Research Article

Student Caricatures: A Teaching Tool For Character Development

Ferry Darmawan[1*], Arif Hakim[2], Yuristia Wira Cholifah[3], Sophia Novita[4]

[1,2,3,4]Universitas Islam Bandung, Bandung, Indonesia
[1]ferry@unisba.ac.id
[2]arifhakim.spsupi@gmail.com
[3]yurisyurisyuris@gmail.com
[4]sophia.novita@unisba.ac.id

ARTICLE INFO	ABSTRACT
	Early childhood education is an important part of the 4.0 industrial era, and Information and Communication Technology (ICT) is essential to ensure that knowledge is disseminated rapidly. To keep up with scientific advances and integrate local wisdom and Islamic values into teaching materials, developing visual communication skills through the use of design software is an effective solution. This study has employed the development research method and data collection techniques such as observation, questionnaires, and focus group discussions, as well as training, to develop a visual communication model for early childhood character development. The results of the study suggest that using Inkscape software can help early childhood teachers to create independent teaching materials effectively. The tracing image method used in the visual communication model for teachers to create illustrated stories is simple to understand and uses the Inkscape application for drawing. This model can enable early childhood teachers to gain the skills required to better integrate Islamic values and local wisdom into their teaching materials and to create visual materials suited to the 4.0 industrial era. **Keywords:** tracing image, Inkscape, visual communication, caricature, teaching materials

1. INTRODUCTION

Character development in early childhood is significant to form a more resilient future generation. Character education is the cultivation of commendable behavior in children ranging from behavior in worship, association, and interaction with the environment, behavior as good citizens to other commendable behaviors that will bring children to success. In line with the nine character pillars of the Indonesia Heritage Foundation concept and the five main characters of Strengthening Character Education (*PPK*) from the Ministry of Education and Culture, as well as through PP Number 19 of 2017, the Ministry of Education and Culture encourages a paradigm shift for teachers to be able to carry out their role as professional educators who are not only able to educate children students but also to shape their positive character to become Indonesia's golden generation with 21st-century skills (Fitroh, Fitroh, & Sari, 2015).

Early childhood education (*PAUD*) mainly uses visual media like picture storybooks. The storybooks used by schools are printed books already available in the market or printed storybooks. The story's content is also more general so that the topic of local wisdom from an educational institution cannot be maximized. Such as storybooks for early childhood downloaded from the page http://direktori.pauddikmasjabar.kemdikbud.go.id/ (Figure 1).

Figure 1. Storybooks aimed at pre-literacy early childhood
(http://direktori.pauddikmasjabar.kemdikbud.go.id/, accessed October 22, 2022)

This study seeks to identify alternative solutions for early childhood teachers to be able to craft illustrated stories with localized wisdom in their educational materials. This includes traditional clothing, traditional toys, manners in intercommunication, and Islamic values incorporated into early childhood character education. Prior studies have found that appropriate methods are necessary to instill values in children. By using storytelling, children can become exposed to moral messages that they can aspire to imitate or be inspired by the characters within the story. Furthermore, when children go through stories in storybooks, they are able to envision the characters and create visual narratives which follow cultural rules and pictorial conventions. This enables them to see and understand cultural elements and perspectives. (Achsani, 2018; Fitroh et al., 2015; Gede Dharman Gunawan et al., 2019; Hendrickson Lohmeier et al., 2021).

This is where a teacher's skills are essential in developing independent teaching media, especially illustrated stories of early childhood character development containing local wisdom and Islamic values. However, based on data on early childhood educators in West Java Province, most are middle school, high school, or equivalent graduates who do not yet have adequate qualifications and competencies based on Law number 137 of 2014 concerning early childhood standards. Primary data on early childhood statistics released by the Ministry of Education and Culture in 2016/2017 shows that the number of early childhood institutions is 18,538. The number of early childhood teachers in West Java is 61,857 people, with details of SMP graduates amounting to 6716, SMA/equivalent graduates 37,359, Diploma graduates totaling 5,278, Bachelor (S1) a total of 12,112, and Postgraduate (S2/S3) a total of 392 people (Secretariat General of the Center for Data and Statistics, 2017). From these results, it can be concluded that the number of teachers who have not met the minimum competence to become an early childhood teacher, namely junior and senior high school graduates, is 44,075 people or 71.25%(Kementerian, Kebudayaan, Jenderal, Sekretariat, & Statistik, 2017). This is the background of this research that some efforts are needed to improve the quality of early childhood teachers from the other side, in addition to their academic status. One of them is the ability to master information and communication technology (ICT). The presence of ICT aims to facilitate humans in various aspects of life, including the field of education (Lubis, Idrus, & Sarji, 2018).

Early childhood generally likes picture stories. Pictures are the most accessible written language to understand. The old proverb says a picture is worth a thousand words (Darmawan & Piliang, 2015). This explains that images can provide various perceptions for those who see them, including children. Through pictures, children will learn to develop their imagination, which triggers them to be active and creative in developing their knowledge. Previous research found that using visual media can increase early childhood activities in the

learning process. Storybooks appeal to touching feelings, which can lead children to follow the storyline, and even imagine being in a position as story characters. (Darmawan, Hakim, & Nurhidayah, 2022; Zaini, 2018) Visual media help children understand the material easily because early childhood should not be able to read. Therefore, the method commonly used by teachers is playing while learning.

Based on this phenomenon, this study tries to develop a visual communication model, especially in developing independent teaching materials which are expected to be used for character development in early childhood. Visual communication is a medium to convey information, ideas, and ideas through well-designed visual elements involving the receiving optic nervous system (Sharudin, Mustaffa, & Sannusi, 2020). Involving children in teaching materials can bring children closer to learning goals. In children's education, this is one way to develop creativity through imagination. (Mulyani, 2019) Therefore, the researcher carries the concept of making caricatures of students as characters in storybooks so that children feel directly involved in the story's theme.

Currently, the presence of computer graphics technology makes it easier for educators to be able to create independent visual teaching materials. Graphic designers use graphic design software to create images for their design projects, such as logos, brochures, posters, etc. There are various popular applications, such as Adobe Illustrator, CorelDraw, or Affinity Designer. However, the software is in the premium category or is not free to use or paid for. In the world of design, apart from premium software, it turns out that the open-source community, namely Inkscape, develops free-to-use software. Not inferior to premium software, Inkscape is also reliable enough for graphic designers to use as a tool to work on their projects. Inkscape software can be downloaded directly through the official website, www.inkscape.org, and is available on various operating system platforms such as Microsoft Windows, Macintosh, and Linux.

