Paradigm Academic Press
Research and Advances in Education
ISSN 2788-7057
NOV. 2022 VOL.1 NO.5

Research on Assessment Literacy Among Teachers in Chinese Schools

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doi:10.56397/RAE.2022.11.04

Abstract

Recently, the issue of teachers' assessment literacy has been brought under the fierce discussion among scholars all over the world. Some research is intended to explore the concept and components of teachers' assessment literacy and others are intended to propose its framework and the level of assessment literacy among the teachers from a certain level of schools. While the existing researches are mainly on the exploration of the assessment literacy among Chinese teachers from secondary schools, this research intends to explore the level of assessment literacy among teachers from levels of Chinese schools, ranging from primary schools to universities. It also intends to explore the correlation between teachers' background information as well as their academic experience and the level of their assessment literacy. This research will provide a practical significance to teachers' training and development.

Keywords: assessment literacy, Chinese teachers, from primary schools to universities, teachers' training, teachers' development

1. Introduction

Since the advent of the 1990s, new problems have constantly emerged in the field of assessment domain, which brought furious criticism to the mainstream assessment system based on standardized tests. Some innovators are advocating new theoretical foundations and new paradigms for assessment. Under these circumstances, a series of new assessment approaches have come into being, such as the portfolio assessment, performance assessment, etc. To some extent, such assessments reflect the overall performance of students in their authentic learning context, representing the orientation of the development of assessment in the education system (Zhao Xuejing, 2014).

The utilization of the new assessment paradigm requires educators to pay more attention to the accumulation of their assessment knowledge in the theoretical level as well as the development and application of their assessment competence in the practical domain. At the meantime, teachers are expected to be familiar with the various assessment approaches so that they can rationally develop assessment plan and communicate the corresponding assessment results with students or their parents. In this sense, teachers are required to develop their own assessment literacy. Through this, they can eventually improve their teaching and help their students improve academic achievements. The study of teachers' assessment literacy is related to the professional development of teachers and the improvement of education quality. Therefore, the issue of teachers' assessment literacy has been under the heated debate and needs to be solved urgently.

2. Literature Review

2.1 The Concept of Assessment Literacy

The concept of assessment literacy was initially proposed by American scholar Stiggins in his article entitled "Assessment Literacy" in 1990 (Stiggins, R.J., 1991). Paterno defined assessment literacy as the mastery of the basic principles of sound assessment practice, including the understanding and utilization of the relevant

terminology, assessment approaches and techniques as well as the familiarity with the standards of assessment quality (Patero, J., 2001). Webb referred assessment literacy to the methodological knowledge which was used to assess students' knowledge and abilities. It included the knowledge about how to communicate assessment results and utilize these results to improve students' learning (Webb, N.L., 2022). Noonan and Renihan pointed out that assessment literacy should be defined as the competence that individuals and groups possess about the process, options and applications of assessments (Noonan, B. & Renihan, P., 2006).

On the basis of assessment practice, Stiggins described the explicit behaviors of educators with assessment literacy. He argued that such educators could differentiate between reliable and unreliable assessment approaches. When they conducted assessment, they kept in their mind the content, aim and procedures of a reliable assessment. They knew what errors might occur in the assessment and how they could prevent these errors from occurring. They also knew the potential negative consequences of inaccurate assessments (Stiggins, R, J., 1991; 1995). According to the research conducted by the Center for School Improvement and Policy Studies of Boise State University, educators with assessment literacy could distinguish the best approaches used to gather reliable information and data of students' achievements for assessment and they were able to effectively communicate the assessment results whether through transcripts, test scores, portfolios or interviews. They could engage students in the assessment to maximize their motivations to learning (Center for School Improvement and Policy Studies, Boise State University, 2003).

As can be seen from the definitions of the assessment literacy listed above, on the one hand, educators with assessment literacy are required to have the competence to distinguish assessment approaches and master the procedure knowledge to utilize these approaches in practice; on the other hand, such educators are required to be able to rationally view the assessment results and effectively utilize these results to achieve the expected assessment objectives. These two points provide the basic theoretical support to explore teachers' assessment literacy in the latter part of this research.

2.2 Existing Studies on Assessment Literacy

Researchers have studied the framework of teachers' assessment literacy from different perspectives. From the perspective of teacher training, Brindley constructed a framework for the content of assessment literacy in teacher training programs. From the perspective of the trend for the development of textbooks in foreign language teaching, Davies (Davies, A.) established a model framework "knowledge + skill + principle" of assessment literacy for foreign language teachers. On the basis of Brindley's work, Inbar-Lourie (O.) proposed a framework of assessment literacy for language teachers, exploring the aims, content and approaches of assessment.

The existing literature illustrates that researchers mainly focus on two aspects of teachers' assessment literacy. Their primary focus is on the research about the training of teachers' assessment competence. They found out that language teachers in different regions all had a strong need and desire for the training of assessment competence, especially the competence related to classroom assessment, such as the use of portfolios, design for quizzes and utilization of self-evaluation, through a questionnaire survey.

In addition, their researches are also mainly about teachers' assessment on curriculum. In 2013, Jeong studied the correlation between the academic background of teachers and the assessments they conducted on the content of curriculum. It was found that there existed a high correlation between these two factors.

