Journal of Education and Learning (EduLearn)
Vol. 19, No. 3, August 2025, pp. 1410~1417
ISSN: 2089-9823 DOI: 10.11591/edulearn.v19i3.22040

Teachers' assessment literacy: the impact of gender, education, training, and work experience

Ali Muhson[1], James Leonard Mwakapemba[2], Siswanto[3], Yeni Nur Prilanita[1], Nenden Susilowati[1]
[1]Department of Economics Education, Faculty of Economics and Business, Universitas Negeri Yogyakarta, Yogyakarta, Indonesia
[2]Department of Population Studies, Faculty of Population and Development Planning, Institute of Rural Development Planning, Dodoma, Tanzania
[3]Department of Accounting Education, Faculty of Economics and Business, Universitas Negeri Yogyakarta, Yogyakarta, Indonesia

Article Info

Article history:

Received Mar 28, 2024
Revised Jul 17, 2024
Accepted Aug 28, 2024

Keywords:

Assessment literacy
Education
Gender
Training
Work experience

ABSTRACT

Assessment literacy is an essential part of the teaching and learning process. Good assessment practices will have an impact on the quality of learning outcomes. The purpose of this study is to investigate assessment literacy among educators and identify the effects of gender, education, training, and work experience. A random sample of 134 teachers participated in this exploratory study. Tests and questionnaires have been employed in data collection methods. The data were analyzed using dummy variable regression analysis. This study found that teachers' assessment literacy was poor. Gender and training had an impact on assessment literacy, while education and work experience had no bearing on it. A more in-depth study with a wider scope needs to be conducted to gain a more comprehensive insight into teachers' assessment literacy. It is also worth studying in more depth what factors are thought to influence teachers' assessment literacy.

Corresponding Author:

Ali Muhson
Department of Economics Education, Faculty of Economics and Business, Universitas Negeri Yogyakarta
Colombo Street No 1. Yogyakarta, Indonesia, 55281
Email: alimuhson@uny.ac.id

1. INTRODUCTION

Assessment is an important aspect of learning that can be used to measure the development of students' knowledge and skills [1]–[3]. Assessments also have a strong influence on improving the learning process [4], even the use of appropriate assessment procedures can directly affect how well students learn [5]. The use of inappropriate assessments will affect the effectiveness of learning [6]–[8]. Therefore, teachers need to be able to develop appropriate assessment procedures in order to effectively assess students' abilities.

Many teachers are in the educational system whose measurement skills are not only not current; they have most likely not been exposed to the current assessment movement involving performance assessment approaches [9]. Several studies have found that the measurement and assessment literacy levels of the teachers were low [10], [11]. It is due to the lack of knowledge and skills in classroom assessment [8], [12]–[14]. During this time, teachers are accustomed to conducting assessments by meeting directly with students [15]. When changes occur in the learning process, teachers must adjust their assessment procedures. Therefore, assessment literacy is absolutely essential for teachers to be able to measure learning outcomes appropriately.

Literacy often refers to the ability to read or write. Using printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential [16]. Assessment literacy is the ability to utilize assessment-related information to achieve learning objectives. According to the OECD,

assessment literacy is the capacity to use scientific knowledge, identify questions, and draw conclusions based on facts to understand and make decisions about changes that occur due to human activity [17]. Assessment literacy also refers to teachers' understanding of good assessment principles to be applied in the learning process [18], especially to design, implement, and discuss assessment strategies, measurement tools, evaluation criteria, decision-making milestones, as well as formative and summative tests [19]. This shows that teachers must have good assessment literacy to ensure the effectiveness of the learning process.

Assessment literacy goes beyond knowledge of assessment principles but also includes how teachers practice assessment appropriately to measure learning success. Assessment literacy comprises two skills: first, the ability to gather dependable and quality information about student achievement; second, the ability to use that information effectively to maximize student achievement [20]. Teachers have been considered to have assessment literacy if they master the assessment competency standards outlined. These competency areas are: i) choosing assessment methods appropriate for instructional decisions; ii) developing assessment methods appropriate for instructional decisions; iii) administering, scoring, and interpreting the results of both externally produced and teacher-produced assessment methods; iv) using assessment results when making decisions about individual students, planning instruction, developing curriculum, and improving schools; v) developing valid pupil grading procedures; vi) communicating assessment results to students, parents, other lay audiences, and other educators; and vii) recognizing unethical, illegal, and other inappropriate methods and uses of assessment information [9].

