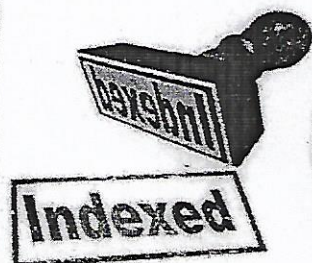


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Scientific literacy and Science Education

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ABSTRACT

Scientific literacy is an important goal of science education. This paper sets out to provide an overview of scientific literacy specifically related to whether emphasis is placed on the 'science' or the 'literacy' aspect, accepting that literacy, wherever used, is wider than simply reading and writing. Today science affects all aspects of our daily life. Students need to be prepared to meet the challenges of everyday life and face the future with confidence. They should be encouraged learning to learn science. Although the reasons for concern about quality differ from nation to nation, the primary rallying point for science education reform is the perceived level of scientific literacy among a nation's populace. The essential nature of scientific literacy is that which influences students' decisions about personal and societal problems. In the present paper an attempt has been made to explain what, why and how of scientific literacy. Various steps that a teacher may take to achieve scientific literacy in students are also discussed.

Keywords: Scientific Literacy, Nature of Science, Assessment and Resources

INTRODUCTION

Scientific literacy is a broad term that incorporates scientific ideas and concepts within and across various scientific disciplines, as well as scientific practices. In order to understand the various components of scientific literacy, there is a need to investigate the unique components of literacy in the various scientific subjects. In science

education we operate in an era in which achieving scientific literacy for all students is one of the main goals (NRC, 1996). The term 'scientific literacy' has been used in the literature for more than four decades (Gallagher & Harsch, 1997), although not always with the same meaning (Bybee, 1997). It is a simple term and its major advantage is that it sums up, at the school level, the intentions of science education. Science education should provide opportunities to learners to attain Scientific Literacy. It leads to an understanding that the goals of education are to prepare citizens who are empowered to lead a productive and best possible quality of life.

Here scientific knowledge means a broad understanding of basic concepts of science, nature of science as human inquiry and limitations of science. Questions that arise out of scientific inquiry lead to meaningful understanding of science. Drawing evidence based conclusion means, often sufficient information and data may not be available. Therefore, it becomes necessary to speculate cautiously and consciously about the available information and data. Scientific knowledge is used the context of human values related with social, economic and political dimensions.

MEANING OF SCIENTIFIC LITERACY

The trend in defining scientific literacy is suggested as away from the short term product approach, in which the facts and skills are paramount, towards the inclusion of issue-based teaching, the need to go beyond scientific problem solving to encompass socioscientific decision making, and the recognition that scientific literacy relates to enabling citizens to effectively participate in the real world. This was later modified and PISA moved to determining scientific literacy in three dimensions-

- First, scientific concepts, which are needed to understand certain phenomena of the natural world and the changes made to it through human activity..... The main content of the assessment is selected from within three broad areas of application: science in life and health; science of the earth and the environment and science in technology.
- Second, scientific processes, which are centred

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