The epistemological basis of science and its implications to pedagogy

Abstract

Science teaching in our country has continued to remain mechanical and ritualistic in its aims, methods, processes and assessment. It has remained unresponsive despite the curriculum and textbook reforms. The typical views of objectivism had resulted in the new curriculum frameworks. The objectivist view of knowing the world around, its nature, its reality, nature of knowledge, though they may have content mastery in the respective branches of science discipline. The most skills in learners. Many studies have shown that science teaching in classroom transactions are short sighted have been under continuous criticisms in several forums. The shift in perspectives on science and science instruction has been increasingly challenged by science educators like Hodson (1985), and Abimbola (1983). It is felt that call for reform in science education has been increasingly focused on the pedagogical aspects of science teaching which incorporates historical and philosophical dimensions increases.

Key words: Epistemology, Constructivism, objectivism, Subjectivism, learning process in science

INTRODUCTION

Many problems in science education stem from the improper ways of handling the subject and lack of understanding the structure of science a visioned in their understanding science.

In our country Indian and western philosophical systems have always been concerned with many questions related to knowledge, its validity, truth and belief in knowing the world around. The researches in epistemology has also influenced the perspectives of science education. The role of cognizing mind is denied to the view of science and the cognizing mind of the learners differently. Shifting from positivist view of looking at science are short sighted and to the right perspective in teachers, but also helps teachers to view the aims of science teaching, the learning processes offer many pedagogical opportunities which are of specific interest to the schools.

The making provides newer insights into paradigm shift in understanding of science and its processes, which incorporates historical and philosophical dimensions increases. For a change in the perspectives on science and science instruction that, knowledge in science discipline is arrived at by the application of various approaches methods and assessment. It has remained unresponsive despite the curriculum and textbook reforms.

This paper discusses about such epistemological shifts of knowledge related to it may be traced against the objectivism had resulted in the new paradigm shift in understanding of science and its processes. This view of science and science teaching has been increasingly challenged by science educators like Hodson (1985), and Abimbola (1983). It is felt that call for reform in science education has been increasingly focused on the pedagogical aspects of science teaching which incorporates historical and philosophical dimensions increases.

This paper discusses about such epistemological shifts of knowledge related to it may be traced against the objectivism had resulted in the new paradigm shift in understanding of science and its processes. This view of science and science teaching has been increasingly challenged by science educators like Hodson (1985), and Abimbola (1983). It is felt that call for reform in science education has been increasingly focused on the pedagogical aspects of science teaching which incorporates historical and philosophical dimensions increases.

This view of science and science teaching have been increasingly challenged by science educators like Hodson (1985), and Abimbola (1983). It is felt that call for reform in science education has been increasingly focused on the pedagogical aspects of science teaching which incorporates historical and philosophical dimensions increases.

REFERENCES


Indian and western philosophical systems have always been concerned with many questions related to knowledge, its validity, truth and belief in knowing the world around. The researches in epistemology have also influenced the perspectives of science education. The role of cognizing mind is denied to the view of science and the cognizing mind of the learners differently. Shifting from positivist view of looking at science are short sighted and to the right perspective in teachers, but also helps teachers to view the aims of science teaching, the learning processes offer many pedagogical opportunities which are of specific interest to the schools.

The making provides newer insights into paradigm shift in understanding of science and its processes, which incorporates historical and philosophical dimensions increases. For a change in the perspectives on science and science instruction that, knowledge in science discipline is arrived at by the application of various approaches methods and assessment. It has remained unresponsive despite the curriculum and textbook reforms.

This paper discusses about such epistemological shifts of knowledge related to it may be traced against the objectivism had resulted in the new paradigm shift in understanding of science and its processes. This view of science and science teaching has been increasingly challenged by science educators like Hodson (1985), and Abimbola (1983). It is felt that call for reform in science education has been increasingly focused on the pedagogical aspects of science teaching which incorporates historical and philosophical dimensions increases.

This view of science and science teaching have been increasingly challenged by science educators like Hodson (1985), and Abimbola (1983). It is felt that call for reform in science education has been increasingly focused on the pedagogical aspects of science teaching which incorporates historical and philosophical dimensions increases.
in his mind, theion of it. Truth is arrived at not by seeking correspondence as objectivists would say, ivismhe, and conditionsaddresses some of the fundamental issues in science, like, how is scientific knowledge created? How does scientific knowledge gain place of traditional view where science has been through their applicaaching.

The knowledge is independent of the knower. It is asserted that manue only if it

ng algorithms to, and Einstein. Kuhnrebuild progress through changes in knowledge and its structure, some philosophers of

critically analysis and arguments have led to the emergence of new philosophy of

knowledge and its structure, some philosophers of

importance of the inclusion of the history of science in science te

in the curriculum.

approach to understanding of learner and learning process.

for science teaching, where there is a need to make a paradigm shift from objectivists approach to subjectivist

III.

Influenced by this thought, traditional philosophies of science believed that science is the search for truth scient.

The philosophy of science a

of great importance in understanding various forms of knowledge which have later been classified into different

disciplines.

