroom assessment practices. As evident by classroom observations and reflective journals, results demonstrated that teachers holding views about educational assessment aligning with constructivist and sociocultural views of learning tended to put a high emphasis on the alternative assessment strategies such as group projects compared to traditional assessment practices such as multiple-choice tests. Also, those teachers tended to interpret assessment results using a criterion referenced approach rather than a norm referenced approach. However, teaching load and other school responsibilities could cause conflicts between teachers' assessment beliefs and practices, in that the teachers do not always have time to enact all of the assessment practices that align with their beliefs about educational assessment.

Recent studies have also confirmed the importance of attitude towards educational assessment, self-perceived competence in educational assessment, assessment training, gender, and major when considering teachers' educational assessment. For example, in a survey of 288 teacher candidates enrolled in a teacher education program in Canada, DeLuca and Klinger (2010) found that teacher candidates who elected to enroll in an educational assessment course had higher levels of confidence in educational assessment knowledge and skills than those who did not have formal instruction in assessment. Likewise, in a study of assessment knowledge, skills, and attitudes of 217 in-service teachers in Oman, Alkharusi, Kazem, and Al-Musawai (2011) found that teachers who had a pre-service course in educational assessment demonstrated on average a higher level of educational assessment knowledge than those who did not have a pre-service assessment course.

When studying self-perceived assessment skills of 213 Omani teachers, Alkharusi (2011c) found that female teachers seemed to be more skillful than male teachers in writing test items and communicating assessment results, science teachers perceived themselves more skilful than English language teachers and fine arts teachers in developing performance assessment and analyzing assessment results, sixth grade teachers reported higher levels of self-perceived skills in developing performance assessment than eighth and tenth grade teachers, teaching experience correlated positively with self-perceived assessment skills, and teachers with in-service assessment training showed a higher level of assessment skills than those without in-service assessment training. Further, in a study of 516 in-service teachers, Alkharusi (2011a) found that in-service assessment training and teaching experience correlated positively with educational assessment knowledge. Similarly, when examining educational assessment knowledge of 259 pre-service teachers who completed an educational assessment course, Alkharusi (2011b) found that male teachers tended to have on average a higher level of educational assessment knowledge than female teachers.

1.3 Research Questions and Objectives

This descriptive study was guided by the following general research questions:

1) What is the current state of educational assessment attitudes, competence, knowledge, and practices of teachers in the educational governorate of Muscat in the Sultanate of Oman?

2) How do teachers' gender, teaching grade, teaching subject, pre-service assessment training, in-service assessment training, teaching load, and teaching experience relate to their educational assessment attitudes, competence, knowledge, and practices?

The specific objectives of the study were:

a) Describe teachers' attitude towards educational assessment.

b) Describe teachers' perceptions of their competence in the educational assessment.

c) Describe teachers' knowledge about educational assessment.

d) Describe teachers' practices in educational assessment.

e) Describe teachers' uses of classroom tests.

f) Describe teachers' attitudes toward classroom tests.

g) Explore differences in the educational assessment attitudes, competence, knowledge, and practices of the teachers with respect to teachers' gender, teaching grade, teaching subject, pre-service assessment training, in-service assessment training, teaching load, and teaching experience.

2. Method

2.1 Participants

The participants in this study were 165 in-service teachers (42 males and 123 females) teaching grades (5-10) randomly selected from Muscat educational governorate in the Sultanate of Oman. The majority of the teachers (91.5%) were Omani. The participants were teaching Islamic education (15.2%), Arabic language (18.8%), English language (15.2%), mathematics (23.6%), science (13.9%), and social studies (13.3%). The teaching experience of the teachers ranged from 1 to 20 years with an average of 10.17 and a standard deviation of 5.21. The self-reported teaching load of the participants ranged from 4 to 21 classes per week with an average of 16 and a standard deviation of 5. One hundred and forty six teachers indicated that they have taken one course in educational assessment during their pre-service preparation. Sixty seven teachers indicated that they have taken at least one in-service workshop training in the educational assessment whereas 98 teachers indicated that they did not take in-service workshop training in the educational assessment.

2.2 Instrumentation

A self-report questionnaire of seven parts was used in this study. The first part was about background and demographic data of the participants including gender, nationality, current teaching class, teaching subject, teaching load, teaching experience, and pre-service and in-service training in the educational assessment. The other six parts were about attitude towards educational assessment, self-perceived competence in educational assessment, knowledge in educational assessment, educational assessment practices, uses of classroom tests, and attitude towards classroom tests. To establish content validity, the questionnaire was given to a group of seven experts in the areas of educational measurement and psychology from Sultan Qaboos University and Ministry of Education. They were asked to judge the clarity of wording and the appropriateness of each item and its relevance to the construct being measured. Their feedback was used for further refinement of the questionnaire.

