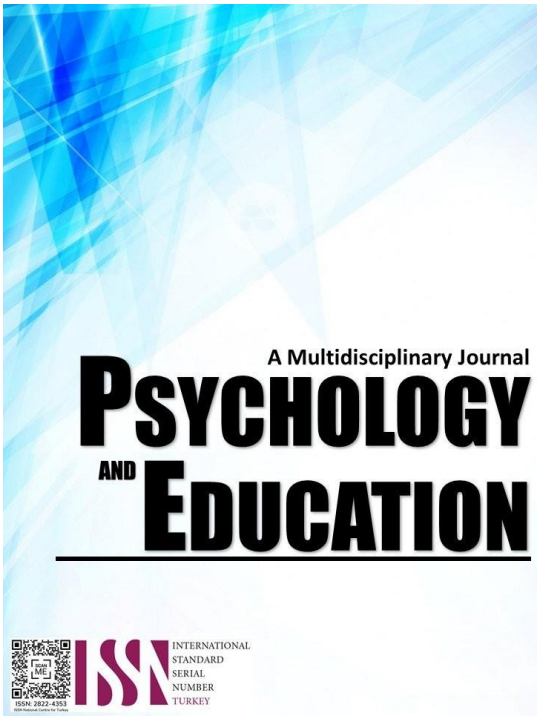
ASSESSMENT LITERACY OF BASIC EDUCATION TEACHERS IN A PRIVATE INSTITUTION



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Research Article

Assessment Literacy of Basic Education Teachers in a Private Institution

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Abstract

Teachers' assessment literacy is a crucial element for effective assessment practices. This study investigated the assessment literacy of 104 Filipino basic education teachers of a non-sectarian private university using descriptive quantitative research methods. The study explored their knowledge in testing, measurement, and data literacy, as well as professional development. Findings revealed that most teachers had limited participation in general professional development but were highly involved in assessment-related activities. Overall, teachers showed satisfactory assessment literacy, with borderline proficiency in data literacy. Assessment literacy levels did not significantly differ by sex, age, educational attainment, field of specialization, years of teaching, or number of professional development trainings. However, the academic level taught significantly predicted assessment literacy, indicating differences in competencies across educational levels. Testing, measurement, and data literacy were positively related to overall assessment literacy and explained its variability. This highlights the need for continuous professional development to enhance teachers' assessment skills and improve educational outcomes, along with better assessment procedures.

Keywords: *assessment, assessment literacy, professional development*

Introduction

Assessment literacy is essential for teachers to conduct effective assessments that enhance student learning. This study examines the assessment literacy of basic education teachers, focusing on their knowledge in testing, measurement, and data interpretation. The study also explores their participation in professional development activities.

The assessment of student learning has always been a fundamental element in teaching. Assessment determines whether students are learning what they are supposed to learn. It is an integral part of instruction. It benefits both the teacher and students. Through assessment, the teacher is able to know the effectiveness of the methods or approaches employed in instruction. Likewise, the teacher can gauge what students have learned and how much they have learned. The results of assessment become the basis of students' ratings. However, in order to ensure that assessments are accurate, trustworthy, and fair, teachers must be involved in all elements of the assessment process (Duran-Nelson & Duran-Rodriguez, 2014). Teachers are the primary assessors of student learning.

Effective assessment requires teacher assessment literacy (Care et al., 2016), which is a crucial element of good assessment. This covers information and abilities related to the development, use, and analysis of assessments as well as the use of data to guide training.

Student learning outcomes can be improved by teacher involvement in assessment (Duran-Nelson & Duran-Rodriguez, 2014). When teachers are involved in all facets of the assessment process, they can use assessment data to guide their instruction and give students specific feedback; this can lead to better student learning outcomes. They are at the forefront in providing activities that could help enhance student learning (Hailaya, 2014). All teachers need to possess sufficient assessment literacy, so their classroom assessments are substantially better (Popham, 2009) and be able to assess students' assessment with proficiency.