Koenig and Holbrook [21] suggested several levels of literacy assessment that are more suitable to be assessed and applied during school learning due to their ease of application to instructional goals. The focus on assessment literacy is essential to build and develop along with teachers' professional development. Proficiency with appropriate assessment and evaluation practices would appear to be a requisite skill for improving the quality of teaching and learning, particularly within these highly accountable educational contexts [22]. As an implication, learning will be more focused, effective, and efficient. Therefore, this study attempts to provide a foundation for the development of teachers' assessment literacy by providing an overview or profile of teachers' assessment literacy.

As a result of the standards-based movement in education, there is an increased need for teacher competency in the area of student assessment and evaluation [7]. Assessment literacy has been seen as a sine qua non for today's competent educator [15]. Teachers' mastery of learning assessment must be fulfilled so that the process of implementing assessment meets the standards outlined. The focus on assessment literacy is crucial to build and develop along with teacher professional development. In assessment literacy, teachers are required to know effective assessment of students' understanding of specific topics, topic-specific assessments to inform instruction, and appropriate changes to assessments (accommodations) for students [13] so that those with learning disabilities could be ascertained for all students and all conditions [23].

As with knowledge and skills in general, teachers' assessment literacy is also influenced by other factors such as work experience, education, training, and gender. Teaching experience for a teacher is invaluable because it shapes teachers' insights, knowledge, and skills in mastering learning assessments. experience is the best teacher because from experience one can learn. Experience is a memory that is recorded and stored as a story that forms a filter of perception that ultimately guides behaviour [24]. Work experience had the highest correlations with job performance [25] and success at work [26]. This shows that the longer teachers teach, the more experienced they are both in knowledge and in overcoming existing problems, so the more literacy, especially assessment, and increases. Teacher experience in teaching is a significant variable in determining teacher literacy assessment [27].

The level of teacher education is one of the main focuses of attention in the world of education because it will form qualified teachers. Qualified teachers are unlikely to rule out good assessments. The level of education also plays a big role in shaping a person's knowledge, attitude, and character. Education has a positive impact on retention of knowledge, attitudes and practices [28]. Education is also shown to have a positive relationship with creativity [29] and work success [26]. Another study also found that the education had a positive and significant effect on the employee's performance [30]. Thus, the higher the level of education, the higher the assessment literacy.

The low level of assessment practices that have occurred so far has been caused by the lack of teacher understanding that has been built. Meanwhile, the teacher's proficiency in conducting assessments is strongly influenced by how much understanding and training has been carried out related to the basic concepts of implementing assessments [31] because in-service and mentoring strategies contribute positively to teachers' job performance [32]. The significant effect of teachers' understanding of the teaching and learning process and student assessment could improve teachers' literacy assessment [33]. Assessment training exerts a direct positive effect on assessment literacy [33]. If teachers have become accustomed to practicing their skills effectively, formative assessment will not only improve the quality of learning but also become an important part of it [34].

The term gender refers to the categories of social expectations, roles, and behaviors, feminine and masculine [35]. Men and women differ in their responsibilities and functions based on their separate roles, functions, and positions in different stages of life and development rather than because they have different biological characteristics. Both biological and social factors have influenced the division of labor by sex [36]. Significant gender differences impact emotional intelligence and performance [37]. Therefore, it is suspected that gender differences will also affect teachers' assessment literacy.

Based on this study, this research aims to get an overview of teachers' assessment literacy and the impact of gender, education, training, and work experience on teachers' assessment literacy. The studies related to this are still limited, especially those on economics teachers. Levy-Vered and Alhija's [33] research only developed an initial model related to the contribution of training, self-efficacy, and conceptions of assessment to teachers' assessment literacy. McGee and Colby's [38] research only examined the impact of an assessment course on teacher candidates' assessment literacy. A more complex study was conducted by Afshar *et al*. [39], they examined the impact of alternative assessment knowledge, teaching experience, gender, and academic degree on teachers' assessment literacy, but it was still limited to English for Academic Purpose (EAP) teachers.

