Designing for Children
- With focus on 'Play + Learn'

Aspect of **'SUBTLENESS'** in the learning environment

Vaishali Borker, B.Arch; M.Des. FreeLancer, India. vaishaliborker@gmail.com

Abstract: Expose children to various environments and let them absorb like a sponge. With the environment or study material being imposing and 'obvious', the children may gather maximum information. But if the environment is subtle, optimum impact may be achieved with immense possibilities for developing a more creative, thinking individual.

Key Words: Subtle, Story-telling, 2-frame, 4-frame, Several frames, imaginative

1. INTRODUCTION

Theories like, 'One need not tell a moral to a child at the end of a story' are already gaining ground. That becomes spoon-feeding and imposing, and defeats the purpose of learning. Similarly, could too many or elaborate illustrations amount to spoon-feeding, leaving nothing for interpretation and restricting the readers' imagination for exploring newer perspectives or thoughts?
If the text in a story fails to conjure up an image before your eyes, it can be boring to read; similarly if illustrations do not speak to you, or inspire you, they could be ineffectual; and may contribute nothing towards the educative aspect of the child. Story-telling itself is a subtle way. Taking 'subtlety' further in narration of a story, my research, focuses on illustrations used in story telling; Should they be 'obvious' or 'subtle'? Can subtle or suggestive illustrations help develop a more creative, thinking individual.

2. BACKGROUND

'Our education system needs an overhaul' is now, a clichéd statement. In India, we often blame the British for the education system based on Mr. Macaulay's principles. Ancient Bharat is credited with various discoveries in the field of Mathematics, Astronomy, Medicine, etc. What were our ancestors doing right, to develop such a scientific and creative approach? What was the change during the British Raj that had such an effect in the Psyche of the Indian people, developing a 'so-called' defeatist mindset!

There were many attributes to the Indian way of learning or educating, prior to the Raj. What I present herein, is **one aspect of subtleness** in which the subject of 'Niti-shastra'

that is Science of Rightful Thought and Conduct, 'Uchit achaar-vichaar' was transmitted in ancient Bharat, by way of **story-telling.**

Faced with the challenge of educating three refractory princes, Vishnugupt Chanakya developed a unique pedagogy; for his aim was to teach the princes how to think and not what to think! The stories he used as teaching aids forms the classic treatise Panchatantra. The genesis of Panchatantra having been designed on 'play (tell a story) and learn', my study revolves around the same. Excerpts from the Panchatantra translated by Chandra Rajan, based on the Purnabhadra recension, 1199 CE, is the source for the stories used in the surveys.

3. OBJECTIVES

Broader objective of my experiments and deliberations is to find answers for the following.
- Do stories actually work as a tool for imparting education?
It has been amply proven in various studies, that the memory retention of the subject is much better when presented through story-telling. But can it bring about a change in the psyche or outlook of a person?
- How and why does it work? The more subtle you make the learning experience more the learner or observer has to apply his mind, leading to discovery of fresher ideas. The brain is like a muscle, the more you use it, the stronger it gets, is an oft used analogy. The usage of the brain is more in a 'subtler' more challenging environment. A stronger mind can apply itself more effectively. Can the process be made gainfully cyclical?'
The focus is on illustrations used in story-telling; to find and set guidelines to design the most beneficial illustrations for developing creative, thinking individuals.

- Can 'Subtlety' provide the intrigue and thus the inspiration for further exploration?
- Can subtleness lead to wrong or undesirable understanding? It may sometimes lead to dire consequences.
- What degree of subtleness is desirable?

4. METHODOLOGY

A single episode story without any text has been illustrated in
   1) 2 frames, a key frame at the beginning and end, like Typoglycemia; with one object besides the background, in this case, a wedge, allowing the connectivity between the 2 frames.
   2) 4 frames, depicting the sub-episodes in the story
   3) Several frames, showing each action, in this case 10 frames.

The sample size is 120 children, 40 each for the above 3 sets of illustrations; in age group 10-14 years with equal rural-urban and male-female ratio.
The children were asked to form the story, whatever comes to their mind when they look at the illustrations and write it down.
The take-away or the learning could be anything; but the children were asked to write the moral of the story; only to check ambiguity.
The time spent by each child to write the story is also noted.
There was no restriction for the number of lines or the time to be taken.