However, using Inkscape requires a learning process because the interface of graphic design software is different from office software in general. The tools used to create objects also vary. Meanwhile, based on the results of the research questionnaire, most teachers have never used graphic design software to create independent visual teaching materials (Figure 2). This is what triggers researchers to create visual communication models in making teaching materials that teachers can use easily, even though they have never used graphic design software before.
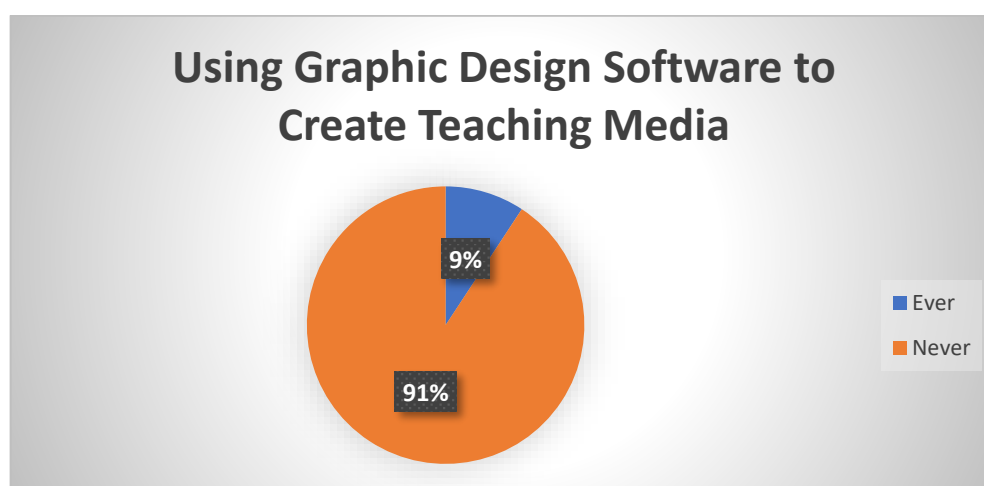

Figure 2. Teachers use graphic software to create independent teaching materials (FGD's Data)

A. ICT and Teacher Professional Development
Information and communication technology (ICT) can be divided into two components: infrastructure and information technology. Infrastructure refers to physical telecommunications systems and networks such as cellular, radio, and television. At the same time, information technology refers to hardware and software such as computer equipment and graphic design software. ICT is now permeating the educational environment and supporting the success of 21st-century education. Communication technology is the driving force for development and innovation in developing countries. Computer technology and digital culture have changed how people live in various aspects, such as work, play, and study (Talebian, Mohammadi, & Rezvanfar, 2014). ICT can affect student learning when teachers can understand and integrate it into the curriculum. In the era of the industrial revolution 4.0, teachers are required to be digitally literate, where the use of ICT will make teachers creative and students will be more motivated to learn. Teachers need to develop their professionalism with ICT skills and abilities. Using ICT makes it possible to distribute knowledge more quickly (Escorcia Guzman, Zuluaga-Ortiz, Barrios-Miranda, & Delahoz-Dominguez, 2021).

B. Visual Communication as a Perspective
We live in a visual world. Various visual products are displayed around us, such as posters on shop walls, billboards on the side of the road, various impressions on our social media on cellphone screens, to traffic signs that color our journey. Visual communication is the process of delivering messages that involve the sense of

sight to read them. Visual communication combines various visual elements such as images, photos, graphics, illustrations, text, and colors. General visual communication is juxtaposed with the word design to become Visual Communication Design so that visual communication becomes an interdisciplinary science (Adiloglu, 2011; Fahmy, Bock, & Wanta, 2014; Ståhl & Kaihovirta, 2019). In the internet era, visual communication design has gone beyond the legal limits of traditional visual communication design. The integration of ICT and visual communication design has become a discourse increasingly expanding its scope. Even today, visual communication design already involves artificial intelligence. To create an interesting visual connection, it must use strong narrative images and create scripts for visuals (Dhanesh & Rahman, 2021).

C. Literacy Cartoons and Storybooks

As mentioned earlier, images are the most straightforward language to understand. As a child, many would love picture storybooks. There are two types of storybooks for preliterate children: wordless picture storybooks and picture storybooks. A wordless picture storybook is a storybook that displays only pictures without any text or writing in it. This type of storybook is still rarely found in Indonesia because making a wordless picture storybook requires the illustrator's skill in visual language.

Meanwhile, picture storybooks (for children) still display words or text in their visuals. Usually, the straightforward text serves to strengthen the visual message that appears in the story. In making picture storybooks, the main elements are cartoons. The word 'cartoon' comes from the Italian '*cartone*,' which means big paper. Like the pictures found on the walls of prehistoric caves, painted on large canvases of cave walls that tell the daily life of early humans. Then, the human civilization created a mural with a series of pictures that told a story and was easy for observers to understand until printing technology brought newspapers and cartoons to appear on the pages (Fairrington, 2009; Trimansyah, 2020). Drawing cartoons starts with the head, the reader's primary focus. In addition to the shape of the head, the face becomes the center of all forms of expression, such as happy, sad, angry, laughing, crying, and so on. In addition, the head and face also determine the male and female characters. Another essential part of drawing cartoons is the character's body. In picture stories, making body characters has its challenges. Various body parts define the character and are related to the story, such as body movements, body shape, or clothing, that need to be adjusted.

2. METHOD

To find a suitable visual communication model in developing teaching media for early childhood teachers, several stages of research were carried out to obtain complete data to be used as an effective and efficient model. Development research method (Julia, Iswara, Gunara, Yildiz, & Agustian, 2020; Sudarmono & Hanani, 2020) as shown in Figure 3, with the following details:

a. *Preliminary studies*—researchers conducted preliminary research through literature study, observation, and centralized discussion groups to obtain data on teaching media commonly used by early childhood character education teachers.

b. *Product design*—researchers, developed a visual communication model to make independent teaching materials. The design here is still hypothetical and has not been tested for truth and reliability.

c. *Design validation*—it is a process of justifying the development of a visual communication method model design by experts in the field of visual communication to see the extent of the strengths and weaknesses of the developed model. The results here are still limited to scientific reasoning and have not been tested for facts in the field.

d. *Model trial*—after going through the improvement and refinement of the validation results, a limited test is carried out through a quasi-experimental method, for example, to see the effectiveness of the visual communication model after being given the model treatment compared to the previous learning model.

e. *Model Revision*—the researcher revised the visual communication method model based on the evaluation results of the model trial.
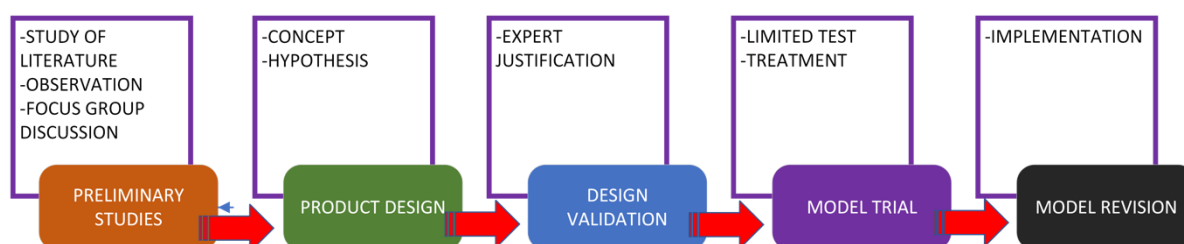

