CHILDREN AS FILM MAKERS

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Schools largely draw upon written assessment focusing on language abilities of students. We wondered whether drawings that require other abilities can be used for assessment of students. Earlier research has attempted to connect children's drawings to their social abilities and intelligence. However, given the significance of drawings, their potential has not been adequately realized in school education. We focused on studying communication ability in children through the medium of visuals. The study emerged from a workshop in which we taught children to create their own animation films using stop motion technique. A group of eight students (studying in 4th and 5th grade) were taught how to use a smartphone for making an animated film. After learning the technique, students thought of a story and animated it by using snapshots of paper cut-out drawings. We observed that some students could communicate through film what they wanted to convey more successfully than others and this was largely because their stories had a clear narrative structure, with a beginning, middle. The results of this study align with larger educational research wherein drawings can be used as means for understanding visual communication in children, especially in the form of visual narratives. (Doherty-Sneddon, 1996; Cox, 2003).

Introduction

Schools are not just places where children acquire new abilities, but also places where students are evaluated for these acquired abilities. In recent years, with growing concerns over developing critical thinking, the focus has shifted from memorizing to developing overall intellectual capacities which include higher order thinking skills. Importance is also given to the development of motor and physical abilities in the form of drawing classes and physical education, while some schools or universities may emphasize courses on developing communication abilities. These communication abilities often refer to verbal communication. Thus, there is not much focus on developing visual communication abilities of students. According to Vygotsky, "*Drawing...is the primary form of creative activity in early childhood*" (Vygotsky, 2004). Drawing, however, is a neglected ability and is not highlighted in schools. Being able to communicate using visuals must be seen as a distinct ability, different from general verbal communication. The ability of visual communication may not 'only' be required by professionals who work in art and design industries but is required by any person who is trying to present some idea to an audience. If teachers could develop the ability of visual communication themselves, they can play an important role in creating visual experiences for their students, without relying upon ready-made audio-visual packages that may not be tailored to specific local context of a classroom. Moreover, it would be interesting to learn how students respond when given the task of telling a story through a visual medium like animation film making, that requires them to make

drawings. In this study, we are interested in comparing the quality of visual communication among visual stories created by a group of children.

Literature

Existing research on the subject of drawings by children comes from two different domains. One domain is the study of children's drawing and its relationship with intellectual and social abilities of children. A separate domain is that of visual communication research. We looked at children's drawing related issues in both these sets of literature. Florence Goodenough (Jolly, 2010), proposed that drawings could be a measure of a child's intellectual abilities (Goodenough, 1926) and created the "Draw-a-man" test for measuring intellectual ability through analysis of drawings made by children (Schloss, 1969). Dale Harris extended this study and proposed that the quality of drawings could indicate the level of intellectual maturity attained by children at different stages of development (Harris, 1963). The Draw-a-man test has been extended later by other researchers for testing a person's emotional state and interpersonal adjustment (Short et al, 2011). Similar tests have also been used for evaluating clinical disorder in children (Ireton et al, 1971) and emotional disturbance through Draw-a-Story test (Silver, 1988).

Despite the large number of publications on the subject, the reliability and validity (Pringle, 1963) of Draw-a-person (DAP) test for assessing children's intelligence at all ages has not yet been established (Willock et al, 2011). However, there have been efforts to improve the definitions of scoring instructions for the raters in the DAP test to improve its capacity to predict intellectual abilities of children (Phillips, 1973). While these studies have tried to infer the mental state of a child through her drawings, our objective is different. In this study, our focus is on understanding how well children can communicate their story ideas through drawings. According to Anim (2012), drawings can be used as means for developing communication ability and self-expression in children.

Since communication with visuals is a subset of communication theory, most of the rules of communication theory are also valid for visual communication. The SMCR model of communication explains the process of communication in terms of four main factors (a) *Source*, (b) *Message,* (c) *Channel* and (d) *Receiver* (Mabulay, 1960). Here, *source* is the starting point of the *message* which can be a single individual or a group sending a *message* to a larger audience. The *message* is the content to be conveyed that is encoded via language. The *message* is selected specifically for an 'audience' by the '*source*' and is formed of some elements that arethe components that combine to form the *message*. The organization of the elements is the structure that affects the overall quality of communication of the *message*. An aspect of communication is the *channel* which is the medium through which the *message* moves from the *source* to the audience. There can be a *channel* of hearing, seeing, touch, taste or smell. In visual communication, the *channel* is mostly images and to some extent sound, to support the visuals. *Channels* are also seen as media such as, books, television, radio, newspaper, magazine and the digital medium. The final aspect of communication is the *receiver,* which comprises the audience of a *message* in general, and can at times be a person in one to one dialogue or it could be a large group of people. How the *message* is sent or received depends upon the attitudes, knowledge and social-cultural contexts of the *source* and the *receiver*. Communication is the link between the source and the receiver. For effective communication, there needs to be a match between the *source* and the *receiver* (Bettinghaus, 1960). It is this effectiveness of *message* communication between the *source* and the *receiver*, that we tried to assess in this exercise using children's drawing and animation.