5. RESULTS

Illustration type Result	2-FRAME	4-FRAME	SEVERAL	Comments
AMBIGUOUS	10	18	11	When narration has completely gone astray
PERFECT	15	15	17	When narration states that the wedge is removed and the leg/tail got stuck in its place. The removal of wedge being responsible for tail / leg getting caught.
HALF CORRECT	15	7	12	While playing with the wedge, / unfortunately, / distracted hence leg / tail gets caught
TOTAL	**40**	**40**	**40**	
AVERAGE TIME TAKEN in minutes	17.2	15.4	18.2	
Average number of Lines / Words	13.3 160	13.5 162	15.7 188	

5.1 Notes

1) The 4-frame illustration, which one might have thought to emerge as the 'optimum' number, has clearly given the maximum number of ambiguous narration. The probable reasons are discussed, subsequently.
2) The 2-frame and several frames have more-or-less the same number of ambiguities.
3) The perfect answers are almost the same number for all three types of illustrations.
4) The average time taken for the 4- frames illustration is the least, about 1.8 minutes (12%) lesser than the 2-frame illustration and 2.8 minutes (18%) lesser than several frames.
5) The average number of lines is almost the same for the 2-frames and 4-frames illustrations but about 17% - 2.3 lines or 28 words more for the 'several frames' illustrations.

The above results have been discussed at length, individually for each type of illustration. The comments with bullets are the actual as written by the children.
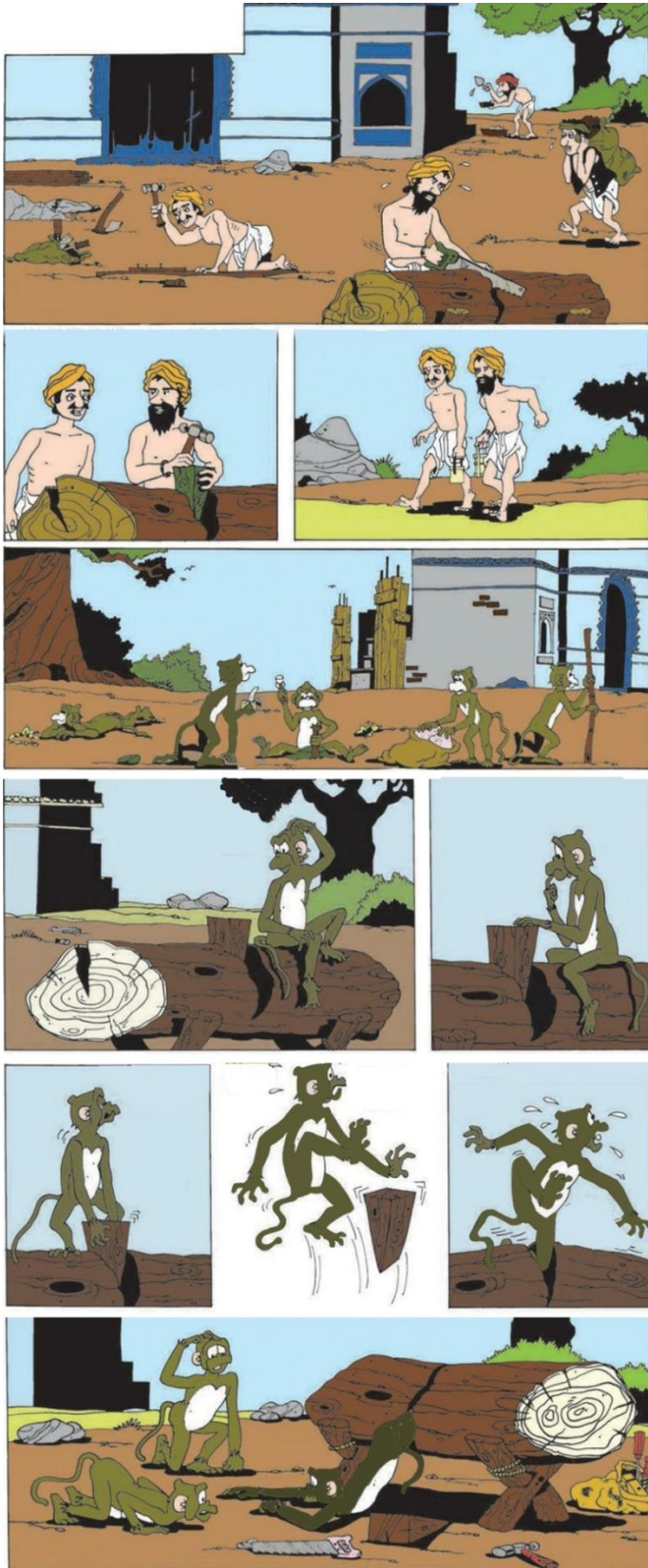
5.2 SEVERAL FRAMES ILLUSTRATION