Figure 3. Development Research Method Chart

The research respondents were 54 early childhood (*TK Aisyiyah*) teachers representing 27 districts and cities in West Java Province. Meanwhile, regarding age, most of the early childhood teachers who became respondents were over 40 years old (Figure 4). This correlates with the low ability to master the technology of most teachers. However, the Covid-19 pandemic "forces" the baby boomers and gen X teachers to learn visual

media technology as a learning tool, such as kinemaster, to make simple learning video materials (FGD with respondents, 23 September 2021).
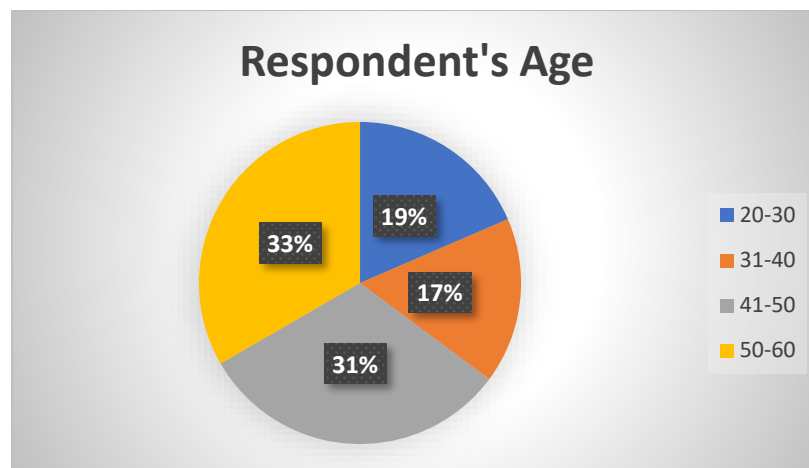

Figure 4. Respondents' Average Age

The approach of this research is quantitative, so the data collection technique uses questionnaires. To determine the effectiveness of the visual communication model training activities for early childhood character development using Inkscape, the researchers used a paired T-test with SPSS. Paired T-test is a parametric difference test on two paired data. The function or use of the test is intended for a different or comparative test, meaning that it compares whether there is a difference in the mean or average of two paired groups where the data source comes from the same subject. To calculate the T-test, we first do the normality test because, in the parametric statistical test, the research data is usually distributed, which is a requirement that must be met.

a. Normality test
Normality test using the Shapiro – Wilk test. The use of this test is motivated by the research results of Nornadiah Mohd Razali and Yap Bee Wah in the Journal entitled "Power Comparison of Shapiro-Wilk, Kolmogorov Smirnov, Lilliefors and Anderson Darling-Tests. Faculty of Computer and Mathematical Science, University Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia. Say for samples 7 - 50 (< 50), then use Shapiro – Wilk (Mohd Razali & Bee Wah, 2011). The results of the normality test on the pretest and posttest data are presented in Table 1.

Table 1: Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest	.206	10	.200[*]	.901	10	.225
Postest	.244	10	.093	.888	10	.160

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

The basis for decision-making in the Shapiro – Wilk normality test a. If Sig. > 0.05, then standard distribution b. If Sig. < 0.05, then the distribution is not normal. The results of the pretest data distribution test, the data distribution shows sig. 0.225 > 0.05, meaning that the data is usually distributed. As for the results of the Posttest distribution test, the data distribution shows sig. 0.160 > 0.05, which means that the results of the data distribution are typically distributed.

b. Paired T Test
After the data can be proven to be normally distributed, then testing the effectiveness of the effect of visual communication model training on early childhood character development on increasing participants' understanding can be done with Paired T-Test. The results are in Table 2.

Table 2: Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	pretest postest	--9.00000	8.75595	2.76887	-15.26363	-2.73637	-3.250	9	.010

Source: SPSS 26 data processing

Basis of decision making in Paired T Test
a. If sig. < 0.05, then there is a significant difference
b. If Sig. > 0.05, then there is no significant difference
The results show that the results of sig. (2 Tailed) of 0.01 <0.05, the result is more minor. It can be concluded that the results of the Visual Communication model training for early childhood character development using Inkscape showed there are differences in knowledge before and after being given training.

3. FINDINGS AND DISCUSSION

The research was initiated by observing the teaching media used in the school that is the object of research. The results of the study found that the teaching media used by early childhood teachers generally used publisher's storybooks, so the theme of storybooks needed to be adjusted to the learning objectives (Figure 5). The themes available in the teaching media mainly refer to the concept of the nine pillars of the Indonesian Heritage Foundation's character, namely (1) Love of God and All of His Creation; (2) Independent, Disciplined, and Responsible; (3) Honest, Trustworthy, and Speak Wisely; (4) Respect, Courtesy, and Good Listener; (5) Generous, Helpful, and Cooperation; (6) Confident, Creative, and Never Give Up; (7) Good and Just Leaders (8) Kind and Humble; (9) Tolerant, peace-loving, and united. However, there are obstacles when teaching media to deliver character education that contains local wisdom and Islamic values, so teachers need to adapt to the available media. On the other hand, one can use videos on the YouTube platform that are tailored to one's needs. The teachers recognize this need more effort to adapt the material to the existing media. In fact, it often requires particular time to elaborate on the various available media (FGD with respondents, September 23, 2021).
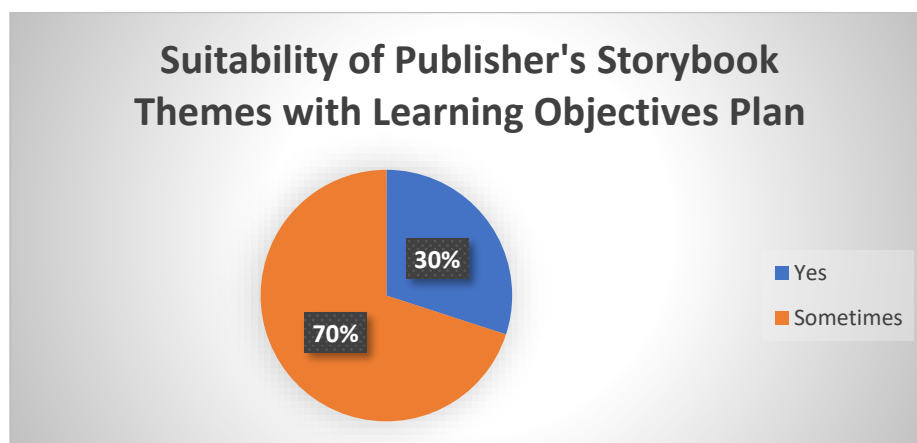

Figure 5. Suitability of Themes in Publisher's Storybooks with Learning Materials in Class

