

## Dr. Dury Bayram Jacobs (NRO project)

<b>Project title</b>	Science Teachers Design Formative Evaluation Tools for SSI (Socio-Scientific Issues) Skills (EN)  Bèta-docenten Ontwerpen Formatieve Evaluatie Tools voor SSI (Socio-Scientific Issues) Vaardigheden (NL)
<b>Grant</b>	NRO
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<b>Research Team</b>	Dr. Ineke Henze (TU Delft) Dr. Judith Gulikers (WUR)
<b>Consortium-schools</b>	Montessori College, Nijmegen Pax Christi College, Druten Regionale Scholengemeenschap Brokdele, Breukelen

Socio-scientific issues (SSI) are incorporated in science education to promote 'scientific literacy'. In order to educate students to be scientifically literate citizens, teachers are expected to help them develop skills such as argumentation, reasoning and assessing the reliability of information sources, etc. There is evidence that teaching Socio-scientific Issues (SSI) promotes the development of these skills (e.g. Simonneaux & Simonneaux, 2009; Zeidler, Sadler, Simmons, & Howes, 2005). SSI are controversial, complex, and interdisciplinary problems with significant consequences for society. They require scientific substantiation but also considerations of a moral, economic, and political nature. Genetically modified food, exterminating mosquitoes and oil drilling in national parks are some examples of SSI.

In practice, science teachers regularly integrate current SSI in their lessons (e.g. climate change, the use of laughing gas among young people, etc.). The SSI lessons developed in the ENGAGE project ([www.engagingscience.eu/en](http://www.engagingscience.eu/en)) can support teachers. However, teaching SSI systematically is difficult for teachers, despite the availability of in-service training activities and materials. Moreover, because of their controversial nature and inherent uncertainty, SSI differs from other educational content (Sadler & Zeidler, 2004). In addition, SSI classes are ideally suited to not only teach science knowledge but also develop critical skills for scientific literacy. With this, SSI lessons require a different teaching approach, for which teachers must expand their repertoire (Ekborg et al., 2013).

Science education literature shows that the 'evaluation' of what has been learned is usually ignored or only focused on knowledge in SSI lessons. As a result, science teachers have difficulty in making the development of SSI skills visible. In this project, teachers in a professional learning community develop their formative evaluation (FE) tools and strategies using the FE cycle developed by Gulikers and Baartman (2017). The teachers design an SSI

lesson for physics, chemistry and biology and develop FE tools and strategies for these SSI lessons. We, the researchers, investigate whether this allows teachers to develop more competence for FE and thus gain a better insight into the development of SSI skills.