

# Development of a Canva-Assisted Microblogging Model to Enhance Understanding of Fundamental Early Childhood Education Concepts

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## ABSTRACT

This study aimed to develop a Canva-assisted microblogging model to enhance nonformal Early Childhood Education (ECE) teachers' understanding of fundamental ECE concepts. The study employed a Research and Development approach using the ADDIE model, consisting of Analysis, Design, Development, Implementation, and Evaluation stages. The products developed included the MIKRO Model and three Canva-assisted microblogs addressing common misconceptions in ECE practices. The MIKRO Model integrated five stages, namely Access, Identification, Review, Reflection, and Optimization, to facilitate concise, contextual, and reflective learning experiences. The model and microblogs were validated by a model expert and a media expert to determine their feasibility before implementation. A limited field trial involving 20 nonformal ECE teachers was conducted using a pretest-posttest design. The findings indicated that the MIKRO Model was feasible for implementation, with expert validation results categorizing both the model and the microblogs as feasible. Furthermore, teachers' understanding of fundamental ECE concepts improved following the intervention, as reflected in the increase in posttest scores and a moderate N-Gain score. The study concluded that the Canva-assisted MIKRO Model represented an innovative and practical alternative for supporting the professional learning of nonformal ECE teachers through concise, flexible, and reflective learning experiences.

## Informasi Artikel

### Kata Kunci:

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Microblogging;  
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Konsep Dasar  
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## ABSTRAK

Penelitian ini bertujuan mengembangkan model microblogging berbantuan Canva untuk meningkatkan pemahaman konsep dasar PAUD pada guru PAUD nonformal. Penelitian menggunakan pendekatan Research and Development dengan model ADDIE yang meliputi tahap Analysis, Design, Development, Implementation, dan Evaluation. Produk yang dikembangkan berupa Model MIKRO dan tiga microblog berbantuan Canva yang mengangkat berbagai miskonsepsi dalam praktik PAUD. Model MIKRO mengintegrasikan lima tahapan, yaitu Mengakses, Identifikasi, Kaji, Refleksi, dan Optimalisasi untuk memfasilitasi pengalaman belajar yang singkat, kontekstual, dan reflektif. Model dan microblog divalidasi oleh ahli model dan ahli media untuk mengetahui kelayakannya sebelum diimplementasikan. Uji coba terbatas dilakukan kepada 20 guru PAUD nonformal menggunakan desain pretest-posttest. Hasil penelitian menunjukkan bahwa Model MIKRO layak digunakan, dengan hasil validasi ahli yang mengategorikan model dan microblog sebagai layak. Selain itu, pemahaman guru terhadap konsep dasar PAUD mengalami peningkatan setelah intervensi, yang ditunjukkan oleh meningkatnya skor posttest dan perolehan nilai N-Gain kategori sedang. Penelitian ini menyimpulkan bahwa Model MIKRO berbantuan Canva merupakan alternatif inovatif dan praktis untuk mendukung pembelajaran profesional guru PAUD nonformal melalui pengalaman belajar yang singkat, fleksibel, dan reflektif.

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## 1. Introduction

Early Childhood Education (ECE) serves as a fundamental cornerstone in human resource development, as children experience rapid growth and development during this period. Often referred to as the golden age, early childhood represents a critical stage during which appropriate stimulation significantly influences children's moral and religious values, physical and motor development, cognitive abilities, language skills, socio-emotional competence, and artistic expression. Therefore, the provision of high-quality ECE services requires teachers who possess adequate understanding of fundamental ECE concepts to facilitate learning experiences that are responsive to children's developmental characteristics and needs. The quality of early childhood education is largely determined by educators' competencies in creating responsive, inclusive, and child-centered interactions [1], [2].

ECE teachers are expected not only to manage administrative aspects of teaching but also to possess a comprehensive understanding of the fundamental principles of early childhood education. Understanding fundamental ECE concepts encompasses knowledge of children's developmental characteristics, play-based learning principles, holistic child development, the importance of socio-emotional well-being, school readiness, and the establishment of safe and participatory learning environments. Such understanding serves as a foundation for selecting appropriate instructional strategies, providing suitable developmental stimulation, and fostering positive interactions with children. Teachers with sound conceptual understanding are more capable of designing meaningful learning experiences, whereas limited understanding may result in instructional practices that are inconsistent with the principles of early childhood education.

Previous studies have indicated the persistence of various misconceptions in early childhood educational practices. Children's success is frequently measured primarily through academic achievements such as reading, writing, and numeracy skills, while socio-emotional development, independence, creativity, and interpersonal competence receive less attention. Likewise, children who are physically active are often perceived as difficult to manage, whereas quiet children tend to be regarded as obedient and problem-free. In fact, the philosophy of early childhood education views child development as a holistic process that extends beyond academic attainment alone. The quality of interactions and children's emotional well-being constitute essential components in creating meaningful learning experiences within early childhood settings [3], [4].

These circumstances present significant challenges, particularly for teachers working in nonformal ECE settings. Nonformal ECE teachers often come from diverse educational backgrounds and possess varying teaching experiences and opportunities for professional development. At the same time, rapid developments in educational knowledge, policy changes,

and evolving learner characteristics require teachers to continuously update their understanding and competencies. Professional development can no longer rely solely on conventional training programs that are formal, periodic, and time-consuming. Teachers require alternative learning approaches that are flexible, accessible, relevant to their needs, and capable of supporting self-directed learning according to their individual learning pace.

The advancement of digital technology has opened new opportunities for adult learning and professional development. One emerging approach is microlearning. Microlearning refers to an instructional strategy that presents learning materials in small, focused units that can be completed within a relatively short period. Microlearning enables learners to acquire information rapidly, efficiently, and according to their immediate needs, thereby supporting lifelong learning [5]. The concise, flexible, and accessible nature of microlearning aligns well with the characteristics of adult learners, who often experience time constraints and tend to seek practical solutions to authentic problems encountered in their professional contexts.