With regard to the research conducted by Chinese scholars. Based on the existing researches and his research on the assessment literacy among teachers from Zhejiang Province, China, Dr. Zheng Donghui (2019) proposed that teachers' attitudes as well as their knowledge and competence of assessment should be incorporated in assessment literacy and thus he constructed a pyramid structure of assessment literacy incorporating these three aspects. Furthermore, Dr. Zhao Xuejing (2014) promoted the utilization of teachers' assessment literacy to teaching practice. She constructed a framework for teachers' assessment literacy including teachers' attitudes, awareness, knowledge and competence of assessment in both theoretical and practical aspects. Moreover, Xue Bowen (2017) conducted a survey on the assessment literacy among teachers from junior high schools in Hubei Province and Qin Weile (2017) made research on the assessment literacy among novice teachers. These researches were made in a comparatively small range and the subjects are mainly teachers from secondary schools. Teachers from primary schools and universities were not included. To expand the applicability of the framework on teachers' assessment literacy, the subjects in this research will cover the teachers from the levels of Chinese schools, ranging from primary schools to universities. And also the correlation between teachers' background information as well as their experience and the level of their assessment literacy will be explored in this research.

Therefore, the research objectives are three folds:

a). To explore the level of assessment literacy among teachers at Chinese schools, ranging from primary schools

to universities;

b). To explore the correlation between teachers' background information and the level of their assessment literacy;

c). To explore the correlation between teachers' academic experience and the level of their assessment literacy.

Hence, three research questions are proposed:

a). What is the level of assessment literacy among teachers at Chinese schools, ranging from primary schools to universities?

b). What is the correlation between teachers' background information and the level of their assessment literacy?

c). What is the correlation between teachers' academic experience and the level of their assessment literacy?

3. Theoretical and Conceptual Framework

3.1. Theoretical Framework

This research is based on the theory of educational assessment. Educational assessment refers to the process of scientific judgement on the various educational activities, processes and results implemented through the use of certain technologies and approaches. The judgement should be in accordance with the educational aims established in advance.

The evolution of this theory began in the middle of the 19th century and experienced four periods. The first period is from the middle of the 19th century to the 1930s. During this period, important progress was made in the quantification, objectification and standardization of examinations and the emphasis of assessment was placed on the measure of students' learning in a quantitative way. However, at that time, the examinations and tests only required students to memorize the knowledge content from the textbooks and could not truly reflect the comprehensive learning process of students.

The second period is from the 1930s to the 1950s. During this period, Tyler (Tyler, R) proposed that educational goals should be regarded as the core for the principles of educational assessment. Based on this proposal, Tyler proposed the concept of "educational assessment" and distinguished educational assessment from educational measurement. The theory of educational assessment was based and developed on the basis of Taylor's principle.

The third period is from the 1950s to the 1970s. During this period, educators, such as Bloom, Scriven (Scriven, M.), Stake (Stake, R.E.) and Kellogg (Kellogg, T.E.), made great contributions to the development of this theory. Noteworthy is that, at that time, Bloom raised the question to assess the educational goals.

The last period is from the 1970s. During this period, the identification of assessment results was placed in the spotlight. Researchers emphasized that great attention should be paid to the assessment process and proposed the possibilities that individuals could be recognized through assessment. The importance of the constructive role of assessment on individual development was finally recognized.

The updated theory regards educational assessment as the interaction between educators and assessed subjects. It promotes that educational assessment is the process of joint construction formed through consultation between teachers and students. The theory requires teachers to avoid limiting assessment to the screening and selection of students, rather, through educational assessment, teachers can timely monitor the process of students' learning, figure out the difficulties students encounter in learning and adjust their teaching accordingly. Thus, they can efficiently improve their teaching and in turn improve the educational quality. In this sense, according to the theory, teachers' assessment literacy occupies an important role in education. As such, it is of great importance to do research in this field.

3.2 Conceptual Framework

In her dissertation for doctoral degree, Dr. Zhao Xuejing proposed the framework for teachers' assessment literacy on the basis of the Standards for Teacher Competence in Educational Assessment of Students, Teacher Assessment Literacy Questionnaire, Classroom Assessment Literacy Inventory and the questionnaire on classroom assessment knowledge among primary and secondary school teachers jointly developed by Chinese scholars Zheng Donghui and Ye Shengnan. According to the framework, teachers' assessment literacy is divided as teachers' assessment awareness, assessment knowledge, assessment competence and their attitudes to assessment. Among these variables, assessment awareness refers to whether teachers are aware of the significance and usefulness of assessment in their teaching as well as the external factors which have influences on their assessment. Assessment knowledge refers to teachers' knowledge to the selection, design and utilization of assessment approaches as well as the interpretation to assessment result. Assessment competence refers to teachers' abilities to distinguish and select suitable assessment approaches according to the assessment objectives as well as their abilities to design corresponding assessments. The questionnaire in this research is developed on the basis of this framework.