2. METHOD

This research is exploratory. The population in this study were all high school economics teachers in Indonesia. The sample consisted of 134 teachers with the characteristics shown in Table 1. Data were collected using questionnaires and tests. The questionnaire was used to collect data on gender (1=male, 0=female), education (1=master's degree, 0=bachelor's degree), training as measured by whether or not they have participated in training related to learning assessment (1=ever, 0=never), and work experience (1=more than 10 years, 0=10 years and below). Meanwhile, the test used to collect data on assessment literacy was adopted from Perry [12]. Assessment literacy is measured by teachers' ability to use knowledge about assessment to identify and make decisions based on assessment results. Assessment literacy is measured by teachers' ability to: i) select appropriate assessment methods; ii) develop assessment methods according to procedures; iii) administer, score, and interpret assessment results; iv) use assessment results to make decisions; v) communicate assessment results; and vi) recognize unethical practices appropriately. The six aspects were measured using 22 items about teachers' assessment literacy.

Content validity is used to evaluate how well the multiple-choice tests. Content validity was used to evaluate the multiple-choice test by involving several experts in the fields of measurement, learning, and economics. Aiken's V coefficient was used to determine the relevance of items in measuring variables [40]. The results showed that there were two items out of 22 items that were invalid because the Aiken's V coefficient was less than 0.6; however, both were corrected and used for data collection.

Table 1. Respondent characteristics

Characteristic	F	%
Gender:		
Female	108	80.6
Male	26	19.4
Employee status:		
Non-civil servant	48	35.8
Civil servant	86	64.2
School status:		
Private	49	36.6
State	85	63.4
Education level:		
Undergraduate	100	74.6
Master's degree	34	25.4
Assessment training:		
Never attended	114	85.1
Have attended	20	14.9
Teaching experience:		
10 years and below	24	17.9
More than 10 years	110	82.1
Age (years):		
<=30	15	11.2
30-40	30	22.4
40-50	55	41.0
>50	34	25.4
Total	134	100.0

This instrument has also been tested by previous researchers, such as the initial pilot test of the assessment literacy inventory with 152 preservice teachers, which revealed an overall KR20 reliability equal to 0.75. The mean item difficulty was equal to 0.64, and the mean item discrimination was equivalent to 0.32 [11]. Thus, the instruments used in this study are valid and reliable.

The analysis technique used was descriptive analysis to describe teachers' assessment literacy. Meanwhile, the impact of gender, education, training, and work experience on assessment literacy was tested using regression analysis with dummy variables. The use of this model requires normality, multicollinearity, and homoscedasticity. Normality was tested using skewness and kurtosis, multicollinearity was detected using the variance inflation factor (VIF) technique, and homoscedasticity was detected using the Park test.

3. RESULTS AND DISCUSSION

3.1. Descriptive analysis results

This study found that the overall score of teachers' assessment literacy was poor, with a score of 37.4%. This finding is supported by Çetin and Ergül [10], who concluded that the measurement and assessment literacy level of the teachers was low (43%). This finding was much lower than other studies, for example, with an overall score of just under 63% [11], [12] and 66% [41]. Yamtim and Wongwanich [8] also found that most of the participants, or 78.5%, had scores for classroom assessment literacy at a poor level. The low assessment literacy of teachers had an impact on the results of the learning outcomes assessment. Therefore, it was necessary to conduct training and mentoring to identify the main problems faced by teachers.

The low level of teachers' assessment literacy needed to be studied in more depth to determine what standards the teachers did not understand. The findings, as shown in Table 2, indicated that the lowest aspect of teachers' assessment literacy was knowledge related to unethical assessment practices such as giving questions according to the exam grid and determining the final score based on only one test. Unethical assessment practices needed to be introduced to teachers. The assessment should be comprehensive. It should fairly measure the cognitive, affective, and psychomotor domains. Teachers used multiple strategies to gather and share information about what students understood and to identify where they might be struggling [42].

Another standard that needed to be improved was the ability of teachers to choose and develop the right assessment method. There were many choices of assessment methods that could be used to measure student competence. Therefore, teachers needed to be able to distinguish between different types of assessment methods, such as assessments for summative, formative, certification, and evaluative purposes [43]. Classroom assessment was quite complex. Many things must be considered when conducting an assessment. However, it contended that the current measurement paradigm for academic assessment was narrow and restrictive and that little was known about the nature, role, or quality of the majority of school assessments (i.e., those developed and used by teachers in the classroom) [44].

