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Paper Art Wonder: Unlocking the Fundamental Origami Folding Techniques for Four-Years Old's Masterpiece

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ABSTRACT

Origami, the art of paper folding, has evolved over time. This art form involves intricate folding techniques that transform a single square sheet of paper into delicate, three-dimensional geometric creations. Origami stands as a unique and culturally enriched form of artwork, reflecting the essence of Japanese philosophy and heritage. Beyond its aesthetic appeal, origami offers a distinctive educational opportunity that allows young children to explore diverse perspectives. However, the complexity of established origami construction methods poses challenges for young learners, particularly four-year-olds. This study aims to address this gap by identifying fundamental origami folding techniques suitable for young children and offers potential insights into the intricate world of origami artistry. Through a pragmatic qualitative case study approach, the research assesses the appropriateness of various origami folding techniques for four-year-old children, considering their cognitive, psychomotor, and fine motor skills. The research findings demonstrate significant potential at the intersection of contemporary art, children's creative development, and academic research. Ultimately, this research provides valuable insights for educational practices that prioritize experiential learning concepts in supporting children's holistic growth. Additionally, it emphasizes the importance of adapting creative activities to suit young learners' developmental stages and promoting inclusive and enriching childhood experiences.

Keywords: Origami Art, Paper Folding Technique & Early Childhood

INTRODUCTION

Origami, the traditional Japanese art of paper folding has captivated the imagination of artists and enthusiasts for centuries. The art transforms a simple sheet of single paper into complex three-dimensional forms through precise folding techniques to celebrate its aesthetic value and cultural significance. Beyond the artistic attributes, origami has increasingly gained recognition for its potential as an educational tool, particularly in early childhood creative development (Dere, 2019; Fadli et al., 2018).

In Japanese society, origami has emerged as a significant educational tool since the 1870s. The implementation of paper folding in pedagogical practice was influenced by the Friedrich Froebel kindergarten system and curriculum from Western countries. The concept of Froebel's kindergarten, which emphasizes the 'Papier -Falten' (paper folding) activity as part of handiwork, was integrated into

the kindergarten curriculum. Nowadays, in early childhood education in Japan, paper folding is recognized as origami (Nishida, 2019).

Similarly, prior studies stated that origami was established to be able to enrich preschool education as this activity concentrates the educational resources of the structure-forming environment (Sokolova, 2021). Similarly, origami can serve as an educational tool for enhancing children's spatial abilities as the art engaged with spatial skills (Hanada, 2022). Furthermore, origami has been found to be highly beneficial for students with special needs, particularly for those who are deaf or hard of hearing, in both general and special education systems (Chen, 2005).

The art of origami is not only captivating because of the exquisite form and method but also as a versatile educational tool. It provides a wide range of benefits in both academic contexts and children's overall growth. Thus, the research embarks on a journey to explore the educational possibilities of origami, with a specific focus on its suitability of folding techniques for four-year-old children.