One form of microlearning that has gained increasing popularity in the digital era is microblogging. Microblogging refers to the dissemination of concise information through the integration of short texts, visuals, and key messages that are easily understood and accessible through various digital devices. Within educational contexts, microblogs function not merely as information-sharing tools but also as instructional media capable of simplifying complex concepts into digestible content. The presentation of information in brief and visually appealing formats allows learners to process information gradually without experiencing excessive cognitive load. Consequently, microblogging holds considerable potential as a learning medium for teachers seeking to strengthen their understanding of educational concepts.

Canva is one of the most widely used digital design applications in educational settings due to its user-friendly features that enable users to create visually appealing content without requiring advanced graphic design skills. The application has been extensively utilized by teachers to produce instructional materials, presentations, and educational media. Previous studies have demonstrated that Canva supports more communicative content presentation, enhances visual attractiveness, and facilitates creativity in educational media development. Nevertheless, the use of Canva in educational research has predominantly focused on developing learning media for students or training teachers to use the application, rather than incorporating Canva into the systematic development of instructional models designed specifically to improve teachers' conceptual understanding.

A review of previous studies indicates that research on microlearning has largely concentrated on digital learning environments, competency development, and professional training. Similarly, studies concerning Canva have reported

positive outcomes in enhancing the quality of instructional media. However, research specifically devoted to developing a Canva-assisted microblogging model to enhance nonformal ECE teachers' understanding of fundamental ECE concepts remains limited. Moreover, existing studies tend to emphasize technological tools and media aspects, while the integration of adult learning principles (andragogy) into digital instructional designs has received relatively little attention.

This research gap suggests the necessity of developing innovative learning models that not only utilize digital technology but also accommodate the characteristics of teachers as adult learners. Adult learning should provide opportunities for learners to connect prior experiences with newly acquired knowledge, engage in reflective thinking, and solve problems that are relevant to their real-life situations [6]. Therefore, professional learning models for teachers should be contextual, reflective, and practical to generate meaningful impacts on their professional practices.

The novelty of this study lies in the development of the MIKRO Model, which integrates microlearning, microblogging, Canva, and andragogical principles into a unified instructional framework. The MIKRO Model consists of five stages: Access (Mengakses), Identification (Identifikasi), Review (Kaji), Reflection (Refleksi), and Optimization (Optimalisasi). Through these stages, teachers are not only exposed to concise information delivered through microblogs but are also encouraged to identify problems, examine concepts in relation to their teaching experiences, reflect upon their instructional practices, and optimize the application of newly acquired concepts within their classrooms. Consequently, the model functions not merely as an information delivery medium but also as a reflective and contextual mechanism for transforming teachers' understanding.

Based on the foregoing discussion, the development of a Canva-assisted microblogging model is considered a promising alternative for enhancing nonformal ECE teachers' understanding of fundamental ECE concepts. The proposed model is expected to address teachers' needs for learning experiences that are flexible, engaging, accessible, and aligned with the characteristics of adult learners. Therefore, this study aims to: (1) develop a Canva-assisted microblogging model to enhance understanding of fundamental early childhood education concepts; (2) determine the feasibility of the developed model based on expert evaluations; and (3) examine the model's potential to improve nonformal ECE teachers' understanding of fundamental early childhood education concepts.

## 2. Method

This study employed a Research and Development (R&D) approach to develop a Canva-assisted microblogging model aimed at enhancing teachers' understanding of fundamental

Early Childhood Education (ECE) concepts. The study adopted the ADDIE development model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. The ADDIE model was selected because it provides a systematic and flexible framework for developing educational products and has been widely applied in instructional design research [7].

The analysis stage was conducted to identify the needs and challenges experienced by nonformal ECE teachers in understanding fundamental ECE concepts. This stage focused on exploring teachers' experiences in professional development, their utilization of digital media for learning purposes, and the necessity for alternative learning approaches that are practical, accessible, and relevant to their professional contexts. The findings from this stage were used as the basis for determining the characteristics of the model and the themes of the developed learning materials.

During the design stage, the researchers developed the conceptual framework of the MIKRO Model and prepared the initial design of the Canva-assisted microblogs. The model was constructed by integrating the principles of microlearning, microblogging, and andragogy to accommodate the characteristics of teachers as adult learners. The MIKRO Model consists of five stages: Access (Mengakses), Identification (Identifikasi), Review (Kaji), Reflection (Refleksi), and Optimization (Optimalisasi). Learning objectives, model syntax, instructional flow, assessment instruments, and visual layouts of the microblogs were formulated at this stage.

The development stage involved transforming the initial design into a prototype consisting of two products: the MIKRO Model and three Canva-assisted microblogs. The developed microblogs addressed common misconceptions frequently encountered in ECE practices through the following themes: Children Get Bored Easily or Is Learning Less Meaningful?, Brilliant Children Are Not Always Those Who Read Early, and Quiet Children Are Not Necessarily Happy. Subsequently, the products underwent expert validation to determine their feasibility and obtain suggestions for revision. Model validation was conducted by an expert in Community Education and Early Childhood Education to evaluate the conceptual framework, syntax, implementation, and usefulness of the model. Media validation was carried out by an educational media expert to assess content appropriateness, presentation, visual design, practicality, and usefulness. The products were revised according to the recommendations provided by the validators before being implemented in the field trial.

The implementation stage involved a limited field trial with 20 nonformal ECE teachers from Margaasih District, Bandung Regency, West Java, Indonesia. Participants were selected using purposive sampling based on the criteria that they were actively teaching in nonformal ECE institutions, willing to participate throughout the study, and had access to smartphones or digital devices required to access the microblog content. Prior to the

intervention, participants completed a pretest to assess their initial understanding of fundamental ECE concepts. The teachers then participated in learning activities using the MIKRO Model and the developed microblogs. After completing the intervention, participants undertook a posttest to identify changes in their conceptual understanding.

