

Research Article

Visual Communication Models in the Development of ECCE Teaching Materials based on Inkscape Graphics Applications

Ferry Darmawan^{1*}, Arif Hakim², Venny Sevtiany¹¹Communication Science Study Program, Universitas Islam Bandung, Bandung, Indonesia,²Kindergarten Teacher Education Study Program, Universitas Islam Bandung, Bandung, Indonesia**ORCID**Ferry Darmawan: <https://orcid.org/0000-0002-3095-1697>Arif Hakim: <https://orcid.org/0000-0001-6472-93682>**Abstract.**

The purpose of this study is to empower teachers to create teaching media independently, focusing on visual communication. The study utilizes the unrestricted Inkscape graphics software, providing teachers with a basic understanding of its usage. The research employs development research methods and involves ECCE (Early Childhood Care and Education) teachers at Aisyiyah Kindergartens across West Java as respondents. Development research is employed to produce a specific product and assess its effectiveness. In this case, the aim is to create a visual communication model for early childhood character development. Data collection techniques are conducted through focus group discussions. The findings reveal that teachers' knowledge of graphics applications is currently limited, and they rarely utilize graphic software to independently create teaching materials, such as storybooks. However, after introducing the basics of using the Inkscape application, teachers exhibit an improved ability to create independent storybooks that align with their desired learning objectives. Moreover, they have the opportunity to involve students and teachers as story characters, fostering emotional connections with the story material.

Keywords: Inkscape, children's storybooks, character development, ECCECorresponding Author: Ferry
Darmawan; email:
ferry@unisba.ac.id**Published** 30 October 2023Publishing services provided by
Knowledge E

© Darmawan et al. This article is distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use and redistribution provided that the original author and source are credited.

Selection and Peer-review under
the responsibility of the 5th
Sores Conference Committee.

1. Introduction

Early Childhood Care and Education (ECCE) is the best time that needs to be addressed by educators so that it can be used to provide appropriate learning so that future generations can answer various societal problems. Character education, which is part of the learning curriculum in Early Childhood, is very suitable for shaping children's personalities through moral values and norms. In addition, it is a shaper of emotional intelligence in children. [1], [2] Learning activities at the ECCE level are divided into three development activities: the development of knowledge skills, attitudes, and skills. Of

OPEN ACCESS

the three abilities, the priority is attitude development because attitude development takes a long time and is carried out through habituation. It is at an early age that the right time for the development of the ability of this attitude is dominant, which is commonly called character education. Character education not only accustoms children to behave well but also builds children’s dispositions, thoughts, and attitudes to succeed. Edward DeRoche, "Therefore, character education is not about simply acquiring a set of behaviors. It is about developing the habits of mind, heart, and action that enable a person to flourish"[3].

Based on several previous studies, the method of telling stories through fairy tales can be an exciting art. Through storytelling, children get a different culture and lifestyle. Children will explore new worlds and engage them in plot and character visualizations. In internalizing character education in students through learning, suitable methods and media are needed to run perfectly. Picture stories such as comics should be a medium for character education. Tips for making pictorial stories into character education media by making stories as attractive as possible, containing stories of everyday life, being short, and highlighting the content of character education that is the delivery target [4]–[6]. The visual communication model developed in this study uses the Inkscape graphics application to create teaching materials in the form of picture storybooks. Making teaching materials independently has the advantage that teachers can include appropriate topics or themes that are local, for example, making caricatures of students as the main characters in storybooks.

So far, teachers only use teaching media available in schools. Unfortunately, not all these storybooks support the material they want to convey related to character development, as shown in

