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POCOYO ANIMATION DESIGN AND CHILDREN WITH AUTISM (CASE STUDY OF POCOYO ANIMATION DESIGN TO HELP CHILDREN WITH AUTISM TO IDENTIFY VISUAL OBJECT)

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ABSTRAK

Penelitian ini menggunakan pendekatan studi kasus pada dua anak penyandang autisme di Sekolah Khusus Autis Bina Anggita Yogyakarta. Tujuan penelitian untuk menguji desain animasi Pocoyo episode Cooking with Elly dalam membantu anak penyandang autisme mengenali objek visual. Metode penelitian yang digunakan adalah kualitatif dengan pendekatan studi kasus dan dianalisis secara interpretatif. Hasil penelitian menunjukkan bahwa desain animasi Pocoyo episode Cooking with Elly dapat digunakan sebagai media pembelajaran untuk anak penyandang autisme dalam mengenali objek visual. Akan tetapi, ada beberapa desain animasi yang perlu memperhatikan prinsip *clarity* untuk meningkatkan kemampuan anak penyandang autisme dalam mengenali objek visual. Pembelajaran juga sangat dipengaruhi oleh kemampuan dari anak penyandang autisme.

Kata kunci: Desain, animasi, anak penyandang autisme, kemampuan mengidentifikasi

ABSTRACT

This research uses case study approach on two children with autism in Special School of Autism Bina Anggita Yogyakarta. The research aim is to test the animation design Let's Go Pocoyo, Cooking with Elly episode in helping the children with autism to identify visual objects. The research methodology is qualitative interpretive. The research result shows the design of animation Let's Go Pocoyo, Cooking with Elly episode can be used as a learning media for the children with autism to identify visual objects. Some animation designs need more attention to clarity principle to help the children with autism improving their skill to identify visual objects. The learning process is also influenced by the skill from the children with autism.

Keywords: design, animation, the children with autism, visual identification skill

Introduction

Background of the study

Visual communication designers have sociocultural responsibilities. In general, they focus on producing works based on certain professional approaches, one of them is education design for children with autism. Due to the increasing number of children with autism, the autism education needs to be concerned. In 2000 it was estimated that the number of children with autism was one per 500 children, while in 2015 it was estimated that one per 300 children. In 2015 it was reported that there were approximately 12,800 children with autism in Indonesia. (Y, 2016). Autism is a mental development disorder characterized by abnormalities in social function, language, communication, and habits and tendencies to unusual things. (Mash & Wolfe, 2010: 300) These disorders make children with autism need extra assistance because they have difficulties in the learning process. The learning difficulties experienced by them can be helped by using the media. Choosing the appropriate media design for them is a big challenge because every child with autism has different characteristics. But there is a tendency for children with autism. Some of them have sensitivity to the visual element. According to Kientz & Dunn (1997), children with autism show sensitivity to visual elements in their daily lives. They are also addictive to movement. (Wilkinson, 2018). So one of the media that can help them in the learning process is motion media.

Motion media is a form of media presenting moving text and images (Roblyer, 2006) or media with integration of sight, sound, and movement. (Shelton, 2004). One type of motion media is animation. Animation is only used as an entertainment medium in the past, but due to the modern technology development, the animation functions become widespread, one of them is in education field. (Suwasono, 2016: 1) Animation is used to describe an image sequence process, computer-generated artwork, or model photos to make optical effects from moving objects. (Taylor, 2011: 143) According to Lowe (2004) the animation role in the learning process is to fulfill affective functions, to attract attention, to make students feel involved, and to strengthen motivation. In addition, it fulfills cognitive functions.

However other problems arise, although children with autism have visual sensitivity, they also have disorders that can inhibit the learning process. Some of them have visual perception disorders. Children with visual perception disorders have difficulty identifying, remembering, and organizing images. (Kurtz, 2006: 33) Based on the data, the question arises, what kind of animation design can help children with autism to achieve certain abilities? Because a good design is not just having a good and attractive visual appearance. The most important thing in the education field is how a design is able to facilitate children in receiving the delivered information.

This research is inspired from previous studies describing that children with autism have prominent communication disorders. Whereas as social beings, humans need communication skill to interact with other people. Communication process needs language skill. Language skill grows continuously. If children with autism who have communication disorder are not treated with appropriate learning therapy, their language skill will not develop. One of the characteristics is having sensitivity to the visual elements so their language skill can be exercised through visual language. Children with autism learn languages by identifying visual objects.