Figure 1 Several Frames Illustration

One would wonder why or where, the children may have made mistakes, where all-actions have been depicted.

About 50% seem to be due to the brain going into a habitual mode of simply stating or describing the actions without applying the mind.

- Two children - As they were narrating the beginning, like one is hammering a nail, cutting wood, carrying a cement bag, etc. similarly, they went on narrating for the monkeys, hence some perceiving that there were multiple monkeys, one was scratching his head / thinking, another put his finger in his mouth, another pulled out the wedge, and another put his leg into the gap, etc.
- Two children - Construction work is going on… describing each action. Then monkeys come and try to do the work but fail.
- Monkeys come in search of food, as one monkey is seen having a banana. But no mention of leg getting caught.
- Monkeys snatched the food that the carpenters had bought from the shop.
- Monkey wanted to remove the wooden piece to hide inside the log!
- Monkey was pulling the wedge and he suddenly heard a gunshot and his leg got stuck in the wood.
- Monkey was trying to drive-in a small piece of wood into the large piece.

Also, a trend where children propagate to conserve forests- it belongs to the animals; is seen in all types.

- Monkeys were troubling as the villagers were cutting wood from their forest. Our villagers should not cut trees. They have to be fined. So we are not troubled by animals
- Two children in several frames have mentioned the wedge being placed as a trap, to catch the monkeys who were troubling the carpenters. To consider this an ambiguity or a fresh interpretation, was the question while analyzing.

- In the present count, they have been included in the mistakes, as there is no narration mentioning the removal of the wedge and tail getting caught in either. They just say the monkey was trapped. Also, in one, there is a repetition of the carpenters going away and then coming back to set the trap, and then, going away, again. This is clear ambiguity as there are no frames, showing it.

5.3 Four Frames illustration

Figure 2 – 4-Frames Illustration

The 4-frame illustration of the story, which one would naturally think would emerge as the optimum number of frames; surprisingly, gave most mistakes in narration than the other two. It seemed that 4 frames were too much.
Out of the 15, who gave perfect narrations, that is 'the wedge is removed and the tail gets stuck',

- Only 3 have mentioned or noticed frame 2 and 3 – that is, the monkey being puzzled / wondered what the wedge was, then pulling hard.
- 5 out of 14 have mentioned pulling of wedge but not monkey being puzzled. So these 5 children, practically have used only 3 frames to get it right.
- And the remaining 7 have got it right only on 2 frames. The first and last key frames.

The mistakes are majorly due to children ignoring the last frame completely or part of the frame that is they have either failed to notice that the wedge has been pulled out or that the tail is stuck in.

- 2 children state -'Wedge is removed' and falls on his head, due to which the monkey is in pain; fails to notice the stuck tail.
- Pulled the wedge and ran to the carpenter who was taking a nap
- 2 narrations were "accidentally hammered in their own tails", failing to notice the 'removed wedge'
- Tail gets stuck unknowingly, tried and tried and pulled out the wedge and ran away.
- While playing with the wedge, unknowingly tail gets stuck.

Some have completely gone astray, like

- One writes - After all they were monkeys, one monkey started sawing, another's tail went and got stuck in between wood; he tried removing it. Here believing that there were multiple monkeys like some in the 'several frames' option
- Since the monkeys came the woodcutters had to go away.
- Elderly monkeys told the naughty monkey to not go near the wedge but he did not listen. Thus, Moral is 'Listen to your elders'.

Environmental concern is seen. But no mention of what is happening in the illustrations.

