Eurasian Journal of Educational Research 99 (2022) 268-280

Eurasian Journal of Educational Research
www.ejer.com.tr

Portfolio Assessment Based on Innovative Mathematics Learning in Elementary School

Darmiyati[1]

ARTICLE INFO

Article History:
Received: 05 January 2022
Received in revised form: 07 April 2022
Accepted: 07 May 2022
DOI: 10.14689/ejer.2022.99.016

Keywords
Portfolio assessment, learning outcomes, mathematics, elementary school, teaching methods.

ABSTRACT

Purpose The purpose of this study is the development of portfolio assessment handbook to promote the standard of mathematics learning results in Indonesia. **Design / methodology / approach** The current study adopted a mixed methods approach in which both quantitative method and qualitative method is considered. For qualitative purpose, data collection is carried out by using interviews and survey is carried out to collect quantitative data. The current study is carried among the elementary schools of South Kalimantan, Indonesia. Additionally, purposive random sampling is employed to collect the data from primary school teachers. **Findings** The results of the study demonstrated that the internal expert and practitioner as part of the evaluation and enhancement of the test cycle is most significant for developing the learning assessment tool. Furthermore, portfolio evaluation is a novel learning tool developed for primary mathematics learning activity which is most significant to use based on the results of internal and external tests. **Practical implications** Findings of the study offer important insights for educationalists, practitioners, and administrative authorities to design special lesson plans and evaluation methods for educational institutions. The results of the study are valuable for practitioners to improve learning and gauge the capacities of students. **Originality/value** This study has significant contribution to the body of knowledge. Especially, the development of portfolio assessment handbook has valuable addition to the literature. In rare case, any study developed the portfolio assessment handbook.

[1] Faculty of Teacher Training, and Education, Universitas Lambung Mangkurat, Banjarmasin, Indonesia.
Email: darmiyati@ulm.ac.id, ORCID ID: https://orcid.org/0000-0003-2160-3065

1. Introduction

The scientific method of teaching and learning prevalent in the twenty-first century encourages students to think critically, creatively, logically, and independently (Panggabean et al., 2021). It enables them to cooperate and be adaptable, consistent, and respectful (Hujjatusnaini et al., 2022). Because it can lead life to evolve following aspirations, education is a necessity of human life that must be satisfied and attained as a life goal (Purnama et al., 2021). Education impacts students' learning outcomes by influencing the future calibre of a nation's human resources (Xu, Zhang, & Zhou, 2022). Education has three essential components. For instance, the first is that educational goals are elaborated in the curriculum and used as the foundation for learning and teaching programs. Second, the teachers want to use teaching and learning to accomplish the curriculum and assessment objectives. Thirdly, an evaluation procedure is used to evaluate the curriculum's degree of achievement and the effectiveness of the learning and teaching process (Helda & Syahrani, 2022).

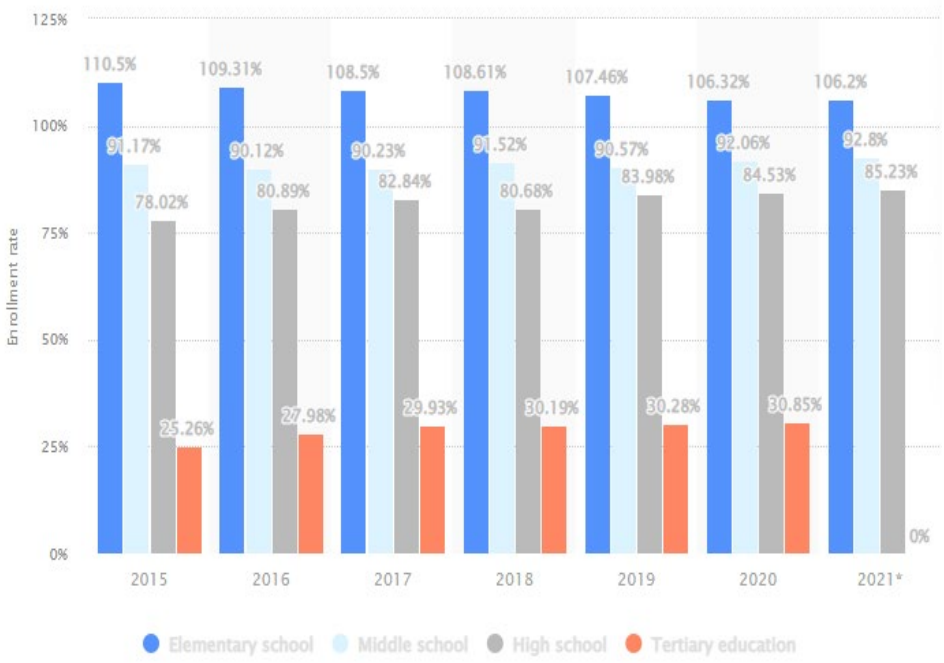

Figure 1. *The enrollment rate in Indonesia from 2015 to 2021 by education level*
Source: Statista Research Department