The quality of teachers is viewed as vital in the implementation of education policies; assessment has increasingly become a key policy instrument for education reform in many countries (Koh, 2014; Kyriakides, 2014). Clores (2020) explains that assessments are expected to produce major changes in schools and provide teachers the opportunity to make some improvements; however, teachers are not prepared for their this. Researchers contend that teachers are not given essential training needed in assessment-related work (Stiggins, 2014; Vogt & Tsagari, 2014 as cited by Lam, 2019). Teachers' inadequate knowledge and skills extremely impact on how teachers contribute to implementing the requirements of the educational reform in assessment (Alkharusi, 2014, as cited by Clores, 2020).

In the light of public health emergency brought about by the pandemic, the Department of Education (DepEd) issued DO 12, s. 2020 "Adoption of the Basic Education Learning Continuity Plan for School Year 2020-2021". This contains the learning delivery modalities that schools may adopt, such as face-to-face, distance learning like blended learning, home-schooling, television/radio-based instruction, modular distance learning (MDL), and online distance learning (ODL). The Department also echoes UNESCO's belief that educational quality, access, and system strengthening cannot be compromised in times of crisis (UNESCO, 2017). Hence, DepEd affirmed its commitment to sustain the delivery of quality, accessible Philippine basic education services anchored on the Sulong Edukalidad framework.

With this, DepEd released the Most Essential Learning Competencies (MELCs) to be used nationwide by teachers in the field for school year 2020-2021. As the nation prepared for challenges in learning delivery, the MELCs allowed the Department to concentrate instruction on the most crucial and indispensable competencies that learners must acquire. The learning outcomes were assessed in the form of knowledge, skills, attitudes, and values through the preparation of portfolio or e-portfolio as evidence of learning (DO 12, s. 2020). As a supplement of this DepEd order, the Interim Policy Guidelines for Assessment and Grading was issued by the Department

to provide guidance on the assessment of student learning and on the grading scheme to be adopted (DO 31, s. 2020). This policy outlines assessment principles which include that assessments should be comprehensive and authentic in capturing the attainment of the most important learning competencies; assessments are essential for understanding student learning and development. In addition, a variety of assessment strategies are required, with formative assessment taking priority to inform teaching and promote growth and mastery. Assessments and feedback should be a shared responsibility among teachers, learners, and their families.

As a former basic education teacher and administrator, the researcher has been concerned with the assessment practices of the teachers in the face-to-face and flexible learning platforms. She was also challenged to look into the assessment literacy of the basic education teachers in a private university. There may have been studies on assessment literacy of teachers in the country but a study of this kind among the basic education teachers of this university has not been conducted. This inquiry may be able to fill in the research gap on the topic. Thus, this study was conceptualized.

Research Questions

The study looked into the assessment literacy of Basic Education teachers and how this explains students' academic performance. It sought to answer the following questions:

1. How are the respondents characterized in terms of the following:
    1.1. sex;
    1.2. age;
    1.3. baccalaureate degree;
    1.4. field of specialization;
    1.5. educational attainment;
    1.6. teaching level;
    1.7. years of teaching experience; and
    1.8. number of trainings attended?
2. How are the respondents described in terms of their professional development in assessment?
3. What is the teachers' level of assessment literacy considering the three components:
    3.1. testing literacy;
    3.2. measurement literacy; and
    3.3. data literacy?
4. Is there a significant difference in the students' academic performance when grouped according to teachers' over-all assessment literacy?
5. To what extent do the following variables: sex, age, baccalaureate degree, field of specialization, educational attainment, teaching level, years of teaching experience, and number of trainings attended, and professional development explain the variation of the teachers' assessment literacy?

Methodology

The research adopted a descriptive design to describe and examine the assessment literacy of teachers quantitatively. It involved 104 faculty members from the Basic Education Department as participants, using the Cochran formula for determining the sample size of teachers, and universal sampling for student participants. The universal sampling was employed to gain a comprehensive understanding of the relationship between teachers' assessment literacy and students' academic performance, by directly matching students' academic ratings with their respective teachers' assessment literacy level.