Meanwhile, based on research data, most teachers have never used graphic design software to create independent teaching materials. The use of teaching media for character development, more often using videos available on YouTube, and the theme is adjusted to the needs and availability of existing videos. During the Covid-19 pandemic, the use of smartphones as a learning medium was due to restrictions on face-to-face meetings. The school uses WhatsApp groups to communicate with students. However, in general, respondents' knowledge of graphic design applications, they know CorelDraw or Paint software (Figure 6). While the Inkscape software no one knows about or even uses it. This explains that premium software is more popular than free-to-use software. Therefore, there is a need for socialization with the public regarding the existence of Inkscape graphic software that is free to use. More users of free-to-use graphics software will contribute to the decrease in the use of pirated software. Until now, users of pirated software are still rampant, especially in Indonesia. Based on data released by BSA | The Software Alliance, APAC, on 18 March 2019, entitled Legalize and Protect: A Campaign To End Corporate Use of Unlicensed Software in Indonesia, the percentage of pirated software usage in Indonesia in 2017 was the second highest for the Asia Pacific region, at 83% (Rahmad Fauzan, 2019).
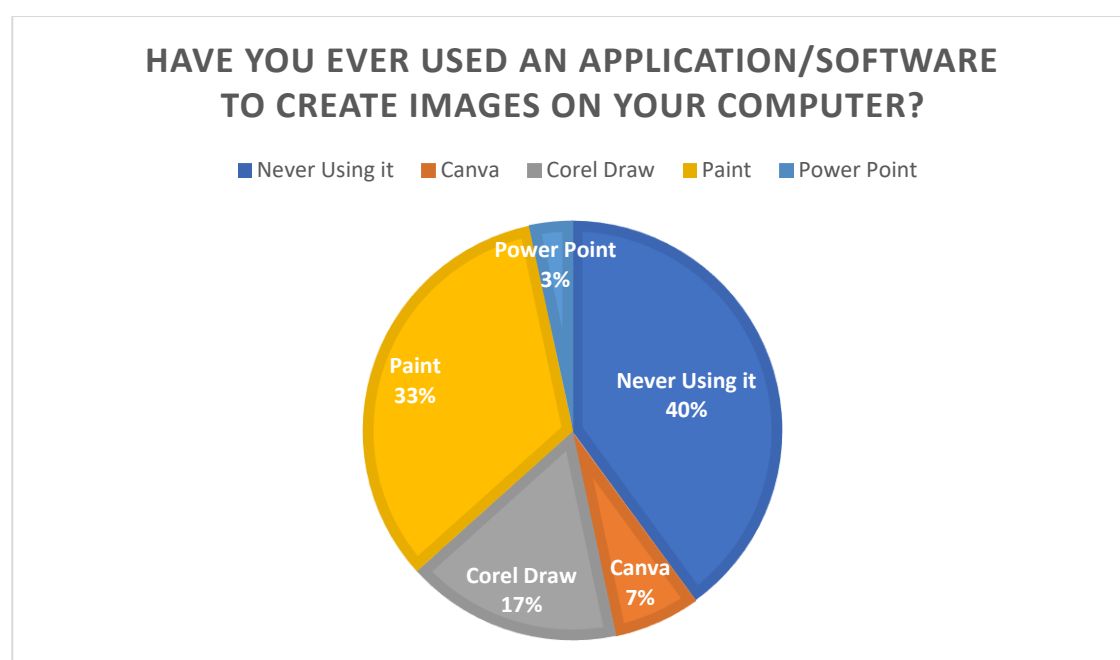
Figure 6. Using Graphic Software to Create Visual Teaching Materials

Based on these findings, the researcher concluded several things related to developing early childhood teachers' skills in making independent teaching materials in the form of picture stories. First, the knowledge of teachers who are still not familiar with Inkscape graphic design software, it is necessary to train them to introduce the essential functions of the Inkscape application as needed. Second, knowledge of visual language skills to develop story materials into images that are easy to understand and help students learn. Third, not all teachers can draw. Therefore, using Inkscape graphics software to create story images is very appropriate with the mimicking method.

In order to understand the Inkscape graphic software so that it is easy to use, the researchers developed a needs-based learning concept through training. To create illustrated stories using the tracing method, the tools used in Inkscape graphics software include (1) the Bezier Tool, which functions to create straight lines or curves; (2) the Path menu, mainly for merging objects or separating objects, converting objects into paths, and simplifying points on objects; (3) color palette, to give color to the object; (4) layers, to help create objects with a method of separation between image components for easy reuse, such as facial expressions that can be changed, and to use the tracing image method. In addition to the tools available in the Inkscape interface, using image sources as reference materials on digital sharing platforms is also one way to make it easier for teachers to create independent illustrated story materials.

A. Proficient in visual language

Visual language is the basic process of someone conveying information through graphics. Before letters were invented, pictures were written language that people used to communicate in writing. To express ideas in a visual language, it is required for someone to use his/her imagination that unites thoughts with real objects. To describe a particular object, it takes a broad and unlimited imagination so that children can develop their imagination. To make children's stories, someone must think like how children think so that the message is more easily accepted by them because of the proximity element.

In this study, respondents were assigned to make a narrative story about character development referring to the concept of the nine pillars of the character of the Indonesian Heritage Foundation. The narrative story is a guide for making visual story material. An example of a narrative story made by one of the respondents is shown in Table 3. There are five plots or storylines to describe the events experienced by the story characters with the theme 'Proud to Wear Traditional Clothes.'

Table 3: Narrative of 'Proud to Wear Traditional Clothes'
(Source: Research Respondents)

Plot	Narration
1	On a sunny morning, Dodit went to school.
2	Today at school, there was a Children's Day celebration
3	Dodit would wear traditional clothes from the Sundanese region that day
4	At school, Dodit's friends were wearing various traditional clothes from various regions of Indonesia

The following process is to determine the keywords visualized from the story's narrative. In this case, seeing and imagination are the keys to turning a narrative into a compelling visual image. In plot 1, there are keywords:

sunny morning and going to school. So to visualize the first event, describe the atmosphere at home in the morning. If it is more detailed, it can be described that the main character is preparing to bring school supplies. Alternatively, to further develop imagination, the child's character is having breakfast at the dining table. This is an example of visual language developing a child's imagination.

The selection of characters and the setting of events is a form of visual language development through visual thinking. The plot of the story can have various events from a single narrative. The more complete the visual elements displayed on the characters, the richer the imagination can be developed for students. We can give a choice of the background of the event. First, the character is having breakfast. Alternatively secondly, the character is cleaning school supplies. The activities described are a form of character that can be raised as part of the concept of developing a child's character, namely independence, discipline, and responsibility.

The next stage is to sketch a picture of the visual thought process that has been done. To make a sketch, you can use manual techniques, namely drawing roughly using a pencil. Then the sketch is scanned and converted into a digital image to be traced. In sketching, the problem that often arises is that not all respondents can draw manually. Therefore, in this research, the technique of making sketches is used using raw materials from the internet that can be searched through search engines, such as Google. By writing keywords for the object, you are looking for on search engines, then download the required image. Then save the image in the Inkscape software and arrange the objects according to the visual message one wants to convey. Then, the objects arranged by tracing techniques are remade so that they become vector images ready to be colored.

B. Inkscape graphic design software

Inkscape is an open-source vector drawing software available for Windows, Macintosh, and Linux operating systems. Inkscape's programs and source code are publicly available on the official Inkscape website, so anyone can learn about and develop them. Inkscape can be used to create vector images for various needs, for example, illustrations on the web, icons for smartphones, cartoons or animations, simple lines, calligraphy, logos, brochures, and more.

Inkscape supports images with basic shapes such as rectangles and circles, lines, and text. Each object can be modified and given its color. Currently, Inkscape is still being developed. This can be seen by regularly adding new features and interfaces in each new release.

