Improving High School Students’ Ability to Evaluate Evidence and Use Evidence in Socioscientific Contexts and Educational Software Environments

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Abstract
Developing students’ higher order thinking skills is one of important goals in contemporary science education. The study aimed at developing one teaching module with an educational software to improve students’ ability to evaluate evidence and justify arguments with evidence. One experienced teacher and two of her classes (N=72) participate in the period of five-week experimental teaching, in which socioscientific contexts were provided and embedded in an educational software environments. The written tests were administered before and after instructional intervention to assess the improvement of students’ abilities. The results revealed that all students got statistically significant improvement in evaluating evidence and using evidence. Most students could generate clear criteria for evaluating evidence and make valid arguments in supportive of evidence. Based on these results, we suggest science instruction that exposes students to socioscientific issues and appropriate software environments through putting emphasis on evidence evaluation and use will be beneficial to elevating students’ higher order thinking skills.

Key words: Evidence evaluation, High school students, Instructional module, Socioscientific issues