Methodology

As identified in the SMCR model of communication, our objective was to assess how clearly the message was transmitted from *source* to *receiver* through the *channel* of an animation film made using hand drawn paper cut-outs. In order to break down the structure of the *message* to its constituent parts, we used elements of foreground and background in the picture as units of analysis. Foreground and background are the essential elements of a picture's composition (Watson, 2006). Professional artists and photographers use these elements to draw attention of the viewer to some aspects of the picture that are necessary to convey the *message* that the *source* wants to communicate to the *receiver*.

Source: The sources in our study were 14 students studying in 4th and 5th grade (8 to 10 years age). These boys (10) and girls (4) were part of a summer camp at the Homi Bhabha Centre for Science Education (HBCSE). Among the numerous activities that students were involved in, one activity involved making a stop-motion animation film. Students were taught the technique and then asked to form groups to make a film with this technology. To begin with, students had to think of a story and draw the main characters in the story and the background scenes of the story. The characters were then cut-out and each individual character was shot with a still camera of a smart phone. Every change in position of the character, was a still photo of the cut-out character.

All the still images were processed in an Android phone application called 'Stop Mo pro'. The application shows the preview of the still images running at 'x' frames per second (fps). For this exercise, we chose the frame speed of 16 fps. A total of 4 groups were formed, one child refused to be part of any group and he made the film independently. We could see the influence of popular stories in the selection of stories chosen by students to animate. Figure 1 shows the titles and snapshots of the films.
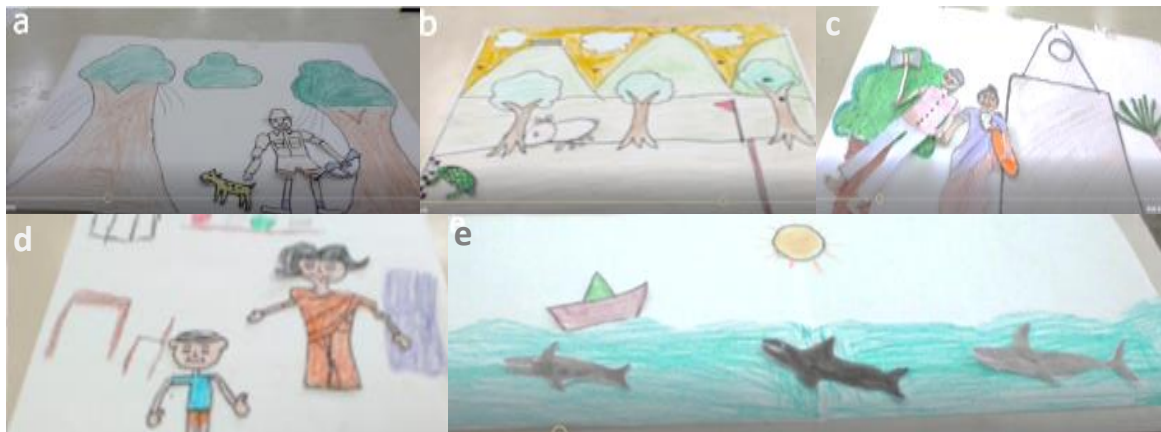

Figure 1: Films produced by children (a) Hunter, (b) Hare and the tortoise, (c) Jungle book, (d) Mother and child, (e) Sharks.

Message: The message consisted of a story that students had chosen or thought out to animate. The groups were free to animate an existing story or create a new story.

Channel: The medium which carried the message of story was a stop-motion animation film which the students made. The films were on an average 20 seconds in duration. When drawing for the story, students generally drew the main characters, the background scene and superimposed the characters in foreground over the background. They used the 'stop mo' application to take photographs of each frame and changed the position of the character frame by frame while taking still pictures of each frame. The application then processed the still frames to produce the illusion of motion and gave the final output in a movie format.

Receiver: Receivers were ten research scholars from HBCSE who volunteered to review the films. They were asked to see the films and answer few questions about the components and structure of the message that the films contained.

