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Empirical Validity of an Instrument for Assessing a Multiliteracy-Based Poetry Transformation Learning Model: A CFA Study in Indonesian Higher Education

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***Abstract*—The digital transformation of literacy education in the 21st century has created an urgent need for validated learning models that bridge traditional poetry appreciation and digital multimodal literacy. This study presents an innovative multiliteracy-based poetry transformation learning model that integrates digital competencies with literacy analysis. This study aims (1) to develop poetry transformation instruments and (2) to identify the key aspects of implementing the poetry transformation learning model. The study sample consisted of 96 students from three Indonesian higher education institutions. This research employs a quantitative approach using a survey design. Data collection utilizes a poetry transformation questionnaire instrument. Data analysis techniques demonstrate empirical validity using Confirmatory Factor Analysis (CFA). The findings of this study reveal that 1) the construction of poetry transformation instruments, covering five aspects, is considered valid and reliable; 2) the syntax aspect emerges as a key factor in the poetry transformation learning models; and 3) the quality of work is the most important indicator in the syntax aspect.**

***Index Terms*—empirical validity, multiliteracy-based poetry, learning model, CFA**

I. Introduction

Learning processes in the 21st century require teachers and educators to master technology, presenting new challenges in the field of education. In this context, the learning processes emphasize the 4C skills: Critical Thinking, Creativity, Communication, and Collaboration (Arnyana, 2019; Aryana et al., 2024). This transformation aligns with the Industrial Revolution 4.0, which emphasizes digitization in manufacturing processes driven by integrated technologies, such as cyber-physical systems, the Internet of Things, cloud computing, and artificial intelligence—all of which influence learning processes, including those in literary education (Gülen, 2020; Kagermann et al., 2013).

One of the innovative approaches in literary education is transmediation, an interdisciplinary teaching that bridges modernist poetry with other fields such as architecture. This approach enriches learning strategies, fosters creativity, and creates maker spaces that enable the exploration of new ideas (Bryant & Hailey, 2022). Furthermore, transmediation can be defined as the process of converting or transferring from one artistic medium to another (Damono, 2018, p. 9). In transmediation, poetry undergoes formal transformation and appears in various forms of multimodal poetic expression. Literary products, including poetry, are increasingly influenced by technologies such as multimedia, the internet, photography, and videography (Rozi, 2019).

Various forms of poetic expression continue to evolve, particularly in response to the growing popularity of social media among the public. Integrating digital platforms into learning processes can be a solution to the challenges of the era. Generation Z, for instance, prefers engagement in digital or online environments (Ciekurs et al., 2022; Demir & Sonmez, 2021; Herlina et al., 2023; Kravalis et al., 2021; Lesinskis et al., 2023). Moreover, poetry shared on social media is now widely appreciated by Generation Z and millennials.

The multiliteracy approach to learning about the transfer of poetry media is highly relevant in this digital era. Language multiliteracy encompasses reading, writing, speaking, and listening, all of which are increasingly important in communication and information technology (Lestari et al., 2024). One of its aspects is that the transfer of poetry media on social media holds significant multiliteracy potential. Multiliteracy media are essential for addressing contemporary challenges as they offer some advantages. Multiliteracy skills play a crucial role in education and are more complex than traditional literacy (García-Barroso & Fonseca-Mora, 2023; Ollonen & Kangas, 2024). Multiliteracy involves engaging with texts in various ways, often necessitating digital skills (Lim et al., 2022). The current generation of students, Generation Z and Millennials, has grown up in a technology-rich environment (Yelland & Gilbert, 2019). Hedley (2024) revealed that utilizing digital tools and AI in poetry can foster a more interactive and dynamic experience for readers. Interactive digital media can enhance students' language skills by incorporating audio and visual elements (Husna & Fajar, 2022; Praheto et al., 2020). The digital-based multiliteracy model offers advantages, including opportunities for active, interactive, and creative engagement (Rifai & Setyaningsih, 2019, p. 25). Moreover, the transformation of poetry created by higher education students can be positively utilized to build multiliteracy skills. Multiliteracy enables students to develop poetry interpretation skills more comprehensively and transform their work into various media.

Empirical data shows that students face difficulties in converting poetry. The survey results confirm that students understand only the basic and general concepts of poetry conversion but often struggle with its implementation. Consequently, the technical steps and procedures involved in producing their work are typically less meticulous, making their works are less engaging and meaningful. This highlights a gap between learning needs and the availability of effective models.