The study deployed validated, pilot-tested tools to collect data on participants' socio-demographic profiles, engagement in professional development trainings, and assessment literacy. Various statistical analyses, including descriptive statistics and tests such as One-way ANOVA was conducted. The study ensured ethical considerations like informed consent, confidentiality, and anonymity in handling data.

Results and Discussion

This chapter presents the analysis and interpretation of data gathered from the study. The data are illustrated in tables. The results are analyzed and interpreted following the sequence of the problems in the first chapter of this study.

Profile of the respondents

Table 1 presents the frequency and percentage distribution of the respondents by their characteristics such as sex, age, baccalaureate degree, field of specialization, educational attainment, teaching level, years of teaching experience, and number of trainings attended. It discloses that majority of the respondents are female with a frequency distribution of 61.5 percent, while 38.5 percent are males.

Based on the data collected on age, the teacher-respondents are dominated by those who are 21-25 years old with 33.7 percent. The 26-30 years age group comes next with a frequency distribution of 29.8 percent. As to the baccalaureate degree of the teachers, majority are graduates of Bachelor of Secondary Education (58.7%), followed by graduates of other programs (29.8%), and Bachelor of

Elementary Education graduates (11.5%).

Table 1. *Distribution of Respondents by Some Characteristics (n=104)*

Characteristics	*Frequency*	*Percentage*
1. Sex		
Male	40	38.5
Female	64	61.5
2. Age		
21 – 25 years old	35	33.7
26 – 30 years old	31	29.8
31 – 35 years old	11	10.6
36 – 40 years old	8	7.7
41 – 45 years old	5	4.8
46 – 50 years old	5	4.8
51 – 55 years old	3	2.9
56 years old and above	6	5.8
3. Baccalaureate degree		
BEED	12	11.5
BSED	61	58.7
Others (Not BEED or BSED)	31	29.8
4. Field of Specialization		
Arts and Music	4	3.8
English	24	23.1
Filipino	12	11.5
General Education	3	2.9
Mathematics	16	15.4
Physical Education	5	4.8
Science	12	11.5
Social Science	11	10.6
TLE	5	4.8
Others	12	11.6
5. Educational Attainment		
Baccalaureate	94	90.4
Master's Degree	10	9.6
6. Level Taught		
K-Elementary	10	9.6
JHS	16	15.4
SHS	78	75.0
7. Years of Teaching Experience		
1 – 5 years	63	60.6
6 – 10 years	16	15.4
11 – 15 years	5	4.8
16 – 20 years	5	4.8
21 – 25 years	7	6.7
26 – 30 years	5	4.8
31 years and above	3	2.9
8. Number of Trainings Attended (SY 2021-2022)		
11 and above	23	22.1
6 – 10	35	33.7
1 – 5	46	44.2

In terms of their field of specialization, results reveal that the English majors topped the list (32.1%), followed by the Mathematics major (15.4%). The rest of the teachers specialize in Arts and Music, Filipino, General Education, Physical Education, Science, Social Studies, Technology and Livelihood Education (TLE) and others. As regard the respondents' educational attainment, the result shows that a great majority (90%) are baccalaureate degree holders; only about 10 percent are full-fledged master's degree holders.

For the teachers' level taught, the senior high school got the highest number (75%); junior high school,15.4 percent; and kinder-elementary, 9.6 percent. As to years of teaching experience, majority (60.6%) have been teaching for 1-5 years; 15.4 percent, 6-10 years; and the rest have been teaching between 11-30 years.

Finally, on the number of trainings attended by the teacher- respondents in school year 2021-2022, the highest is 1–5 trainings with a frequency distribution of 44.2 percent; followed by 6–10 trainings, 33.7 percent; and the least with 22.1 percent for 11 and above trainings.

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Teachers' Professional Development in Assessment

Table 2 presents the frequency, percentages and mean distribution of the respondents in terms of their professional development engagement in assessment. The result reveals that the teachers have a moderate level of professional development, having an overall mean of 3.18. The standard deviation of 0.43 indicates that the respondents have consistent responses. This is aligned with the frequency distribution results where 65.4 percent have a moderate level of professional development. This means that the teachers are actively participating in professional development activities, which is a positive sign for their growth and development as educators.

