STUDY OF MIDDLE SCHOOL STUDENTS' IDEAS ABOUT PHOTOSYNTHESIS THROUGH MULTIPLE INTERACTION MODES

Ankita Patel, Saurav Shome and Chitra Natarajan
Homi Bhabha Centre for Science Education (TIFR)
V. N. Purav Road, Mankhurd, Mumbai 400 088. India

Abstract

Understanding photosynthesis is essential to understanding energy and material flow through the environment and especially through living organisms. This is rarely addressed either in textbooks or in classroom discussions. In fact, most classroom practices do not even acknowledge students' spontaneous ideas, and hence students retain their ideas as disjunctive from the ideas they learn in the classroom. Photosynthesis and its role in energy flow through living organisms was hence an important area of study in an 8-day course on Energy and Environment that was conducted for students of Class 8, who volunteered from three similar English medium schools in the vicinity of our Centre.

The course designed explored students' spontaneous ideas about photosynthesis and related concepts, including possible alternative conceptions, using multiple probes. Students' ideas were first probed through a questionnaire. Students' responses were studied by the researchers and this was followed by a classroom discussion on photosynthesis. Students in groups carried out a few activities and observations on photosynthesis through a set of three simple experiments designed for the purpose. The results of the experiments, some of which failed, were discussed in the class.

Students' responses to the work sheet as well as during discussions reflected their misconceptions about photosynthesis and energy flow. The discussions gave an opportunity to address students' ideas and clarify them. Students were unable to make the link between photosynthesis and the flow of energy through living organisms. The paper will discuss students' ideas on photosynthesis, the importance of our sequence of classroom interactions, and implications of the findings for classroom settings. The paper will also discuss the limitations of the course sequence and possibilities for further improvement.