

## STEAM Approach with Loose Parts Learning Materials in the Early Childhood Education

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### Abstract

The development of a very fast and competitive era demands the readiness of high quality and though human resources. The use of the STEAM approach with Loose Parts learning materials is one of the unique learning at this institution, where the institution incorporates elements of local wisdom in STEAM and Loose Parts. The purpose of this study was to determine the institution's strategy in providing learning media used in implementing the Hauriyah Halum Integrated STEAM PAUD approach. This type of research is a case study with a qualitative approach; Data collection techniques are carried out by means of interviews, observation and documentation. Data analysis techniques and data interpretation were carried out including; data reduction, data presentation and conclusion. While for the validity of the data is done by triangulation of methods and sources. The results of the study show that in carrying out learning activities with STEAM and Loose Part, the school utilizes the media in the environment around the child by adhering to the concept of "Álam Takambang Jadi Guru" and integrating it with modern audiovisual media.

**Keywords:** early childhood education, steam, loose parts.

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## INTRODUCTION

Education is something that cannot be separated from everyday life. Education is obtained from the time humans are born until they become children, adolescents, adults and even old people. Education is needed with the aim of improving the quality of Human Resources (HR), through a learning process by providing knowledge to children. Education given to children must adapt to the development of the current era and according to the needs of society at that time (Primayana, 2019).

Along with the times, education began to evolve and be further improved. Developments that occur in education are also inseparable from the influence of the industrial revolution which is growing day by day so that it indirectly changes and has an impact on the educational order, multicultural education paradigms, such as unity in diversity, equality, cultural identity, and indigenous Indonesian social justice. This study contributes to promotion and debate of multicultural education nationally and internationally (Jayadi et al., 2022). The industrial revolution that occurred was experienced by the whole world as well as its rights in Indonesia. The industrial revolution has occurred several times and now has entered the Industrial Revolution 4.0. The revolution that is happening at this time shows that information and communication technology is being used in almost every line of society's life. The changes that are happening are

of course inevitable, in facing the Industrial Revolution 4.0. We must prepare and improve the quality of adequate human resources so that they are ready. In adapting to competing on a large scale, the world. Therefore, the Industrial Revolution 4.0 education has an important role to prepare and assist in optimizing the quality of human resources (Lase, 2016).

Early childhood education is one of the educational units that helps in improving and optimizing human resources from an early age (Harahap & Ismaniar, 2022). Early childhood education is one of the non-formal education units as well as basic level education which also has an important role in preparing children to face the development of the Industrial Revolution and technological advances as well as improving the quality of human resources in children from an early age so that later it will help children in the present and the future (Novianti et al., 2018). This is because an early age children are in a period of rapid development. Therefore we must be able to provide the best for children at that age, including in preparing children to face the outside world.

In providing preparation in dealing with the development of the industrial revolution, one way is to innovate in education such as in terms of learning strategies, methods, approaches, media to the learning materials provided and so on which of course adapts to the times. The early childhood education institution that is very progressive in responding to the challenges of the progress of the times in the city of Padang is the Hauriyah Halum Integrated early childhood education. One of the efforts in preparing children to face development, at the Institute is carried out using the STEAM (science, technology, engineering, art and mathematic) approach with Loose Parts. This learning approach is also being intensively given in the face of the development of the Industrial Revolution. STEAM stimulates children to think (Zubaidah, 2019).

The STEAM approach has its own uniqueness, because this approach is very diverse starting from the fields of science or knowledge, technology, engineering, art and mathematics which will better integrate skills of children. Whereas Loose Parts themselves are learning materials that are very easy to use and affordable. Loose Parts come from open materials, natural materials and synthetic materials which can be designed, combined or arranged into one, can be separated again, flexible and easy to carry or moved. Therefore, with the various properties that exist. Loose Parts will further stimulate the creativity and imagination of children. In addition, this learning material will make children explore more in real terms according to what the child wants (Nugraheni, 2019).

