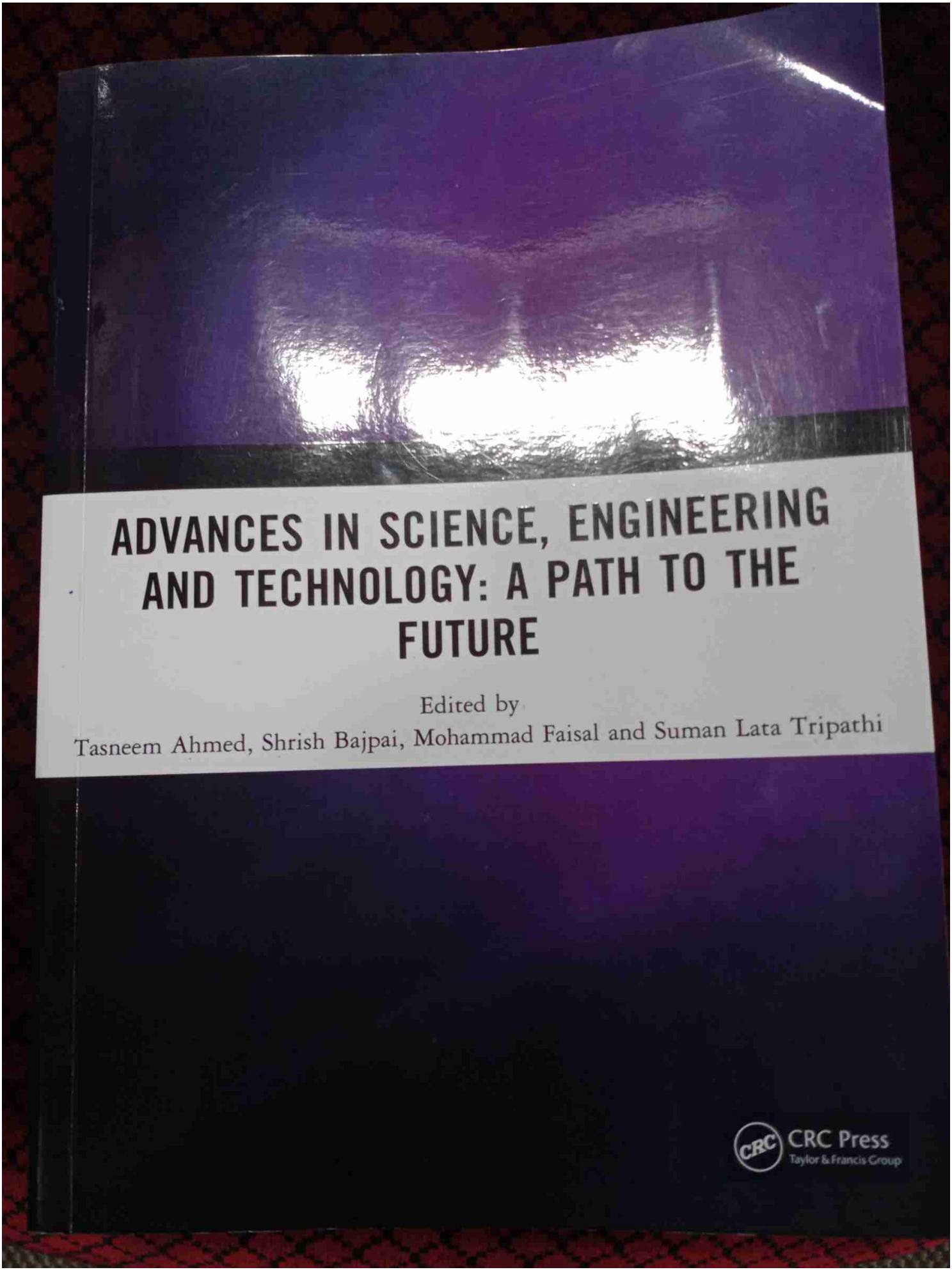
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Edited by
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CHAPTER 51

Inclination of science teachers towards use of technology

An instrument for revolutionizing science teaching

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Abstract

Changing times expect renewal in science teaching with a concern about improving quality of basic science education. Indian industrial developments have science as an important contributor to it, indicating a significant role of science teachers. The changes in outlook of science teaching for utilizing new technology changed the focus of the teachers, introducing new challenges for them namely balance between knowledge and method of teaching. The purpose of this study was to provide the prevailing picture of the status of affinity of science towards incorporation of technology in teaching. It was seen teachers intended to reform their teaching but face challenges in use of technology in classroom. It was found that teachers approach towards the reception of new technology forms the background to improve quality of teaching. Teachers utilizing the latest technologies such online learning, digital presentations in science teaching had impact on improving the quality of science teaching, improving of concepts science which benefit the learners. To clarify role of teachers to improve quality of science teaching it was observed that inclination towards use of technology was independent of the gender of teachers. Thus, indicating all science teaching fraternity is trying to revolutionize science teaching through positive attitude towards incorporating technology while science teaching.

