

## CONTEXTUAL TEACHING AND LEARNING: A KEY STRATEGY IN SCIENCE CLASS ROOM

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### ABSTRACT

*This article deals with Contextual Teaching and Learning and its importance in science classroom. The most important single factor influencing learning is the active engagement of the learner with the learning material. Learning is meaningful when an idea fits within the conceptual frame work or the mental scheme of the learners. Students are then able to construct their own knowledge, transfer the same and use it in new learning situations. To create such conditions teachers have to deal with subject matter and its pedagogy in an appropriate manner. In imparting education, the role of a teacher assumes special significance. Modern educators have proposed different approaches to encourage students to participate in a wider range of learning experiences, so as to nurture students to develop certain high-level abilities like analytical, problem-solving and communication skills etc. The so-called contextual teaching and learning is one among the new teaching and learning strategy. Contextual teaching and learning strategy helps the teacher to make class room active and effective by inculcating above mentioned high level abilities. Thus the class becomes a constructive one. Contextual teaching and learning is learning that goes beyond the classroom and focuses on making connections between class topics and real-world applications. When students are learning contextually, they are considering issues from their lives in the context of their class lessons. The goal is to create lifelong learners who use critical thinking skills to tackle problems. Contextual Teaching and Learning (CTL) has an understanding of learning that helps teachers to link subjects with real-world situations and lessons that motivate students to connect knowledge and its application to everyday life as a member of the family and the community. Contextual learning is a concept that helps teachers relate subject concepts with world situations and motivates students to make the relationship between knowledge and its application in their lives as family members, citizens, and labor.*

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### INTRODUCTION

The purpose of science education is not simply to produce the next generation of scientists, but produce a generation with scientific literacy. Today we all face issues on a global scale that are fundamentally technical climate change, energy resources, food production, genetic modification, and so on and as such demand basic scientific literacy throughout our population so that wise decisions can be reached about how to address them. Science is certainly a very fascinating subject to learn as it arouses children's curiosity about the nature and whatever happens in our everyday life. For instance, it helps the children to understand better about their own sense organs, living and non-living things, energy, and electricity and so on.

The most important single factor influencing learning is the active engagement of the learner with the learning material. According to Campbell et al., the fundamental design criterion in mind, the ideas and concepts selected, should enhance learners' appreciation of how the subject "contributes to their lives or the lives of others around the world; or helps them to acquire a better understanding of the natural environment" (Campbell et al. 1994). Science classes provide students with essential skills and knowledge for success in later life. Students who do well in science can go on to productive careers in engineering, medicine, and other innovative fields. Science education provides students of all ages with skills that apply in other fields as well, and helps students succeed in all areas of life. Without science, modern society would not be

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where it is today in terms of technology, exploration, and innovation. Science learning enables students to explore new ideas to benefit us all.

Learning is meaningful when an idea fits within the conceptual frame work or the mental scheme of the learners. Students are then able to construct their own knowledge, transfer the same and use it in new learning situations. To create such conditions teachers have to deal with subject matter and its pedagogy in an appropriate manner. In imparting education, the role of a teacher assumes special significance. Learning is not simply bringing knowledge. It is far more than that. It is in fact basically interplay of two challenging processes, getting knowledge that is inside to move out and outside to move in and through this dual process the learner constructs his or her knowledge. Mere pushing in of outside information without any interaction with the knowledge within is only transmission of information. The inter-play, interaction, the wrestling between the internal knowledge and the external information only helps the learner to construct his own new knowledge from the external information and this is learning that goes well.

Traditional science teaching tends towards unidirectional didactic teaching and is not very efficient in encouraging students' engagement. Modern educators have proposed different approaches to encourage students to participate in a wider range of learning experiences, so as to nurture students to develop certain high-level abilities like analytical, problem-solving and communication skills etc. The so-called contextual teaching and learning is one among the new teaching and learning strategy. Contextual teaching and learning strategy helps the teacher to make class room active and effective by inculcating above mentioned high level abilities. Thus the class becomes a constructive one. Contextual teaching and learning is learning that goes beyond the classroom and focuses on making connections between class topics and real-world applications. When students are learning contextually, they are considering issues from their lives in the context of their class lessons. The goal is to

create lifelong learners who use critical thinking skills to tackle problems.