This combination of STEAM and Loose Parts will help children to prepare themselves to face the progress of the times because this learning will stimulate a critical, innovative, creative mindset and can stimulate a child's mindset in solving problems which mindset is very much needed in dealing with technological advances, and development of the industrial revolution. The combination of the STEAM method with Loose Parts will make children explore more and find out about their surroundings. This combination will integrate the skills that exist in the child so that it will help the child in the future. Education regarding the Industrial Revolution from an early age to children has a very positive impact on children, especially in preparing children to go to the outside world and compete on a national to international scale and will improve the quality of Human Resources (HR) in children.

STEAM-based learning with Loose Parts is very helpful in improving the quality of education because the learning provided uses various contexts and various skill areas. STEAM-based learning with Loose Parts can be closer to children's daily lives (Imamah & Muqowim, 2020). However, researchers found a uniqueness in this approach, in which in this era of increasingly rapid technology, the school still incorporates elements of local wisdom into its learning, with the motto "Alam Takambang Jadi Guru (Natural Movement Becomes a Teacher)". Seeing the urgency of the importance of the role of education in the times and the uniqueness found, the researchers are interested in conducting this research to explore deeper into the learning media used in the STEAM approach with Loose Parts learning materials in Integrated early childhood education Hauriyah Halum.

## METHODS

To explore deeper into the phenomena that researchers find, the type of research that researchers use is a case study with a qualitative approach. It is a type of research that is carried out intensively, in detail and in depth about a program, event and activity whether it is related to an individual, a group of people, an institution or an organization. This approach is used to gain in-depth knowledge about the events that occurred, in other words this approach is carried out so that researchers can observe and see directly related to the phenomena found (Sari, 2017).

Data collection techniques that researchers do are by interview, observation and documentation. As for data analysis, the researchers carried out several stages which included; collecting data, data reduction, data display and conclusion/verification as well as for the validity of the data the researcher uses method and source triangulation.

The data sources in the study consisted of two sources, namely research subjects and research informen. The research subjects were students and educators, the research informen were school principals, program managers and parents of students who were in Hauriyah Halum Integrated Early Childhood Education.

## FINDING AND DISCUSSIONS

Based on the results of extracting information that the researchers carried out through the methods of observation, interviews and documentation studies, there were several findings that the researchers obtained regarding the learning media used in the STEAM approach with Loose Parts learning materials at the Hauriyah Halum early childhood education Institute as follows:

### *Learning Media with Utilization of the Surrounding Environment*

Based on the results of observations, interviews and supported by documentation data obtained by researchers in the field, the researchers obtained several findings. First, the media prioritized and most utilized by schools is media that is in the environment around the child or can be said to be the closest to the child. The surrounding environment in question includes natural/surrounding natural materials such as plants, animals, and the environment itself. From the phenomena that the researchers observed and the explanations that have been expressed by various parties, the researchers found that the surrounding environmental media used by this school included local wisdom, where schools sometimes used local plants as traditional medicines such as castor leaves or were creative using leaves, goods, wood branches and so on. Children are given the freedom to be creative and also free to choose, whether they want to use the media or activities they want to use, but still refer to the learning objectives. This is done by the school as a form of implementing the Minangkabau philosophy of "Alam takambang jadi guru". So the philosophy that exists in Minangkabau and the school is based on this in addition to being based on the established national curriculum.

"Alam takambang jadi guru" is one of the philosophies in Minang which means learning from nature to make nature a teacher or learning resource. It means to learn to seek experience with nature because there are so many things that can be learned from nature as well as phenomena that occur in nature. Therefore, the school utilizes the surrounding media as an introduction to the environment that is closest to the child as well as introducing local wisdom that exists in the area where they live. This local wisdom already includes many of the Loose Parts components.