Keywords: Technology, science teachers, science teaching, revolutionizing, inclination.

1. Introduction

Changing times expect renewal in science teaching with a concern about improving quality of basic science education. Indian industrial developments have science as an important contributor to it indicating significant role of science teachers. The changes in outlook of science teaching by utilizing new technology have changed the focus of the teachers, introducing new challenges for them namely balance between knowledge and method of teaching, social utility, diversity in knowledge given and teaching learning environment with learner as centre of education. Vibrant changes are observed in concepts of science education in last few decades. Two major concepts were seen, the first science education is teaching which is basically focussed on knowing the objective universe is now no longer basis of the norms of learning science, it is seen that latest and supplementary perspectives are not yet extensively accepted by science teacher educators (Barbules et. Al. 1991). In the second view science teaching is assumed to be a work of specialist so confined to those having distinct abilities to undertake tough investigational efforts, is confronted presently by the idea that scientific knowledge for creating understanding of day-to-day life problems is essential for every individual and should be imparted in schools for connecting science with everyday problems. The teachers are the most influential factor in an educational change (Duffee & Aikenhead, 1992). They play important role to reform or innovate curriculum. They need to adapt their teaching practices accordingly.

1.1 Science Teaching and Technology

In the recent times it is observed that the variation in the perspectives of science teaching have changed the focus of the teachers introducing new challenges for them namely balance amidst social utility, subject matter and procedure in learning, diversity in subject matter and teaching learning aspects and student as centre of education. Content and process in learning- A major change of times is shifting stress from learning the subject matter

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of science to being intricate in the process by which scientists grow their knowledge. It supports the idea as given by John Dewey's idea of experimental and project learning (Macmilan & Verloop, 1996). Presently there is growing concern about a balance between process and learning. Science learning takes place within specific content areas and so all process-based work needs to take place with reference to specific theoretical understanding. There should be a caution in formulating the relation in process-centred science teaching.

- *Integration of technology:* This includes encompassing science around all major other disciplines of knowledge. This principle is functional in the different forms indicates using appropriate technology for continuity of science education.
- *Universalization of science:* There is required a scientific base which that everyone reaches the equivalent understanding making it useful in everyday life. This provides a social dimension to science it includes constructive experiences that would encourage the involvement with the environment and attitude for acceptance indicating technology can be an active vehicle of creating universal appeal of science which can advance quality of life and become main contributor to national progress and development.
- *Science technology, society:* A good science education programme links science to technology and society. The school students should be provided with the experiences relating these. These programmes are interdisciplinary in nature.

1.2 Role of Science Teacher

To follow the constructivist approach for science teaching in the learning environments there are many aspects to be followed which include the following in Figure 51.1

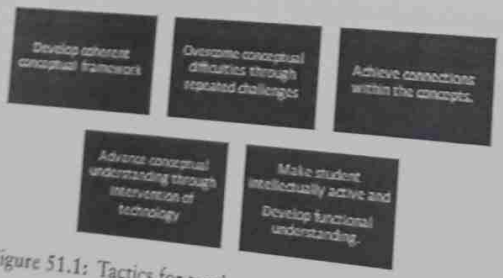

Figure 51.1: Tactics for teachers.

These above-mentioned tactics to science teaching indicate many questions relating to present science teacher education. To know about how these prospective teachers are made aware that how they can modify the practice they have experienced during their schooling (Appelton k. 1990). There is a need felt for the teacher to incorporate functional technology and device ways by which these new advancements can be incorporated in teaching of science. This requires examination of feasibility in newer approaches with context of science education. Identify available alternative teacher training structure which are helpful in construction of better content foundation.

2. Review of Related Literature

Ladha & Trivedi (2017) in their study found that use of technology in school system have both their benefits and challenges in improving quality of teaching, addressing problem areas and strengthening faculty. Bakir (2015) observed current practices and barriers to implementation of technology interaction programmes found that lack of systematic implementation is giving rise to inconsistent use of technology. Hew & Brush (2007) in their study found that negative attitudes of teachers and the limited knowledge of teachers about technology integration are the barriers for the technology integration in education. Sarangi (2003) found in his study that teacher educators had low positive attitude towards use of information and communication technology, they had limited idea about how to use the available equipment in teaching learning. Knezek et at. (2000) reported that educators with higher level of skills, knowledge and tools would exhibit higher levels of technology integration in classroom. Mumtaz (2000) worked on factors affecting adoption of technology in classroom in secondary schools and found that lack of administrative, technical and financial support and problems that prevent using computers in classroom.