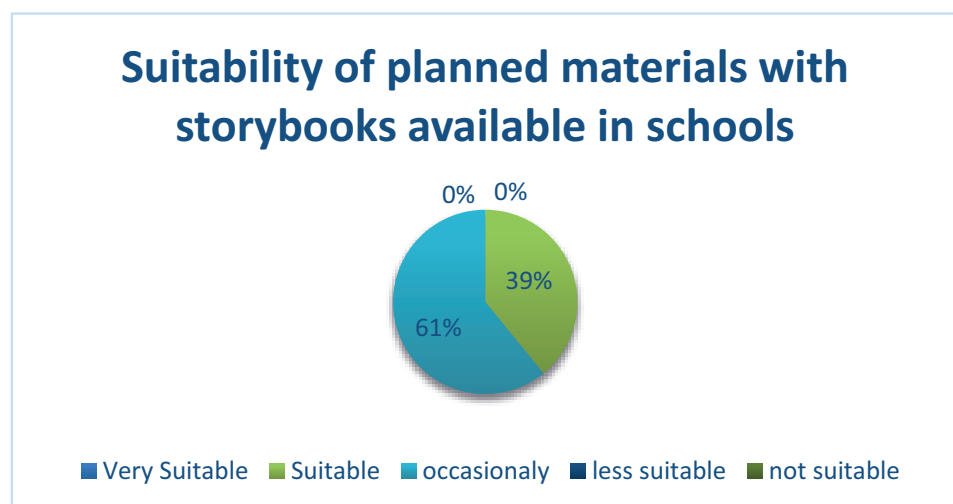


Figure 1: Suitability of planned materials with storybooks available in schools.

Thus, it is necessary to develop teacher skills to be able to create independent teaching materials that can be tailored to the needs. Based on the data obtained, respondents who were the subject of the study stated that they had never made an independent storybook and had never even used a graphic application to prepare teaching media. So, they said they were very interested in learning about this Inkscape application, as seen in Figure 2.

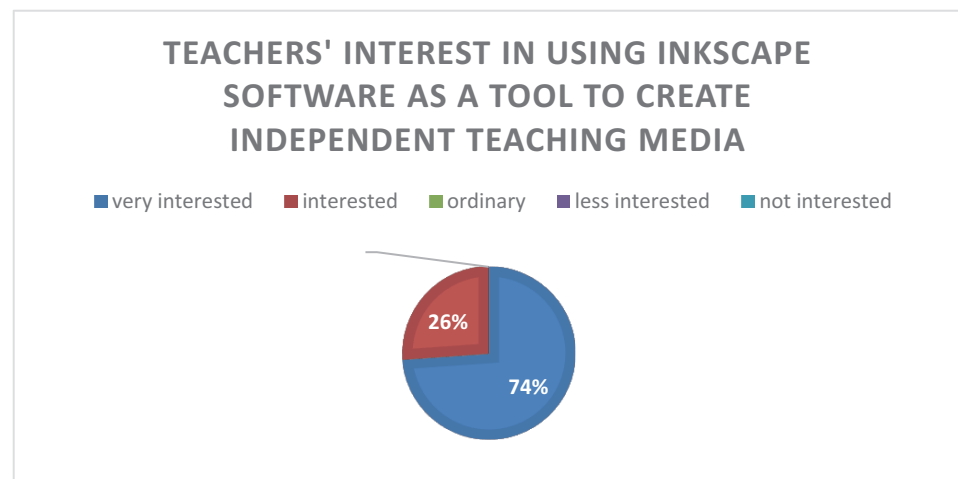


Figure 2: Teachers' Interest in Using Inkscape Software as a tool to create independent teaching media.

In the era of the industrial revolution 4.0, where digital technology is the primary key that must be mastered today, it has even been integrated into the world of education [7], [8]. Era industrial revolution

4.0 is getting a quick response worldwide, including in Indonesia [9]–[11]. Educational theorists use

the term Education 4.0 describes the integration of information and communication technology in learning, both physical and non-physical [12]–[14]. In education 4.0, harmony between humans and information technology is needed to find solutions that can be used to solve various problems that arise and create creative and innovative opportunities [15], [16]. The main qualities expected of a protégé are co-communication skills, technological skills, learning skills, and personal characteristics. Therefore, teachers must be able to adapt to technological developments in the era of the industrial revolution 4.0.

One of the tangible forms for ECCE teachers is being able to create learning media based on communication technology [17], [18]. Because now it has become a necessity for the current generation (gen X, gen Y, and gen Z), learning using information technology media is more in demand and accessible for children to understand [19]–[22]. The teacher profession will indirectly be called the Industrial Revolution 4.0. Therefore

teachers must not be careless because it is possible that the form of learning, both from the media, methods, and learning models, will adapt to technological developments and change according to the times.

