

Storytelling: An Innovative Teaching Device to Teach Science

K. Nisha ^{1*}, N. Prema ²

¹ Ph D scholar, SRM School of Teacher Education and Research, SRM Institute of Science and Technology, Chennai, INDIA

² Guide, Supervisor and HOD, SRM School of Teacher Education and Research, SRM Institute of Science and Technology, Chennai, INDIA

* CORRESPONDENCE: ✉ nisha.narsikar@gmail.com

ABSTRACT

Story telling can be used as a constructive teaching device for teaching science. Constructivism means constructing knowledge by the learner on his/her own. Story telling involves construction of characters, their physical and behavioural attributes, a plot, setting etc. in short constructing a story. These stories can be made on difficult science topics. The seemingly difficult and uninteresting science topics can be made interesting through building up of stories. It develops the creative thinking abilities of the learners and makes the learning a joyous experience. This paper talks about how story-telling can be used as an innovative and effective constructivist device of teaching of science.

Keywords: storytelling, constructivism, science

INTRODUCTION

Imagine a 6th Std. general science hour going on in school. What would you expect from a science teacher? You would expect the science teacher to point at some drawings made on the black board and explain them or show some charts or perform a small experiment appropriate to the 6th std class to demonstrate some phenomenon. But can you imagine a science teacher explaining a science concept through story telling? How do you think that would be? It would be great! Using storytelling as teaching device to teach science would be nothing less than a joyful experience for students.

Science as we all know is a subject with lots of information, facts, ideas, concepts, principles, theories and phenomenon. To remember all of these facts, theories and principles students have to really work hard on their memory. This makes the students rote learners. Science facts, concepts, formulae are expected to be learnt by heart by the students. In keeping such expectations we tend to forget that we are making the students passive mechanical learners instead of active creative learners.

By using storytelling to teach these difficult to memorize science concepts, the teacher can reduce the burden on the memory of the learners. Stories are an integral part of our lives. We have been listening to stories of Ramayana, Mahabharata, Akbar Birbal, Panchatantra, Aesop's fables, etc to name a few. These stories create an experience in the minds of the listeners which is unforgettable experience. It becomes so easy to remember the story, it's characters, the dialogues of the characters, characters' physical attributes and behavioural attributes, the hidden value or the moral of the story, etc. Stories transport us to the world which we cannot be literally experiencing at the moment but can really enjoy experiencing it with imagination.

Article History: Received 8 July 2019 ♦ Revised 19 July 2019 ♦ Accepted 19 July 2019

© 2019 The Author(s). Open Access terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>) apply. The license permits unrestricted use, distribution, and reproduction in any medium, on the condition that users give exact credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if they made any changes.

SIGNIFICANCE OF THE TOPIC

The present paper is significant because it paves way for an innovative method of teaching and learning of science and gives an insight to the science educators into the nature of story-telling and guides them on how analogical stories can be effectively used in teaching and learning of science.

STORY-TELLING AS A CONSTRUCTIVIST TEACHING DEVICE IN TEACHING OF SCIENCE

Teaching or Learning of science can also be done easily through story telling. NCERT has already introduced this method of teaching science through stories in their science textbooks from class one to class five.

The researcher intends to use the same for higher classes especially tenth, eleventh and twelfth where in it's truly a burden on the memory of the learners to memorize such huge amount of information not only of science but of all the other subjects listed in the curriculum. Science teaching can be made more joyous through storytelling.

For example: the researcher has created an original story on the topic of cell division.

The story goes like this....

Once upon a time there was a tiny little kingdom. This kingdom was so tiny and small that it wouldn't be visible to the naked eye. One day one man named Robert Hooke was peeping with his instrument which was called 'microscope' and what do you think he saw? He saw a tiny little kingdom and he named it as "The cell". This kingdom cell was ruled by an enormously elongated thin intelligent king. The king's name was as unique as the kingdom's name. His name was Dubby Nubby Appy. Whenever he used to go to the procession outside his palace, named the "Nucleus" people used to make fun of his name and used to shout heyyyyyyyyyyyyyy Dubby Nubby Appy Dubby Nubby Appy Dubby Nubby Appy Dubby Nubby Appy! Hoo hoo! The king used to get upset with this humour made on his name. He decided to cut short his name and also decided not to move out of his palace in his life again! He named himself as DNA. Now, he was addressed as the King DNA! This kingdom had a prime minister. His name too was funny and people loved to play pranks on him too. They used to shout heyyyyyyyyyyyyyy look who's coming? It's the Rumpy Numpy Ampy, Rumpy Numpy Ampy Rumpy Numpy Ampy hee heehoo heehoo! The prime minister pleaded the king to cut short his name too. And the king renamed the prime minister as RNA!

This RNA was very sincere and dedicated servant of the king. The king loved to eat a lot and lot of tasty food as he believed he would never grow fat! And the prime minister used to please the king's taste buds by serving him with good tasty and variety of food.

One day it so happened that the king started to eat his breakfast and he liked the dish very much. He kept on eating and he was so busy in eating that he never knew that he started to grow fat. He became enormously bulged and exactly the double of his size! Dhoom Dhoom Dhoom! He exploded into two equal parts because of the explosion like a bomb! The explosion divided the kingdom into two equal parts.