Assessments are crucial to determining the degree of learning in the classroom and the application of the curriculum (Simanjuntak et al., 2022). Assessment is used to determine students' levels of learning; as a result, it is crucial to the learning process (Colbert & Bierer, 2022). Therefore, the primary goal of the current study is to design and evaluate the viability of the portfolio evaluation instrument product in Indonesian elementary schools for teaching mathematics. In Indonesia, elementary school is a formal institution that all

pupils must attend (Sondakh et al., 2022). According to research, learning and assessment in elementary schools must consider the pupils' age (Tabroni, Nasihah, & Bahijah, 2021).

The current study has also been carried out to provide a novel evaluation method to evaluate Mathematics pupils. One of the skills that students are expected to have from early infancy through secondary and postsecondary school levels is mathematics (Chamberlin & Schultz, 2021). Students in primary school are required to have a basic understanding of mathematics, but they frequently struggle, particularly when it comes to problem-solving (Junaidi & Miralam, 2020). Students learn mathematics in elementary school to develop their understanding of mathematical concepts and the relationships between concepts, their ability to apply concepts, their ability to use reasoning when applying mathematics generally, their ability to design and explain mathematical ideas and statements, and their capacity to solve problems encountered in daily life (Wilson, McChesney, & Brown, 2017). In addition, mathematics is a science that investigates various phenomena to assist people in comprehending and controlling social, economic, and environmental issues (Marbán et al., 2021). From elementary school to higher education, mathematics is a required subject. Students who study mathematics must be organized, logical, analytical, creative, and critical thinkers who can solve problems not only in mathematics but also in other branches of science relevant to daily life (Robert & Owan, 2019).

Developing a portfolio assessment handbook is the goal of this work to raise the standard of mathematics learning results. Because no other study has been done in this field of literature, this study is based on a novel idea. The work is important because it has contributed new methods for teaching mathematics at the elementary school level to theory and practice. The study's conclusions are consistent with its goal, which is to provide a manual for portfolio evaluation. Based on its findings, this work has substantially contributed to the body of knowledge. Based on its reliability, validity, and efficacy, the portfolio evaluation innovative learning implementation plan product created by this study for a basic mathematics learning activity is practical. Additionally, this study has directions for future work in other literary fields.

2. Literature Review

Assessment is a broad phrase that refers to methods used to gather data on student learning (observation, average written test administration) and assessment of learning progress (Mutch-Jones, Hicks, & Sorge, 2022). It is a method of monitoring, capturing, and documenting children's behavior and behaviors as the foundation for educational decisions (Hartono et al., 2022). Researchers have emphasized the value of evaluation in determining the obligations and duties of teachers to advance and enhance students' abilities (Suwarma & Apriyani, 2022). Additionally, the assessment of learning outcomes emphasizes higher-order thinking skills (HOTS), where an evaluation is conducted to track students' advancement, knowledge, skill, and attitude in a particular subject to raise educational standards (Hamzah, Hamzah, & Zulkifli, 2022).

A portfolio assessment is one sort of evaluation that teachers can implement as part of learning activities to aid students in learning activities (Arumugham, 2019). A portfolio assessment gauges students' capacity for a task or piece of work, and the teacher then provides formative and summative feedback on the student's performance (Lam, 2020). The portfolio assessment's goal, content, format and classroom observation show how the

portfolio functions as an assessment instrument (Is'haq Salim Al-Naibi, Al-Hatali, & Al-Hadhrami, 2019). While tests, organized assignments, daily behavior logs, and reports on extracurricular activities are among the portfolio assessment indicators (Arumugham, 2019). In addition, students' work is systematically assessed through portfolios, which are collections of works, evaluations, and reflections on specific competencies acquired throughout the learning process (Lam, 2020).

The government uses student learning outcomes as the foundation for formulating education policy. Therefore assessment of learning outcomes strives to assess procedures, learning development, impediments, and continual improvement of student learning outcomes (Purnama et al., 2021). Additionally, information regarding students' procedures and learning results is gathered, reported, and used in the portfolio assessment (Cronenberg, 2022). Although there are many opportunities for students to demonstrate what they have learned and mastered throughout the learning process with this portfolio evaluation, teachers still use it very infrequently (Tang, 2022) In education, portfolios are collections of the results of students' learning over time (Purnama et al., 2021). The works are organized according to the categories of student activities chosen and evaluated to describe the growth of students' competencies or abilities (Syzdykova et al., 2021). Portfolio assessment, also known as continuous assessment, is based on works demonstrating how a student's skills have changed over time (Rahimi, Ghonsooly, & Rezai, 2021).