Data were collected using several instruments. A needs analysis questionnaire was employed to explore teachers' experiences, learning needs, and expectations regarding microblogging-based learning models. Expert validation sheets were used to assess the feasibility of the developed products. The model validation sheet consisted of 21 items covering conceptual feasibility, syntax, implementation, and novelty, whereas the media validation sheet comprised 20 items related to content appropriateness, presentation, visual design, practicality, and usefulness. In addition, pretest and posttest instruments consisting of 15 Higher-Order Thinking Skills (HOTS)-based multiple-choice questions in parallel forms were administered to measure teachers' understanding of fundamental ECE concepts. The test items addressed topics related to child characteristics, meaningful learning, holistic development, school readiness, and children's socio-emotional well-being.

The collected data were analyzed using both quantitative and qualitative approaches. Quantitative data obtained from the expert validation sheets were analyzed using percentage techniques by comparing the obtained scores with the maximum possible scores using the following formula:

$$P = \frac{\sum X}{\sum X_i} \times 100\%$$

The resulting percentages were interpreted using the following criteria: 81–100% (very feasible), 61–80% (feasible), 41–60% (fairly feasible), 21–40% (less feasible), and 0–20% (not feasible) [8].

To examine the potential effectiveness of the developed model, participants' pretest and posttest scores were analyzed using the normalized gain (N-Gain) formula as follows:

$$g = \frac{S_{post} - S_{pre}}{S_{max} - S_{pre}}$$

The N-Gain score was interpreted into three categories, namely high ( $\geq 0.70$ ), moderate (0.30–0.69), and low ( $< 0.30$ ), to determine the extent of improvement in teachers' understanding following the intervention [9].

Qualitative data obtained from open-ended questionnaire responses and validators' comments were analyzed descriptively. The analysis focused on identifying recommendations, suggestions, and aspects requiring revision to improve the developed products. The findings from the qualitative analysis were subsequently used to refine the MIKRO Model and the Canva-assisted microblogs before final implementation.

Ethical considerations were observed throughout the study. Participants were informed about the objectives and procedures

of the research prior to data collection. Their participation was voluntary, and informed consent was obtained from all participants. The confidentiality and anonymity of participants' identities were ensured, and all collected data were used solely for academic purposes.

### 3. Result and Discussion

#### 3.1 Needs Analysis of Nonformal ECE Teachers Regarding Fundamental ECE Concepts

The analysis stage was conducted to identify the learning needs of nonformal Early Childhood Education (ECE) teachers concerning their understanding of fundamental ECE concepts and to explore the characteristics of learning models expected by teachers. The findings from this stage served as the basis for developing the Canva-assisted microblogging model. A needs analysis questionnaire was administered to 20 nonformal ECE teachers in Margaasih District, Bandung Regency, covering five aspects: understanding of fundamental ECE concepts, professional development experiences, utilization of digital media, the need for microblogging-based learning models, and the need for ECE content materials.

The results revealed that teachers demonstrated a relatively high need for strengthening their understanding of fundamental ECE concepts. The average percentage score for this aspect reached 70.0%, indicating that teachers still required additional support to deepen their understanding of essential principles of early childhood education. Furthermore, teachers reported limitations in existing professional development experiences, reflected in an average percentage of 67.0%. These findings suggest that conventional professional learning opportunities have not fully addressed teachers' learning needs and preferences.

Teachers also showed a strong readiness to engage with digital learning environments. The aspect of digital media utilization obtained an average percentage of 83.0%, indicating that most participants were familiar with smartphones and digital platforms as learning resources. In addition, teachers expressed a very high need for alternative learning models that were practical, flexible, and easily accessible, as indicated by the average percentage score of 87.5% for the need for microblogging-based learning models. Similarly, the aspect related to the need for ECE content materials achieved an average percentage of 90.0%, demonstrating teachers' strong interest in obtaining relevant and applicable learning materials to support their professional practice.

The detailed results of the needs analysis are presented in Table 1.

**Table 1.** Needs Analysis Results of Nonformal ECE Teachers

| Aspect                                    | Average Percentage (%) | Category |
|-------------------------------------------|------------------------|----------|
| Understanding of Fundamental ECE Concepts | 70.0                   | High     |

|                                              |      |           |
|----------------------------------------------|------|-----------|
| Professional Development Experiences         | 67.0 | High      |
| Digital Media Utilization                    | 83.0 | Very High |
| Need for Microblogging-Based Learning Models | 87.5 | Very High |
| Need for Fundamental ECE Content Materials   | 90.0 | Very High |

The quantitative findings were further supported by responses to the open-ended questions. Analysis of teachers' responses indicated that one of the major difficulties encountered in understanding fundamental ECE concepts involved translating theoretical knowledge into practical classroom applications. Teachers also highlighted the challenges of accessing professional development opportunities that were relevant, concise, and directly applicable to their daily teaching practices.

Regarding preferred learning media, most teachers expressed a preference for visual and concise learning materials that could be accessed flexibly through digital devices. Teachers considered that lengthy training materials often reduced their motivation and limited their ability to retain essential information. Instead, they expected learning resources to present key messages in a clear and engaging manner without oversimplifying important concepts.

The open-ended responses also revealed teachers' interest in practical ECE topics closely related to classroom realities. The areas most frequently mentioned included understanding children's developmental characteristics, supporting socio-emotional development, implementing child-centered learning, addressing children's behavioral challenges, and preparing children for school readiness. Teachers further expected future professional learning initiatives to provide practical examples that could be directly implemented in their teaching contexts.

