

Development Of Puji (Emoji Puzzle) Learning Media Assisted By Picture Cards To Improve Emotional Intelligence Of Children Aged 4–6 Years

Isti Cintami Sarikasdani, Nita Priyanti, Chandra Apriyansyah

Program Studi Magister Pendidikan Anak Usia Dini, FKIP, Universitas Panca Sakti Bekasi

ABSTRACT

This study aims to develop an emoji puzzle assisted by picture cards to improve the emotional intelligence of children aged 4–6 years. The background of the study indicates that some children at TK Cinta Ibu experience difficulties in identifying and expressing their emotions, while others are not yet able to recognize the emotions of their peers. The limited availability of learning media specifically designed to support emotional intelligence development has become a major challenge in early childhood education institutions. This study employed a Research and Development (R&D) approach using the Four-D model (Define, Design, Develop, Disseminate). The define stage involved needs analysis through observation and interviews. The design stage produced a puzzle prototype representing eight basic emotions (happy, sad, angry, afraid, surprised, shy, proud, and disgusted) supported by contextual situation cards. The develop stage included expert validation and a limited trial using a one-group pretest–posttest design with 30 children (10 children aged 4–5 years and 20 children aged 5–6 years). Effectiveness was analyzed using the Normalized Gain (N-Gain). The results show that the emoji puzzle model is theoretically feasible, highly valid according to expert evaluation, and moderately effective in improving children’s emotional intelligence.

Keywords: *Emoji Puzzle, Emotional Intelligence, Early Childhood*

Corresponding author

Name: *Isti Cintami Sarikasdani*

Email: *isticintami1410@gmail.com*

INTRODUCTION

Emotional intelligence is one of the essential competencies that need to be developed during early childhood. At this stage, children begin to recognize, understand, and manage their emotions while interacting with others in their social environment. Emotional intelligence plays a significant role in helping children develop empathy, regulate emotions, and build positive social relationships. Early childhood education institutions therefore have an important responsibility to facilitate the development of emotional intelligence through meaningful learning experiences and appropriate educational media. When emotional development is not optimally stimulated, children may experience

difficulties in recognizing emotions, expressing feelings appropriately, and responding to the emotions of others (Goleman, 1995; Mayer & Salovey, 1997).

In early childhood learning, play-based activities are widely recognized as effective approaches to support children's cognitive, social, and emotional development. Learning media that involve interactive and concrete experiences are particularly suitable for young learners because children tend to understand concepts more easily through visual and tactile stimulation. One form of learning media that can support emotional learning is educational puzzles. Puzzle-based learning encourages children to think, explore, and actively engage in problem-solving activities while simultaneously stimulating emotional and social interaction with peers. When designed appropriately, puzzles can serve not only as cognitive stimulation tools but also as media for introducing emotional expressions and situations (Piaget, 1964; Vygotsky, 1978).

Several previous studies have emphasized the importance of emotional intelligence development in early childhood education. Research indicates that children with well-developed emotional intelligence demonstrate better social skills, improved academic readiness, and stronger self-regulation abilities. Various educational strategies have been implemented to improve emotional intelligence, including storytelling, role-playing, and the use of visual media such as emotion cards and picture books. However, most of these learning tools focus primarily on identifying emotional expressions and do not fully integrate contextual situations that help children understand the causes and appropriate responses to emotions (Denham, 2006; Brackett et al., 2011).

Despite the growing recognition of emotional learning in early childhood education, many early childhood institutions still face limitations in providing innovative and structured learning media specifically designed to develop children's emotional intelligence. Preliminary observations conducted at TK Cinta Ibu indicate that several children experience difficulties in identifying and expressing their emotions, while others struggle to recognize the emotions of their peers. These challenges highlight the need for engaging and developmentally appropriate learning media that can facilitate emotional understanding through play-based activities. One potential solution is the development of an emoji puzzle assisted by contextual picture cards that represent various emotional situations commonly experienced by children.

The emoji puzzle media is designed to represent eight basic emotions, namely happiness, sadness, anger, fear, surprise, shame, pride, and disgust. These emotional representations are supported by contextual picture cards that illustrate everyday situations that may trigger specific emotional responses. By combining visual symbols with contextual storytelling, children are expected to better understand emotional expressions, identify emotional situations, and learn appropriate emotional responses. This approach aligns with the emotional intelligence framework proposed by Mayer and Salovey, which emphasizes emotional perception, emotional understanding, and emotional regulation as core components of emotional intelligence (Mayer & Salovey, 1997).