4. Research Methodology

The quantitative method is adopted in this research and the data are collected through the questionnaire. The questionnaire consists of three parts. The first part is about the personal information of these teachers participating in this research. This part includes their gender, academic qualifications, which level of school they are teaching and the years of teaching experience. The second part is about their academic experience, including whether they have attended the course on assessment, participated in the relevant training programs or research projects on assessment, or read a book on assessment in a self-learning manner. The third part is a survey on the level of their assessment literacy in terms of their awareness and attitudes to assessment, knowledge of assessment and competence to conduct an assessment. The survey is conducted on Likert Scale of five points while "5 points" correspond to "totally agree" and "1 point" to totally disagree. Altogether 19 questions are constructed in this part. Questions 1-5 are concerned about teachers' awareness to assessment, questions 6-10 are about their knowledge, questions 11-15 their competence and questions 16-19 their attitudes.

The questionnaire has been posted on www.wenjuanxing.cn, the website specifically designed for questionnaire research, for two weeks to collect data.

5. Data Analysis

Altogether 337 teachers responded to the questionnaire. The data collected are analyzed through SPSS 27. Descriptive analysis is used to describe the level of the respondents' assessment literacy and Pearson correlation coefficient is used to figure out the correlation between teachers' background information as well as their academic experience and the level of their assessment literacy. The Cronbach's Alpha is 0.938.

Among these respondents, 149 are male teachers (44.2%) and 188 are female teachers (55.8%). In terms of their academic qualifications, most of them claim that they hold the bachelor degree (n=210, 62.3%) and master degree (n=110, 32.6%). Only 4.7% (n=16) of them claim that they have obtained their doctoral degree and only one teacher (0.3%) say that s/he has diploma. The teachers are all from all levels of Chinese schools. They are from junior secondary schools (n=131, 38.9%), primary schools (n=96, 28.5%), senior secondary schools (n=74, 22.0%) and universities (n=36, 10.7%). Regarding the years of their teaching experience, only 6 teachers honor that they have been teaching for more than 20 years (1.8%). Most of them have teaching experience of 1-3 years (n=141, 41.8%), 4-10 years (n=122, 36.2%), 11-20 years (n=41, 12.2%) and less than 1 year (n=27, 8.0%). Moreover, 289 respondents claim that they have attended the course on assessment (85.8%), 273 (81%) participated in the relevant training program on assessment, 242 (71.8%) participated in the research project on assessment and 235 (69.7%) read books on assessment in a self-learning manner.

To answer the first question, descriptive analysis is used to describe the level of assessment literacy among teachers at Chinese schools, ranging from primary schools to universities. The statistic shows that all of these teachers have medium level of assessment awareness (Mean=3.68, I think assessment is a significant and indispensable part of teaching; 3.58, I can be aware of what external factors influence my assessment in teaching; 3.56, I can be aware of my assessment and deliberately control it; 3.49, I can be aware of planning an assessment plan in addition to my teaching plan; 3.61, I can be aware to the role of assessment in monitoring students' learning).

Medium level of assessment knowledge (Mean=3.61, I know how to select a suitable assessment approach according to the teaching objectives; 3.63, I know how to observe and monitor students' learning through assessment; 3.52, I know how to design homework; 3.64, I know how to design tests and examination questions; 3.62, I know how to reasonably interpret students' test or examination results).

Medium level of assessment competence (Mean=3.66, I always analyze and summarize the key points and difficult points for a lesson and design corresponding assessment accordingly; 3.60, I always write some comments when assessing students' homework or assignments; 3.62, I can make rational judgement about students' learning according to my observation on their performance in class; 3.59, I always adjust my teaching according to the feedback of student's learning; 3.66, when some students are lagging behind in learning, I am able to analyze their learning and communicate with them or their parents about their learning effectively based on assessment).

And medium level of assessment attitudes (Mean=3.55, I think the current assessment methods cannot authentically reflect students' learning; 3.48, compared to the standardized tests, the assessment I design will be able to better evaluate my students' learning; 3.59, I think it is reasonable to assess students' learning through scores or grades; 3.57, compared to the assessment to students' basic knowledge, the assessment on their emotions, attitudes and values is hard to achieve).

To answer the second question, Pearson correlation coefficient is used to figure out the correlation between teachers' background information and the level of their assessment literacy. Astonishingly, the statistics illustrates that there exists a negative correlation between the level of academic qualifications these teachers hold

and their level of assessment awareness (r=-0.256, -0.283, -0.249, -0.284, -0.200, P<0.001), as well as a negative correlation between the level of schools these teachers are teaching and the level of assessment awareness (r=-0.111, P=0.041; r=-0.149, P=0.006; r=-0.146, P=0.007).