- Monkeys were angry because carpenters were cutting trees. No mention of wedge pulled out or tail stuck
- Monkeys believe that the forest is theirs. One of the monkey's tail got stuck and he cried aloud. No mention of wedge coming out.
- The woodcutters destroyed the play area of the monkeys. Hence the monkeys destroyed their wood

5.4 Two Frames illustration

Figure 3 – 2-Frames Illustration

In the 2-frame illustration, the mistaken and perfect narration is more-or-less the same as the 'several frames' narration and so is the average time taken. The average number of lines or words as compared to the difference in the number of frames that is 2 and 10 is negligible, that is 2.3 line which is about 17% less. However as expected the beginning and the end have several imaginations. The mistakes have no particular trend.

- 2 children describe the frame 1 but are unable to comprehend frame 2
- Monkeys attacked the carpenters to teach them a lesson
- Monkey touched the Wedge and got harmed
- Monkey challenged that he could cut the wood with his tail
- Carpenters have kept mangoes, and monkeys came to eat mangoes, but monkey's tail got stuck
- Two children very objectively have read the illustrations correctly but have failed to connect the two frames

Environmental concern
- Monkeys were watching wood-cutters. After they left monkeys scrambled the things. One monkey's tail got stuck and started crying. The work was reason of fear for monkeys and other animals. Here, the moral of the story is "Forests are homes of the animals and we have no right to cut them."

In the 2-frame illustration, the in-between frames of monkey being puzzled, wondered or in confusion, has been comprehended as playing with the wedge, copying the carpenters, playing mischief, etc; and 'pulled the wedge hard' has been narrated by most of those, who have got the narration, right; in spite of no frame being there showing this action.

6. Discussions

Now, taking into consideration other beneficial factors which contribute to developing more creative or fresh thinking individuals like the imagination and creativity in interpretation, the beginning and the end of the narration is observed. And also, other innovative thought in between, if any.

For the beginning, in the narration of 'several' frames illustration, 19 out of 40 began with describing the first frame in detail, one is carrying cement bag, another cutting wood, hammering a nail, etc. which occupied 4-5 lines / 50-60 words without any significance. Few stated briefly that some workers were constructing a house/ temple. One child states that it is a wood-cutting factory.

In the 2-frame and 4-frame illustration, but naturally, there were many variations in the beginning of the story. About 6-7 beginnings with minor variations were seen.
'There was a village named Palampur, near a forest. One day, a wood-cutter came to cut trees. There was also a temple of Narayani, there.'
'There was a thick forest, where-in lived monkeys, deer, tigers…'
Some commented or tried to guess the profession of the wood-cutter/carpenter.
'A wood-cutter named Rama, used to cut trees and sell the wood in the market, and thus he earned his livelihood.'
'A carpenter used to make toys out of the wood and sell in the market.'
'Some villagers had no work / livelihood and hence they were cutting trees to sell in the market.'
'Once upon a time, there lived two friends in a village. …went to the forest to cut trees.'
'Some monkeys were watching from the trees, the woodcutters at work… and later tried to imitate them.'

In the 2-frame and 4-frame narrations, (6 and 5 children, resp.) there was a tendency to name the characters – wood-cutters / carpenters and /or the temple or the village. Only one in the 'several frames' narration named the village. Also, the tendency of monkeys to copy humans is noted by 9 children (5 and 4 children resp.) in their narration and in the

Moral – 'Do not copy others. Do the work only if you know it.' There were none in the 'several frames' narration.

'Monkeys snatched the food from the carpenters', 'Carpenters had to leave as monkeys were troubling them'; Thus, children were also applying actual experiences in life, while comprehending the illustrations; As it is not depicted anywhere in the illustrations.
2 children wrote that the monkey wanted to steal the wedge of wood.

The endings majorly ended in the leg/ tail getting caught or cut, as the monkey tried to rescue himself by pulling the tail. 'After the carpenters came back, they had pity on the monkey and they rescued him.' Or 'the carpenters beat him for his mischief.' Only 2 persons ended it very tragically, that the monkey died. And it is uniform for all 3 types of illustration.

7. Conclusion

Expose children to various environments and let them absorb like a sponge. With the environment or study material being imposing and 'obvious', the children may gather maximum information. But if the environment is subtle, optimum impact may be achieved with immense possibilities for developing a more creative, thinking individual.

With the above assumption, we set ourselves the following objectives and explored.