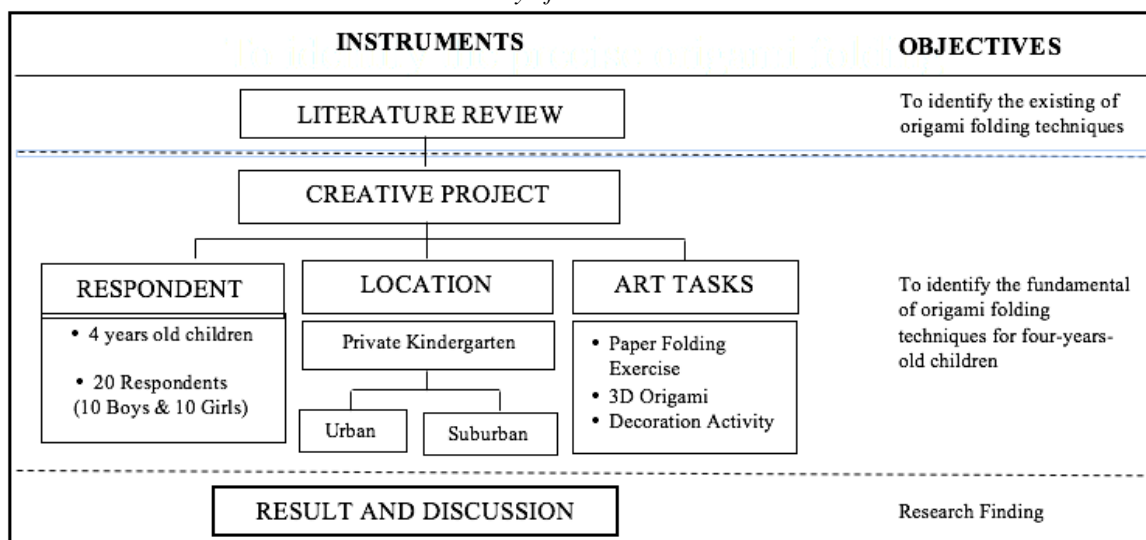
Origami is a unique paper art that embodies significant aesthetic value as it reflects Japanese philosophy, culture, and heritage (Nishida, 2019) stated that origami has played a significant role in Japanese symbolic art, craft culture, and religious ceremonial objects since the introduction of paper and folding techniques from China in the seventh century. By the eighteenth century, origami had evolved into a popular form of mass entertainment in Japanese society. Literally, the term *origami* is derived from a combination of two Japanese words; *ori* (fold) and *kami* or *gami* (paper). Originally, the term derived from the words *ori* or *oru*, signifying the folding method, and *kami* or *gami*, representing the material used (Bolitho, 2014; Hayakawa, 2009; Gardiner, 2008). The art form can be defined as a three-dimensional art form that relies on various folding techniques to create intricate artworks from a single square sheet of paper. Similarly, Balaji (2022) characterized origami as an intricate paper art, whereas Ao (2022) described origami as a model created from a single sheet of paper. In addition, the art has also been described as a folding technique that produces elegant and intricate three-dimensional art form (Ahn et al., 2010).

Referring to origami's etymology, the art comprises various folding techniques which are the exclusive methods used to construct an exquisite three-dimensional form that enriched with aesthetic, depth, and dimension. Consequently, the precision of the folding techniques emerges as the most crucial factor in constructing a flawless origami masterpiece. In contemporary practice, numerous folding techniques have been established, including mountain fold, valley fold, reverse fold, inside reverse fold, outside reverse fold, and sink fold (Bolitho, 2014; Kikugawa, (Ed.). (2016). However, Hayakawa (2009) emphasizes the significance of two fundamental origami folding techniques, namely as mountain fold and valley fold, while Gardiner (2008) identifies a broader spectrum of fifteen origami folding techniques, encompassing book fold, cupboard fold, blintz fold, pleat fold, bisect fold, inside reverse fold, outside reverse fold, double reverse fold, inside crimp fold, petal fold, squash fold, open sink fold, rabbit ear fold, double rabbit ear fold, and swivel fold technique. A previous study stated that there are various types of origami folding techniques that have been established nowadays. Eventually only minimal research has been conducted a fundamental study of origami folding techniques specifically for young children (Abdul Jamil et al., 2019). With the intention to attain the research aim, a qualitative approach within the pragmatic paradigm through literature review and observational instruments for in-depth analysis were employed. The study's focal point was a creative project that exclusively design aligning with the research objective of identifying suitable origami folding techniques for four-year-old children.

METHODOLOGY

The research anatomy focused on the qualitative research design throughout the pragmatic paradigm. To facilitate an in-depth comprehensive studied, the documentation of the literature review and the observational case studies was implemented. A detail outline of the research design framework is thoughtfully presented in the table below:

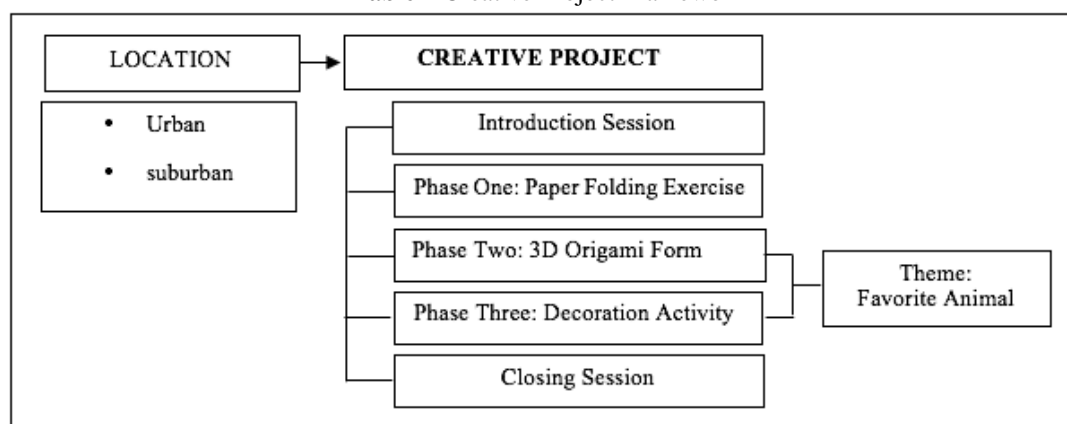
Table 1 Anatomy of the Research Framework



An extensive selection of literature data collection instrument was employed. The research has systematically accessed a wide spectrum of primary and secondary literature sources. To ensure a comprehensive literature review, various data collection instrument such as academic journal, books and online resources were utilized. The documentation of the literature review was deliberately managed to determine the existing of origami folding techniques.

In conjunction, to discover the fundamental folding techniques appropriate for the developmental needs of four-year-old children, the research embarked on a creative project. The project was precisely structured to emphasize the artistic skills that are appropriate for young learners at the age of four. Also, the creative project offers a diverse form of experiential learning opportunities through hands-on origami activities. The following table presents an overview of the creative project implemented within the study.

Table 2 Creative Project Framework



The creative project was intentionally designed to spark the imaginations of children, in accordance with the research objectives. The project encompassed three phases, involving paper folding exercises, the creation of three-dimensional origami forms, and the exploration of origami surface activity. The research infuses joyfulness and playfulness elements at each phase as defined by Ao (2022) every component of the origami structure and method were crafted through playful manipulation of single piece of paper. Throughout this vibrant journey, the study prominently featured children's favorite animals as the central theme of the creative project.

Observational Studies

The observational study took place in two distinct areas within Perak; urban and suburban. Each area involved a group of four-year-old children who served as the research respondents. To address ethical considerations, a comprehensive ethical outline was precisely designed for the study as it involved children as the primary respondents. Ethical considerations are of paramount importance in constructing social science studies (Isa & Forrest, 2011). These regulations serve to instill an awareness of human rights and responsibilities within both researchers and respondents. In response to these concerns, every research element related to the ethical issue was addressed through the provided consent form, establishing a formal agreement between the researcher and the participants.

The creative project was conducted within private kindergartens in Perak, with a single kindergarten representing each of the urban and suburban areas. Each kindergarten was participated in by two groups of respondents, each consisting of five boys and five girls. The research initiated the studies during the morning school session, with the preschoolers serving as the respondent. The duration of the creative activity was approximately one hour and forty-five minutes, commencing at 9.30am and concluding at 11.15am.

To ensure a comfortable and safe learning environment for the respondents, the creative project was conducted within the kindergarten classroom. Prior research has confirmed that conducive learning environment has a significant impact on students' success, enabling them to acquire the necessary knowledge and meet performance expectations (Folami et al., 2021; Guinibert, 2020). Also, a well-organized educational setting, which includes teacher-student interactions, and an active co-curricular program will contribute to the embracing of deep learning approaches (Kember et al., 2020). Therefore, the conducive learning environment was considered as an essential mechanism in the creative project to ensure the respondents enjoyed the activities.

The creative project unfolds in three distinct phases, encompassing paper folding exercises, the construction of three-dimensional origami forms based on animal theme, and origami surface decorating activity. All tasks intricately connected to the art of origami and the research objectives. The creative project begins with an introductory session aimed at building a connection between the researcher and respondents. During this phase, an ice-breaking activity is conducted to establish a relationship, followed by a concise overview of the project activities to ensure clarity and comprehension. Significantly, the theme of animals is woven throughout this session. As the introduction concludes, a Q&A session was conducted. At this phase, the respondents are encouraged to share their knowledge and experiences related to the project theme which is animals. This engaging session typically spans approximately thirty minutes. The following phase of the creative project highlighted the paper folding exercises. Each respondent received two sheets of different color origami paper measuring 26cm x 26cm. During this phase, all respondents were tasked with folding the first sheet of square origami paper using a single folding technique. Subsequently, they received the second origami papers and the respondents required to repeat the same process. The research refrained from providing demonstrations of folding techniques during the activity to ensure genuine folding techniques were employed.