2.2.1 Attitude towards Educational Assessment

This part of the questionnaire contained 29 items from the Arabic version of the Bryant and Barnes's (1997) Attitude toward Educational Measurement Inventory (Alkharusi, 2011d). Responses were obtained on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Scoring of the negative items was reversed so that a high score reflected a more positive attitude towards educational assessment. An individual's attitude towards educational assessment was represented by an average rating score across all the items. Internal consistency reliability coefficient was .90 as measured by Cronbach's alpha.

2.2.2 Self-perceived Competence in Educational Assessment

This part of the questionnaire contained 54 items from Alkharusi's (2009) Self-Confidence Scale in Educational Measurement designed to assess teachers' perceptions of confidence in their abilities to perform certain educational assessment tasks related to developing and administering assessment methods (17 items); analyzing assessment results (10 items); developing and scoring performance assessment (10 items); developing grading procedures (7 items); and communicating assessment results to various audiences (8 items). Additional five items related to recognizing ethics of assessment were added by the authors to the questionnaire. Responses were obtained on a 5-point Likert scale ranging from 1 (*very low competence*) to 5 (*very high competence*) with high scores reflecting a high level of competence in educational assessment. An individual's self-perceived competence in each area of the educational assessment was represented by an average rating score across all the items in that area. Also, an overall individual's self-perceived competence in educational assessment was represented by an average rating score across all the items. Internal consistency reliability coefficient for the total scale scores was .93 as measured by Cronbach's alpha. Internal consistency reliability coefficients for the subscale scores were .80 for developing and administering assessment methods; .87 for analyzing assessment results; .72 for developing and scoring performance assessment; .69 for developing grading procedures; .67 for communicating assessment results to various audiences; and .63 for recognizing ethics of assessment.

2.2.3 Knowledge in Educational Assessment

This part of the questionnaire consisted of 32 items from the Arabic version of the Plake and Impara's (1992) Teacher Assessment Literacy Questionnaire (Alkharusi et al., 2011). It assesses teachers' knowledge and understanding of the basic principles of the educational assessment practices, terminology, development, and use of various classroom assessment methods. All items followed a multiple-choice format with four options, one being the correct answer. The KR20 reliability coefficient for the scores was .62. The average item difficulty was .41 and the average item discrimination as measured by item-total correlation was .17.

2.2.4 Educational Assessment Practices

This part of the questionnaire contained 42 items from Alkharusi's (2010) Teachers' Assessment Practices Questionnaire designed to assess teachers' frequent use of various assessment practices related to traditional assessment methods (8 items); alternative assessment methods (4 items); analysis of assessment results (6 items); assessment communication (9 items); assessment standards and criteria (5 items); student-involved assessment (3 items); and non-achievement grading factors (6 items). Responses were obtained on a 5-point Likert scale ranging from 1 (*never*) to 5 (*all of the time*) with high scores reflecting more frequent use of the assessment described in the item. An individual's frequent use of the assessment practice in a particular area was represented by an average rating score across all the items in that area. Internal consistency reliability coefficients as measured by Cronbach's alpha were .60 for traditional assessment methods; .61 for alternative assessment methods; .72 for analysis of assessment results; .62 for assessment communication; .65 for assessment standards and criteria; .65 for student-involved assessment; and .60 for non-achievement grading factors.

2.2.5 Uses of Classroom Tests

Informed by the educational assessment literature (Gallagher, 1998; Gronlund, 2006; Nitko, 2001), the teachers were asked to indicate the extent to which they use results obtained from classroom tests in addressing 10 different areas of instructional decisions: diagnose student weakness, group students for instructional purposes, plan for instruction, assign grades, evaluate instruction, control student behavior, motivate students for learning, evaluate academic achievement, compare student performances with others, upgrade students from one class to another. Responses were obtained on a 5-point Likert scale ranging from 1 (*never*) to 5 (*all of the time*). Internal consistency reliability coefficient was .86 as measured by Cronbach's alpha.

2.2.6 Attitude towards Classroom Tests

Informed by the literature (Green, 1992; Green & Stager, 1987), six positively worded items and four negatively worded items were used to measure teachers' attitude towards classroom tests. Responses were obtained on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Scoring of the negative items was reversed so that a high score reflected a more positive attitude towards classroom tests. An individual's attitude towards classroom tests was represented by an average rating score across all the items. Internal consistency reliability coefficient was .90 as measured by Cronbach's alpha.

