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The Effectiveness of Developing Galactic Spin Media in Introducing Textures at Putra Harapan Wiyung Kindergarten

Merya Nancy Jihan Presdiana[1], Mallevi Agustin Ningrum[2]
[1,2] Universitas Negeri Surabaya, Surabaya, Indonesia
e-mail: *[1]merya.21020@mhs.unesa.ac.id, [2]malleviningrum@unesa.ac.id

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ABSTRACT

Different types of textures—such as rough, smooth, soft, or hard—can provide varying sensory stimulation for children. Texture influences the way children interact with objects around them, as well as their learning experiences and cognitive development. Based on this premise, this study aims to determine the effectiveness of the Galactic Spin media at Putra Harapan Wiyung Kindergarten. This research is based on R&D using the ADDIE model. The results indicate that the application of Galactic Spin media for texture indicators among children aged 5–6 years at Putra Harapan Wiyung Kindergarten was categorized as effective, as the significance values were less than 0.05, with details showing a significance value of 0.000 for class A1 and 0.001 for class A2.

Introduction

Cognitive development is used as a measure of children's intelligence, as it shows how they think and how well they can integrate different ways of thinking to solve various problems. It is a process of

the human internal nervous system (Fardiah et al., 2019). Children's cognitive abilities enable them to effectively acquire knowledge about the world, closely related to their environment, and can be observed from growth to adulthood. This means that children with such abilities can investigate various objects in their surroundings to gain knowledge (Hendriati & Santoso, 2020). In a knowledge-based society, cognitive development is expected to serve as the foundation for learning abilities.

Understanding textures—such as fine, soft materials like fabric, foam, and smooth plastic—through play activities has great potential to stimulate the senses in various aspects of cognitive development. This is especially important for early childhood, as it provides a key foundation for building skills and character (Aisyah et al., 2024). Children's strong curiosity to explore and seek answers is equally significant (Safitri & Mahmudah, 2015). Research has shown that sensory experiences, including touch, can help children develop logical thinking, memory, and problem-solving skills (Ayuni et al., 2022). By experiencing various textures, children can learn to recognize differences, classify objects, and develop sensory perception.

Generally, cognition refers to mental activities associated with perceiving, knowing, and thinking, from birth until the stage where no further changes occur (Mayer, 1996). More specifically, Piaget's cognitive theory maps cognitive development in stages; early childhood (ages 18 months–6 years) falls in the preoperational stage, where symbolic thinking begins to emerge.

Various textures—rough, smooth, soft, or hard—affect how children interact with objects (Isbell & Raines, 2013). Children with greater opportunities to explore textures tend to have better problem-solving, logic, and creativity. Through play, they develop not only social and emotional skills but also cognitive skills such as problem-solving, creativity, and understanding basic concepts. One interesting aspect is how texture-based play activities affect early childhood cognitive development. Children are gradually introduced to scientific thinking processes such as experimenting, explaining, classifying, and observing (Ma'viyah, 2021).

Initial observations on July 29, 2024, at Putra Harapan Wiyung Kindergarten revealed that some children could not yet differentiate sensory stimuli accurately, such as distinguishing between rough and smooth textures. According to Froebel's theory, this can be addressed by frequently providing opportunities for children to be active and engaged in creating, making, and doing activities (Hasibuan & Ningrum, 2017). Texture in play activities is therefore a factor in cognitive development.

Texture introduction can be applied using various learning media, such as the **Galactic Spin**, which combines images and textures. This media helps children actively explore and recognize textures, but its availability in schools is still limited. Galactic Spin has several advantages, such as: 1) Interactive elements that capture children's attention and increase learning engagement; 2) Attractive graphics that

help children understand texture concepts; 3) Integration of visual and tactile stimuli, reinforcing learning and memory; 4) Hands-on manipulation activities to develop fine motor skills.

No research has exclusively examined the effect of Galactic Spin on early childhood texture recognition. Therefore, this study aims to develop the Galactic Spin media and test its effectiveness in improving children's ability to identify and distinguish textures. This research is a development from previous studies, such as Inayah & Prayogo (2023), which examined spinning wheel games for learning living things, while this study focuses on the solar system.

Methods

This study employed Research and Development (R&D) methodology. According to Sugiyono (2016), R&D research is used to create specific products and test their effectiveness. By testing the product first, researchers aim to develop new products or improve existing ones based on real needs in the field, ensuring effectiveness for practical use. This approach was chosen to create a learning media product (Inayah & Prayogo, 2023). The researchers produced the Galactic Spin media to help children aged 4–5 years improve their ability to recognize various textures.

