

Research on the Current Status of Assessment Literacy of Chinese Primary and Secondary School Teachers

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Abstract: China's ongoing new curriculum reform has prompted extensive changes in student academic assessment. Therefore, assessment literacy is now recognized as a central component of professional standards for teachers. The enhancement of assessment literacy among primary and secondary school teachers represents a significant aspect of their professional development. In addition, it represents a critical element influencing the reform and advancement of basic education. Utilizing a self-developed assessment tool, this study determined that primary and secondary school teachers in China's X province possess assessment literacy levels exceeding the average. However, significant differences exist based on school location, teaching grade level, professional background, years of experience, professional title, and class size. Notwithstanding the overall positive findings, several challenges remain, including deficiencies in assessment knowledge and differences in assessment practices between urban and rural teachers. Besides, issues of insufficient overall assessment literacy and comparatively lower levels among novice teachers require attention. Addressing these identified issues through research offers valuable theoretical grounding for the adjustment, development, and execution of relevant policies.

Keywords: Teachers' Assessment Literacy; Assessment for Learning; Teachers' Professional Development

Online publication: June 4, 2025

1. Introduction

Improving the quality of talent cultivation necessitates deepening reforms in the educational field. Optimization and reform of evaluation methods utilized in education and teaching are central to effectively enhancing educational quality. Scholars emphasize that "the integration of teaching, learning, and evaluation" constitutes a significant principle supporting "literacy-oriented" classroom teaching^[1]. Teacher assessment literacy itself is understood as a comprehensive combination of the knowledge, abilities, and emotions teachers require for daily educational and teaching assessment activities. This literacy holds value for promoting teacher development and student growth, deepening curriculum and teaching reform, and encouraging the transformation of educational assessment paradigms^[2]. Students' growth and development are positively influenced by appropriate and reasonable assessment from their teachers. Therefore, the assessment practices employed by teachers in daily teaching have become a focal point for researchers. Enhancing the

assessment literacy of primary and secondary school teachers carries great significance for the reform and development of basic education. Related research on teachers' assessment literacy has been conducted by certain scholars. It is apparent, however, that existing studies often lack specific applicability, leaving the accurate level of teachers' assessment literacy in need of further clarification. This paper details the construction of an assessment literacy structure model suitable for teachers in province X, China. Meanwhile, a measurement tool was developed specifically for primary and secondary school teachers, allowing for an accurate assessment of their current assessment literacy status and associated problems. Finally, a discussion of the identified problems aims to explore potential solutions.

2. Research design and survey process

2.1. Questionnaire development process

Firstly, the research utilized a "Four-dimension Framework for Teachers' assessment literacy" as the basis for the survey tool. This framework, according to established theory and independently refined, comprises four dimensions: teachers' assessment knowledge, skills, attitudes, and value orientations^[4]. Following approval from numerous education experts, and after conducting interviews with several teachers, along with a preliminary test involving 60 teachers, two assessment instruments were finalized: a survey questionnaire and an interview outline concerning teacher assessment literacy.

2.2. Sampling process

Primary and secondary school teachers located in X province, China, were designated as the research subjects. A total of 79 schools were selected for sampling, ensuring representation based on criteria such as urban versus rural location, public versus private status, and school size. The actual test was administered in each selected school. Completing each questionnaire required approximately 20 minutes per participant, finally involving 1,995 teachers in the data collection. After eliminating invalid questionnaires, 1,918 valid responses were retained, yielding an effective response rate of 98.5%.

2.3. Basic characteristics of the sample population

Among the primary and secondary school teachers from X province who participated, the gender composition demonstrated a greater number of female teachers, representing 78% of the total sample. Regarding school location, teacher numbers were relatively balanced between urban ($n = 1069$) and rural ($n = 849$) areas. In terms of teaching grades, primary school teachers constituted the larger group, accounting for 58.4%. Analysis of professional background indicated that teachers graduating from normal universities were predominant, comprising 82% of participants. Professional titles were distributed across junior level and below (37.7%), intermediate level (35.0%), and advanced level and above (27.3%). The distribution of teachers across different teaching experience brackets demonstrated similar proportions. Concerning class sizes, the majority of classes contained 31-50 students, representing 55.5% of the sample. Finally, based on subject taught, teachers of Chinese, mathematics, and English formed the largest group, accounting for 56.9% of the total respondents.