2.3 Procedures

Permission was requested from Ministry of Education and school principals to collect data from the teachers. The participants were informed that a study is being conducted to investigate teachers' assessment attitudes, competence, knowledge, and practices. The teachers were also informed that they were not obligated to participate in the study, and that if they wished, their responses would remain anonymous and confidential. Those who wished to participate in the study were provided a cover letter and the questionnaire along with brief instructions about the information that was requested in the questionnaire, how to respond to the items, and where to find directions that were also included both on the cover letter and the questionnaire. The participants took on average one hour to complete the questionnaire.

2.4 Data Analysis

The data analysis was primarily descriptive using frequencies, percentages, means, and standard deviations. Factorial analysis of variance (Factorial ANOVA) was used to examine differences in teachers' attitude towards and knowledge in educational assessment as well as their attitude towards and uses of classroom tests with respect to teachers' gender, teaching class, teaching subject, pre-service training in assessment, and in-service training in assessment. Multivariate analysis of variance (MANOVA) was used to examine differences in teachers' competence and practices in educational assessment with respect to teachers' gender, teaching class, teaching subject, pre-service training in assessment, and in-service training in assessment. Post-hoc comparisons were conducted using Scheffe's test. Pearson product-moment correlation coefficients were computed to examine relationships of teachers' teaching load and teaching experience to their assessment attitudes,

competence, knowledge, and practices.

3. Results

3.1 Attitude towards Educational Assessment

An analysis of teachers' attitude towards educational assessment is presented in Table 1. Overall, the teachers tended to have a positive attitude towards educational assessment (M = 3.63, SD = .49). The majority of the teachers (68.5%) reported having positive or strongly positive attitude towards educational assessment. About 29% reported being neutral in their attitude towards educational assessment and 2.4% perceived themselves to have a negative attitude towards educational assessment.

Table 1. Frequencies for teacher attitude towards educational assessment (N = 165)

Scale value		*f*	%
1.00 – 1.79	Strongly negative attitude	0	0.00
1.80 – 2.59	Negative attitude	4	2.4
2.60 – 3.39	Neutral	48	29.1
3.40 – 4.19	Positive	96	58.2
4.20 – 5.00	Strongly positive attitude	17	10.3

Further analysis of teachers' attitude towards educational assessment was conducted to examine differences with respect to teachers' gender, teaching class, teaching subject, pre-service training in assessment, and in-service training in assessment using factorial ANOVA. Table 2 summarizes results of the factorial ANOVA. As shown in Table 2, there were no statistically significant differences in the attitude towards educational assessment between the teachers with respect to their gender, teaching class, pre-service training in assessment, and in-service training in assessment. However, there was a statistically significant difference in the attitude towards educational assessment between the teachers with respect to their teaching subject (partial $\eta^2 = .24$). Scheffe's test indicated that teachers teaching Arabic language and those teaching social studies tended to have on average less favorable attitude towards educational assessment than those teaching Islamic education, mathematics, and science. Pearson product-moment correlation coefficients indicated no statistically significant relationships of teaching load and teaching experience with attitude towards educational assessment.

Table 2. Factorial ANOVA for the attitude towards educational assessment

Source	*SS*	*df*	*MS*	*F*	*p*-value
Gender	.164	1	.164	.864	.354
Teaching class	.943	5	.189	.990	.426
Teaching subject	9.090	5	1.818	9.547	.000
Pre-service training	.440	1	.440	2.308	.131
In-service training	.131	1	.131	.689	.408
Error	28.754	151	.190		

3.2 Self-perceived Competence in Educational Assessment

An analysis of teachers' self-perceived competence in educational assessment is presented in Table 3. Overall, the teachers tended to perceive themselves as being competent in educational assessment (M = 3.68, SD = .44). The majority of the teachers (73.3%) considered themselves to be competent or highly competent in the educational assessment. About 25% perceived themselves to be moderately competent in the educational assessment and 1.2% perceived themselves to have a low competence in the educational assessment.

Table 3. Frequencies for teacher competence in educational assessment (N = 165)

Scale value		*f*	%
1.00 – 1.79	Very low competence	0	0.00
1.80 – 2.59	Low competence	2	1.2
2.60 – 3.39	Moderate competence	42	25.5
3.40 – 4.19	High competence	103	62.4
4.20 – 5.00	Very high competence	18	10.9

Table 4 displays means and standard deviations of the teachers' responses regarding their competence in the different areas of the educational assessment. As shown in Table 4, although teachers perceived themselves to be competent in developing and administering assessment methods, developing and scoring performance assessment, developing valid grading procedures, communicating assessment results to various audiences, and recognizing ethics of assessment; they tended to have on average a lower level of competence in analyzing assessment results than other areas of the educational assessment.