In the subsequent phase, the research focuses on the construction of three-dimensional origami forms. This task was expressly centered on the theme of animals, requiring each respondent to create their preferred animal origami form. To fulfill this creative task, every respondent was equipped with a single square sheet of origami paper measuring 26 cm x 26 cm. Once again, the respondents are required to employ diverse paper-folding techniques to create the animal form. Notably, the creative process was driven by individual interpretation and imagination, as the research deliberately abstained from demonstrating specific origami construction methods. This approach empowered respondents to fully engage their creative aptitudes while embarking on this artistic journey.

Next, the research focuses towards the exploration of origami surface decoration, marking the final stage of the creative project. At this phase, respondents were tasked with embellishing the animal forms they had created in the second phase. The tasks needed to be performed using provided art mediums and materials, including colored pencils, colored markers, googly eyes, and pipe cleaners. Significantly, this phase allowed respondents to unleash their imagination and creativity without any rules or regulations, granting full artistic freedom to decorate their origami masterpieces.

The concluding phase of the research involves play activity. During early childhood stages, play is a fundamental activity that contributes significant impact to children's developmental growth. Engaging in play allows children to develop crucial social skills and interact effectively with their surroundings. Previous study affirmed that children with limited social skills often experience higher rates of behaviour problems (Julian & McCall, 2016). Due to the circumstances, the study encouraged the respondent to play and interact with the origami form during and after the session. Engaging in the playful concept of origami activity enables children to improve their fine motor skills and enhance concentration levels (Adetya & Gina, 2022).

Earlier research emphasized the importance of interactive play within the classroom, by highlighting the connection between children's play, language, and literacy. This connection of the mechanisms emphasizes the importance of incorporating children's experiences and existing knowledge into academic learning (Flint, 2020). Consequently, children can grasp the concept of simultaneous learning and play (Letourneau & Sobel, 2020).

After completing the three-dimensional form of origami, respondents are encouraged to interact with these paper creatures. During this phase, some respondents engage in individual play with the animal forms, while others collaborate in play and share the fun with their friends. As the session ended, each participant involved in the origami creative project received a thoughtful goodies bag as a token of appreciation. This creative journey concluded at 11.15am, encompassing a duration of approximately one hour and forty-five minutes to complete all the provided tasks.

Throughout the study, the researchers fully embraced the role of primary observers in each task to appreciate the opportunity to capture a vibrant, real-life perspective through direct observation. The entire project was vividly documented through the lens of a digital camera. Subsequently, all gathered data was subjected to thorough content analysis.

RESULT

Referring to the data gathered from the literature review, the researchers identified a range of established folding techniques commonly employed in origami art. These techniques encompass mountain folds, valley folds, pleat folds, reverse folds, inside reverse folds, and sink folds, as well as book folds, cupboard folds, blintz folds, bisect folds, double reverse folds, inside crimp folds, petal folds, squash folds, open sink folds, rabbit ear folds, double rabbit ear folds, and swivel folds. These techniques are widely utilized today to create exquisite origami creations (Bolitho, 2014; Mitchell, 2010; Hayakawa, 2009; Gardiner, 2008).

In light of the conducted observational studies within the creative project, the research has successfully identified the fundamental folding techniques suitable for four-year-old children. All collected data derived from task one; the paper folding exercises and task two; the construction of three-dimensional form of origami were systematically organized using a thematic approach, allowing the extraction of crucial information for content analysis.

Table 3 The Observational Case Study: Folding Paper Exercise

LOCATION	PROJECT	FOLDING TECHNIQUES			
		Book Fold	Mountain Fold	Valley Fold	Shawl Fold
Urban Area	Task One	5	3	2	0
	Task Two	4	3	2	1
Suburban Area	Task One	4	2	3	1
	Task Two	3	3	2	2

Referring to the data acquired from the paper folding exercises, the research has determined four paper folding techniques particularly well-suited for four-year-old children. These techniques include the book fold, mountain fold, valley fold, and shawl fold. The technique is categorized as fundamental folding techniques within the domain of existing origami art.

