

Engagement with Socioscientific Issues: Five Types of Students

Lida T. Klaver, Juliette H. Walma van der Molen, Patrick H. M. Sins, Laurence J. F. Guérin

Overview: Dutch 8- to 16-year-old students' engagement with socioscientific issues was studied. Questionnaire data showed five types of students, with most students fitting the Non-Users profile.

AUDIENCE: Formal educators; informal educators; science educators; citizenship educators

KEY POINTS

- Students can use several resources to learn about socioscientific issues (SSI): social (parents, friends, Internet), in-class, media, and informal education (science museums, the zoo).
- Students' use of SSI-related resources differs. We found five types of students: Social Visitors (5.9%), Offline Media Consumers (10.6%), Media Discussers (14.3%), In-Class Users (21.0%), and Non-Users (48.3%).
- Non-Users have more negative attitudes towards SSI than students with another use of sources of knowledge profile.
- Especially in secondary education, many students rarely engaged with SSI-related resources in-class.

INTRODUCTION With this study, we aimed to provide more insight into students' engagement with socioscientific issues. SSI are open-ended, complex societal issues with a scientific dimension. In SSI education, students engage with issues related to, for instance, textile, plastic, energy, or the Internet. To get insight into students' engagement with SSI, we studied their use of sources of knowledge about SSI and their attitudes toward SSI. Using questionnaire data of 2015/2016 of 1676 Dutch 8- to 16-year-old students, we explored patterns of use of sources of knowledge and related these to students' attitudes towards SSI.

FINDINGS We developed a questionnaire to measure the frequency of students' use of sources of knowledge about SSI. The questionnaire measured students' use of SSI-related social resources (talking with parents, friends, or online about SSI), in-class resources (talking about SSI or watching the news or television programs about SSI in class), visit resources (going to the zoo or a science museum), and offline media resources (watching the news, reading about SSI in books, magazines, or the newspaper). The questionnaire data were used to explore patterns of students' use of sources of knowledge. Five profiles could be distinguished. Social Visitors (5.9%) scored higher on visit resources and social resources. Offline Media Consumers (10.6%) scored higher on offline media resources, Media Discussers (14.3%) scored higher on offline media resources and social resources, and In-Class Users (21.0%) scored higher on in-class resources. Finally, Non-Users (48.3%) scored lower on all the SSI-related resources.

These profiles related to attitudes towards SSI, with Non-Users having the most negative attitudes and Media Discussers the most positive attitudes. In primary education, most students were In-Class Users (50.7%), while in secondary education most students were Non-Users (65.0%). Students in pre-university tracks of secondary education were more likely to be Offline Media Consumers or Media Discussers than students in pre-vocational tracks.

TAKEAWAYS The large amount of Non-Users is reason to stimulate students' engagement with SSI. Policy makers can support teachers by stimulating SSI-related curriculum development, the exploitation of existing SSI-related educational materials, and teacher professional development. Previously, we argued that students' SSI-related resources impact students' learning and decision-making about SSI (Klaver et al., 2022). Therefore, it is important to know the learner and to consider students' socioscientific capital when engaging in SSI-based teaching. The questionnaire that measures students' use of sources of knowledge about SSI can be used by teachers and researchers to learn about students' SSI-related resources. Furthermore, the profiles and their frequencies in our sample can inform teachers on possible differences between their students and their sources of knowledge about SSI.