Despite the portfolio assessment's extreme importance, it is still less common among teachers, and its implementation is still not ideal (Ikawati et al., 2022). Similarly, the phases of carrying out this portfolio assessment continue to run improperly (Punyapratheep & Wudthayagorn, 2022). For educational institutions to effectively use students' increased learning, it is crucial to establish and implement a portfolio assessment innovative learning implementation plan. Additionally, instruction must consider how each student learns to develop a preferred learning style. Further, the constructivism theory demonstrates how educators and students work together to create individual and social knowledge (Mohammed & Kinyó, 2022). According to this notion, learning occurs when students can actively build their knowledge (Archambault, Leary, & Rice, 2022). This idea helps a teacher create learning and evaluation assignments that call for active participation from pupils (Dale et al., 2022). Therefore, it's crucial to consider this constructivist approach while creating and successfully implementing a consolidated portfolio assessment instrument.

Researchers also identified five key benefits of learning mathematics, including 1) boosting awareness, 2) fostering creativity, 3) generalizing knowledge and recognizing relationships, 4) resolving issues in daily life, and 5) using mathematics as a tool for rational and clear thinking (Slicker et al., 2021). The surgeons emphasized mathematical education's value in resolving daily life challenges. However, this shows that students' actions in response to mathematical difficulties don't just show that they can be more careful with their calculations; they also suggest that they can solve significant problems crucial to everyday life and invoke the world (Robert & Owan, 2019). To attain the intended learning outcomes, it is important to pay close attention when presenting mathematical concepts orally and in writing using symbols, tables, diagrams or other media (Nofrianto et al., 2022). However, due to students' preconceptions that mathematics is a challenging subject, it has always been a terrifying phantom for students in Indonesia (Sari & El Islami, 2022).

The reality on the ground demonstrates that math learning achievement among kids is quite low compared to other courses. Regarding mathematical aptitude, Indonesia ranks at the bottom of the globe. This is demonstrated by the SMP Mathematics EBTNAS result, which is 2018-2019 averaged 44.8. (Tambunan et al., 2021). Fourth-grade elementary school pupils in the TIMS (Third International Mathematics and Science Study) study were rated 44th out of 49 nations in 2015 with an average score of 397, while the global average score was 500. (Purwasi, 2019). Therefore, it is crucial to develop and apply portfolio assessment techniques in elementary schools for kids taking mathematics as their main course. Based on these specifications, the current project seeks to create a portfolio evaluation tool for mathematics learning in the Indonesian primary school by offering tests and non-tests.

3. Method and Data Analysis

3.1 Research Design

A development model based on research and development (R&D) was used in the current investigation (Arumugham, 2019). The following processes have been changed: (1) potential issues, (2) product design, (3) internal testing (by experts and practitioners) and design modifications, (4) product manufacture, (5) small-scale trials and revisions, and (6) significant field trials and revisions. Additionally, the design of this study investigated the viability of the portfolio assessment instrument product in mathematics learning, which instrument experts had previously validated, evaluation experts, and mathematicians following the recommendations made by Syzdykova et al. (2021).

3.2 Validity of the Instrument

The five components of the portfolio assessment tool are categorized as (1) Less relevant, (2) Quite relevant, (3) Relevant, and (4) Very Relevant. Educational tool (RPP) Six components, with 20 statement items created from the criteria. Educators say that the criteria—very poor, poor, good, and very good—have been met. Professionals validated the instrument before the first modification was made. Following validation, the product underwent restricted testing, a second revision was implemented in field trials, and a third change was made.

3.3 Data Collection Process

A mixed method approach (interviews time quantitative observation) during and after the experiment was adopted to conduct the test. A pre-test was conducted to accomplish activities before the main trial, followed by treatment and post-test. Applying the formula, i.e., **O1 X O2,** the values obtained before and after treatment were compared.

3.4 Study Sample and Sampling Technique

In South Kalimantan, Indonesia, elementary schools, this study was carried out in 2021–2022. 40 primary school teachers were included in the research sample using a purposive random sampling technique. Using questionnaires, interviews, and documentation, data-gathering procedures examine affective, cognitive, and psychomotor elements. The study's tools included tests and non-tests that were given to educators to explore their understanding of the assessment materials. The non-test was used to determine whether or not the learning portfolio assessment tool was utilized.

3.5 Data Analysis

Both qualitative and quantitative methodologies were used in the data analysis process. Quantitative data studies the outcome of the design of the learning device instrument, while qualitative data examines the instrument to determine the product's viability. Aiken's V test (Aiken, 2009) was utilized for internal data analysis on the portfolio evaluation instrument's validity test. The KR 20 alpha Cronbach test was employed for the questionnaire-based instrument's reliability test (Foster, 2021).

