IN-SERVICE TEACHERS' PERCEPTION ABOUT THE EFFECTIVENESS OF THE USE OF MULTIMEDIA IN TRAINING OF SCIENCE

Vijay P. Singh

Regional Institute of Education (NCERT)
Ajmer-305004
Email: vpsujjwal@yahoo.com

Currently, the use of multimedia and ICT have revolutionised all aspects of the world of knowledge and information, including creation and development of content, storage, classroom transaction, assessment and evaluation, reporting, training of teachers, etc. This paper attempts to explore and report the views of science teachers about the effectiveness of multimedia content in teaching-learning of science at elementary level. These teachers participated in the Capacity Development Programme at RIE, Ajmer in the development and use of teaching-learning material through ICT integrated pedagogy at elementary level. The sample consisted of 11 in-service teachers from Uttarakhand, J&K and Rajasthan. The participants were exposed to a set of multimedia animated content in science in a session and their opinions were collected through an opinionnaire constructed for the purpose. The tool contained 16 items asking their opinion in affirmation or negation, four items about grading of the multimedia content and one item inviting their suggestions and comments in descriptive form. The analysis of the responses indicates that they found the use of multimedia very useful, sensitising, and interesting. However, most of the teachers indicated that the use of such multimedia cannot replace the teachers in classroom and that there is a need of teachers' intervention after viewing the multimedia content. Some of the teachers indicated that the use of such multimedia is difficult in rural areas due to lack of proper infrastructural facilities.

Keywords: Multimedia and ICT, Teachers' perception, Effectiveness, Teaching of Science.

Introduction

The NCF-2005 (Position Paper National Focus Group on Teaching of Science para 6.4) has mentioned that "with the increasing use of personal computers in schools, homes and workplaces, and internet connectivity, ICT shows renewed promise as a powerful tool for education, but only if these developments are complemented by making available quality software in different disciplines of science". It further suggested that "scientific experiments using a PC could be designed for school students through innovative software and hardware interface to help students to measure common physical parameters (e.g. temperature, luminosity of light, humidity, etc.) and also control these parameters."

With the advent of latest electronic devices such as android phone sets with various applications and startups, we are now living in a world where we have easy access with a lot of open resources to almost all fields including science education. A variety of ICT based multimedia content is available in the open domain as well as on subscription, the only thing is that one has to make conscious efforts in the selection and use of these

material. As the onus for this task is on the teachers, therefore they need proper orientation and training about the use of multimedia content in classroom situation.

Recently, CIET-NCERT has taken a lead in developing and augmenting the National Repository of Open Educational Resources (NROER). Initially, these resources are placed in public domain and suggestions and critical comments of the viewers and reviewers are then incorporated for further refinement before finalizing the content part of the NROER. A plenty of literature is available to advocate emphatically the development and use of multimedia and creating smart classrooms. A cursory survey of literature indicates that multimedia content is useful, attractive and economic to the users. Elliot et al. (2014) has also reported the role and potential of ICT initiatives in achieving the UEE goals and also the impact study of the innovative multimedia programme in increasing the enrolment and retention of children at elementary level (Singh, 2007, 2008). The studies have also been carried out to see the effectiveness of multimedia content in science in enhancing the achievement levels of students and competence of pre-service and in-service teachers of elementary level (Singh, 2007, 2008; Singh and Husain, 2014, 2015).

The present study has been carried out to seek the opinion of the experienced science teachers about the effectiveness of the selected multimedia content in science with which they were exposed in a training programme organised at RIE, Ajmer.

Methodology

The selected animation based multimedia content in science was screened in a technical session with a sample of 11 in-service science teachers from Jammu and Kashmir, Uttarakhand and Rajasthan. The tool EMMCS-Opinionnaire was administered at the end of the session. The responses were collected and analysed.
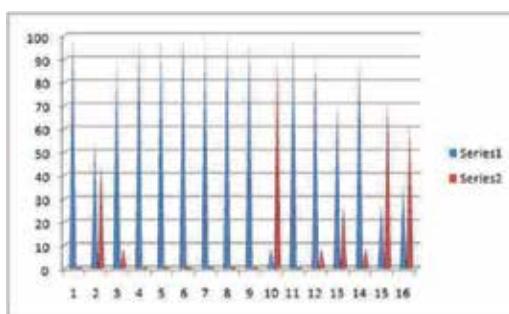
Results and Discussion

The responses of the teachers are divided in three categories. In the first one the % responses in Yes or No against items 1-16 are given in the Table 1 below. The responses of items 17-20 regarding the grading of the MM content are described thereafter. The comments and suggestions of the teachers are also indicated in the third part of the discussion.

