Engagement in Online Education Through Unique Teaching Methods

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ABSTRACT

Children attending classes online can suffer from distractions and lower comprehension of class material due to ineffective teaching methods, leading to gaps in knowledge and a loss in motivation. This research study, conducted in a Public school in Bareilly, aims to quantitatively and qualitatively analyze the most effective method of teaching Science online to children in Grade 4. It further aims to analyze the reasons for the effectiveness of certain methods, to propose improvements and solutions to the current methods employed in the Edtech industry and schools functioning online. In this study, 3 unique teaching methods, **traditional, through drama/storytelling and through arts and crafts,** and Science topics aligned with the Class 4 CBSE curriculum were chosen. Three 45 minute online classes were conducted with a group of 30 children, followed by a monitored online test and an online survey. The results of this study clearly support that both retention of concepts and engagement within the class is higher in the drama/storytelling and arts and crafts condition as compared to traditional teaching methods.

INTRODUCTION

- A research study from Academia *(Rowcliffe, S. 2004)* has found out that the use of storytelling- and by extension, drama- to teach Science is more coherent, memorable and meaningful.

- Although extensive research has been done in the field of online education to students and Science education, there is little clarity on the comparison between methods to teach Science to children online. Previous research studies have also not holistically investigated both interest, confidence and enjoyment as well as understanding and retention, to assess the effectiveness of teaching pedagogies.

- The pandemic has changed the face of educational pedagogy, and now hybrid and online classes are becoming the norm. This study can also be applied to teaching materials used by the Edtech industry (by 2026 the online education industry is set to grow by 11.6 billion in India)

METHODS AND MATERIALS

- The hypothesis of this study is that teaching Science online through storytelling and/or arts and crafts will be more effective than traditional methods currently being used. A mixed method study was conducted, using both qualitative and quantitative methods.
- Each group, which had an average of 10 children each, followed the same syllabus covering the topic 'Sound'.
- **Inclusion Criteria**: each group had the same average overall scores and were divided based on past exam results.
- **Traditional condition:** concepts were taught through a diagram drawing on the whiteboard, a video, and practical demonstration with a rubber band.
- **Storytelling condition:** a handmade story was used to teach the concepts
- **Arts and Crafts condition:** 2 distinct arts and crafts activities were done to teach the topic.
- A general details and consent form was filled by students before all 3 classes. An online monitored test worth 10 marks was conducted after the class to gauge understanding and retention (quantitative data). An online monitored 5 minute survey was also conducted to gauge interest, confidence and enjoyment qualitatively.
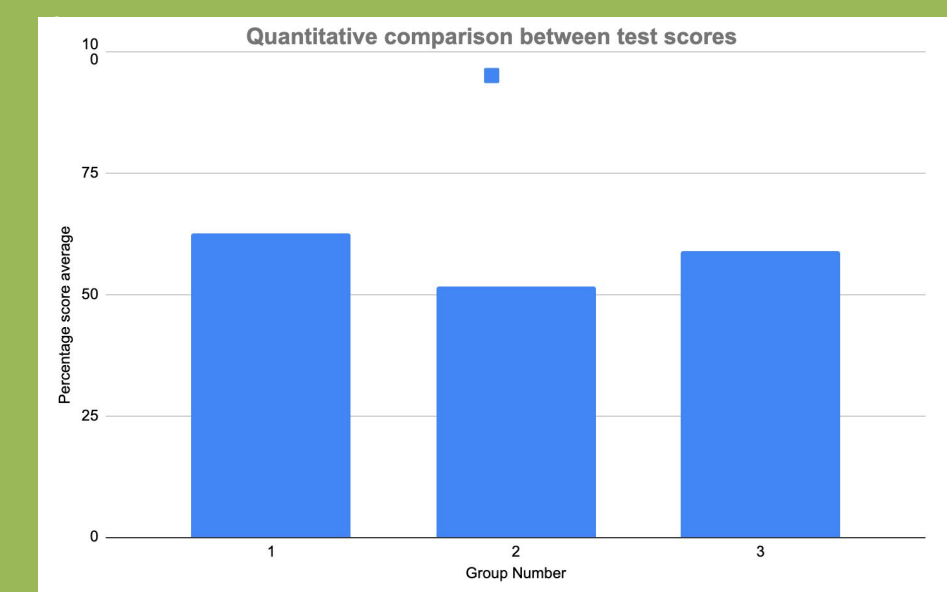
RESULTS

-Note: Statistical tests for significance are yet to be conducted upon the data collected