The findings of this needs analysis demonstrate that the development of the Canva-assisted microblogging model was grounded in the authentic needs of nonformal ECE teachers rather than solely driven by technological trends. Teachers required professional learning experiences that were accessible, visually engaging, practical, and responsive to their professional challenges. Therefore, these findings provided a strong rationale for developing the MIKRO Model as an alternative approach to strengthening teachers' understanding of fundamental ECE concepts through concise, contextual, and reflective learning experiences.

These results align with the principles of adult learning, which emphasize that adult learners prefer learning experiences that are relevant to their immediate needs, connected to their prior experiences, and oriented toward solving practical problems encountered in real-life situations [10]. Consequently, the identified needs not only justified the development of the proposed model but also informed the characteristics and content of the Canva-assisted microblogs developed in this study.

### *3.2 Development of the Canva-Assisted Microblogging Model (MIKRO Model)*

The development stage focused on transforming the findings from the needs analysis into a practical learning model that could address the professional learning needs of nonformal Early Childhood Education (ECE) teachers. Based on the identified needs, a Canva-assisted microblogging model named the MIKRO Model was developed. The term "MIKRO" is an acronym representing five sequential learning stages: Mengakses (Access), Identifikasi (Identification), Kaji (Review), Refleksi (Reflection), and Optimalisasi (Optimization). The model was designed by integrating the principles of microlearning, microblogging, and andragogy to facilitate concise, contextual, and reflective learning experiences for teachers.

The development of the MIKRO Model was grounded in the assumption that adult learners require learning experiences that are directly relevant to their professional contexts and provide opportunities to connect new knowledge with prior experiences. Consequently, the model was not merely designed as a medium for delivering information but as a structured learning process that encourages teachers to critically examine their instructional practices and formulate strategies for improvement. Through this approach, teachers are positioned as active learners who construct meaning from both the microblog content and their lived experiences as practitioners.

The syntax of the MIKRO Model consists of five interconnected stages. The first stage, Access (Mengakses), requires teachers to access the microblog content through smartphones or other digital devices. At this stage, teachers are introduced to concise and visually engaging content designed to stimulate their interest and activate prior knowledge. The second stage, Identification (Identifikasi), encourages teachers to identify key issues, misconceptions, or challenges related to the topic presented in the microblogs. Teachers are invited to compare the situations described in the content with their own classroom experiences.

The third stage, Review (Kaji), involves examining the fundamental ECE concepts embedded in the microblogs. Teachers analyze the presented information and relate it to relevant theoretical perspectives and professional practices. The fourth stage, Reflection (Refleksi), provides opportunities for teachers to reflect upon their existing beliefs and instructional approaches. Through reflective questions, teachers are encouraged to reconsider whether their practices align with the principles of developmentally appropriate ECE. Finally, the fifth stage, Optimization (Optimalisasi), guides teachers to formulate practical actions and strategies that can be implemented to improve future teaching practices.

The framework of the MIKRO Model is presented in Figure 1.



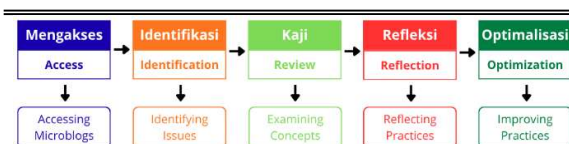


Figure 1. Framework of the MIKRO Model

The MIKRO framework illustrates a progressive learning process in which teachers move from receiving information toward transforming their understanding into practical actions. Unlike conventional training approaches that often emphasize one-way information delivery, the MIKRO Model emphasizes interaction between new knowledge and teachers' professional experiences. This structure reflects the characteristics of adult learning, which prioritize self-direction, relevance, and problem-solving [11].

As an operationalization of the model, three Canva-assisted microblogs were developed to address common misconceptions and challenges frequently encountered in ECE practices. Each microblog was designed in a carousel format consisting of several interconnected slides that combined concise text, illustrations, reflective prompts, and practical messages. The carousel format was selected because it allows information to be presented gradually, thereby reducing cognitive overload while maintaining users' attention.



Figure 2. Microblog Content 1

The first microblog, entitled "Children Get Bored Easily or Is Learning Less Meaningful?", focused on the importance of meaningful learning experiences and play-based learning in ECE settings. This microblog challenged the misconception that children's boredom primarily results from children's characteristics rather than instructional approaches. The content encouraged teachers to examine whether classroom activities had provided opportunities for exploration, active participation, and enjoyment.



Figure 3. Microblog Content 2

The second microblog, "Brilliant Children Are Not Always Those Who Read Early," addressed the widespread tendency to equate children's success with early literacy and numeracy achievements. The content emphasized the holistic nature of child development and highlighted that socio-emotional competence, independence, curiosity, creativity, and problem-solving abilities are equally important indicators of children's growth and readiness for future learning.



Figure 4. Microblog Content 3

The third microblog, "Quiet Children Are Not Necessarily Happy," explored issues related to children's emotional well-being and participation in learning activities. This microblog encouraged teachers to reconsider assumptions that quiet children are automatically comfortable and engaged. Instead, it highlighted the importance of creating psychologically safe learning environments where every child feels valued, heard, and supported.

All microblogs were developed using Canva due to its accessibility, user-friendly interface, and diverse visual design features. The use of Canva enabled the researchers to produce attractive educational content without requiring advanced graphic design expertise. Consistent visual elements, readable typography, contextual illustrations, and reflective prompts were incorporated to enhance user engagement and support conceptual understanding. Documentation of the design process indicated that the microblogs underwent several revisions to ensure alignment between visual presentation, conceptual accuracy, and the characteristics of adult learners.

Overall, the development process resulted in a learning model that integrates technology, reflective practice, and adult learning principles into a practical and accessible format. The MIKRO Model and its accompanying microblogs were developed not only to deliver information efficiently but also to facilitate meaningful learning experiences capable of strengthening nonformal ECE teachers' understanding of fundamental ECE concepts. The integration of microblogging and andragogical principles represents a distinctive contribution of this study, offering an alternative approach to professional learning that is responsive to the realities faced by nonformal ECE teachers [12], [13].