One of the learning media used by schools is by utilizing the surrounding environment, where this environment is the closest to the child, therefore the surrounding environmental media is greatly utilized by the school. Through the environment around them children learn many things such as the nature in that environment, the plants that surround them, the animals that exist and know what the community environment is like. Early childhood are children where playing is everything the other hand, we can take advantage of this to provide children with various learning using interactive activities and make children happy and excited, therefore through playing that they gain a lot of experience and learning (Hasanah, 2018). Use of media and use of explicit

approaches in instruction always improve students' writing performance to a great extent (Choo & Singh, 2011)

The world of children is the world of play, and children really like various activities that make them able to express their desire to play and activities that blend with nature are one of them. Activities that blend in with nature are activities that are directly visible to children and sometimes children carry out experiments on those they encounter. This is done by children because their curiosity is so high that they want to see for themselves what happens if they take action on things he found it. Therefore we can take advantage of this child's hobby to provide stimulation that can stimulate the growth and development of children both in terms of motor, cognitive, child's mindset in solving problems and other things. Early childhood education is education that is given to early childhood with the aim of growing and providing a basis for children from an early age on how to behave, providing knowledge that can sharpen children's cognitive skills, hone existing skills in children, and creativity that can adapt children to the surrounding environment. The child can assist the person responsible for the design of the site and its content, and forms the basis for further usability studies to develop an online instructional multi-media discussion environment (Erdem et al., 2013). Extant evaluations focus on specific aspects of digital media education, while the conscious and responsible use of mobile media, thanks also to its multifunctional nature, depends on a broader set of strictly interdependent skills, and in particular on a mix of screen time management and content-related skills (Gui et al., 2023)

The teaching and learning process by using various constructive learning media has significantly increased student achievement in SPS and Science (Vebrianto & Osman, 2011). As well as the surrounding environment has also been incorporated into local wisdom, such as traditional medicinal plants or native animals originating from West Sumatra. As well as the surrounding environment media is also a medium that is rich in Loose Parts learning material components where there are lots of natural materials and children can also find other non-natural objects such as used bottles or other used items that are still in the Loose Parts component. Factors related the usage of instructional media usage in vocational education, Bangkok province were teaching experiences and supported materials (Phosuwan et al., 2013).

Apart from learning materials for Loose Parts, the STEAM approach is also used to introduce the surrounding environment. Starting in terms of knowledge, namely insight into nature and its surroundings, technology, namely how to grow crops or the equipment used, in terms of technique/engineering, namely children learn how to combine the knowledge they already have and process it using technology that they already know and learn, in terms of art namely how children's ability to be creative in forming these products and in terms of mathematics, namely how children take into account all aspects ranging from knowledge to art. Therefore, educators, parents and adults who are around children must be able to create a learning environment that makes children enthusiastic about learning and getting to know their surroundings. Teaching is successful, various aspects of the environment should be considered such as application of domain knowledge, conceptual theory, and evaluation of the overall quality of the environment designed with instructional media (Sangsawang, 2015). Our findings show that there is no universal strategy of communication among leaders of business schools, however, there are some patterns of social media use in different world regions. This is highly important from the perspective of leadership in higher education sector practice (Kotula et al., 2021)

The environment around children provides a lot of learning, through this environment children can learn many things starting from how the environmental conditions themselves, living things in the environment such as plants or animals to how the environment affects the living things around them. All of these things children can learn from the environment around them, therefore using media in the surrounding environment will be very helpful in child development (Khaironi, 2020). Develop an adequate media strategy to increase the use of training programs and continuing education through social networks in Saudi Arabia (Alzain et al., 2021).

Using learning media for the surrounding environment means that we have introduced children to the environment in which they are located, by introducing this environment we can

stimulate or foster self-awareness in children from an early age regarding the importance of paying attention to the surrounding environment and being sensitive to what is happening to the surrounding environment so that care and love for the surrounding environment (Kusumawardani & Kuswanto, 2020). The most effective method of informing people about the primary prevention of hypertension using a social media website corresponded to the following sequence: a video clip followed by a text post (Bezzubtseva et al., 2022).