Based on these considerations, this study aims to develop an emoji puzzle assisted by picture cards to improve the emotional intelligence of children aged 4–6 years. The

research employs a Research and Development (R&D) approach using the Four-D model consisting of Define, Design, Develop, and Disseminate stages. Through this approach, the study seeks to design, validate, and test the effectiveness of the developed learning media in supporting emotional intelligence development among early childhood learners.

The contribution of this research lies in the development of an innovative play-based learning medium that integrates visual emotional symbols and contextual situations to facilitate emotional learning in early childhood education. Unlike previous learning media that focus mainly on emotion recognition, the developed emoji puzzle emphasizes emotional understanding and regulation through interactive play experiences. Therefore, this study is expected to contribute both theoretically and practically to the field of early childhood education by providing an alternative learning medium that supports emotional intelligence development in young children.

METHOD

Research Design

This study employed a mixed-method approach using a Research and Development (R&D) design to develop and evaluate an educational learning medium in the form of an emoji puzzle assisted by picture cards for improving children's emotional intelligence. The development process followed the Four-D (4D) model consisting of Define, Design, Develop, and Disseminate stages. This model was selected because it provides a systematic framework for identifying learning needs, designing educational products, validating their feasibility, and evaluating their effectiveness in educational settings. The mixed-method approach enabled the researcher to combine qualitative data obtained during the needs analysis and product development stages with quantitative data collected through expert validation and pretest–posttest assessments of children's emotional intelligence.

Research Site and Duration

The study was conducted at TK Cinta Ibu, located on Jalan Terusan Kapten Halim Gg. Adung, Kertajaya Village, Pasawahan District, Purwakarta Regency, West Java, Indonesia. The institution was selected because it represents an early childhood education setting with children aged 4–6 years and had limited learning media specifically designed to support emotional intelligence development.

The research was conducted over a five-month period from September 2025 to January 2026. The stages included needs analysis, product design, prototype development, expert validation, limited trials, and product evaluation. Conducting the study during the first semester allowed children to adapt to the school environment and participate effectively in the learning activities involving the developed media.

Subjects and Participants

The participants in this study consisted of 30 children enrolled at TK Cinta Ibu. The children were divided into two learning groups: Group A consisted of 10 children aged 4–5

years, and Group B consisted of 20 children aged 5–6 years. The gender composition included 16 girls and 14 boys.

Initial observations indicated that children demonstrated diverse levels of socio-emotional development. Children aged 4–5 years generally recognized basic emotions such as happiness, sadness, anger, and fear but still experienced difficulties identifying more complex emotions such as pride or shame. Meanwhile, children aged 5–6 years demonstrated more advanced emotional awareness and were better able to identify emotional causes and expressions. The participants came from diverse socio-economic backgrounds, including families working as civil servants, private employees, entrepreneurs, and factory workers.

Development Procedure

The development of the emoji puzzle learning media followed the Four-D model consisting of four stages.

1. Define Stage

The define stage focused on identifying learning needs and problems related to children's emotional development. Data were collected through classroom observations, interviews with teachers and parents, and documentation analysis. The results indicated that many children had difficulty recognizing and expressing their emotions appropriately, highlighting the need for an interactive learning medium to support emotional development.

2. Design Stage

During the design stage, the researcher developed the conceptual framework and prototype of the learning media. The media consisted of puzzle pieces representing facial expressions of emotions combined with contextual picture cards illustrating emotional situations. The design also included game instructions and learning scenarios to guide teachers and parents in facilitating children's emotional learning through play-based activities.

3. Develop Stage

The develop stage involved creating the prototype of the emoji puzzle media using digital design tools and printed materials. The prototype included puzzle components, emotional expression images, contextual cards, and instructional guidelines. The developed media was then evaluated through expert validation involving specialists in early childhood education, learning media design, and child psychology. Feedback from the experts was used to revise and improve the product before conducting a limited trial with children.

4. Disseminate Stage

The final stage involved introducing the developed media to teachers and educational stakeholders. This stage included demonstrations, short training sessions for teachers on how to use the media in classroom learning, and observations of children's interactions while using the puzzle. The purpose of dissemination was to encourage wider implementation of the learning media in early childhood education settings.

