

## Prioritizing Emotion Objects in Making Sense of Student Learning of Socioscientific Issues

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**Overview:** The referents of students' emotions (emotion objects) matter: those who have emotions about social phenomena or stakeholders are indicative of deep learning of socioscientific issues.

**Audience:** Teachers; Teacher educators.

### Key Points

- Students have different emotions about different stakeholders, phenomena, information, the status quo, and the future (collectively referred to as emotion objects) within a socioscientific issue.
- Teachers should consider strategies that help students attend to (disadvantaged) stakeholders and (injustice) social phenomena such as direct-to-child marketing or discrimination against the obese.
- We need to attend to and specify emotion objects as key variables in future research on emotions.

**INTRODUCTION** In view of the complexity involved in learning socioscientific issues – ill-structured problems (e.g., climate change, pandemics) that require both scientific reasoning and moral reasoning for decision-making, students are likely to have emotions about different aspects of the issues. By identifying specific referents that students' emotions are directed to (i.e., emotion objects), we can gain a better idea of what they attend to during their learning, and how. This study investigated and compared the emotional expressions of four university students enrolled in a 12-week general education course about obesity. Data were collected throughout the course and 6 months after, including weekly reflective journals and delayed post-course interviews.

**FINDINGS** Students who developed a deeper understanding of obesity had specific emotion objects in their reflections. They showed a wider range of *social phenomena* as emotion objects, e.g., food industry lobbying, the spread of social values, beauty standards, and the impact of health information on students. Also, these learners tended to have a broader range of *stakeholders* as emotion objects that embraced those in need (e.g., obese people and future citizens). The emotions about social phenomena and stakeholders were often moral in nature. Negative emotions about these emotion objects are not necessarily detrimental to learning.

It is possible that these negative emotions were antecedents for acknowledging the need to take actions, in particular, to help those in need. Our findings provide strong evidence that moral emotion is an essential component for deep learning of socioscientific issues.

### TAKEAWAYS

- In teaching socioscientific issues, teachers should focus on directing students' attention to emotion objects such as stakeholders and social phenomena that are key to the issues.
- Teachers should create learning experiences that elicit moral emotions among students. An example would be a role play that engages students in the day-to-day experiences of those who are negatively impacted in an issue. These moral emotions are important because they are antecedent to action-taking orientation.
- Negative emotions are unavoidable in learning socioscientific issues. Directing students to possible resolutions may help them regulate their negative emotions and prompt them for actions to help those in need.
- Emotion objects are indicative of what matters to students. In future research into emotions, it is important to be specific about emotion objects so that we can gain a better understanding of student learning.