3. Analysis of the current status of teachers' assessment literacy

3.1. Overall status of teachers' assessment literacy

3.1.1. Survey results on teachers' assessment knowledge

The surveyed teachers achieved an overall mean score of 3.95 for assessment knowledge, a value exceeding

the median score of “3” and indicating an above-average level. The average scores of the two sub-dimensions are also higher than the median value of “3.” The scores of the two sub-dimensions of teachers’ assessment ,knowledge theory and practice, from high to low are (3.98 ± 0.76) and (3.91 ± 0.79) , respectively.

3.1.2. Survey results on teachers’ assessment skills

For assessment skills, the overall mean score among surveyed teachers was 4.00, surpassing the median “3” and signifying an above-average level. The average scores of the four sub-dimensions are also higher than the median value of “3.” The scores of sub-dimensions of teachers’ assessment skills from high to low are as follows: the score of teacher assessment feedback skills (4.10 ± 0.68) > the score of teacher assessment implementation skills (3.99 ± 0.73) > the score of teachers’ assessment reflection skills (3.97 ± 0.75) > the score of teachers’ assessment design skills (3.92 ± 0.76) .

3.1.3. Survey results on teachers’ assessment attitudes

Surveyed teachers demonstrated an overall average score of 4.19 for assessment attitudes, which is above the median “3” and reflects an above-average level. The average scores of the three sub-dimensions are also higher than the median value of “3.” The scores for sub-dimensions of teachers’ assessment attitudes from high to low is as follows: the score of the attitudes towards students in teachers’ assessment (4.23 ± 0.68) > the score of the attitudes towards knowledge acquisition in teachers’ assessment (4.22 ± 0.68) > the score of the attitudes towards teachers themselves in teachers’ assessment (4.14 ± 0.68) .

3.1.4. Survey results on teachers’ assessment value-orientations

The overall mean score for assessment value orientations was 4.243 among the surveyed teachers, indicating performance above the median “3” and an above-average level overall. The average scores of the three sub-dimensions are also higher than the median value of “3.” The scores for sub-dimension of teachers’ assessment value orientations from high to low are as follows: the average score of teacher assessment fairness (4.266 ± 0.68) > the average score of teacher assessment comprehensiveness (4.234 ± 0.68) > the average score of teacher assessment development (4.229 ± 0.70) .

3.1.5. Survey results on teachers’ assessment of literacy

Teachers participating in the survey obtained an overall average assessment literacy score of 4.09. This score surpasses the median value of “3,” demonstrating an above-average level. The average scores of the four sub-dimensions are also higher than the median value of “3.” The scores for the sub-dimensions of teachers’ assessment literacy from high to low is as follows: the average score of teachers’ assessment value orientations (4.24 ± 0.67) > the average score of teachers’ assessment attitudes (4.19 ± 0.66) > the average score of teachers’ assessment skills (4.00 ± 0.70) > the average score of teachers’ assessment knowledge (3.95 ± 0.76) .

3.2. The distribution of differences in teachers’ assessment of literacy in terms of locations of the schools

Results from an independent sample *T*-test indicated significant differences in the total assessment literacy score, as well as in the scores for skills, attitudes, and value orientations, between teachers in urban and rural schools (Table 1). Specifically, the data indicate that the assessment literacy level of rural teachers is significantly higher compared to that of urban teachers.

Table 1. Distribution of differences in teachers' assessment of literacy in school location

Dimension	School location (n)	M	SD	T
Teachers' assessment knowledge	Urban (1069)	3.92	0.76	-1.828
	Rural (849)	3.99	0.76	
Teachers' assessment skills	Urban (1069)	3.95	0.71	-3.286**
	Rural (849)	4.06	0.69	
Teachers' assessment attitudes	Urban (1069)	4.17	0.66	-2.148*
	Rural (849)	4.23	0.66	
Teachers' assessment value orientations	Urban (1069)	4.21	0.68	-2.206*
	Rural (849)	4.28	0.66	
Teachers' assessment literacy	Urban (1069)	4.05	0.64	-2.721**
	Rural (849)	4.13	0.64	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

3.3. The distribution of differences in teachers' assessment literacy in teaching grade level

A one-way analysis of variance was performed utilizing teacher assessment literacy and its dimensions as dependent variables, with teaching grade level representing the independent variable. The sample included 1121 primary school teachers, 471 junior high school teachers, and 326 high school teachers. The analysis of variance results demonstrated significant differences ($p < 0.001$) in the total assessment literacy score and across all four sub-dimensions among teachers assigned to different grade levels.

