

Inquiring about the inquiry laboratories in chemistry in Arab high schools in Israel

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Learning by inquiry has played an important role in recent years and is considered to be an important element in scientific literacy. Generally, the laboratory is integrated into chemistry education in order to improve students' learning ability and also to vary teaching methods. Combining inquiry experiments in the chemistry curriculum for high-school students gives students opportunities, besides the pleasure that they experience when dealing with materials or methods used to develop research skills such as asking questions, making predictions, designing experiments, collecting data, and drawing conclusions. The inquiry laboratory enables students to learn actively. In order to realize this goal, students have to examine their knowledge and rebuild it again during discussions with their peers in the working group.

The inquiry-type laboratory in chemistry is rapidly spreading within Arab high schools in Israel. During the last few years, about 90% of Arab high schools taught according to the inquiry laboratory.

On the one hand, we found in our current study that the inquiry laboratory in chemistry had succeeded in increasing the Arab students' actual perception of the laboratory learning environment and their attitudes toward laboratory work and also in bridging the gap between the their actual and preferred perception of the laboratory learning environment. In addition, it also increased the Arab students' ability to ask more and better questions as a result of reading scientific articles. But on the other hand, we found differences between Arab and Jewish students' actual perceptions of the laboratory learning environment, and we found that the Arab students had more positive attitudes towards laboratory work and that the Arab students' ability to ask more and better questions as a result of reading scientific article was lower from the number of questions point of view and from the cognitive level of the questions. We correlated these differences to cultural and philosophical issues.