In addition, multiple-choice tests were arguably the most popular type of assessment in education [45], [46]. Multiple-choice questions were generally perceived by students as more favorable than essay items, generated lower anxiety, and allowed a higher success rate [47]. Multiple-choice examinations assessed lower levels of intellectual abilities [48], whereas learning assessment not only measured the cognitive domain but also the affective and psychomotor domains. Therefore, teachers needed to have skills in developing and using various assessment methods, such as observation, portfolios, interviews, self-assessment, performance, projects, and products.

Table 2. Comparison of study results on teachers' assessment literacy

No	Standards	Plake *et al.* [41]	Mertler and Campbell [11]	Perry [12]	Current study
1	Choosing methods	69.2	74.8	68.6	34.29
2	Developing methods	64.4	63.6	72.8	35.68
3	Interpreting results	79.2	79.0	58.6	39.09
4	Using it to make decisions	68.0	67.2	81.4	43.17
5	Developing procedures	63.8	41.2	64.2	N/A
6	Communicating results	54.0	51.4	67.2	53.48
7	Illegal practices	65.2	62.0	25.8	23.56
	Overall	66.3	62.7	62.7	37.54

3.2. The effect of gender, education, training, and work experience on assessment literacy

The results of regression analysis with dummy variables found that globally, gender, education, training, and work experience had an impact on teachers' assessment literacy. However, partially only gender and training had a significant impact on assessment literacy, with a t-statistic (p-value) of -2.126 (0.035) and 2.305 (0.023), while education and work experience did not have a significant impact on assessment literacy

(see Table 3). This regression model fulfilled the classical assumptions of normality, multicollinearity, and homoscedasticity (see Table 4).

This study founded that female teacher had better assessment literacy than male teachers. This finding was not in line with other studies that concluded that there was no significant difference between male and female EAP teachers regarding their assessment literacy [39]; there was no significant difference in the assessment literacy found among the participants when it came to sex [49], even contrary to van der Slik's [50] research, he found that men slightly outperformed women in academic literacy. However, this study was in line with the findings which conclude that females outperformed males in literacy [51], gender had a strong effect on economic knowledge [52], gender could affect the development of literacy proficiency [53]. This difference in findings implied that the effect of gender on assessment literacy was still a mystery. Therefore, this topic attracted the attention of other researchers who wanted to study it further by involving teachers from various subjects.

Education had no significant impact on teachers' assessment literacy. This finding was in line with the results of Jawhar and Subahi's [49] study, which concluded there was no significant difference in the assessment literacy found among the participants when it came to qualifications. This indicated that education level did not improve specific aspects of competence, such as assessment literacy, but developed general literacy skills. Literacy completely explained the effect of a high school diploma [54]. Another finding concluded that the Ph.D. degree holders possessed significantly higher levels of assessment literacy compared to their MA/MSc-holding counterparts [39]. However, in this study, there were no respondents with a Ph.D. degree, so it could not be compared.

Training had a positive impact on assessment literacy, especially training related to assessment. The more teachers attended assessment training, the higher their assessment literacy. In-service assessment training was a reliable predictor of assessment literacy [55]. Another study also revealed that certain aspects of assessment literacy were present before the course, but also that exposure to the course potentially increased assessment literacy in some areas [38]. This indicated that teachers needed to participate in various assessment training and mentoring programs. Even if it was necessary to organize split levels of assessment literacy training in order to empower teachers in their decision-making and protect those who were required to design tests [56].

This study additionally discovered that job experience, or more specifically, the duration of work experience, has no impact on the development of teacher evaluation literacy. Jawhar and Subahi's [49] also concluded that there was no difference in assessment literacy based on teachers' work experience. However, this finding was different from Alkharusi's [55] findings, who concluded that teaching experience was a reliable predictor of assessment literacy. The difference in findings was interesting to study. Experience was expected to make teachers more mature in their work, but if it was not accompanied by efforts to improve assessment knowledge and skills, such as by attending assessment workshops and training, it would not have an impact on improving assessment literacy.