Do stories actually work as a tool for imparting education?
It has been amply proven in various studies, and in this survey, too it is seen that children have several takeaways in the moral of the story as well as the exercise of the survey, itself of learning how to comprehend the story from the illustrations.
How and why does it work? Can the process be made gainfully cyclical?'
This question has been left unanswered. It will need several more such exercises, with same set of children, to see if their comprehending capability, imagination and creative interpretation has improved; or those who were not able to comprehend it rightly, are now able to do so. A single exercise is a limitation to achieve this objective.
'Subtlety' can provide the intrigue and thus the inspiration for further exploration.
The 2-frame illustration gave almost the same number of perfect and ambiguous narrations, as the 'several frames' illustration. Thus, the subtlety did provide intrigue for children; and they also wrote just as much as several frames. It was observed during the survey, though, initially the children were skeptical and thus reluctant to start, but as they got the hang of it, soon they picked up the enthusiasm and quite enjoyed the exercise. Some even wanted more such exercises. However, this objective has not been sufficiently addressed in the present research paper; And needs further exploration to prove it, conclusively.

The focus was on illustrations used in story-telling; Can subtleness lead to wrong or undesirable understanding? Can it become ambiguous? **What degree of subtlety is desirable?** Or what is the optimum number of frames to illustrate a story? These objectives have been satisfactorily achieved and concluded through the following factors.
   a) The 2-frame illustration and the several frames illustration has given the same number of perfect and ambiguous narrations; 15-17 and 10-11 resp. Hence, we cannot conclude that subtleness leads to wrong understanding.
   b) **The 2-frame and the several frames illustration, has given the least number of mistakes/ ambiguities in narration,** 10 and 11 respectively. The number of ambiguous narrations in 4- frame illustration was 18. Also, 7 out of 15 perfect narrations in the 4-frame type illustration seem to have managed it right, using

only 2 frames. Thus, one may conclude that the best illustration, yielding minimum ambiguous narrations is either only the 'key frames' or 'each and every action'.

c) Number of lines or words written

The children have actively used their minds to create what is not depicted in '2-frames' illustration, and write almost same number of words as for 'several frames'. For 2-frames illustration, average 160 words were written whereas for 'several frames' - 10 frames, 188 words were written; a difference of about 17%, negligible as compared to the difference in the number of frames. Thus, subtlety has certainly benefitted the children as they were compelled to use their imagination, where there were no frames or illustrations.

d) The time factor

The average time taken to narrate the story for the 4- frames illustration is the least, about 1.8 minutes (12%) lesser than the 2-frame illustration and 2.8 minutes (18%) lesser than several frames. The type of illustration where-in the children have spent least amount of time that is applied their mind the minimum, has yielded the maximum number of mistakes / ambiguous narration. The time taken for 2-frame narration is 1 minute, only about 6% lesser than the 'several frames' narration; The 'thinking' that was put-in for individual frame for the 2-frame narration would train the children to apply their mind rather than the 'spoon-feeding' of the several frames.

e) Optimum number of frames for a story, where children have used their imagination or creativity, narrating a lot more than what was illustrated.

In the 'several frames' illustration the thought process of the children seems to have been only to describe what they were seeing.
In the 4-frame illustration, children have tended to ignore frames; sometimes the in-between frames where the narration is correct; and when the last frame is ignored, they have made mistakes in comprehending the story.
Besides, the thought given for the beginnings of the story and some observations in between, by children, as discussed above, show an advantage for the 2-frames illustration.

Thus in conclusion, the minimum, only suggestive key frames or subtlety is desirable where optimum impact has been achieved for a more creative, imaginative output from an individual.

FUTURE STUDIES

The objectives, which have been left unaddressed or require repetitive research surveys, could be a part of Future studies. In this paper, the subtlety related to number of frames or illustrations was explored. In future, the optimum number of elements, used in illustrations and its backgrounds, optimum number of colours, the white/blank space, etc. for illustrations related to children's education can be researched.

Acknowledgement

Special thanks to Prof. Uday Athavankar without whose guidance, this paper wouldn't have been what it is.

References

Figure 1 'several frames' illustion has been taken from Stories from the Panchatantra, 5-in-1, Vol 1004, Amar Chitra Katha Pvt Ltd. Available on Kindle [Accessed and bought on 1August 2018]