

New Trends And Techniques Of 21st Century Education With Special Reference To Life Science: A Review

Dr. Neha Bhatnagar

Abstract: These Education is the leading sector that bears the biggest responsibility of shaping the future of youth of India. According to a research our traditional approach of teaching and learning of science is not preparing students to enhance their conceptual learning and they are unable to work in science and technology rich environment of the 21st century. As a result of this the interest and attitude of student towards science is declining day by day. The reason for this is poor teaching methodology and unsatisfactory quality of education. So it's the need of time to change the educational learning method from theoretical approach to practical and concept based approach. We should encourage the educators to adopt modern and innovative methods of teaching like videos, digital literacy, role playing and kinesthetic activities so that learning can become easy, meaningful and more interesting. As the life science or natural science is an immensely important stream of science which is all about the environment, human life, plant cell, animal evolution and all other living organism around us, it's very essential to increase the interest of student towards this to save our earth or nature from deterioration. Through this paper the present status of higher education system is summarized and also reviewed the teaching approach that are recommended to improve the quality of science education. This paper also present new trends and techniques for enhancing the effective and conceptual learning of students of Life science at higher level.

Index Terms: Conceptual learning, Digital literacy, E-learning, Micro learning, Moodle, Teaching method, Webinar

1. INTRODUCTION

THE traditional method of learning for the student is based on the book learning method. This method is also known as teacher centered method. Now a days this method become irrelevant and it does not satisfy or meet the current need of society. These traditional approach of teaching only provide impractical knowledge i.e. theoretical knowledge which is little relevant for the students and also for the society in which one's survive. A great revolutionary changes in education has been taking place in India or in worldwide from the last two decades. The Gap between education and employability is increasing day by day which in turn also increasing interest of students towards professional courses. It's the need of time to bring about changes in Science education that include changes in curriculum, based on environment related studies and encouraging an integrated approach. It's very essential for us to improve the quality of education in our country and cope with the issues and challenges posed in recent years by the problems in education. For this we should pay proper attention to the new strategy or trends of learning and also make efforts to introduce new methods or evolve new techniques of instructions suitable for positive learning outcomes in education. According to a study with the wise use of educational technology we can improve the quality of teaching, learning process and also extend its coverage.

As we know that Life science is a wide ranging field that includes cell biology, ecology, genetics, biotechnology, wild life studies and economic zoology. To understand this subject, we have to shift our traditional teacher centered learning approach to modern class room techniques based approach of learning. We can acquire knowledge of this subject only by observation and experimental techniques, not by bookish or theoretical knowledge. We have to adopt new trends and techniques of teaching so that we can produce more intellectual researcher and scientist that would contribute in the process of resolving

environmental issues and help to save our earth and society. In the 21st century we need to improve our teaching and learning method of Life science so that more and more students can take interest in this branch of science. Now E-learning, digital literacy, workshops, innovation of educational app or software are the emerging trends in this field. We should adopt these methods to make our students more innovative and informative.

2 CURRENT MAJOR ISSUES AND CHALLENGES RELATED TO EDUCATION SYSTEM AT HIGHER LEVEL

Traditional education has a number of shortcoming that are making its less accessible to those students that are in need of educational program that will help them further in their career. There should be need to reform the higher education system so that we can achieve the right purpose of higher education. We have to do excellence job in education in order to cultivate research and innovative qualities in students. We need higher educated, intellectual and skilled youth who can drive our economy forward. Our educational system doesn't meet the global quality standard. Traditionally the quality of higher education can be determined by its internal resources viz. faculty with immense sets of degrees and experience, number of books and journals in the library and ultra-modern campus etc. The major issues in higher education system are increasing educated unemployment, decrease in student motivation, unrest and indiscipline among students, deterioration of standard etc. At present world class institution in India are limited. Most of the Indian universities and colleges lack in high end research facilities. The reason for that is lack of investment in libraries, information technology, laboratories and class rooms makes it very difficult to provide high quality education to students. The quality of education is absent in higher education. Most of the teachers are making money with tuition. The teachers are not having proper knowledge of subject and resources to students' community are very poor. Students do study only for job and just want marks in subject. There is no creativity in students. Our

• Dr. Neha Bhatnagar G.G.D.S.D College Palwal (Haryana, India) PH- +91 9910966154. E-mail: vneha.2008@gmail.com

students are hard workers but not innovative. They are not capable to produce new technology. So these are some challenges in the present scenario of higher education and we have to work hard on them.

