



Development of "The Jungle Adventure" Game Media for Stimulating Concentration in Early Childhood

Diana Wulandari¹, Intan Prastihastari Wijaya¹, Linda Dwiyantri¹ 

¹ Universitas Nusantara PGRI Kediri, Indonesia

* corresponding author: wulandadiana90@gmail.com; intanwijaya@unpkediri.ac.id; lindadwiyantri@unpkediri.ac.id

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ABSTRACT

This study aims to develop and conduct a preliminary feasibility evaluation of "The Jungle Adventure" game-based learning media designed to stimulate concentration in early childhood. Employing a Research and Development (R&D) approach adapted from Borg and Gall's ten-step model, this study proceeded through six essential stages: needs analysis, product design, expert validation, product revision, limited pilot testing, and final refinement. The research subjects comprised one subject matter expert, one media expert, two classroom teachers, and eleven children aged 3–4 years from Kindergarten Class A₂ at Labschool UN PGRI Kediri. Data were collected through observations, interviews, documentation, expert validation questionnaires, and teacher practicality questionnaires. Qualitative data were analyzed descriptively, while quantitative data were calculated using percentage techniques. The validation results yielded 100% from the subject matter expert and 95% from the media expert, both classified as "highly valid." The teacher practicality test achieved an average of 92.5%, categorized as "highly practical." The limited pilot test revealed positive child responses to the media, accompanied by observable improvements in concentration behaviors—indicated by an increase in the "Developing as Expected" and "Developing Very Well" categories, while the "Not Developing" category decreased to 0%. However, given the exploratory nature, small sample size, and single-expert validation, these findings are interpreted as preliminary evidence of feasibility and practicality rather than conclusive proof of effectiveness. Consequently, "The Jungle Adventure" media demonstrates high validity and practicality, warranting further rigorous experimental investigation to confirm its efficacy in stimulating early childhood concentration.

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1. Introduction

Concentration constitutes a fundamental cognitive ability that significantly influences the learning process in early childhood. This capacity enables children to sustain attention on specific activities for adequate durations, thereby facilitating optimal information processing. During early developmental stages, concentration abilities remain nascent and require appropriate stimulation through engaging learning experiences tailored to developmental characteristics. Insufficient concentration can impede children's capacity to

comprehend instructions, complete tasks, and participate effectively in learning activities (Riinawati, 2021; Yuliati et al., 2022). Recent research has demonstrated that attention skills in preschool children are positively influenced by participation in structured educational games, with digital educational game applications showing significant improvements in attention skills among 5-6-year-old children (Sop & Hançer, 2025). Given that concentration does not develop automatically, it is shaped by multiple factors, including the learning environment, instructional methods, media utilization, and the types of activities provided to children. Young children are particularly susceptible to distraction when learning activities are monotonous and lack active participation, necessitating instructional strategies capable of capturing and sustaining their focus throughout the learning process.

Concentration enhancement in early childhood can be effectively cultivated through purposefully designed play activities. Play serves not merely as entertainment but as an effective learning medium congruent with children's natural predispositions. Play activities incorporating exploration, challenges, and active interaction have been empirically shown to sustain children's attention longer than passive instructional approaches. Studies have demonstrated that play-based audiovisual training in school settings effectively enhances sustained attention in preschool children, with parental involvement further benefiting the intervention outcomes (Shangguan et al., 2022). Similarly, sensorimotor play methods have been shown to improve learning concentration in 4-5-year-old children (Musyafa'ah & Salim, 2024). Research has also documented that educational game tools provide significant benefits in stimulating interest and concentration in early childhood learning (Ratri et al., 2023; Asip et al., 2020). Beyond instructional methods, media utilization plays a critical role in supporting attention development. Visually engaging media can enhance children's attention to presented material, rendering the learning process more meaningful. The use of interactive multimedia in early childhood learning has been associated with increased understanding, positive emotions, and improved behavior during the learning process (Hibana et al., 2024; Rengganis et al., 2022).

With advancing educational technology, innovative learning media represent promising solutions for improving early childhood education quality (Amalia et al., 2021). Such media must be developed with careful consideration of developmental characteristics, particularly children's need for enjoyable and interactive learning experiences. Educational play tools (Alat Permainan Edukatif) represent one frequently pursued initiative capable of integrating play and learning within unified activities. Research has shown that interactive visual media using PowerPoint can be effectively utilized for early childhood learning, broadening educators' understanding of the importance of interactive media in early childhood education (Handayani et al., 2024). Furthermore, interactive media have been shown to stimulate multiple developmental aspects during learning processes, resulting in more active and meaningful educational experiences. Recent studies have demonstrated that interactive learning multimedia products developed using the ADDIE model are valid, effective, and feasible for improving early childhood literacy (Purnamasari, 2023).