Inkscape's interface (Figure 7) is no different from similar software, which has several main sections, such as (1) Menu Bar/Option Bar/Command Bar; (2) Toolbars; (3) Docking/Floating Menu; (4) Status Bar/Color Palette; (5) Canvas/Pages. The vertical toolbar on the left shows Inkscape's drawing and editing tools. Depending on your screen resolution, the Commands bar with general command buttons, such as "Save" and "Print," can be found either in the top part of the window, right below the menu, or on the right side of the window. Right above the white Canvas Area, there is the Tool Controls bar with controls that are specific to each tool. The status bar at the bottom of the window will display valuable hints and messages as one is working, and so will the color palette.
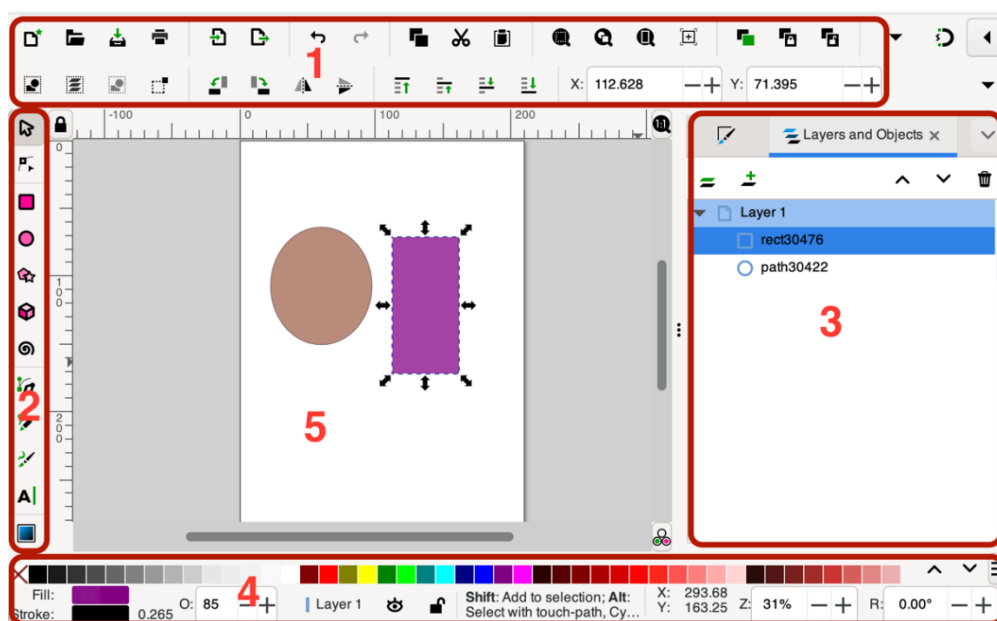

Figure 7. Inkscape Graphic Design Software Interface

Using the Inkscape software, it takes consistent practice in order to understand each of the available tools. Start by making a simple drawing using the rectangle tool or the Ellipse tool, then imagine making shapes by changing the shape using the Edit Path tool, such as drawing a flat design.

C. Visual Communication Model with Inkscape

The design begins with making a story outline that will be visualized. Character development material for early childhood is in the form of a straightforward story narrative which is then transferred to a visual form in the form of a storyboard by determining the keywords of each story plot. Visual thinking is a complete experience consisting of seeing, imagining, and drawing elements (Aini & Hasanah, 2019; Köksal & Çöğmen, 2019; Pramono, 2021; Veneti et al., 2019). In visual thinking, the steps taken are (a) seeing the shape to be visualized based on general references; (b) imagination to be adapted to the goals to be achieved; (c) drawing the results of the imagination so that it can be used to create the desired character from the story narrative.

In making illustrated stories as independent teaching materials, the researcher proposes the concept of the caricatures of students as the main characters. A caricature is an imitation of a person's face by emphasizing certain things or protrusions on certain parts of the face to recognize it as a cartoon of the person being depicted (Navasky, 2013). Why caricature students? Advances in gadget technology make it easy for teachers to use their cell phone cameras to take pictures of students. The results of these photos become reference images in making caricatures of students using Inkscape graphics software. Then, The tracing technique with graphic software is known as image tracing, one digital drawing technique that simplifies the drawing process. The purpose of the tracing image is so that the resulting image is not much different from the photo or image used as a reference image.

Through a series of trials, researchers created a visual communication model based on Inkscape graphics software for making independent visual teaching materials, as shown in the model chart (Figure 8). To make independent teaching materials for early childhood character development, refer to the guidelines for strengthening early childhood character education published by the Ministry of Education and Culture. Based on the early childhood learning method that prioritizes play and habituation, the selection of story themes should be simple and easily understood by children. After determining the theme, a series of stories are compiled and visualized in the form of images using the Inkscape graphic application. Characters in children's storybooks usually feature familiar figures, such as children, adults as companions, animals or objects that are made 'live,' or other things considered attractive by children. Children will see, listen, and imitate what they see from the pictures contained in storybooks. In fact, it is not uncommon for a child to see a storybook featuring a superhero. He/she will imitate the style used in the storybook. However, the behavior of superheroes in storybooks may not follow children's character education which is expected to be a provision for children's psychological development. Therefore, in this visual communication model, the central figure is the student whose caricature is made.
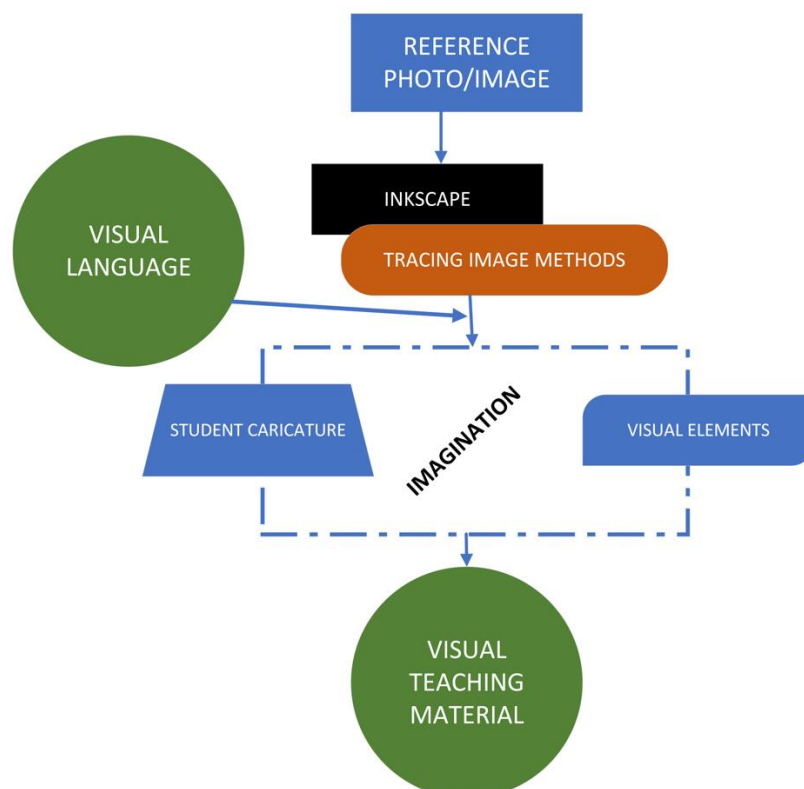

Figure 8. Visual Communication Model for Early Childhood Character Development Based on Inkscape

D. Using Inkscape to Create Picture Stories

The initial stage is to import students' photos into the Inkscape software for reference. By default, the photo will be on layer one, and we can rename it, for example, to 'source.' The method of tracing in Inkscape software

using layers. The reference photo is placed at the bottom layer position and then locked so it does not change its position. Then we add a second layer above the 'source' layer, and this layer 2 becomes our work canvas. We can rename it, for example, to 'Sketch.' To start tracing the reference photo, the drawing tool used is the Bezier Tool by following the outline of the object. At this stage, the teacher's skills are needed to draw following the photo so that the resulting outline can be seen clearly and resembles a reference image (Figure 9).