Data Collection Procedures

Data collection in this study employed several instruments designed to evaluate the feasibility and effectiveness of the developed media.

Observation

Observation was conducted during the needs analysis stage to identify children's emotional behaviors, teachers' instructional strategies, and the availability of socio-emotional learning media in the classroom.

Interviews

Semi-structured interviews were conducted with teachers, parents, and early childhood education experts to explore challenges related to emotional learning and to identify expectations regarding appropriate learning media.

Expert Validation Questionnaire

Expert validation questionnaires were used to assess the feasibility of the developed media in terms of visual design, educational content, practicality, safety, and effectiveness. The validation process involved experts in early childhood education and instructional media design.

Pretest and Posttest Performance Assessment

A performance-based assessment was used to measure children's emotional intelligence before and after using the emoji puzzle learning media. The assessment evaluated three aspects of emotional intelligence: emotional recognition, emotional management, and emotional self-regulation. Children's performance was scored using a rubric ranging from 1 to 4 based on their ability to identify emotional expressions, respond appropriately to emotional situations, and apply emotional regulation strategies.

Documentation and Field Notes

Documentation, including photographs, videos, and field notes, was used to record the implementation process and children's interactions with the learning media.

Data Analysis

Both qualitative and quantitative data analysis techniques were applied in this study. Qualitative data obtained from observations, interviews, and documentation were analyzed using the interactive model proposed by Miles and Huberman (1994), which includes data reduction, data display, and conclusion drawing. Quantitative data were obtained from expert validation questionnaires and pretest–posttest assessments. The feasibility of the developed media was analyzed using descriptive statistics in the form of percentage scores to determine the level of validity based on predefined criteria.

To measure the effectiveness of the learning media, a normalized gain (N-Gain) analysis was applied to compare children's performance scores before and after using the

media. The gain score indicates the level of improvement in children’s emotional intelligence abilities. The interpretation of gain values follows Hake’s (1999) classification: high improvement ($\geq 76\%$), moderate improvement (56–75%), and low improvement ($\leq 55\%$).

FINDING AND DISCUSSION

Research Results

Feasibility of the Developed Emoji Puzzle Media

The feasibility of the emoji puzzle learning media assisted by picture cards was evaluated through expert validation involving specialists in early childhood education and instructional media design. The validation process aimed to assess the suitability of the developed media in terms of visual design, content relevance, practicality, safety, and attractiveness for children aged 4–6 years.

The validation results indicate that the developed media met the required feasibility standards. The material expert evaluation resulted in an average feasibility score of 92.5%, while the media expert evaluation produced an average score of 94.0%. Both scores fall within the “very feasible” category based on the predetermined assessment criteria.

Table 1. Expert Validation Results

Validator	Percentage Score	Category
Material Expert	92.5%	Very Feasible
Media Expert	94.0%	Very Feasible

The results show that the developed emoji puzzle learning media assisted by picture cards fulfilled the feasibility criteria and was suitable for implementation in early childhood learning activities.

Results of Media Validation Based on Assessment Aspects

The validation results were also analyzed based on several evaluation aspects including visual design, size and ergonomics, media safety, practicality, and attractiveness. Each aspect was assessed using a Likert scale ranging from 1 to 5.

Table 2. Media Expert Validation by Aspect

Aspect	Percentage	Category
Visual Design	93%	Very Feasible
Size and Ergonomics	95%	Very Feasible
Media Safety	94%	Very Feasible
Practicality	93%	Very Feasible
Attractiveness	95%	Very Feasible

These results indicate that all assessed aspects of the media obtained scores within the very feasible category, suggesting that the design and functionality of the emoji puzzle media are appropriate for early childhood learning.

Children's Emotional Intelligence Before and After the Intervention

To measure the effectiveness of the developed learning media, a pretest and posttest performance assessment was conducted involving 30 children aged 4–6 years. The assessment evaluated three aspects of emotional intelligence: emotional recognition, emotional management, and emotional self-regulation.

The results show that the average emotional intelligence score before the intervention was 28.8, equivalent to 40.0% of the maximum score. After the implementation of the emoji puzzle learning media, the average score increased to 53.4, equivalent to 74.2% of the maximum score.

Table 3. Pretest and Posttest Results

Assessment	Mean Score	Percentage
Pretest	28.8	40.0%
Posttest	53.4	74.2%

The results show an increase in the average emotional intelligence score of children after participating in the learning activities using the emoji puzzle media assisted by picture cards.