2. Method

This research uses development research methods [23], [24] as seen in Figure 3, with the following details: (1) Preliminary Studies; Researchers conduct preliminary research through literature studies, observations, and centralized discussion groups to obtain data on teaching media commonly used by early childhood character education teachers; (2) Product Design; Then, the researcher developed the concept of visual communication methods to create independent teaching materials. The design here is still hypothetical and has not been tested for correctness and reliability; (3) Design Validation; Design validation is the process of justifying the development of a visual communication method model designed by experts in the field of optical communication to see the extent of the strengths and weaknesses in the developed model. The results here are still limited to scientific reasoning assessments and have not been tested for facts in the field; (4) Model Trials; After going through the improvement and refinement of the validation results, a limited test was then carried out through quasi-experimental methods, for example, to see the effectiveness of the visual communication model after being given the *treatment* model compared to the previous learning model; (5) Model Revision; Researchers revised the visual communication method model based on the evaluation results of the model trial.

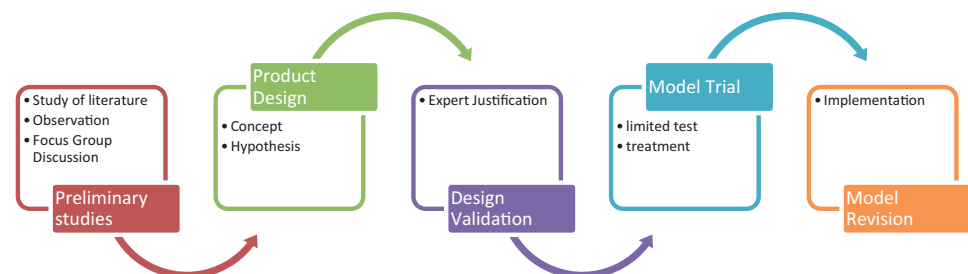


Figure 3: Research Methods Chart.

The steps of the development method begin with collecting the required data related to teaching media commonly used by teachers for early childhood character development. From the data, it was developed into a visual communication model concept as a method of making independent teaching materials. The model refers to the curriculum, habits, and convenience for all factors formulated from the initial research results. Then the concept of the model is validated by experts to get input under related science,

namely communication and early childhood education. After that, a limited trial was conducted on respondents with assistance and training. Then an evaluation is carried out to see the obstacles and opportunities for further model development.

3. Results and Discussion

A visual communication model that creates independent teaching media for ECCE teachers has undergone several trials with respondents (Figure 4). In addition, the model has also been disseminated in seminars and Focus Group Discussions, as well as training for ECCE teachers. The visual communication model has several stages, namely (1) preparing the storyline following the theme of character education; (2) preparing photos of students who are reference materials for plagiarization; (3) creating a script or story script that is adapted to the concept of the story and then translated into a visual language; (4) apply the visual communication model of storybook making with Inkscape.