4. Result and Discussion

The difficulty primary school teachers have administering learning assessments, particularly portfolio exams serves as the starting point of this study. Typically, educators evaluate the cognitive component, after which a literature review is done to find references about portfolio evaluation.

4.1 Product Test Result Data Validity and Reliability of Expert and Practitioner

The validity exam gives professionals and practitioners who teach mathematics a portfolio assessment tool. After analyzing Aiken's V method, the content validity and reliability were determined using the alpha Cronbach KR 20 formula. Tables 1 and 2 display the findings of the validation analysis conducted by instrument specialists and practitioners.

Table1

Result of Expert Validation Analysis (instrument expert)

No	Rated aspect	Expert			Criteria
		∑s	n(c-1)	V	
1	The suitability of the instrument design with the conceptual portfolio assessment	13	15	0.86	Proper to use
2	Compatibility of KD and indicator with learning material comprehensively	13	15	0.86	Proper to use
3	Appropriateness of assessment technique and rubric	14	15	0.93	Proper to use
4	The suitability of instrument design with higher order thinking HOTS	14	15	0.93	Proper to use
5	Appropriateness of the language used	14	15	0.93	Proper to use

Table 2

Practitioner Validation Analysis Result

No	Rated aspect	Practitioner			Criteria
		∑s	n(c-1)	V	
1	The suitability of the instrument design with the conceptual portfolio assessment	13	15	0.86	Proper to use
2	Compatibility of KD and indicator with learning material comprehensively	14	15	0.93	Proper to use
3	Appropriateness of assessment technique and rubric	13	15	0.86	Proper to use
4	The suitability of instrument design with higher-order thinking skills HOTS	13	15	0.86	Proper to use
5	Appropriateness of the language used	13	15	0.86	Proper to use

The outcome covers the five components used to calculate the reliability of experts and practitioners. All have been deemed practical for use. When experts and practitioners recapitulate internal test assessment data on portfolio assessment tools, the instrument has met the requirements for high validity when the agreement index is above 0.8. Before conducting empirical testing of the constructed learning device instrument, it is crucial to conduct an expert evaluation (Meng et al., 2021). In addition, assessment and validation by influential panellists are required to make sure the instrument can achieve its goals (Adillah, Ridwan, & Rahayu, 2022). Expert dependability results came up with a highly reliable value of 0.711. Practitioners successfully attained a value of 0.70. Researchers found that items with low correlation should be revised or removed if the Cronbach Alpha reliability is less than 0.70 (ri 0.70). (Mansoor, 2021). According to the calculation of the instrument's reliability based on the evaluation of experts and practitioners, it does not require revision because it has a high level of dependability.

4.2 Assessment of Internal test of Expert and Practitioner on RPP Product Developed

Assessment of students' performance in educational institutions is made easier by creating the Learning Equipment Learning Implementation Plan (RPP) (Masding et al., 2021). Six objectives are included in the effectiveness of the lesson plans: learning objectives, learning materials, learning strategies, learning media selection, selection of learning resources, and learning evaluation (Sunaryo, Nasbey, & Amelia, 2021). The standardized evaluation rubric used in the teacher education program (PPG) is also referenced during internal expert, and practitioner tests on the innovative learning implementation plan product conducted simultaneously (Loeneto et al., 2022). The minimal standard of an average score of 70 assessors is used in interpreting internal tests from experts and practitioners on the innovative learning implementation plan product generated. Additionally, Table 3 provides the tool for evaluating the effectiveness of the lesson plan.

Table 3.

The instrument for assessing the performance of the lesson plan.

Aspect of assessment	Item Statement /item	Expert	Practitioner
1. Learning objective	a. Conformity of objective with basic competence (KD) and indicator to be achieved	41	41
	b. The objective formulation includes the ABCD component (Audience, Behavior, Condition, Degree), using the right operational verbs	41	39
	c. Formulation of objective for implementing HOTS (Higher Order Thinking Skills)	39	39
2. Learning material	a. Designing learning material under KD and indicators based on TPACK (Technological, Pedagogical, Content Knowledge)	39	41
	b. Compile learning materials comprehensively	39	38
	c. Designing learning materials cohesively and sequentially logically	40	40
	d. Designing learning materials that are relevant to real-life conditions and oriented to the 21st century	39	40
	e. Designing Student Worksheet (LKPD) according to indicators and learning materials	39	39