Improvement Based on Emotional Intelligence Aspects

Further analysis was conducted to examine the improvement in each aspect of emotional intelligence assessed during the study. The assessment focused on emotional recognition, emotional management, and emotional self-regulation.

Table 4. Pretest and Posttest Scores by Emotional Intelligence Aspect

Aspect	Pretest Mean	Posttest Mean
Emotional Recognition	10.2	18.5
Emotional Management	9.5	17.1
Emotional Self-Regulation	9.1	17.8

The results indicate that the highest score increase occurred in the emotional recognition aspect, followed by emotional self-regulation and emotional management.

N-Gain Analysis of Emotional Intelligence Improvement

To measure the level of improvement in children’s emotional intelligence, the normalized gain (N-Gain) analysis was conducted based on the pretest and posttest results. The overall N-Gain score obtained in this study was 57.0%, which falls within the moderate improvement category.

Table 5. N-Gain Score of Emotional Intelligence

Indicator	N-Gain Score	Category
Overall Emotional Intelligence	57.0%	Moderate

Further analysis of the N-Gain scores was conducted for each aspect of emotional intelligence.

Table 6. N-Gain Score by Emotional Intelligence Aspect

Aspect	N-Gain Score	Category
Emotional Recognition	64.0%	Moderate
Emotional Management	55.0%	Moderate
Emotional Self-Regulation	54.0%	Moderate

The results show that all aspects of emotional intelligence experienced improvement after the implementation of the emoji puzzle learning media assisted by picture cards.

Distribution of Children's Emotional Intelligence Categories

The distribution of children's emotional intelligence levels was also analyzed before and after the implementation of the learning media. The categorization was based on the scoring rubric used in the performance assessment.

Table 7. Distribution of Emotional Intelligence Categories

Category	Pretest	Posttest
High	3 children	12 children
Moderate	8 children	14 children
Low	19 children	4 children

The results show changes in the distribution of emotional intelligence categories among children after the implementation of the learning media.

Observation Results During Media Implementation

Observations were conducted during the implementation of the emoji puzzle learning media in classroom activities. During the learning sessions, children participated in puzzle matching activities involving facial expressions and contextual picture cards. The activities required children to identify emotional expressions and associate them with relevant situational cards.

Field observations showed that children engaged in puzzle assembly activities, responded to questions posed by the teacher regarding emotional situations, and participated in discussions related to the emotions presented in the cards. Documentation and field notes recorded children's interactions with the media and their responses during the learning process.

DISCUSSION

Interpretation of Findings

The findings of this study indicate that the emoji puzzle assisted by picture cards can support the development of emotional intelligence among children aged 4–6 years. The results show a clear increase in children’s emotional intelligence scores between the pretest and posttest assessments. This improvement suggests that the learning activities using the developed media provided opportunities for children to recognize, express, and respond to emotional situations during the learning process.

The highest improvement was observed in the emotional recognition aspect. This finding indicates that visual representations of emotional expressions presented in the puzzle pieces and picture cards may facilitate children’s ability to identify emotions. Facial illustrations and contextual scenarios appear to help children connect emotional expressions with everyday experiences. As a result, children become more familiar with recognizing different emotional states and associating them with specific situations.

In addition, moderate improvements were also observed in the emotional management and emotional self-regulation aspects. The interactive nature of the puzzle activities encouraged children to communicate their feelings, respond to the emotional situations presented in the cards, and interact with peers during the learning activities. These interactions may provide opportunities for children to practice emotional responses and gradually develop better emotional regulation skills.

Another important finding of this study is the change in the distribution of children’s emotional intelligence categories after the intervention. The number of children in the high emotional intelligence category increased, while the number of children in the low category decreased. This shift indicates that the learning media was able to support emotional development among children participating in the activities.

Relationship to Previous Studies

The results of this study are consistent with previous research emphasizing the importance of play-based learning in early childhood education. Play activities allow children to explore concepts through hands-on experiences, which can support both cognitive and emotional development. Educational games such as puzzles can stimulate children's curiosity, engagement, and interaction during learning activities.

The findings also align with the emotional intelligence theory proposed by Mayer and Salovey, which identifies emotional perception as the foundational component of emotional intelligence. According to this framework, the ability to recognize emotional expressions is the first step toward understanding and managing emotions. The improvement observed in the emotional recognition aspect in this study supports this theoretical perspective.