3 APPROACHES TO TEACHING LIFE SCIENCE

The focus of this research is to find out which teaching approaches are used by Life science teachers without making it difficult for learners to understand. The literature reveals that there are various teaching approaches which can be employed in science classroom. It is not sufficient for student to remember information in the same way in which it was presented in class room and that is learnt by rote. Instead they need to be able to use what they have learnt in class, to answer new question, solve new problems, relate what they have learnt in everyday life and facilitate learning new subject matter meaningfully. There are a variety of ways by which students can accomplish meaningful learning

3.1 Project based learning

It is a student centered learning that involves a dynamic classroom approach in which it is believed that student acquire a deeper knowledge through active exploration of real world challenges and problems. It is a style of active learning and enquiry based learning for example if we ask our student to make our institute more ecofriendly, students will work on it and try to find out how to improve conservation strategies and recycling of resources.

3.2 Conceptual based learning

One of the major problem in science teaching is that we focus on fact but leave central concept that is lying in fact for example if we teach lifecycle of butterfly, student remember only stages of lifecycle of butterfly like egg, larva, pupa, adult not the concept of lifecycle like why butterfly have these stages and why not other organism? The fact egg, larva, pupa, adult, is not important idea. The central concept is that all living things including plants have a lifecycle that consist of birth, growth, reproduction and death. This conceptual learning last long after experience and facts is faded away from memory.

3.3 Use of creative thinking

Educational institute is the most important place to nourish the creative talents and abilities of students and also an important medium in the generation of creative minds of students. Teacher should try to improve the quality of creative thinking among students. It helps them to look at the situation and problems from a fresh perspective. It is a way to gather knowledge and conduct research.

3.4 Demonstration method

This is a technique that is used to show or illustrate a procedure, process, phenomenon or a structure. Demonstration in science provide effective and excellence learning experience. It can promote relevant and useful discussion in the class by providing opportunity for questing and reviewing.

3.5 Seminar, symposium and workshop

Such type of platform is important for student in their upcoming future because these platform help in developing skills like communication, confidence, motivation and expert knowledge

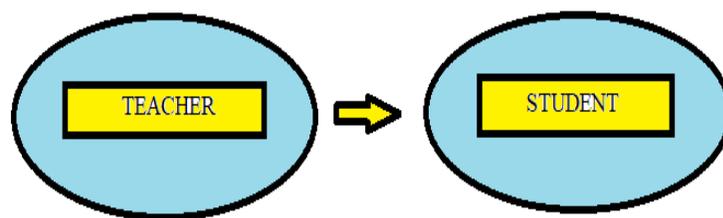
in students. By attending workshops students can achieve success in their academic environment by putting their skills into practice.

3.6 Computer assisted instruction

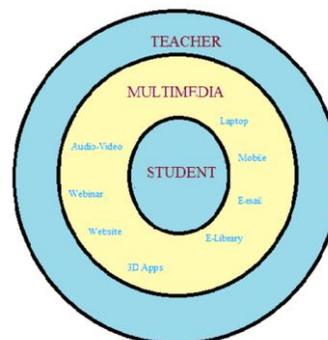
Computer assisted instruction refers to instruction presented on a computer. Many type of educational computer programs are available online we can use it to provide meaningful and interesting method of teaching.

3.7 Z to A Approach

This type of approach is very beneficial in the teaching of Science. The teacher should explain the application part of a particular concept first and then explain the effect of such application.



Traditional Method of teaching



Modern Method of teaching

4 NEW EMERGING TECHNIQUES TO TEACH LIFE SCIENCE

There is immense diversity and rapid evolution of technology with relevance to life science study. We use technology in educational field to provide more effective, conceptual and innovative learning that support in shaping the future of student. We researched some of the best options that can help the instructor to save time and efforts.

