

# INVESTIGATING THE ASSESSMENT LITERACY OF TEACHERS IN PRIVATE JUNIOR HIGH SCHOOLS IN THE PHILIPPINES

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## Abstract

Increasingly, education in all levels in many institutions moves toward societal accountability mechanisms through reforms in assessment practices. Unless teacher's assessment literacy is understood, how assessment practices influence students' study strategies and learning processes remains a phenomenon. This study investigated the level of assessment literacy among junior high school level (Grade 7-10) teachers ( $n=241$ ) in the Philippines. It also examined how teachers' attributes affect their level of assessment literacy. The 35-item assessment literacy inventory and Item Facility (IF) index were used. General Linear Model (GLM) was done to predict teacher's literacy level. Results showed that overall, the Grade 7-10 teachers have a "midlevel" literacy in assessment ( $M \pm SEM = 17.15 \pm 0.24$ ). Teachers are most literate on "Developing assessment methods" while they are least literate on "Communicating assessment results." Teachers desire to develop innovative forms of assessments for formative and summative classroom purposes but deterrence on communicating results of assessment to the students and parents suggest an uneven intention and conception of assessment for school accountability purposes. The Humanities, Arts and Social Sciences teachers were outperformed by the Mathematics and Science teachers based on their scores in the test. Mathematics and Science teachers are more literate in assessment than the other teachers. Among the categorical predictors, only the

teacher's content area could predict the teachers' assessment literacy level. The findings point to teachers' mixed understanding that assessment of student learning is an essential component of effective educational accountability system.

**Keywords:** Assessment; assessment literacy; testing; grading

## **Introduction**

Students want to know what will be assessed and how because they want to succeed in their classes. Their learning strategies and processes are deeply influenced by how their teachers assessed their learning (Alkharusi et al., 2014; Gijbels et al., 2008; Biggs and Tang, 2007). Unfortunately, some assessment methods have both desirable and undesirable consequences (Brown et al., 1997). Also, the extent by teachers allow students to participate in the assessment process, such as letting them know how they will be assessed, giving them opportunity to negotiate assessment tasks, practices, criteria and scores, and make them realize that they are given fair assessment, result in positive attitude towards assessment (Alkharusi et al., 2014; Segers et al., 2003; Struyven et al., 2003). Teachers should therefore carefully consider their assessment practices because these practices tremendously affect student's learning.

What teachers actually know about assessment, or so-called assessment literacy, limits their repertoire of classroom assessment practices. Cimer et al. (2010) and Alkharusi, et al. (2012; 2014) emphasized that teachers' inadequate knowledge and skills extremely impact on how teachers contribute in implementing the requirements of the educational reform in assessment. Teachers should know that the more effective methods or types of assessments they can apply in their daily classroom instruction the more impact they will have on the learning. For instance, the use of innovative, creative and alternative forms of assessment allows students to construct knowledge and achieve deep learning. When students are given opportunities to assess the learning process and undergo self-assessment instead of the recall types of assessment, the emphasis moves from grades and memorization to meaningful learning (Brantley, 2006; Struyven et al., 2005).

Many students who completed their courses do not have a robust understanding of essential concepts (Aydeniz and Brown, 2010; Ramsden, 2003; Struyven et al., 2005). Only when teachers create or redesign learning environments wherein students are form effective study practices and meaningful learning, this problem is solved. Teachers must ensure that assessment, learning experiences and the learning outcomes are aligned (Biggs and Tang, 2007; Boud and Falchikov, 2006).

There are many aspects of assessment that teachers find challenging. These challenges are a confluence of many factors such as conceptions about teaching and how students learn. Studies reveal the direct relationship between teachers' practices and conceptions of teaching (Lee et al., 2019; Abraha and Terekegne, 2018; Eley, 2006; Kember and Kwan, 2000; Postareff et al., 2008). However, many teachers exclude assessment as an essential component of their teaching practices. They do not have equal emphasis on assessment, course content and teaching strategies (Boud and Falchikov, 2006; Ramsden, 2003). This could be due to their view that assessment is not an essential part of teaching but separate from teaching, while others see assessment simply as an addition to teaching (Parpala and Lindblom-Ylänne, 2007). Hence, understanding how teachers view teaching and assessment is crucial because assessment literacy can be a useful basis for many educational reforms through effective teacher preparation and teacher retooling.