Table 2. Distribution of differences in teachers' assessment of literacy in teaching grade level

Dimension	Teaching grade level	Mean	SD	F
Teachers' assessment knowledge	Primary school	4.08 ^{2a*3a*}	0.71	45.133***
	Middle school	3.83 ^{3a*}	0.77	
	High school	3.68	0.82	
Teachers' assessment skills	Primary school	4.11 ^{2a*3a*}	0.67	42.460***
	Middle school	3.89 ^{3a*}	0.70	
	High school	3.76	0.73	
Teachers' assessment attitudes	Primary school	4.28 ^{2a*3a*}	0.64	21.020***
	Middle school	4.09	0.68	
	High school	4.07	0.66	
Teachers' assessment value orientations	Primary school	4.33 ^{2a*3a*}	0.64	25.795***
	Middle school	4.13	0.70	
	High school	4.10	0.68	
Teachers' assessment literacy	Primary school	4.19 ^{2a*3a*}	0.61	39.811***
	Middle school	3.98 ^{3a*}	0.65	
	High school	3.89	0.64	

1a = primary school, 2a = middle school, 3a = High school.

Following the analysis of variance, post hoc multiple tests were conducted for groups exhibiting differences (**Table 2**). Regarding the overall score for teachers' assessment literacy, primary school teachers demonstrated significantly higher levels than middle and high school teachers ($p < 0.05$). In addition, primary and junior high school teachers exhibited significantly higher assessment literacy levels compared to high school teachers ($p < 0.05$). analyzing the sub-dimensions of teachers' assessment indicated that primary school teachers scored significantly higher than middle and high school teachers across all areas ($p < 0.05$). Besides, junior high school teachers had significantly higher assessment knowledge and skill levels than high school teachers ($p < 0.05$).

3.4. The distribution of differences in assessment literacy in professional background

Statistical testing indicated a significant difference ($p < 0.05$) in the assessment literacy scores between normal students and non-normal students (**Table 3**). Significant differences in scores between these two groups were specifically observed in the knowledge and skill dimensions of teachers' assessment literacy.

Table 3. Distribution of differences in teacher's assessment literacy in professional background

Dimension	Professional background (n)	Mean	SD	T
Teachers' assessment knowledge	Normal students (1573)	3.97	0.75	2.523*
	Non-normal students (345)	3.86	0.80	
Teachers' assessment skills	Normal students (1573)	4.02	0.69	2.847**
	Non-normal students (345)	3.90	0.73	
Teachers' assessment attitudes	Normal students (1573)	4.21	0.65	1.752
	Non-normal students (345)	4.14	0.70	
Teachers' assessment value orientations	Normal students (1573)	4.25	0.67	0.591
	Non-normal students (345)	4.22	0.67	
Teachers' assessment literacy	Normal students (1573)	4.10	0.64	2.246*
	Non-normal students (345)	4.02	0.66	

3.5. The distribution of differences in teachers' assessment of literacy in years of experience

To study the relationship between teaching experience and teacher assessment literacy, a one-way analysis of variance was performed. The dependent variables in this analysis were teacher assessment literacy (total score) and its constituent dimensions. Teaching experience was the independent variable, categorized into six groups: 5 years or less ($n = 504$), 6–10 years ($n = 324$), 11–15 years ($n = 266$), 16–20 years ($n = 201$), 21–25 years ($n = 244$), and 26 years or more ($n = 379$). The results from the analysis of variance indicated significant differences ($p < 0.001$) across teaching experience groups for the total assessment literacy score and for four specific sub-dimensions (**Table 4**).