Table 4. Means and standard deviations for the competencies in educational assessment

Competencies of educational assessment	*M*	*SD*
1. Developing assessment methods	3.81	.46
2. Analyzing assessment results	3.13	.73
3. Developing performance assessment	3.70	.50
4. Developing valid grading procedures	3.65	.54
5. Communicating assessment results	3.88	.52
6. Recognizing ethics of assessment	3.95	.52

Further analysis of teachers' competence in the educational assessment was conducted to examine differences with respect to teachers' gender, teaching class, teaching subject, pre-service training in assessment, and in-service training in assessment using MANOVA. Results revealed a statistically significant multivariate effect for gender on the teachers' competence in the educational assessment; $F(6, 146) = 3.798$, *Wilks' Lambda* = .865, $p = .002$. There were no statistically significant multivariate effects for teaching subject, teaching class, pre-service assessment training, and in-service assessment training on the teachers' competence in the educational assessment. The univariate analysis showed statistically significant gender differences on recognizing ethics of assessment; $F(1, 151) = 13.771$, $p = .000$, partial $\eta^2 = .084$. Female teachers ($M = 4.083$, $SD = .45$) perceived themselves to be more competent on recognizing ethics of assessment than male teachers ($M = 3.731$, $SD = .64$).

Table 5 displays Pearson product-moment correlation coefficients of teaching load per week and teaching experience with teacher's competence in the educational assessment. As shown in Table 5, weekly teaching load correlated negatively with teacher's overall competence in the educational assessment as well as with teacher's competence in developing and administering assessment methods, developing and scoring performance assessment, developing valid grading procedures, communicating assessment results to various audiences, and recognizing ethics of assessment. There was no statistically significant correlation between weekly teaching load and teacher's competence in analyzing assessment results. According to Table 5, there were statistically significant positive relationships between teaching experience and teacher's competence in developing and scoring performance assessment and recognizing ethics of assessment. Teaching experience did not correlate significantly with teacher's overall competence in the educational assessment as well as with teacher's competence in developing and administering assessment methods, analyzing assessment results, developing valid grading procedures, and communicating assessment results to various audiences.

Table 5. Pearson product-moment correlation coefficients of teaching load and teaching experience with teacher's competence in the educational assessment (N = 165)

Variable	Teaching load	Teaching experience
1. Developing assessment methods	-.175*	.129
2. Analyzing assessment results	-.125	.068
3. Developing performance assessment	-.253**	.172*
4. Developing valid grading procedures	-.162*	.052
5. Communicating assessment results	-.179*	.150
6. Recognizing ethics of assessment	-.157*	.164*
7. Overall competence in assessment	-.210**	.145

*$p < .05$. **$p < .01$.

3.3 Knowledge in Educational Assessment

The scores of the participating teachers on the TALQ ranged from 3 to 21 with an average of 12.42 and a standard deviation of 3.34. Approximately 41 (25%) teachers answered 10 items or less correctly out of 32 items of the TALQ. About 82 (50%) teachers answered 12 items or less correctly out of 32 items of the TALQ. Approximately 123 (75%) teachers answered 15 items or less correctly out of 32 items of the TALQ.

Further analysis of teachers' knowledge in educational assessment was conducted to examine differences with respect to teachers' gender, teaching class, teaching subject, pre-service training in assessment, and in-service training in assessment using factorial ANOVA. Table 6 summarizes results of the factorial ANOVA. As shown in Table 6, there were no statistically significant differences in the educational assessment knowledge as measured by TALQ's scores between the teachers with respect to their teaching class and pre-service training in assessment. However, there were statistically significant differences in the educational assessment knowledge with respect to teacher's gender (partial $\eta^2 = .088$), teaching subject (partial $\eta^2 = .074$), and in-service training in assessment (partial $\eta^2 = .045$). Female teachers (M = 12.588, SD = 3.21) tended to have on average a higher level of educational assessment knowledge than male teachers (M = 10.236, SD = 3.51). Teachers having in-service training in assessment (M = 12.115, SD = 3.20) demonstrated on average a higher level of educational assessment knowledge than teachers having no in-service assessment training. Scheffe's test indicated that Mathematics teachers (M = 12.438, SD = 3.53) and science teachers (M = 12.612, SD = 4.81) had on average a higher level of educational assessment knowledge than English language teachers (M = 10.746, SD = 3.09). Also, mathematics teachers had on average a higher level of the educational assessment knowledge than social studies teachers (M = 10.155, SD = 2.67). Pearson product-moment correlation coefficients indicated no statistically significant relationships of teaching load and teaching experience with educational assessment knowledge.