Teaching environment and the attributes of the teachers themselves influence level of assessment literacy. It was found that cultural differences are an important factor leading to variation in how teachers conceive assessment (Fulmer et al., 2019; Segers and Tillema, 2011). Moreover, the teachers teaching the hard sciences focus more on factual knowledge and assessment of facts while teachers teaching soft sciences emphasize more on deep learning hence testing is less content-focused (Seden and Svaricek, 2018; Lindblom-Ylänne et al., 2006; Lueddeke, 2003; Postareff and Lindblom-Ylänne, 2008; Prosser et al., 2003). These findings imply the need to identify teachers' attributes that predict assessment literacy.

In the Philippines, the implementation of the K to 12 curriculum is a major educational reform that poses a great challenge for educators and professional teacher development and curriculum makers and implementors (Bringula et al., 2019). Teachers who are the heart of the educational process in the classroom, being the implementers of the new curriculum, need to bring the necessary improvement in teaching, learning and assessment. It is therefore important to explore how teachers understand and transform their assessment approaches according to the requirements of the new curriculum. Therefore, the aim of the present study is to reveal the level of assessment literacy among teachers in the Philippine setting, with focus on those teaching in the private high

schools. It also explored on the teachers' knowledge about what constitute good assessment, what tests measure, how tests measure learning and how teachers prepare tests. How teachers' attributes affect their level of assessment competency was also examined.

## **Methods**

Filipino teachers (n=241) in four private schools (one in Luzon, one in the Visayas, and two in Mindanao, Philippines) handling Grades 7-10 were asked to participate in the study. The Teacher Assessment Literacy Questionnaire (TALQ) by Plake and Impara (1996) was used to determine the general concepts of the teachers, specifically on the following: testing and assessment, the use of assessment activities for assigning student grades and communicating the results of assessment to students and parents, and their knowledge about standardized testing. The items in the questionnaire were validated for the Philippine context by replacing some words or phrases that integrate temporal, environmental, and social contexts for Filipino teachers. For instance, surnames in the question were replace with common Filipino surnames and certain terms such as "state curriculum" or "state-wide testing" were changed accordingly.

The first part of the questionnaire is composed of 35 items on the recognized competence standards for teachers on assessment of student learning. The second part of the questionnaire assesses teachers' knowledge about classroom assessment practices, level of teaching experiences and other teacher attributes.

Mean and standard deviations of the scores in TALQ were calculated. Count and percentages in each of the responses of the teachers were computed to show differences in the frequencies and proportions of the answers to all items in the tests. Item facility (IF), also called Item difficulty, which refers to the proportion of test takers who answered the question correctly, were reported (Wood 1960). Items with  $IF < .25$  were considered difficult for the teachers or that they are not literate about the concept asked in the test item. This is based on the suggestion that the ideal difficulty for an item would be halfway between the percentage of pure guess (25%) and 100%,  $(25\% + [(100\% - 25\%)/2]$

(Thompson and Levitov, 1985). From the individual score of test takers, the average, standard deviation, and standard error of measurement were also computed.