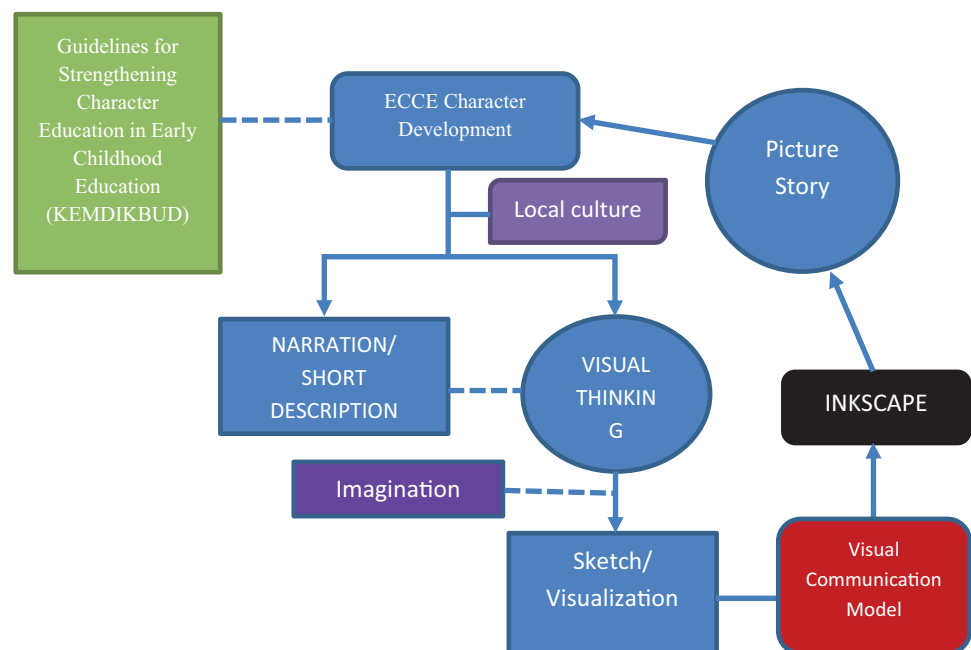


Figure 4: Visual Communication Model of Early Childhood Character Development.

To develop this visual communication model, some aspects need to be considered, including (1) Children’s story writers need to place themselves and visualize stories based on children’s perspectives or glasses. Educators and early childhood teachers must be able to think like them, not position themselves as adults; this is a fundamental idea in creating learning media for early childhood. [25]; (2) an early childhood educator needs

to understand the characterization of child development so that the material taught follows the stage of their development; (3) Graphic language in visual communication is nothing new. This kind of language is not only used in one culture, for a time in history, or by someone. Graphic languages are an excellent way to combine information, communicate, and share knowledge and insights. Well-designed visual images can produce a more robust and memorable learning experience than just verbal or textual descriptions. Improve visual thinking skills; an essential part of visual learning is to display and organize ideas graphically. [9]; (4) Related to cognitive development, if it is associated with the creation of storybooks, it can be arranged based on the type of book and also its age. They are starting from the type of book that can introduce letters and numbers to non-words story books. Toddlers can use the type of non-speech books or also picture books that begin to have simple words in the form of short dialogues, and children who are at the age of 6-7 start to recognize picture books with simple sentences because of preparations to go to the elementary school level; (5) The focus of this research is on the non-word book (full image) which is made in such a way that the images displayed can convey meaning to children and this picture book is also able to help children in terms of language development, such as expressing language and also understanding situations in stories; (6) Non-speech books are also able to develop cognitive and affective aspects of children, so the task of a book author or early childhood educator must be able to express his ideas on visualizations that can convey meaning to his stories either in terms of language or feelings to be shared.

Research respondents also stated that using students as the main character in a storybook used as a

teaching medium is also quite interesting because it can convey messages effectively (Figure 5). In addition, the use of photos of students in caricature images will make children engage more emotionally closer so that the child will more readily accept the message. Using tracing techniques, it is hoped that. Making caricature images is easier even if respondents use the Inkscape application for the first time.

The technique used in the manufacture of caricatures using Inkscape is plagiarizing. First, photos of students are prepared in advance, then imported into the Inkscape page. Then, using tools like plagiarizing images using tracing paper, children's pictures are stored on a different layer from the working document. This plagiarizing activity is at the core of using the Inkscape graphics application as a visual communication model for early childhood character development. The results obtained from this plagiarizing process are then stored as images of the main characters in the storybook (Figure 6).