Before implementation, the media underwent validation by material and media experts. Once validated, effectiveness testing was conducted using SPSS. The effectiveness test was carried out with 10 children aged 4–5 years at Putra Harapan Wiyung Kindergarten, using

a pre-experimental design—specifically the one-group pretest–posttest design—where the same experimental subjects were assessed before and after treatment. The data obtained allowed researchers to determine differences in ability after using the Galactic Spin media to stimulate texture recognition. A t-test was applied to analyze the differences.

Normality testing was conducted using SPSS. A paired-sample t-test was applied if the data were normally distributed, while the Wilcoxon test was used if the data were not normally distributed (Eli, 2020). The research hypothesis (Ha) was that the Galactic Spin media has an influence on texture recognition among children aged 4–5 years.

Results and Discussions

Expert Validation Process

Table 1. Validator Results

Validator	Score Obtained	Maximum Score	Percentage (%)	Category
Media Expert	30	32	93%	Good
Material Expert	22	24	94%	Good

The validation process aimed to ensure that the media and instruments were tested optimally, thus requiring input from experts. Media expert validation was conducted by D on December 18, 2023, obtaining a score of 30 out of a maximum score of 32, with a percentage of 93%, reflecting that the Galactic Spin media is suitable to be applied in the process of

introducing the texture concept to children aged 4–5 years. The suggestion from the media validator was that the use of the media must be under the supervision of the teacher because it uses slime materials. Meanwhile, material expert validation was carried out by K on December 18, 2023, obtaining a score of 22 out of a maximum score of 24, with a percentage of 94%, reflecting that the material for the Galactic Spin media is suitable to be applied in the process of introducing the texture concept to children aged 4–5 years, referring to the content of the RPPH with the solar system theme.

Product Specifications

The developed Galactic Spin media is in the form of media with four main textures: rough, soft, hard, and smooth. This media is presented in the form of a solar system and classified according to specific textures with the following details:

- **Rough texture**: designed for the planets Mercury and Mars, with the main material made of papier-mâché and painted.
- **Soft texture**: designed for the planets Venus and Uranus, with the main material made of concave papier-mâché, painted, and each concavity filled with slime with a soft texture.
- **Hard texture**: designed for the planets Earth and Saturn, with the main material in the form of ready-made hard balls, painted.
- **Smooth texture**: designed for the planets Jupiter and Neptune, made from plush doll material.

The inside of the media is arranged on a block in the shape of an arm,

with the main pole in the form of a long cylinder and a flat cylindrical base. This main construction is used for rough, soft, and hard textures. The smooth texture is made from plush dolls, making it a different part. Before the children begin touching the media, the researcher first explains the textures to be introduced. The children are given a general description of the available textures, such as rough, smooth, bumpy, slippery, or porous. The details are as follows:

1. **Exploration by touch** – After receiving the explanation, the children are asked to take turns touching the surface of the Galactic Spin media. They are encouraged to feel each texture available with their hands so that they can understand its characteristics directly through sensory experience.
2. **Texture analysis and identification** – After touching, the children are invited to analyze and identify the textures they feel. They are asked to describe the texture using words they understand, such as "rough like stone," "smooth like silk fabric," or "slippery like a wet floor."
3. **Association with objects at home or in class** – To strengthen understanding, the researcher asks the children whether they have encountered similar textures at home or around the classroom. For example, if they touch a rough texture, they might relate it to sandpaper or tree bark in the schoolyard. In this way, the children learn to connect new experiences with prior knowledge, which can improve their cognitive skills.

Constraints of the Galactic Spin media during treatment:

- Only one unit of the media is available, requiring children to take turns, which makes the sessions longer. Some children had to wait for their turn, sometimes leading to impatience or loss of focus. To overcome this, educators can provide additional activities related to texture, such as texture picture matching games or group discussions.
- The media is relatively heavy because it is made of wood, requiring careful handling, especially by younger children. During play, children must be supervised to ensure they do not have difficulty rotating or lifting parts of the media. Teachers or researchers should also ensure the media is placed on a stable surface to prevent slipping or falling during use.

Figure 1 and Figure 2. *Documentation of Student Activities at Putra Harapan Wiyung Kindergarten During Learning Using the Galactic Spin Media*

During implementation, the research was conducted at Putra Harapan Wiyung Kindergarten with a total of 37 students, consisting of 22 students in class A1 and 15 students in class A2. In using the media, students understood the rules and play instructions. In addition, the media met expectations because it could be rotated and disassembled by the children. The challenge encountered was that the media tended to be heavy; the solution found was to remove all parts to make it lighter.