General Linear Model (GLM) Univariate procedure was used to further analyze the teachers' assessment literacy. This allowed the researchers to model the value of the level of assessment literacy as the dependent variable based on its relationship with the teachers' attributes which are categorical and scale predictors. The categorical predictors include the school, subject taught, age, gender, civil status, highest educational attainment, and number of years of experiences as classroom teacher. GLM Univariate - Two-Factor Analysis of Variance (ANOVA) was performed several times. The model terms and the entire model itself is explored for its capacity to account for variation in the test scores of the teachers on the assessment literacy test. For instance, given the results of the assessment literacy test results, the researchers wanted to see if the total correct number of the junior high school teachers in the test is related to the subject area they are teaching, controlling for the gender, schools or years of teaching, etc. The null hypothesis tested was that error term variances are constant across cells delimited by the combined factor levels. Hence, two general hypotheses were tested using the GLM Two-Factor ANOVA:

1. The teachers' content area affects their assessment literacy.
2. The educational attainment of the junior high school teacher affects their assessment literacy

## Results

### A. Teachers' Level of Assessment Literacy

Overall, the junior high school teachers got a "midlevel" literacy in assessment based on the average of  $\text{Mean} \pm \text{SEM} = 17.15 \pm 0.24$  in the 35-item Assessment Literacy Test. Teachers aggregated according to the school they are affiliated from showed that they did *not* significantly differ  $F(2, 240) = 1.217$ ,  $p = .304$  in their assessment literacy. This was confirmed by small effect size (Cohen's  $d = 0.213$ ) (Table 1).

The Humanities, Arts and Social Sciences teachers were outperformed by the Mathematics and Science teachers based on their scores in the test. The

difference in the scores categorized according to their content area was significant,  $F(7, 240) = 5.097, p = .000$ . This was confirmed by large effect size (Cohen's  $d = 2.93$ ) which indicates that the differences are larger than 2 standard deviations, Cohen, 1988) (Table 2).

Although no significant differences were found among teachers when grouped according to their other attributes, it was found that those who have earned Doctorate degree units got the slightly higher average score (Mean  $\pm$  SEM =  $19.00 \pm 1.496$ ) compared to those who have Master's degree, and College degree holders. Also, the older teachers, particularly those who are 50 years and above, got the highest average score (Mean  $\pm$  SEM =  $17.83 \pm 0.824$ ) compared to the younger teachers. The female teachers (Mean  $\pm$  SEM =  $17.50 \pm 0.392$ ) outperformed the male teachers (Mean  $\pm$  SEM =  $17.24 \pm 0.499$ ) in the test. Furthermore, those who have 25 years or more years of experience got the highest average score (Mean  $\pm$  SEM =  $18.29 \pm 1.322$ ) in contrast to those who have less than 25 years of experience.

## **B. Teachers' Item Difficulty/Facility (ID/IF) Index on the Assessment Literacy Test**

Test items about "Developing assessment methods" were found to be the easiest to answer by the junior high school teachers, followed by "Administering, scoring and interpreting assessment results" and then, "Using assessment in grading". Test items about "Communicating assessment results" were found to be the most difficult items for the teachers (Table 3).

Among the specific items, the activity about consideration in choosing assessment method in the domain "Choosing assessment methods" obtained the highest IF/ID of 0.96. Two important items about the assessment domain "Developing assessment methods" both got an IF/ID value of 0.90. These are assessment practices about documenting the validity of test scores and assessing students' appreciation of literary works. In the domain "Administering, scoring and interpreting assessment results" two items obtained also a high value: scoring procedure to maximize objectivity (IF/Id = 0.84) and interpreting test-taking behavior in timed test (IF/ID=0.83). These IF/ID values indicate that the junior high school teachers are literate about these assessment practices (Table 3).

Three specific items in the domain “Communicating assessment results” obtained very low IF/ID values. These are related to school accountability on test scores (IF/ID = 0.18), interpretation of standardized test data (IF/ID = 0.17) and percentile band and percentile rank (IF/ID = 0.13). Two items in the domain “Developing assessment methods” also obtained very low and low IF/ID values: assessment strategy for grouping students (F/ID = 0.05) and increasing the reliability of multiple choice-test (IF/ID = 0.28). Three other items obtained low IF/ID values: reliability of scores from standardized test (IF/ID = 0.15), interpreting grade equivalent score (IF/ID = 0.17), and upholding truth-in-testing laws (IF/ID = 0.15). The IF/ID values are indicative that the junior high school teachers are not literate about these assessment practices (Table 3).

