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Research paper

Creating awareness about traffic jam through engaged use of stop motion animation: boomerang

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Abstract

How can this stop motion animation be used to promote social awareness? In this paper, we examined the role of stop motion ani-mation on creating social awareness among people, focusing on traffic jam, wrote an overview overall process of making a stop mo-tion anima-tion. In South Asian countries like ours, traffic jam is a hilarious problem. Because of traffic jam, we face a lot of incon-venience every single day. Actually, we are responsible for creating this problem. If we follow the laws and regulations of traffic, we can get rid of the problems caused by traffic jam. Because who knows! The problems we create today can be the problems that we will face tomorrow.

Keywords: *Stop Motion; Animation; Film Media; Awareness; Character.*

1. Introduction

Stop Motion Animation is a technique used in animation to bring static objects to life on screen. This is done by moving the object in increments while filming a frame per increment. When all the frames are played in sequence, it shows movement. Clay figures, puppets and miniatures are often used in stop motion animation as they can be handled and repositioned easily. For our project, we had a story to spread awareness about traffic rules, and chose stop motion as a medium to express the story. In Bangladesh, the over-all sector of animation is still growing, and stop motion is not really a popular medium. But we took it as a challenge to express and we implemented that. The process of making a stop motion was challenging and tedious because of scarce resources and lack of experience. Starting from forming a group for the project to ending with publishing the film, the whole process required a lot of determination, patience and hard work. After forming a group and discussing the story and deciding a medium, all the props were gathered and everything was handmade. There were many trial and error processes. Problem solving and improvisation was the key to make everything work out.

Our goal was to make an animation, which portrayed the fact that whatever we do comes back to us. Be it right or wrong, good or bad. In this film, we took some real life events as references and added some drama to it. We can see that most of the problems we face in our daily life is caused by us solely. It is for our ignorance that we suffer and make others suffer too. In this case, disobeying traffic rules and causing problems to others went heavy on the rule breaker himself. It is to show and make people understand that rules are there to be maintained and they are made for making peoples' lives easier. Breaking them might save some time tempo-rarily but in the end, it causes much more waste of time. And we never know what it may bring to us. So we should all be aware of the rules and abide by them.

2. Boomerang: pre-production, production and post-production process

2.1. Pre-production

2.1.1. Story

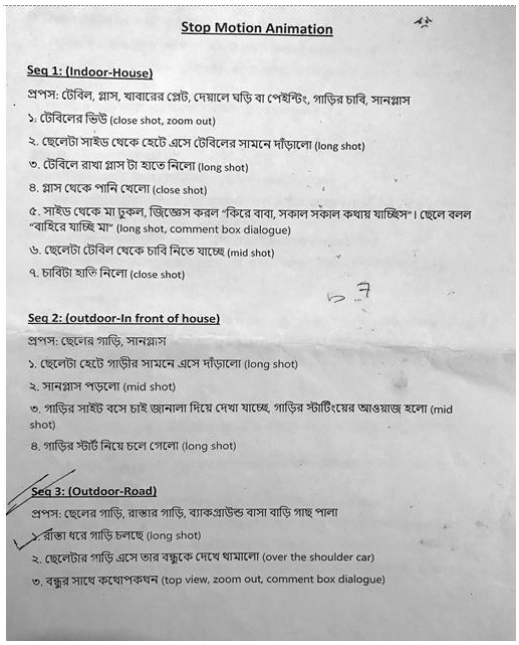
At first a story needs to be come up with. The animation will be made based on that. So the first job was brain storming an idea about social awareness. In this case, we prioritized the problems around us.

2.1.2. Script

After coming up with a story, a script is needed to be made from it. Script is basically a storyboard containing text only. In script, the description of actions is written serially. This helps to figure out what kind of actions can be executed. After that impossible ac-tions are left out or modified.

2.1.3. Story board

Storyboard is the most important part of a production. It contains every single shot, drawn out and written including the frames and camera angles. Story boarding helps us realize how much action and drama we can perform through a stop motion animation. It shows the limitations of this process more precisely. So various problems may rise and they are solved accordingly. Story board-ing saves a lot of time while animating as all the possible prob-lems are previously sorted out and the work procedure is pre-visualized.