Table 6. Factorial ANOVA for the educational assessment knowledge

Source	*SS*	*df*	*MS*	*F*	*p*-value
Gender	139.542	1	139.542	14.571	.000
Teaching class	94.073	5	18.815	1.965	.087
Teaching subject	114.899	5	22.980	2.400	.040
Pre-service training	25.671	1	25.671	2.681	.104
In-service training	68.017	1	68.017	7.102	.009
Error	1446.106	151			

3.4 Educational Assessment Practices

Table 7 presents descriptive statistics for teachers' assessment practices. As shown in Table 7, the teachers reported involving students in the assessment process, analyzing assessment results, using alternative assessment methods, and using non-achievement factors in grading some of the time. Less than a quarter of the teachers indicated involving students in the assessment process most to all of the time. Less than one third of the teachers

reported analyzing assessment results most to all of the time. About one third of the teachers mentioned using alternative assessments most to all of the time. About two third of the teachers indicated using non-achievement factors in grading never to some of the time. Also, the teachers reported using traditional assessment methods, developing scoring criteria and standards for performance assessments, and communicating assessment results to various audiences most of the time. Nearly half of the teachers indicated using traditional assessment methods most to all of the time. About 71% of the teachers reported communicating assessment results to various audiences most to all of the time. Approximately 64% of the teachers indicated developing scoring criteria and standards for performance assessments most to all of the time.

Table 7. Descriptive statistics for teachers' assessment practices (N = 165)

Assessment practices	Scale value					*M*	*SD*
	1.00-1.79 Never	1.80-2.59 Seldom	2.60-3.39 Some of the time	3.40-4.19 Most of the time	4.20-5.00 All of the time		
	f (%)	*f* (%)	*f* (%)	*f* (%)	*f* (%)		
1. Traditional assessment methods	0 (0.0)	6 (3.6)	79 (47.9)	68 (41.2)	12 (7.3)	3.42	.50
2. Alternative assessment methods	0 (0.0)	24 (14.5)	86 (52.1)	44 (26.7)	11 (6.7)	3.16	.57
3. Analysis of assessment results	6 (3.6)	31 (18.8)	77 (46.7)	43 (26.1)	8 (4.8)	3.08	.71
4. Assessment communication	0 (0.0)	0 (0.0)	48 (29.1)	88 (53.3)	29 (17.6)	3.69	.47
5. Assessment standards and criteria	0 (0.0)	4 (2.4)	56 (33.9)	74 (44.8)	31 (18.8)	3.58	.57
6. Student-involved assessment	24 (14.5)	26 (15.8)	77 (46.7)	23 (13.9)	15 (9.1)	2.91	.90
7. Non-achievement grading factors	2 (1.2)	25 (15.2)	81 (49.1)	45 (27.3)	12 (7.3)	3.17	.65

Further analysis of teachers' assessment practices was conducted to examine differences with respect to teachers' gender, teaching class, teaching subject, pre-service training in assessment, and in-service training in assessment using MANOVA. Results revealed a statistically significant multivariate effect for gender on the teachers' assessment practices; $F(7, 145) = 7.499$, *Wilks' Lambda* = .734, $p = .000$. There were no statistically significant multivariate effects for teaching subject, teaching class, pre-service assessment training, and in-service assessment training on the teachers' assessment practices.

The univariate analysis showed statistically significant gender differences on using alternative assessments; $F(1, 151) = 13.454$, $p = .000$, partial $\eta^2 = .082$; analyzing assessment results; $F(1, 151) = 5.790$, $p = .017$, partial $\eta^2 = .037$; communicating assessment results; $F(1, 151) = 5.434$, $p = .021$, partial $\eta^2 = .035$; using assessment standards and criteria; $F(1, 151) = 11.896$, $p = .001$, partial $\eta^2 = .073$; and using non-achievement grading factors; $F(1, 151) = 12.530$, $p = .001$, partial $\eta^2 = .077$. Alternative assessments were used more frequently by male teachers ($M = 3.548$, $SD = .51$) than by female teachers ($M = 3.156$, $SD = .54$). Male teachers ($M = 3.483$, $SD = .48$) tended to analyze assessment results more frequently than female teachers ($M = 3.154$, $SD = .75$). Female teachers ($M = 3.772$, $SD = .50$) tended to communicate assessment results with various audiences more frequently than male teachers ($M = 3.552$, $SD = .45$). Assessment standards and criteria were used more frequently by female teachers ($M = 3.703$, $SD = .55$) than by male teachers ($M = 3.322$, $SD = .57$). Female teachers ($M = 3.126$, $SD = .67$) tended to use non-achievement factors in grading less frequently than male teachers ($M = 3.570$, $SD = .48$).