### **C. Predictors of Junior High School Teachers’ Assessment Literary**

Majority of the junior high school teachers in the four private schools who participated in the study are 20-29 years old (44%), female (61%), and with single civil status (55%). Most (47%) have earned Master’s degree units. Most of the teachers have less than 5 years of classroom experience (41%) and do not have any experience of being a school administrator (70%). Most of them have not attended an in-service training about tests and measurement (78%). Most of those who have training reported that the last time since they attended a test and measurement class was 1-5 years ago (31%). Majority agreed that instruction can be improved by extensive use of assessment (77%) and standardized test data (53%). They also expressed desire to achieve high proficiency in test score interpretation and in student assessment in general (61%). Majority also agreed that in-service training is the most effective approach in making teachers’ proficiency in test score interpretation (80%).

Further analysis of the teachers’ attributes and teachers’ assessment literacy using General Linear Model (GLM), specifically GLM Univariate Two-Factor Analysis of Variance showed that of the two general hypotheses tested: (1) The content area taught by the junior high school teachers affects their assessment literacy and (2) The educational attainment of the junior high school

teacher affects their assessment literacy, only the former was found to be supported by the results of the statistical test.

For the first hypothesis, the subject area is a fixed effect because the researchers are interested in those areas. The school, years of classroom experience, highest educational attainment, attendance to a formal class or in-service training on test and measurement, and gender, are random effects because these attributes or profile of the sample of teachers from the four private schools. While there is likely to variations in assessment literacy, for instance, school-to-school, the researchers are not directly interested in that variation in the context of the research problem. Results showed a strong interaction effect between variables and the test between-subject effects for confirmation of its significance showed that content area of the junior high school teachers affects them in becoming more literate about assessment. A main effect of subject area was found for the school they are affiliated from,  $F(7, 3) = 5.100$ ,  $p=.000$ , for years of classroom experience  $F(7, 4) = 4.938$ ,  $p=.000$ , for attendance to a formal class or in-service training on test and measurement  $F(7, 1) = 3.200$ ,  $p=.003$ , and for gender  $F(7, 4) = 4.946$ ,  $p=.000$ , The main effect of subject area on educational attainment was not significant,  $F(7, 7) = 10.755$ ,  $p = .428$  (Tables 4-8).

For the second hypothesis, the highest educational attainment is a considered as the fixed effect because the researchers are interested in this variable. The years of classroom experience, gender, attendance to a formal class or in-service training on test and measurement are random effects. Results revealed that the educational attainment of the junior high school teachers does not affect them in becoming more literate about assessment.

## **Discussion**

Overall, the junior high school teachers got a “midlevel” literacy in assessment, and the Humanities, Arts and Social Sciences teachers have lower assessment literacy level compared with the teachers of highly academic disciplines, Mathematics and Sciences. These results confirm previous research findings that content areas is an important factor of teachers’ assessment practices (Duncan and Noonan, 2007; Gullikson, 1984; Stiggins and Conklin,

1992; Zhang, 1995) and that “content-related variations in teachers’ assessment practices are largely reflective of the nature and relative importance of the various subjects taught at school” (Zhang and Burry-Stock, 2003, p. 332). Compared to the Humanities, Arts and Social Sciences teachers, the Mathematics and Science teachers engage more on certain assessment practices such as grading, communicating assessment results, ensuring ethical standards are met, and interpreting standardized test results (Zhang and Burry-Stock, 2003).

The findings that teacher’s content area, was supported by the strong interaction effect between variables and the test between-subjects effects for confirmation of its significance showed that subject area taught by the junior high school teachers affects them in becoming more literate about assessment. This results support Zhang and Burry-Stock (2003) that the assessment practices of teachers are driven by their content area or content subjects they teach. These findings have a lot of implications to teacher training and development. Indeed, teacher preparation should focus on improving assessment practices that are tailored according to the teachers’ content area or specialization. In-service trainings should also be designed to help teachers become more literate on developing assessment tools that are aligned to their commonly used teaching methods in their classrooms.