Stop Motion Animation

Seq 1: (Indoor-House)

প্রপস: টেবিল, গ্লাস, খাবারের প্লেট, দেয়ালে ঘড়ি বা পেইন্টিং, গাড়ির চাবি, সানগ্লাস

১. টেবিলের ভিউ (close shot, zoom out)

২. ছেলেটা সাইড থেকে হেটে এসে টেবিলের সামনে দাঁড়ালো (long shot)

৩. টেবিলে রাখা গ্লাস টা হাতে নিলো (long shot)

৪. গ্লাস থেকে পানি খেলো (close shot)

৫. সাইড থেকে মা ঢুকল, জিজ্ঞেস করল "কিরে বাবা, সকাল সকাল কথায় যাচ্ছিস"। ছেলে বলল "বাহিরে যাচ্ছি মা" (long shot, comment box dialogue)

৬. ছেলেটা টেবিল থেকে চাবি নিতে যাচ্ছে (mid shot)

৭. চাবিটা হাতি নিলো (close shot)

Seq 2: (outdoor-In front of house)

প্রপস: ছেলের গাড়ি, সানগ্লাস

১. ছেলেটা হেটে গাড়ীর সামনে এসে দাঁড়ালো (long shot)

২. সানগ্লাস পড়লো (mid shot)

৩. গাড়ির সাইট বসে চাই জানালা দিয়ে দেখা যাচ্ছে, গাড়ির স্টার্টিংয়ের আওয়াজ হলো (mid shot)

৪. গাড়ির স্টার্ট নিয়ে চলে গেলো (long shot)

Seq 3: (Outdoor-Road)

প্রপস: ছেলের গাড়ি, রাস্তার গাড়ি, ব্যাকগ্রাউন্ড বাসা বাড়ি গাছ পালা

১. রাস্তা ধরে গাড়ি চলছে (long shot)

২. ছেলেটার গাড়ি এসে তার বন্ধুকে দেখে থামালো (over the shoulder car)

৩. বন্ধুর সাথে কথোপকথন (top view, zoom out, comment box dialogue)

Fig. 1: Script of the Stop Motion Animation.

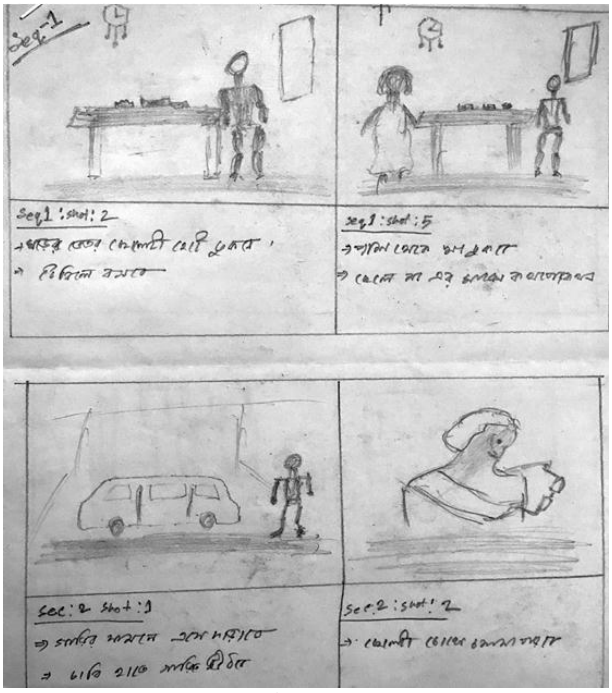


Fig. 2: Story Board of the Stop Motion Animation.

2.1.4. Group forming

After the story board is ready a group of 5 people was formed. After discussions and deliberation, they collected and bought all the equipment's required for the project.

2.1.5. Creating process

Character: For the animation, 1 or 2 basic characters and a few secondary characters were needed. So we made total 7 characters. But the making of characters took a few attempts for coming up with a process that would work somewhat perfectly. At first the shape of the skeleton was drawn on a piece of paper. The height was set 5 inches, comparing with 5 feet as a standard height. Then the skeleton or the armature of the character was made out of steel wires by bending and twisting them with pliers using the drawing as a stencil. After the skeletons were made it was time for making the body or theoretically the muscle part of the character. Here is where the attempts took place.