2.1 Significance of the Study

The purpose of this study was to explore the inclination of science teachers towards intervention of technology science teaching and observing their affinity to incorporate technology in regular classrooms settings by which quality of science teaching can be conducted. This may provide improved quality of learning through technological orientations of teachers. This will also help in providing how many teachers can become effective science teachers for technologically aware students. This a step towards identifying aspects related to technological incorporation in teaching learning situation

2.2 Objectives of the study

- To find the inclination of science teacher towards use of technology in teaching in classroom.
- To compare the inclination teachers for use of technology in science classroom with respect to their gender.

2.3 Hypothesis

- There is no significant difference in inclination of male and female science teachers towards the use of technology in classroom.

3. Research Methodology

...study was conducted to examine the existing pic... ...of inclination of science teacher, so it employed ... survey type study. The population of the ... science teachers at schools. Sample of ... comprises of 72 science teachers from 6 schools ... Dist. Dhr. The data was collected with help of ... and questionnaire was administered on the ... teachers. The analysis was done based upon the ... and comparison of the inclination of male and ... teachers was done using t-test. The conclusions ... drawn according to the response of the respond... ... questionnaire included thirty questions which ... answered according to level of acceptance.

4. Result and Discussion

- *Objective 1:* To find out the problems faced by science teacher in using technology in teaching in classroom.

...help of the questionnaire the problems faced by ... teachers were studied. From the item wise analy... ...it was seen that 12 teachers found the use of tech... ...email services, computer difficult in regular ... The latest technology was complicated for ... 10 of them felt that technology involvement is ... as it consumes more time.18 of them report... ...that students were distracted when the technology ...assisted lessons were given. The teachers also observed ...the use of technology degraded the interpersonal rela... ...among the teachers and students. There were ... teachers who could use technology with ease in the ... The interview conducted with the teachers ...indicated that those teachers who are in science teach... ...from more than 10 years had problem in accept... ...of technologies while younger teacher found the ...of technology easy. The teachers are open to attend ...training programmes to learn latest technologies for ... The teachers using it in the classroom found ...positive changes in learning patterns of students.

...When the responses of the teacher were studied it ...was found that there is resistance in the employing ...technology in teaching. They accept their shortcom... ...up preparation and support to teach with new and ...different topics. It was difficult for them to learn the ...new technological tools at present time science. They ...found that the resources available to them were insuf... ...learner to help them in teaching of science. The science ...teacher prefers to follow the same procedures which ...they are following since years. They find lack of time ...and resources to device new approach in the training of ...science teachers. Majority of science teachers have an ...idea that the learning science is not possible for all the ...learners. Learning modern technology increases their ...workload so they do not find it effective. Although few ...of the teachers go out of the way to give their teaching constructivist approach and find inclusion of science and technology makes their teaching effective

- *Objective 2:* To compare the inclination of male and female teachers for use of technology in science classroom

Table 51.1 indicates mean score of male teachers was 131.03 and SD is10.560 and that of female teachers was128.04 & 12.407. The estimated t- value was 1.199 which was less than 2.58 at 5% level of significance. This shows that there is no major variation in inclination of using technology in classroom among male and female science teachers. The hypothesis is accepted. Thus, it can be concluded that all the science teacher fraternity are equally inclined to revolutionize science teaching by showing inclination towards use of technology.

Table 51.1: Comparison of inclination of male and female students toward use of technology.

Gender	N	Mean	SD	t-Value
Male	36	131.03	10.560	1.199
Female	36	128.04	12.407	

5. Implications of study

It is seen that technology in science teaching employed presently is not sufficient to meet out the vacuum between science learned with a theoretical framework of science as traditionally followed and the science that benefits the learners. It can easily be inferred that there is a need to enhance the inclination of teachers to frequently use technology to science teacher despite of other approaches science teaching can be enhanced through inclusion of the principles as given by constructivist and reflective teaching. Science methods and activities need to be modulated by using modern technology the science teachers to pass on the useful teaching. They also need to implement the knowledge and skills developed by them. There is a need to provide positive experiences to technologically active learner which would develop thinking and attitude for accepting that scientific developments can make life of people better for this science education. It must be presented such as it is easily modifiable and penetrating to socio- political and cultural status of society. They should be made aware of the fact that they are the makers of future scientists an important role to play in modifying the picture of science and technology

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