Table 4. Distribution of differences in teachers' assessment of literacy in years of experience

Dimension	Years of experience	Mean	SD	F
Teachers' assessment of knowledge	1	3.860	0.74	9.679**
	2	3.866	0.82	
	3	3.863	0.85	
	4	3.898	0.70	
	5	4.0910 ^{1b*2b*3b*4b*}	0.64	
	6	4.140 ^{1b*2b*3b*4b*}	0.72	
Teachers' assessment skills	1	3.923	0.70	9.928**
	2	3.913	0.74	
	3	3.943	0.74	
	4	3.952	0.67	
	5	4.070 ^{1b*2b*3b*}	0.66	
	6	4.205 ^{1b*2b*3b*4b*5b*}	0.65	
Teachers' assessment attitudes	1	4.069	0.67	9.454***
	2	4.155	0.68	
	3	4.206 ^{1b*}	0.67	
	4	4.148	0.63	
	5	4.290 ^{1b*2b*4b*}	0.60	
	6	4.350 ^{1b*2b*3b*4b*}	0.65	
Teachers' assessment value orientations	1	4.115	0.67	9.084***
	2	4.203	0.69	
	3	4.292 ^{1*}	0.67	
	4	4.180	0.67	
	5	4.342 ^{1b*2b*4b*}	0.63	
	6	4.383 ^{1b*2b*4b*}	0.65	
Teachers' assessment literacy	1	3.987	0.64	10.638***
	2	4.024	0.67	
	3	4.065	0.66	
	4	4.037	0.61	
	5	4.185 ^{1b*2b*3b*4b*}	0.58	
	6	4.265 ^{1b*2b*3b*4b*}	0.61	

1b = 5 years or less, 2b = 6–10 years, 3b = 11–15 years, 4b = 16–20 years, 5b = 21–25 years, 6b = 26 years or more.

The post hoc multiple comparison analysis, detailed in **Table 4**, offered further insights into these differences. Regarding the teacher assessment knowledge dimension, significantly higher levels were observed for teachers with 21–25 years and those with 26 or more years of experience when compared to teachers with 5 years or less, 6–10 years, 10–15 years, or 16–20 years of experience.

Concerning teachers' assessment skills, individuals with 26 years or more of teaching experience exhibited significantly higher skill levels than all other experience groups (5 years or less, 6–10 years, 10–15 years, 16–20 years, and 21–25 years). Teachers with 21–25 years of experience also demonstrated an assessment skill level

significantly exceeding that of teachers with 5 years or less, 6–10 years, and 10–15 years of experience.

For teachers' assessment attitudes, those with 26 years or more of teaching experience demonstrated significantly higher attitude levels compared to teachers in the 5 years or less, 6–10 years, 10–15 years, and 16–20 years' experience brackets. Moreover, the assessment skill level of teachers with 21–25 years of teaching experience is significantly higher than the assessment attitude level of teachers with 5 years or less, 6–10 years, and 16–20 years of teaching experience. An additional finding demonstrated that the assessment skill level of teachers with 11–15 years of teaching experience is significantly higher than the assessment attitude level of teachers with 5 years or less of teaching experience.

Analysis of teacher assessment value orientations indicated that teachers with 21–25 years and those with 26 years or more of experience held significantly higher value orientation levels than teachers in the 5 years or less, 6–10 years, and 16–20 years' experience categories. The assessment value orientation level for teachers having 11–15 years of experience also significantly exceeded that of teachers with 5 years or less experience.

3.6. The distribution of differences in teachers' assessment of literacy in professional titles

The study conducted a one-way analysis of variance utilizing teachers' assessment of literacy and its dimensions as dependent variables. The independent variable was professional title, categorized as junior title and below ($n = 724$), intermediate title ($n = 671$), or senior title and above ($n = 523$). **Table 5** displays the results from this analysis of variance. Significant differences ($p < 0.05$) can be observed in the total score of assessment literacy among teachers holding different professional titles, according to the variance analysis. When considering the specific dimensions of assessment, significant differences related to professional titles were identified in the scores for assessment attitudes and value orientations.

Table 5. Distribution of differences in teachers' assessment of literacy in professional titles

Dimension	Professional title	Mean	SD	F
Teachers' assessment of knowledge	1	3.914	0.75	2.023
	2	3.949	0.78	
	3	4.002	0.75	
Teachers' assessment skills	1	3.979	0.69	2.720
	2	3.979	0.71	
	3	4.063	0.70	
Teachers' assessment attitudes	1	4.123	0.68	7.233**
	2	4.224 ^{1c*}	0.63	
	3	4.256 ^{1c*}	0.66	
Teachers' assessment value orientations	1	4.168	0.68	7.734***
	2	4.276 ^{1c*}	0.65	
	3	4.306 ^{1c*}	0.68	
Teachers' assessment literacy	1	4.041	0.65	4.381*
	2	4.095	0.63	
	3	4.149 ^{1c*}	0.64	

1c = junior title and below, 2c = intermediate title, 3c = senior title and above

Teachers with senior or higher professional titles displayed significantly higher levels of assessment value orientation compared to those with junior or lower professional titles. The assessment value orientation level among teachers holding intermediate professional titles was also significantly greater than that observed in teachers with junior or lower titles. With respect to the overall score of teachers' assessment literacy, individuals with senior or higher professional titles achieved significantly higher assessment literacy levels than their counterparts holding junior or lower titles.