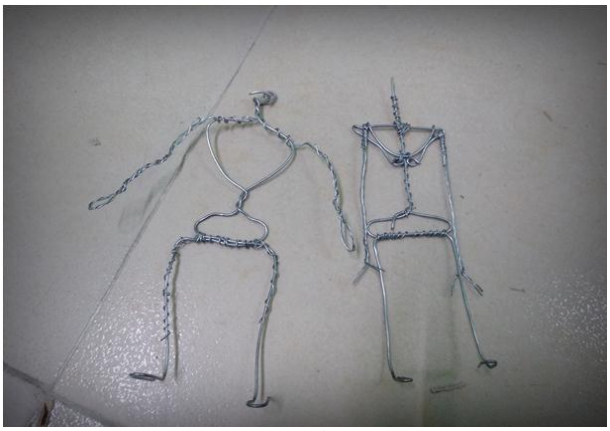


Fig. 3: Basic Character Design of the Stop Motion Animation.

Attempt 1: Using paper clay: Paper clay was used to cover the torso, legs and arms keeping essentially the areas with movement or bending uncovered. After letting it dry for a while it was tested for animating. But unfortunately the clay broke and came off of the skeleton making it unworthy of use. A head was also sculpted out of clay but it was also unusable for it was too heavy to carry for the skeleton and it couldn't stand up straight.

Fig. 4: Paper clay Design for Character.

Attempt 2: Using melted glue: As a simple test to work with whatever stuff we had in hand, an attempt was taken for making the body with melted glue using a glue gun. Simply pasting hot glue on to the wire skeleton was the technic. But it was too hard to control and did not look as good. So this technique was omitted too.

Fig. 5: Melted Glue Design for Character.

Attempt 3: Using sponge: Pieces of sponge was cut in half. The skeleton was put in the middle then wrapped with two pieces of sponge secured with tape. Then the whole thing was put under pressure for a while for the sponge to squeeze down and loose the fluffiness. Although it was workable, but it wasn't the best and easiest option to work with.

Fig. 6: Skeleton Design for Character.

Attempt 4: Using jute thread: Finally the idea to wrap the whole skeleton or armature with jute thread to make it flesh-like was come up with. It is a very straight forward way, the whole armature was wrapped with thread and a thin wood glue and water mixture was pasted on to it to set the strands of tread together. So far it was the best option as the thread looked good because the color of the thread was close to human skin color and the threads being soft and flexible, it was easy to animate the figure and keep the postures. It was also lightweight, so the figures would stand up straight. After trying a couple of ways to wrap the threads around the armature an ideal procedure was found.

Fig. 7: Jute Thread Design for Character.

Making the head and face: after omitting the clay head and finalizing the jute thread body, it was time for making the heads and faces and hair. Small Styrofoam balls were used to make the base of the heads as they were lightweight. Jute thread was wrapped around them using wood glue. After a few failed attempts it eventually worked out. Thin black cotton thread was used to make the hair. Small strands were first cut out then they were stuck on the heads with either hot glue or wood glue. The hair would later be cut or trimmed to give them different shapes. The eyes were rhinestones colored black. The eyebrows and mouth were black thread.

Fig. 8: Eye Design for Character.

Transport: Mainly 4 types of transport medium was made. A main car for the main character to use, 10 normal cars for streets, an ambulance and a bus. All of them were made of cardboard cutouts and gluing them with glue gun. The main car being the star of the animation was made different than the others. It was a blue convertible. The making process of this was also harder and more detailed. Styrofoam sheet seat and plastic windshield and a cardboard steering wheel was added to it. And the rest of the cars were only cardboard while windows and designs were painted with plastic paint. The ambulance and the bus were made in the same process but their designs were different. The windows of them were made with clear file. Tires of all of the cars and other transports were made of colored bottle caps. All the head lights were made of Styrofoam balls. Clear nail polish was added to the main car and windshield of the bus to make them shiny.