Validity and Reliability Analysis

After conducting the research process through the ADDIE development stages (Analyze, Design, Development, Implementation, and Evaluation), this section discusses the development of the Galactic Spin media designed to stimulate children's cognitive and sensory development on the texture material for children aged 4–5 years.

Before conducting the field trial, a limited trial was first carried out to review the validity and reliability of the data. This limited trial was conducted in class A1 of TK Hidayatullah on January 20, 2025, with 7 children. To determine the validity of the data, SPSS version 27 was used, applying the Pearson Correlation test to examine the validity of the developed instrument data.

Based on the Pearson Correlation test results in SPSS, all data from statements 1, 2, and 3 were categorized as valid, with significance values less than 0.05 and r-values greater than 0.754 (based on the number of respondents). This indicates that the data can be used in the field trial

class.

Table 2. SPSS Results for Three Statements

Statement	r-count	r-table	Sig. (p)	Description
1	> 0.754	0.754	< 0.05	Valid
2	> 0.754	0.754	< 0.05	Valid
3	> 0.754	0.754	< 0.05	Valid

The reliability test used SPSS version 27, applying the Cronbach Alpha test to examine the reliability of the developed instrument data. Based on the Cronbach Alpha test results in SPSS, the data was categorized as reliable, as Sujerweni (2014) states that a questionnaire is considered reliable if the Cronbach Alpha value is greater than 0.6. The table clearly shows that the value was 0.94, which is greater than 0.6, indicating that the data can be used in the field trial class.

Effectiveness Results

In the field trial stage, the aim was to observe the final data from the application of the Galactic Spin media for texture learning in children aged 5–6 years. This trial was conducted at Putra Harapan Wiyung Kindergarten with a total of 37 students, consisting of 22 students in class A1 and 15 students in class A2.

To determine data normality, SPSS version 27 was used, applying the Shapiro–Wilk test to review the normality of pretest and posttest data.

Table 3. Shapiro–Wilk Normality Test

Class	Stage	Sig. (p)	Description

A1	Pretest	0.136	Normal
A2	Pretest	0.175	Normal
A1	Posttest	0.086	Normal
A2	Posttest	0.246	Normal

Based on the normality test results using Shapiro–Wilk, all pretest and posttest data for classes A1 and A2 were categorized as normal because the significance values were greater than 0.05: pretest for A1 was 0.136 and for A2 was 0.175; posttest for A1 was 0.086 and for A2 was 0.246.

For effectiveness testing, SPSS version 27 was used, applying the Wilcoxon test to review the effectiveness of the implemented media. Based on the Wilcoxon test results, the media was categorized as effective because the significance values were less than 0.05, with details: class A1 = 0.000 and class A2 = 0.001.

This development produced a product in the form of the Galactic Spin media, incorporating various textures—smooth, rough, soft, and hard—applied in a solar system model. The treatment results and statistical calculations showed that the application of the Galactic Spin media had an influence on the texture indicators of children aged 4–5 years at Putra Harapan Wiyung Kindergarten. The content of the Galactic Spin media helps teachers address problems in introducing the texture concept, aligning with Putri et al. (2022), who stated that learning media can assist teachers in overcoming difficulties in teaching certain concepts.

The validity test results indicated that all items (1, 2, and 3) were valid ($p < 0.05$, $r > 0.754$), and the reliability test showed Cronbach's Alpha = 0.94 (> 0.6). The media validity score was 93% for media and 94% for material, indicating high feasibility for use. These results are consistent with Setiawati et al. (2021), who found that texture- and science-based media have high validity and can be applied in learning.

The effectiveness review results showed that the Galactic Spin media was effective in texture learning ($p < 0.05$: A1 = 0.000; A2 = 0.001). This aligns with Paud Rahmadanti (2023), who emphasized that texture recognition—covering smooth, rough, soft, and hard—is part of cognitive development indicators, enabling children to identify textures in their environment. Children also showed enthusiasm during texture introduction activities, actively participating in texture-related experiments, and observing and recording differences between textures. High curiosity in seeking and exploring answers was also evident (Safitri & Mahmudah, 2015).

From this research process, several constraints were also identified: class size can affect learning conduciveness, as seen in the larger A1 class compared to A2, although both achieved good results. Technically, the media is heavy and inflexible; thus, future improvements to the Galactic Spin should focus on making it lighter and more adaptable.