3.7. The distribution of differences in teachers' assessment of literacy in class size

Differences in teachers' assessment of literacy based on class size were analyzed through a one-way analysis of variance. Teachers' assessment of literacy scores and the scores for its dimensions acted as the dependent variables. Class size represented the independent variable, grouped into four categories: 30 people or less ($n = 393$), 31–40 people ($n = 439$), 41–50 people ($n = 625$), and 51 people or more ($n = 461$). The results of the analysis of variance are demonstrated in **Table 6**. Significant differences were detected by the analysis of variance in assessment literacy scores and across all four dimensions among teachers responsible for different class sizes.

Table 6. Distribution of differences in teachers' assessment of literacy in class size

Dimension	Class size	Mean	SD	F
Teachers' assessment of knowledge	1	4.089 ^{2d*3d*4d*}	0.76	8.114***
	2	3.968 ^{4d*}	0.72	
	3	3.934 ^{4d*}	0.75	
	4	3.836	0.81	
Teachers' assessment skills	1	4.134 ^{2d*3d*4d*}	0.69	9.108***
	2	4.034 ^{4d*}	0.67	
	3	3.977 ^{4d*}	0.71	
	4	3.892	0.71	
Teachers' assessment attitudes	1	4.279 ^{3d*4d*}	0.67	3.240*
	2	4.200	0.66	
	3	4.175	0.65	
	4	4.144	0.67	
Teachers' assessment value orientations	1	4.327 ^{3d*4d*}	0.69	3.263*
	2	4.244	0.66	
	3	4.234	0.64	
	4	4.184	0.71	
Teachers' assessment of literacy	1	4.201 ^{2d*3d*4d*}	0.66	7.066***
	2	4.106 ^{4d*}	0.62	
	3	4.071	0.63	
	4	4.089	0.76	

1d = 30 people or less, 2d = 31–40 people, 3d = 41–50 people, 4d = 51 people or more.

The post hoc multiple comparison analysis (**Table 6**) offers specific details. In the domain of teachers' assessment knowledge, those responsible for classes of 30 students or less demonstrated significantly higher levels than teachers overseeing classes of 31–40, 41–50, or 51 students or more. A significantly higher assessment knowledge level was also identified for teachers responsible for classes of 31–40 and 41–50 students compared to those managing classes of 51 students or more.

With respect to teachers' assessment skills, teachers responsible for classes containing 30 students or less had significantly higher assessment skill levels relative to teachers managing classes of 31–40, 41–50, or 51 students or more. Besides, the assessment skill level of teachers with classes of 31–40 and 41–50 students significantly surpassed that of teachers responsible for classes with 51 students or more. Regarding teachers' assessment attitudes, the attitude level for teachers responsible for classes of 30 students or less was significantly higher than that of teachers overseeing classes with 41–50 or 51 students or more. In terms of teachers' assessment value orientations, the assessment attitude level of teachers responsible for classes with 30 students or less significantly exceeds that of teachers responsible for classes with 41–50 or 51 students or more.

Considering the overall score for teachers' assessment literacy, the literacy level of teachers responsible for classes of 30 or fewer students proved significantly higher than that of teachers handling classes with 31–40, 41–50, or 51 or more students. Teachers responsible for classes containing 31–40 students also demonstrated a significantly higher assessment literacy level compared to those responsible for classes of 51 or more students.

4. Research findings

We utilized a self-developed survey questionnaire alongside interviews to conduct a comprehensive, in-depth analysis of primary and secondary school teachers in X province, China. This research discovered some problems, which the following sections will explain in detail.

4.1. Lack of assessment knowledge among primary and secondary school teachers

Our research indicated that the average assessment literacy score for primary and secondary school teachers in X province surpasses the “3” mark, placing their overall assessment literacy at an above-average level. Student academic assessment has experienced numerous reforms since the beginning of China's new curriculum reform; shifts in the concept of student academic assessment have thus imposed new requirements upon teachers. Teacher assessment of literacy has thus become a central component of professional standards for teachers. Interviews with teachers, however, uncovered continuing deficiencies in their assessment literacy. A lack of corresponding assessment knowledge was noted, hindering the effective implementation of high-quality assessment activities.

