

Science Education for Sustainable Development through Socioscientific Issues: Teacher Competences

Citation for published version (APA):

Stouthart, T., Bayram, D. D., & van der Veen, J. (2023). *Science Education for Sustainable Development through Socioscientific Issues: Teacher Competences*. Poster session presented at Educating the Educators, ETE IV, Leiden, Netherlands.

Document status and date:

Unpublished: 11/05/2023

Document Version:

Other version

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

www.tue.nl/taverne

Take down policy

If you believe that this document breaches copyright please contact us at:

openaccess@tue.nl

providing details and we will investigate your claim.



Science Education for Sustainable Development through Socioscientific Issues: Teacher Competences

Tuba Stouthart^{1*}, Dury Bayram-Jacobs¹, Jan van der Veen¹

¹Department of Applied Physics and Science Education, Eindhoven University of Technology, the Netherlands

*Correspondence: t.stouthart@tue.nl; Tel.: +31 40 247 3260

Main Research Question

Which teacher competences are necessary, and, considering these, what are the training needs of science teachers to successfully implement the Sustainable Development Goals (SDGs) in Dutch secondary science education through socioscientific issues (SSI)?

Study 1

Research questions

What resources pre-service teachers (PSTs) use to design SSI lesson to teach the SDGs?

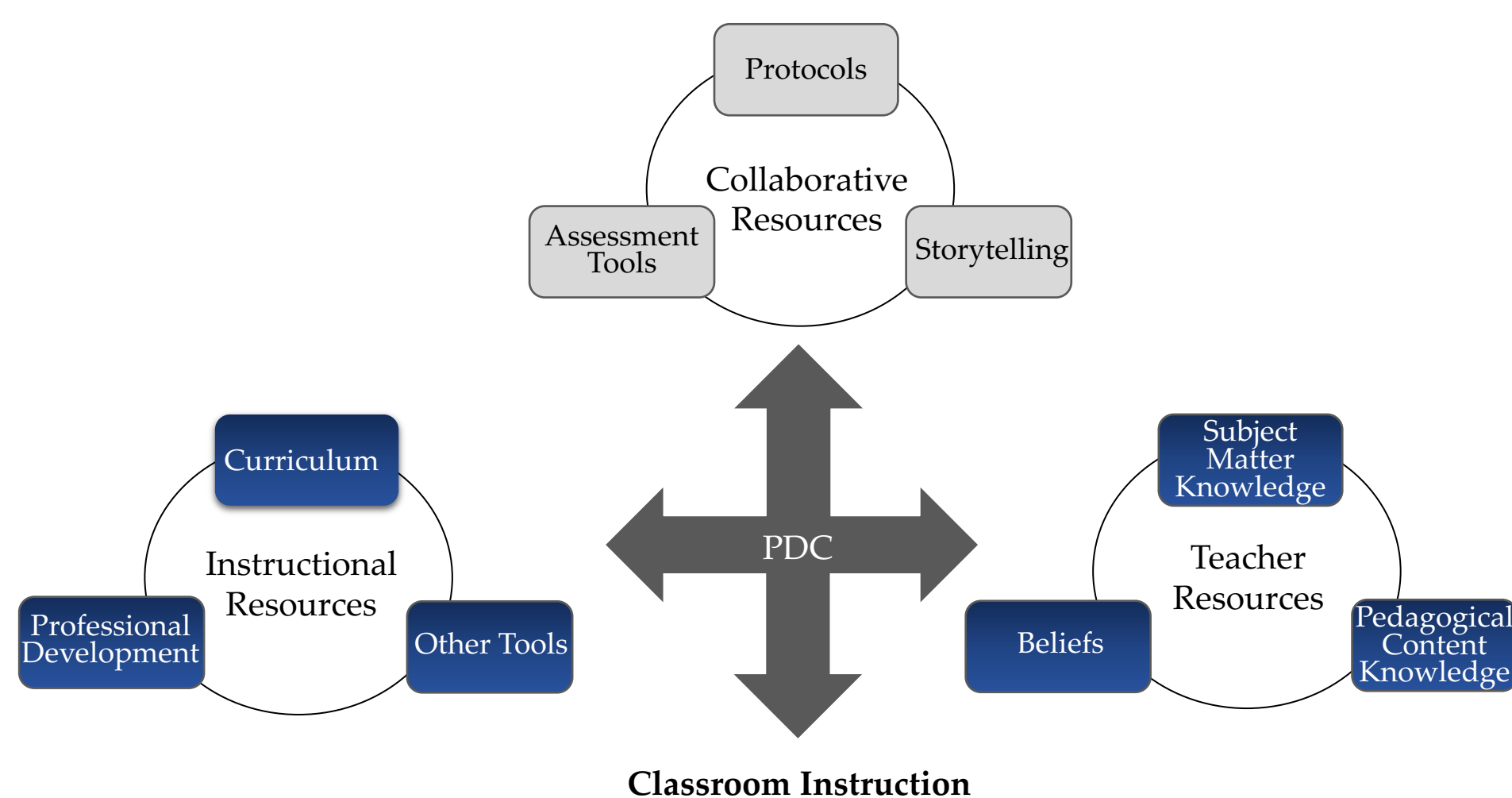
How does the use of the resources impact PSTs' lesson design for teaching the SDGs through SSI?