The challenges of learning to convert poetry are becoming increasingly complex due to the student characteristics and learning environments. Each higher education institution has different conditions and resources, which affect the implementation of learning models. Institutions recognize the potential and all aspects of student development through a multimedia, multi-contextual, and multimodal approach (Yelland, 2019). Therefore, to address these gaps and issues, a poetry transfer learning model is essential. In response to the challenges of the Industrial Revolution 4.0, the curriculum must incorporate digital technology, electronic literature, and interdisciplinary elements to enhance the relevance of literature in the modern workplace (Devi et al., 2020). Perveen (2018), Yelland (2019), and Perry (2020) indicated that multiliteracies and multimodal approaches are positively regarded as a practical perspective in teaching and a valuable pedagogical tool for developing 21st-century skills. Additionally, the model must be built upon the principles of poetry media transfer.

The urgency of this research is becoming increasingly relevant for universities facing digital transformation in the 21st century. Universities must prepare graduates to confront the challenges of the Industrial Revolution 4.0. The empirical validity of a poetry learning model that emphasizes multiliteracy serves as a strategic approach to bridging the gap and strengthening the scientific foundation related to innovation in literary education at Indonesian universities.

Based on data from 46 studies, research guidelines on poetry learning are not discussed in any study, mechanization in 3 studies, recognized learning guidelines in 9 studies, research on cyber poetry in 2 studies, work on post-truth in 2 studies, while digitalization and multimodal approaches in 9 studies. Research and development in poetry learning is reported in 2 studies, social media audiovisual poetry in 4 studies, and poetry learning with audiovisuals in 6 studies. Moreover, digital literacy is discussed in 1 study, multiliteracy models in 4 studies, and topics outside of humanities in 1 study. These articles are examined carefully. A critical analysis is conducted with an in-depth evaluation, summarizing, analyzing, and synthesizing the content, which is then presented in written form. The majority of the collected articles are presented in qualitative descriptive terms.

Although several studies have been conducted on poetry transfer learning, a gap remains concerning the empirical validity of comprehensive learning models. Previous studies tend to emphasize theoretical aspects or practical implementation, but lack systematic model validity. Developing a multiliteracy-based poetry transfer learning model requires empirical validation, which allows for the replication of findings in the future. The use of Confirmatory Factor Analysis (CFA) ensures the systematic construct validity of five key aspects of the learning model: 1) learning process, 2) student characteristics, 3) teaching materials and media, 4) learning environment, and 5) learning model, as well as syntax aspects. The model must be validated through construct validity using Confirmatory Factor Analysis (CFA) (Alan & Edi, 2023, p. 187). The empirical validity of the learning model will create a robust scientific foundation for advancing poetry transfer learning in Indonesian universities. Empirical data collected from the field will be compared with a hypothetical model (Alan & Edi, 2023, p. 188). A construct-validated model can serve as a reference for higher education institutions when designing and implementing effective transfer learning in poetry.

CFA is a factor analysis method employed to establish construct validity. It examines the confirmation of a theory within a confirmatory model (Hair et al., 2018). The primary objective of this study is to identify the key factors that may impact the success of poetry transfer learning. This method was chosen because it not only identifies the relationships between variables but also reveals the underlying factor structure that contributes to the effectiveness of the learning model. Understanding these factors can help lecturers design and implement more effective teaching strategies.

II. METHOD

This study employs a quantitative research approach, utilizing a survey method. The objectives are: 1) to develop the poetry transfer instrument and 2) to identify the dominant aspects of implementing the poetry transfer learning model. The research was conducted at three universities: in West Java, Central Java, and the Special Region of Yogyakarta, Indonesia. A total of 96 students participated in this study. Data collection was carried out using a poetry transfer questionnaire instrument. Data analysis techniques were applied to establish empirical validity through the Confirmatory Factor Analysis (CFA) technique.

Data analysis using CFA will initially assess the reliability of the construction by providing reliability estimates between 0.6 and 0.8, with a high reliability estimate (Brown, 2015). Additionally, it will assess the Average Variance Extracted (AVE) value, requiring it to surpass 0.5 to establish convergent and discriminant validity in the model (Hair et al., 2018). Furthermore, to understand the dominant aspects of the model, it is necessary to examine the factor loading. In CFA, an item and aspect are considered valid if they have a factor loading value greater than 0.3 (Hair et al., 2018). The grid used in this study is presented in Table 1.