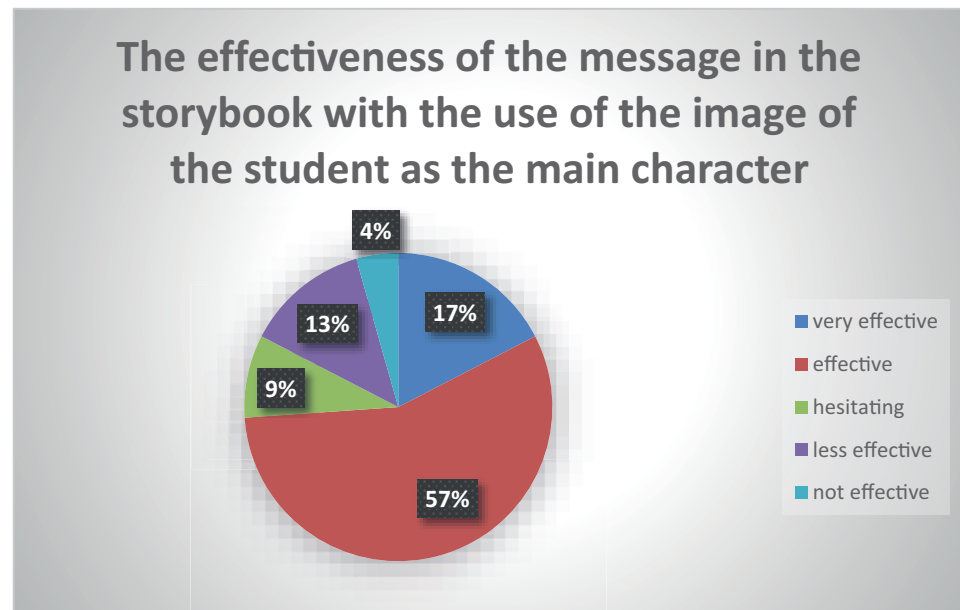


Figure 5: The effectiveness of the message in the storybook with the use of the image of the protégé as the main character.

As for creating other elements, such as body parts, use cartoon images that are free to download on image provider websites such as www.vecteezy.com or www.freepic.com. The files used in the Inkscape application are in .ai formats. The technique used by opening the file in Inkscape, then converting it to the Inkscape system so that it can be edited as needed. Furthermore, the image already in Inkscape is transformed into a different path shape so that the image can be manipulated as desired. (Figure 7) At this stage, the results of making caricature images of children and pictures of their bodies are combined to become a whole.

In the next step, add the background or plot of the story, which can also be searched on the image provider's website. For example, the theme used is self-reliance character education (Figure 8).

A cartoon image has been converted from the source to be edited using Inkscape (right). (Work of research respondents)

However, the implementation of the Inkscape-based visual communication model taught to the respondents was relatively easy to use because it used the image tracing method so that the teacher's difficulties when making drawings with his thoughts could be overcome by tracing images from reference images obtained from the internet.