The critical analysis and arguments have led to the emergence of new philosophy of

education. The critical analysis and arguments have led to the emergence of new philosophy of

science and its implications toPedagogy of science

In practical terms we need to improve co

The new p

of reflection. It is argued that the scientific discoveries have context and

context and

nnot suggest an absolute truth. Instead the errors and the temporary status

representation of knowledge in that perso

In contrast to t

in the individual when learning

Similar changes in knowledge occur in the individual when learning

Kuhn, Lakatos and Toulmin converge on

Though there have been

change paradigms. In the p

pp.46

nworthy of scientific

of Galileo, Newton

their 'true'

rebuilding
disciplines.

levels of reflection. It is argued that the scientific discoveries have context and

scientific

and explain the world tentatively. In the p

in the external world.

concepts in the mind are formed due to the corresponding sense impressions made by the objects around on the

mind.

comes to know the objects around through his sense perceptions which create a mirror image of the objects in

know it. Objectivism also believes that t

true

in science, scientific

new concepts.

with the objects in the external world.

Objectivis m subsumes all those theories of knowledge that

that knowledge of the world

exist outside the knower which is relatively fixed and it is for the individuals to

the purpose of creating new knowledge?

pose limitations. It is observed by many science educators that

that

never learn concepts, laws and theories in the abstract and by themselves. Instead,

be used in solving problems and generating new research. The intervention of the objectivists' view point believed that the

proposed by and t

rules to

rebuild the independent

with and t

with other interpretations and representations. Thus in the history of epistemology, one can see the trend of moving fr

influence, and purpose.

concerned with and t

be used in solving problems and generating new research. The intervention of the objectivists' view point believed that the

end of time.

truth

corresponds to

real world that is

"reality constructs the person" paradigm (Evans, 2000).

true

concepts in the mind are formed due to the corresponding sense impressions made by the objects around on the

mind. The more that one knows about a concept, the closer the

representation of knowledge in that perso

concepts in the mind are formed due to the corresponding sense impressions made by the objects around on the

mind. The more that one knows about a concept, the closer the

representation of knowledge in that perso

concepts in the mind are formed due to the corresponding sense impressions made by the objects around on the

mind. The more that one knows about a concept, the closer the
The role of the teacher in this is that of training young people in efficient ways of constructing and transmitting models of the world. This approach is largely passive, teachers dictate knowledge and students are expected to replicate its content and structure. The positivistic approach is strongly objectivist in nature, where knowledge is seen as existing outside the consciousness of people. From the positivist perspective, learning is not a stimulus (e.g., memory) that occurs in the environment, but rather a response phenomenon. It requires the transmission of preformed knowledge, and paper and pencil tests have exerted a major driving force on the curriculum. This objectivist approach which is largely passive, teacher controlled, and dependent on the environment has resulted in somewhat of a stereotyped portrayal of teaching and learning which is a widely criticized shortcoming in elementary and secondary education.

In contrast, constructivism argues that effective learning builds upon pupils' own hypotheses as a basis for concept development and deep understanding in order to be able to build a hypothetical model of the conceptual world. This approach is not driven by the environment, but rather by learning. According to behaviouristic school, learning can be defined as acquiring skills or information and procedures for investigating the world and testing hypotheses. This approach is very useful in developing scientific facts. Behaviorism centers on students' efforts to accumulate knowledge of the natural world and on teachers' efforts to transmit it. It is acknowledged widely in the developed and the developing countries that science teaching has focused on the transmission of knowledge, and paper and pencil tests have exerted a major driving force on the curriculum. From the constructivistic perspective, learning is not how it is but how the world might be rather than how it is. The models derive their validity not from their accuracy in representing the natural world but from the fact that they are the foci of students, since these worlds could be very different from what is intended by the educator.

Yet, there are multiple positions and Jean Piaget (late 18th century) taught that no man's knowledge can go beyond his experience. Immanuel Kant (late 18th century) who was a radical empiricist, argued that the world is contingent upon human knowledge. According to him, knowledge is the product of the human mind and not the product of the natural world. This view is known as realism or existence and is based on the idea that knowledge is objective and exists outside the consciousness of people. According to him, knowledge is objective and exists outside the consciousness of people. This view is known as realism or existence. It is acknowledged widely in the developed and the developing countries that science teaching has focused on the transmission of knowledge, and paper and pencil tests have exerted a major driving force on the curriculum. From the constructivistic perspective, learning is not how it is but how the world might be rather than how it is. The models derive their validity not from their accuracy in representing the natural world but from the fact that they are the foci of students, since these worlds could be very different from what is intended by the educator.

According to constructivism, the role of the teacher is that of creating an environment in which learners can bring in their knowledge together. The environment is conceived as a social setting, where learning and regulation are regulated and the building of conceptual structures through reflection and the regulation of these structures is an essential component of cognitive development. In constructivist setting, knowledge is not objective; science is viewed as a system of models that describe natural phenomena. Children do this by discovering relationships and trying to explain them. They use their own hypotheses to explain natural events and try to make sense of them. This is the way of thinking about knowing, a referent for building models of teaching, learning and context. Despite some of the differences, all constructivist positions emphasize the importance of understanding young people's work and the construction of knowledge. A key approach to teaching and learning was guided discovery with proof and conclusions as the most significant learning outcomes of science teaching. This approach is guided discovery with proof and conclusions as the most significant learning outcomes of science teaching. It is acknowledged widely in the developed and the developing countries that science teaching has focused on the transmission of knowledge, and paper and pencil tests have exerted a major driving force on the curriculum.
Do not hallucinate.

Teaches must strive to engage them in experiences that help in reconstructing their ideas and in critical thinking. Doing so, learning of science can become more challenging, A science course for Primary schools, Phoenix Education Private Ltd. Reality Scale – A science course for Primary schools, Phoenix Education Private Ltd. Developing subject knowledge, Sage Publications Inc, London. Teaching Elementary Science – An Introduction to the Development of Subject Knowledge, Sage Publications Inc, London.

REFERENCES:


REFERENCES:

