

INTERACTIVE SIMPLE CARTOON DRAWING TUTORIAL FOR AUTISTIC STUDENTS

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Keywords: courseware, autism, instructional design

ABSTRACT – *This paper focuses on the development of a prototype interactive tutorial courseware for autistic children, specifically for ages 5 to 12. This courseware will teach autistic children basic drawing mechanics and shapes. Shapes are important to help in writing and drawing. This courseware will use the concept the Bloom taxonomy ID Model, where users are engaged in 6 concepts in sequence, remembering, understanding, applying, analyzing, evaluating and creating. These steps will ensure that by the end of the courseware, the users are able to achieve their learning needs and be able to draw basic cartoon characters.*

1. INTRODUCTION

Autism or autism spectrum disorder characterized with slow or stunted development basic social interaction and communication. Simple communication such as speech and movement can prove to be a challenge for people with autism. Autistic people also have trouble understanding emotions or social cues. Autistic people at first glance may look like they lack empathy, but they in fact do feel emotions. It is simply that they do not know the rhyme nor reason for certain emotions such as anger, sadness and envy. They do not get jokes and sarcastic remarks since autistic people are unique in their thinking process and as such only understand simple and clear instructions[1].

There is no clear cut way in generalizing and coping with autism. However, recognizing patterns for autism in childhood stages is very important. Children with autism will find it difficult to keep up with their peers. However, given enough attention and care, an educator will be able to develop in the interests and talent of autistic children. Based on observation, autistic children tend to like to watch cartoons. This is to be expected since cartoons are colourful, funny and educate them in ways that books and lectures are not able to. Cartoons can spark ideas for autistic children and as such autistic children require an outlet for those ideas. Drawing is a great way to help autistic children with self-expression and development of motor skills to aid in writing. Autistic children will be eager to be able to draw their favourite cartoon characters and show off to their peers and loved ones. This in hand not only gives a confidence boost in autistic children, but also helps autistic children to develop meaningful interests and healthy relations.

The problem here is that drawing something even cartoons can be stressful and hard for autistic children. Teaching them to draw will even be more of a challenge since autistic children are either unable to understand a drawing concept or easily bored and frustrated when their drawing is not similar to the real thing. Using instructional design[2], a simple program will help them in understanding the basics of drawing and how to draw simple cartoon characters. This program will help autistic children develop a passion for drawing and show simple steps on how to draw simple cartoon characters[3].

2. METHODOLOGY

The development of this project will be following the bloom taxonomy design [3] where viewers or students are engaged and 6 concepts throughout the courseware. These steps are as follows:

- **Remembering:** The courseware will start with the basics. Viewers are taught in simple but compact ways to draw shapes. Shapes are the foundation of understanding the structure of an object. There will not be a lot of text and with pictures to guide viewers.
- **Understanding:** Viewers are then shown how simple cartoon characters or shapes around them can be broken down using just shapes. An example is a snowman is basically 3 circles on top of each other.
- **Applying:** Viewers are then shown Level 1, where they will be shown a simple step by step guide on how they can use shapes to create a cartoon character. At the end of Level 1 viewers are given a brain teaser on how to draw a cartoon character without the help of the program[5].
- **Analyzing:** Level 2 will deal with more advanced perspectives and cartoon characters. Viewers are now taught on the concept of other more complex shapes, such as pyramids, cones and cylinders
- **Evaluating:** Using the newfound knowledge in level 2, viewers are now encouraged to try and experiment with the techniques. Using a cylinder viewers will understand how to draw arms and legs. A cuboid can be used to represent the body etc[6].
- **Creating:** Level 3 is where all previous concepts are applied. Viewers are now given a brief overview on how to draw cartoon characters from shows. An example would be Doraemon, his head is circle, his arms thick cylinders and so on[7]. Viewers are also encouraged to be creative and able to find the foundations of a subject.

3. RESULTS AND DISCUSSIONS



Figure1: Homepage

Figure 1 shows the homepage, where users are able to choose between 'Asas' or 'Tahap' Asas teaches the basics while Tahap uses the skill learned in Asas to draw and construct.

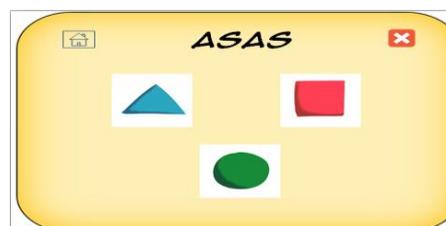


Figure 2: Basics



Figure 3: Example of Basics Page

Figure 2 and 3 shows the basics of drawing and forming a shape using lines. There is a slideshow and video tutorial provided on how to do it and text is minimal to engage audience attention.



Figure 4: Levels

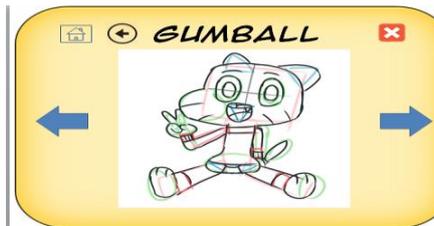


Figure 5: Example of Level 3

Figure 4 and 5 focuses on how the users utilize the knowledge they've gained in 'asas' in constructing a cartoon character. As seen in Figure 5, the character gumball is constructed using squares, triangles and circles.

Usability evaluation was then conducted to test the overall user's opinion about the performance of the courseware. A group consisting of 10 respondents with multimedia knowledge participated in focus group study on the usability of this courseware. After using the courseware, the focus group is required to answer two questionnaires focusing on the Bloom Taxonomy ID morel and the overall usability evaluation. The focus is group are tasked to rate the courseware with 1(not satisfy) until 5(satisfy) and their results are recorded in Table 1 and Table 2.

Bloom Taxonomy Aspects	1	2	3	4	5
Remembering	-	-	3	5	2
Understanding	-	-	2	4	4
Applying	1	3	4	2	-
Analyzing	-	-	3	5	2
Evaluating	-	1	1	5	3
Creating	2	1	4	3	-

Table 1 Bloom Taxonomy Evaluation

Gagné Nine Events	1	2	3	4	5
Users satisfactory (%)	5	8.33	28.33	40	18.33

Usability questions	1	2	3	4	5
Visibility of the content	-	-	-	5	5
User control and freedom	-	2	-	4	4
Consistency	-	-	2	5	3
Accessibility	-	2	5	3	-
Flexibility & Efficiency	-	4	2	4	-
Aesthetic	-	-	1	6	3

Table 2 Usability Evaluation

Usability Evaluation	1	2	3	4	5
Users satisfactory (%)	-	13.33	16.67	45	25

Overall Evaluation	1	2	3	4	5
Users satisfactory (%)	2.5	10.83	22.5	42.5	21.67

Based on the result in Table 1 only 18.33% respondents were satisfied with the courseware and says it follows the bloom taxonomy model while only 5% are not satisfied with the courseware. In usability evaluation, 25% of the users are satisfied and 13.33% are considered slightly dissatisfied and no users are considered not satisfied. Overall, the final evaluation is 2.5% of the users are not satisfied, 10.83% are slightly unsatisfied, 22.5% are unsure, 42.5% are slightly satisfied and 21.67% users are satisfied.

4. CONCLUSIONS

Based on the design and feedback obtained from the evaluation, it can be concluded that by using the concepts of the BLOOM taxonomy method, a courseware which caters to autistic children can be created. This courseware focuses on creating a baseline for autistic children to start their passion for drawing. Hopefully the children or audiences will find this courseware useful and spark their interest in drawing.

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