Correlations

		Academic qualification	Level of the school	In my opinion, assessment is a significant and indispensible part of teaching.	I can be aware of what external factors influence my assessment in teaching.	I can be aware of my assessment and deliberately control it.	I can be aware of planning an assessment plan in addtion to my teaching plan.	I can be aware to the role of assessment in monitoring my students' learning process.
Academic qualification	Pearson Correlation	1	.472**	-.256**	-.283**	-.249**	-.284**	-.200**
	Sig. (2-tailed)		<.001	<.001	<.001	<.001	<.001	<.001
	N	337	337	337	337	337	337	337
Level of the school	Pearson Correlation	.472**	1	-.111*	-.102	-.149**	-.146**	-.073
	Sig. (2-tailed)	<.001		.041	.062	.006	.007	.179
	N	337	337	337	337	337	337	337
In my opinion, assessment is a significant and indispensible part of teaching.	Pearson Correlation	-.256**	-.111*	1	.689**	.738**	.737**	.707**
	Sig. (2-tailed)	<.001	.041		<.001	<.001	<.001	<.001
	N	337	337	337	337	337	337	337
I can be aware of what external factors influence my assessment in teaching.	Pearson Correlation	-.283**	-.102	.689**	1	.585**	.577**	.549**
	Sig. (2-tailed)	<.001	.062	<.001		<.001	<.001	<.001
	N	337	337	337	337	337	337	337
I can be aware of my assessment and deliberately control it.	Pearson Correlation	-.249**	-.149**	.738**	.585**	1	.595**	.608**
	Sig. (2-tailed)	<.001	.006	<.001	<.001		<.001	<.001
	N	337	337	337	337	337	337	337
I can be aware of planning an assessment plan in addtion to my teaching plan.	Pearson Correlation	-.284**	-.146**	.737**	.577**	.595**	1	.551**
	Sig. (2-tailed)	<.001	.007	<.001	<.001	<.001		<.001
	N	337	337	337	337	337	337	337
I can be aware to the role of assessment in monitoring my students' learning process.	Pearson Correlation	-.200**	-.073	.707**	.549**	.608**	.551**	1
	Sig. (2-tailed)	<.001	.179	<.001	<.001	<.001	<.001	
	N	337	337	337	337	337	337	337

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Figure 1. The negative correlation between the academic qualifications as well as the level of the school and teachers' assessment awareness

Teachers' assessment knowledge also has a negative correlation with the academic qualifications that teachers hold (r=0.145, P=0.008; r=-0.206, -0.260, -0.205, -0.252, P<0.001) and the level of the school they are teaching in terms of designing homework (r=-0.136, P=0.012).

Correlations

		Academic qualification	Level of the school	I know how to select a suitable assessment approach according to the teaching objectives.	I know how to observe and monitor students' learning through assessment.	I know how to design homework.	I know how to design tests and examination questions.	I know how to reasonbly interpret students' test or examination results.
Academic qualification	Pearson Correlation	1	.472**	-.145**	-.206**	-.260**	-.205**	-.252**
	Sig. (2-tailed)		<.001	.008	<.001	<.001	<.001	<.001
	N	337	337	337	337	337	337	337
Level of the school	Pearson Correlation	.472**	1	-.111*	-.102	-.136*	-.088	-.095
	Sig. (2-tailed)	<.001		.042	.061	.012	.105	.081
	N	337	337	337	337	337	337	337
I know how to select a suitable assessment approach according to the teaching objectives.	Pearson Correlation	-.145**	-.111*	1	.663**	.687**	.631**	.635**
	Sig. (2-tailed)	.008	.042		<.001	<.001	<.001	<.001
	N	337	337	337	337	337	337	337
I know how to observe and monitor students' learning through assessment.	Pearson Correlation	-.206**	-.102	.663**	1	.693**	.691**	.680**
	Sig. (2-tailed)	<.001	.061	<.001		<.001	<.001	<.001
	N	337	337	337	337	337	337	337
I know how to design homework.	Pearson Correlation	-.260**	-.136*	.687**	.693**	1	.703**	.682**
	Sig. (2-tailed)	<.001	.012	<.001	<.001		<.001	<.001
	N	337	337	337	337	337	337	337
I know how to design tests and examination questions.	Pearson Correlation	-.205**	-.088	.631**	.691**	.703**	1	.651**
	Sig. (2-tailed)	<.001	.105	<.001	<.001	<.001		<.001
	N	337	337	337	337	337	337	337
I know how to reasonbly interpret students' test or examination results.	Pearson Correlation	-.252**	-.095	.635**	.680**	.682**	.651**	1
	Sig. (2-tailed)	<.001	.081	<.001	<.001	<.001	<.001	
	N	337	337	337	337	337	337	337

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Figure 2. The negative correlation between the academic qualifications as well as the level of the school and teachers' assessment knowledge

According to the statistics, teachers' assessment competence has a negative correlation with the academic qualifications they have ($r=-0.187, -0.206, -0.198, -0.225, -0.215$, $P<0.001$) and the level of the school they are teaching in terms of designing corresponding assessment ($r=-0.114$, $P=0.037$), making rational judgement about students' learning on the basis of assessment on students' performance ($r=-0.221$, $P<0.001$) and analyzing and communicating assessment results ($r=-0.155$, $P=0.004$).