Previous research has developed various learning media for early childhood with diverse objectives. Fitri & Wijaya (2025) developed animation-based media to help children understand addition and subtraction concepts, demonstrating that appropriately designed media can increase child participation and engagement. However, the majority of developed media have focused primarily on specific academic outcomes, while media specifically designed to stimulate concentration remains relatively limited. Nurani et al. (2024) conducted a related study developing the Jungle Treasure Hunt Board Game to increase attention duration in PAUD children. Their findings indicated that adventure-themed games successfully captured children's attention and motivated them to maintain focus while completing various challenges. The effectiveness of maze games on concentration ability in children aged 5-6 years has also been documented, with maze games significantly

improving children's concentration abilities (Desti. D, & Manto, 2024). These findings suggest that adventure and puzzle game concepts hold considerable potential for concentration stimulation media, as they deliver simultaneously enjoyable and challenging learning experiences.

Despite the existence of these previous efforts, a critical gap remains. Most available adventure-themed educational games are either physical board games or complex digital applications requiring significant technical resources. Moreover, these media often emphasize general cognitive development rather than specifically targeting concentration indicators, such as sustained attention, sequential instruction adherence, and task completion. Based on preliminary observations at early childhood education institutions, it was found that the majority of children still struggle to maintain concentration during learning activities. Children tend to be easily distracted, frequently shift attention, and lack the ability to complete activities thoroughly. While several media are currently employed in instruction, most remain oriented toward content delivery and have not been specifically designed to stimulate concentration abilities (Fitria et al., 2023). Additionally, the digital media previously used were insufficiently optimized due to monotonous features and lack of active child involvement. Research has shown that the hit and jump circuit game is effectively applied to stimulate concentration in children aged 5-6 years, with the early childhood curriculum emphasizing that providing educational stimulation in the right way is through play, because it can provide meaningful learning to children (Susanti et al., 2025; Varas-Pavez et al., 2025). This contextual gap underscores the urgent need for accessible, engaging, and specifically targeted media that integrate play, challenge, exploration, and interaction—all within a single affordable digital platform.

In response to this identified gap, the present study focuses on developing "The Jungle Adventure" game media as a concentration-stimulation tool. Designed with an adventure theme incorporating visual and audio elements, gradually escalating challenges, immediate feedback mechanisms, and a reward system, this media is intended to help children maintain focus, extend attention duration, and promote active engagement in learning. Distinct from the board game format explored by Nurani et al. (2024), this media leverages the widely accessible Microsoft PowerPoint platform, making it feasible for implementation in diverse educational settings with limited technological infrastructure. Consequently, this research is expected to produce media that are not only valid and practical but also provide preliminary empirical evidence supporting their potential for stimulating concentration in early childhood.

2. Method

This study employed a Research and Development (R&D) approach aimed at developing "The Jungle Adventure" game media as a concentration-stimulation tool. R&D methodology is essential for both creating specific products and evaluating their feasibility (Sugiyono, 2019). The development model referenced Borg and Gall's ten-step framework (Borg & Gall, 2003). However, consistent with the study's preliminary and exploratory nature, this framework was streamlined into six principal stages deemed sufficient to meet the research objectives: (1) preliminary study (needs analysis and information gathering), (2) product planning and initial design, (3) initial product development, (4) expert validation, (5) product revision, and (6) limited pilot testing. This simplification was justified as the study aimed to establish foundational feasibility rather than conduct a full-scale implementation and dissemination study. Recent R&D studies in early childhood education have similarly employed adapted models, such as the ADDIE model, for developing interactive learning media (Purnamasari, 2023; Arimansyah et al., 2023).

The research was conducted at Kindergarten Labschool UN PGRI Kediri during the even semester of the 2025/2026 academic year. Research subjects included two expert validators (one subject matter expert and one media expert), two classroom teachers, and eleven children from Class A₂ aged 3–4 years. The consistent age range of 3–4 years was confirmed through school records and teacher verification. The research object was "The Jungle Adventure" game media developed specifically for stimulating concentration abilities in this age group.

