

Appendix

Characteristics of the reviewed articles

Article code	Article Title	Authors and Publication year	Country	Study design	Study method	Participants	Data collection instrument	Results
1	English language teachers' research literacy test: Construction and validation	Anani Sarab & Aghazadeh (in press)	Iran	Cross-sectional	Quantitative (Descriptive)	In-service teachers	Language Research Literacy Test	The construct of research literacy includes three components: information literacy, data literacy, and evidence-based reasoning. The validation of the test showed that the proposed instrument could be used to assess English language teachers' research literacy.
2	Assessing statistical literacy level of postgraduate education research students in Malaysian research universities	Yusof et al. (2021)	Malaysia	Cross-sectional	Quantitative (Descriptive)	Postgraduate students	Research Literacy Test	The statistical literacy of graduate students was below average, and the most difficult item for students was answering hypothesis-testing items.
3	Master teachers: The constrained role of research literacy	Constable and Boyd (2021)	England	Longitudinal	Qualitative (Content analysis)	In-service teachers	Interviews	Although teachers value their research literacy gained through graduate studies, overall, they seem to benefit more from practical wisdom in the teaching process.
4	Action research journals: A window into how student teachers build research literacy	Yamin-Ali and Sambucharan (2021)	Trinidad and Tobago	Longitudinal	Qualitative (Content analysis)	Pre-service teachers	Teacher journals	Initially, teachers experienced emotions such as anxiety and fear of engaging in research. However, their research ability and self-confidence in relation to conducting research increased significantly after participating in an action-research project.
5	Research literacy in initial teacher education: Supporting the development of personal theories	Westbroek, Jongejan, et al. (2021)	The Netherlands	Cross-sectional	Quantitative (Experimental)	Pre-service teachers	Research Literacy Course Evaluation Questionnaire	Overall, teachers had positive views regarding the quality of the research literacy course and believed that the course had improved their research literacy.
6	Educational research literacy: Validation of a competency test based on cross-national comparisons	Groß Ophoff and Egger (2021)	Germany and Austria	Cross-sectional	Quantitative (Descriptive)	<i>Educational Sciences</i> students and pre-service teachers	Educational Research Literacy Test	The construct of research literacy includes three components: information literacy, statistical literacy, and evidence-based reasoning. The validation of the test showed that the instrument could be used to measure the research literacy of students in the field of <i>Educational Sciences</i> and teacher training in both Germany and Austria.
7	The impact of implementing critical appraisal on EFL teachers' data analysis knowledge	Zaker, et al. (2020)	Iran	Longitudinal	Quantitative (Experimental)	English language undergraduate students	Quantitative Research Literacy Questionnaire	Participation in the critical appraisal course had a significant impact on improving the teachers' data analysis knowledge (analysis and interpretation of quantitative data and examination of hypotheses through a set of computational processes).
8	Research literacy level of education Postgraduate research students using RASCH measurement model	Yusof et al. (2019b)	Malaysia	Cross-sectional	Quantitative (Descriptive)	Research Literacy Test	Postgraduate students	The level of overall research literacy, knowledge of research methodology, and statistical literacy of postgraduate students were below average, while their information literacy level was above average.