Correlations

		Academic qualification	Level of the school	I always analyze and summarize the key points and difficult points for a lesson and design corresponding assessment accordingly.	I always write some comments when assessing students' homework or assignments.	I can make rational judgement about students' learning according to my observation on their performance in class.	I always adjust my teaching according to the feedback of students' learning (such as their performation, homework, examination results).	When some students are lagging behind in learning, I am able to analyze their learning and communicate with them or their parents effectively.
Academic qualification	Pearson Correlation	1	.472**	-.187**	-.206**	-.198**	-.225**	-.215**
	Sig. (2-tailed)		<.001	<.001	<.001	<.001	<.001	<.001
	N	337	337	337	337	337	337	337
Level of the school	Pearson Correlation	.472**	1	-.114*	-.097	-.221**	-.080	-.155**
	Sig. (2-tailed)	<.001		.037	.076	<.001	.143	.004
	N	337	337	337	337	337	337	337
I always analyze and summarize the key points and difficult points for a lesson and design corresponding assessment accordingly.	Pearson Correlation	-.187**	-.114*	1	.630**	.675**	.706**	.729**
	Sig. (2-tailed)	<.001	.037		<.001	<.001	<.001	<.001
	N	337	337	337	337	337	337	337
I always write some comments when assessing students' homework or assignments.	Pearson Correlation	-.206**	-.097	.630**	1	.569**	.658**	.631**
	Sig. (2-tailed)	<.001	.076	<.001		<.001	<.001	<.001
	N	337	337	337	337	337	337	337
I can make rational judgement about students' learning according to my observation on their performance in class.	Pearson Correlation	-.198**	-.221**	.675**	.569**	1	.584**	.641**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001		<.001	<.001
	N	337	337	337	337	337	337	337
I always adjust my teaching according to the feedback of students' learning (such as their performation, homework, examination results).	Pearson Correlation	-.225**	-.080	.706**	.658**	.584**	1	.683**
	Sig. (2-tailed)	<.001	.143	<.001	<.001	<.001		<.001
	N	337	337	337	337	337	337	337
When some students are lagging behind in learning, I am able to analyze their learning and communicate with them or their parents effectively.	Pearson Correlation	-.215**	-.155**	.729**	.631**	.641**	.683**	1
	Sig. (2-tailed)	<.001	.004	<.001	<.001	<.001	<.001	
	N	337	337	337	337	337	337	337

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Figure 3. The negative correlation between the academic qualifications as well as the level of the school and teachers' assessment competence

Regarding teachers' attitudes to assessment, it also has a negative correlation with the academic qualifications that teachers hold (r=-0.158, P-0.004; r=-0.224, -0.260, P<0.001; r=-0.167, P=0.002) and the level of the school they are teaching in terms of their opinions on whether it is reasonable to assess students' learning thorough scores or grades (r=-0.119, P=0.029).

Correlations

		Academic qualification	Level of the school	In my opinion, the current assessment methods can not authentically reflect students' learning.	Compared to the standardized tests (such as the college entrance examination), the assessment I design will be able to better evaluate my students' learning.	I think it is reasonable to assess students' learning through scores or grades.	Compared to the assessment to students' basic knowledge, the assessment to their emotions, attitudes and values is hard to achieve.
Academic qualification	Pearson Correlation	1	.472**	-.158**	-.224**	-.260**	-.167**
	Sig. (2-tailed)		<.001	.004	<.001	<.001	.002
	N	337	337	337	337	337	337
Level of the school	Pearson Correlation	.472**	1	-.045	-.103	-.119*	-.063
	Sig. (2-tailed)	<.001		.405	.059	.029	.250
	N	337	337	337	337	337	337
In my opinion, the current assessment methods can not authentically reflect students' learning.	Pearson Correlation	-.158**	-.045	1	.597**	.663**	.576**
	Sig. (2-tailed)	.004	.405		<.001	<.001	<.001
	N	337	337	337	337	337	337
Compared to the standardized tests (such as the college entrance examination), the assessment I design will be able to better evaluate my students' learning.	Pearson Correlation	-.224**	-.103	.597**	1	.683**	.586**
	Sig. (2-tailed)	<.001	.059	<.001		<.001	<.001
	N	337	337	337	337	337	337
I think it is reasonable to assess students' learning through scores or grades.	Pearson Correlation	-.260**	-.119*	.663**	.683**	1	.642**
	Sig. (2-tailed)	<.001	.029	<.001	<.001		<.001
	N	337	337	337	337	337	337
Compared to the assessment to students' basic knowledge, the assessment to their emotions, attitudes and values is hard to achieve.	Pearson Correlation	-.167**	-.063	.576**	.586**	.642**	1
	Sig. (2-tailed)	.002	.250	<.001	<.001	<.001	
	N	337	337	337	337	337	337

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Figure 4. The negative correlation between the academic qualifications as well as the level of the school and teachers' assessment competence

To answer the third question, Pearson correlation coefficient is again used to figure out the correlation between teachers' academic experience and the level of their assessment literacy. Not surprisingly, the variables (whether they have attended a course on assessment, participated in the relevant training program on assessment, participated in the research project on assessment, and read book on assessment in a self-learning manner) all have positive correlation with teachers' assessment literacy in four domains (assessment awareness, assessment knowledge, assessment competence and attitudes to assessment).