Thus this paved the way for the kingdom cell's division! Now the kingdom cell was divided into two equal parts which had everything same as the previous one!

Thus, a story can be created by the science teacher creatively and presented to the students innovatively. Through this the waning interest of the students in the science subject can also be restored. Stories have a larger impact than performing the experiments. Many students develop fear for science subject because they have to perform experiments which are beyond comprehension levels of many below average students. But a story can be an easy and interesting way to create love for the science subject.

Not only the interest is developed, students can also develop creative skills by creating stories themselves by developing characters based on DNA, RNA, other cell organelles, important enzymes like polymerase, etc. Giving life to the essence of entire living things in it itself is a rewarding experience. Students love to imagine and can create fantastic stories themselves.

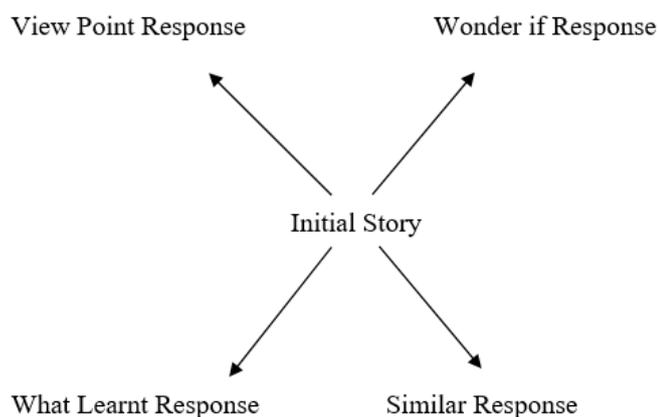
PAST RESEARCH ON THE USE OF STORY-TELLING AS A METHOD OF TEACHING SCIENCE

“Story-telling approach was used during practice teaching wherein the pupil-teacher used Story-telling as a constructivist tool to explain the concept of translation of DNA. Instead of starting the class in usual inductive manner, the teacher narrated the story about the candy factory and correlated with translation process.

The teacher started the lesson with narration of story about David the boss, who owns a candy factory. “David is a rich man who has candy factory and he makes delicious candies of the world. And he has the library of all the recipes stored in his office. As the recipes are with the boss David, similarly the recipe to make the protein is stored in the DNA (boss of the cell) and as the candies are produced in factory, the proteins are produced in the protein producing factories called the ribosomes, as messenger or the peon would deliver the recipe of the candy to the workers from the office to the factory, same way the mRNA is the peon or the messenger in the cell which delivers the message from the DNA- the boss from the nucleus (office of the boss) to the ribosomes (factory)” Thus analogy between candy production and protein synthesis was established through this story. This not only enhanced the aesthetic aspect of pupil and teachers, but the affective domain which is always seen as a neglected aspect in science teaching “(Tandon, 2011).

Story-telling method can be further improvised by adding various dimensions to it as given by McDrury and Alterio’s in 2003 as five –stage model of story-telling.

- A “View Point Response”, which explores different views.
- A “Wonder if Response”, which considers all the different possibilities.
- A “What Learnt Response”, which encourages students to think about the lessons learned.
- A “Similar Response”, which calls for students similar experiences.



CONCLUSION

Story telling is one of the constructive approach which can be used in teaching and learning of science, no doubt there are various other ways in which we can make our lessons interesting and effective in this fast paced world of technology but we just need to challenge our thinking and push ourselves a bit more beyond the envelope to make an impact.

Stories work like a constructive device in teaching and learning of science. Constructing a story is like constructing knowledge through one’s understanding and experience. Hence storytelling can also be called a constructive tool and can very well be included as one of the activities under the theory of constructivism. Constructing knowledge of science through storytelling!

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributors

K. Nisha – Ph D scholar, SRM School of Teacher Education and Research, SRM Institute of Science and Technology, Chennai, India.

N. Prema – Guide, Supervisor and HOD, SRM School of Teacher Education and Research, SRM Institute of Science and Technology, Chennai, India.

REFERENCES

- Glynn, S. M., & Takahashi, T. (1998). Learning from Analogy-Enhanced Science Text. *Journal of Research in Science Teaching*, 35. [https://doi.org/10.1002/\(SICI\)1098-2736\(199812\)35:10<1129::AID-TEA5>3.0.CO;2-2](https://doi.org/10.1002/(SICI)1098-2736(199812)35:10<1129::AID-TEA5>3.0.CO;2-2)
- McDrury, J., & Alterio, M. (2003). *Learning through Storytelling in Higher Education: Using Reflection and Experience to Improve Learning*. London: Kogan Page. <https://doi.org/10.4324/9780203416655>
- Schank, R. C., & Abelson, R. P. (1995). Knowledge and Memory: The Real Story. In R. S. Wyer, Jr. (Eds.), *Advances in Social Cognition*, Vol. VIII, (pp. 1-85), Hillsdale, Erlbaum, New Jersey.
- Tandon, T. (2011), Story-telling --- A constructivist tool in science teaching, *School Science. NCERT*, 49(2), 4-8.
- Yanowitz, K. L. (2001). The Effects of Analogies on Elementary School Students' Learning of Scientific Concepts. *School Science and Mathematics*, 101, 133-142. <https://doi.org/10.1111/j.1949-8594.2001.tb18016.x>