Conclusion

This study proves that the use of pop-up book media can effectively improve the artistic creativity of children aged 5–6 years at RA

Islamiyyah Gunung Melayu. This is evident from the increase in the percentage of children's creativity achievements, which rose from **25.5%** in the pre-cycle, to **75%** in Cycle I, and reached **93.75%** in Cycle II. The children became more active, creative, and enthusiastic in exploring and creating artworks through interactive and enjoyable visual media. The use of pop-up books not only attracts children's attention but also encourages them to try new ideas, involve others, and complete challenges independently. This activity provides space for children to express their imagination and practice divergent thinking. Therefore, the pop-up book is an appropriate learning medium to develop the aesthetic, imaginative, and creative expression aspects of early childhood.

References

Amirah, N. (2023). Meningkatkan Kemampuan Menyimak Pada Anak Usia Dini Melalui Kegiatan Digital Storytelling. *Jurnal Pemikiran Dan Pengembangan Pembelajaran*, *5*(2), 1348.

Anggraini, A., Sit, M., & Basri, M. (2022). Mengembangkan kecerdasan visual spasial anak melalui kegiatan kolase pada anak usia dini. *Jurnal Pelita PAUD*, *6*(2), 248-254. https://doi.org/10.33222/pelitapaud.v6i2.1937

Danur, D. T., & Mayar, F. (2020). Mengembangkan Potensi Kreativitas Seni Pada Anak Usia Dini Melalui Kegiatan Menyusun Daun. *Ensiklopedia of Journal*, *2*(2), 170–174.

Eha, E., Dewi, R. S., & Pribadi, R. A. (2024). Proses Pengembangan Kreativitas Peserta Didik Melalui Kegiatan Pembelajaran Berbasis Pendekatan Saintifik Di Sd Negeri Ciomas 2. *JURNAL PENDIDIKAN DASAR PERKHASA: Jurnal Penelitian Pendidikan Dasar*, *10*(1), 256–277. https://doi.org/10.31932/jpdp.v10i1.3156

Febriani, S. A., Dwiyanti, L., & Yulianto, D. (2023). Pengembangan

Media Pop Up Book Untuk Meningkatkan Kemampuan Membaca Permulaan Pada Anak Usia Dini. *PINUS: Jurnal Penelitian Inovasi Pembelajaran*, *8*(2), 1–8. https://doi.org/10.29407/pn.v8i2.16387

Hafidah, R., Dewi, N. K., Syamsudin, M. M., Pudyaningtyas, A. R., Nurjanah, N. E., & Sholeha, V. (2022). Meningkatkan Kompetensi Profesionalisme Guru Paud Melalui Pelatihan Penerapan Penelitian Tindakan Kelas (Ptk). *JP2KG AUD (Jurnal Pendidikan, Pengasuhan, Kesehatan Dan Gizi Anak Usia Dini)*, *3*(1), 19–34. https://doi.org/10.26740/jp2kgaud.v3n1.19-34

Manik, R. T. Y., & Wulan, D. S. A. (2024). Pengaruh Penggunaan Media Pop-Up Book untuk Perkembangan Bahasa Lisan Ekspresif Anak Usia 5-6 Tahun di TK Tunas Harapan Ambarita. *Khirani: Jurnal Pendidikan Anak Usia Dini*, *2*(4), 22-37. https://doi.org/10.47861/khirani.v2i4.1323

Putri, V. M., Yaswinda, & Mahyuddin, N. (2024). Development of Pop-Up Book Media Based on Multisensory for Scientific Literacy of Early Chidhood. *Jurnal Ilmiah Potensia*, *9*(1), 48–59. https://doi.org/10.33369/jip.9.1.48-59

Rusanti, D. D., Naimah, N., & Putro, K. Z. (2022). Pengembangan Kreativitas Anak Melalui Kegiatan Bermain Plastisin di TK Al-Khairiyah Bandar Lampung. *Jurnal Penelitian Medan Agama*, *13*(2), 73. https://doi.org/10.58836/jpma.v13i2.12861

Sit, M. (2023). Pengembangan Media Busy Book untuk Meningkatkan Kemampuan Aksara dan Angka pada Anak Usia 5-6 Tahun. *Aulad: Journal on Early Childhood*, *6*(2), 260-271. https://doi.org/10.31004/aulad.v6i2.512

Utomo, P., Asvio, N., & Prayogi, F. (2024). Metode penelitian tindakan kelas (PTK): Panduan praktis untuk guru dan mahasiswa di institusi pendidikan. *Pubmedia Jurnal Penelitian Tindakan Kelas Indonesia*, *1*(4), 19-19. https://doi.org/10.47134/ptk.v1i4.821

Winnuly, W., Fauziah, P. Y., Triana, R. S., & Susanti, T. (2023). Pengembangan media pembelajaran pop-up storybook interaktif untuk anak usia dini. *Jurnal Pendidikan Anak*, 36-48. *https://journal.uny.ac.id/v3/jpa*