In addition, their characteristics are difficult to focus on at one point. So dynamic animation media can be a drawer so that children with autism can focus on learning. Pocoyo animation is choosen because the design is appropriate with the characteristics of children with autism. The prominent Pocoyo animation design is its white background and its minimal property. It is assumed that the design is appropriate with the characteristics of children with autism who focus on details. Based on the data described above, this study will discuss how the Pocoyo animation design helps children with autism identifying visual objects. For children with autism who have special characters, the most important thing is not only what material will be introduced and studied, but also how the material is presented. So

the design animation has a fundamental function in learning media.

Problem of the Study

How can the Pocoyo animation design help children with autism identifying visual objects?

Aim of the Study

Testing Pocoyo animation design in helping children with autism identifying visual objects.

Literature Study

1. Design

Design is all related to visual communication. Its function is to convey a message to the target audience using images. Its visual message delivery form has the power to engage the audience target compared to the delivered message only through writing. (Taylor, 2011: xxiv) Visual is something visible, one of the visual elements is form, form can be designed in several ways:

a. Realist

Realist is presenting images naturally and there is no manipulation. Realist forms are used to convey the visual forms seen in real life.

b. Stylization

Stylization is a process of simplifying form. According to (Britton, 2003) stylization always involves a simplicity measurement, such as the use of colors, contours, etc. The simplification level is suited to the target audience needs. Stylization can form objects based on the realist form or ignore the original form so it forms abstract.

c. Form

Form is an element communicating the identity of an object so it can be easily recognized. The considered principle in designing a form is clarity because it affects to the audience interpretation. How a form is easily understood and does not cause ambiguity or multiple meanings. Mainly if the visual forms are intended for children. The clarity principle needs to be adjusted to the children cognitive level, especially children with special needs.

A conveyed message using visual elements is designed using design principles so that the message contents are acceptable to the audience target. If the visual element is "what", then the design principle is "how". One of the main principles in a design is composition. According to Taylor (Taylor, 2011) the composition is arranging visual elements in a design. Positioning the visual elements on a page, screen, or space is very important, not only as aesthetics but also a design is understood by the audience target. (Taylor, 2011)

One of the basis for making compositions is using the rules of third principle. According to Taylor (2011) the rules of third is a well-used principle in photography, film, and graphic design. The formula use is to divide the screen into three horizontal parts and three vertical parts to form nine rectangles. The rules of thirds are used as a composition guidance when pointing the camera or positioning elements in one frame. Elements must be placed parallel to the line division based on the rules of third to create a good composition. According to Taylor (2011) the composition principles are:

1. Repetition

Repetition is the principle used to form a visual rhythm. It can be applied to colors, shapes, sizes, movements, and other elements.

2. Emphasis

Emphasis is an emphasis on visual elements. It can be used in several ways, including: thickening outlines, making space around objects, or brightening the object colors.

3. Symmetry

Symmetrical composition is an easy way to make a balanced composition. Humans also naturally seek symmetry. Gestalt theory explains that seeking for the symmetry of what humans see as Prägnanz. According to Mads (Soegaard, 2017) symmetry can be used to build familiarity with layouts. It is also useful for someone with learning disability.

4. Contrast

Contrast related to lightness and darkness.

It can be applied to color. For example, making the object's color more contrast than the background color.

2. Autism Spectrum Disorder and Animation

Autism is a developmental disorder characterized by abnormalities in social function, language, communication, and habits and tends to unusual things. It attacks several brain parts, affecting behavior and ability. For example, children with autism as having their own world, not understanding about feelings, and unable to communicate with others. They also see more in details compared to the big picture. For example, when someone sees a forest, he will see thick trees but children with autism see different things, they may only see one pine tree leaf. (Mash & Wolfe, 2010)

Another characteristic of children with autism is having visual perception disorders. According to Kurtz (Kurtz, 2006) children with visual perception disorders have difficulty in recognizing, remembering, and organizing images as a need to understand material in the form of writing or pictorial symbols used for learning. The ability to sort or recognize objects indicates the ability to use visual discrimination skills. The disorder ability makes children with autism misinterpret a visual form.