In the urban area, the result for task one indicated that five respondents engaged in the book fold technique. Following with the mountain fold technique by three respondents, the valley fold

technique by two respondents, and none of the respondent has performed the shawl fold technique. In terms of task two, the book fold technique was again performed by four respondents, the mountain fold technique by three respondents, the valley fold technique by two respondents, and the shawl fold technique by 1 respondent. The results indicate that the book fold technique is the most preferred in the urban area, whereas the shawl fold is the least favored among the selected folding techniques.

Similarly, in the suburban area study for paper folding exercises, the results showed that the book fold technique is the most preferred among the paper folding methods, while the shawl fold is the least favored. Task one revealed that the book fold technique was performed by four respondents, the valley fold by three respondents, the mountain fold by two respondents, and the shawl fold technique by one respondent. In task two, the book fold technique was performed by three respondents, the mountain fold by three respondents, the valley fold technique by two respondents, and the shawl fold technique by two respondents. The results displayed that the book fold and mountain fold techniques were consistently performed by majority of respondents across both urban and suburban areas in Perak, while the valley fold and shawl fold techniques are less preferred.

The second activity of the creative project, which involved the creation of three-dimensional form of origami, revealed a similar result as the first activity. The finding discovered four types of folding techniques performed by the respondents, including the book fold, mountain fold, valley fold, and shawl fold. The results of the creative project indicated the respondents in both urban and suburban areas employed the same folding techniques as observed in activity one, the paper folding exercise. These results indicate a preference for certain paper folding techniques among the study's subjects; four-year-old respondents.

DISCUSSION AND IMPLICATION OF THE STUDY

The data attained through observational studies within the creative project revealed valuable insights into the preferences and suitability of various origami folding techniques for four-year-old children. This discussion focuses on the preferences observed in both urban and suburban areas, as well as the implications from various perspectives.

Referring to the creative project result, there are four folding techniques determined such as book fold, mountain fold, valley fold and shawl fold. The finding displayed the book fold technique emerged as the most preferred origami folding method among the four-year-old respondents, with a total of sixteen participants selecting this approach. There was a slight difference in preference between urban and suburban areas, with nine children from urban settings and seven from suburban environments favoring this technique. Following, the mountain fold technique ranked as the second most favored folding method, with six respondents using this approach, evenly distributed between urban and suburban areas. The valley fold technique was employed by eight participants, equally split between urban and suburban areas. Conversely, the shawl fold technique was chosen by four respondents, with one from an urban area and three from suburban locations. While these techniques received slightly fewer preferences.

Based on the research findings, four fundamental folding techniques have been identified as suitable for four-year-old early learners, the book fold, mountain fold, valley fold, and shawl fold. Upon examining these folding methods, it becomes clear that the book fold, mountain fold, and valley fold share common characteristics, primarily involving the same folding process. The primary distinction lies in the orientation of the paper, whether it's folded vertically or horizontally. All these techniques are based on straight lines, making them relatively simple and manageable for young children. On the other hand, the shawl fold introduces a slightly different folding pattern, emphasizing a single diagonal line. This unique feature may present a challenge for young children with developing fine motor skills. Accordingly, this issue makes it less preferred compared to the book fold, valley fold, and mountain fold techniques.

The diversity form of folding techniques preferences can be attributed to individual artistic inclinations. As previously mentioned, the study involved early childhood respondents, specifically four-year-olds. At this stage, the children have limited skills due to the nature of their developmental growth. Furthermore, healthy development of motor skills and the consistent engagement in physical activities during early childhood lay the foundation for long-term mental and physical well-being

(Schmutz et al., 2020). According to the facts, the children at the age of four-year-old are only proficient in simpler origami folding techniques. These young respondents can only create basic origami forms using specific folding methods.

The research offers valuable insights into young children's preferences, particularly in terms of fine motor skill development within the academic context. The data obtained emphasizes the significance of introducing origami to young learners, encouraging the inclusion of origami as an engaging and educational activity for children. This provides them with a platform to explore their artistic abilities and cultivate patience and attention to detail.