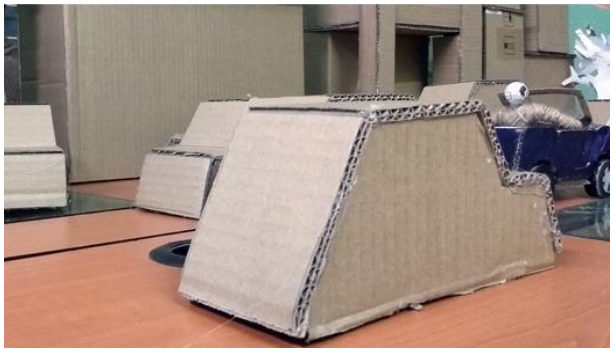


Fig. 9: Transport Modelling.

Figure. 10: Transport Modelling with Painting.

Street lamp: Street lamps were made by using bamboo sticks as a base and wrapping a piece of mount board around it to make the pole. For the lights small plastic spoons were cut in half and glued

together and then glued on to the poles to make a complete street light. Black thread was glued on the poles to imitate wires.
Whole house indoor: The indoor walls were made of PVC board. The windows were cut out and the rods were made of plastic sticks. Window frames were made by cutting Popsicle sticks and gluing them on. The curtain rods were made of bamboo sticks. Printed offset papers were stuck on the PVC boards to create wallpaper. Similarly tiles texture were printed and stuck on the floor to make tiled floor. The table and chairs were made from Popsicle sticks, bamboo sticks and glue. The chest-of-drawers were made of PVC board and then painted with plastic paint. The food and plates were made of clay. The photo frames were made of PVC board cutouts. Flower vases were actually pen caps. And the flowers were either made of paper or real flowers.

Fig. 11: Indoor Design and Modelling.

Ambulance indoor: Again, the indoor walls and floor were made of PVC board. Windows were cut out and the glass-like element is actually clear file cut outs which were colored black. The floor was given some texture by making dents with scissors. The stretcher was made of Styrofoam sheet with bamboo stick legs and wheels. Cloth was used to make the bedding and pillow. The bench was made of PVC board. Saline stand was made with wire by twisting them, and the saline bag was made of plastic. The oxygen cylinder was made of plastic empty juice container. It was colored to seem more realistic. The oxygen mask was made out of thrown away plastic, all the pipes are actually clear plastic threads.
Costumes: All the costumes are hand sewn and the clothes were scrap pieces collected from tailors.

Fig. 12: Costumes Design for Character.

Buildings: There were different types of buildings which were made from cardboard cutouts and attached them with hot glue gun. University, shopping mall, bank, hospital and other buildings were made in different structures by following the same process according to the specific size. At the first step all the cardboards were cut into specific size then attached with glue. After that, windows, door structures were drawn on those buildings by using pencil and then painted them with different colors to identify the door and window. After that, border was marked with marker pen to make a more specific image of a building.

Fig. 13: Building Design and Model.

Traffic Lights: Traffic lights were made by using bamboo stick as the pole and pieces of foam and mount board were as the upper part or body part of the traffic light. The body were made by the foam wrapping with mount board. The light lenses were made by the Styrofoam balls and the visor part of the light was made with mount board cutout. The Styrofoam balls were cut into two pieces and painted them in Red, Green and Yellow color. All the visors were glued together with the mount board body after the lights have been attached with the body. After that the whole body was attached with the bamboo stick then stripes were painted on the sticks.

Fig. 14: Traffic Light Design and Model.

Traffic Sign: The signs were made with bamboo stick and thin cardboard. Firstly all the signs were drawn by following some references of traffic rules in the cardboard cutouts then we painted those bamboo sticks as a stand or base of those signs. A small slit was made on one end of the bamboo sticks and the cardboard was slid into it to attach them.

Fig. 15: Traffic Sign Design and Model.

Petrol Pump: Card board and PVC pipe were mainly used for building the petrol pump shade. The roof was made with the card board pieces which were cut into specific sizes and attached with glue. Then the upper thinner part of the cardboard were torn and

sanded with sand paper to make the roof smooth and give it a tin shade roof look. The poles were made with pieces of PVC pipe and attached with the roof by sticking them into Styrofoam pieces then gluing the Styrofoam pieces with the roof. The base part of the pole were made with Styrofoam which was cut into square shape and sanded to give them a beveled look. After attaching all those parts the painting was done. Two petrol and octane depositor were made out of Styrofoam cutting and then painted with acrylic color, printed writing was cut and pasted with glue.

Ice cream shop: The ice cream shop was made with some Popsicle stick, bamboo sticks and cardboard cutouts. First of all a rectangle box was made by the cutouts of cardboard gluing them together with a glue gun. The shade was made with Popsicle sticks attached with hot glue. Made a stand with bamboo stick and joined with Styrofoam of the upper part of the stick. Then the base part of the shop, the stands and the shade were attached with each other with hot glue after painted them separately. The logo "ice & pop" was made by painting on PVC board.

Broom: Broom was made with bamboo skewer and jute yarn. Some small pieces of jute threads were cut and glued on the end of the stick.

Dustbin: Made from mount board cut outs. First we made a cylinder by curving the mount board and stuck them with glue, after that we painted them with acrylic color. A mini dust carrying cart was made out of mount board cut out gluing together. The handles were made of bamboo stick and wheels were made of painted mount board cut out.

Popcorn & ice cream: Popcorn was made with Styrofoam dust and ice cream was made with paper clay and painted to give an ice cream texture on it.

Pond: One pond was made for the park area. A clay bowl was used to make the pond. Some masking tape was added on the edge of the bowl to make the old and scratchy concrete pond bank. Then plastic emulsion paint was used to finish the look. Two paper lotus was made on PVC board base for floating on water and leaves were made of PVC board cut out and then painted with acrylic color. Some stones were made for the pond bank. These were made of Styrofoam ball cutting and then sanded with sand paper to get the irregular stone size and then painted with acrylic color.

Fig. 16: Pond Design and Modelling with Flowers.

Tree: Two type of trees were made; large and small. Four mount board cutouts shaped like tree trunk and branches were glued together to make the trunks for the large trees and then painted with color. Leaves were made of green colored paper. The small trees were made of dead Tutsi (Ocimum tenuiflorum) branches and colored Loofa sponge, coated with green colored wood grains as leafy bush on top.

Fig. 17: Tree Design and Modelling.

Road: The roads were actually the base of the set. Styrofoam board was used to make both roads and sidewalk. Roads were painted with black color and black colored scrap wood powder was spread on it to make the rough surface of road. The sidewalk was nothing but Styrofoam board just sanded on the edge and then painted. The road divider was made of Styrofoam base with black and white stripe colored PVC board cutting and green colored handmade tissue paper as moss texture.

Fig. 18: Road Design and Modelling.

Fence: The fence was made out of sliced Popsicle sticks and thin bamboo sticks glued together.

Benches: Two benches were made for the park. They were made of thin plastic rod cuttings glued together by hot glue gun.

Park: The Park was made basically on a Styrofoam board painted with green colored plastic emulsion paint and green colored wood grain on top as grass. A round hole was cut in the middle of the board and pre-made pond was set there. Then pre-made trees, benches and fence were added to finish the look.

Fig. 19: Park Design and Modelling.

2.2. Set setup & production

After setting all kinds of object characters, we built the set. We setup the whole set by leveling Styrofoam. We didn't really fix the objects in its place because in some cases we used the same objects, even buildings, by rotating them or making them upside down. We set the objects in the base of Styrofoam through alpines. We cut leafs into pieces and spread them in different places of the set to make it look realistic. Wooden particles were also used in this regard. We wanted a variant color like sky blue color in the background. So we used sky blue fabric behind the set to build the background.

Fig. 20: Stop Motion Background and Set Design.

2.2.1. Light setting

One of the most challenging parts was the light setup phase as it was a giant set that we made. Firstly, we set 3 big LED lights over the whole set. Still it was not sufficient. So we used umbrella lights in order to run the shoot. One soft box light was used upon the characters. In some of the special moments we used halogen light to manipulate the colors of the environment. We played with lights and shadows as well by using a reflector

2.2.2. Camera setting

In stop motion works, cameras play a vital role. So a good lens can be of huge support. To operate the camera, we didn't really have too many instruments as this wasn't any commercial project. We used Nikon D750 and Nikon D7500 DSLR camera. Four different lenses were used to capture the whole video, which are- 50mm Prime, 24mm Prime, 70-200mm Zoom lens and 18-140 Zoom lens. The place being quiet small, we had changed the lens time to time according to our needs.

Fig. 21: Camera Setup for Shooting.

2.2.3. Software and instrument

After finalizing the light and camera setup, we concentrated on a good computer, in which the software for image capturing will be installed and used. We used two tripods and another monitor to preview the captures. We used software named Dragon Frame which needs to be connected with the camera. So we installed the software in a laptop and took the captures with the help of it. This software is mainly built to work on stop motion videos. Work becomes easier through this software as it provides the benefit of seeing the preview and work accordingly.

2.2.4. Shooting

As stop motion animation is all about making videos with single captured pictures, we standardized it on 15 frames per second. Character animation was another challenge that we faced. We had to move the elements very carefully and neatly for a proper capture. Even in slight shake of the camera, we had to retake the whole shot. The objects were moved frame by frame even the body parts of the characters were moved by our own hand with a lot of care. For this particular stop motion animation, we captured around 5000 images.

Fig. 22: Stop Motion Shooting Setup.

2.3. Postproduction

2.3.1. Editing software

We used five different software in the editing panel which are- Adobe After Effect, Adobe Premiere Pro, Adobe Photoshop, Adobe Illustrator, FL Studio.

2.3.2. Composite

Through composite software, we turned the images into video. In that context, we used Adobe After Effect 2017. The settings for composition were frame rate 15fps, resolution 1920*1080. In case of small corrections, we used Adobe Photoshop 2017. In this stage

we dumped some images which had perspective, composition or lighting issues, so that those don't hamper the quality of the whole animation.

Fig. 23: Postproduction Working Process.

2.3.3. Colour correction

Composing the files in After Effect, we cropped them according to our needs and then the whole project was shifted to Adobe Premiere Pro 2017. Here we did all the color corrections. We did manual color correction as well as we used Red Giant Plug-in software to do color correction. Keeping specific environment for different shots in mind, natural colors were set. Our set being much colorful and because of the sensible light setup high level color corrections were not really needed.

2.3.4. Sound

Sound gives life to any kind of video production. In this project some sounds were taken from internet and some were made by us. We used FL Studio Audio software in order to make some of the sounds. Other than that we bought some copy right free music from internet and used them in the animation.

2.3.5. Final render

After the sounds were ready we imported them to Adobe Premiere Pro and merged them with the video. By using Adobe After Effect we made the Intro, Title and credit list of the short film and imported them in Premiere Pro as well. After bringing all the things under one roof, we rendered the file for final output. The format which was set in the composition of Adobe After Effect, the render occurred in the same format.

3. Results and discussion

3.1. Study design

We conducted a survey to see that how many people have got the proper message of the Stop Motion Animation short film and how much awareness it has spread. It was a tough job to conduct the survey as it wasn't possible to show it to a big number of people together and get feedback from them. So we started the survey in online basis and asked some questions to the viewer's regarding the short film. Thousands of people saw our short film and we got amazingly positive feedbacks. But we also wanted to know if everyone, who loved the short film, has understood the proper message from the short film. We conducted the survey upon 300 people which included males, females, people from different ages, job holders and students etc. We uploaded the video in a YouTube channel and those 300 people saw our stop motion animation. We made so many different types of questions as about the whole short film. But our main concern was to know if the short film has made them more aware and if they agree to the message. We also asked that if they face the same problem, and if they think about it. As the short film was based on traffic jam, a major problem of our country, people were really cooperative. So around 300 people answered all the questions online.

3.2. Qualitative feedback

After conducting the whole survey, we did detailed analysis over the answers we got. We asked 13 questions in total. In the survey 69.3% people were male and the other 30.7% were female (see figure 24).In case of the age limit there were 65.8% of people within the age of 21 - 25. Most of the people were students and job holders (see figure 25).

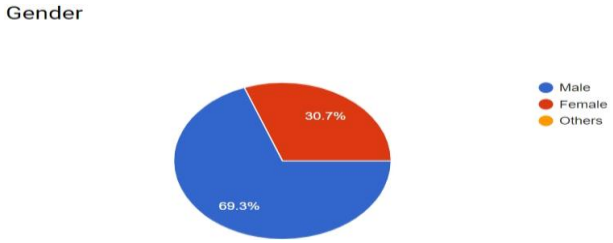


Fig. 24: Survey Result Based on Gender.

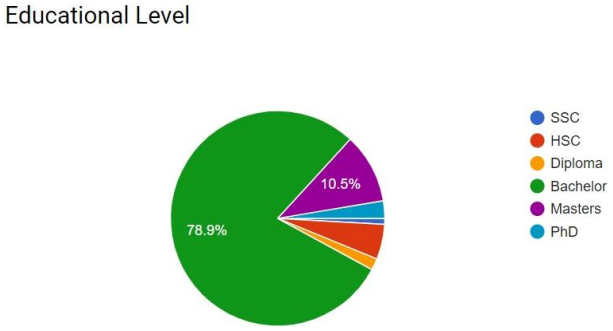


Fig. 25: Survey Result Based on Education.

Among them 91.2% people had clear idea about stop motion animation (see figure 26). 95.6% people recognized this stop motion animation as an educational short film (see figure 27) and 98.2% people agreed to the fact that it created social awareness (see figure 28).

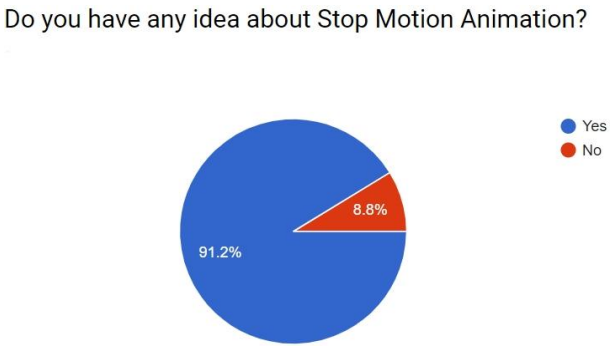


Fig. 26: Survey Result Based on Knowledge about Stop Motion.

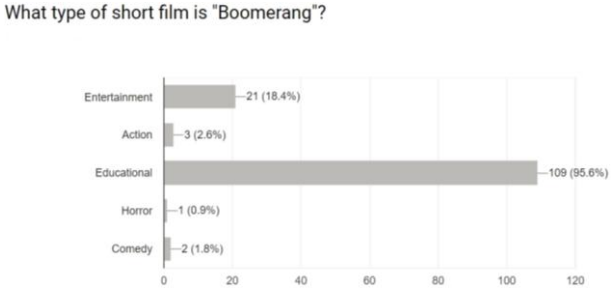


Fig. 27: Survey Result Based on Film Category.

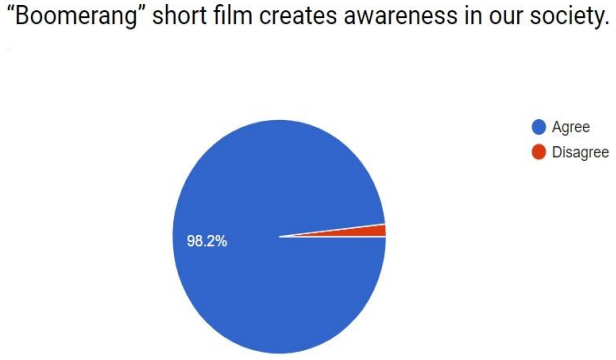


Fig. 28: Survey Result of Awareness.

96.5% people gave their opinion about the animation being related to real life (see figure 29) and 88.6% people themselves faced this kind of problems (see figure 30). 94.7% people agreed that this animation made an impact on the society and the problem shown in the short film should be abducted from the society (see figure 31).

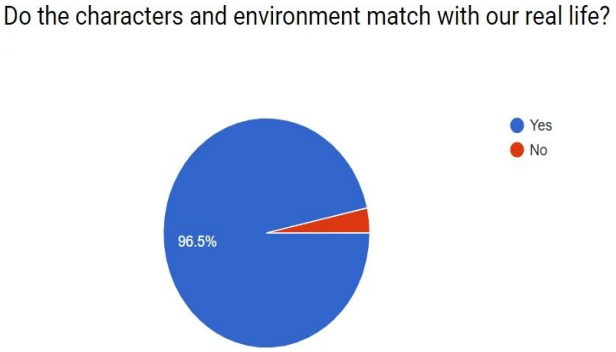


Fig. 29: Survey Result of Character and Environment Match with Our Real Life.