Framework for analysis

A questionnaire was used to check how the receivers perceived the message of the films and contained questions about the foreground and the background. For example, we checked whether receivers were able to identify the characters in the foreground and their relationship with each other, and if they were able to identify the background elements (forest, sea, house etc). Finally, we checked whether the receivers were able to identify the stories or describe the story they had viewed. We also checked whether there was any consistency among different receivers regarding their identification of the elements of the story. If different receivers identified different things, then the communication of the story was not effective, while consistency among responses of receivers meant the communication was clear and effective.

We assessed the quality of foreground and background drawing of the picture/film through the developmental stage theory of children's art. Children's drawing quality progresses through 5 stages of development (Roland, 2006). The first stage is called *scribbling.* In this stage the child only draws scribbles of circles and lines. The second stage is a *pre-schematic stage* where the child begins to depict objects through minimum lines. She does not draw how an object looks like but what she remembers about the object. The third stage is the *schematic* stage. Here the child begins to draw objects that resemble abstract form of reality. The fourth stage is a *transitional* stage where the drawings are closer to being realistic and the fifth stage is *realism* stage where the drawing resembles an actual three-dimensional object as it would appear in real life with light and shade (Salome & Moore, 2017). We assessed the drawings in foreground to find out the stage of development that the drawing represented. One point was given to each stage of development. This assessment of stage of development was done by the first author. It was also tested by showing one single drawing sample from the movie to the 10 receivers who had to identify the drawing. Their response was correlated with the quality of drawing score given by the author. Our objective was also to find out whether the most effectively communicated story also had the best quality of drawing.

Data

Table 1 presents the responses of the receivers to the 5 films made by the students. The vertical columns represent each film with its title. The horizontal rows contain data of questions that were gathered from *receiver*'s questionnaire (refer Table 2 for the list of the questions). For example, the *receivers* were supposed to identify the main characters present in the foreground. We have tabulated

only those responses in which more than 4 *receivers* identified it similarly. We chose 4 because we wanted more than 50% of receivers to identify an element from the visual similarly. With reference to the film titled "Hunter", 8 receivers identified "hunter" as one of the main characters and only 4 people identified a dog as one of the main characters. This implies that the drawing of the "hunter" very clearly communicated who he is, but the drawing of the dog was not clear enough to be identified easily.

Questions for which no similar responses were evoked are marked with a cross (X) symbol. Row 8 contains the score about the developmental stage of drawing. A score of 1 for detail means only scribbling, 2 implies that a complete stick figure is drawn, 3 means a figure resembling some real object is drawn, 4 implies that a figure with clothes and color is drawn (a stage between symbolic and real drawing). Score 5 means that a realistic figure with light and shade color is drawn. Apart from the data about films, we also asked some receivers to identify one individual drawing element (rabbit/hare) from the hare and tortoise film.

	1 (hunter)	2 (race)	3 (jungle book)	4 (mother-child)	5 (shark)
(1)	Hunter (8), dog (4), deer (6)	Tortoise and Hare/rabbit (10)	Man, woman, child (6)	Boy, mother	Sharks and boat (7)
(2)	Hunter-prey (7)	Competitors (8)	Husband, wife, child (4)	Mother and son	X
(3)	Man, hunting animal (9)	Running race (10)	X	Boy going out of house (7)	Sharks playing in sea. Boat obstructing play. A shark topples the boat (8)
(4)	Outdoor (10)	Outdoor (10)	Outdoor and indoor (8)	Indoor (10)	Outdoor (10)
(5)	Forest (10), sky (4)	Sky (10), hills (10), birds (4)	House (9) Trees (7)	House (10), dining room (5), window (4)	Sea (10), sky (5), sun (5), boat (3)
(6)	Hunting in jungle (8)	Slow and steady wins (4), Running race (6) Overconfidence	X *Preserve trees (2)*	X	Play and movement of fish (3). Don't disturb the ecosystem/fish
(7)	*	Rabbit and tortoise story	X	X	X
	4	*3*	*4*	*3*	*4*

Table 1: Receivers' identification of foreground and background elements in the 5 films

Foreground: (1) Who are the main characters in the picture/film? (2) What is the relation between the characters? (3) What is the main action that the characters are doing?

Background

(4) Where is the action happening? (indoor/outdoor) (5) Based on your previous response, select all indoor and outdoor elements that you can identify in the picture. Add any other element that you see which are not given in the list.