By introducing media in the form of the surrounding environment which includes all living things, namely humans, animals and plants, as well as the STEAM approach used, we have equipped children how to love and care for the surrounding environment and stimulated children to think about how to keep the environment maintained. This is because the earth is getting older and the people's concern for the environment is also fading, so we must be able to equip and make children love their environment because in that way we have helped the next generation of the nation to be able to protect and preserve nature and its contents.

### ***Modern Media***

In addition to utilizing media related to nature and the surrounding environment, researchers also found that schools were very adaptive to advances in science and technology, namely using other learning media that could support the learning process such as using modern media. In the times and technology that is increasingly advanced and the industrial revolution is also developing day by day, this certainly has an impact on education, one of which is in terms of the media used during learning activities. Researchers found that at early childhood education Hauriyah Halum, schools use learning media, in the form of audio media, visual media and audiovisual media in providing learning to children. The audiovisual media used in learning found include; video clips, animations, cartoons and so on. All audiovisual learning media used are related to the ongoing theme. Likewise the learning tools used to display the video, researchers found that schools also use projector screens and teachers and children watch them together. After watching, the teacher usually explains the meaning contained in the video or film that has been played.

Other media used besides environmental media are modern media. At this time, children cannot be separated from technological advances, the era that is increasingly developing and the industrial revolution which is also increasingly advanced makes children inevitably have to be able to follow the flow because if not then the child will be left behind. As technology advances and the industrial revolution also has an impact on children's education starting from the learning itself, the methods or approaches used to the learning media.

Learning media for early childhood is important in providing learning to children or in the learning activities carried out. Using learning media will increase children's motivation and enthusiasm for learning. Children will seriously carry out activities and pay attention to the learning provided, therefore the learning media provided to children must be interactive, interesting and in accordance with the child's development (Nurdiyanti, 2019). Multimedia can help improve knowledge about breast milk (Novianty et al., 2021).

The learning media used today are also increasingly advanced, where previously they only wrote and explained on the blackboard, now they are switching to more modern ones, such as using audiovisual media. Media that is audiovisual in nature is media that emits sound and displays images, for example, namely a video, animation, film footage and so on (Nurdiyanti, 2019). Use of social media has the potential to influence students' views of instructors and universities (Manu et al., 2021).

Using audiovisual media for early childhood is very good, children become familiar with one of the technologies that can be used in education, precisely in the learning process. Therefore we must be able to introduce to children that at this time technology is growing even when he is learning he has used one of the technologies that is currently developing and the introduction of this technology can be done directly and indirectly (Darihastining et al., 2020). By displaying a video or animation, it will make the child more enthusiastic in paying attention to learning so that

what is conveyed through the snippet can be conveyed properly and the child can understand and capture what is meant by the video shown.

Learning with audiovisual media in the form of animated displays or images accompanied by sound will make children more interested and excited to listen and pay attention to what is being shown. That way, children who pay close attention to the videos shown will make children understand little by little about what they see, but here, of course, the educator will explain further later (Suryani & Seto, 2020).

Through the videos that are displayed, children can learn about many things because the video clips or animations that are displayed have meaning and moral messages contained, such as videos or animations related to the stories of the prophets or about other stories, which in these stories have a very good message for children. Therefore, an educator must also be able to explain well what is the purpose of showing the footage so that what the child imagines can be straightened out more clearly and does not float, this is because the child will catch learning or something faster if he can see it directly the real thing.

## CONCLUSION

Learning Media is very important in its existence in early childhood education. Learning media used in carrying out STEAM approach activities with Loose Parts learning materials are generally used by people by utilizing IT-based media. However, the uniqueness found in the research location combines it with media based on local wisdom. The media found are media that are in the environment around the child or that are closest to the child and are combined with modern audio-visual media.

