

SHORT COMMUNICATION

## Scientific Literacy And Its Relevance In The Modern World

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Received: May 12, 2016 / Accepted: August 10, 2016

### Abstract

**The terms science and scientific literacy, historically refer to natural sciences, but in recent years the term scientific literacy has included terms from mathematics and technology with applications in the physical sciences. The term science literacy was first encountered in an article by Paul DeHart Hurd in 1958 entitled Science Literacy: Its Meaning for American Schools (Laugksch, 2000). According to Hurd, the term refers to the community's understanding of science and its applications. Norris & Philips (2003) believe that the term scientific literacy refers to general scientific knowledge that one must have in order to be able to understand scientific applications, to be able to distinguish between science and non-science and to recognize the benefits and risks of science.**

**Keywords:** Science, scientific literacy, second chance school.

### Introduction

There are many definitions of scientific literacy, but there are three main categories (Shamos, 1995). The first category is that of cultural scientific literacy, which refers both to scientific knowledge and the knowledge of history and philosophy one must have so as to be able to participate in scientific discussions and read scientific journals. The second category is that of functional scientific literacy, in which the knowledge of scientific concepts is not enough but the ability to be able to communicate scientifically with others is also required. The third category - true scientific literacy - refers not only to scientific knowledge but also to the ability to be able to articulate and develop scientific questions knowing basic scientific theories.

### *The importance of Scientific Literacy*

Scientific literacy has an important role in educating the people of a society. The arguments in this review paper, according to Shamos (1995) are based on two considerations, the macroscopic (macro view) and microscopic (micro view). The macroscopic approach focuses on the positive results and benefits for a society, for science and for a nation. It claims that scientifically literate citizens can contribute to the economic development of

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a society and to scientific research, since the modern world is dependent on technology and science. The microscopic view is associated with positive outcomes at the individual level. Surveys have shown that the understanding of science provides personal satisfaction and fulfilment (McDonald & Dominguez, 2005). Additionally a scientifically literate person has the skills to manage day to day issues related to science and technology such as PCs, mobile phones etc. and also has increased employment opportunities in fields that require the use of technological equipment. According to Durant (1993) the concept of scientific literacy refers to what the community needs to know about science, while Millar (1997) believes that citizens should be in an age where technology is developing rapidly scientifically literate. In a rapidly growing technology era, the need for scientific literacy is greater than ever necessary (Rychen & Salganik, 2003).

### **Scientific Literacy in Second Chance Schools**

Second Chance Schools (SCS) are aimed at people over 18 who have not been able to complete the nine-year compulsory education. The SCS has two year compulsory attendance and provides a high school diploma equivalent to that of a conventional secondary school. One of the major objectives of these schools is to re-integrate adults in training that have been diverged from it for various reasons. The purpose of SCSs is to offer training to adults who have abandoned education so as to help enable them to regain their confidence (European Commission - White Paper, 1996). It should be emphasized that the SCSs operate with an open curricula with the aim of being places where knowledge is produced rather than transmitted (Vergidis, 2003). Science as part of compulsory secondary education follows a very specific curriculum and is more advanced with more complicated maths and equations in comparison to Second Chance Schools which follow an open curriculum with more straightforward science containing little or no maths at all. Nevertheless by attending these lessons students of Second Chance Schools increase their scientific literacy.

Based on the above analysis of the concept of scientific literacy, the usefulness of Second Chance Schools (SCS) will now be discussed. Their primary goal is to produce graduates that achieve functional scientific literacy and if this is not possible they should have at least mastered cultural scientific literacy. Students of SCSs should have developed scientific knowledge and skills so as to be able to participate in scientific issues that occur in everyday life.

The objectives pursued by scientific literacy in SCSs is (Chalkia, 2000, 2003) to allow learners to:

- Explain how the physical sciences describe and interpret the world.
- Explain the role of technology in the modern world and

the way that technological discoveries and constructions modify the world to serve the needs of humanity.

- Read and understand simple scientific articles, follow and understand documentaries about science and also be able to participate in discussions about matters of science.
- Distinguish science from non-science and reject any pseudoscientific interpretations of a phenomenon.
- Collect sound scientific information from various sources.
- Distinguish good from bad uses of technology on society and the environment.
- Use scientific thinking both for personal and for social purposes.
- Use the basic principles and laws of science to interpret simple physical phenomena and technological applications.
- Recognize the variety and harmony of the natural world.
- Recognize the interdependence of science, technology and mathematics.

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