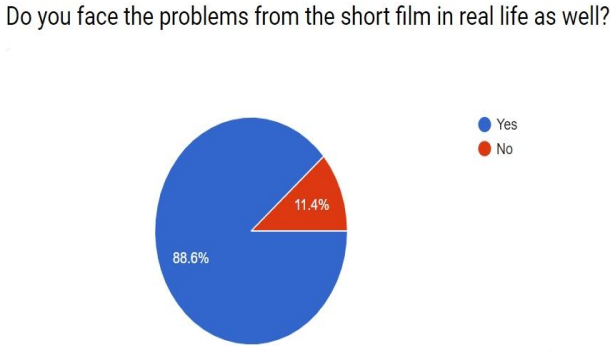


Fig. 30: Survey Result of Facing Problems in Our Real Life.

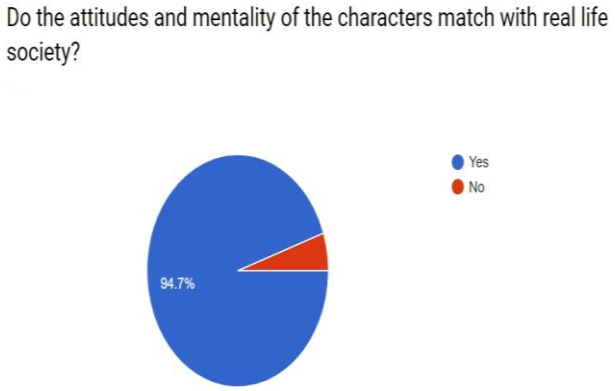


Fig. 31: Survey Result of Attitudes and Mentality of the Character Match with Real Life.

94.7% people want to solve these types of problems (see figure 32). The most focused issue of this short film were Traffic Jam and Consequence of action, people agree to this statement in the percentage of 78.9% and 37.7% consecutively (see figure 33).

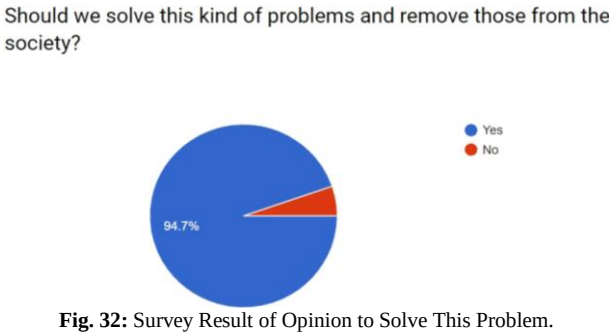


Fig. 32: Survey Result of Opinion to Solve This Problem.

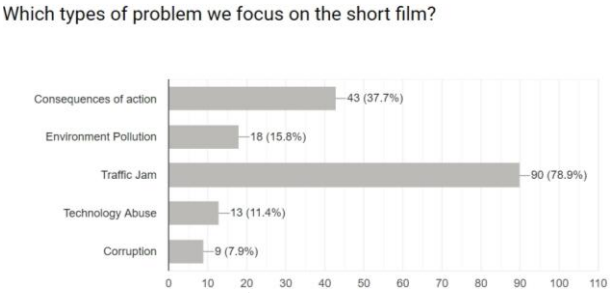


Fig. 33: Survey Result of Problem We Focus on the Short Film.

4. Conclusion

Finally, from the results we got from our survey, we understood that our stop motion animation made awareness among people. The audience could realize their own faults and they felt the necessity of solving these problems by being well aware. Even they understood the concept of being responsible for their own hassles. Short films created by stop motion are hardly found in our country. Till now, Boomerang is the longest stop motion animation in Bangladesh. We wanted to make a scope for spreading awareness through the techniques of stop motion. There were also other ways that could have been used to do so, but we actually wanted to create awareness and that also through a new way. From the bottom of our heart, we hope that Boomerang stop motion animation will have a huge impact in spreading awareness and also in the process of solving these problems which will lead us to a better society.

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