## REFERENCES

- Alzain, Z., Alfayez, A., Alsalman, D., Alanezi, F., Hariri, B., Al-Rayes, S., Alhodaib, H., & Alanzi, T. (2021). The Role of Social Media in the Training and Continuing Education of Healthcare Professionals in Eastern Saudi Arabia. *Informatics in Medicine Unlocked*, 24(April), 100587. <https://doi.org/10.1016/j.imu.2021.100587>
- Bezzubtseva, M. V., Demkina, A. E., Lipilina, M. N., Benimetskaya, K. S., Pivenstein, A. L., Gavriilyuk, N. D., Isaeva, A. V., Lobzhanidze, F. A., Podgorodetskaya, N. V., Klyashtornyj, V. G., Taskina, V. Y., & Pogosova, N. V. (2022). Video or text? Education through a social media website in hypertension. *International Journal of Cardiology: Cardiovascular Risk and Prevention*, 14(June), 200139. <https://doi.org/10.1016/j.ijcrp.2022.200139>
- Choo, J. C. S., & Singh, M. K. M. (2011). Enhancing Critical Literacy in Writing by Employing Media in Explicit Instructional Approaches. *Procedia - Social and Behavioral Sciences*, 29, 1409–1417. <https://doi.org/10.1016/j.sbspro.2011.11.380>
- Darihastining, S., Aini, S. N., Maisaroh, S., & Mayasari, D. (2020). Penggunaan Media Audio Visual Berbasis Kearifan Budaya Lokal pada Anak Usia Dini. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 5(2), 1594–1602. <https://doi.org/10.31004/obsesi.v5i2.923>
- Erdem, M., Pala, F. K., & Baş, T. (2013). A Usability Study of an Online Instructional Multimedia Discussion Environment. *Procedia - Social and Behavioral Sciences*, 83(2004), 786–792. <https://doi.org/10.1016/j.sbspro.2013.06.148>
- Gui, M., Gerosa, T., Argentin, G., & Losi, L. (2023). Mobile Media Education as a Tool to Reduce Problematic Smartphone use: Results of a Randomised Impact Evaluation. *Computers and Education*, 194(November 2021), 104705. <https://doi.org/10.1016/j.compedu.2022.104705>
- Harahap, F. S., & Ismaniar, I. (2022). The Importance Of Learning Strategies In Supporting Children’S Achievement In PAUD Institutions. *SPEKTRUM: Jurnal Pendidikan Luar Sekolah (PLS)*, 10(2), 306. <https://doi.org/10.24036/spektrumpls.v10i2.115088>
- Hasanah, U. (2018). Strategi Pembelajaran Aktif Untuk Anak Usia Dini. *INSANIA: Jurnal Pemikiran Alternatif Kependidikan*, 23(2), 204–222. <https://doi.org/10.24090/insania.v23i2.2291>