Figure 9. Children's Photos as Reference Images and Tracing Image Techniques with Inkscape

The advantages of using Inkscape graphics software, even though the user cannot draw, as long as they want to practice using the drawing tools available in Inkscape, the image tracing technique makes caricatures feel easier. To outline the drawing more interesting, it is necessary to practice making shadows. The line's thickness and thinness are also determining factors for the success of drawing lines. Coloring on objects also needs to understand the suitability of colors and color types to be right in their selection (Figure 10). Color is a supporter of the image so that it has an appeal to children. The choice of various colors helps children to recognize colors from an early age. In addition, psychological colors also have various meanings, such as hot colors, cold colors, gender colors, or symbolic colors. In picture stories for early childhood, bright colors are recommended.
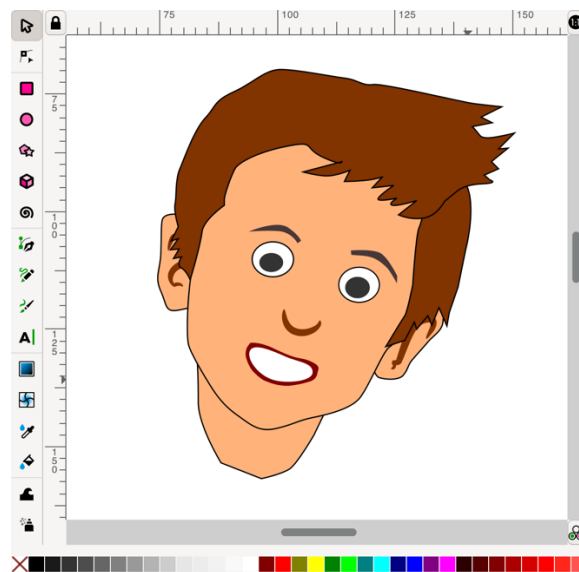

Figure 10. Colored sketch results

After making a cartoon face, make a body character, body, hands, or feet. In this example, the body part drawn is related to the theme of local wisdom of traditional regional clothing in West Java. To make it easier for respondents to make body parts and clothes, they can use reference images on the internet. Then a screenshot of the desired image and the results are imported into the Inkscape software. Next, trace the body image using the tracing method (Figure 11).
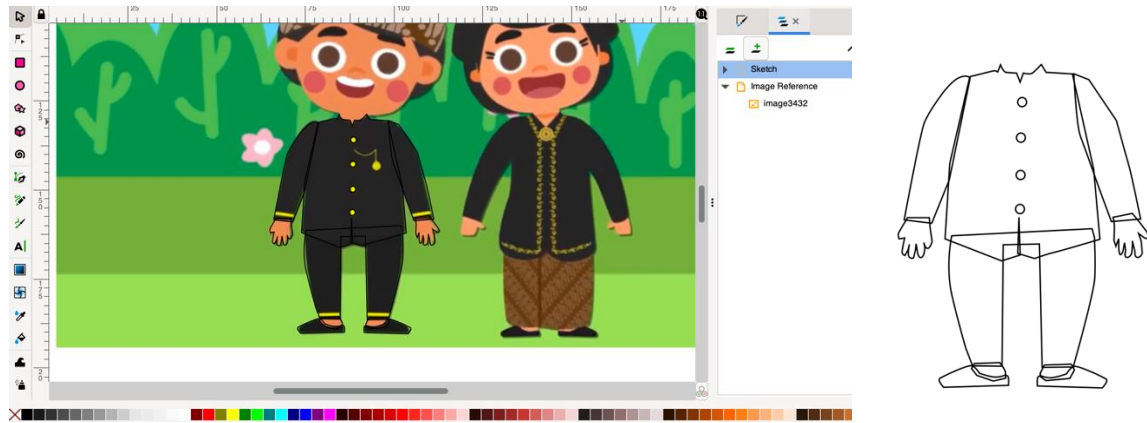
Figure 11. Drawing traditional clothes with tracing techniques from reference images obtained from the internet

The next step is to combine the face image with the body image, then color it (figure 12). At this stage, the stage of making caricatures of students as illustrated story characters has been completed. Next, create the background for the story. Following the storyline that has been made previously, the background image follows the storyline. For example, the character of the story is in the room. Then we need to draw the attributes in the room, such as the bed, study table, cupboard, and other decorations.
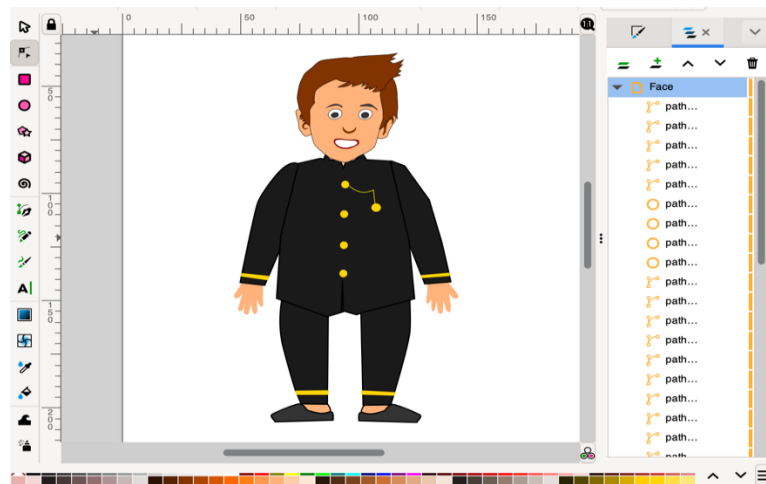

Figure 12. Merging a caricature of a face with a body that has been colored

This process can also use the tracing method using reference images to make it easier. We can use the references available on several digital platforms that provide graphic images, such as www.freepik.com, www.vecteezy.com, or www.freevector.com. For example, we want to draw a child's bedroom with its furniture. On the search page for the graphics provider platform, enter "room," and several image options will be displayed (Figure 13). Please select the appropriate image, then take a screenshot of the image to be used as a reference image. The next stage is tracing the image, the same as making caricatures and bodies in the previous stage. The Inkscape tool is used to create objects in the room. One can use the rectangle tool and the path edit tool.
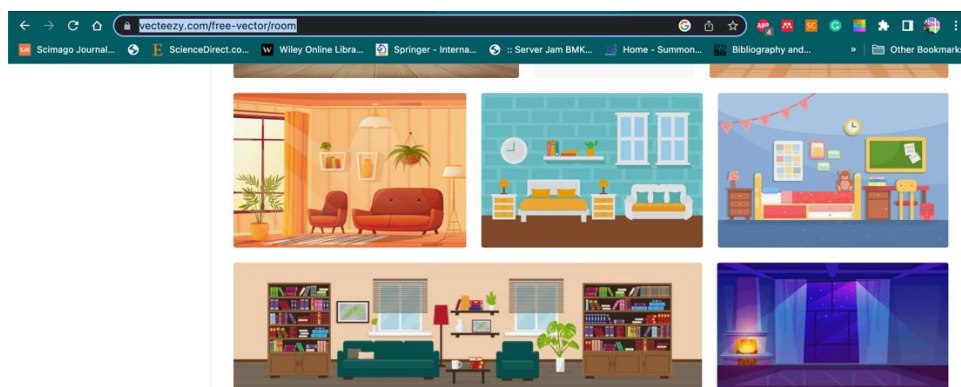

Figure 13. One of the displays of graphic images on the image-sharing platform www.vecteezy.com