4.1 Online laboratories simulation

There are many online software, often free that creates the class room laboratory online. This works well for teachers as experiments can be conducted in the class room or in the group. Students can conduct experiments at home as part of their core work assignment. These are also known as virtual laboratories. Online simulation can be created by teachers and students which can be shared in group. Through these labs you can get hands on science experiments without going in a laboratory for e.g., there is a website "www.Onlinelabs.in/biology". on this site free bio lab resources are available.

4.2 Interactive 3D animation apps for Biology

Now a days many interactive educational animation apps have been developed that allows university students to know more about the life science like complexity of cells and molecules, genes, animal behavior and biotechnology. More apps are being developed for both Apple and Android devices for e.g. On this website "www.smartbiology.com" we can get a wide range of videos of cell biology, molecular biology and x ray crystallography, genetics etc. these apps help the students in gaining deeper understanding of life science.

4.3 Short videos for micro learning

Micro learning is one of the best method of E- learning through which teachers can delivers a lot of content in burst of 5-10 minutes instead of hour long lectures. This type of content appeals to the students of digital generation. These short instructional videos can be searched on you tube for a more targeted and better researched resources of life science. For e.g. we can get videos on this site <http://sciencevideos.org>.

4.4 Games / Gamification

Educational games have become popular in recent years among preschoolers but we can use it also for college students. it is clear that games are particularly useful for learners who are not taking interest in the subject or those students who are struggling to grasp particular elements of topics. it is a form of active learning for today's digital generation. Gamification can be used to encourage students towards learning and also increase motivation, engagement and innovative skills among students for eg." Science game center" is a great resource for educational games.

4.5 Open Educational Resources

An educational institutions focus more on student centered approach of learning and also on collaborative approach of learning between institutions. They give more emphasis on joint working and sharing of good practice and resources. Online communities such as the "Life science teaching resource community" provide excellence resources for teaching of students. Educators and students can easily access to specific blogs on this site and enhance their knowledge

4.6 Prezi- Presentation

Prezi is a presentation tool that can be used in place of traditional slide making programs like PowerPoint. Prezi makes use of one large canvas that allows you to pan and zoom to various parts of the canvas and emphasize the ideas presented there.

4.7 Podcasts and the classroom

Podcasts are serial recordings and these are posted regularly online. It can be a great way to engage different kinds of learners and its an easy way for teachers to disseminate information that augment in classroom learning. Podcasts can easily be used in schools and colleges to engage students and improve learning and teaching practices. It include audio, video, PDF and ePub files which can be downloaded online to a computer or mobile devices.

4.8 Social Bookmarks

Social bookmarking is an online service which allows users to store, organize, search and manage bookmarks of Web pages

that they like to share with other members. Social bookmarking is a great advantage as you can access your favorite folder from any computer simply by logging into your social bookmarking account. Some social bookmarking sites are Pinterest.com, Twitter.com, Reddit.com and dig.com etc.

4.9 Moodle

The Moodle is an e-learning platform used throughout the world. It is a free and open source learning management system (LMS) distributed under the GNU (General Public licenses), developed on pedagogical principles. It is used to create private websites with online courses for educators and trainers to achieve learning goals.

4.10 Webinars

The word "webinar" is a blend of "web" and "seminar". A Webinar is an event hold on the internet which is attended exclusively by an online audience. Participants can see and hear the speaker by audio and video feeds. In addition to the video images, PowerPoint slides can be broadcast which run in sync with the rest of the presentation. Participants follow webinars via a PC, Mac, tablet and smartphones.

5 CONCLUSION

Today's Students are living and studying in the digital age, that's why in almost every academic institution there is an increased emphasis on improved teaching methodology/Student centered learning system, which has led to the discovery/adoption of different approach, varying from the orthodox teaching/ learning process. Life Science has a unique nature and specific teaching strategies might be needed to help students to understand the concept, methods and nature of science. The modern methods and techniques develop curiosity, creativity and collaboration among the students for plants and animals. So it's the need of time to adopt modern trends of education that provide basic scientific literacy to students in order to face the fundamental issues of life and society.

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