In addition, previous studies have highlighted the effectiveness of visual media in helping young children understand emotional expressions and social situations. Learning media that integrate images, symbols, and contextual storytelling can support children's

emotional awareness by making abstract emotional concepts more concrete and easier to understand.

The results of this study also correspond with research indicating that interactive learning media can enhance children's engagement in classroom activities. When children actively participate in learning through games or puzzles, they tend to demonstrate higher levels of motivation and involvement, which may contribute to improved learning outcomes in various developmental domains, including socio-emotional development.

Limitations of the Study

Despite the positive results obtained in this study, several limitations should be considered when interpreting the findings. First, the study involved a relatively small sample consisting of 30 children from a single early childhood education institution. This limited sample size may reduce the generalizability of the findings to other educational contexts or populations.

Second, the research design employed a one-group pretest–posttest approach without a comparison or control group. As a result, it is difficult to determine whether the observed improvements were solely influenced by the use of the emoji puzzle media or by other factors such as natural developmental progress or classroom learning experiences.

Third, the duration of the implementation was relatively short and conducted within a limited number of learning sessions. Emotional intelligence development is a complex and long-term process, and a longer implementation period may provide more comprehensive insights into the long-term effectiveness of the learning media.

Another limitation relates to the scope of the emotional intelligence aspects assessed in this study. Although the research evaluated emotional recognition, emotional management, and emotional self-regulation, other aspects of emotional intelligence such as empathy, social awareness, and interpersonal communication were not extensively examined.

Implications for Practice and Future Research

The findings of this study suggest several implications for both educational practice and future research. In practical terms, the emoji puzzle assisted by picture cards can serve as an alternative learning medium for supporting socio-emotional learning in early childhood education settings. Teachers may integrate this media into classroom activities to facilitate children's understanding of emotional expressions and emotional situations through interactive play.

The use of visual and game-based learning media may also help teachers create more engaging learning environments that encourage children to express their feelings and interact with peers. By incorporating emotional learning activities into daily classroom routines, educators may support children's emotional development alongside cognitive and social learning.

For future research, it is recommended that studies involving larger samples and multiple early childhood education institutions be conducted in order to improve the

generalizability of the findings. Experimental designs that include control groups may also provide stronger evidence regarding the effectiveness of the developed learning media.

Future research may also explore the integration of digital technologies in emotional learning media, such as interactive applications or augmented learning tools. Additionally, further studies may investigate the long-term effects of emotional learning interventions on children's social competence, empathy, and interpersonal relationships.

CONCLUSION

This study developed and evaluated an emoji puzzle learning model assisted by picture cards to support the development of emotional intelligence in children aged 4–6 years. The development process followed the Four-D (Define, Design, Develop, Disseminate) model and resulted in a learning medium that integrates visual emotional expressions, contextual situation cards, and reflective activity guidance. The systematic development process demonstrated that a structured research and development approach can produce learning media that meet theoretical, pedagogical, and practical feasibility standards.

The findings indicate that the developed media has strong theoretical foundations aligned with the emotional intelligence framework proposed by Mayer and Salovey as well as play-based learning principles in early childhood education. Expert validation results confirmed that the media is highly feasible in terms of content suitability, visual clarity, and implementation practicality.

The limited trial results further demonstrated the initial effectiveness of the model in improving children's emotional intelligence, as indicated by the increase in the average score from 28.8 to 53.4 and an N-Gain value of 57.0%, categorized as moderate improvement. The most significant improvement was observed in the emotional recognition aspect.

Overall, the findings suggest that visual and game-based learning media such as emoji puzzles can serve as effective tools for supporting socio-emotional development in early childhood education. Future research is recommended to involve larger samples and longer implementation periods to further examine the long-term impact of the learning model.

REFERENCES

- Abristiana, P. O., Kristanti, A., & Aisyatul W., A. (2020). Pengenalan angka menggunakan permainan puzzle dan pengaruhnya terhadap perkembangan emosi dan kemampuan motorik halus anak usia dini di play group se-Kecamatan Summersari Kabupaten Jember. *Laplace: Jurnal Pendidikan Matematika*, 3(1). <https://doi.org/10.31537/laplace.v3i1.314>
- Aprily, N. M., Laeni, N. A., & Rahman, T. (2023). Analisis media pembelajaran untuk memfasilitasi perkembangan sosial emosional anak usia 5–6 tahun. *Jurnal Riset Golden Age PAUD*, 6(2).