Aspect of assessment	Item Statement /item	Expert	Practitioner
3. Learning strategy	a. Determine a learning model and design strategy that adapt the TPACK approach	39	39
	b. Designing 21st-century skill-based learning strategy. 21st-century skills: critical thinking, creative, collaborative, and communicative.	40	41
	c. Designing innovative learning scenarios using the approach, model, and method that are under learning objectives	39	39
	d. Designing a creative learning scenario that is meaningful and fun	40	40
4. Selection of learning media	a. Utilizing ICT with multiple modes to design learning media	39	40
	b. Using concrete media/real objects in learning	41	41
	c. Designing the use of learning media to train attitude and skill	39	41
5. Selection of learning material and resource	a. Utilize interesting real-life events or problems as a learning resource	39	41
	b. Utilize learning resources via the internet/online sources	39	41
6. Learning evaluation	a. Designing evaluation that is under learning indicators, which include the aspect of attitude, knowledge, and skill	39	40
	b. Designing authentic evaluation	40	41
	c. Develop HOTS evaluation instrument	39	41
Average Number of Practitioners and Experts Assessment		79	80.2

The average total score for the five specialists got 79, as shown in Table 3, whereas the average score for practitioners was 80.2. The design of newly created creative learning tools has satisfied the standards, namely good. Thus this tool can be used in elementary schools (Nurbait & Bastian, 2021). The outcome of this study supports (Santoso, 2018) findings, demonstrating how creative learning can enhance student learning outcomes. Masding et al. (2021) created a learning tool that showed reliable validation findings. The requirements for learning tools are quite practical regarding how learning is put into practice and successful learning tools in the ability to think creatively.

5. Conclusion

Assessment is done to gauge the level of learning in the classrooms, the execution of the curriculum, and student learning successes. As a result, evaluation is crucial to the learning process (Colbert & Bierer, 2022). Therefore, the primary objective of the current study is to create and evaluate the viability of a portfolio evaluation innovative learning implementation plan for mathematics learning activities in Indonesian elementary schools. In Indonesia, elementary school is formally held, attended by all pupils, and evaluations are required based on the children's age features (Tabroni et al., 2021). Assessment is also a process for learning about student learning (observation, average written exam implementation) and a way to measure learning progress. Through assessment processes, teachers observe, record, and document the students' behaviour (Amka & Dalle, 2021; Mutch-Jones et al., 2022). Additionally, portfolio evaluations gauge students' aptitude for a task or piece of work, which is a crucial kind of evaluation.

Therefore, the current study's goal is to create and evaluate a model for learning assessment. The new learning assessment tool was simultaneously developed and put to the test using a scientific methodology. The portfolio evaluation (cognitive, affective, and psychomotor) is also included with notes on student behavior, student self-assessment with an assessment rubric, and a cooperative model. It also consists of the character value. This strategy for enhancing students' competency through applying a scientific strategy and portfolio assessment is consistent with Syzdykova et al. (2021) and Lam (2020). Masding et al. (2021) and Sunaryo et al. (2021) were tested via three processes, including an internal test, a limited trial, and the third main test, before employing this cutting-edge learning assessment tool and device.

It can be concluded that the portfolio evaluation novel learning tool developed for primary mathematics learning activity is practical to use based on its reliability, validity, and effectiveness based on the results of internal and external tests, followed by multiple stages of refinement. According to the findings, the fundamental goal of portfolio assessment is to help students become more independent and responsible for their own learning, including making decisions, taking part in the evaluation of their work, and being active learners. The most recent curriculum should include three types of learning assessments: one for skill (performance, project, product, and portfolio), one for knowledge (written test, observation, and assignment), and one for attitude (observation, self-assessment, and diary). Learning must also be fostered to improve pupils' proficiency with the offered mathematical information.

6. Implications

This study adds to the body of knowledge by having important theoretical ramifications. The study provided a theoretical framework for evaluation tools to help educational institutions better evaluate students' learning and talents. This program is being offered for Indonesian elementary school pupils because it wasn't covered in the earlier research. This study's contribution to the corpus of knowledge indicates the important significance for enhancing the comprehension of upcoming researchers. The assessment guidelines created by this study are an original concept that wasn't covered by earlier investigations.

These findings also offer insightful recommendations for educationalists, practitioners, and administrative authorities to design special lesson plans and evaluation methods for educational institutions to improve learning and gauge the capacities of students. Additionally, according to the class levels and learning objectives, the findings of the primary school's observation using portfolio assessment should be shown on the classroom wall with maps. In addition, one of the measures of educational achievement is the assessment process, which is a critical part of the learning process. As a result, educational institutions ought to use it in a useful and efficient way. To achieve excellent education, creating a good learning evaluation system and a high-quality learning curriculum is necessary.

7. Future Directions

Developing a portfolio assessment handbook is the goal of this work to raise the standard of mathematics learning results. The results show that the study's objective was accomplished. Indeed, there are significant shortcomings in this study that need to be addressed in future work. Future studies should be based on primary data to determine

how students feel about using novel learning methodologies. Second, because high school kids also require special assistance for the learning, they may be included as a sample in future studies. Thirdly, future studies should examine the influence of students' assessment guides on their learning development.