### 3.3 Feasibility of the Developed Model and Microblogs

The feasibility evaluation of the developed products was conducted to determine whether the MIKRO Model and the Canva-assisted microblogs were appropriate for implementation in the limited field trial. Product validation was performed through expert judgment involving one model expert and one media expert. The validation process aimed not only to obtain feasibility scores but also to gather constructive feedback to improve the quality of the developed products before implementation.

The validation of the MIKRO Model was conducted by an expert in Community Education and Early Childhood Education. The assessment covered four aspects, namely conceptual feasibility, model syntax, implementation feasibility, and novelty and usefulness. The results showed that the MIKRO Model obtained a total score of 75 out of a maximum score of 105, resulting in a feasibility percentage of 71.43%. Based on the predetermined criteria, this percentage falls within the "feasible" category, indicating that the developed model can be utilized with minor revisions.

The detailed results of the model validation are presented in Table 2.

**Table 2.** Results of Model Expert Validation

| Aspect                     | Obtained Score | Maximum Score | Percentage (%) | Category        |
|----------------------------|----------------|---------------|----------------|-----------------|
| Conceptual Feasibility     | 18             | 25            | 72.00          | Feasible        |
| Model Syntax               | 21             | 30            | 70.00          | Feasible        |
| Implementation Feasibility | 17             | 25            | 68.00          | Feasible        |
| Novelty and Usefulness     | 19             | 25            | 76.00          | Feasible        |
| <b>Total</b>               | <b>75</b>      | <b>105</b>    | <b>71.43</b>   | <b>Feasible</b> |

The model expert acknowledged several strengths of the developed model. First, the MIKRO Model was considered simple and easy to understand, making it suitable for nonformal ECE teachers with diverse educational backgrounds. Second, the integration of microblogging into the learning process was regarded as relevant to teachers' current learning preferences, particularly in terms of flexibility and accessibility. Third, the selected microblog topics were considered contextual because they addressed issues frequently encountered in ECE practices.

Despite these strengths, the validator also identified several aspects requiring refinement. The implementation guidelines for each stage of the model needed to be described more explicitly to facilitate independent application by teachers. In addition, the reflection stage required more concrete examples of reflective prompts to stimulate deeper thinking. The validator further suggested clarifying the indicators of success within the optimization stage to ensure that teachers could more easily translate conceptual understanding into practical actions.

Following the expert recommendations, several revisions were made to the MIKRO Model. Operational descriptions were

added to each stage of the syntax to provide clearer guidance regarding teachers' activities. Reflective questions were incorporated into the reflection stage to encourage teachers to critically examine their classroom practices. Furthermore, examples of follow-up actions and expected outcomes were included in the optimization stage to strengthen the practical orientation of the model.

In addition to model validation, the Canva-assisted microblogs were evaluated by an educational media expert. The assessment focused on five aspects, namely content appropriateness, presentation, visual design, practicality, and usefulness. The results indicated that the microblogs achieved a total score of 72 out of a maximum score of 100, resulting in a feasibility percentage of 72.00%. Based on the established criteria, the microblogs were categorized as "feasible" for implementation with minor revisions.

The results of the media validation are presented in Table 3.

**Table 3.** Results of Media Expert Validation

| Aspect                      | Obtained Score | Maximum Score | Percentage (%) | Category        |
|-----------------------------|----------------|---------------|----------------|-----------------|
| Content Appropriateness     | 18             | 25            | 72.00          | Feasible        |
| Presentation                | 18             | 25            | 72.00          | Feasible        |
| Visual Design               | 18             | 25            | 72.00          | Feasible        |
| Practicality and Usefulness | 18             | 25            | 72.00          | Feasible        |
| <b>Total</b>                | <b>72</b>      | <b>100</b>    | <b>72.00</b>   | <b>Feasible</b> |

The media expert highlighted several positive aspects of the developed microblogs. The content was considered concise and relevant to the realities faced by nonformal ECE teachers. The selected themes addressed misconceptions that frequently emerge in ECE settings, thereby increasing the practical value of the materials. The validator also noted that the visual appearance was sufficiently attractive and capable of supporting the delivery of key messages.

Nevertheless, several recommendations for improvement were provided. Some slides contained relatively dense textual information and therefore required simplification to improve readability. Greater consistency in the use of icons and illustrations across the three microblogs was also recommended. In addition, the validator suggested adjusting the size of visual elements and typography to optimize readability when accessed through smartphones.

Based on these recommendations, revisions were undertaken before implementation. Several textual components were shortened to emphasize key messages, visual elements were standardized to create a more coherent design, and typography was adjusted to improve legibility across digital devices. These revisions were intended to enhance the practicality and user experience of the developed microblogs.

Overall, the findings of the expert validation indicate that both the MIKRO Model and the Canva-assisted microblogs met the criteria for feasibility. The validation process not only confirmed the appropriateness of the developed products but also

contributed to their refinement through expert feedback. The incorporation of validators' suggestions strengthened the conceptual clarity, usability, and practicality of the products before they were introduced to nonformal ECE teachers during the implementation stage. These findings suggest that the developed products possess adequate quality to support professional learning experiences aimed at enhancing teachers' understanding of fundamental ECE concepts [14], [15].

### 3.4 Potential Effectiveness of the MIKRO Model in Enhancing Teachers' Understanding

The potential effectiveness of the MIKRO Model was examined through a limited field trial involving 20 nonformal Early Childhood Education (ECE) teachers. Teachers' understanding of fundamental ECE concepts was measured using pretest and posttest instruments consisting of 15 parallel-form Higher-Order Thinking Skills (HOTS)-based multiple-choice questions. The pretest was administered before the implementation of the MIKRO Model to identify participants' initial understanding, whereas the posttest was conducted after participants completed the learning activities using the developed model and Canva-assisted microblogs.