TABLE 1
GUIDELINES OF POETRY MEDIA TRANSFER INSTRUMENT

Aspect	Indicator
Learning Objectives and Process	1. Completion of the attitude of learning the transfer of poetry media. 2. Ability to transfer poetry media in class. 3. Pattern of managing learning the transfer of poetry media. 4. Conditions of learning the transfer of poetry media. 5. Learning outcomes and aesthetic value of the transfer of poetry media.
Student Characteristics	1. Students' interest in learning materials of poetry media conversion. 2. Students' understanding the materials of poetry media conversion. 3. The system for working on the poetry media transfer project.
Poetry media and teaching materials	1. The 21st-century skills built into materials, media, and assignments. 2. Exploring the experiences and multiliteracy skills of group members.
Learning environment	1. Multiliterate learning atmosphere created. 2. Learning facilities. 3. Multimedia equipment available on campus.
Syntagmatic aspects	1. Monitoring, feedback, and appreciation of the work. 2. Quality of the results of the poetry media transfer work. 3. Evaluation of the results. 4. Completeness of the syntactic section

III. RESULT AND DISCUSSION

This study uses primary data collected by researchers through questionnaires distributed to respondents, specifically students from three universities in West Java, Central Java, and the Special Region of Yogyakarta. The researchers distributed the questionnaires online, reaching a total of 96 students.

The construct of the poetry transformation instrument includes five aspects: 1) learning process (LP), 2) student characteristics (SC), 3) teaching materials and media (TMM), 4) learning environment (LE), and 5) syntax aspects (SA). The final results of construct validity are obtained using SmartPLS. Construct validity can be evaluated through CFA. This aims to determine whether empirical data from the field align with the proposed hypothetical model (Alan & Edi, 2023, p. 188). CFA is intended to identify the factors that account for the variance among indicators. The results of construct validity and reliability are shown in Table 2.

TABLE 2
CONSTRUCT RELIABILITY AND VALIDITY

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
AS	0.873	0.874	0.913	0.724
Alih Wahana	0.901	0.926	0.918	0.419
KM	0.691	0.692	0.829	0.618
LP	0.678	0.750	0.823	0.616
MMA	0.761	0.774	0.893	0.806
PP	0.675	0.796	0.790	0.465

The analysis results indicate that learning process (LP), student characteristics (SC), teaching materials and media (TMM), learning environment (LE), and syntax aspects (SA) demonstrate good reliability, as all reliability estimation measures fall within the range of 0.6 to 0.8 (Brown, 2015). Furthermore, the findings indicate good validity, since the Average Variance Extracted (AVE) values exceed 0.5 for all aspects.

Table 2 presents the reliability for the learning process (LP) aspect, which has a Cronbach's Alpha reliability of 0.675, rho_A of 0.796, and Composite Reliability of 0.790, indicating poor validity at 0.465. The student characteristics (SC) aspect demonstrates a Cronbach's Alpha reliability of 0.691, a rho_A of 0.692, and a Composite Reliability of

0.829, reflecting good validity at 0.618. The teaching materials and media (TMM) aspect has a Cronbach's Alpha reliability of 0.761, rho_A of 0.774, and Composite Reliability of 0.893, denoting good validity at 0.806. The learning environment (LE) aspect demonstrates a Cronbach's Alpha reliability of 0.678, a rho_A of 0.750, and a Composite Reliability of 0.823, indicating good validity at 0.616. The syntax aspect (SA) shows a Cronbach's Alpha reliability of 0.873, a rho_A of 0.874, and a Composite Reliability of 0.913, alongside good validity at 0.724. Additionally, discriminant validity must be considered, as illustrated in Table 3.

TABLE 3
DISCRIMINANT VALIDITY

	SA	SC	LE	TMM	LP
SA	0.851				
SC	0.677	0.786			
LE	0.760	0.566	0.785		
TMM	0.256	0.381	0.347	0.898	
LP	0.717	0.760	0.650	0.223	0.682

The diagonal values in Table 3 represent the roots of the Average Variance Extracted (AVE), while the other values indicate the correlation coefficients between constructs. Discriminant validity is established when the AVE root value exceeds the correlation coefficient. Since all correlation coefficients are lower than the AVE root value, it can be concluded that the constructs developed in the poetry learning model demonstrate good discriminant validity. The next aspect to consider is the factor loading value.