Table 8 displays Pearson product-moment correlation coefficients of teaching load per week and teaching experience with teachers' assessment practices. As shown in Table 8, weekly teaching load correlated negatively

with teacher's use of traditional assessments as well as with teacher's communication of assessment results to various audiences. There were no statistically significant correlations between weekly teaching load and teacher's use of alternative assessments, analysis of assessment results, student-involved assessment, and non-achievement grading factors. According to Table 8, there was a statistically significant positive relationships between teaching experience and teacher's use of traditional assessments. However, teaching experience did not correlate significantly with teacher's use of alternative assessments, analysis of assessment results, communication of assessment results, assessment standards and criteria, student-involved assessment, and non-achievement grading factors.

Table 8. Pearson product-moment correlation coefficients of teaching load and teaching experience with teachers' assessment practices (N = 165)

Variable	Teaching load	Teaching experience
1. Traditional assessment methods	-.186*	.157*
2. Alternative assessment methods	-.076	.076
3. Analysis of assessment results	-.139	.014
4. Assessment communication	-.247**	.103
5. Assessment standards and criteria	-.161*	.040
6. Student-involved assessment	.013	-.035
7. Non-achievement grading factors	-.025	-.054

*$p < .05$. **$p < .01$.

3.5 Uses of Classroom Tests

Table 9 presents descriptive statistics for teachers' uses of classroom tests. As shown in Table 9, on average, the teachers reported using classroom tests for assigning grades and motivating students for learning all of the time. Also, on average the teachers indicated using classroom tests most of the time for other purposes such as diagnosing students' weakness, grouping students for instruction, planning for instruction, evaluating instructional methods, controlling students' behavior, evaluating academic achievement, comparing students' performances with each other, and upgrading students from one class to another.

Table 9. Descriptive statistics for teachers' uses of classroom tests (N = 165)

Uses of classroom tests	Scale value					*M*	*SD*
	1.00-1.79 Never	1.80-2.59 Seldom	2.60-3.39 Some of the time	3.40-4.19 Most of the time	4.20-5.00 All of the time		
	f (%)	*f* (%)	*f* (%)	*f* (%)	*f* (%)		
1. Diagnose student weaknesses	0 (0.0)	3 (1.8)	34 (20.6)	67 (40.6)	61 (37.0)	4.13	.80
2. Group students for instruction	0 (0.0)	6 (3.6)	56 (33.9)	64 (38.8)	39 (23.6)	3.82	.83
3. Plan for instruction	5 (3.0)	13 (7.9)	53 (32.1)	67 (40.6)	27 (16.4)	3.60	.96
4. Assign grades	0 (0.0)	3 (1.8)	30 (18.2)	47 (28.5)	85 (51.5)	4.30	.83
5. Evaluate instructional methods	5 (3.0)	14 (8.5)	55 (33.3)	51 (30.9)	40 (24.2)	3.65	1.03
6. Control student behavior	8 (4.8)	5 (3.0)	46 (27.9)	40 (24.2)	66 (40.0)	3.92	1.11

7. Motivate students for learning	0 (0.0)	3 (1.8)	32 (19.4)	49 (29.7)	81 (49.1)	4.26	.83
8. Evaluate academic achievement	1 (0.6)	3 (1.8)	35 (21.2)	52 (31.5)	74 (44.8)	4.18	.87
9. Compare students' performances	6 (3.6)	8 (4.8)	62 (37.6)	56 (33.9)	33 (20.0)	3.62	.98
10. Upgrade students to upper classes	3 (1.8)	8 (4.8)	44 (26.7)	56 (33.9)	54 (32.7)	3.91	.97

Further analysis of teachers' uses of classroom tests was conducted to examine differences with respect to teachers' gender, teaching class, teaching subject, pre-service training in assessment, and in-service training in assessment using MANOVA. Results revealed statistically significant multivariate effects for gender; $F(10, 142) = 3.084$, *Wilks' Lambda* = .822, $p = .001$; teaching class; $F(50, 650.984) = 1.696$, *Wilks' Lambda* = .572, $p = .003$; and teaching subject; $F(50, 650.984) = .719$, *Wilks' Lambda* = .568, $p = .002$ on the teachers' uses of classroom tests. There were no statistically significant multivariate effects for pre-service assessment training and in-service assessment training on the teachers' uses of classroom tests.

