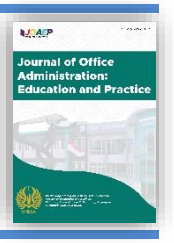
Journal of Office Administration: Education and Practice

Volume 4 Issue 1, pp.1-9 (2024)

Hompage: https://ejournal.unesa.ac.id/index.php/joa



Construct Validity of Non-Test Instrument for Problem-Based Learning Method

Nova Septiana[a], Febrika Yogie Hermanto[b]

[a,b]Universitas Negeri Surabaya, Surabaya, Indonesia

ARTICLE INFO

Keywords:

Non-Test Instrument, Problem-Based Learning, Construct Validity, Expert Judgement

Article History:

Received March 20, 2024

Revised April 29, 2024

Accepted May 10, 2024

Available online May 31, 2024

Correspondence:

Nova Septiana, Office Administration Education, Faculty of Economics and Business, Universitas Negeri Surabaya, Surabaya, Indonesia.

Email: novaseptiana.20004@mhs.unesa.ac.id

ABSTRACT

This study aims to examine how the process of problem-based learning emphasizes creativity, cooperative learning, critical thinking, and idea development. The instruments used in these assessments cannot reflect the principles inherent in the problem-based learning method, which prioritizes contextual and daily-life applications. This study aims to validate the developed product using the ADDIE model, focusing on the outcomes of assessments by instrument and learning evaluation experts. The results of this study showed that the assessment instrument was categorized as very feasible by experts, with an average score of 4.59 out of 5 as the maximum score. The learning evaluation of expert assessment score was 4.71, and the instrument expert assessment was 4.47. Thus, the products developed are valid and suitable for use by the target group. Valid and feasible instruments are expected to provide more accurate student learning assessment results according to learning objectives.

INTRODUCTION

Educators can develop learning models based on student competency targets. Problem-based learning, aligned with an independent curriculum, enhances students' abilities through active problem-solving (Vandenhouten et al., 2017). This ability is viewed from how students analyze a problem and find appropriate problem-solving (Winarno et al., 2018). Problem-based learning is consistent with the independent curriculum by allowing teachers to make lessons

relevant to local content and everyday life. Teachers play a crucial role in education, making it essential to analyze factors that support their success in guiding students to meet educational standards. A key factor in academic success is the role of educators as assessors of student work. To ensure learning activities meet targets and objectives, an effective assessment instrument is needed to help educators determine the level of success during the learning process.

The instruments currently used in assessments cannot accommodate the principles of the problem-based learning approach, which emphasizes contextualization and real-life application. Implementing a fair assessment process and achieving fair results is a significant challenge for teachers. This difficulty arises from their inability to observe student activities carefully and systematically (Arlinwibowo et al., 2020). In the process of implementing learning, learning outcomes are generally always used as a reference in conducting assessments, so the formative process tends to be forgotten.

Assessment processes that are not adapted to the types and needs of learning are contrary to the purpose of assessments, which is to collect information about students' learning processes for decision-making or performance evaluation. All assessments should be aligned with learning objectives and the types of learning used (Rasyid et al., 2007) to measure the achievement of desired outcomes. Assessments not based on precise instruments lead to subjectivity, relying solely on the assessor's judgment, resulting in biased evaluations. (Godwin et al., 2015).

The theory of constructivism in problem-based learning models will provide opportunities for students to develop their knowledge, and educators or teachers will only be facilitators (Saputro & Pakpahan, 2021). The results of problem-solving that occur in this learning model are a form of developing students' knowledge, and in the process of solving problems, attitudes will be cultivated that can be used as an assessment.

Based on the problem, the researcher aimed to create a non-test assessment instrument for the problem-based learning (PBL) process. This model was chosen because it aligned with the problem's concept, focusing on student-centered learning. PBL allows for direct attention to students' conditions, making non-test instruments suitable for addressing issues of objectivity in test-based assessments. These non-test instruments can assess broader skills, including social aspects, attitudes, and collaboration. Therefore, a formative assessment for problem-based learning can be carried out using the instrument that will be used.