(6) What do you think is the theme of the picture / film? (7) Can you recall any story on which the picture is based?
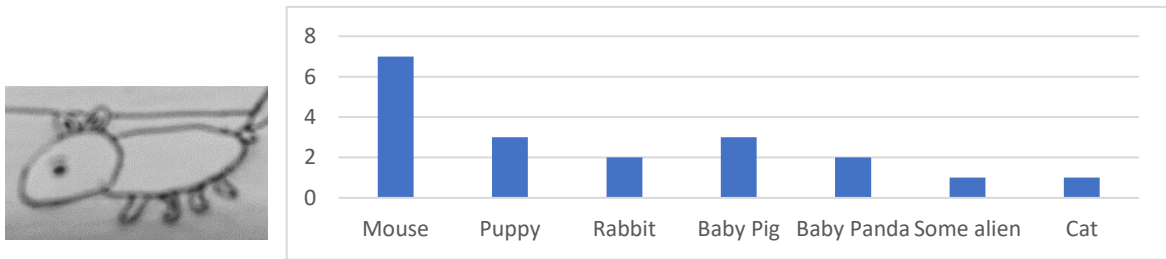
Table 2: Questions for the receivers

Figure 2: Number of viewers who identified the drawing as rabbit/hare or some other animal

Results

Only 2 groups (group 2 and 3) had made film about a story, while groups 1, 4 and 5 animated a sequence of events. The "jungle book" story had the highest score (4) in the quality of individual foreground drawing, but the film could not communicate clearly the main event of the story to the audience. In the "hare and tortoise" story, most receivers misunderstood the individual drawing of the rabbit as a mouse, but when shown in the film, all receivers identified it correctly as the hare and tortoise story. In the film "mother and child", most people correctly identified many individual elements of the film, but the film could not communicate the main event in the story. Only those films that had a narrative structure with a beginning, middle and end could communicate their main theme to the audience, while those that did not have a narrative structure could not communicate their theme.

Discussion

Communication value of a drawing of /for a story does not depend upon quality of individual drawings. A story made with good quality individual drawing may fail to communicate the theme of the story. For example, in the case of "jungle book" story, even though the quality of individual drawing of father and mother is at 4th stage of development, the receivers were still not able to identify the story of "jungle book" in the film. The reverse may be true as well. An individual drawing that is not of good quality may acquire a meaning if it is placed in a composition in relation to some other elements of drawing and action. All receivers could easily identify the story of "hare and the tortoise",

but most receivers when shown the drawing of a rabbit in isolation, could not identify it appropriately. The drawing is practically non-recognizable without its context and the presence of more elements in the drawing do not ensure that it will be communicated well to the audience.

Stories and events with a structure of beginning, middle and end were more easily identified by receivers than those events and stories that did not have this structure. In the "mother and child" story, receivers correctly identified the maximum number of objects in the background, yet they could not comprehend the main event. We found that it was not necessary that an existing popular story will inherently have a narrative structure. For example, the "jungle book" story did not have a narrative with beginning, middle and end, while the "shark" film, which was not based on any existing popular story, had a clear narrative structure.

Conclusion

Examinations in schools are mostly based on testing students' written and verbal communication skills. Even if students are tested for specific subject matter knowledge like science, social science or mathematics, proficiency in any written language is a necessary requirement for students to present their subject matter knowledge. Because of this, students who may be able to answer some questions in their native language, may find it difficult to write the same answer in a second language like English (Aula, 2014). An alternative to written communication is visual communication. Some students may have the ability to communicate some ideas with a narrative structure through visual stories. We have seen that communicating messages through a visual story does not require acquiring proficiency in drawing. This becomes evident when students are asked to illustrate a story with a complex composition instead of drawing of a single element/object. We propose that the possibility of evaluating students' communication and comprehension ability through visual storytelling can be assessed and improved. In the current and traditional educational evaluation, students are assessed based on their ability to answer some predefined questions. However, some students, or all, may have the capacity to articulate ideas using visuals.

The task of film making for communicating a story seemed to be motivating for all children to participate. We feel that while it may seem like a complex task in which the whole scene must be animated as compared to drawing a static scene, this complexity along with use of technology like smart phone and animation apps, appears to utilize multiple task performance abilities of children. The tasks involved are; thinking of a story, writing a script (optional), planning the various scenes of the film, planning the foreground and background action, planning and drawing the characters, thinking of logical flow of action and scenes, and dealing with the technical aspects of mobile application to render a video output. Having many activities would aid collaborating students who can devote their energy on any task of their liking. The final output would be a joint effort of a group of children. Motivated by the findings of this research, we ask a further question, can the ability of students to express their ideas on a topic in visual format, be used as an effective instrument for evaluating students' understanding of concepts and ideas?

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