Correlations

		whether attended the course on assessment	whether participated in the relevant training program on assessment	whether participated in the research project on assessment	whether read books on assessment in a self-learning manner	In my opinion, assessment is a significant and indispensible part of teaching.	I can be aware of what external factors influence my assessment in teaching.	I can be aware of my assessment and deliberately control it.	I can be aware of planning an assessment plan in addtion to my teaching plan.	I can be aware to the role of assessment in monitoring my students' learning process.
whether attended the course on assessment	Pearson Correlation	1	.301**	.254**	.194**	.190**	.234**	.181**	.162**	.155**
	Sig. (2-tailed)		<.001	<.001	<.001	<.001	<.001	<.001	.003	.004
	N	337	337	337	337	337	337	337	337	337
whether participated in the relevant training program on assessment	Pearson Correlation	.301**	1	.672**	.669**	.452**	.388**	.380**	.360**	.388**
	Sig. (2-tailed)	<.001		<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N	337	337	337	337	337	337	337	337	337
whether participated in the research project on assessment	Pearson Correlation	.254**	.672**	1	.463**	.280**	.249**	.256**	.271**	.181**
	Sig. (2-tailed)	<.001	<.001		<.001	<.001	<.001	<.001	<.001	<.001
	N	337	337	337	337	337	337	337	337	337
whether read books on assessment in a self-learning manner	Pearson Correlation	.194**	.669**	.463**	1	.273**	.228**	.256**	.204**	.284**
	Sig. (2-tailed)	<.001	<.001	<.001		<.001	<.001	<.001	<.001	<.001
	N	337	337	337	337	337	337	337	337	337
In my opinion, assessment is a significant and indispensible part of teaching.	Pearson Correlation	.190**	.452**	.280**	.273**	1	.689**	.738**	.737**	.707**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001		<.001	<.001	<.001	<.001
	N	337	337	337	337	337	337	337	337	337
I can be aware of what external factors influence my assessment in teaching.	Pearson Correlation	.234**	.388**	.249**	.228**	.689**	1	.585**	.577**	.549**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001		<.001	<.001	<.001
	N	337	337	337	337	337	337	337	337	337
I can be aware of my assessment and deliberately control it.	Pearson Correlation	.181**	.380**	.256**	.256**	.738**	.585**	1	.595**	.608**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	<.001		<.001	<.001
	N	337	337	337	337	337	337	337	337	337
I can be aware of planning an assessment plan in addtion to my teaching plan.	Pearson Correlation	.162**	.360**	.271**	.204**	.737**	.577**	.595**	1	.551**
	Sig. (2-tailed)	.003	<.001	<.001	<.001	<.001	<.001	<.001		<.001
	N	337	337	337	337	337	337	337	337	337
I can be aware to the role of assessment in monitoring my students' learning process.	Pearson Correlation	.155**	.388**	.181**	.284**	.707**	.549**	.608**	.551**	1
	Sig. (2-tailed)	.004	<.001	<.001	<.001	<.001	<.001	<.001	<.001	
	N	337	337	337	337	337	337	337	337	337

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 5. The positive correlation between teachers' academic experience and their assessment awareness

Correlations

		whether attended the course on assessment	whether participated in the relevant training program on assessment	whether participated in the research project on assessment	whether read books on assessment in a self-learning manner	I know how to select a suitable assessment approach according to the teaching objectives.	I know how to observe and monitor students' learning through assessment.	I know how to design homework.	I know how to design tests and examination questions.	I know how to reasonbly interpret students' test or examination results.
whether attended the course on assessment	Pearson Correlation	1	.301**	.254**	.194**	.162**	.157**	.154**	.166**	.166**
	Sig. (2-tailed)		<.001	<.001	<.001	.003	.004	.005	.002	.002
	N	337	337	337	337	337	337	337	337	337
whether participated in the relevant training program on assessment	Pearson Correlation	.301**	1	.672**	.669**	.458**	.387**	.471**	.463**	.386**
	Sig. (2-tailed)	<.001		<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N	337	337	337	337	337	337	337	337	337
whether participated in the research project on assessment	Pearson Correlation	.254**	.672**	1	.463**	.286**	.247**	.275**	.283**	.217**
	Sig. (2-tailed)	<.001	<.001		<.001	<.001	<.001	<.001	<.001	<.001
	N	337	337	337	337	337	337	337	337	337
whether read books on assessment in a self-learning manner	Pearson Correlation	.194**	.669**	.463**	1	.329**	.266**	.326**	.313**	.230**
	Sig. (2-tailed)	<.001	<.001	<.001		<.001	<.001	<.001	<.001	<.001
	N	337	337	337	337	337	337	337	337	337
I know how to select a suitable assessment approach according to the teaching objectives.	Pearson Correlation	.162**	.458**	.286**	.329**	1	.663**	.687**	.631**	.635**
	Sig. (2-tailed)	.003	<.001	<.001	<.001		<.001	<.001	<.001	<.001
	N	337	337	337	337	337	337	337	337	337
I know how to observe and monitor students' learning through assessment.	Pearson Correlation	.157**	.387**	.247**	.266**	.663**	1	.693**	.691**	.680**
	Sig. (2-tailed)	.004	<.001	<.001	<.001	<.001		<.001	<.001	<.001
	N	337	337	337	337	337	337	337	337	337
I know how to design homework.	Pearson Correlation	.154**	.471**	.275**	.326**	.687**	.693**	1	.703**	.682**
	Sig. (2-tailed)	.005	<.001	<.001	<.001	<.001	<.001		<.001	<.001
	N	337	337	337	337	337	337	337	337	337
I know how to design tests and examination questions.	Pearson Correlation	.166**	.463**	.283**	.313**	.631**	.691**	.703**	1	.651**
	Sig. (2-tailed)	.002	<.001	<.001	<.001	<.001	<.001	<.001		<.001
	N	337	337	337	337	337	337	337	337	337
I know how to reasonbly interpret students' test or examination results.	Pearson Correlation	.166**	.386**	.217**	.230**	.635**	.680**	.682**	.651**	1
	Sig. (2-tailed)	.002	<.001	<.001	<.001	<.001	<.001	<.001	<.001	
	N	337	337	337	337	337	337	337	337	337