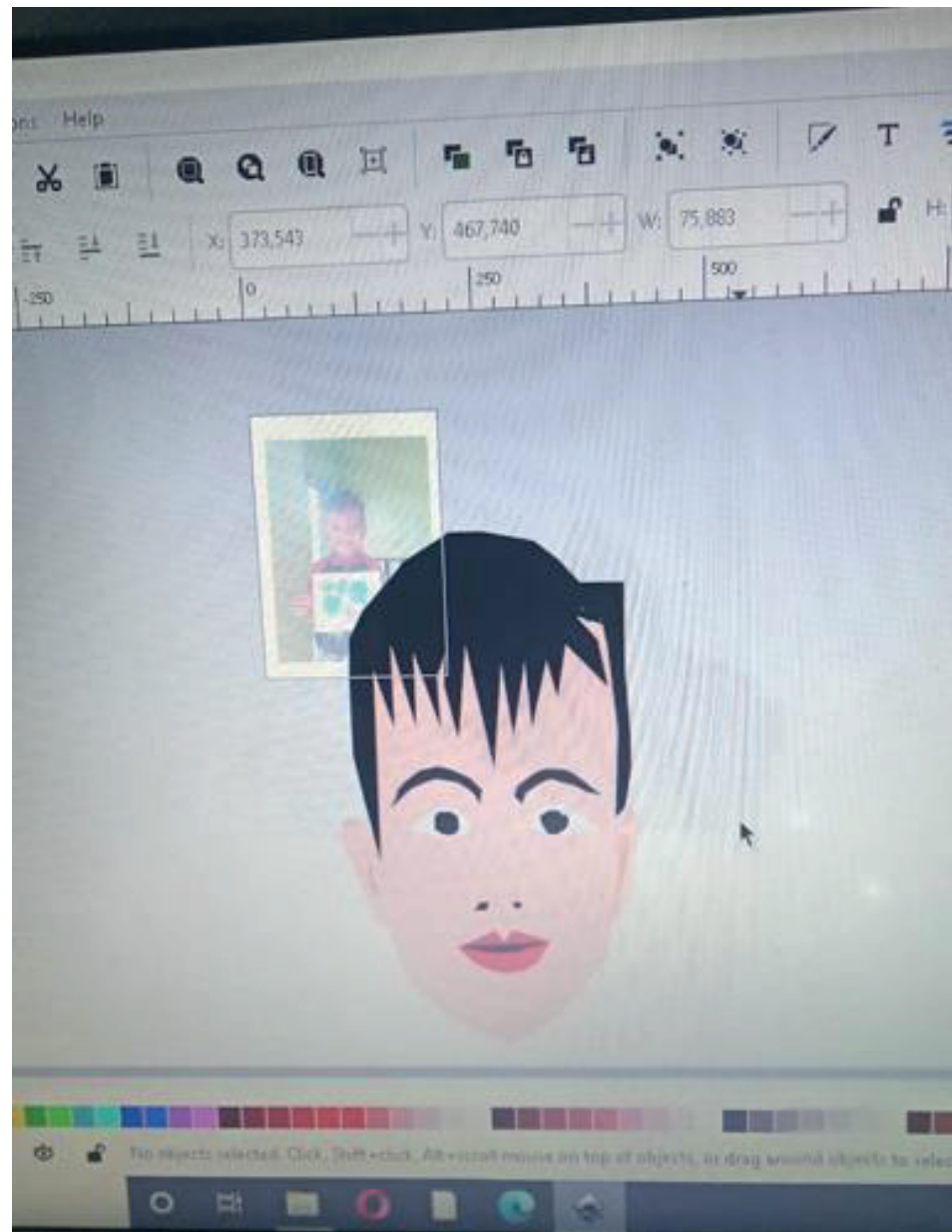


Figure 6: Image of student caricature plagiarized from a photo using Inkscape (the work of research respondents).

4. Conclusion

Early childhood character development is the main thing in education in schools, especially early childhood education. Many learning methods can be used. However, in the current era of digital technology, ECCE teacher's ability is required to develop their skills related to mastery of communication technology. Based on the research results, teachers have never made a storybook independently to use during learning. Introducing visual communication models in early childhood character development



Figure 7: Cartoon images downloaded from the provider's free graphic images (left) website.



Figure 8: One of the teaching media made by teachers with the theme of Independence. (Work of Research Respondents).

to research respondents improved ECCE teachers' competence, especially in graphic design. Continuous training will enhance the teacher's ability to use Inkscape.

Graphics application. However, as a basic knowledge of visual communication models, ECCE teachers who were respondents to the study could use Inkscape to contain independent teaching media.

Acknowledgments

Thank you to the Ministry of Education, Culture, Research and Technology, Directorate General of Higher Education, Research, technology, Institute for Research and Community Service of UNISBA, Head of the Aisyiyah Region of West Java.