Participants and Data Collection

5 PSTs form a Professional Learning Community (PLC) together with two researchers

Data Collection and Data Analysis

Qualitative data is collected via field notes of the PLC meetings, reflection reports and semi-structured interviews. Deductive and inductive qualitative data analysis (Boeije, 2009) via Pedagogical Design Capacity (PDC) Framework (Ellingson, 2018; Knight-Bardsley & McNeill, 2016)

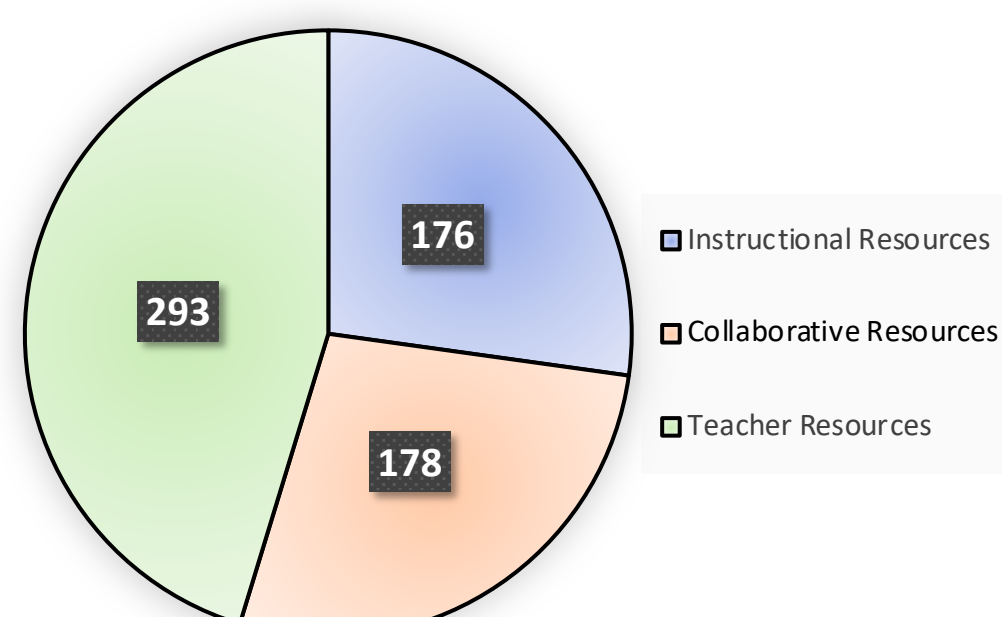


Preliminary Findings

"... problems are open ended. SSI is finding the problem and the way to the solution, not really about the solution. It is about working towards the solution."

"Students find SSI really, really hard because they find it hard that they do not have like very clear goals, they have to set it themselves and they are used to from other courses just like getting a lot of content sent to them."

Pedagogical Design Capacity (PDC)



Study 2

Research questions

What do science teachers perceive to be the key competences to teach the SDGs through SSI?

How do science teachers differ in terms of their perceptions of the key competences?

Participants and Data Collection



Data Analysis

Qualitative data will be analysed via ATLAS.ti, a qualitative data analysis software
Quantitative data will be analyzed via KADE, a desktop application for the analysis of Q methodology data

Works cited

Bianchi, G., Pisiotis, U., Cabrera, M., Punie, Y., & Bacigalupo, M. (2022). *GreenComp: The European sustainability competence framework*. <https://doi.org/10.2760/13286>

Boeije, H. (2009). *Analysis in qualitative research* (Reprint). SAGE.

Ellingson, C. L. (2018). *Teachers as Curriculum Designers: Understanding STEM Pedagogical Design Capacity*.

Knight-Bardsley, A., & McNeill, K. L. (2016). Teachers' Pedagogical Design Capacity for Scientific Argumentation. *Science Education*, 100(4), 645–672. <https://doi.org/10.1002/sce.21222>