Table 3. Regression analysis results

No	Variable	Coefficient	t	p	R^2	F	p
1.	Constant	37.169	17.584	.000	0.072	2.508	0.045
2.	Gender	-4.617	-2.126	.035			
3.	Education	1.046	.528	.598			
4.	Training	5.560	2.305	.023			
5.	Work experience	-1.223	-.545	.587			

Table 4. Classical assumption check

No	Assumption	Testing	Critical ratio	Cut off	Note
1.	Normality	Skewness	-1.414	1.96	Normal distribution
		Kurtosis	0.991	1.96	Normal distribution
2.	Multicollinearity	Gender	1.005	4.00	No multicollinearity
		Education	1.011	4.00	No multicollinearity
		Training	1.006	4.00	No multicollinearity
		Work experience	1.011	4.00	No multicollinearity
3.	Homoscedasticity		0.743	2.44	Homoscedastic

4. CONCLUSION

This study found that teachers' assessment literacy was poor. Knowledge of unethical assessment practices, choosing, and developing assessment methods was very low. Real efforts to improve assessment

literacy among teachers needed to be created so as not to adversely affect the learning process. The findings of the impact of gender and training on teachers' assessment literacy indicate that both have an important role in shaping assessment literacy. Training and mentoring related to assessment need to be increased and better implemented. Training and mentoring should not only treat teachers as objects but also put teachers in their proper roles. It also suggests a revised approach to training that treats these teachers as experts rather than novices and thus builds their confidence.

A more in-depth study with a wider scope needs to be conducted to gain a more comprehensive insight into teachers' assessment literacy. It is also worth studying in more depth what factors are thought to have an effect on teachers' assessment literacy. The absence of the effect of education and work experience on teachers' assessment literacy can be used as a deeper study. This is interesting to study to find out exactly what factors cause teachers' assessment literacy.

ACKNOWLEDGEMENTS

This study was supported by Faculty of Economics and Business (FEB) Universitas Negeri Yogyakarta Fund under grant T/1911/UN34.18/PT.01.03/2021.