According to Kientz & Dunn (1997) children with autism show sensitivity to visual elements in their daily lives. Children with autism also have a good response to the visual component. Notbohm (Notbohm, 2012) in a book entitled *Ten Things Every Child with Autism Wishes You Knew* chapter six wrote! *Picture this! I'm visually oriented*, means children with autism have an orientation to the visual element.

Children with autism also have an interest in moving things. According to Kathy, an assistant professor at SUNY Buffalo State, children with autism are addicted to movement. Vestibular motion engage, propiocepture, and visual sense. (Wilkinson, 2018) Animation is advantageous because it integrates sight, sound, and movement. On sound elements, it usually includes music elements. Music acts as a driver so children with autism can focus. Moreover, music can motivate in the learning process. Stephen (Stephen, 2008) found the imitation to the actions and words of children with autism increased when music was used to improve social engagement.

Research Methodology

1. Research Methods and Problem Approaches

The research method used in this study is an interpretive qualitative method. According to Denzin and Lincoln (Denzin, 1994), the interpretive paradigm is used to help researchers in understanding and interpreting what behind the events, the background of human thinking involved in it, and how humans put meaning on events that occur or develop understanding of them . While case study is used as problem approach. Nazir (Nazir, 1988) revealed case studies were used to explain the research subject status relating to a specific or typical phase from the research subject overall personality, which could be individuals, families, institutions or communities.

2. Data Collection Tools

Some sources and data collection tools used in this study include:

a. Interview

The interview is carried out at the preliminary observation and during the study with the accompanying teacher. During preliminary observations, interview is conducted with the aim to know general description of each student's academic abilities. The goal is to get information about students having visual media preference and sufficient communication skills at Bina Anggita Autism School in Yogyakarta. This information is used as a step for researchers to determine the subjects in this study. Then, to get data about the learning process and media used for learning.

b. Observation

The researcher function is as a research instrument. Observation is based on direct experience to test the reality existing in the field during the study and to obtain the data validity obtained from other

data collection tools. This observation technique enables researcher to be able to understand complex situations, for example in observing and paying attention to various behavior types or responses shown by research subjects during the activity of watching animation. Another reason using the observation technique is methodological. According to Moleong (2015) observation will optimize the researcher ability in motives, beliefs, attention, unconscious behavior, habits, etc., and allow researcher to see the world as seen by the research subject and capture the phenomena meaning in understanding the subject at the treatment time.

c. Animation Watching Activity

Animation watching activity is a data collection tool used to answer research problems. Each research subject watches the animation six times individually. The researcher acts as a companion who directly provides material to the research subject. During the implementation the researcher is accompanied by an accompanying teacher from the research subject.

3. Sources and Data Types

a. Words and Actions

The main data sources in this study are the words or responses from the research subjects while they are watching the animation *Let's Go Pocoyo! Cooking with Elly episode*. The data will be written in the notebook.

b. Video Recording and Photo

The researcher uses videos and photos to get data collection about the research subject responses during the animation watching *Let's Go Pocoyo! Cooking with Elly episode*. Video recording and photo will help in collecting dynamic and continuous data.

Results and Discussion

1. Results during watching animation entitled *Let's Go Pocoyo! Cooking with Elly episode*

After the animation watching activity is carried out, the results are:

a. During the watching, subject I and subject II show the ability to recognize visual objects but there are visual objects that are not recognized.
b. There are scenes in the animation that consistently get responses from subject I and subject II.
c. Subject I and subject II only recognize one visual object in each scene.
d. Subject I and subject II have a preference for music shown by giving a response when listening to a song by imitating.

2. Discussion

Based on the results, there are scenes that get responses consistently by subject I and subject II. The scenes are:

1. Scene 37

Figure 1. Scene 37

The visual object forms in the animation *Let's Go Pocoyo! Cooking with Elly* are designed using stylization techniques (simplification form). Based on English dictionary, stylization comes from the word *to stylize* which means drawing conventional forms with a non-realistic style. According to Piers (2003) stylization always involves a simplicity measure, such as the use of colors, contours, etc. Simplicity is the key from its design principle. As stated by Leonardo Da Vinci "simplicity is the ultimate sophistication" and Ludwing Mies Van Der Rohe that "less is more." The simplicity principle has the power to make the audience target receives messages quickly. Simple forms are also easier to be understood by the children. However, simplicity in a form

can make a misinterpretation if it ignores its objectivity by not paying attention to the abilities and children development.