The validity criteria for instrument items and aspects were also analyzed using CFA. In CFA, an item or aspect is considered valid if it has a factor loading value greater than 0.3 (Hair et al., 2018). Based on the analysis, it was concluded that the five items developed to measure the learning process (LP) were valid, as they had loading factor values > 0.3; however, LP_4 was invalid due to its loading factor value < 0.3. Three items were developed to measure student characteristics (SC) and were deemed valid because they had loading factor values > 0.3. Two items were created to measure teaching materials and media (TMM) and were also deemed valid, as they had loading factor values > 0.3. Three items designed to measure the learning environment (LE) were considered valid since their loading factor values were > 0.3. Furthermore, four items were developed to measure the syntax aspect (SA), which were deemed valid due to their loading factor values > 0.3. The loading factor values are illustrated in Figure 1.

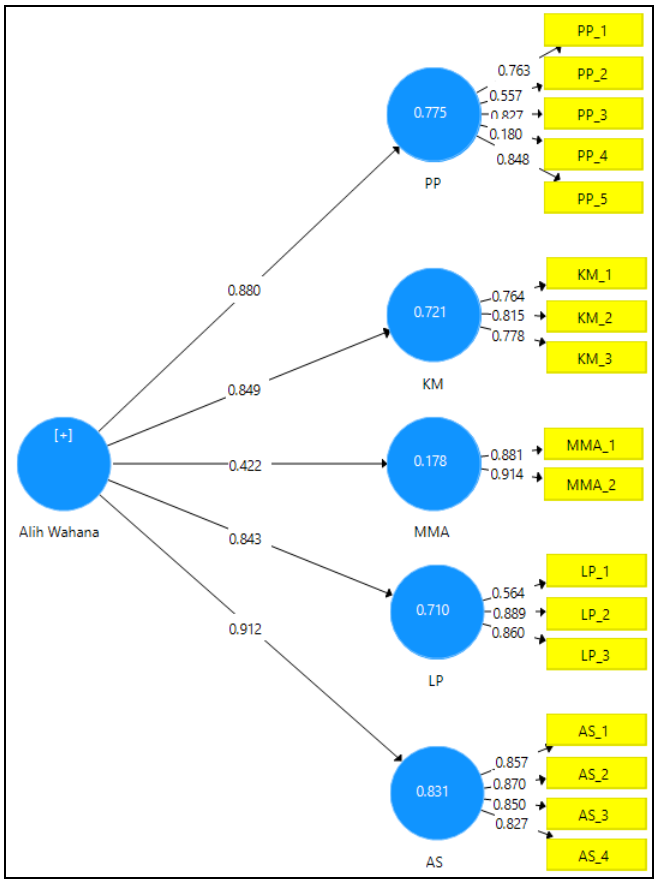

Figure 1. Results of CFA Analysis

The CFA analysis, as shown in Figure 1, highlights the key items and dominant aspects related to the need for media transfer. The learning process (LP) aspect has a loading factor value of 0.880, confirming its validity. The student characteristics (SC) aspect also has a loading factor value of 0.849, which is deemed valid. The teaching material and media (TMM) aspect demonstrates a loading factor value of 0.422, considered valid. Meanwhile, the learning environment (LE) aspect shows a loading factor value of 0.843, confirming its validity. Lastly, the syntax aspect (SA) indicates a loading factor value of 0.912, signifying its validity. The loading factor results reveal that the most dominant aspects are the syntax aspect (SA), learning process (LP), student characteristics (SC), learning environment (LE), and teaching material and media (TMM).

The foremost aspect is the syntax aspect (SA), with SA_2 being the most prominent indicator of the syntax aspect (SA), exhibiting a loading factor of 0.870. Table 1 reveals that the SA_2 item represents the quality of the results from the poetry media transfer work. Rufaidah et al. (2024) explain that educators play a crucial role in promoting familiarity with technology and ensuring access to digital resources. Consequently, the quality of poetry adaptation outcomes is inherently linked to the role of educators. Attention to relevant digital trends is essential for enhancing the quality of poetry adaptation results, particularly those incorporating versatile content, including audiovisual materials such as YouTube. This platform offers innovative learning methods to enhance students' knowledge, understanding, and motivation (Kaval et al., 2022; Muslem et al., 2022). Understanding student needs is vital for creating effective learning experiences that foster quality results (Anggoro et al., 2024; Godor, 2021). By aligning learning with student needs, educators can establish a learning environment conducive to academic success, which is the primary objective of poetry adaptation education (Anderson et al., 2022). Moreover, effective feedback must take into account the individual needs of students to ensure the poetry adaptation learning process achieves optimal results.