The univariate analysis showed statistically significant gender differences favoring female teachers than male teachers on using classroom tests for grouping students; $F(1, 151) = 6.132$, $p = .014$, partial $\eta^2 = .039$; assigning grades; $F(1, 151) = 17.494$, $p = .000$, partial $\eta^2 = .104$; motivating students; $F(1, 151) = 4.609$, $p = .033$, partial $\eta^2 = .030$; evaluating academic achievement; $F(1, 151) = 10.923$, $p = .001$, partial $\eta^2 = .067$; and upgrading students from one class to another; $F(1, 151) = 6.092$, $p = .015$, partial $\eta^2 = .039$. Also, the univariate analysis showed statistically significant differences by teaching class on using classroom tests for grouping students; $F(5, 151) = 2.621$, $p = .026$, partial $\eta^2 = .080$; and assigning grades; $F(5, 151) = 2.458$, $p = .036$, partial $\eta^2 = .075$. Scheffe's test indicated that sixth grade teachers ($M = 4.16$, $SD = .82$) tended to use classroom tests for grouping students more frequently than ninth grade teachers($M = 3.46$, $SD = .95$). Also, the sixth grade teachers ($M = 4.68$, $SD = .60$) reported using classroom tests for assigning grades more frequently than fifth grade teachers ($M = 3.91$, $SD = .90$) and ninth grade teachers ($M = 4.08$, $SD = .89$).

Further, the univariate analysis showed statistically significant differences by teaching subject on using classroom tests for grouping students; $F(5, 151) = 2.970$, $p = .014$, partial $\eta^2 = .090$; and evaluating academic achievement; $F(5, 151) = 3.328$, $p = .007$, partial $\eta^2 = .026$. Scheffe's test indicated that Islamic education teachers ($M = 4.20$, $SD = .76$) tended to use classroom tests for grouping students more frequently than mathematics teachers($M = 3.59$, $SD = .79$). Also, social studies teachers ($M = 4.55$, $SD = .51$) reported using classroom tests for evaluating academic achievement more frequently than Islamic education teachers ($M = 3.84$, $SD = .90$).

Table 10 displays Pearson product-moment correlation coefficients of teaching load per week and teaching experience with teachers' uses of classroom tests. As shown in Table 10, weekly teaching load correlated negatively with teacher's use of classroom tests for diagnosing students' weaknesses, grouping students for instruction, and comparing student performance with others. There were no statistically significant correlations between weekly teaching load and teacher's use of classroom tests for planning for instruction, evaluating instructional methods, controlling students' behavior, motivating students, evaluating academic achievement, and upgrading students from one class to another. According to Table 10, there were statistically significant positive relationships between teaching experience and teacher's use of classroom tests for assigning grades and evaluating academic achievement. However, teaching experience did not correlate significantly with teacher's use of classroom tests for diagnosing students' weakness, grouping students for instruction, planning for instruction, evaluating instructional methods, controlling students' behavior, motivating students, comparing students' performances with each other, and upgrading students from one class to another.

Table 10. Pearson product-moment correlation coefficients of teaching load and teaching experience with teachers' uses of classroom tests (N = 165)

Variable	Teaching load	Teaching experience
1. Diagnose student weaknesses	-.157*	.089
2. Group students for instruction	-.212**	-.010
3. Plan for instruction	.038	-.057
4. Assign grades	-.135	.176*
5. Evaluate instructional methods	-.124	.001
6. Control student behavior	-.019	-.075
7. Motivate students for learning	-.147	.075
8. Evaluate academic achievement	-.145	.152*
9. Compare students' performances	-.152*	.130
10. Upgrade students to upper classes	-.040	.112

*$p < .05$. **$p < .01$.

3.6 Attitude towards Classroom Tests

An analysis of teachers' attitude towards classroom tests is presented in Table 11. Overall, the teachers tended to have a positive attitude towards classroom tests ($M = 3.56$, $SD = .38$). The majority of the teachers (74.5%) reported having positive to strongly positive attitude towards classroom tests. About one quarter of the teachers reported being neutral in their attitude towards classroom tests.

Table 11. Frequencies for teacher attitude towards classroom tests (N = 165)

Scale value		*f*	%
1.00 – 1.79	Strongly negative attitude	0	0.00
1.80 – 2.59	Negative attitude	0	0.00
2.60 – 3.39	Neutral	42	25.5
3.40 – 4.19	Positive attitude	115	69.7
4.20 – 5.00	Strongly positive attitude	8	4.8

Further analysis of teachers' attitude towards classroom tests was conducted to examine differences with respect to teachers' gender, teaching class, teaching subject, pre-service training in assessment, and in-service training in assessment using factorial ANOVA. Table 12 summarizes results of the factorial ANOVA. As shown in Table 12, there were no statistically significant differences in the attitude towards classroom tests between the teachers with respect to their gender, teaching class, teaching subject, pre-service training in assessment, and in-service training in assessment. Pearson product-moment correlation coefficients indicated teachers' attitude towards classroom tests correlated negatively with weekly teaching load, r (163) = -.151, p = .052; and positively with teaching experience; r (163) = .194, p = .013.