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 6. The positive correlation between teachers' academic experience and their assessment knowledge

Correlations

		whether attended the course on assessment	whether participated in the relevant training program on assessment	whether participated in the research project on assessment	whether read books on assessment in a self-learning manner	I always analyze and summarize the key points and difficult points for a lesson and design corresponding assessment accordingly.	I always write some comments when assessing students' homework or assignments.	I can make rational judgement about students' learning according to my observation on their performance in class.	I always adjust my teaching according to the feedback of students' learning (such as their performation, homework, examination results).	When some students are lagging behind in learning, I am able to analyze their learning and communicate with them or their parents effectively.
whether attended the course on assessment	Pearson Correlation	1	.301**	.254**	.194**	.174**	.191**	.170**	.141**	.182**
	Sig. (2-tailed)		<.001	<.001	<.001	.001	<.001	.002	.009	<.001
	N	337	337	337	337	337	337	337	337	337
whether participated in the relevant training program on assessment	Pearson Correlation	.301**	1	.672**	.669**	.428**	.347**	.389**	.405**	.384**
	Sig. (2-tailed)	<.001		<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N	337	337	337	337	337	337	337	337	337
whether participated in the research project on assessment	Pearson Correlation	.254**	.672**	1	.463**	.251**	.199**	.188**	.238**	.198**
	Sig. (2-tailed)	<.001	<.001		<.001	<.001	<.001	<.001	<.001	<.001
	N	337	337	337	337	337	337	337	337	337
whether read books on assessment in a self-learning manner	Pearson Correlation	.194**	.669**	.463**	1	.319**	.261**	.257**	.291**	.305**
	Sig. (2-tailed)	<.001	<.001	<.001		<.001	<.001	<.001	<.001	<.001
	N	337	337	337	337	337	337	337	337	337
I always analyze and summarize the key points and difficult points for a lesson and design corresponding assessment accordingly.	Pearson Correlation	.174**	.428**	.251**	.319**	1	.630**	.675**	.706**	.729**
	Sig. (2-tailed)	.001	<.001	<.001	<.001		<.001	<.001	<.001	<.001
	N	337	337	337	337	337	337	337	337	337
I always write some comments when assessing students' homework or assignments.	Pearson Correlation	.191**	.347**	.199**	.261**	.630**	1	.569**	.658**	.631**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001		<.001	<.001	<.001
	N	337	337	337	337	337	337	337	337	337
I can make rational judgement about students' learning according to my observation on their performance in class.	Pearson Correlation	.170**	.389**	.188**	.257**	.675**	.569**	1	.584**	.641**
	Sig. (2-tailed)	.002	<.001	<.001	<.001	<.001	<.001		<.001	<.001
	N	337	337	337	337	337	337	337	337	337
I always adjust my teaching according to the feedback of students' learning (such as their performation, homework, examination results).	Pearson Correlation	.141**	.405**	.238**	.291**	.706**	.658**	.584**	1	.683**
	Sig. (2-tailed)	.009	<.001	<.001	<.001	<.001	<.001	<.001		<.001
	N	337	337	337	337	337	337	337	337	337
When some students are lagging behind in learning, I am able to analyze their learning and communicate with them or their parents effectively.	Pearson Correlation	.182**	.384**	.198**	.305**	.729**	.631**	.641**	.683**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	
	N	337	337	337	337	337	337	337	337	337

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 7. The positive correlation between teachers' academic experience and their assessment competence