METHODS

This study used Research and Development (R&D) through the ADDIE model (Branch, 2009) and focused on analyzing expert assessments by learning evaluation and instrument experts (Hermanto et al., 2022). This study shows the validation results of these experts in developing non-test instruments for problem-based learning tailored to measure students' abilities. The product validity assessment was conducted using research instruments to evaluate product quality, with indicators modified from (Hermanto et al., 2022; Ramadhan, 2019) in Table 1.

Table 1. Assessment Indicators

No	Indicators
Expert in Learning Evaluation	
1.	Accuracy of the instrument to assess
2.	Implementation Accuracy of Instrument
Expert in Non-Test Instrument	
1.	Instrument Format
2.	Instrument Content
3.	Instrument Function
4.	Language Intelligibility for Instrument

This study used a Likert scale (Vagias, 2006) with rating criteria such as very good (5), good (4), enough (3), less (2), and very less (1). The data analysis technique combines quantitative and qualitative models, presenting the results descriptively (Hermanto et al., 2022).

The data obtained through quantitative methods will be analyzed by calculating the average score using the formula $X\ (mean) = \Sigma X\ N$, where X (mean) is the average score ∑X is the sum of the scores obtained, and N is the number of subjects tested. Based on the assessment results, the feasibility classification will be carried out using the score conversion guidelines (Hermanto et al., 2022; Saputri et al., 2020) in Table 2 to determine the feasibility of the developed instrument.

Table 2. Score Conversion Guidelines

Score	Formula	Range	Category
5	Xi + 0,6 SBi < X	4,21 – 5,00	Very Feasible
4	Xi + 0,6 SBi < X< Xi + 1,8 SBi	3,41 – 4,20	Feasible
3	Xi - 0,6 SBi < X< Xi + 0,6 SB	2,61 – 3,40	Less Feasible
2	Xi – 1,8 SBi < X< Xi - 0,6 SBi	1,81 – 2,60	unfeasible
1	X< Xi – 1,8 SBi	0 – 1,80	Very unfeasible

Description:
Xi : Ideal average
: ½ (ideal maximum score + ideal minimum score)
SBi : Standard deviation of ideal score
: 1/6 (ideal maximum score + ideal minimum score)

X : Score

Furthermore, the qualitative data collected related to the input provided by the experts will be analyzed using qualitative analysis (Bogdan & Bilken, 2007) so that the data can be used as a basis for improving the instrument (Hermanto et al., 2019) so that it can be used optimally in the target group (Widianingrum et al., 2020). The validity of this assessment instrument is determined by analyzing qualitative and quantitative data from experts to improve the assessment instrument to suit the target group (Arlinwibowo & Retnawati, 2015).

RESULTS AND DISCUSSION

Validation of the non-test instrument for the problem-based learning method was conducted by two experts: a Learning Evaluation Expert and a Non-Test Instruments Expert. The Learning Evaluation Expert, a Lecturer for the Learning Evaluation Course in the undergraduate Office Administration Education Study Program at Surabaya State University and a member of the Indonesian Association of Office Administration Scholars and Practitioners (ASPAPI) assessed the needs of problem-based learning methods at the Office Management and Business Services Vocational High School. The Non-Test Instruments Expert, a Doctor in Educational Research and Evaluation and a lecturer in the undergraduate Mathematics Education Study Program at Surabaya State University, with numerous publications on school learning instruments, evaluated the non-test instrument requirements for problem-based learning. This assessment aimed to review each indicator and statement used to measure students' abilities both individually and in groups (Amir, 2009; Fogarty, 1997; Hmelo-Silver, 2004; Ibrahim & Nur, 2000; Rusman, 2014; Suyadi, 2013). The indicators of non-test instruments are shown in Table 3.