The audience target may have different interpretations to a form depending on their cognitive abilities. The data show two different responses between subject I and subject II to one visual object, a bird. Subject I identified the visual object in scene 37 as a sleeping bird but the opposite thing happened to subject II because he identified the visual object in scene 37 as a mouse. The inability of children with autism to identify visual objects can occur due to visual perception disorders. According to Kurtz (2006) children with visual perception disorders have difficulty in recognizing, remembering, and organizing images as a need to understand material in the form of writing or pictorial symbols used for learning. The case in this study subject II still repeats as mouse although he was given an understanding. Initially, subject II identified bird as mouse. Then after subject II was given an understanding, he called the visual subject as a bird. However, at the next meeting, he mentioned the bird as a mouse again. Based on this data, it can be assumed that the subject II has a disturbance in the perception of visual forms, ability disorder to recognize the basic stimulus, such as shape, size, and color. According to Kurtz (2006) the ability to sort or recognize objects indicates the ability to use visual discrimination skills. This ability disorder makes children with autism misinterpret a visual form.

The animated bird body at Let's Go Pocoyo! Cooking with Elly in scene 37 does not seem to have legs so it is quite different from the real object. In addition, the bird wings are also less clear. The clarity principle is not used well in the animation. It makes children with autism confused to identify due to visual perception disorders. The conclusion is the bird design Let's Go Pocoyo! Cooking with Elly are not suitable for children with autism who have visual perception disorders.

2. Scene 109-118

Figure 2. Scene 109-118

Scene 109-118 got a positive response from subject I and subject II. Both research subjects were able to identify the names of visual objects at the number menu, such as apple, watermelons, cakes, sushi, strawberries, carrots, oranges, and cherries but there was one visual object that was not successfully identified at scene 115. The visual object is round green. The shape is simple but there is no special characteristics that refer to a particular form. So the visual object confuses children with autism. The inability of children with autism to identify the object is caused by design factors that do not use the clarity principle.

Scene 109-118 uses compositions based on the rules of third. According to Taylor (2011) the rules of third is a principle that is well used in photography, film, and graphic design. The formula use is to divide the screen into three horizontal parts and three vertical parts to form nine rectangles. The rules of thirds are used as a composition guidance when pointing the camera or positioning elements in one frame. Elements

must be placed parallel to the line division based on the rules of third to create a good composition. In scenes 109-118 the composition looks simple but is pleasing to the eye.

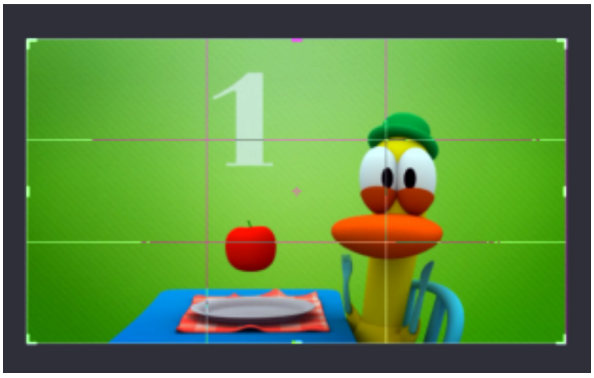


Figure 3. Example of applying the rules of thirds in scene 109

Visual objects in the scene 109-118 are also easily identified by children with autism because they use colors and shapes that contrast between the foreground and background. Moreover it uses emphasis principle (emphasizing the important part) by applying perspective so the main object stands out.

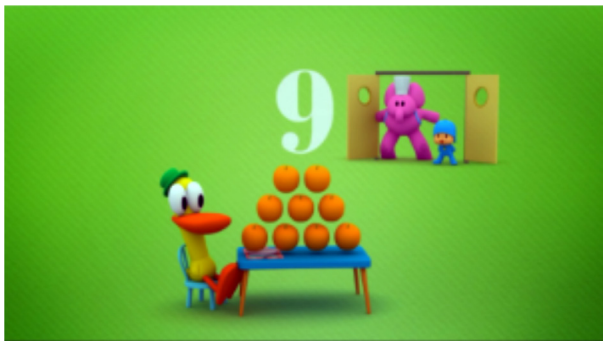


Figure 4. The Application of emphasis principle.

The number menu composition in each scene consists of several visual objects. For example in the scene 109 the first menu is one apple. The amount one is visualized in the number one symbol. Besides apple, there are Pato characters and properties such as tables, chairs, plates, napkins, spoons, and forks

Figure 5. Scene 109

Although the composition of each scene consists of several visual objects, subject I and subject II only identify and mention one visual object. The visual objects are foods in the menu number list: apple, watermelon, cakes, sushi, strawberries, carrots, oranges, and cherries. The ability of subject I and subject II only identifies and mentions one visual object because children with autism have a disorder in understanding the big picture. Mentioned by Mash & Allen (2010) that children with autism see details compared to the big picture. For example, when someone sees a forest, he will see thick trees. But children with autism see different things, they may only see one pine tree leaf.

Typographic elements in the form of numbers 1-10 from scene 109-118 help children with autism identify numbers. This is also supported by the application of the animation principle in the form of sound. The Children's character in the animation *Let's Go Pocoyo! Cooking with Elly* pronounces numbers in each scene from 1-10 accompanied by instrumental music. The case in this study subject II responded spontaneously and enthusiastically every scene 109-118 aired then will follow say numbers 1-10. Subject II has a passion for music so that when he starts listeningto the instrument sound, he will be excited and imitate the sound. Sound has a role in helping children with autism identify a symbol. Apart from seeing the visual objects of children with autism, they also carry out a process of identifying forms by listening to sounds and imitating them. Music acts as a driver so that children with autism can focus. Besides that, music can motivate in the learning process. Stephen (2008) found that imitation of the actions and words of children

with autism increased when music was used to improve social engagement.

3. Scene 219, 220, 225, 226, 228, and 230

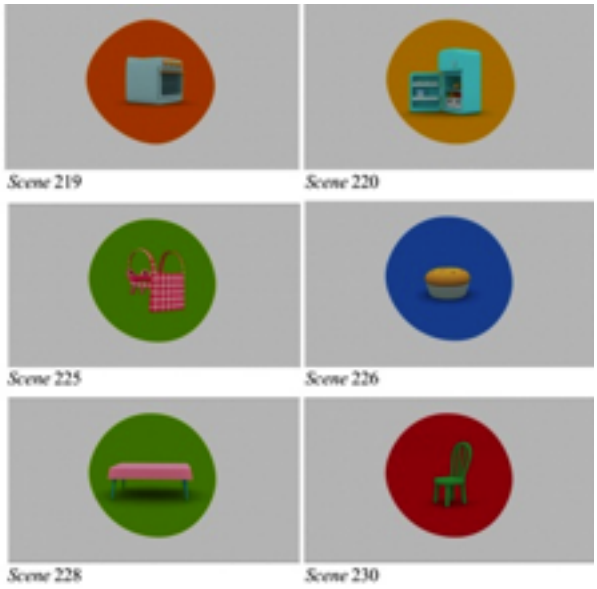


Figure 6. Scene 219, 220, 225, 226, 228, and 230

Scene 219, 220, 225, 226, 228, and 230 use the symmetrical composition principle. Taylor (2011) revealed that when starting a design, the biggest temptation is to make everything symmetrical. Symmetrical composition is an easy way to make a balanced composition. Humans also naturally seek symmetry. In Gestalt theory look for the symmetry of what humans see as Prägnanz. The use of the symmetry principle on a composition can cause a design to look stiff and boring. However, it can be interpreted differently by children with autism. Mads (2017) revealed that symmetry can be used to build familiarity with layouts. Using symmetry in a design can be useful for learning disability people. The case of this study shows that children with autism are quick to identify forms in scenes 219, 220, 225, 226, 228, and 230, designed with the symmetrical composition principle.

The composition principle applied to scenes 219, 220, 225, 226, 228, and 230 is repetition. Taylor (2011) revealed that repetition is used to form a visual rhythm. Repetition can be applied to colors, shapes, sizes, movements, and other elements. At *Let's Go Pocoyo! Cooking with Elly* repetition is applied to the background color, white. The background makes visual objects look contrasting so that visual objects are easily identified by children with autism. In addition, the white background can provide benefits for children with autism who focus on details. In scenes 219, 220, 225, 226, 228, and 230 visual objects are presented only one object per scene. It benefits children with autism who do not understand the big picture. Mash & Allen (2010) states that children with autism see details compared to the big picture. For example, when someone sees a forest, he will see thick trees. But children with autism see different things, they may only see one pine tree leaf.

