

IO8: TEACHERS' BELIEFS ABOUT TEACHING SOCIO-SCIENTIFIC ISSUES

OVERVIEW AND AIMS

- The main aim of this module is to support future teachers to understand how their beliefs, narratives, cultural backgrounds and personal identities can influence how they choose to teach an SSI.
- The module introduces the teachers to the following:
 - An appreciation of their own beliefs on specific SSI
 - An understanding of how their beliefs, or those of their students can influence the discussion of an SSI
 - An exploration of cultural backgrounds and personal identities as issues hindering the discussion of SSI through case studies
 - Teaching practices and pedagogical strategies to help them in introducing SSI in their classes.

SOCIO-SCIENTIFIC ISSUES AND TEACHERS

- Teachers can be reluctant to teach SSI due to concerns about their abilities, time constraints and lack of support materials (Pitiporntapin & Srisakuna, 2017; Saunders & Rennie, 2013).
- Teachers' own belief systems, their cultural or religious background and the personal identities influence how they discuss an SSI (Kilinc, Demiral & Kartal, 2017, Sadler et al., 2006)
- Teachers often turn to teacher-centred activities emphasising on content or facts of science as a way to cope with the pedagogical challenges of SSI (Day & Bryce, 2011).
- Teachers often have a content-centred interpretation of SSI; they teach SSI in order to teach content; reduce SSI to specific content (Tidemand & Nielsen, 2017).
- Some teachers lack confidence in monitoring student discussion (e.g Bryce & Gray, 2004) and find it difficult to facilitate students' search for, and critical examination, of information (Ekborg, Ottander, Silfver & Simon; 2013)
- Science teachers tend to devalue SSI-relevant assessment criteria (e.g. Steffen & Hößle, 2017) and they instead tend to focus on the science disciplinary content when assessing students (Christenson, Gericke & Rundgren, 2017; Tidemand & Nielsen, 2017)

DEALING WITH THEIR BELIEFS AND BELIEFS OF OTHERS (1/3)

- Part 1: the future teachers are presented with different SSI and are asked to discuss them in their groups and try to reach decisions,
 - Role play: different roles are given within the group as a way to bring the future students in conflict with their own belief systems (example in picture 1)
 - Reflection: difficulties that teachers had when discussing from a role? What influenced their decisions?
 - Conclusion: what is the role of our beliefs when discussing an SSI? What is the role of our beliefs when teaching an SSI?
 - Presentation of relevant literature



DEALING WITH THEIR BELIEFS AND BELIEFS OF OTHERS (2/3)

- Part 2: Identifying your own beliefs and those of the others
 - A questionnaire to help future teachers identify their beliefs on teaching SSI has been prepared as part of this module. Future teachers are asked to complete this and then reflect on their responses as part of a group work.
 - Questions to discuss: what did you learn from this questionnaire? Which SSI would you avoid teaching and why?
 - Conclusion: How do our beliefs influence our decision on whether to teach SSI and how to teach them?



Conscience alley



Consequences wheel



Mind movies



Two Stray, One Stay

DEALING WITH THEIR BELIEFS AND BELIEFS OF OTHERS (3/3)

- Part 3: Pedagogical practices and guidelines to support future teachers deal with their beliefs and those of their students.
 - Consciousness alley, role playing, dialogue and argumentation practices (theory and practical examples)
 - Case studies with teachers discussing SSI in their classes – discussions of beliefs
 - Designing a lesson plan to include the above, and microteaching for feedback.

Maria Evagorou

Associate Professor of Science Education

University of Nicosia, Cyprus

Evagorou.m@unic.ac.cy