Table 3. Indicators of Non-Test Instrument for Problem-Based Learning Method

No	Indicators
	Planning Stage
1.	Problem Identification
2.	Fact Identification
3.	Developing a Hypothesis
	Implementation Stage
4.	*Self-Directed Learning*
5.	Collaboration and Cooperation
6.	Penentuan Solusi Terhadap Permasalahan
	Evaluation Stage
7.	Evaluation of the Problem-Solving Process

Table 3 shows the indicators developed in the non-test instrument for the problem-based learning method. These indicators are realized in statements aimed at capturing the entire

problem-based learning process carried out by students. The validation results from each expert are explained in detail in the following subsections.

Results from Expert in Learning Evaluation

The validation results of the non-test assessment instruments in problem-based learning, conducted by learning evaluation experts, were categorized as very feasible, with an average value of 4.71. In addition, the learning evaluation expert concluded that the developed assessment instrument is feasible to use, with revisions according to the suggestions. The suggestion given is to improve the process of taking the results of students' final scores. These revisions were then used to enhance the non-test assessment instruments in problem-based learning. The assessment results from the learning evaluation expert are presented in Table 4.

Table 4. Results from Expert in Learning Evaluation

No	Indicators	Average Score	Category
1.	Accuracy of the instrument to assess	4,8	Very Feasible
2.	Implementation Accuracy of Instrument	4,5	Very Feasible
Average Score from Expert in Learning Evaluation		**4,71**	**Very Feasible**

Results from Expert in Non-Test Instrument

The validation results of Instrument Experts' problem-based learning non-test assessment instruments show a "very feasible" category, with an average score of 4.47. The conclusion provided by the expert suggests that the assessment instrument is very feasible for use, with improvements based on the following recommendations: 1) provide an assessment grid as a reference to equalize perceptions in assessing the process and results of student learning, add self-learning indicators as indicators to assess the student's self-learning process, and 3) make adjustments to how many assessment items are adjusted to the learning process. These revisions were used to improve the non-test assessment instruments for problem-based learning methods so that they can effectively assess learning using this approach. The results of the instrument expert validation are presented in Table 5:

Table 5. Results from Expert in Non-Test Instrument

No	Indicators	Average Score	Category
1.	Instrument Format	4,1	Feasible
2.	Instrument Content	4,5	Very Feasible
3.	Instrument Function	4,5	Very Feasible
4.	Language Intelligibility for Instrument	5	Very Feasible
Average Score from Expert in Non-Test Instrument		**4,47**	Very Feasible

Discussion

The development of non-test assessment instruments in problem-based learning involves

several stages. Based on the average scores from assessments conducted by both learning evaluation experts and instrument experts, the instrument achieved an average score of 4.59 out of 5, showing that the non-test assessment instrument for problem-based learning is categorized as very good and is highly feasible for implementation in the target group. The assessment results are presented in Table 6.

Table 6. Recapitulation of the expert judgments

No	Indicators	Average Score	Category
1.	Expert in Learning Evaluation	4,71	Very Feasible
2.	Expert in Non-Test Instrument	4,47	Very Feasible
Average Score		**4,59**	**Very Feasible**

A detailed review of each indicator assessed by the experts shows that the non-test assessment instrument products for problem-based learning are valid and highly feasible, as explained in Table 6. It shows that the assessment instrument developed using the ADDIE model is very suitable for the intended target group, specifically for assessing the problem-based learning process.

The process of determining this feasibility is by research conducted by (Arlinwibowo et al., 2021 Hermanto et al., 2022; Saputri et al., 2020; Susanti et al., 2019) which states that the feasibility process of the developed product can be carried out based on the assessment process by experts (Djamas et al., 2018)djamasd who have been selected according to the needs of the product assessment process developed. Furthermore, the input provided by experts in the form of qualitative data must be analyzed continuously and in-depth, which is then improved according to the needs of the product to follow the predetermined objectives. It is what has been conveyed by (Arlinwibowo et al., 2021) that the input and revisions provided by experts to improve the products that have been developed can be used as a reference in making improvements so that the final result of the developed product will follow the needs of the target group. Furthermore, after experts declare the feasibility and validity, the product can be tested and implemented in the learning process so that further evaluation can be carried out regarding the advantages and disadvantages of the product (Febriana & Sakti, 2021; FH et al., 2021; Kristanto et al., 2021).