The findings demonstrate that involvement in origami folding techniques significantly enhances the fine motor skills of children during early childhood stages (Musafir et al., 2022). Also, the children will have a strong connection between motor skills and cognitive benefit through engaging in origami folding activities (Shi & Feng, 2022). In relation, origami plays a significant role in three domains of children's learning development including cognitive domain, affective domain, and psychomotor domain (Yusiyaka & Septina, 2022).

The observational results highlight that mountain fold, valley fold, and shawl fold techniques are essential choices for teaching origami to four-year-old children. These techniques can serve as foundational building blocks for more intricate origami creations. This finding has the potential to guide educators and curriculum designers in developing age-appropriate art activities that nurture creativity, enhance dexterity, and support cognitive development in early childhood education. It also reinforces the idea that children can derive both joy and educational benefits from art activities.

In the realm of art and creative development, the research highlights the significance of early exposure to creative activities, with a specific focus on origami. It provides compelling evidence that involving young children in origami can effectively nurture artistic expression and kindle their imaginations from a tender age. Through origami, the study reveals the latent creative potential of young learners, emphasizing the essential role of artistic expression as a foundational aspect of early childhood development. This research highlights the significant value of art in cultivating imagination, facilitating self-expression, and improving fine motor skills in four-year-old children, thereby contributing significantly to their holistic growth.

In terms of societal implications, this research promotes the cause of inclusive and accessible art activities for children, fostering a more equitable and enriched childhood experience available to all. It emphasizes the importance of ensuring that educational and creative opportunities are within reach for every child, regardless of their socio-economic background or geographic location. As a summary, the study on origami and its suitability folding technique for four-year-old children carries extensive implications across academia, art, children's development, and society. It enthusiastically supports the integration of creative and educational activities that nurture young minds and elevate the overall quality of childhood experiences.

CONCLUSION

In conclusion, this research has shed light on the suitability of origami as a creative activity for four-year-old children. The study determined the fundamental folding techniques that resonate with young learners and promote their artistic development, particularly through the mountain fold and valley fold techniques. These findings not only hold academic significance by notifying early childhood education but also have far-reaching implications in the realm of art, fostering creative expression and imagination. Furthermore, the research advocates for inclusive access to such enriching activities, ensuring that all children, regardless of their socio-economic background or geographic location, can benefit from the positive impact of origami on their holistic growth. Ultimately, this research emphasizes the importance of early exposure to creative endeavors, contributing to the enhancement of childhood experiences and the development of well-rounded individuals in our society.