The results indicated an increase in teachers' understanding following the implementation of the MIKRO Model. The average pretest score was 7.55 out of a maximum score of 15, equivalent to a mean percentage score of 50.33. After participating in the intervention, the average posttest score increased to 10.40, corresponding to a mean percentage score of 69.33. These findings suggest that teachers demonstrated better understanding of fundamental ECE concepts after engaging with the developed learning model.

The comparison between pretest and posttest results is presented in Table 4.

**Table 4.** Comparison of Pretest and Posttest Results

| Variable | Mean Score | Maximum Score | Mean Percentage |
|----------|------------|---------------|-----------------|
| Pretest  | 7.55       | 15            | 50.33           |
| Posttest | 10.40      | 15            | 69.33           |

To further examine the extent of improvement, the normalized gain (N-Gain) score was calculated. The analysis revealed an average N-Gain score of 0.37, which falls within the moderate improvement category according to Hake's interpretation criteria [9]. This finding indicates that the MIKRO Model has the potential to facilitate meaningful improvement in teachers' understanding, although the magnitude of improvement was not excessively high.

The distribution of pretest scores, posttest scores, and N-Gain values is summarized in Table 5.

**Table 5.** Summary of Pretest, Posttest, and N-Gain Results

| Indicator              | Result |
|------------------------|--------|
| Number of Participants | 20     |

|                          |          |
|--------------------------|----------|
| Mean Pretest Score       | 7.55     |
| Mean Pretest Percentage  | 50.33    |
| Mean Posttest Score      | 10.40    |
| Mean Posttest Percentage | 69.33    |
| Mean N-Gain Score        | 0.37     |
| N-Gain Category          | Moderate |

The findings demonstrate that the implementation of the MIKRO Model was associated with an increase in teachers' understanding of fundamental ECE concepts. Nevertheless, the moderate N-Gain score suggests that the improvement occurred gradually rather than dramatically. This result appears reasonable considering that the intervention was delivered through a limited trial using three microblog topics within a relatively short period of time. The developed model was intended to provide concise and accessible learning experiences rather than intensive professional training programs conducted over extended durations.

The moderate level of improvement also reflects the characteristics of adult learning. Adult learners often require repeated exposure, opportunities for reflection, and continuous practice to transform conceptual understanding into sustained changes in professional practice. Therefore, although the present findings indicate that the MIKRO Model possesses the potential to enhance teachers' understanding of fundamental ECE concepts, broader implementation accompanied by ongoing support may produce greater improvements in future applications.

Overall, these findings suggest that the Canva-assisted MIKRO Model is not only feasible but also demonstrates promising potential as an alternative professional learning approach for nonformal ECE teachers. The integration of concise microblog content, reflective activities, and contextual issues appears to support teachers in revisiting and strengthening their understanding of fundamental ECE concepts through flexible and meaningful learning experiences [13], [16].

### 3.5 Discussion

The findings of this study indicate that nonformal ECE teachers require learning experiences that are concise, flexible, and closely connected to the realities of their professional practice. This finding can be understood through the perspective of andragogy, which views adults as self-directed learners who possess accumulated experiences, specific learning needs, and a strong orientation toward solving practical problems. Unlike children, adult learners do not learn simply because they are instructed to do so; rather, they seek learning opportunities that they perceive as immediately relevant to their personal and professional responsibilities. According to Knowles' assumptions of adult learning, adults need to understand why they need to learn something, prefer learning that addresses real-life problems, rely heavily on their prior experiences as learning resources, and are motivated when learning contributes directly



to improving their performance and quality of life. Consequently, professional learning initiatives that require prolonged participation, rigid schedules, and extensive theoretical exposition may not align well with the realities faced by nonformal ECE teachers, who often balance teaching responsibilities, administrative tasks, family obligations, and limited opportunities for formal professional development. In this context, the preference for concise and flexible learning identified in this study should not be interpreted as a desire for superficial learning; rather, it reflects adult learners' efforts to maximize limited resources while pursuing meaningful professional growth. Livingston argued that andragogical instructional approaches become more effective when they emphasize learner-centered practices, immediate applicability, and active engagement with authentic problems, allowing adult learners to integrate new knowledge into their existing professional frameworks [17]. Similarly, Ariefin highlighted that adult learners tend to demonstrate stronger commitment to learning environments that acknowledge their experiences, respect their autonomy, and address their perceived needs rather than imposing externally determined learning agendas. Teachers participating in adult learning contexts therefore expect educational experiences that are practical, respectful, and responsive to their circumstances rather than merely information-intensive [18]. These characteristics are particularly relevant for nonformal ECE teachers, whose access to continuous professional development is often constrained by time, institutional support, and geographical limitations.

Furthermore, the increasing complexity of teachers' professional roles in the digital era reinforces the importance of flexible learning opportunities that can accommodate diverse learning trajectories. Contemporary teachers are expected to continuously update their pedagogical knowledge while simultaneously adapting to curriculum changes, technological developments, and evolving understandings of children's needs. Adult learners are more likely to engage in learning when they retain a degree of control over the pace, timing, and format of their educational experiences. They also tend to favor learning activities that allow them to exercise autonomy and immediately apply newly acquired insights to ongoing professional challenges. This perspective is consistent with the principle that adult learning is readiness-based and problem-centered rather than content-centered. Rather than accumulating abstract knowledge detached from practice, teachers seek learning experiences that directly support decision-making in their classrooms and help them respond to everyday educational dilemmas. Research has shown that recognizing adult learners' experiences and promoting self-directed participation contribute to the development of respectful learning environments characterized by mutual trust, increased motivation, and sustained engagement [10]. Therefore, the demand for concise and flexible learning identified among nonformal ECE teachers should be viewed as an adaptive response to their dual identities

as practitioners and learners. Professional development models that are accessible, contextually relevant, and respectful of adult learners' characteristics are more likely to foster meaningful participation and continuous learning. The MIKRO Model responds to these needs by offering learning experiences that can be accessed independently, integrated into teachers' daily routines, and immediately connected to authentic educational practices, thereby reflecting the fundamental assumptions of andragogy within a contemporary digital learning environment.