Data collection utilized multiple techniques: observation, interviews, documentation, and questionnaires. Initial observations were conducted to identify learning conditions, child characteristics, and media development needs. During the limited pilot test, two types of observations were carried out: (1) child response observation, capturing children's immediate behavioral and emotional reactions to the media, and (2) concentration stimulation observation, designed to assess whether the media facilitated observable concentration behaviors. Semi-structured interviews were conducted with classroom teachers to gather in-depth information regarding instructional challenges and specific media requirements. Documentation was employed to collect supporting data, including activity records, field notes, and learning documents. Meanwhile, questionnaires were administered to experts and teachers to obtain validity and practicality data (Sugiyono, 2019).

Research instruments comprised an initial observation sheet, interview guide, media expert validation sheet, subject matter expert validation sheet, teacher practicality questionnaire, child response observation sheet, and concentration stimulation observation sheet. The media expert validation sheet encompassed aspects of visual display, design aesthetics, ease of use, and technical quality. The subject matter validation sheet included content appropriateness, learning objective alignment, game content, and suitability with early childhood developmental characteristics (ages 3–4). The teacher practicality questionnaire addressed ease of media implementation, clarity of instructions, and the extent to which teachers experienced difficulties. For the child response observation, indicators included enthusiasm, willingness to participate, and positive affective expressions. The concentration observation sheet operationalized concentration through three specific behavioral indicators: (1) duration of sustained attention on the activity, (2) ability to follow sequential instructions, and (3) successful task completion without premature abandonment. Both observations were conducted collaboratively by the two participating teachers to enhance reliability through inter-rater agreement. All instruments were content-validated through expert judgment prior to use.

Data analysis employed both qualitative and quantitative approaches. Qualitative data—consisting of validator feedback, recommendations, and comments—were analyzed descriptively to inform product improvement. Quantitative data derived from expert validation, teacher practicality questionnaires, and observation checklists were analyzed using percentage techniques. Feasibility percentages were calculated by comparing obtained scores to maximum possible scores, subsequently converted into feasibility categories. The percentage formula adopted from Arikunto (2016) was used to determine the validity and practicality levels of the developed product. Given the exploratory and small-scale nature of this pilot study, no inferential statistical tests (e.g., t-tests or non-parametric alternatives) were applied; the study intentionally limited its analytical scope to descriptive and percentage-based interpretations to provide foundational evidence for subsequent rigorous experimental validation.

3. Result and Discussion

Preliminary Study Results

The initial phase involved interviews and observations at Kindergarten A₁ and A₂ of Labschool UN PGRI Kediri to ascertain children's concentration conditions during learning. Interview findings with educators indicated that attention spans among 3–4-year-old children remained relatively short. Children were easily distracted by environmental stimuli and frequently shifted attention before completing instructional activities. Furthermore, the media predominantly employed during instruction were conventional in nature—such as printed pictures, worksheets, and physical toys—which proved insufficient to sustain children's focus for extended periods. Teachers also reported having utilized digital media occasionally, yet these failed to yield optimal outcomes due to monotonous features and insufficient active child engagement. Consequently, there existed a clear and urgent need for learning media that were more engaging, interactive, and capable of providing immediate feedback to motivate sustained focus during learning activities. These findings align with previous research indicating that children's concentration abilities require more optimal stimulation through engaging and interactive media (Fitria et al., 2023; Cecep et al., 2022).

Product Development: "The Jungle Adventure" Media

Based on the identified needs, the researcher developed "The Jungle Adventure" game media as a concentration-stimulation tool. The media was designed as a digital game leveraging Microsoft PowerPoint, integrating visual elements, audio cues, progressively challenging levels, and a reward system to sustain child attention. The adventure theme was selected due to its demonstrated capacity to capture children's interest and encourage persistence, as suggested by prior research (Nurani et al., 2024; Warmansyah et al., 2024). The game narrative positions children as adventurers who assist a character named Adi in completing various challenges across different jungle zones. Activities presented include matching images, object recall, following simple instructions, pattern recognition, and sequential task completion. Visual elements comprise animal and plant illustrations, adventure pathways, simple animations, and audio instructions specifically adapted to the developmental characteristics of 3–4-year-old children. Each activity provides immediate feedback and incorporates a reward system—such as stars and cheerful sounds—as positive reinforcement when children successfully complete assigned tasks. The display of "The Jungle Adventure" game can be seen in Figures 1:



Figure 1. The Jungle Adventure Game Main

Expert Validation Results

Validation was conducted by both subject matter and media experts to evaluate product feasibility prior to limited pilot testing. The subject matter expert validation yielded a maximum score of 16 out of 16, corresponding to 100%. This maximum score indicated

that game content, learning objectives, concentration indicator alignment, and material characteristics were deemed highly suitable for 3–4-year-old children. While a 100% score from a single expert is notably high and may suggest limited critical scrutiny, it nonetheless provides initial evidence of content appropriateness. The media expert validation resulted in a score of 19 out of a maximum 20, equating to 95%. This assessment covered visual design, interactivity, ease of use, technical stability, and accessibility. Both validations fell within the "highly valid" category. The complete expert validation results are summarized in Table 1.

Table 1. Expert Validation Results

Validator	Maximum Score	Obtained Score	Percentage	Category
Subject Matter Expert	16	16	100%	Highly Valid
Media Expert	20	19	95%	Highly Valid
Average	36	35	97.5%	Highly Valid

It is important to acknowledge that expert validation involved only one validator per domain; consequently, these results should be interpreted as preliminary positive indications rather than definitive guarantees of universal validity. Future studies would benefit from multiple expert validators to enhance objectivity and robustness. Notwithstanding this limitation, the media was deemed suitable to proceed to the limited pilot testing stage.

Teacher Practicality Results

Media practicality was assessed through questionnaires completed by two educators following media implementation in the classroom. The results are presented in Table 2.

Table 2. Teacher Practicality Assessment Results

Teachers	Maximum Score	Obtained Score	Percentage	Category
Teacher 1	20	19	95%	Highly Practical
Teacher 2	20	18	90%	Highly Practical
Average	40	37	92.5%	Highly Practical

The first teacher provided a practicality score of 95%, while the second gave 90%, yielding an average practicality percentage of 92.5%. These results place the media within the "highly practical" category. Teachers reported that the media was easy to use, visually engaging, and effectively helped create a more active and enjoyable learning atmosphere. The instructions embedded within the media were judged clear and child-friendly, minimizing the need for extensive teacher guidance during gameplay. Nevertheless, teachers also offered constructive feedback: they suggested that additional levels or variations could be added to maintain long-term engagement, as children might become familiar with existing content after repeated use. This feedback has been documented for future product refinement.

Limited Pilot Test Results: Child Responses and Concentration Observations

The limited pilot test involved eleven children from Class A₂, aged 3–4 years. Prior to media implementation, an initial observation was conducted to measure baseline concentration conditions. The pre-implementation observation revealed that most children were in the "Starting to Develop" (MB) category (36.36%) and the "Not Developing" (BB) category (36.36%). Only a small proportion of children were classified as "Developing as Expected" (BS) or "Developing Very Well" (BSB). These findings confirmed that children's concentration abilities required more optimal stimulation.

Following implementation of "The Jungle Adventure" media, a notably positive shift occurred in children's concentration levels. The detailed distribution of concentration levels before and after the intervention is presented in Table 3.

Table 3. Distribution of Children's Concentration Levels Before and After Media Implementation

Concentration Category		Pre-Test (N=11)	Pre-Test (%)	Post-Test (N=11)	Post-Test (%)
Not Developing (BB)		4	36.36%	0	0%
Starting to Develop (MB)		4	36.36%	1	9.09%
Developing as Expected (BS)		2	18.18%	6	54.55%
Developing Very Well (BSB)		1	9.09%	4	36.36%

Post-implementation data indicated that 54.55% of children reached the "Developing as Expected" (BS) category, while 36.36% achieved "Developing Very Well" (BSB). Notably, no children remained in the "Not Developing" (BB) category, and the "Starting to Develop" (MB) category decreased to 9.09%. Qualitative observations enriched these quantitative findings: children were observed leaning toward the screen, maintaining eye contact with the visual elements, attempting tasks without teacher prompting, and expressing audible excitement (e.g., clapping, smiling, and verbal exclamations) when receiving rewards. For example, Child A, initially observed as easily distracted and frequently leaving activities unfinished, successfully completed three consecutive game levels without seeking external distraction, actively pointing at the screen and verbalizing the names of encountered animals. These behavioral observations provide contextual support for the quantitative category improvements.