Properties in scenes 219, 220, 225, 226, 228, and 230 are presented in a rotating motion on the spot. It can attract the attention of children with autism because they are very interested in rotating objects. This is also supported by the application of the animation principle in the form of sound. The Children's character in the animation *Let's Go Pocoyo! Cooking with Elly* pronounces the names of objects (properties) accompanied by instrumental music. The case in this study subject I repeats the names of objects in the 219, 220, 225, 226, 228, and 230, i.e. ovens, refrigerators, aprons, cakes, tables and chairs. Sound has a role in helping children with autism identifying a symbol. Apart from seeing the visual objects of children with autism, they also carry out a process of identifying forms by listening to sounds and imitating them. Music acts as a driver so that children with autism can focus. Besides that music can motivate in the learning process. Stephen (2008) found that imitation of the actions and words of children with autism increased when music was used to improve social engagement.

One of the learning media used by subject I is a picture card and subject II is a Picture Exchange Communication System (PECS). The two media are designed with a white background and only consist of one visual object with symmetrical proportions. The same principle is applied to scenes 219, 220, 225, 226, 228, and 230. The design principle in the similar animation to the common media used by research subjects for

learning supporting the process of identifying visual objects.

4. Scene 233, 235, 236, 238, 241, 242, and 246

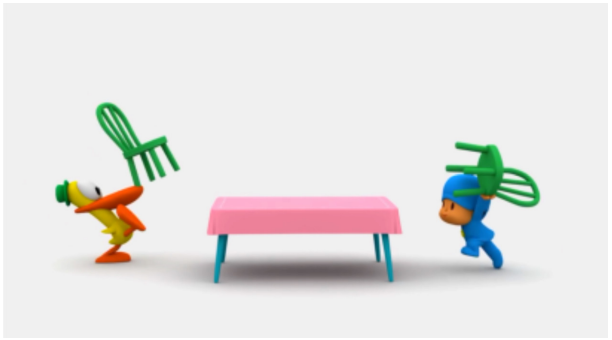
Scene 233

Scene 235

Scene 236

Scene 238

Scene 241



Scene 242

Scene 246

Figure 7. *Scene* 233, 235, 236, 238, 241, 242, and 246

Children with autism have a characteristic to focus on details and do not understand the big picture. As mentioned by Mash & Allen (2010) that children with autism see details compared to the big picture. In the previous scene, the scenes 219, 220, 225, 226, 228, and 230 visual objects have been presented individually in each scene. For scenes 233, 235, 236, 238, 241, 242, and 246 visual objects are presented to form compositions. It benefits for children with autism because they can exercise understanding the big picture. Visual objects are presented globally in details previously.

The composition principle applied to the scene 233, 235, 236, 238, 241, 242, and 246 are repetitions. Taylor (2011) revealed that repetition is used to form a visual rhythm. Repetition can be applied to colors, shapes, sizes, movements, and other elements. In the animation *Let's Go Pocoyo! Cooking with Elly,* repitition is applied to the background color, white. The white background makes visual objects look contrasting so that visual objects are easily recognized by children with autism. In addition, the white background can provide benefits for children with autism who focus on details.

In addition, in the scenes 233, 235, 236, 238, 241, 242, and 246, there are song elements with lyrics *I have an oven, I have a fridge, I have an apron, I have a cake, I have a table, I have chairs* sung by the narrator. The use of music and songs can attract the attention of children with autism to focus and be useful to motivate. Stephen (2008) found that imitation of the actions and words of children with autism increased when music was used to improve social engagement.

Conclusion

The Animation *Let's Go Pocoyo! Cooking with Elly* can be used as learning media to identify visual objects for children with autism. A design is very influential on a child's success in understanding the conveyed information. The design success in conveying information is also influenced by the visual abilities of each child. The design principles in animation *Let's Go Pocoyo! Cooking with Elly* can also be used as a consideration for making designs or animations for children with autism.

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