The effectiveness of microblogging as a learning medium can be understood through the perspective of microlearning, which emphasizes the delivery of instructional content in small, focused, and manageable learning units. Unlike conventional professional development programs that frequently present extensive information within limited periods, microlearning recognizes that learners often experience difficulties in maintaining attention and retaining large amounts of information simultaneously. For adult learners, particularly teachers who juggle multiple professional responsibilities, concise learning experiences are more compatible with their available time and cognitive resources. Microblogging operationalizes the principles of microlearning by transforming complex ideas into brief yet meaningful messages that can be consumed gradually without requiring prolonged periods of concentration. Through carousel-based content that combines short texts, visual illustrations, and key messages, microblogs facilitate just-in-time learning, enabling teachers to access information whenever they encounter relevant professional situations. This flexibility aligns with findings suggesting that shorter learning episodes can enhance engagement and support knowledge retention because learners are more likely to revisit and repeatedly access instructional materials presented in accessible formats. Buchem and Hamelmann argued that microlearning environments support self-regulated learning by allowing individuals to determine when, where, and how they engage with content, thereby increasing learner autonomy and participation [19]. Similarly, De Gagne et al. reported that microlearning promotes efficiency and sustained motivation among adult learners because educational content is structured around clearly defined objectives and immediately applicable information rather than extensive theoretical exposition [20]. Consequently, the effectiveness of microblogging extends beyond convenience; it reflects an instructional strategy deliberately designed to accommodate contemporary learners' patterns of information consumption and professional demands.

The effectiveness of microblogging can also be explained through Cognitive Load Theory, which posits that the human working memory has limited capacity for processing new information. When learners are exposed to excessive amounts of information simultaneously, cognitive overload may occur, reducing comprehension and impairing knowledge retention. Sweller distinguished between intrinsic cognitive load, which relates to the complexity of the material itself, and extraneous

cognitive load, which results from ineffective instructional design [21]. Educational materials that contain lengthy explanations, dense textual information, and multiple competing messages often increase extraneous cognitive load, making it more difficult for learners to identify essential concepts. Microblogging addresses this challenge through the deliberate simplification of information. Rather than reducing conceptual depth, simplification involves selecting core ideas, organizing information hierarchically, emphasizing key messages, and presenting them through integrated verbal and visual representations. Mayer emphasized that learners understand instructional materials more effectively when unnecessary information is minimized and essential concepts are highlighted through coherent multimedia design principles [22]. Within the MIKRO Model, the microblogs were intentionally designed to present one major issue at a time, supported by contextual illustrations and reflective prompts. Such organization allows teachers to focus their attention on critical concepts without becoming overwhelmed by excessive details. The simplification of information therefore functions as a pedagogical strategy rather than a reduction of academic rigor. By reducing unnecessary cognitive burden while preserving conceptual relevance, microblogging creates opportunities for teachers to process, connect, and apply newly acquired knowledge more effectively within their professional contexts. This finding suggests that concise and visually structured learning resources can facilitate meaningful understanding, particularly among adult learners who require efficient access to information that directly supports their daily practice.

One of the distinctive features of the MIKRO Model is the incorporation of reflection as an integral stage within the learning process. Reflection was not positioned merely as an additional activity following content exposure, but rather as a transformative process through which teachers reinterpret their experiences in light of newly acquired knowledge. This approach is closely aligned with Experiential Learning Theory proposed by Kolb, which emphasizes that learning occurs through the continuous transformation of experience into knowledge. According to Kolb, effective learning involves a cyclical process consisting of concrete experience, reflective observation, abstract conceptualization, and active experimentation [23]. Adult learners do not enter learning situations as blank slates; instead, they bring accumulated experiences, beliefs, routines, and assumptions that shape how they interpret new information. For nonformal ECE teachers, classroom practices developed over years of professional experience often become implicit frameworks guiding instructional decisions. However, these experiences do not automatically lead to professional growth unless individuals are given opportunities to critically examine and reconstruct their meanings. Through the reflection stage of the MIKRO Model, teachers are encouraged to revisit their assumptions regarding children's learning, compare them with the principles presented

in the microblogs, and identify inconsistencies between what they know and what they practice. This reflective process enables teachers to move beyond passive information consumption toward deeper conceptual understanding. Research conducted by Widodo and Ferdiansyah demonstrated that reflective activities contribute significantly to teachers' professional learning because they encourage practitioners to question habitual practices, recognize alternative perspectives, and make informed pedagogical decisions grounded in evidence rather than intuition alone [24]. Thus, reflection serves as a bridge connecting theoretical understanding with authentic teaching experiences.

Furthermore, reflection represents a central component of adult learning because it facilitates perspective transformation and sustained professional development. Schön argued that professionals improve their practice through deliberate reflection both during and after action, enabling them to learn from complex situations characterized by uncertainty and uniqueness [25]. In educational contexts, reflective practice encourages teachers to become critical practitioners who continuously evaluate the effectiveness of their instructional approaches rather than simply reproducing established routines. The reflective prompts embedded within the MIKRO Model were therefore designed to stimulate self-questioning, such as whether existing classroom practices truly support children's holistic development, whether certain beliefs about children's abilities reflect developmentally appropriate principles, and how alternative approaches might better address children's needs. Such questions invite teachers to engage in critical self-examination and foster greater awareness of the relationship between beliefs and actions. Mezirow's Transformative Learning Theory further suggests that critical reflection enables adult learners to reassess previously unquestioned assumptions and reconstruct their frames of reference in more inclusive and informed ways [26]. In this sense, the strength of the MIKRO Model lies not only in its concise delivery of information through microblogs but also in its ability to create reflective spaces where teachers actively negotiate meaning from their experiences. Reflection transforms microlearning from a process of acquiring fragmented information into an opportunity for professional growth and conceptual change. Consequently, the reflective dimension embedded within the MIKRO Model becomes a powerful mechanism for strengthening nonformal ECE teachers' understanding of fundamental ECE concepts and supporting the development of more intentional, responsive, and developmentally appropriate teaching practices.