- Imamah, Z., & Muqowim, M. (2020). Pengembangan kreativitas dan berpikir kritis pada anak usia dini melalui metode pembelajaran berbasis STEAM and loose part. *Yinyang: Jurnal Studi Islam Gender Dan Anak*, 15(2), 263–278. <https://doi.org/10.24090/yinyang.v15i2.3917>
- Jayadi, K., Abduh, A., & Basri, M. (2022). A Meta-analysis of Multicultural Education Paradigm in Indonesia. *Heliyon*, 8(1), e08828. <https://doi.org/10.1016/j.heliyon.2022.e08828>
- Khaironi, M. (2020). Meningkatkan Kemampuan Kognitif Anak Melalui Penggunaan Media Bahan Alam Pada Kelompok B. *Jurnal Golden Age*, 4(02), 261–266. <https://doi.org/10.29408/jga.v4i02.2272>
- Kotula, N., Kaczmarek-Ciesielska, D., & Mazurek, G. (2021). Social Media E-leadership Practices During the COVID-19 Pandemic in Higher Education. *Procedia Computer Science*, 192, 4741–4750. <https://doi.org/10.1016/j.procs.2021.09.252>
- Kusumawardani, R. R. W. A., & Kuswanto, K. (2020). Membangun kesadaran lingkungan melalui ekopedagogik pada anak usia dini berlandaskan konsep Jan Ligthart. *Jurnal Pendidikan Anak*, 9(2), 94–99. <https://doi.org/10.21831/jpa.v9i2.31997>
- Lase, D. (2016). Pendidikan di Era Revolusi Industri 4.0 Education. *Journal Sunderman*, 1(1), 28–43.
- Manu, B. D., Ying, F., Oduro, D., & Boateng, S. A. (2021). Student Engagement and Social Media in Tertiary Education: The Perception and Experience From the Ghanaian Public University. *Social Sciences & Humanities Open*, 3(1), 100100. <https://doi.org/10.1016/j.ssaho.2020.100100>
- Novianti, E., Wahid, S., & Jalius, J. (2018). Gambaran Kinerja Pendidik di Bimbingan Minat Baca dan Belajar (BIMBA) AIUEO Kota Padang. *SPEKTRUM: Jurnal Pendidikan Luar Sekolah (PLS)*, 6(2), 162. <https://doi.org/10.24036/spektrumpls.v1i2.9059>
- Novianty, N., Syarif, S., & Ahmad, M. (2021). Influence of breast milk education media on increasing knowledge about breast milk: Literature review. *Gaceta Sanitaria*, 35, S268–S270. <https://doi.org/10.1016/j.gaceta.2021.10.031>
- Nugraheni, A. D. (2019). Penguatan Pendidikan Bagi Generasi Alfa Melalui Pembelajaran Steam Berbasis Loose Parts Pada Paud. *Seminar Nasional Pendidikan Dan Pembelajaran 2019*, 512–518.
- Nurdiyanti, S. (2019). Implementasi Media Visual Dan Audiovisual Terhadap Pembelajaran Anak Usia Dini Di Era Revolusi Industri 4 . 0. *Universitas Sultan Ageng Tirtayasa*, 2(1), 647.
- Phosuwan, A., Sopeerak, S., & Voraroon, S. (2013). Factors Related the Utilization of Instructional Media and Innovation of Nursing Instructors at Boromarajonani College of Nursing, Suphanburi, Thailand. *Procedia - Social and Behavioral Sciences*, 103, 410–415. <https://doi.org/10.1016/j.sbspro.2013.10.354>
- Primayana, K. H. (2019). Tantangan dan Peluang Dunia Pendidikan di Era 4.0. *Prosiding Seminar Nasional Dharma Acarya*, 1, 321–328.
- Sangsawang, T. (2015). Instructional Design Framework for Educational Media. *Procedia - Social and Behavioral Sciences*, 176, 65–80. <https://doi.org/10.1016/j.sbspro.2015.01.445>
- Sari, S. amelia. (2017). *Studi Kasus dalam Penelitian Kualitatif: Konsep dan Prosedurnya*. 549, 40–42.
- Suryani, L., & Seto, S. B. (2020). Penerapan Media Audio Visual untuk Meningkatkan Perilaku Cinta Lingkungan pada Golden Age. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 5(1), 900–908. <https://doi.org/10.31004/obsesi.v5i1.601>
- Vebrianto, R., & Osman, K. (2011). The Effect of Multiple Media Instruction in Improving Students' Science Process Skill and Achievement. *Procedia - Social and Behavioral Sciences*, 15, 346–350. <https://doi.org/10.1016/j.sbspro.2011.03.099>
- Zubaidah, S. (2019). STEAM (Science, Technology, Engineering, Arts, and Mathematics): Pembelajaran untuk Memberdayakan Keterampilan Abad ke-21. *Seminar Nasional Matematika Dan Sains, September*, 1–18.