References

- [1] Sholichah AS. Pendidikan Karakter Anak Berbasis Al-Qur'an. Mumtaz. 2017;1(1):53–74.
- [2] Hasanah R. "PENDIDIKAN KARAKTER DALAM PRESPEKTIF AL-QURAN HADITS," *Holistika Jurnal Ilmiah PGSD*. 2020;IV(1):22–26. Accessed: Oct. 01, 2022. [Online].
- [3] Darmawan F, Hakim A. "Training of picture stories with inkscape application for Aisyiyah kindergarten teachers, West Java," 2nd International Conference on Early Childhood Education and Parenting, Cirebon, 2021. [Online].
- [4] Muktiarni M, Widiaty I, Abdullah AG, Ana A, Yulia C. "Digitalisation trend in education during industry 4.0," *Journal of Physics: Conference Series*. 2019;1402(7):0-6. <https://doi.org/10.1088/1742-6596/1402/7/077070>
- [5] Haron H. "Education in the Era of IR 4.0," 2018 International Conference on Information Management and Technology (ICIMTech 2018) at Alam Sutera Main Campus, Bina Nusantara University, held on 3 – 5 September, Jakarta Indonesia. 2018;ICIMTech:1–38.
- [6] Heriyanto H, Sator D, Komariah A, Suryana A. La educación del carácter en la era de la revolución industrial 4.0 y su relevancia en el proceso de transformación del aprendizaje en la escuela secundaria. *Utopía Prax Latinoam*. 2019;24(5):327–340.
- [7] Sudibjo N, Idawati L, Retno Harsanti H. "Characteristics of learning in the era of Industry 4.0 and Society 5.0." *Advances in Social Science, Education and Humanities Research*. 2019;372(IcoET):276–278.
- [8] Mohd KN. International Invention, Innovative & Creative (Iniic). Conference; 2019.
- [9] Abdullah F. "Fenomena Digital Era Revolusi Industri 4.0." *Jurnal Dimensi DKV Seni Rupa dan Desain*. 2019;4(1):47. <https://doi.org/10.25105/jdd.v4i1.4560>
- [10] Satya VE. Strategi Indonesia Menghadapi Industri 4.0. *Jurnal Info Singkat*. 2018;10(9):19–24.

- [11] Fadilah N. Tantangan Dan Penguatan Ideologi Pancasila Dalam Menghadapi Era Revolusi Industri 4.0. *Journal of Digital Education, Communication, and Arts (Deca)*. 2019;2(02):66–78.
- [12] Cholily YM, Putri WT, Kusgiarohmah PA. “Pembelajaran di Era Revolusi Industri 4.0,” Seminar Nasional Penelitian Pendidikan Matematika (SNP2M). UMT; 2019:192.
- [13] Priyanto A. Pendidikan Islam dalam Era Revolusi Industri 4.0. *J-PAI: Jurnal Pendidikan Agama Islam*. 2020;6(2):80–89.
- [14] Rahman A, Nuryana Z. “Pendidikan Islam di Era Revolusi Industri 4.0.” 2019: 34. <https://doi.org/10.31219/osf.io/8xwp6>.
- [15] Himmetoglu B, Aydug D, Bayrak C. Education 4.0: Defining the teacher, the student, and the school manager aspects of the revolution. *Turkish Online Journal of Distance Education*. 2021;21(July):12–28.
- [16] Ratilla M, Chovancová M. Engaging consumers in the sharing economy: A proposed empirical study from the perspective of an emerging country. 2020;(November):446–459.
- [17] Nabilah CH, Sesrita A, Suherman I. Development of learning media based on articulate. 2020;1(2):80–85.
- [18] Julia J, Iswara PD, Gunara S, Supriyadi T. Developing songs for elementary school students with the support of music notation software. *Universal Journal of Educational Research*. 2019;7(8):1726–1733.
- [19] Ayuningtias AI. *Jurnal Inovasi Kurikulum*. 2020;17(2):77–86.
- [20] Rachmavita FP. Interactive media-based video animation and student learning motivation in mathematics. *Journal of Physics: Conference Series*. 2020;1663(1):012040.
- [21] Nugroho F, Arrosyad MI. Learning multimedia development using articulate storyline for students. *International Journal of Elementary Education*. 2020;4(4):575–579.
- [22] Dinayusadewi NP, Agustika GN. Development of augmented reality application as a mathematics learning media in elementary school geometry materials. *Journal of Education Technology*. 2020;4(2):204.
- [23] Julia J, Iswara PD, Gunara S, Yildiz YM, Agustian E. Developing elementary school teacher competence in making music learning media using scratch application: An action research. *Mimbar Sekolah Dasar*. 2020;7(3):362–385.
- [24] Sudarmono M, Hanani ES. Health education teaching materials through comic media for primary school students. *Journal of Health Education*. 2020;5(1):49–54.
- [25] Darmawan F. “Modalitas Visual Komunikasi Politik Iklan Pilkada Kota Bandung 2018.” 2018;11(1):56–65. <https://doi.org/10.29313/mediator.v11i1.3155>