REFERENCES

[1] S. Brown, "Assessment for learning," *Learning and Teaching in Higher Education*, no. 1, pp. 81–89, 2004, doi: 10.7810/9781927131763_9.
[2] M. K. Russell, P. W. Airasian, and P. W. Airasian, "Classroom assessment: concepts and applications," p. 415, 2012.
[3] I. S. Kirsch, M. L. Lennon, M. von Davier, E. J. Gonzalez, and K. Yamamoto, "On the growing importance of international large-scale assessments," in *The role of international large-scale assessments: perspectives from technology, economy, and educational research*, M. von Davier, E. Gonzalez, I. Kirsch, and K. Yamamoto, Eds., Dordrecht: Springer Science+Business Media, 2013, pp. 1–11.
[4] J. E. Raymond, C. S. E. Homer, R. Smith, and J. E. Gray, "Learning through authentic assessment: an evaluation of a new development in the undergraduate midwifery curriculum," *Nurse Education in Practice*, vol. 13, no. 5, pp. 471–476, Sep. 2013, doi: 10.1016/J.NEPR.2012.10.006.
[5] M. D. Miller, R. L. Linn, N. E. Gronlund, and R. L. Linn, *Measurement and assessment in teaching*, Tenth edition. Upper Saddle River N.J.: Merrill/Pearson, 2009.
[6] M. Bouwmans, P. Runhaar, R. Wesselink, and M. Mulder, "Fostering teachers' team learning: an interplay between transformational leadership and participative decision-making?" *Teaching and Teacher Education*, vol. 65, pp. 71–80, 2017, doi: 10.1016/j.tate.2017.03.010.
[7] C. DeLuca and D. A. Klinger, "Assessment literacy development: identifying gaps in teacher candidates' learning," *Assessment in Education: Principles, Policy & Practice*, vol. 17, no. 4, pp. 419–438, 2010, doi: 10.1080/0969594x.2010.516643.
[8] V. Yamtim and S. Wongwanich, "A study of classroom assessment literacy of primary school teachers," *Procedia - Social and Behavioral Sciences*, vol. 116, pp. 2998–3004, 2014, doi: 10.1016/j.sbspro.2014.01.696.
[9] B. S. Plake and J. C. Impara, "Teacher assessment literacy: what do teachers know about assessment?" in *Handbook of Classroom Assessment*, G. D. Phye, Ed., San Diego: Academic Press, 1996, pp. 53–68, doi: 10.1016/B978-012554155-8/50005-3.
[10] Dr. S. Çetin and A. Ö. Ergül, "Measurement and assessment literacy levels of teachers in the context of certain factors," *Adıyaman University Journal of Educational Sciences*, vol. 11, no. 1, pp. 26–35, 2021, doi: 10.17984/adyuebd.755873.
[11] C. A. Mertler and C. Campbell, "Measuring teachers' knowledge & application of classroom assessment concepts: development of the 'assessment literacy inventory," *Online Submission*, Apr. 2005.
[12] M. L. Perry, "Teacher and principal assessment literacy," The University of Montana, Missoula, 2013.
[13] M. A. Siegel and C. Wissehr, "Preparing for the plunge: preservice teachers' assessment literacy," *Journal of Science Teacher Education*, vol. 22, no. 4, pp. 371–391, 2011, doi: 10.1007/s10972-011-9231-6.
[14] Y. Xu and G. T. L. Brown, "Teacher assessment literacy in practice: a reconceptualization," *Teaching and Teacher Education*, vol. 58, pp. 149–162, 2016, doi: 10.1016/j.tate.2016.05.010.
[15] W. J. Popham, "Assessment literacy for teachers: faddish or fundamental?" *Theory Into Practice*, vol. 48, no. 1, pp. 4–11, 2009, doi: 10.1080/00405840802577536.
[16] I. Kirsch, *Adult literacy in America: a first look at the results of the National Adult Literacy Survey*. 1993. Accessed: Aug. 13, 2022. [Online]. Available: https://eric.ed.gov/?id=ED358375
[17] OECD, "Literacy skills for the world of tomorrow- further results from PISA 2000," Montréal, 2012.
[18] C. DeLuca and A. Bellara, "The current state of assessment education: aligning policy, standards, and teacher education curriculum," *Journal of Teacher Education*, vol. 64, no. 4, pp. 356–372, May 2013, doi: 10.1177/0022487113488144.
[19] M. Mellati and M. Khademi, "Exploring teachers' assessment literacy: impact on learners' writing achievements and implications for teacher development," *Australian Journal of Teacher Education (Online)*, vol. 43, no. 6, pp. 1–18, Jan. 2018, [Online]. Available: https://search.informit.org/doi/10.3316/informit.689580391330186
[20] R. J. Stiggins, "The principal's leadership role in assessment," *NASSP Bulletin*, vol. 85, no. 621, pp. 13–26, Jan. 2001, doi: 10.1177/019263650108562103.
[21] A. J. Koenig and M. C. Holbrook, *Project LMA: learning media assessment of students with visual impairments. Facilitator's manual and participant workbook*. Lubbock: Texas Tech University, 1998.
[22] L. Volante and X. Fazio, "Exploring teacher candidates' assessment literacy: implications for teacher education reform and professional development," *Canadian Journal of Education*, vol. 30, no. 3, pp. 749–770, 2007, doi: 10.2307/20466661.
[23] T. Levi and O. Inbar-Lourie, "Assessment literacy or language assessment literacy: learning from the teachers," *Language Assessment Quarterly*, vol. 17, no. 2, pp. 168–182, 2019, doi: 10.1080/15434303.2019.1692347.
[24] D. K. Nazila, A. Adisaputera, and A. Saragih, "Development of teaching material for short story writing experience based on 7th grade students of Junior High School 2 Kejuruan Muda," *Budapest International Research and Critics in Linguistics and Education (BirLE) Journal*, vol. 3, no. 2, pp. 1137–1150, 2020.