However, it is essential to acknowledge that these observational data were collected without a control group and without statistical significance testing. Consequently, while the improvements are encouraging, they cannot be definitively attributed solely to the media intervention. Potential confounding factors—including the novelty effect of a new digital game, heightened teacher attention during the pilot, and natural developmental maturation—cannot be ruled out. The persistence of 9.09% of children in the "Starting to Develop" category also suggests that the media may not be equally effective for all children, possibly due to individual differences in baseline attention capacity, prior digital exposure, or varying learning styles. Future experimental designs with larger samples and control groups are needed to establish causal inference.

Discussion

The findings of this study confirm that "The Jungle Adventure" game media possesses high validity and practicality based on expert and teacher assessments. These results align with previous research demonstrating that educational game media can effectively support the development of focus and attention duration during learning activities (Amalia et al., 2021; Sop & Hançer, 2025; Arimansyah et al., 2023). The positive responses from children, alongside observed concentration improvements, suggest that the integration of visual, audio, interactive, and reward elements in the game successfully sustained child attention for longer periods compared to conventional media. The adventure theme, which resonates with children's natural affinity for exploration and play, appears to foster curiosity and active engagement, consistent with the findings of Nurani et al. (2024) and the documented effectiveness of maze games on concentration ability (Desti. D, & Manto, 2024; Khotimah et al., 2020).

The reduction in "Not Developing" (BB) and "Starting to Develop" (MB) categories, coupled with the increase in "Developing as Expected" (BS) and "Developing Very Well" (BSB) categories, supports the argument that purposefully designed play-based media can facilitate concentration development. This is consistent with research demonstrating that the hit and jump circuit game is effectively applied to stimulate concentration in children aged 5-6 years (Susanti et al., 2025; Dal Calisici & Yildiz Duban, 2025). The media's gradual difficulty progression, which presents increasingly challenging tasks while providing immediate positive feedback, likely contributed to maintaining an optimal challenge level—neither too easy to induce boredom nor too difficult to cause frustration, thereby supporting sustained attention. Research has also shown that interactive multimedia in learning can increase understanding, positive emotions, and behavior of PAUD children during the learning process (Siswanti, D. N. & Daud, M., 2024; Anguera et al., 2022).

However, several limitations must be candidly acknowledged. First, the study relied on a single expert per domain for validation. A single perspective, regardless of expertise, introduces potential bias and limits the generalizability of validity claims. Multi-expert validation would provide a more robust assessment. Second, the sample size (eleven children) is small and drawn from a single institution, which restricts the external validity of the findings. The observed improvements might not be replicable in different educational contexts, geographical settings, or age groups. Third, the absence of a control group and the reliance on descriptive analysis preclude any definitive causal claims regarding the media's effectiveness. The concentration improvements observed could partly reflect the Hawthorne effect (participants altering behavior due to awareness of being observed), novelty effects (temporary engagement due to unfamiliarity), or natural developmental progression over the study period. Fourth, the 9.09% of children remaining in the "Starting to Develop" category suggests that individual variability—in attention capacities, prior media experience, or learning preferences—influences responsiveness to the media. Future research should explore these moderating factors.

Despite these limitations, the study contributes valuable preliminary evidence that an affordable, PowerPoint-based digital game can be practically implemented in early childhood settings and may positively influence concentration-related behaviors. The use of a widely accessible platform reduces technological barriers, increasing the potential for scalability in resource-constrained environments. The study thus provides a solid foundation for future experimental investigations aimed at rigorously testing the media's efficacy.

4. Conclusion

This R&D study produced "The Jungle Adventure" media, achieving 97.5% validity and 92.5% practicality. Pilot testing with 11 children revealed positive concentration shifts: the "Not Developing" category dropped from 36.36% to 0%, while "Developing as Expected" and "Developing Very Well" categories increased substantially. However, given the small sample, single-expert validation, and lack of a control group, these findings are preliminary. The media is thus feasible for supplementary classroom use, though its definitive effectiveness requires rigorous experimental verification.

Teachers should integrate this media thematically, while institutions provide basic digital infrastructure (projectors, speakers). Future researchers must employ large-scale, controlled experimental designs with statistical analyses to confirm causal effects and examine moderating factors (digital exposure, temperament). Developers should enhance the media with adaptive difficulty levels and supplementary teacher-parent guides to sustain long-term engagement and broader impact.

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