Table 1

Responses of the Teachers against Items 1–16

Item No.	Statement	% Response	
		Yes	No
1.	Did you find the multimedia content and science activities interesting?	100	00
2.	Can you organise these experiments without lab material?	54.55	45.45

3.	Did you find the multimedia content informative and sensitising?	91.01	9.09
4.	Are these useful for explaining the scientific concepts behind daily life observations?	100	00
5.	Whether the multimedia content could be used for facilitating learning of out of school children and general public?	100	00
6.	Is the MM content suitable to develop scientific attitude in learners?	100	00
7.	Can the MM content be used in eradicating superstitions from society?	100	00
8.	Whether the content is useful in developing learners' strong belief in truth?	100	00
9.	Whether the content is suitable in developing learners' interest in science?	100	00
10.	Is there any risk in organising such type of activities and experiments in a classroom?	9.09	91.01
11.	Did you find these activities and experiments innovative?	100	00
12.	Whether the material for such activities could be arranged from surroundings?	91.01	9.09
13.	Is there any need for further explanation of the activities presented in DVDs?	72.73	27.27
14.	Do you still need teachers' intervention after viewing the MM content?	91.01	9.09
15.	Do you feel that use of multimedia content can replace the teachers in the classroom?	27.27	72.73
16.	Is it possible to use this type of content in ordinary classroom?	36.36	63.64

The responses indicate that most of the teachers found the MM content is useful in developing scientific attitude and generating interest among the learners about science. Almost equal proportion of the teachers were of the opinion that these activities could be organised without lab material. Majority of teachers felt that there is a need to explain the content after the screening of the multimedia and that the MM content cannot replace the teachers. Graphical presentation of the responses of Table 1 is given in Fig. 1.

Fig. 1: Graphical presentation of the responses of teachers

The grading of the activities, presentation and explanation of the scientific facts and concepts indicated that none of them was poor and most of them were above average, the per cent responses are given below;

17. Grading of the MM content in motivating the learners towards exploring science.

Excellent (36.36) Very Good (50%) Good (0) Average (18.18%) Poor (0)

18. Grading of the presentation of the MM content.

Excellent (18.18%) Very Good (54.54%) Good (27.27%) Average (0) Poor (0)

19. Grading the explanation of the scientific facts and concepts through the content.

Excellent (0) Very Good (100%) Good (0) Average (0) Poor(0)

On the categorisation of the content in terms of cost effectiveness 45.45 per cent found them costly and 9.09 per cent as of high cost.

20. How do you categorise these activities and experiments in terms of cost involved?

No cost (18.18%) Low cost (27.27%) No/low Cost (0) Costly (45.45%) High Cost (9.09)

Further, the suggestions and comments of some of the teachers are reproduced below.

T1: *Shiksha mein multimedia ka prayog saral aur prabhavi hai. Eis prakar se chhatra aur samaj mein positive sandesh jata hai.*

T2: It is very good for learning. Proper use of multimedia enhances the learning of a child/student.

T3: In rural areas these facilities are not properly available, so many problems exist such as non-availability of electricity.

T4: Very interesting content but it should be provided in schools.

T5: The use of multimedia is quite effective and interesting but explanations are required, simultaneously or continuously.

T6: Still need improvements in many fields. Maximum concepts can be done better in labs.

T7: ICT classroom gets interesting and knowledge improves with playway and funny methods. There is no burden on children.

T8: We must include some persons, scientists, models or celebrities who may also attract the young ones and the students may feel that our role models are also taking interest in performing the experiments/activities.

Conclusion

On the basis of the above study it could be corroborated that multimedia content is useful in facilitating learning in an interesting manner for student population and general public as well. It also helps in inculcating the scientific attitude among the learners. Most of the in-service teachers have very positive opinion about the MM content and graded it as very good or excellent. They also found that the presence of teachers is a must to explain the concepts and doubts. However, while selecting and using the MM content the following observation of the NCF-2005 must be kept in mind, "ICT as a tool should be used with care so that it serves to bridge the social divide and equalise opportunity, inappropriate and insensitive use may as easily wider the divide." (NCF-2005 Positon Paper NFG on Science Education, p. 22). The teachers

were skeptical about the use of the MM content in rural area schools and they have suggested that school should be provided all such materials for creating an enabling environment.

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