[25] M. A. Quińones, J. K. Ford, and M. S. Teachout, "The relationship between work experience and job performance: a conceptual and meta-analytic review," *Personnel Psychology*, vol. 48, no. 4, pp. 887–910, Dec. 1995, doi: 10.1111/J.1744-6570.1995.TB01785.X.
[26] P. B. Robinson and E. A. Sexton, "The effect of education and experience on self-employment success," *Journal of Business Venturing*, vol. 9, no. 2, pp. 141–156, 1994, doi: 10.1016/0883-9026(94)90006-X.
[27] J. B. Napanoy and M. K. Peckley, "Assessment literacy of public elementary school teachers in the indigenous communities in Northern Philippines," *Universal Journal of Educational Research*, vol. 8, no. 11B, pp. 5693–5703, 2020, doi: 10.13189/ujer.2020.082203.
[28] J. B. Suchitra and N. L. Devi, "Impact of education on knowledge, attitudes and practices among various categories of health care workers on nosocomial infections," *Indian Journal of Medical Microbiology*, vol. 25, no. 3, pp. 181–187, 2007, doi: 10.1016/S0255-0857(21)02104-6.
[29] T. W. H. Ng and D. C. Feldman, "How broadly does education contribute to job performance?" *Personnel Psychology*, vol. 62, no. 1, pp. 89–134, Mar. 2009, doi: 10.1111/J.1744-6570.2008.01130.X.
[30] Y. Rivaldo and S. D. Nabella, "Employee performance: education, training, experience and work discipline," *Calitatea*, vol. 24, no. 193, pp. 182–188, 2023.
[31] C. Coombe, H. Vafadar, and H. Mohebbi, "Language assessment literacy: what do we need to learn, unlearn, and relearn?" *Language Testing in Asia*, vol. 10, no. 3, 2020.
[32] G. B. Ehinola and B. B. Akomolafe, "In-service training programmes and mentoring for improving teachers' job performance in north senatorial District of Ondo State, Nigeria," *International Journal of Educational Research and Review*, vol. 3, pp. 1–7, 2022.
[33] A. Levy-Vered and F. Nasser-Abu Alhija, "Modelling beginning teachers' assessment literacy: the contribution of training, self-efficacy, and conceptions of assessment," *Educational Research and Evaluation*, vol. 21, no. 5–6, pp. 378–406, 2015, doi: 10.1080/13803611.2015.1117980.
[34] F. Giraldo, "Language assessment practices and beliefs: implications for language assessment literacy," *How*, vol. 26, no. 1, pp. 35–61, 2019, doi: 10.19183/how.26.1.481.
[35] A. Jule, "Gender theory," in *Encyclopedia of quality of life and well-being research*, Springer, 2022, pp. 1–4.
[36] M. M. Marini, "Sex and gender: What do we know?" in *Sociological forum*, Springer, 1990, pp. 95–120.
[37] P. Dhani and T. Sharma, "Effect of emotional intelligence on job performance of IT employees: a gender study," *Procedia Computer Science*, vol. 122, pp. 180–185, Jan. 2017, doi: 10.1016/J.PROCS.2017.11.358.
[38] J. McGee and S. Colby, "Impact of an assessment course on teacher candidates' assessment literacy," *Action in Teacher Education*, vol. 36, no. 5–6, pp. 522–532, Nov. 2014, doi: 10.1080/01626620.2014.977753.
[39] H. S. Afshar, S. Tofighi, M. Asoodeh, and N. Ranjbar, "The impact of alternative assessment knowledge, teaching experience, gender, and academic degree on EAP teachers' assessment literacy (research paper)," *Iranian Journal of English for Academic Purposes*, vol. 7, no. 2, pp. 1–15, 2018, [Online]. Available: https://journalscmu.sinaweb.net/article_87251.html
[40] L. R. Aiken, "Content validity and reliability of single items or questionnaires," *Educational and Psychological Measurement*, vol. 40, no. 4, pp. 955–959, Jul. 1980, doi: 10.1177/001316448004000419.
[41] B. S. Plake, J. C. Impara, and J. J. Fager, "Assessment competencies of teachers: a national survey," *Educational Measurement: Issues and Practice*, vol. 12, no. 4, pp. 10–12, Dec. 1993, doi: https://doi.org/10.1111/j.1745-3992.1993.tb00548.x.
[42] S. Boss, "Comprehensive assessment: a short history," Edutopia. Accessed: Aug. 12, 2022. [Online]. Available: https://www.edutopia.org/comprehensive-assessment-history
[43] W. I. N. Hornby, "Assessing using grade-related criteria: a single currency for universities?" *Assessment & Evaluation in Higher Education*, vol. 28, no. 4, pp. 435–454, Aug. 2003, doi: 10.1080/0260293032000066254.
[44] R. J. Stiggins, N. F. Conklin, and N. J. Bridgeford, "Classroom assessment: a key to effective education," *Educational Measurement: Issues and Practice*, vol. 5, no. 2, pp. 5–17, 1986, doi: 10.1111/J.1745-3992.1986.TB00473.X.
[45] A. C. Butler, "Multiple-choice testing in education: are the best practices for assessment also good for learning?" *Journal of Applied Research in Memory and Cognition*, vol. 7, no. 3, pp. 323–331, Sep. 2018, doi: 10.1016/j.jarmac.2018.07.002.
[46] S. F. Leung, E. Mok, and D. Wong, "The impact of assessment methods on the learning of nursing students," *Nurse Education Today*, vol. 28, no. 6, pp. 711–719, 2008, doi: 10.1016/j.nedt.2007.11.004.
[47] K. Struyven, F. Dochy, and S. Janssens, "Students' perceptions about evaluation and assessment in higher education: a review1," *Assessment & Evaluation in Higher Education*, vol. 30, no. 4, pp. 325–341, Aug. 2005, doi: 10.1080/02602930500099102.
[48] K. Scouller, "The influence of assessment method on students' learning approaches: multiple choice question examination versus assignment essay," *Higher Education*, vol. 35, no. 4, pp. 453–472, 1998, doi: 10.1023/A:1003196224280.
[49] S. S. Jawhar and A. M. Subahi, "The impact of specialty, sex, qualification, and experience on teachers' assessment literacy at Saudi higher education," *International Journal of Learning, Teaching and Educational Research*, vol. 19, no. 5, pp. 200–216, May 2020, doi: 10.26803/ijlter.19.5.12.
[50] F. van der Slik, "Gender bias and gender differences in two South African tests of academic literacy," *Southern African Linguistics and Applied Language Studies*, vol. 27, no. 3, pp. 277–290, Apr. 2010, doi: 10.2989/SALALS.2009.27.3.4.938.
[51] T. J. Gambell and D. M. Hunter, "Rethinking gender differences in literacy," *Canadian Journal of Education / Revue canadienne de l'éducation*, vol. 24, no. 1, pp. 1–16, 1999, doi: 10.2307/1585767.
[52] R. Happ, M. Kato, and I. Rüter, "Results from the test of economic literacy in Germany and Japan: a critical discussion on the gender effect," *Citizenship, Social and Economics Education*, vol. 20, no. 1, pp. 48–68, Apr. 2021, doi: 10.1177/20471734211004117.
[53] J. Moore, L. Yin, T. Weaver, P. Lydell, and S. Logan, "Preschool caregiver perceptions of the effect of gender on literacy skills," *Reading Improvement*, vol. 44, no. 3, p. 132+, 2007.
[54] R. M. De Anda and P. M. Hernandez, "Literacy skills and earnings: race and gender differences," *The Review of Black Political Economy, Springer;National Economic Association*, vol. 34, no. 3–4, pp. 231–243, Dec. 2007, doi: 10.1007/s12114-008-9014-2.
[55] H. Alkharusi, "A logistic regression model predicting assessment literacy among in-service teachers," *Journal of Theory and Practice in Education*, vol. 7, no. 2, pp. 280–291, 2011.
[56] E. Boyd and D. Donnarumma, "Assessment literacy for teachers: a pilot study investigating the challenges, benefits and impact of assessment literacy training," in *Teacher Involvement in High-Stakes Language Testing*, D. Xerri and P. Vella Briffa, Eds., Cham: Springer International Publishing, 2018, pp. 105–126, doi: 10.1007/978-3-319-77177-9_7.