Further interviews identified several reasons contributing to teachers' comparatively low level of knowledge of assessment. The first issue is a lack of assessment knowledge among teachers. Most frontline teachers reported having scarcely encountered relevant theoretical knowledge relevant to teacher assessment, often depending instead on practical knowledge passed down from more experienced colleagues. Secondly, a strong emphasis remains on preparing students for entry into higher levels of schooling. While national initiatives increasingly emphasize education for teachers, offering more learning and training opportunities where nearly every teacher can participate, teachers themselves express a greater preference for learning methods and skills aimed directly at improving students' academic performance. Therefore, the “result-orientation” concept of assessment features prominently in teachers' daily practice, whereas concepts and methods centered on the learning process and formative evaluation have not achieved widespread adoption.

4.2. The assessment practice of urban teachers is less sufficient than that of rural teachers

Findings from this study (**Table 1**) exhibit significant differences in the total assessment literacy score, as well as in skill, attitude, and value orientation scores, between teachers in urban and rural middle schools. Rural teachers specifically exhibit a significantly higher level of assessment literacy compared to urban teachers.

Further interviews identified two primary factors contributing to the lower assessment literacy levels observed among urban school teachers. Firstly, urban schools experience substantive greater pressure related to student progression into higher education compared to rural schools. While standardized education requirements aim to curb the excessive pursuit of high progression rates, this remains a key concern for a large number of schools. Urban school teachers perceive their primary teaching duty as centering on “Score-oriented education.” Information collected during interviews indicated that numerous teachers conduct an average of 3–4 classes daily. Their responsibilities extend beyond classroom teaching to include lesson preparation, homework grading, and assessment design, leaving limited capacity to dedicate more energy toward evaluation practices. The second factor involves urban parents, who, compared to their rural counterparts, tend to place greater emphasis on their children’s academic performance. In the broader educational ecosystem, families, society, and schools exert mutual influence. Such a focus on academic performance among urban parents significantly affects teachers’ educational and teaching approaches, intensifying their concentration on teaching while reducing their engagement with more diverse assessment methods and practical activities.

4.3. The overall assessment literacy of high school teachers urgently needs to be improved

This study utilized a one-way analysis of variance to study the relationship between the grade level taught (independent variable) and teacher assessment literacy, including its dimensions (dependent variables). **Table 2** presents the results of this analysis. Significant differences can be observed ($p < 0.001$) among teachers of different grades regarding both the total assessment literacy score and the four sub-dimensions.

Post hoc multiple comparisons, detailed in **Table 2**, indicated specific patterns indicating differences across grade levels. The assessment literacy level of primary school teachers was significantly higher compared to that of middle and high school teachers ($p < 0.05$). In addition, both primary and junior high school teachers demonstrated significantly higher assessment literacy levels than high school teachers ($p < 0.05$). These findings suggest a trend where teacher assessment literacy levels appear to decrease as the grade level taught increases. Several potential reasons underlie these results. First, high school teachers confront high pressure related to assisting students with university entrance, a pressure that increases with higher grades. Second, the workload for high school teachers tends to be heavier; they are required to teach more advanced academic knowledge and manage a denser curriculum compared to their counterparts in middle and primary schools, which thus impacts their engagement in evaluation and practical activities. Third, larger class sizes in high schools, relative to middle and primary schools, also exert a certain influence on the assessment literacy of high school teachers by limiting the amount of energy teachers can invest in each student.

4.4. Non-normal teachers have lower assessment literacy

An independent sample *T* test was conducted with teachers’ assessment of literacy and its dimensions as dependent variables, and profession types (normal/nonnormal students) as independent variables (**Table 3**). The test results indicated significant differences ($p < 0.05$) in assessment literacy scores between normal and non-normal teachers.

Analysis of survey data demonstrated that teachers who graduated from normal universities exhibit

significantly higher levels of assessment literacy compared to non-normal teachers. At present, the majority of Chinese universities offer both general and professional courses for their students. However, prospective teachers graduating from normal universities must study educational principles, methods, strategies, and evaluation theory in addition to their specific subject knowledge. This specialized knowledge forms a key foundation for developing teacher assessment literacy. Non-normal students, in comparison, typically lack this specific teaching. Skill training methodologies may also differ across various professional preparation programs. Therefore, normal teachers are expected to perform better in evaluation practices than non-normal ones.