CONCLUSION

This study developed non-test assessment instruments for evaluating problem-based learning methods. The results showed that experts categorized the assessment instrument as very feasible, with an average score of 4.59 out of 5 as the maximum score. The learning evaluation of expert assessment score was 4.71, and the instrument expert assessment was 4.47.

Thus, the results of expert validation show that the non-test assessment instrument product is declared valid and feasible to implement in the target group. The limitation of this study is that it only establishes the validity of assessment instruments based on expert evaluations. Thus, the assessment is limited to the expertise of experts. Therefore, further research is expected to evaluate the effectiveness of these non-test assessment instruments in problem-based learning among teachers and students across different conditions and characteristics.

ACKNOWLEDGEMENT

The author would like to thank the Universitas Negeri Surabaya (Unesa), all experts, and all friends who helped us finish this study. We hope this study can help students learn in vocational high schools and be cited for future research on the same topic.

REFERENCES

Amir, M. T. (2009). *Inovasi Pendidikan Melalui Problem Based Learning*. Kencana Perdana Media Group.

Arlinwibowo, J., Mustaqim, Y., Prihandono, A., Maisa, F., Ridwan, A., & Himayati, A. I. A. (2021). Developing Mathematical Exercise Software for Visually Impaired Students. *Psychology, Evaluation, and Technology in Educational Research*, *3*(2), 77–88. https://doi.org/doi.org/10.33292/petier.v3i2.81

Arlinwibowo, J., & Retnawati, H. (2015). Developing Audio Tactile for Visually Impaired Students. *International Journal on New Trends in Education and Their Implications*, *6*(4), 18–30.

Arlinwibowo, J., Retnawati, H., Kartowagiran, B., & Kassymova, G. K. (2020). Distance learning policy in Indonesia for facing pandemic COVID-19: School reaction and lesson plans. *Journal of Theoretical and Applied Information Technology*, *98*(14), 2828–2838.

Bogdan, B. C., & Bilken, S. K. (2007). *Quality research for education: An introduction to theory and methods*. Pearson.

Djamas, D., Tinedi, V., & Yohandri. (2018). Development of Interactive Multimedia Learning Materials for Improving Critical Thinking Skills. *International Journal of Information and Communication Technology Education*, *14*(4), 66–84. https://doi.org/10.4018/IJICTE.2018100105

Febriana, F. D., & Sakti, N. C. (2021). Pengembangan E-Modul berbasis Kontekstual sebagai Pendukung Pembelajaran Jarak Jauh Kelas X IPS. *Jurnal PROFIT: Kajian Pendidikan Ekonomi Dan Ilmu Ekonomi Kajian Pendidikan Ekonomi Dan Ilmu Ekonomi*, *8*(1), 47–58. https://doi.org/10.36706/jp.v8i1.14057

FH, Y., Fatimah, S., & Barlian, I. (2021). Pengembangan Bahan Ajar Digital Interaktif dengan Pendekatan Kontekstual pada Mata Kuliah Teori Ekonomi Mikro. *Jurnal PROFIT: Kajian Pendidikan Ekonomi Dan Ilmu Ekonomi*, *8*(1), 36–46. https://doi.org/10.36706/jp.v8i1.13875

Fogarty, R. (1997). *Problem-Based Learning and Other Curriculum Models for the Multiple Intelligences Classroom*. Hawker Brownlow Education.