BIOGRAPHIES OF AUTHORS

Ali Muhson is a Ph.D. in Educational Research and Evaluation. He is an associate professor in the Department of Economics Education at Universitas Negeri Yogyakarta, Indonesia. His research interests are educational assessment and measurement, economics teaching, and teacher education. He can be contacted at email: alimuhson@uny.ac.id.

James Leonard Mwakapemba holds a bachelor's degree in Population and Development Planning from the Institute of Rural Development Planning (IRDP), Tanzania. Currently, he is pursuing a master's degree in Educational Research and Evaluation at Universitas Negeri Yogyakarta, Indonesia. His research interests are educational assessment and measurement, and teacher education. He can be contacted at email: jamesleonard866@gmail.com.

Siswanto is a Ph.D. in Educational Sciences. He is a professor in the Department of Accounting Education at Universitas Negeri Yogyakarta, Indonesia. His research interests are educational evaluation, accounting teaching, and teacher education. He can be contacted at email: siswanto@uny.ac.id.

Yeni Nur Prilanita is a Ph.D. candidate at the University of Malaya, Malaysia. She is a lecturer in the Department of Economics Education at Universitas Negeri Yogyakarta, Indonesia. Her research interests are economics teaching and learning, learning assessment, and teacher education. She can be contacted at email: yeniprilanita@uny.ac.id.

Nenden Susilowati is a Ph.D. candidate at Universitas Negeri Yogyakarta, Indonesia. She is a lecturer in the Department of Economics Education at Universitas Negeri Yogyakarta, Indonesia. Her research interests are economics teaching, learning strategy, and teacher education. She can be contacted at email: nendensusilowati87@uny.ac.id.