Do the same process with the stages of drawing children's characters. Import the room image referencing the Inkscape page, then use the image tracing method to trace the required shapes (Figure 14). Then give color to the objects that have been created. Use bright colors to appeal to children.
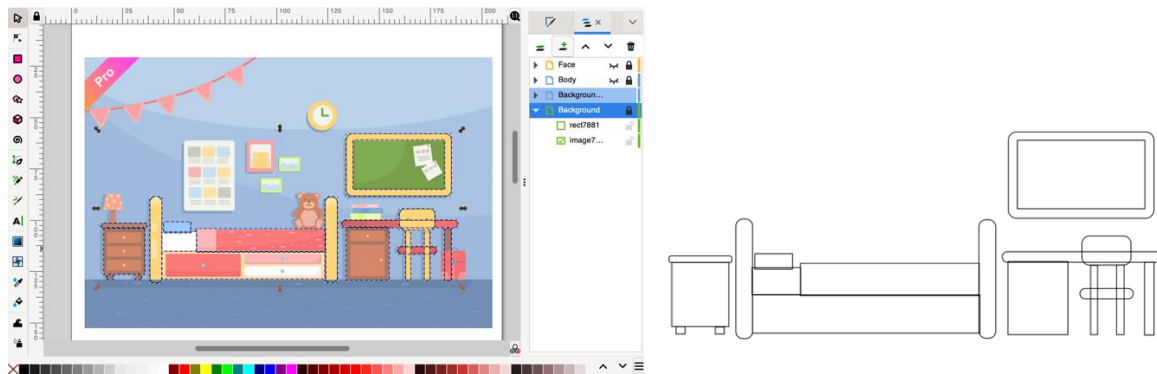

Figure 14. Using reference images to create pictures of objects in the bedroom as a background

After completing the background in the form of a bedroom, combine the story's characters with the background image (Figure 15). These are the stages of making independent teaching materials in the form of illustrated stories as teaching aids for early childhood character development.
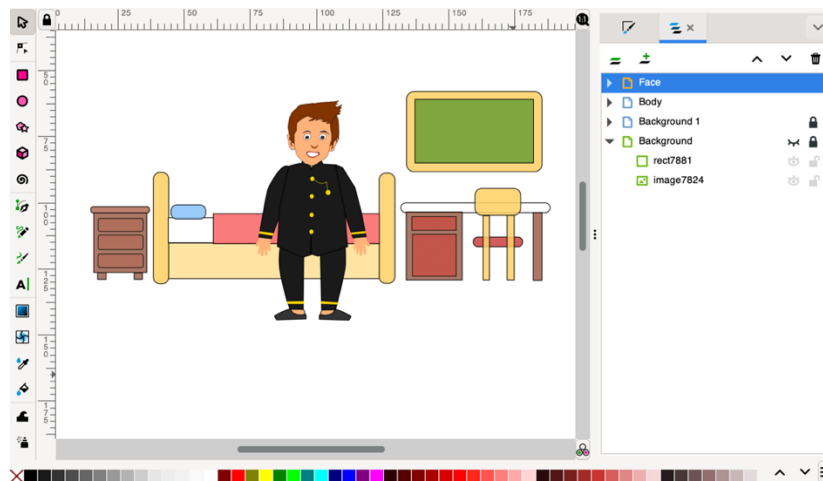

Figure 12. The final result of making teaching materials using an Inkscape-based visual communication model

E.   Inkscape-based Visual Communication Model Training Results

After participating in the training on making Inkscape-based picture stories, respondents' responses to the ease of using Inkscape software varied. However, most respondents said it was pretty easy to use Inkscape to create illustrated stories using a visual communication model developed by researchers, as shown in Figure 13. Tracing images through tracing techniques make it easier for respondents to create objects needed in pictures even though they do not have expertise in drawing.
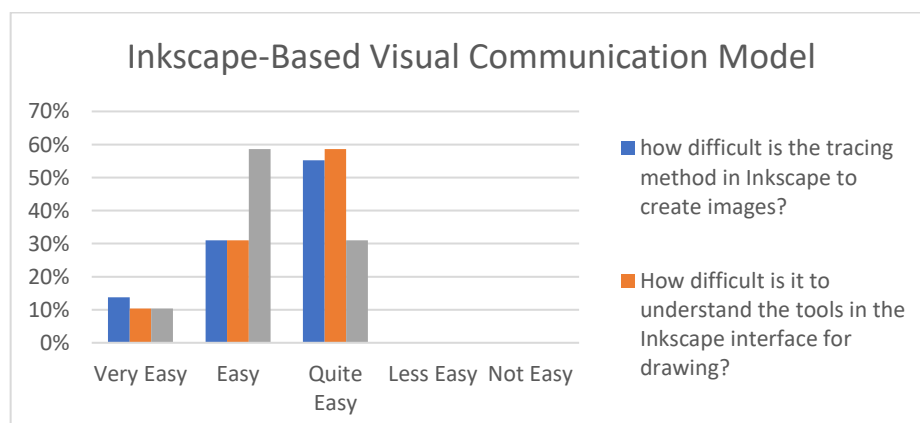

Figure 13. Respondents' Responses to Inkscape Software

Through digital images, other conveniences can be obtained. For example, somebody's shapes and movements can be made according to the desired character. Facial characters such as happy, silent, confused, happy, angry, crying, and so on can be prepared using layers. These characters can be directly applied as capital from cartoon images that can be used later, likewise with the necessary body movements. The hands and feet can be shaped as needed, for example, by walking, holding objects, raising hands, running, or doing other activities. The hand movements are stored in different layers so that they can be changed based on the story's theme.

4. CONCLUSION

Pictures are a language that is easy to understand. Through pictures, information can be received quickly, even by preliterate children (early and young children who cannot read yet). Therefore, the ability of teachers to create illustrated stories needs to be developed to create teaching media that follow learning objectives and can contain local wisdom and Islamic values. Based on the study results, using an Inkscape-based visual communication model, teachers can use the application to develop independent teaching media. Drawing is made more accessible with image tracing techniques, and early childhood character development materials can be delivered with the concept desired by the teacher, even allowing the characters in the picture story to be the teacher and the student in one storyline. So that it can be used for teaching aids for teachers in telling stories.