References

Adillah, G., Ridwan, A., & Rahayu, W. (2022). Content Validation through Expert Judgement of an Instrument on the Self-Assessment of Mathematics Education Student Competency. *International Journal of Multicultural and Multireligious Understanding, 9*(3), 780-790. https://doi.org/10.18415/ijmmu.v9i3.3738

Aiken, L. R. (2009). *Psychological Testing and Assessment*. Pearson Education. https://books.google.com.pk/books?id=Hj5NuHCww3sC

Amka, A., & Dalle, J. (2021). The Satisfaction of the Special Need'Students with E-Learning Experience During COVID-19 Pandemic: A Case of Educational Institutions in Indonesia. *Contemporary Educational Technology, 14*(1), ep334. https://doi.org/10.30935/cedtech/11371

Archambault, L., Leary, H., & Rice, K. (2022). Pillars of online pedagogy: A framework for teaching in online learning environments. *Educational Psychologist, 57*(3), 178-191. https://doi.org/10.1080/00461520.2022.2051513

Arumugham, K. S. (2019). Teachers'understanding Towards Portfolio Assessment: A Case Study Among Malaysian Primary School Teachers. *Problems of Education in the 21st Century, 77*(6), 695-704. https://www.ceeol.com/search/article-detail?id=940656

Chamberlin, S. A., & Schultz, C. B. (2021). Secondary Mathematics for High–Ability Students. In *The handbook of secondary gifted education* (pp. 417-438). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9781003238829-19

Colbert, C. Y., & Bierer, S. B. (2022). The Importance of Professional Development in a Programmatic Assessment System: One Medical School's Experience. *Education Sciences, 12*(3), 220. https://doi.org/10.3390/educsci12030220

Cronenberg, S. (2022). Is the edTPA a portfolio assessment?: Applying academic language in teacher education. *Arts Education Policy Review, 123*(2), 70-83. https://doi.org/10.1080/10632913.2020.1793250

Dale, C. M., Cioffi, I., Murphy, L., Langlois, S., Musa, R., & Stevens, B. (2022). Ten-year mixed-method evaluation of prelicensure health professional student self-reported learning in an interfaculty pain curriculum. *Pain Reports, 7*(5), e1030. https://doi.org/10.1097/PR9.0000000000001030

Foster, R. C. (2021). Kr20 and kr21 for some nondichotomous data (it's not just cronbach's alpha). *Educational and Psychological Measurement, 81*(6), 1172-1202. https://doi.org/10.1177/0013164421992535

Hamzah, H., Hamzah, M. I., & Zulkifli, H. (2022). Systematic Literature Review on the Elements of Metacognition-Based Higher Order Thinking Skills (HOTS) Teaching and Learning Modules. *Sustainability, 14*(2), 813. https://doi.org/10.3390/su14020813

Hartono, H., Putri, R. I. I., Inderawati, R., & Ariska, M. (2022). The strategy of Science Learning in Curriculum 2013 to Increase the Value of Science's Program for International Student Assessment (PISA). *Jurnal Penelitian Pendidikan IPA, 8*(1), 79-85. https://doi.org/10.29303/jppipa.v8i1.1185

Helda, H., & Syahrani, S. (2022). National Standards of Education in Contents Standards and Education Process Standards in Indonesia. *Indonesian Journal of Education (INJOE), 3*(2), 257-269. https://doi.org/10.54443/injoe.v3i2.32

Hujjatusnaini, N., Corebima, A., Prawiro, S., & Gofur, A. (2022). The Effect of Blended Project-based Learning Integrated with 21st-Century Skills on Pre-Service Biology Teachers' Higher-order Thinking Skills. *Jurnal Pendidikan IPA Indonesia, 11*(1), 104-118. https://doi.org/10.15294/jpii.v11i1.27148

Ikawati, I., Lestari, I. D., Ratnasari, D., & Sari, I. J. (2022). Development of Portfolio Assessment Instruments Based on Scientific Literacy on the Archaebacteria and Eubacteria Concepts. *International Journal of Biology Education Towards Sustainable Development, 2*(1), 34-43. https://doi.org/10.53889/ijbetsd.v2i1.130

Is'haq Salim Al-Naibi, N., Al-Hatali, R., & Al-Hadhrami, M. A. (2019). EFL Teachers and Students Raising Their Eyebrows Over Portfolio Assessment in Language Classrooms. *English Language Teaching, 12*(10). https://pdfs.semanticscholar.org/0142/b574ae6293dbf3a8b6d61c6e5ca9260d95a0.pdf

Junaidi, M. H., & Miralam, M. S. (2020). Online buying behavior among university students: A cross cultural empirical analysis. *Journal of Information Technology Management, 12*(2), 26-39. https://jitm.ut.ac.ir/article_75789_02f5e55365797da890320d0d8cb5f8ac.pdf