4.5. Novice teachers have lower assessment literacy

The study utilized a one-way analysis of variance to appraise how teaching experience (independent variable) influences teacher assessment literacy and its specific dimensions (dependent variables); **Table 4** presents these results. The analysis indicated significant differences ($p < 0.001$) based on teaching experience for both the total assessment literacy scores and the four sub-dimensions. Post hoc multiple comparisons were then used to explore these variations. Regarding teachers' assessment knowledge, the results indicate significantly higher levels for teachers with 21–25 years and those with 26 or more years of experience compared to teachers with 5 or fewer years, 6–10 years, 11–15 years, and 16–20 years of experience. Focusing on assessment skills, teachers with 26 years or more of experience demonstrated significantly higher levels compared to all other experience groups (5 years or less, 6–10 years, 11–15 years, 16–20 years, and 21–25 years). In addition, teachers in the 21–25 years' experience bracket demonstrated significantly greater assessment skills than their colleagues with 5 or fewer years, 6–10 years, or 11–15 years of experience.

Differences in assessment attitudes were also observed; specifically, those with 26 or more years in teaching reported significantly higher attitude levels than individuals in the 5 years or less, 6–10 years, 11–15 years, and 16–20 years' experience cohorts. Assessment attitude levels for teachers with 21–25 years of experience were also significantly higher compared to teachers having 5 years or less, 6–10 years, or 16–20 years of experience. Significantly more positive assessment attitudes were displayed by the group with 11–15 years of experience compared to the group with 5 years or less experience. Assessment value orientations demonstrated a similar pattern, where post hoc analysis indicated that teachers with 21–25 years and those with 26 or more years of experience had significantly higher levels compared to teachers with 5 or fewer years, 6–10 years, or 16–20 years of experience. A significant difference was also noted for assessment value orientation levels between teachers in the 11–15 years' experience group and those with 5 years or less experience, favoring the former.

Finally, considering the overall assessment literacy scores, significantly higher levels were identified among teachers with 21–25 years and those with 26 years or more of experience relative to teachers with 5 or fewer years, 6–10 years, 11–15 years, and 16–20 years of experience. These findings align to some degree with previous research^[5].

Furthermore, a separate one-way analysis of variance explored the connection between teachers' professional titles (independent variable) and their assessment literacy levels (dependent variable). The variance analysis results are demonstrated in **Table 5**. These results demonstrated significant differences ($p < 0.05$) in the total score for assessment literacy among teachers holding different professional titles. Regarding the specific dimensions of assessment literacy, significant differences based on professional title were also observed for assessment attitudes and assessment value orientations. This finding lends support to previous research identifying professional title as an important factor affecting teachers' assessment literacy^[6].

Considering the findings from the analyses of both teaching experience and professional title, it appears that

teachers' assessment literacy levels tend to rise with increasing years of service and advancement in professional rank. This survey indicated that the overall assessment level is relatively low among teachers in the early stages of their careers. Follow-up interviews shed light on the main reasons for this pattern. Firstly, certain novice teachers demonstrated an insufficient understanding of evaluation's significance and reported rarely consulting professional literature on the subject. Secondly, these teachers often lack adequate practical experience in evaluation. Besides, the assessment requirements expected of teachers shift according to their professional titles; higher titles necessitate greater assessment abilities, which require teachers to accurately apply assessment scales and standards, continuously optimize their practical assessment skills, and finally improve the effectiveness of their educational practices.

5. Conclusion

In summary, the assessment literacy of teachers holds significant importance for improving the overall quality of education and teaching. This research defined the current status of assessment literacy among primary and secondary school teachers in Province X. It was achieved by constructing an assessment literacy structure model tailored for teachers in this region and employing a specifically developed measurement tool. Existing problems identified through the survey were further evaluated and interpreted utilizing relevant research findings and teacher interviews. The insights gained from this research can potentially cultivate improvements in teacher assessment literacy. It may also increase the focus of government departments and educational systems on teacher evaluation work, while offering essential and dependable data to inform the creation and adoption of related policies and systems.

Disclosure statement

The authors declare no conflict of interest

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