ACKNOWLEDGMENT

REFERENCES

1. Achsani, F. (2018). Cerita Anak sebagai Media Pembentuk Karakter Anak. *Diglosia: Jurnal Kajian Bahasa, Sastra, Dan Pengajarannya*, *1*(2), 53–64. https://doi.org/10.30872/DIGLOSIA.V1I2.9
2. Adiloglu, F. (2011). Visual communication: Design studio education through working the process. *Procedia - Social and Behavioral Sciences*, *28*, 982–991. https://doi.org/10.1016/j.sbspro.2011.11.182
3. Aini, S. D., & Hasanah, S. I. (2019). Berpikir Visual dan Memecahkan Masalah: Apakah Berbeda Berdasarkan Gender? *JNPM (Jurnal Nasional Pendidikan Matematika)*, *3*(2), 177. https://doi.org/http://dx.doi.org/10.33603/jnpm.v3i2.2192
4. Darmawan, F., Hakim, A., & Nurhidayah, P. S. (2022). Gim ASIK sebagai Metode Komunikasi Visual dalam Pengembangan Karakter Anak Usia Dini. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, *6*(3), 2266–2275. https://doi.org/10.31004/obsesi.v6i3.1932
5. Darmawan, F., & Piliang, Y. A. (2015). Cartoonist Visual Communication through Online Political Cartoon in the Era of the Government of President Susilo Bambang Yudhoyono. *Sosiohumanika*, *8*(November), 195–204.
6. Dhanesh, G. S., & Rahman, N. (2021). Visual communication and public relations: Visual frame building strategies in war and conflict stories. *Public Relations Review*, *47*(1), 102003. https://doi.org/10.1016/J.PUBREV.2020.102003
7. Escorcia Guzman, J. H., Zuluaga-Ortiz, R. A., Barrios-Miranda, D. A., & Delahoz-Dominguez, E. J. (2021). Information and Communication Technologies (ICT) in the processes of distribution and use of knowledge in Higher Education Institutions (HEIs). *Procedia Computer Science*, *198*, 644–649. https://doi.org/10.1016/J.PROCS.2021.12.300
8. Fahmy, S., Bock, M. A., & Wanta, W. (2014). *Visual Communication Theory and Research*. PALGRAVE MACMILLAN. https://doi.org/10.1057/9781137362155
9. Fairrington, B. (2009). Drawing Cartoons & Comics for Dummies. In *Drawing Cartoons & Comics for Dummies*.
10. Fitroh, S., Fitroh, S. F., & Sari, E. D. N. (2015). DONGENG SEBAGAI MEDIA PENANAMAN KARAKTER PADA ANAK USIA DINI. *Jurnal PG-PAUD Trunojoyo : Jurnal Pendidikan Dan Pembelajaran Anak Usia Dini*, *2*(2), 95–105. https://doi.org/10.21107/pgpaudtrunojoyo.v2i2.2606
11. Gede Dharman Gunawan, I., UNHI Denpasar, P., & Palangka Raya, I. (2019). CERITA DONGENG SEBAGAI MEDIA PENDIDIKAN KARAKTER ANAK USIA DINI. *Tampung Penyang*, *17*(02), 73–87. https://doi.org/10.33363/TAMPUNG-PENYANG.V17I01.430
12. Hendrickson Lohmeier, J., Thompson, S. R., Chen, R. F., & Mishol, S. (2021). Youth as Climate Change Messengers: A Picture Is Worth a Thousand Words. *Science Communication*, *43*(6), 814–823.

https://doi.org/10.1177/10755470211044825/ASSET/IMAGES/LARGE/10.1177_10755470211044825-FIG1.JPEG

13. Julia, J., Iswara, P. D., Gunara, S., Yildiz, Y. M., & Agustian, E. (2020). Developing Elementary School Teacher Competence in Making Music Learning Media Using Scratch Application: An Action Research. *Mimbar Sekolah Dasar*, *7*(3), 362–385. https://doi.org/10.17509/mimbar-sd.v7i3.29100

14. Kementerian, Kebudayaan, Jenderal, Sekretariat, P., & Statistik. (2017). Statistik Pendidikan Anak Usia Dini 2016/2017. *Statistic of Early Childhood Education 2016/2017*, 1–119. http://publikasi.data.kemdikbud.go.id/uploadDir/isi_C6C3980D-F1F1-4BEB-8DFA-FD57559F1D86_.pdf

15. Köksal, N., & Çöğmen, S. (2019). Visual Thinking Processes and Interactions of Sixth Grade Students. *Journal of Qualitative Research in Education*, *7*(2), 1–19. https://doi.org/10.14689/issn.2148-2624.1.7c.2s.15m

16. Lubis, A. H., Idrus, S. Z. S., & Sarji, A. (2018). ICT usage amongst lecturers and its impact towards learning process quality. *Jurnal Komunikasi: Malaysian Journal of Communication*, *34*(1), 284–299. https://doi.org/10.17576/JKMJC-2018-3401-17

17. Mohd Razali, N., & Bee Wah, Y. (2011). Power comparisons of Shapiro-Wilk, Kolmogorov-Smirnov, Lilliefors and Anderson-Darling tests. *Journal of Statistical Modeling and Analytics*, *2*(1), 21–33.

18. Mulyani, N. (2019). *Mengembangkan Kreativitas Anak Usia Dini* (N. N. M, Ed.). PT Remaja Rosdakarya.

19. Navasky, V. S. (2013). *The art of controversy : political cartoons and their enduring power*. Alfred A. Knopf.

20. Pramono, A. et al. (2021). Character Thematic Education Game "AK@R" of Society Themes for Children with Malang-Indonesian Visualize. *International Journal of Instruction*, *14*(2), 179–196. https://doi.org/https://doi.org/10.29333/iji.2021.14211

21. Rahmad Fauzan. (2019, March 18). *Software Bajakan Marak, Indonesia Jadi Target Aliansi Software AS*. Indonesia Menjadi Salah Satu Target Utama Perusahaan Perangkat Lunak Non-Profit Dari Amerika Serikat, BSA | The Software Alliance Dalam Rangka Pengurangan Jumlah Perangkat Lunak Bajakan. https://teknologi.bisnis.com/read/20190318/84/901176/software-bajakan-marak-indonesia-jadi-target-aliansi-software-as

22. Sharudin, S. A., Mustaffa, N., & Sannusi, S. N. (2020). The role of infographic in increasing youths' health awareness from a graphic designer perspective. *Jurnal Komunikasi: Malaysian Journal of Communication*, *36*(1), 356–368. https://doi.org/10.17576/JKMJC-2020-3601-20

23. Ståhl, M., & Kaihovirta, H. (2019). Exploring visual communication and competencies through interaction with images in social media. *Learning, Culture and Social Interaction*, *21*, 250–266. https://doi.org/10.1016/j.lcsi.2019.03.003

24. Sudarmono, M., & Hanani, E. S. (2020). HEALTH EDUCATION TEACHING MATERIALS THROUGH COMIC MEDIA FOR PRIMARY SCHOOL STUDENTS. *Journal of Health Education*, *5*(1), 49–54. https://doi.org/10.1080/10556699.1994.10603001

25. Talebian, S., Mohammadi, H. M., & Rezvanfar, A. (2014). Information and Communication Technology (ICT) in Higher Education: Advantages, Disadvantages, Conveniences and Limitations of Applying E-learning to Agricultural Students in Iran. *Procedia - Social and Behavioral Sciences*, *152*, 300–305. https://doi.org/10.1016/j.sbspro.2014.09.199

26. Trimansyah, B. (2020). Panduan Penulisan Buku Cerita Anak. In *Pusat Pembinaan Bahasa dan Sastra RI*. Kementerian Pendidikan dan Kebudayaan RI. https://badanbahasa.kemdikbud.go.id/resource/doc/files/Panduan_Penulisan_Buku_Cerita_Anak.pdf

27. Veneti, A., Jackson, D., & Lilleker, D. G. (2019). Visual politics Communication. In *Palgrave macmillan*. Palgrave Macmillan. https://doi.org/10.2307/j.ctvndv935.7

28. Zaini, A. (2018). Metode-Metode Pendidikan Islam Bagi Anak Usia Dini. *ThufuLA: Jurnal Inovasi Pendidikan Guru Raudhatul Athfal*, *2*(1), 25. https://doi.org/10.21043/thufula.v2i1.4264