- *Group 1 (Storytelling condition) average: 62.5%*
- *Group 2 (Traditional condition) average: 51.7%*
- *Group 3 (Arts and crafts condition) average: 59%*

Figure 1. Quantitative comparison between test scores

- *Group 1 (Storytelling condition) average: 4.77/5*
- *Group 2 (Traditional condition) average: 4/5*
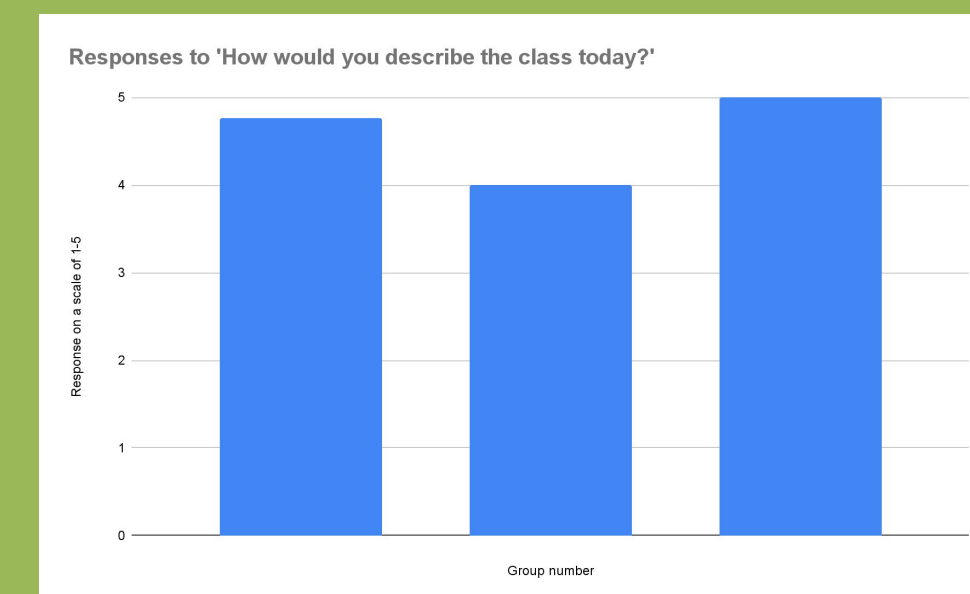- *Group 3 (Arts and Crafts condition) average: 5/5*

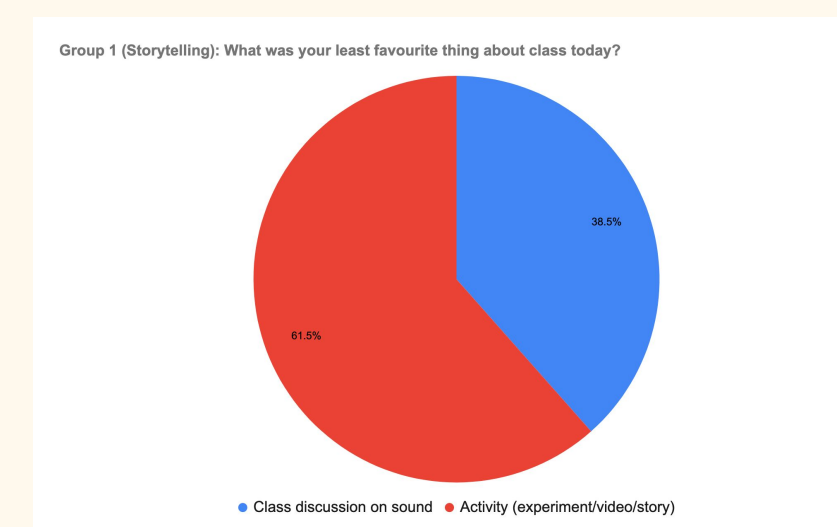**Figure 2.** Responses to 'How would you describe the class today?'