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REFERENCES

- Abdul Jamil, S.E.S., Ibrahim, N.H., Samsuddin, I., & Baharom, M. K. (2019). A study on the enfolded technique of origami art sensible among five years children in Perak, Malaysia. *International Journal of Advanced and Applied Sciences*, 6(6), 1-5. <https://doi.org/10.21833/ijaas.2019.06.001>.
- Adetya, S., & Gina, F. (2022). Bermain origami untuk melatih keterampilan motorik halus anak usia dini. *Altruis: Journal of Community Services*. <https://doi.org/10.22219/altruis.v3i2.21501>.
- Ahn, B., Shoji, D., Hansen, C., Hong, E., Dunand, D., & Lewis, J. (2010). *Printed Origami Structures*. *Advanced Materials*, 22. <https://doi.org/10.1002/adma.200904232>.
- Ao, Q. (2022). *How to design single-sheet origami models*. 2022 IEEE Integrated STEM Education Conference (ISEC), 340-340. <https://doi.org/10.1109/ISEC54952.2022.10025167>.
- Balaji, R. (2022). The STEM of origami. *2022 IEEE Integrated STEM Education Conference (ISEC)*, 380-380. <https://doi.org/10.1109/isec54952.2022.10025216>.
- Bolitho, M. (2014). *Zoogami: Fold Your Own Origami Wildlife Park*. New York: Harper Design
- Chen, K. (2005). Math in motion: origami math for students who are deaf and hard of hearing. *Journal of deaf studies and deaf education*, 11 2, 262-6. <https://doi.org/10.1093/DEAFED/ENJ019>.
- Dere, Z. (2019). Investigating the creativity of children in early childhood education institutions. *Universal Journal of Educational Research*. <https://doi.org/10.13189/UJER.2019.070302>.
- Fadli, Z., Hastuti, N., Ratna, M., Widiandari, A., & Sakariah, D. (2018). Brainstorming dini dengan origami untuk anak-anak., 2. <https://doi.org/10.14710/HM.2.1.%P>.
- Flint, T. (2020). Responsive play: Creating transformative classroom spaces through play as a reader response. *Journal of Early Childhood Literacy*, 20, 385 - 410. <https://doi.org/10.1177/1468798418763991>.
- Hanada, M. (2022). Introversion and high spatial ability is associated with origami proficiency. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.825462>.
- Folami, A., Riaz, A., & Musolihu, M. (2021). Critical Environmental Factors Affecting Learning in College of Education. <https://doi.org/10.35877/454ri.eduline400>.
- Gardiner, M. (2018). *Everything Origami: Instructions for 55 Beautiful Models*. Australia: Hinklers Book Pty Ltd.
- Guinibert, M. (2020). Learn from your environment: A visual literacy learning model. *Australasian Journal of Educational Technology*, 36, 173-188. <https://doi.org/10.14742/AJET.5200>.
- Hayakawa, H. (2009). *Kirigami Menagerie: 38 Paper Animals to Copy and Cut*. New York: Lark Craft an Imprint of Sterling Publishing Co., Inc.
- Isa, B., & Forrest, D (2011). A qualitative case study of the implementation of education programs at the national gallery of Victoria (NGV), Australia. *Procedia-Social and Behavioral Sciences*, 29: 1905-1913
- Julian, M., & Mccall, R. (2016). Social skills in children adopted from socially-emotionally depriving institutions. *Adoption Quarterly*, 19, 44 - 62. <https://doi.org/10.1080/10926755.2015.1088106>.
- Kember, D., Webster, B., & Chan, W. (2020). Refocusing the 3P model to incorporate a learning and teaching environment and graduate attributes. *Educational Psychology*, 40, 592 - 607. <https://doi.org/10.1080/01443410.2020.1732304>.
- Kikugawa, T. (Ed.). (2016). *Akira Yoshizawa: Japan's Great Master*. Japan: Turtle Publishing Ltd.

- Letourneau, S., & Sobel, D. (2020). Children's descriptions of playing and learning as related processes. *PLoS ONE*, 15. <https://doi.org/10.1371/journal.pone.0230588>
- Musafir, M., Hadi, R., & Muhajirin, M. (2022). Meningkatkan kemampuan motorik halus anak melalui seni melipat origami pada anak kelompok b raudatul jannah. *Jurnal Ilmiah Mandala Education*. <https://doi.org/10.58258/jime.v8i3.3692>.
- Nishida, Y. (2019). Something old, something new, something borrowed, and something froebel? The development of origami in early childhood education in Japan. *Paedagogica Historica*, 55, 529 - 547. <https://doi.org/10.1080/00309230.2018.1546330>.
- Schmutz, E., Leeger-Aschmann, C., Kakebeeke, T., Zysset, A., Messerli-Bürgy, N., Stülb, K., Arhab, A., Meyer, A., Munsch, S., Puder, J., Jenni, O., & Kriemler, S. (2020). Motor competence and physical activity in early childhood: stability and relationships. *Frontiers in Public Health*, 8. <https://doi.org/10.3389/fpubh.2020.00039>.
- Shi, P., & Feng, X. (2022). Motor skills and cognitive benefits in children and adolescents: relationship, mechanism, and perspectives. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.1017825>.
- Sokolova, G. (2021). Origami as a means of geometric modeling: environmental approach to self-organization in young childhood. bulletin of kemerovo state university. *Series: Humanities and Social Sciences*. <https://doi.org/10.21603/2542-1840-2021-5-3-229-237>.
- Yusiyaka, R., & Septina, H. (2022). Games based learning dengan media origami untuk menstimulasi kreativitas anak usia 6-12 tahun di pusat sumber belajar masyarakat bukit mekar wangi. *Inspiratif Pendidikan*. <https://doi.org/10.24252/ip.v11i2.35496>.