Correlations

		whether attended the course on assessment	whether participated in the relevant training program on assessment	whether participated in the research project on assessment	whether read books on assessment in a self-learning manner	In my opinion, the current assessment methods can not authentically reflect students' learning.	Compared to the standardized tests (such as the college entrance examination), the assessment I design will be able to better evaluate my students' learning.	I think it is reasonable to assess students' learning through scores or grades.	Compared to the assessment to students' basic knowledge, the assessment to their emotions, attitudes and values is hard to achieve.
whether attended the course on assessment	Pearson Correlation	1	.301**	.254**	.194**	.109*	.204**	.173**	.090
	Sig. (2-tailed)		<.001	<.001	<.001	.045	<.001	.001	.099
	N	337	337	337	337	337	337	337	337
whether participated in the relevant training program on assessment	Pearson Correlation	.301**	1	.672**	.669**	.371**	.436**	.436**	.360**
	Sig. (2-tailed)	<.001		<.001	<.001	<.001	<.001	<.001	<.001
	N	337	337	337	337	337	337	337	337
whether participated in the research project on assessment	Pearson Correlation	.254**	.672**	1	.463**	.217**	.297**	.255**	.227**
	Sig. (2-tailed)	<.001	<.001		<.001	<.001	<.001	<.001	<.001
	N	337	337	337	337	337	337	337	337
whether read books on assessment in a self-learning manner	Pearson Correlation	.194**	.669**	.463**	1	.277**	.282**	.277**	.217**
	Sig. (2-tailed)	<.001	<.001	<.001		<.001	<.001	<.001	<.001
	N	337	337	337	337	337	337	337	337
In my opinion, the current assessment methods can not authentically reflect students' learning.	Pearson Correlation	.109*	.371**	.217**	.277**	1	.597**	.663**	.576**
	Sig. (2-tailed)	.045	<.001	<.001	<.001		<.001	<.001	<.001
	N	337	337	337	337	337	337	337	337
Compared to the standardized tests (such as the college entrance examination), the assessment I design will be able to better evaluate my students' learning.	Pearson Correlation	.204**	.436**	.297**	.282**	.597**	1	.683**	.586**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001		<.001	<.001
	N	337	337	337	337	337	337	337	337
I think it is reasonable to assess students' learning through scores or grades.	Pearson Correlation	.173**	.436**	.255**	.277**	.663**	.683**	1	.642**
	Sig. (2-tailed)	.001	<.001	<.001	<.001	<.001	<.001		<.001
	N	337	337	337	337	337	337	337	337
Compared to the assessment to students' basic knowledge, the assessment to their emotions, attitudes and values is hard to achieve.	Pearson Correlation	.090	.360**	.227**	.217**	.576**	.586**	.642**	1
	Sig. (2-tailed)	.099	<.001	<.001	<.001	<.001	<.001	<.001	
	N	337	337	337	337	337	337	337	337

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Figure 8. The positive correlation between teachers' academic experience and their attitudes to assessment

6. Research Findings

The data analysis illustrates that a negative correlation exists between the academic qualifications that teachers hold and their assessment literacy. It may be due to the fact that teachers with master or doctoral degrees may focus mainly on the theoretical research on assessment while teachers with diploma or bachelor degrees are primarily concentrated on practical usage of assessment in their teaching. From this point of view, their practical teaching will bring them accumulative experience on assessment, thus contributing to the cultivation of their assessment literacy.

In addition, the level of the school that teachers are teaching also has a negative correlation with their assessment literacy. It is not surprising that students from primary schools are free from the pressure from examinations. Thus, teachers at this level will have more time to analyze different varieties of assessment approaches and adopt the one that is suitable to their students. The assessment approaches they adopt are variable, ranging from portfolios to performance assessment. They can also have more chance to develop their abilities to monitor their students' learning and adjust their teaching accordingly, which in turn will improve their assessment literacy. In contrast, students from secondary schools are facing the pressure of examinations, which makes the teachers at

this level primarily focus their attentions on standardized tests and examination. In this sense, they seldom adopt assessment approaches other than standardized tests or examinations. Therefore, it is not surprising that the level of their assessment literacy is no higher than that of the primary school teachers. Concerning university teachers, they pay less attention to assessment as it is hypothesized that students will learn and assess their progress by themselves.

No doubt that the academic experience teachers have will impose great influence on the level of their assessment literacy. According to the research, attending the course on assessment, participating in the relevant training program and research project, as well as reading books on assessment will all help improve teachers' assessment literacy.

7. Conclusion

The issue of teachers' assessment literacy has brought furious debate among scholars. Research has been made on its concept and framework. Chinese scholars have also conducted researches on the assessment literacy among teachers mainly from Chinese secondary schools. In order to expand the applicability of the framework on assessment literacy, this research aims to explore the level of assessment literacy among teachers at levels of Chinese schools, ranging from primary schools to universities. It also aims to explore the correlation between teachers' background information as well as their academic experience and the level of their assessment literacy.

The questionnaire on teachers' assessment literacy is constructed under the theoretical framework of educational assessment and the conceptual framework proposed by Dr. Zhao Xuejing. The data analysis indicates that the level of assessment literacy among Chinese teachers is medium in terms of their assessment awareness, assessment knowledge, assessment competence and their attitudes to assessment. Furthermore, it is found that the academic qualification teachers hold and the level of school they are teaching both have negative correlations with the level of assessment literacy, while the variables of teachers' academic experience have positive correlations. It is hypothesized that teachers hold higher degrees may focus their attention mainly on theoretical research and neglect the practical use of assessment in their teaching. This is the domain where educators should focus on. Moreover, the data analysis also shows that attending the course on assessment, participating in the relevant training program and research project, as well as reading books on assessment will help improve teachers' assessment literacy. This is what educators should advocate.

This research has a practical significance for teachers' training and development. Yet, it also has some limitations. First of all, the questionnaire is posted online for only two weeks and only 337 teachers responded. The time is short and the sample is small. The further studies can expand the time period for collecting data and advertise more teachers to respond to the issue. Secondly, the data are collected through questionnaire only. More research instruments, such as interviews and classroom observations, are advisable in further studies so that more authentic data can be collected.

It is no doubt that researches on teachers' assessment literacy will make invaluable contributions to the professional development of teachers and the improvement of education quality. Hope this research can make a certain contribution to the development of education cause.

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