Good teaching is about recognizing and selecting instructional patterns that match the context for learning and the students. So finding, recognizing, and using patterns form the basis of our everyday life. Just as our brains seek the organization of new information, educators must seek ways to assist students in their efforts to learn by selecting appropriate instructional patterns to maximize their learning potential. As educators make decisions about how to operate in the class room, we seek the pattern that is most appropriate to the contextual factors in the learning environment and the learners. (Holt and Kysilka)

### **CONTEXTUAL TEACHING AND LEARNING**

Contextual Teaching and Learning (CTL) has an understanding of learning that helps teachers to link subjects with real-world situations and lessons that motivate students to connect knowledge and its application to everyday life as a member of the family and the community. Contextual learning is a concept that helps teachers relate subject concepts with world situations and motivates students to make the relationship between knowledge and its application in their lives as family members, citizens, and labor (Nur, 2001). Nur further mentions CTL is a reaction to a theory that is basically behavioristic that has dominated education for decades. CTL approach recognizes that learning is a complex process and learning occurs only when students get the knowledge in connection with the life situation.

People can learn best in a context, when teacher plan activity in connection with their needs. Context is something outside the classroom environment, maybe from the family, from society, from the workplace. In order to cover different possibilities, the variety of context is stressed. As the contextual approach stress student directing the learning, it is of extreme importance that they are interested in the things to be learned. Learning activities carried out by inductively, beginning with the observation in order to understand the concept. In practice,

learning through cycles of activity observed, question, analyze, and formulate a theory, either individually or together with other friends. In contextual learning teacher's act as facilitators, guide and academic mentors in encouraging students to conduct cooperation in the study. In contextual learning, learning community formed in schools to do with an attempt to jointly use the knowledge, focused learning goals and allows everyone to learn from each other.

#### **Contextual teaching and learning strategies stress on:-**

1. emphasize problem-solving;
2. recognize the need for teaching and learning to occur in a variety of contexts such as home, community, and work sites;
3. teach students to monitor and direct their own learning so they become self-regulated learners;
4. anchor teaching in students diverse life-contexts;
5. uses teams or interdependent group structures to encourage students to learn from each other and together; and
6. Employ authentic assessment.

#### **Contextual Teaching and Learning in science class room**

Science is a dynamic, expanding body of knowledge covering ever new domains of experience. Environmental validity of science curriculum requires that science be placed in the wider context of the learner's environment, local and global, enabling him or her to appreciate the issues at the interface of science, technology and society, and preparing the students with the requisite knowledge and skills to enter the world of work.(NCF,2005). The teaching of science should be recast so that it enables children to examine and analyze every day experiences. The main objective of science teaching is to provide a systematic and practical idea of the discipline of science and to change the students' behavior.

Research in science education shows that the students hold conceptions about natural phenomena which are different from what they

are told in the text book or what they are taught by the teacher. These are not simply wrong ideas but they follow their own logic and are often based on experience. Across the world researchers find students believing that the material which is produced in growing plants comes from the soil: that air plays only a minor part in this process. Students imagine that matter is destroyed during burning; they think that constant motion requires a force to maintain it and that electric current is used in lighting a bulb. Such erroneous views are widespread and also highly resistant to change, even through carefully constructed teaching programs. Since science education is dependent on context it is important to connect the science concept with the students surrounding. Studies done in India have found that tribal student's knowledge about the living world is rich and largely reflects their environment and life style. In comparison, urban student's ideas about living things are shaped by knowledge gained through books and stories.(NCF,2005).Though activity based teaching has been accepted as a paradigm for science education and is also influenced in some measure in the text books developed at the national and state levels, it has hardly been translated to actual class room practice.

Since science is related with life and its interaction with environment it is essential to connect it with students need and aspiration. The problem faced by students in classroom is that they can't make a connection between what is learnt and its application in real life situation and also the formation of misconception among students. Contextual teaching and learning can overcome above mentioned problems. By using contextual teaching and learning approach, teacher can design instructional strategy in relation to individual and diverse students in the classroom.

In science classes, students learn about the environment and the need for conservation efforts. They learn about endangered species and how to preserve them, about the history of evolution and extinction, and the importance of preserving wildlife. When they learn about dinosaurs, for example, they begin to understand that we can lose an entire species if we do not

take steps to protect them. In ecology classes, students learn how to reuse and recycle, as well as how to live a greener existence. They complete projects where they plan ideas for reducing our impact on the environment and restoring the damage we have done. In this way, science education can help us preserve the future of our planet.