- Brackett, M. A., Bailey, C. S., Hoffmann, J. D., & Simmons, D. N. (2019). RULER: A theory-driven, systemic approach to social, emotional, and academic learning. *Educational Psychologist*. <https://doi.org/10.1080/00461520.2019.1614447>
- Bredenkamp, S. (2018). *Brain development and implications for practice*. Washington, DC: National Association for the Education of Young Children.
- Daud, M., Irwansyah, R., Ferawati, Sari, D. R., Yuniar, N., Pruwaningrum, J. P., Purbasari, I., ... Ndeot, F. (2021). *Media pembelajaran PAUD*. Bandung: Widina Bhakti Persada.
- Denham, S. A., Bassett, H. H., & Miller, S. L. (2017). Early childhood teachers' socialization of emotion: Contextual and individual contributors. *Child and Youth Care Forum*. <https://doi.org/10.1007/s10566-017-9409-y>
- Denham, S. A., Blair, K. A., Demulder, E., Levitas, J., Sawyer, K., Auerbach-Major, S., & Queenan, P. (2003). Preschool emotional competence: Pathway to social competence? *Child Development*. <https://doi.org/10.1111/1467-8624.00533>
- Gross, J. J. (2015). Emotion regulation: Current status and future prospects. *Psychological Inquiry*. <https://doi.org/10.1080/1047840X.2014.940781>
- Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology*.
- Hake, R. R. (1999). *Analyzing change/gain scores*. Indiana University.
- Mayer, J. D., Caruso, D. R., & Salovey, P. (2016). The ability model of emotional intelligence: Principles and updates. *Emotion Review*. <https://doi.org/10.1177/1754073916639667>
- Muttaqin, M. A. (2021). Perkembangan kecerdasan emosional anak usia dini pada kegiatan belajar mengajar. *Buhuts Al-Athfal: Jurnal Pendidikan dan Anak Usia Dini*. <https://doi.org/10.24952/alathfal.v1i2.4456>
- Santrock, J. W. (2021). *Educational psychology* (6th ed.). New York, NY: McGraw-Hill Education.
- Saarni, C. (2000). The development of emotional competence. In R. Bar-On & J. D. A. Parker (Eds.), *The handbook of emotional intelligence*.
- Siti Nur Hayati, & Putro, K. Z. (2021). Bermain dan permainan anak usia dini. *Generasi Emas*. [https://doi.org/10.25299/jge.2021.vol4\(1\).6985](https://doi.org/10.25299/jge.2021.vol4(1).6985)
- Suryani, L. K., & Kandarisah, I. (2025). A mixed-methods development study of teak wood thematic puzzle media to enhance storytelling skills of 4–5 year old children in early childhood learning settings. *Jurnal Konseling dan Pendidikan*, 13(3). <https://doi.org/10.29210/1163600>
- Thiagarajan, S. (1974). *Instructional development for training teachers of exceptional children: A sourcebook*. Bloomington, IN: Indiana University.
- Thompson, N. M., van Reekum, C. M., & Chakrabarti, B. (2022). Cognitive and affective empathy relate differently to emotion regulation. *Affective Science*. <https://doi.org/10.1007/s42761-021-00062-w>
- Uno, H. B., Lamatenggo, N., & Satria. (2020). *Desain pembelajaran*. Jakarta: Bumi Aksara.

- Wiresti, R. D., & Na'imah, N. (2020). Aspek perkembangan anak: Urgensitas ditinjau dalam paradigma psikologi perkembangan anak. *Aulad: Journal on Early Childhood*. <https://doi.org/10.31004/aulad.v3i1.53>
- Zahra, S., Nurhayani, N., Aini, L., Amalina, M. N., Nasution, C. W., & Sit, M. (2024). Mengembangkan kecerdasan intrapersonal melalui bermain peran mikro pada anak usia dini. *Ceria: Jurnal Program Studi Pendidikan Anak Usia Dini*. <https://doi.org/10.31000/ceria.v13i1.10483>
- Zulkarnain, N. F., & Nirwana, E. S. (2025). Development of digital puzzle game-based learning media to improve linguistic intelligence in early childhood. *Al-Ishlah: Jurnal Pendidikan*, 17(1), 575–590. <https://doi.org/10.35445/alishlah.v17i1.6024>