Lam, R. (2020). Writing portfolio assessment in practice: individual, institutional, and systemic issues. *Pedagogies: An International Journal, 15*(3), 169-182. https://doi.org/10.1080/1554480X.2019.1696197

Loeneto, B. A., Alwi, Z., Ernalida, E., Eryansyah, E., & Oktarina, S. (2022). Teacher Education Research and Development in Indonesia: Preparing Educators for the Twenty-First Century. In *Handbook of Research on Teacher Education* (pp. 173-204). Springer. https://doi.org/10.1007/978-981-16-9785-2_10

Mansoor, M. (2021). Citizens' trust in government as a function of good governance and government agency's provision of quality information on social media during COVID-19. *Government Information Quarterly, 38*(4), 101597. https://doi.org/10.1016/j.giq.2021.101597

Marbán, J. M., Radwan, E., Radwan, A., & Radwan, W. (2021). Primary and secondary students' usage of digital platforms for mathematics learning during the COVID-19 outbreak: the case of the gaza strip. *Mathematics, 9*(2), 110. https://doi.org/10.3390/math9020110

Masding, M., Ahmad, A., Anshari, A., & Gani, H. A. (2021). Development of Learning Equipment Learning Implementation Plan (RPP) Integration of Character Education in Pancasila and Citizenship Education Subjects (PPKN) at Smp Negeri 20 Makassar. *Asian Journal of Applied Sciences, 9*(6). https://ajouronline.com/index.php/AJAS/article/view/6803/3726

Meng, L., Endo, H., Blanc-Mathieu, R., Chaffron, S., Hernández-Velázquez, R., Kaneko, H., & Ogata, H. (2021). Quantitative assessment of nucleocytoplasmic large DNA virus and host interactions predicted by co-occurrence analyses. *MSphere, 6*(2), e01298-01220. https://doi.org/10.1128/mSphere.01298-20

Mohammed, S. H., & Kinyó, L. (2022). The cross-cultural validation of the technology-enhanced social constructivist learning environment questionnaire in the Iraqi Kurdistan Region. *Research and Practice in Technology Enhanced Learning, 17*(1), 1-25. https://telrp.springeropen.com/articles/10.1186/s41039-022-00199-7

Mutch-Jones, K., Hicks, J., & Sorge, B. (2022). Elementary science professional development to impact learning across the curriculum. *Teaching and Teacher Education, 112*, 103625. https://doi.org/10.1016/j.tate.2021.103625

Nofrianto, A., Gulo, A. D., Amri, M. A., & Rafulta, E. (2022). Student Errors in Mathematics Word Problem: What Can Be Learned? *Jurnal Gantang, 7*(1), 59-67. https://doi.org/10.31629/jg.v7i1.4426

Nurbait, S., & Bastian, R. H. (2021). Development of Emotional Intelligence (Emotional Intelligence) in Sports Learning Activities at School. *Kinestetik: Jurnal Ilmiah Pendidikan Jasmani, 5*(4), 843-850. https://doi.org/10.33369/jk.v5i4.19757

Panggabean, F. T. M., Pardede, P. O., Sitorus, R. M. D., Situmorang, Y. K., Naibaho, E. S., & Simanjuntak, J. S. (2021). Application of 21st Century Learning Skills Oriented Digital-Age Literacy to Improve Student Literacy HOTS in Science Learning in Class IX SMP. *Jurnal Mantik, 5*(3), 1992-1930. http://iocscience.org/ejournal/index.php/mantik/article/view/1796

Punyapratheep, K., & Wudthayagorn, J. (2022). Portfolio Assessment Among Thai EFL First-Year University Students: Perceptions and Progress. *rEFLections, 29*(2), 435-453. https://so05.tci-thaijo.org/index.php/reflections/article/view/260768

Purnama, S., Aini, Q., Rahardja, U., Santoso, N. P. L., & Millah, S. (2021). Design of Educational Learning Management Cloud Process with Blockchain 4.0 based E-Portfolio. *Journal of Education Technology, 5*(4), 628-635. https://doi.org/10.23887/jet.v5i4.40557

Purwasi, L. A. (2019). The Development Of Higher-Order Thinking Skills On Junior High School Students Through Guided Inquiry-Based Learning Approach. *Jurnal Pendidikan Matematika dan IPA, 11*(2), 311-322. https://jurnal.untan.ac.id/index.php/PMP/article/view/40859

Rahimi, S., Ghonsooly, B., & Rezai, A. (2021). An Online Portfolio Assessment and Perception Study of Iranian High School Students' English Writing Performance during the COVID-19 Pandemic. *Teaching English as a Second Language (Formerly Journal of Teaching Language Skills), 40*(3), 197-231. https://doi.org/10.22099/jtls.2021.39788.2946