Table 12. Factorial ANOVA for the attitude towards classroom tests

Source	*SS*	*df*	*MS*	*F*	*p*-value
Gender	.360	1	.360	2.541	.113
Teaching class	.330	5	.066	.466	.801
Teaching subject	.659	5	.132	.931	.463
Pre-service training	.041	1	.041	.291	.590
In-service training	.328	1	.328	2.317	.130
Error	21.387	151	.142		

4. Discussion

Assessment of student learning is one of the daily classroom tasks for teachers. A significant proportion of the classroom time is devoted to educational assessment-related activities (Mertler, 2003). These assessment activities play a critical role in shaping student academic motivation and performance (Brookhart, 2004). Educators have long recognized that teachers' knowledge and beliefs might influence their classroom practices (Calderhead, 1996; Green, 1992). As might be expected, undesirable teachers' knowledge and beliefs about educational assessment could cripple the quality the assessment outcomes (Popham, 2009). Thus, there is a need to fully understand teachers' attitudes, competence, knowledge, and practices about educational assessment. The present study aimed at addressing this need.

Results revealed that although teachers held a favorable attitude towards and perceived themselves as being competent in educational assessment, they demonstrated a low level of knowledge in educational assessment. Teachers used a variety of assessments in the classroom primarily for assigning grades and motivating students to learn, with some variations by gender, grade level, and subject area. Teaching load and teaching experience accounted for some of the variations in teachers' educational assessment practices. These results were consistent with the results from earlier research by Alkharusi (2011a, 2011b, 2011c), Alkharusi et al. (2011), Lyon (2011), Mertler (2003), Mertler and Campbell (2005), Ogan-Bekiroglu (2009), Plake and Impara (1992), Zhang and Burry-Stock (2005) that have repeatedly documented a concern about teachers' educational assessment knowledge and practices.

Appropriate classroom assessment practices have been identified as one of the critical element that must be considered in order to maximize student learning (Lukin, Bandalos, Echout, & Mickelson, 2004). However, research has consistently reported that teachers, in general, lack adequate knowledge about educational assessment deemed necessary for appropriate assessment practices (Fan, Wang, & Wang, 2011; Koh, 2011; Quilter & Gallini, 2000). Tierney (2006) identified two external sources (educational policy and professional development) and an internal source (teachers' beliefs) mediating teachers' assessment practices. The present study provided evidence that in-service training in educational assessment might have a positive impact on teachers' educational assessment knowledge. Thus, it is recommended that ongoing professional development programs should be designed to strengthen teachers' educational assessment knowledge and skills.

As shown in this study, the teachers had positive views about educational assessment and perceived themselves as competent in educational assessment. Based on the literature, teachers' assessment practices tend to be influenced by their beliefs about educational assessment (Quilter & Gallini, 2000). However, the results of the present study showed that heavy weekly teaching load of the teachers might have a negative impact on teachers' assessment beliefs, knowledge, and practices. These results were in agreement with Lyon's (2011) study who found that teaching load and other school responsibilities could cause conflicts between teachers' assessment beliefs and practices. Thus, it is recommended that the Ministry of Education pay attention to the teaching load of the teachers in relation to the educational assessment responsibilities of the teachers.

The literature has suggested that teachers' assessment practices may vary as a function of grade level and subject area (Zhang & Burry-Stock, 2003). The current findings showed some trends with respect to grade level and subject area in relation to teachers' self-perceived competence, knowledge, and practices in educational assessment. Thus, it is recommended that teacher educators should consider the specific nature of the various grade levels and subject areas when designing and implementing professional development programs for teachers in educational assessment.

The findings of this study revealed gender differences in educational assessment competence, knowledge, and

practices. In this study, female teachers were found to have on average a higher level of knowledge and self-perceived competence in educational assessment than male teachers. Although these findings partially agree with Alkharusi's (2011c) study who reported gender differences in the self-perceived assessment skills favoring female teachers, they disagree with Alkharusi's (2011a) who found gender differences in the educational assessment knowledge favoring male teachers. In addition, the current study showed that female teachers tended to use non-achievement factors such as effort and ability in grading more frequently than male teachers. These practices do not align with those recommended by educational assessment experts which state that non-achievement factors such as effort, ability, interest, and motivation should not be incorporated into academic grades because they are complex to be operationally defined and measured (Stiggins, Frisbie, & Griswold, 1989). However, it is not clear from the present study why do these gender differences exist. Future research using classroom observations and interviews might shed more light on gender differences in the educational assessment competence, knowledge, and practices.

Finally, the generalizability of the present study findings are limited by the use of self-report questionnaire and by the particular sample of teachers. Future research might consider using interviews and direct observations of teachers' assessment practices to judge the validity of the teachers' responses to the questionnaire. Also, future research should be conducted to testify the findings using a representative larger sample of teachers selected from various educational governorates in the country.

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