Many of the assessment practices that the junior high school teachers are not literate about practices which are related to that Ramesal (2011) described as the pedagogic and societal functions of assessment in school and to challenges in the using assessment for student learning experiences. The findings suggest an urgent need to improve the teachers’ assessment literacy particular on school accountability on test scores, assessment strategy for grouping students, increasing the reliability of tests and upholding truth-in-testing laws.

Teachers are more literate on “Developing assessment methods,” “Administering, scoring and interpreting assessment results” and “Using assessment in grading” than “Communicating assessment results.” These findings can be explained by what McClam and Sevier (2010) conclude from their study about grades and grading, particularly, “the deeply ingrained and broadly interconnected role that traditional understandings of grades play in

defining and stabilizing identities and responsibilities" (p.1460). Seemingly, the junior high school teachers know what Roth and McGinn (1998) had argued that "if you take away grades and their power you take away the essential stabilizing force of an educational network" (p.1462). But unfortunately, the teachers still need more training on how to correctly and efficiently communicate the assessment results.

In a nutshell, the assessment literacy and assessment practices of the junior high school teachers revealed in the present study can be interpreted properly using the Attribution Theory which proposed certain principles on an individual to choose and apply knowledge to determine the plausible reasons for a particular action or behavior. The theory has been used to predict how people will respond in particular situations (Gross et al., 2000). The researchers examining how teachers make causal attributions for their assessment practices, rather than how they actually do make them use these theories of attribution. In this study, the teachers can be viewed as logical and systematic beings in their explanations of behaviors (i.e., classroom assessment practices). Teachers may act as naïve scientists, inferring unobservable causes (or meaning) from observable behaviors. Their assessment practices may be explained in terms of both personal (disposition/internal) and situations (environmental/external factors) (Heider, 1958). In other circumstances, teachers' assessment literacy and practices may be influenced by free choice, anticipations, and social desirability patterns. These dispositional attributions explain why people make correspondent inferences about people's disposition and their analysis of non-common effects (Jones and Davis, 1965). Assessment literacy may also be related to the processes by which internal and external ascriptions are conceived as reasons for certain action or behavior.

Clearly, the junior high school teachers in the private schools should continue to strive in giving good assessment tasks and strategies. It is important that the teachers know where their students are vis-à-vis the standards and competencies and then must repeatedly check on how they are progressing. This can be done through a clear and efficient feedback they get from their learners. Further research on what sort of tests should measure what sort of learning tasks. There is also a need to innovate new trends on how teachers could guide their students on what they are expected to learn and what quality work looks like.

Teachers should undergo in-service trainings on how to prepare the many forms of assessments (e.g., formative, summative, alternative, creative, interdisciplinary and collaborative assessments). Assessment for learning occurs in all phases of the learning process, hence, the teacher and student must work together to demonstrate the student's knowledge and apply what was learned. Also, using assessment results for assigning grades and how to effectively communicate them to students and parents should be included in teachers' professional development programs. This is increasingly important since education in all levels in many institutions moves toward societal accountability mechanisms through reforms in assessment practices. Unless teacher's assessment literacy is understood, how assessment practices influence students' study strategies and learning processes remains a phenomenon. As shown in this study, teachers desire to develop innovative forms of assessments for formative and summative classroom purposes but deterrence on communicating results of assessment to the students and parents suggest an uneven intention and conception of assessment for school accountability purposes. The findings point to teachers' mixed understanding that assessment of student learning is an essential component of effective educational accountability system.

Lastly, the teachers in the private schools in the Philippines should continue to contribute in producing the ideal twenty-first-century citizens who are prepared to a knowledge-based, highly-technological society. Their assessment literacy should transcend assessment *of* learning to assessment *for* learning (Heick, 2018) and assessment *as* learning (Rowe, 2012).

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