Furthermore, the second dominant aspect is SA_1, which has a loading factor of 0.857 related to monitoring, feedback, and appreciation of work. These results are in line with Yuen et al. (2022) and Saragih et al. (2023), which emphasize the importance of direct feedback on work for improving quality and addressing common mistakes. Feedback from educators and peers enhances idea refinement, develops writing skills, and fosters a cooperative learning environment (Mafulah et al., 2023; Nurkamto et al., 2024). This theory is based on the belief that quality feedback offers an ideal opportunity for students to improve their work (Gorham et al., 2024). Timely feedback from educators and peers plays a crucial role in enhancing the quality of students' work. This highlights the importance of monitoring and appreciation in the process of improving work.

The second dominant aspect is the learning process (LP), with LP_5 being the most significant indicator, showcasing a loading factor of 0.848. Table 1 illustrates that LP_5 reflects the learning outcome and aesthetic value of poetry transfer. The next indicator is LP_3, which has a loading factor of 0.827 and is associated with the pattern of managing poetry transfer learning. Additionally, LP_1 has a loading factor of 0.763 and relates to fostering positive attitudes toward poetry transfer learning. Following this is LP_2, which features a loading factor of 0.557 and involves the ability to transfer poetry during class. Lastly, LP_4, with a loading factor of 0.180, corresponds to the conditions of poetry transfer learning.

This study empirically validates the construction of a multiliteracy-based poetry transformation learning model. It will enrich theoretical studies in the field of literature education in the digital era. The study found that the syntax aspect is the most dominant, which strengthens the theoretical basis that systematic steps in the poetry transformation process play a crucial role in learning success. Constructing validity using CFA will provide a solid scientific foundation for developing a poetry transformation learning model.

The research findings presented can be used to develop practical guidelines for lecturers in designing and implementing poetry transformation learning. Additionally, these findings can help address student difficulties in the poetry transformation learning process, enabling lecturers to focus on developing modules centered on syntax aspect while ensuring work quality. For institutions, it is essential to leverage these findings to conduct lecturer training programs aimed at designing multiliteracy-based poetry transformation learning.

The findings of the study can inform developers of literature curricula in universities. However, after conducting CFA analysis, the poetry learning model based on multiliteracy can be refined, and it is necessary to revise the LP_4 item, which has low factor loading, to enhance the overall construct's validity.

IV. Conclusion

The development of the poetry media transfer instrument encompasses five aspects represented by 17 items or indicators. First, the reliability analysis indicates that the learning process aspect (LP) has good reliability, as it falls within the range of 0.6 to 0.8; however, it has poor AVE validity since it is below 0.5. The aspects of student characteristics (SC), teaching materials and media (TMM), learning environment (LE), and syntax aspects all show good reliability, also ranging from 0.6 to 0.8, and they demonstrate good validity.

Second, the results of the factor loading indicate that the most dominant aspects are the syntax aspect (SA), the learning process (LP), student characteristics (SC), the learning environment (LE), and teaching materials and media (TMM).

Third, according to the results of the first dominant aspect, the Syntax Aspect (SA), the most prominent item or indicator relates to the quality of the poetry media conversion results. The second dominant aspect pertains to the

monitoring, feedback, and appreciation of the work. The second dominant aspect of the Learning Process (LP) highlights the most significant item or indicator associated with the learning outcomes and the aesthetic value of the poetry media conversion. Following this, the second dominant aspect relates to the management pattern of learning in poetry media conversion.

The findings indicate that the syntax aspect is a key factor in the poetry media conversion learning model. The quality of the work is the most important indicator within the syntax aspect. Furthermore, the learning process emphasizes both results and aesthetic value. This study recommends: 1) prioritizing the syntax aspect in developing learning models, particularly focusing on the quality of the outcomes in poetry media conversion. Additionally, a more structured monitoring and feedback system should be established; 2) revising the indicators related to the learning process to enhance the validity of AVE; and 3) institutions should provide improved support facilities for implementing the poetry media conversion learning model.

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