9	Development and validation of a quantitative research literacy questionnaire	Zaker and Nosratinia (2021)	Iran	Cross-sectional	Quantitative (Descriptive)	English language undergraduate students	Quantitative Research Literacy Questionnaire	The construct of quantitative research literacy includes four components: developing research topic knowledge, research design knowledge, procedural knowledge, and data analysis knowledge. The validation of the instrument showed that it could be used to assess English language undergraduate students' quantitative research literacy.
10	Teachers' conception and difficulties in doing Action research	Tindowen, et al. (2019)	Philippines	Cross-sectional	Mixed-methods (sequential)	In-service teachers	Teachers' Attitudes Toward Action Research Questionnaire and interviews	Teachers face some problems in conducting action research, especially in searching the literature, presenting, and publishing results, and data collection. The main challenges were teachers' heavy workloads, writing anxiety, lack of time, and insufficient knowledge in conducting action research.
11	The impact of implementing critical appraisal on EFL teachers' quantitative research literacy	Zaker, et al. (2019)	Iran	Longitudinal	Quantitative (Experimental)	English language undergraduate students	Quantitative Research Literacy Questionnaire	Participation in the critical appraisal course had a significant impact on improving all the aspects of teachers' quantitative research literacy.
12	Social-scientific research competency: Validation of test score interpretations for evaluative purposes in higher education	Gess, et al. (2018)	Germany	Cross-sectional	Quantitative (Descriptive)	Undergraduate students in <i>Social Sciences</i>	Research Competency Test	The students' research competency is somewhat similar among different disciplines of <i>Social Sciences</i> . At the same time, there are some differences among the students of different disciplines in terms of their quantitative and qualitative research skills.
13	The use of interviews and focus groups in teacher research	Xerri (2018)	Republic of Malta	Cross-sectional	Qualitative (Content analysis)	Pre-service teachers	Interviews and focus groups	Teachers' lack of knowledge about research methodology is an important obstacle in their efforts to find answers to educational problems.
14	Benefits and challenges of doing research: Experiences From Philippine public school teachers	Ulla (2018)	Philippines	Cross-sectional	Qualitative (Content analysis)	In-service teachers	Interviews	Teachers had a positive view of research because of personal motivations (e.g., pay raises or career advancement). Some challenges for teachers in conducting research are lack of financial support, heavy workloads, inadequate research skills, and lack of research resources.
15	Effects of different response formats in measuring educational research literacy	Schladitz, et al. (2017)	Germany	Cross-sectional	Quantitative (Experimental)	Students of <i>Educational Sciences</i>	Educational Research Literacy Test	In the domain of educational research literacy, there was no clear advantage in terms of the difficulty of one answer format over another, and both multiple-choice and free-response question formats could be used in research competency tests.
16	The utility value of research evidence for educational practice from the perspective of pre-service student teachers in Austria: A qualitative exploratory study	Haberfellner and Fenzl (2017)	Austria	Cross-sectional	Qualitative (Content analysis)	Pre-service teachers	Interviews	When assessing the importance of research studies for teaching and addressing the conceptual and instrumental value of research evidence to improve their teaching performance, teachers rely heavily on education-based resources (e.g., theses).
17	How pre-service teachers internalize the link between research literacy and pedagogy	Gutman & Genser (2017)	Jerusalem	Cross-sectional	Mixed-methods (Sequential)	Pre-service teachers	Research Literacy Inventory	Participation in the learning community had a significant short-term effect on the growth of all dimensions of teachers' research literacy and also had a

								significant long-term effect on the growth of two dimensions of research literacy (i.e., identifying existing educational problems and formulating appropriate research questions).
18	Differences in research literacy in <i>Educational Sciences</i> depending on study program and university	Groß Ophoff, Schladitz, and Wirtz (2017)	Germany	Cross-sectional	Quantitative (Descriptive)	<i>Educational Sciences</i> students	Educational Research Literacy Test	In terms of research literacy levels, students seemed to profit from their studies at different universities. Moreover, the competence facets of research literacy differentiated to some extent between universities and degree programs.
19	Assessment of educational research literacy in Higher education: Construct validation of the factorial structure of an assessment instrument comparing different treatments of omitted responses	Groß Ophoff, Wolf, et al. (2017)	Germany	Cross-sectional	Quantitative (Descriptive)	<i>Educational Sciences</i> students	Educational Research Literacy Test	The construct of research literacy includes three components: information literacy, statistical literacy, and evidence-based reasoning. The validation of the test showed that it could be used to assess the research literacy of students in the field of <i>Educational Sciences</i> .
20	Domain-specificity of research competencies in the <i>Social Sciences</i> : Evidence from differential item functioning	Gess, et al (2017)	Germany	Cross-sectional	Quantitative (Descriptive)	<i>Social Sciences</i> undergraduate students	Research Competency Test	In general, research competencies were found to be similar in different disciplines of <i>Social Sciences</i> . However, there were some differences in terms of the students' skills in quantitative and qualitative research methods.
21	Measuring teacher educators' researcherly disposition: Item development and scale construction	Tack and Vanderlinde (2016)	Belgium	Cross-sectional	Quantitative (Descriptive)	Teacher educators	Teacher Educators' Researcherly Disposition Scale	Teacher educators with more research and teaching experience obtained higher scores in all dimensions of Researcherly Disposition (i.e., valuing research, being a smart consumer of research, being able to conduct research, and conducting research).
22	Assessing the development of educational research literacy: The effect of courses on research methods in studies of <i>Educational Sciences</i>	Groß Ophoff, et al. (2015)	Germany	Longitudinal	Quantitative (Descriptive)	<i>Educational Sciences</i> students	Educational Research Literacy Test	Participation in the research methodology course had a significant impact on the development of all aspects of research literacy (i.e., information literacy, statistical literacy, and evidence-based reasoning) of <i>Educational Sciences</i> students
23	Tensions in teachers' conceptions of research: Insights from college English teaching in China	Liu and Borg (2014)	China	Cross-sectional	Qualitative (Content analysis)	In-service teachers	Interviews	There are several tensions in the teachers' views concerning conducting research, which include: conducting research to publish articles or educational development, conducting theoretical or practical research, conducting research according to quantitative or qualitative approaches, and having internal or external motivations for conducting research.
24	Research in higher professional education	Griffoen (2013)	The Netherlands	Cross-sectional	Qualitative (Content analysis)	-	Document analysis	The review and analysis of the documents of the Ministry of Science showed that research in higher professional education is expected to facilitate the development of a) knowledge, b) education, c) professors, and d) external orientation.
25	Teacher research in secondary education: Effects on teachers'	Meijer, et al. (2013)	The Netherlands	Longitudinal	Qualitative (Content analysis)	In-service teachers	Interviews	The study's results indicated evidence of professional development, mainly at the level of teachers and to a lesser

	professional and school development, and issues of quality								extent at the school level. After engaging in research, the teachers' awareness, knowledge, and skills in conducting research improved, and teachers adopted a more critical attitude towards reviewing their performance and solving educational problems.
26	Chinese college English teachers' research engagement	Borg and Liu (2013)	China	Cross-sectional	Mixed-methods (Sequential)	In-service teachers	Teachers' Views on Research Engagement Questionnaire and interviews		Although teachers were expected to be active in conducting research, their research engagement was at an average level. The support that teachers received from their institutions to facilitate research engagement was not enough, and a wide range of personal, interpersonal, and institutional factors affected their research engagement.
27	University teacher educators' research engagement: Perspectives from Saudi Arabia	Borg and Alshumaimeri (2012)	Saudi Arabia	Cross-sectional	Quantitative (Descriptive)	Teacher educators	Teachers' Views on Research Engagement Questionnaire and interviews		Teacher educators' research engagement was at an average level. They also had a technical view of research, and their evaluation of their institutional context's research culture revealed a significant gap between the research productivity expected from them and the support they received from their institutions.
28	Evaluating the research competencies of doctoral students	Ismail and Meerah (2012)	Malaysia	Cross-sectional	Quantitative (Descriptive)	Ph.D. students	Research Skills Questionnaire		There was no significant difference between doctoral students studying in Malaysian universities and those studying abroad regarding their research skills. The research skills of both groups were at an average level.
29	Like looking through a magnifying glass	Harel and Sela (2011)	Jerusalem	Longitudinal	Qualitative (Content analysis)	In-service teachers	Teacher journals		After engaging in research on teacher-selected topics (related to teaching), the teachers reported that they gained a better perspective on both the use of research studies' results and the research process itself.
30	Developing an instrument to measure research skills	Meerah, et al. (2011)	Malaysia	Cross-sectional	Quantitative (Descriptive)	Ph.D. students	Research Skills Questionnaire		The construct of research literacy includes five components: research capacity, reflection skills, problem-solving skills, communication skills, and research methodology skills. Validation of the instrument showed that it could be used to measure doctoral students' research skills.
31	Experiences of a research-based approach to teacher education: Suggestions for future policies	Toom et al. (2010)	Finland	Cross-sectional	Mixed-methods (Sequential)	Pre-service and in-service teachers	Questionnaire of Teachers' Views on The Research-Oriented Approach and Interviews		Teachers had positive views regarding the research-oriented approach in education and believed that relying on this approach effectively responded to their educational needs.
32	Mentoring undergraduates in their research proposal writing: EFL students in Taiwan.	Kuo and Chiu (2009)	Taiwan	Cross-sectional	Qualitative (Content analysis)	English language undergraduate students	Interviews		Students had different views and experiences about research. They needed more training and guidance in areas such as narrowing down the research topic, writing research questions, writing the literature review in English, and choosing the correct research methods.

33	English language teachers' conceptions of research	Borg (2009)	England	Cross-sectional	Mixed-methods (Sequential)	In-service teachers	Questionnaire of Teachers' Views on The Research-Oriented Approach and interviews	Teachers considered the general concept of research to be the same as scientific research. Teachers' engagement in reading research studies and conducting research was below average. Lack of time, insufficient knowledge, and lack of access to materials were identified as factors preventing their research engagement.
34	The process of finding a shape: Stabilizing new research Structures in Swedish teacher education, 2000-2007	Arreman (2008)	Sweden	Cross-sectional	Qualitative (Content analysis)	Teacher educators and senior managers	Interviews	The inclusion of research in teacher education has effectively provided a suitable environment for the professional development of teachers and teacher educators and created a spirit of questioning and critical thinking in the research culture.
35	Evidence-based practice in teaching: An information perspective	Williams and Coles (2007)	England	Cross-sectional	Mixed-methods (Sequential)	In-service teachers	Questionnaire of Teachers' Views on the Research-Oriented Approach and interviews	Teachers used informal sources to find answers to educational problems more than the results of research studies. The lack of quick access to information, lack of time, and insufficient knowledge and skills of teachers in finding and evaluating research studies were mentioned as the main obstacles to using research-based evidence.
36	Research engagement in English language teaching	Borg (2007)	England	Cross-sectional	Quantitative (Descriptive)	In-service teachers	Questionnaire of Teachers' Views on the Research-Oriented Approach	The teachers' main motivation for engaging in research was to find answers to educational problems, and external factors such as managers' expectations or promotions played a lesser role. Attitudinal, conceptual, procedural, and institutional barriers also hindered teachers' research engagement.