Table 2. *Distribution of Respondents in Terms of Their Professional Development in Assessment*

Description in "Level"		*Frequency*	*Percentages*
High Level	[3.60 – 4.00	20	19.2
Moderate Level	[2.70 – 3.59]	68	65.4
Fair Level	[1.80 – 2.69]	16	15.4
Poor level	[1.00 – 1.79]	0	0.0
Total		104	100.00

Mean: 3.18 Standard Deviation: 0.43 Description: Moderate Level

Amidst the pandemic, the university organized a set of training sessions for all its teaching staff, including those who teach in the basic education program. The topics covered in these sessions were focused on increasing students' engagement, assessing students' learning online, humanizing the virtual learning environment, thinking approaches of teaching for learning, creating effective rubrics for student assessment, using formative assessment to improve student learning outcomes and mentoring and feed backing skills in the academe. The teachers who participated in these sessions stated that they have gained valuable skills that have helped them create a more effective online learning experience for their students. The continuous professional development opportunities provided to the teachers aimed at enhancing their skills in online teaching. This, in turn, resulted in an improvement in their overall teaching performance.

Teachers' Level of Assessment Literacy

Table 3 presents the overall level of distribution of participants' level of assessment literacy, with categories ranging from "High Literacy" to "Very Low Literacy".

Table 3. *Over-all Distribution of Respondents' Level of Assessment Literacy*

Description in "Level"		*Frequency*	*Percentages*
High Literacy	[3.60 – 4.00]	44	42.3
Moderate Literacy	[2.70 – 3.59]	56	53.8
Low Literacy	[1.80 – 2.69]	4	3.8
Very Low Literacy	[1.00 – 1.79]	0	0.0
Total		104	100.0

Mean: 3.39 Standard Deviation: 0.43 Description: Moderate Literacy

They obtained an overall mean of 3.39 described as moderate literacy. the standard deviation of 0.43 means that the responses are relatively consistent. The results show that the majority of respondents (53.8%) rated their assessment literacy as "Moderate Literacy". Meanwhile, 42 percent of the participants rated their assessment literacy as "High Literacy". Only a small percentage of respondents rated their assessment literacy as "Low Literacy" or "Very Low Literacy", with 3.8% and 0% respectively. The mean score for testing literacy, measurement literacy, and data literacy falls within the range of "Moderate Literacy", with scores of 3.39, 3.37, and 3.39 respectively. This suggests that teacher- respondents generally have a good level of assessment literacy.

As conveyed by Depascale et al. (2018), assessment literacy is not a stand-alone ability that can be distinguished from other knowledge and abilities necessary for successful performance in a particular role. For example, a teacher's level of assessment literacy cannot be understood without also considering their subject-matter expertise and pedagogical abilities. Moreover, assessment literacy involves proficiency in measurement, data processing, and testing concepts for proper interpretation and application.

Significant Difference in the Students' Academic Performance and Teachers' Over-all Assessment Literacy

Table 4. *Test of Significant Difference in the Student - Respondents' Academic Performance When Grouped According to Teachers' Over-all Assessment Literacy*

Dependent Variable (Academic Performance)	*Over-all Assessment Literacy*				*Welch - T*
	Very Good [3.60-4.00] n=44		*Fair to Good [1.80-3.59] n=60*		
	x	*desc*	*X*	*Desc*	
Academic Performance	89.9	S	89.8	S	9.80×10^6 *

*Legend: S = Satisfactory * significant (0.01 < P ≤ 0.05*

As shown, there were 44 respondents who had an overall assessment literacy rating of "very good" (M=89.9) and 60 respondents who had a rating of "fair to good" (M=89.8). The mean academic performance of the "very good" group is slightly higher than the mean academic performance of the "fair to good" group. The overall assessment literacy may play a role in students' academic performance, and that teachers who have a higher level of assessment literacy may be better equipped to develop and use assessment tools that accurately measure student learning outcomes.