Robert, I. A., & Owan, V. J. (2019). Students' perception of teachers effectiveness and learning outcomes in Mathematics and Economics in secondary schools of Cross River State, Nigeria. *Robert, AI & Owan, VJ (2019). Students' perception of teachers effectiveness and learning outcomes in Mathematics and Economics in secondary schools of Cross River State, Nigeria. International Journal of Contemporary Social Science Education (IJCSSE), 2*(1), 157-165. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3457807

Santoso, A. (2018). Morphological Error Analysis on Student's English Narrative Composition: A Survey at Private University in East Jakarta. *Scope: Journal of English Language Teaching, 1*(2), 110-120. https://doi.org/10.30998/scope.v1i02.2256

Sari, I. J., & El Islami, R. A. Z. (2022). A Comparison of Senior High School Curriculum Between Indonesia and Japan. *Jurnal Pendidikan Indonesia Gemilang, 2*(2), 123-129. https://doi.org/10.53889/jpig.v2i2.140

Simanjuntak, M. B., Suseno, M., Setiadi, S., Lustyantie, N., & Barus, I. R. G. R. G. (2022). Integration of Curricula (Curriculum 2013 and Cambridge Curriculum for Junior High School Level in Three Subjects) in Pandemic Situation. *Ideas: Jurnal Pendidikan, Sosial, dan Budaya, 8*(1), 77-86. https://jurnal.ideaspublishing.co.id/index.php/ideas/article/view/615

Slicker, G., Barbieri, C. A., Collier, Z. K., & Hustedt, J. T. (2021). Parental involvement during the kindergarten transition and children's early reading and mathematics skills. *Early Childhood Research Quarterly, 55*, 363-376. https://doi.org/10.1016/j.ecresq.2021.01.004

Sondakh, D. S. I., Rahmatullah, A. S., Adiyono, A., Hamzah, M. Z., Riwayatiningsih, R., & Kholifah, N. (2022). Integration of language, psychology, and technology and the concept of independence learning in reading characters in indonesian children's films as media and learning materials in character building for elementary school students-indonesia. *Linguistics and Culture Review, 6*(1), 70-88. https://doi.org/10.21744/lingcure.v6n1.1963

Sunaryo, S., Nasbey, H., & Amelia, H. (2021). Learning Media Development using Transformative Learning Strategy Android Application as a Distance Learning Support on Static Fluid. *Jurnal Penelitian & Pengembangan Pendidikan Fisika, 7*(1), 61-72. https://doi.org/10.21009/1.07107

Suwarma, I. R., & Apriyani, S. (2022). Explore Teachers' Skills in Developing Lesson Plan and Assessment That Oriented on Higher Order Thinking Skills (HOTS). *Journal of Innovation in Educational and Cultural Research, 3*(2), 106-113. https://doi.org/10.46843/jiecr.v3i2.66

Syzdykova, Z., Koblandin, K., Mikhaylova, N., & Akinina, O. (2021). Assessment of E-portfolio in higher education. *International Journal of Emerging Technologies in Learning (iJET), 16*(2), 120-134. https://www.learntechlib.org/p/218933/

Tabroni, I., Nasihah, F., & Bahijah, I. (2021). The Implementation Of School Culture-Based Character Education In Salem State Elementary School, Pondoksalam Subdistrict, Indonesia. *Erudio Journal of Educational Innovation, 8*(2), 202-208. https://doi.org/10.18551/erudio.8-2.9

Tambunan, T., Santoso, W., Busneti, I., & Batunanggar, S. (2021). The development of MSMEs and the growth of peer-to-peer (P2P) lending in Indonesia. *International Journal of Innovation, Creativity and Change, 15*(2). https://ww.ijicc.net/images/Vol_15/Iss_2/15238_Tambunan_2021_E2_R1.pdf

Tang, J. T. (2022). A practical action research of portfolio assessment on building the learning community for graduate students in Taiwan. *Systemic Practice and Action Research, 35*(4), 555-578. https://doi.org/10.1007/s11213-021-09583-8

Wilson, S., McChesney, J., & Brown, L. (2017). Cultural Competencies and Planning for Teaching Mathematics: Preservice Teachers Responding to Expectations, Opportunities, and Resources. *Journal of Urban Mathematics Education, 10*(1). https://doi.org/10.21423/jume-v10i1a290

Xu, D., Zhang, Q., & Zhou, X. (2022). The Impact of Low-Ability Peers on Cognitive and Noncognitive Outcomes Random Assignment Evidence on the Effects and Operating Channels. *Journal of Human Resources, 57*(2), 555-596. http://jhr.uwpress.org/content/57/2/555.short