

"As for one who is unable to inquire on his own, show him the way"

Tsila Aran

Teachers, especially in the science disciplines, often wonder why their students – even the gifted ones – seldom ask interesting or original questions. The reasons vary: their years of school experience may have taught them that it's the teachers who ask the question and are unwilling or unable to share the stage. When given the opportunity to ask questions themselves, students most often voice their own preconceptions; their questions tend to simplicity and focus on phenomena that meet the eye.

In a study conducted in 2008, I investigated whether students' questioning skills could be improved through concentrated instruction in creative thinking; the uniqueness of my approach was in borrowing generic tools from the field of creative thinking and adapting them for use in processes of scientific research.

For the purposes of the study, a plan for teaching creative thinking was developed on the basis of two approaches: direct instruction, and the combinatorial approach (Swartz, de Bono, Perkins). During the semester, the students did chemistry experiments and learned creative thinking. The study was conducted in five cycles. At the beginning and end of each semester, the students received the identical task sheet. They were required to read a text concerning the sciences, explain it, and ask questions about it. The following criteria were examined: the number of questions asked, the number of questions about the narrative aspects of the passage, and the number of questions about the scientific aspects of the passage. The results of the study indicate that learning creative thinking produced a greater number of questions in general, and questions related to scientific contents in particular, while it decreased the number of questions asked about the narrative aspects of the texts. The study clearly indicates the need for teachers' direct involvement in order to enhance questioning abilities in science education.