Assessment literacy is an important aspect of teaching, as it enables teachers to develop and use assessment tools that accurately measure student learning outcomes (Sari, 2014). Teachers with advanced assessment literacy skills are likely to be more capable of developing assessments that are in line with learning objectives, evaluate student growth, and offer constructive feedback to students. This can help to improve student academic performance by providing teachers with the information they need to adjust their instruction to better meet the needs of their students.

Mellati and Khademi (2018) conducted a study to investigate the relationship between teachers' assessment literacy and its impact on their assessment practices and their students' writing outcomes. The primary goal of the research was to determine the extent to which teachers' assessment literacy influences their assessment-related practices and their students' writing performance. The study found that teachers' assessment literacy had a statistically significant impact on their students' writing abilities.

Likewise, Yamtim and Wongwanich (2014) investigated the levels of classroom assessment literacy of primary school teachers consisted of 19 primary school teachers at Wat Phai Rong Wua School, Thailand. They came to the conclusion that assessment literacy—the ability to gather information about students' academic performance and use the results and process of assessments to inform teacher preparation and enhance student learning—is essential.

The study of Hailaya (2014) investigated teachers' assessment literacy and its potential impact on student achievement and aptitude using intervening variables at the teacher and student levels among 582 teacher samples and 2.077 student samples in Tawi-Tawi, Philippines. The results showed that teachers' assessment practices had a positive impact on their teaching practices.

Husain et al. et al. (2018) found that teacher educators' assessment literacy was of average level, which was significantly co-related to their students' academic achievement.

Lastly, Wang et al.'s (2022) study revealed a positive correlation between teachers' assessment literacy and students' academic achievement. Teachers who possess assessment literacy are more likely to have a beneficial impact on students' learning than those who are not trained or knowledgeable about assessment. Based on these findings, the researchers concluded that assessment literacy is a crucial factor in teachers' ability to support student learning and academic performance.

Demographic Factors and Professional Characteristics Influence Teachers' Assessment Literacy, encompassing Testing Literacy, Measurement Literacy, and Data Literacy

Table 5 presents the results of multiple regression analysis for the variables that explain the variation of the teachers' assessment literacy in terms of testing literacy. The multiple regression analysis resulted to the age, level taught in SHS, and professional development as significant, as illustrated in the initial model. Other variables are not significant. Hence, there is a need to re- analyze the data, removing the other variables which are not significant.

This resulted to the professional development being the only factor that significantly influence the teachers' testing literacy with the final model which is $\hat{y} = 1.651 + 0.548X$.

Table 5. *Extent of How Independent Variables Explain the Variation of the Teachers' Assessment Literacy in terms of Testing Literacy Through Multiple Linear Regression*

Independent Variable	*Coefficient*	*B*	*T*	*Probability*	*Interpretation*
	1.921				
Sex		-0.148	-1.555	0.12	ns
Female (D1)					
Age		0.170	1.315	0.19	ns
26-30 years old (D3)		0.255	1.388	0.17	ns
31-40 years old (D4)		0.554	2.421	0.02	*
41-50 years old (D5)		0.696	2.289	0.03	*
51 years old and above (D6)					ns
Baccalaureate Degree		0.084	0.337	0.74	ns
BSED (D7)		-0.116	-0.474	0.64	
Others (not BSED					ns
or BEEd) (D8)		-0.161	-0.998	0.32	ns
Field of Specialization		-0.178	-1.185	0.24	ns
Filipino (D9)		-0.160	-0.940	0.35	ns
Mathematics (D10)		-0.240	-1.366	0.18	ns
Science (D11)		-0.068	-0.328	0.74	
Social Science (D12)					ns

Others (D13)	0.002	0.014	0.99	
Educational Attainment				*
Master's Degree (D14)	-0.514	-2.292	0.02	
Level Taught				ns
Senior High School (D15)	-0.101	-0.706	0.48	ns
Years of Teaching Experience	-0.403	-1.554	0.12	
6-10 years (D16)				ns
11 years and above (D17)	-0.007	-0.051	0.81	ns
# of Trainings Attended	-0.033	-0.246	0.96	***
1 to 5 (D18)	0.555	4.628	< 0.001	
6 to 10 (D19)				
Professional Development (X)				
Final model: $\hat{y} = 1.651 + 0.548$ x				
Multiple R = 0.494				
R2 = 0.244				
F = 32.9 *** (significant at 0.001 level)				

Teachers utilize the data collected during assessment administration to provide feedback to both students and parents. However, in some cases, teachers may not be able to deliver fair and unbiased assessment results due to limited knowledge, particularly among new teachers who make up the majority. This is where professional development plays a crucial role.