The findings of this study contribute to the growing body of literature on teachers' professional learning by proposing an instructional innovation that extends beyond the isolated use of educational technology. Previous studies have predominantly examined Canva as a visual design tool for developing teaching materials, presentations, worksheets, or learning media aimed at enhancing classroom attractiveness and students' engagement.

Other studies have explored microlearning as a strategy for delivering concise instructional content to improve accessibility and efficiency in various educational contexts. Although these studies have demonstrated positive outcomes, they tend to focus on either the technological affordances of digital tools or the efficiency of short learning formats. Consequently, teachers are often positioned as recipients of information rather than active adult learners who critically construct understanding through their professional experiences. Moreover, research specifically addressing the professional learning needs of nonformal Early Childhood Education (ECE) teachers remains limited, despite the unique challenges they encounter, including diverse educational backgrounds, restricted access to continuous professional development, and the need to translate abstract ECE principles into everyday classroom practices. A review conducted by Loeneto found that technology integration studies in Indonesian educational settings frequently emphasize media effectiveness while paying insufficient attention to pedagogical processes and learners' characteristics, particularly in adult education contexts [27]. Similarly, Huda reported that innovations in teacher professional development often prioritize content delivery rather than creating opportunities for reflective engagement that enable teachers to critically examine their instructional beliefs and practices [28]. These observations suggest that there remains a need for professional learning models that not only employ digital technology but also accommodate the characteristics of teachers as adult learners who require contextual, reflective, and practice-oriented learning experiences.

Against this backdrop, the novelty of the present study lies in the development of the MIKRO Model as an andragogical microlearning innovation that integrates microblogging, Canva, and reflective learning principles into a coherent instructional framework. Unlike previous studies that treated Canva merely as a medium for visual presentation or microlearning solely as a strategy for simplifying content delivery, the MIKRO Model conceptualizes technology as a facilitator of professional meaning-making. Through the sequential stages of Access (Mengakses), Identification (Identifikasi), Review (Kaji), Reflection (Refleksi), and Optimization (Optimalisasi), teachers are guided not only to access concise information but also to identify classroom issues, connect new knowledge with prior experiences, critically reflect on existing practices, and formulate practical improvements for future implementation. Reflection, therefore, functions as the transformative core of the model, converting short informational exposure into deeper conceptual understanding and professional awareness. This integration represents an important contribution to the field of community education and teacher professional development because it demonstrates that concise digital learning can remain pedagogically meaningful when grounded in adult learning principles. Furthermore, by focusing specifically on strengthening fundamental ECE concepts among nonformal

ECE teachers, this study addresses a population that has received relatively limited scholarly attention despite its crucial role in expanding access to early childhood services. The MIKRO Model therefore contributes both theoretically and practically: theoretically, it enriches the discourse on the intersection of andragogy, microlearning, and reflective practice; practically, it offers an accessible and replicable professional learning alternative that can be implemented using widely available digital technologies. In this sense, the novelty of this study resides not merely in the use of Canva or microblogging themselves, but in the purposeful integration of these elements within an andragogical and reflective framework designed to strengthen teachers' understanding of fundamental ECE concepts and support continuous professional growth among nonformal ECE educators.

#### **4. Conclusion**

This study developed the MIKRO Model, a Canva-assisted microblogging model designed to enhance nonformal Early Childhood Education (ECE) teachers' understanding of fundamental ECE concepts. Developed through the ADDIE framework, the model integrates microlearning, microblogging, and andragogical principles into five interconnected stages: Access (Mengakses), Identification (Identifikasi), Review (Kaji), Reflection (Refleksi), and Optimization (Optimalisasi). The development process was grounded in teachers' authentic learning needs, particularly their preference for professional learning experiences that are concise, flexible, accessible, visually engaging, and directly relevant to classroom practice. The resulting products consisted of the MIKRO Model and three Canva-assisted microblogs addressing common misconceptions in ECE practices. The findings demonstrated that both the model and the microblogs met the feasibility criteria based on expert judgment, indicating that they are appropriate for implementation with minor revisions.

Furthermore, the limited implementation of the MIKRO Model indicated its potential to improve teachers' understanding of fundamental ECE concepts, as reflected by the increase in posttest performance and a moderate N-Gain score. Although the magnitude of improvement was not substantial, the findings suggest that concise and reflective learning experiences can support meaningful conceptual development among adult learners. The integration of reflective activities enabled teachers not only to access information efficiently but also to critically examine their existing beliefs and instructional practices in light of developmentally appropriate ECE principles. The novelty of this study lies in the integration of microblogging, Canva, and andragogical principles within a reflective learning framework specifically designed for nonformal ECE teachers. Unlike previous studies that primarily positioned Canva as a visual medium or microlearning as a content delivery strategy, the MIKRO Model conceptualizes digital technology as a facilitator

of professional meaning-making and reflective practice. Therefore, this study contributes both theoretically and practically by offering an innovative, accessible, and replicable approach to supporting the continuous professional development of nonformal ECE teachers. Future studies are recommended to involve larger samples, broader implementation settings, and longer intervention periods to further examine the effectiveness and sustainability of the MIKRO Model in diverse educational contexts.

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