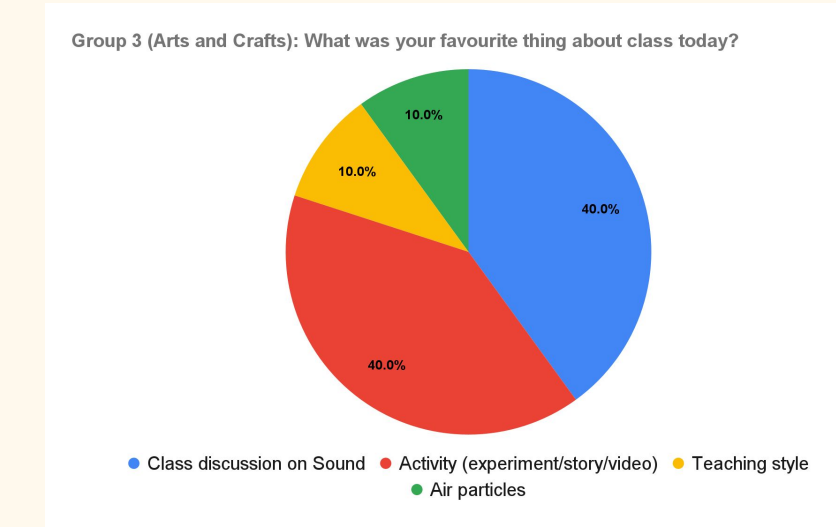**Figure 3.** Traditional group: 'What was your least favourite thing about class today?'

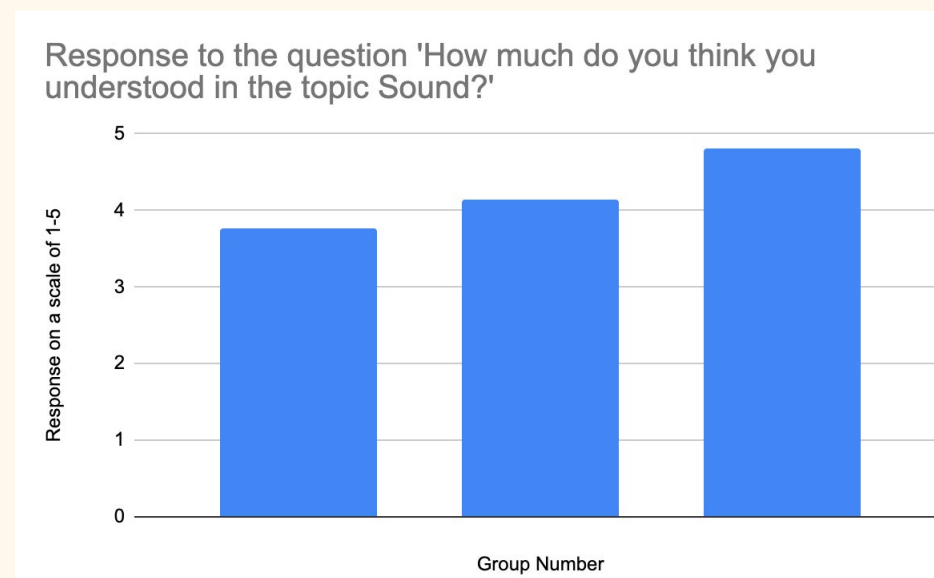**Figure 4.** Arts and Crafts condition: 'What was your favourite thing about class today?'

- *Group 1 (Storytelling condition) average: 3.77/5*
- *Group 2 (Traditional condition) average: 4.14/5*
- *Group 3 (Arts and Crafts condition) average: 4.8/5*

Figure 5. Responses to the question 'How much do you think you understood about the topid 'Sound'?

DISCUSSION

- All participants were asked if they were interested in learning more Science (from a scale of 1-5) before and after the class. Although the storytelling and traditional group had an average change in answer of 0, the arts and crafts group had an average increase of **0.667** in their response
- In response to the question 'What activity would you want added (if any)', the story telling group had a high amount of answers asking for **more practicals.**

- **Traditional condition:** had the lowest average test score, lowest confidence and lowest average score in terms of enjoyment and engagement.
- **Storytelling condition:** had the highest average test score and they were the least confident in their understanding of the topic.
- **Arts and Crafts condition:** showed highest confidence, enjoyment and engagement. They were also the only group in which the results reflected a change in their overall attitude towards Science.

Using liberal arts to teach Science can improve understanding, retention and enjoyment, and is thus more effective than traditional methods of teaching. These results can be utilised by schools, NGOs, educational youtube channels and Edtech companies to increase the effectiveness of their content. This study can also be extended by investigating different age groups, offline conditions and with a larger sample size.

CONCLUSIONS

The aim of the research study was to quantitatively and qualitatively analyse the most effective method of teaching Science online to children in Grade 4. Based on the results, it is evident that Arts and Crafts and Storytelling is more effective than traditional methods to teach Science in an online environment. Therefore, the null hypotheses set out in this research study is rejected. More specifically, this study shows that the use of Arts and Crafts leads to the most engagement and confidence, and the use of Storytelling leads to the most retention and understanding of a topic.

REFERENCES

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