Godwin, A., Potvin, G., Scott, T. D., Sonnert, G., & Sadler, P. M. (2015). The Academic Performance Index: Creating a More Robust and Less Biased Measure of Student Academic Performance. *2015 IEEE Frontiers in Education Conference (FIE)*. https://doi.org/10.31539/joeai.v4i1.2151

Hermanto, F. Y., Sutirman, Hidayati, B., & Sholikah, M. (2019). The Need for Practical Teaching in Vocational High School of Automation and Office Management Program in Yogyakarta City. *Jurnal Pendidikan Vokasi*, *9*(3), 238–248. https://doi.org/10.21831/jpv.v9i3.26734

Hermanto, F. Y., Wulandari, S. S., Muyassaroh, J., & Hidayati, B. (2022). Validitas Modul Praktik Perkantoran Menggunakan Metode Pembelajaran Role-Playing berbasis Kebutuhan Industri. *Jurnal PROFIT: Kajian Pendidikan Ekonomi Dan Ilmu Ekonomi*, *9*(2), 103–111. https://doi.org/10.36706/jp.v9i2.19014

Hmelo-Silver, C. E. (2004). Problem-Based Learning: What and How Do Students Learn? *Educational Psychology Review*, *16*(3), 235–266.

Ibrahim, M., & Nur, M. (2000). *Pengajaran Berdasarkan Masalah*. Unesa University Press.

Kristanto, S. A., Harti, Wulandari, S. S., & Patrikha, F. D. (2021). Pengembangan Media Pembelajaran Menggunakan Lectora Inspire pada Mata Kuliah Salesmanship. *Jurnal PROFIT: Kajian Pendidikan Ekonomi Dan Ilmu Ekonomi*, *8*(2), 84–94. https://doi.org/doi.org/10.36706/jp.v8i2.14417

Ramadhan, R. H. (2019). *Pengembangan Komik Fisika berbasis Kearifan Lokal Long Bumbung Berbantu Android untuk Meningkatkan Kemampuan Representasi Fisis dan HOTS Peserta Didik Sma pada Materi Bunyi*. Universitas Negeri Surabaya.

Rasyid, Harun, & Mansur. (2007). *Penilaian Hasil Belajar*. CV. Wacana Prima.

Rusman. (2014). Penerapan Pembelajaran Berbasis Masalah. *Edutech*, *1*(2), 211–230.

Saputri, A., Sukirno, Kurniawan, H., & Probowasito, T. (2020). Developing Android Game-Based Learning Media "Go Accounting" in Accounting Learning. *Indonesian Journal on Learning and Advanced Education (IJOLAE)*, *2*(2), 91–99. https://doi.org/10.23917/ijolae.v2i2.9998

Saputro, M. N. A., & Pakpahan, P. L. (2021). Mengukur Keefektifan Teori Konstruktivisme dalam Pembelajaran. *JOEAI (Journal of Education and Instruction)*, *4*(1), 24–39. https://doi.org/doi.org/10.31539/joeai.v4i1.2151

Susanti, N., Ramayani, C., Yulhendri, Y., & Evanita, S. (2019). Validation in the Development of Cost Accounting Practicum Module of Guided Discovery Methods. *Dinamika Pendidikan*, *14*(1), 26–36. https://doi.org/10.15294/dp.v14i1.18053

Suyadi. (2013). *Strategi Pembelajaran Pendidikan Karakter*. PT. Remaja Rosdakarya.

Vagias, W. M. (2006). Likert-type scale response anchors. *Clemson International Institute for Tourism & Research Development, Department of Parks, Recreation and Tourism Management.*

Vandenhouten, C., Groessl, J., & Levintova, E. (2017). How Do You Use Problem-Based Learning to Improve Interdisciplinary Thinking? *New Directions for Teaching and Learning*, *151*, 117–133. https://doi.org/10.1002/tl.20252

Widianingrum, R., Suranto, Hermanto, F. Y., & Sholikah, M. (2020). Office Communication Competencies for Vocational High School in Industri 4.0. *Dinamika Pendidikan*, *15*(1), 77–86. https://doi.org/10.15294/dp.v15i1.24348

Winarno, S., Muthu, K. S., & Ling, L. S. (2018). Direct Problem-Based Learning (DPBL): A Framework for Integrating Direct Instruction and Problem-Based Learning Approach. *International Education Studies*, *11*(1), 119–126. https://doi.org/10.5539/ies.v11n1p119