The finding indicates that teachers' data literacy significantly improves when they actively participate in professional development activities. This suggests that teachers can be empowered to become more data-informed educators through a well-rounded and focused approach to professional development that includes work-based learning, professional activities, instructional activities, and coaching activities.

Teachers have expressed that the webinars they have attended have been instrumental in developing and enhancing their assessment skills. These webinars have provided teachers with valuable insights and strategies for assessing student learning resulting in increased confidence and preparedness in conducting assessments.

Professional development programs can help teachers develop their understanding of data concepts and improve their skills in analyzing and interpreting data. This can be particularly important in today's data-driven educational landscape, where teachers are increasingly expected to use data to inform their instructional decisions. By providing teachers with high-quality professional development opportunities focused on data literacy, the school can help ensure that teachers have the necessary knowledge and skills to effectively analyze and interpret data and use it to inform their teaching practices. Schools should value the experience of their teachers and invest in ongoing professional development opportunities focused on data literacy to help ensure that their teachers have the necessary skills to effectively analyze and interpret data.

This result is supported by findings of several studies, that professional development significantly influences teachers' assessment literacy in terms of data literacy. For instance, Li et al. (2023) found out that a professional development program in Hong Kong significantly improved the assessment literacy of primary school teachers, equipping them with the necessary skills to effectively implement it in classrooms. Similarly, Koh (2011) discovered that teachers' assessment literacy increased dramatically as a result of professional development. Those who participated in continuous, sustained professional development demonstrated understanding of authentic assessment through the creation of authentic classroom assessments and rubrics.

In an Iranian study, Mellati and Khademi (2018) revealed that assessment literacy has a substantial impact on teachers' practices and learner results. Assessment awareness leads to successful and motivated assessment design; therefore, educators should incorporate assessment literacy into their teacher education programs. The findings show that factors like teacher reflection, collaboration, communication, and involvement in professional development are all part of teachers' data literacy, which extends beyond meeting the demands of assisting students' learning.

According to the study of Lee et al. (2024), teachers' data literacy encompasses more than just meeting the requirements for assisting students' learning. It also involves activities like professional development involvement, instructor reflection, teamwork, and communication.

Generally, data literacy is a crucial component of professional development (Cui & Zhang, 2022). It can be implied that professional development significantly explained teachers' assessment literacy in terms of data literacy.

Conclusions

The study underscored the crucial role of teachers' assessment literacy, particularly their measurement literacy and data literacy, in supporting student learning. Teachers with advanced assessment literacy can provide tailored and effective teaching.

The study showed the potential to enhance teachers' proficiency in assessment practices through the adoption of the Assessment Literacy Framework and the Constructive Alignment Approach. While teachers exhibited a moderate baseline level of assessment

literacy, the research indicates significant room for development, highlighting the urgent need to expand educators' understanding and application of assessment strategies. Notably, more assessment literate educators also design assessments that align with learning goals, thus building meaningful learning experiences for students.

The identification of the significant role played by professional development, particularly from educational institutions, in developing teachers' assessment literacy, including testing, measurement, and data literacy, emphasizes the critical need for ongoing professional growth. This development is essential to enhancing teachers' assessment abilities in both traditional classrooms and online learning environments.

The study on teachers' assessment literacy yields significant recommendations for teachers and learning institutions. It advises teachers to engage in professional development activities, participate in teacher training, and collaborate with other teachers to foster a nurturing atmosphere that promotes the understanding of assessment literacy. The critical importance of ongoing professional development by educational institutions to improve their teachers' assessment skills and, in turn, elevate the quality of student outcomes is emphatically emphasized.

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