Science teaches students to follow a logical process to solve a problem. From using the scientific method to inventing a new gadget, students learn to identify and solve problems daily in their science classes. These skills apply to other school subjects, real-world careers, and even family relationships. We benefit today from life-saving medicines, efficient transportation systems, and global communications products because someone learned how to solve problems in a science class. Problem-solving forms the basis for innovation and creativity in the world, and science can be a big part of developing those skills.

To find a good context for context-based learning and teaching in physics is by no means easy. There are times when the complications of the real world make it difficult for the teacher to introduce the physics content he wishes to teach through a real situation. In the real world a phenomenon almost always depends on a number of factors, many of which may be out of the syllabus of secondary school physics, and students may have no way of understanding. Even if the factors are understandable, students might be confused by their complicated relations. Contexts of this kind make students, and at times even experienced teachers difficult to demonstrate clearly the main point of learning and the logical relationship therein. If the context is the means that serves only to achieve the learning process and the acquisition of physics knowledge as the ultimate aim, this kind of contexts would not benefit learning, on the contrary, it would obstruct the learning process. The first premise of utilizing context should be, the context is a learning tool used to increase the involvement of the students, provide them with a wide range of learning experience, as well as to develop their ability to solve real-world problems, and should not be turned into the content of learning and teaching itself as a burden.

In science class room teacher must focus on helping students to construct understanding of concepts themselves. Instead of spending time memorizing material, filling in the blanks on worksheet and repeating large number of similar problems, students need to learn to solve novel problems, integrate information, and create knowledge for them. Contextual teaching and learning strategy can satisfy the need of the students and overcome the difficulty of science teachers.

### CONCLUSION

Thus in science class room, teachers should try to make learning Science as an enjoyable experience and the one that the children will remember for a life time because we must be aware that learning Science is an on-going process and it will continue even when these children step out of the primary school. Therefore, it is definitely a wise move to help these children to understand the importance of Science. For CTL to be effective, all strategies must be present in the teaching/learning experience. Implementation of CTL may not require drastic changes in practice for all educators. It may require enhancement of practice in one characteristic and not another. Continual use and reflection on CTL processes broadens and deepens educators' knowledge and ability to facilitate learning. Context-based learning approach obtains active engagement of the learner with the material. Similarly, implementation of CTL has ramifications for the school organization. According to some CTL advocates: "This approach differs from other ways to think about teaching and learning. Here, we are not attempting to raise achievement scores by teaching basic skills. For CTL to be successful for all students, a school must value and support the approach. Newmann and Wehlage (1997) describe a system of support for authentic learning that has been adapted to describe supports for CTL. Context-based learning approach obtains active engagement of the learner with the material. The material in broadest terms can be social and cultural; in less general terms, the material could be applications of the theory of the particular subject that the

student can relate to, contribute to, or that is personally useful to the student.

### REFERENCES

Alex,Kozulin.,Boris,Gindis.,Vladimir,S.,Ageyev., Suzanne, M., Miller.(2003).Vygotsky's Educational Theory In Cultural Context. Cambridge university Press publication:USA.

Donna, Walker, Tileston. (2007). Teaching Strategies for Active Learning-Five Essential for Your Teaching Plan. London: Sage Publication Company Ltd.

Dorothy Faulkner, Karen Littleton and Martin Woodhead.(1998).Learning relationships in the class room. Routledge publication:Canada.

John,Beck.and Mary, Earl.(2006).Key Issues In Secondary Education-2 nd Edition.British Continuum Publication:London.

Kenneth.D.Moore,(2005),Effective Instructional Strategies- from theory to practice. London. Sage Pulication Ltd

NCERT ,National Curriculum Frame Work.2005

Prue ,Huddleston. and Lorna,Unwin.( 1997)Teaching and learning in further education- Diversity and change. Routledge publication: Canada

Susan,Capel.,Marilyn,Leask.,and Tony Turner.(1995). Learning to Teach in the Secondary School. Routledge publication: Canada.

<http://www.contextual.org>.

<http://socciresearch.com>.

[http:// www.contextualpsychology.org/](http://www.contextualpsychology.org/)

<http://www.actinobioscience.org>