

SIG 4 Science | Environment | Health activities summary 2019 for the ESERA Board

1) The present **official SIG 4 Science | Environment | Health members list** includes 81 persons (December 2019).

2) **At the 2019 ESERA conference in Bologna**, the SIG 4 hosted successful activities:

- There was a SIG preconference on Monday 26.8.2019, 9.00 - 12.45. The title was: **Science | Environment | Health – Towards a Science Pedagogy of Complex Living Systems**. It was dedicated to a workshop on the upcoming chapters of the 2nd edition of our SIG flagbook, and an opportunity to get acquainted and involved with SIG 4 topics and issues.
- **Two SIG 4 symposia** were presented:
 - A) the invited SIG4 symposium:**
Title: "Prediction and Adaption in Science | Environment | Health contexts"
Organisator: Albert Zeyer, Switzerland
Discussant: Alla Keselman, US
 - a) Deidre Bauer, Julia Arnold, Kerstin Kremer, Germany: Students' perceptions about the complexity of sustainability-related consequences of their behavior
 - b) Nuria Álvaro, Olga Mayoral and Valentín Gavidia, Spain: Development of adaptive didactic resources for decision-making on environmental health problems
 - c) Iztok Devetak, Sonja Posega Devetak, Tina Vesel Tajnšek, Slovenia: Can pre-service teachers' perception of allergic students' quality of life be a predictor of their adaptation in future profession?
 - d) Albert Zeyer. Prediction and Adaption in complex systems. An introduction.
 - B) SIG4 Symposium 2**
Title: The question of responsibility in Science | Environment | Health
Organisator: Alla Keselman
Discussant: Albert Zeyer
 - a) Claes Malmberg, Anders Urbas and Tomas Nilson, Sveden: The paradox of responsibility
 - b) Julia Arnold, Switzerland: What knowledge do students need in order to form decisions concerning preventive health actions?
 - c) Benedikt Heuckmann & Finja Krüger, Germany: The impact of scientific knowledge on university students' risk perception of a controversial habit
 - d) Denise Quiroz Martinez, UK: Creating Pedagogies for Sustainability in Chile through Chemistry Education: Benefits and Challenges from Teachers' Perspectives

3) At the SIG 4 members meeting in Bologna, the SIG 4 members **elected a new SIG 4 co-coordinator**. It is **Kerstin Kremer**, Leibniz Universität Hannover, Germany.

4) **The 3rd ESERA SIG4 Science | Environment | Health 2020 Mini Conference** will take place from Sunday, 30th August until Tuesday, 1st September 2020 at Obergurgl University Center near Innsbruck in Austria. A particular focus of this mini conference will be research on environmental and health education contributing to a sustainable development on our planet. The local organisation team is presided by Suzanne Kapelari, University of Innsbruck, Austria and supported by the coordinators of ESERA SIG 4. The call is going out these days.

Olga Mayoral, University of Valencia, Spain, plans to invite for the **SIG Miniconference 2022** in the University's botanical garden.

5) There are plans for establishing an international **SIG research project**, proposed and coordinated by Uwe Simon, University of Graz, Austria.

6) Publications

- **The second edition of the flag book** of the SIG 4 in the Springer Science Education Series is well under way:

Zeyer, A., & Kyburz-Graber (Eds.). (2012). *Science | Environment | Health. Towards a Renewed Pedagogy for Complex Living Systems*. Dordrecht, Boston, London: Springer Verlag

Presently, the reviews for each of the ten chapters are coming back and will be summarized and extended by the editors. The book is planned to appear in summer 2020.

- The **publication of a chapter** resulting from the invited SIG4 symposium at ESERA 2019 in the Springer conference book of selected papers is planned.

- The **SIG 4 invited symposium** at the 2017 ESERA conference resulted in a **publication**:

Zeyer, A., Álvaro, N., Arnold, J., Benninghaus, J. C., Hasslöf, H., Kremer, K., Lundström, M., Mayoral, O., Sjöström, J., Sprenger, S., Gavidia, V., & Keselman, A. (2019). Addressing Complexity in Science | Environment | Health Pedagogy. In E. McLoughlin, O. Finlayson, S. Erduran, & P. Childs (Eds.), *Contributions from Science Education Research, Selected Papers from the ESERA 2017 Conference* (Contributi, p. pp 153-170). Springer.

- SIG 4 members published several **papers** concerning S|E|H issues (list assembled from the updates to the researchgate project

<https://www.researchgate.net/project/ScienceEnvironmentHealth>):

Arnold, J., Dannemann, S., Gropengießer, I., Heuckmann, B., Kahl, L., Schaal, S., Schaal, S., Schlüter, K., Schwanewedel, J., Simon, U., & Spörhase, U. (2019). Modell zur reflexiven gesundheitsbezogenen Handlungsfähigkeit aus biologiedidaktischer Perspektive. *Biologie in Unserer Zeit*, 49(4), 243–244. <https://doi.org/10.1002/biuz.201970410>

Benninghaus, J. C., Mühlhng, A., Kremer, K., & Sprenger, S. (2019). *Complexity in Education for Sustainable Consumption — An Educational Data Mining Approach using Mysteries*. <https://doi.org/10.3390/su11030722>

Peter, M., Diekötter, T., & Kremer, K. (2019). Participant outcomes of biodiversity citizen science projects: A systematic literature review. *Sustainability (Switzerland)*, 11(10), 1–18. <https://doi.org/10.3390/su11102780>

Rafolt, S., Kapelari, S., & Kremer, K. (2019). Kritisches Denken im naturwissenschaftlichen Unterricht – Synergiemodell, Problemlage und Desiderata Critical Thinking in the Science Classroom—Synergy Model, Challenges and Desiderata. *Zeitschrift Für Didaktik Der Naturwissenschaften*, December. <https://doi.org/10.1007/s40573-019-00092-9>

Sjöström, J. (2019). Didactic Modelling for Socio-Ecojustice. *Journal for Activist Science and Technology Education*, 10(1). <https://doi.org/10.33137/jaste.v10i1.32916>

Zeyer, A. (2019). *Getting Involved with Vaccination . Swiss Student Teachers ' Reactions to a Public Vaccination Debate*. 11(23), 1–15. <https://doi.org/10.3390/su11236644>

Zeyer, A., & Dillon, J. (2019a). *Science | Environment | Health – the emergence of a new pedagogy of complex living systems*. 1–10.

Zeyer, A., & Dillon, J. (2019b). The role of empathy for learning in complex Science | Environment | Health contexts. *International Journal of Science Education*, 41(3), 297–315. <https://doi.org/10.1080/09500693.2018.1549371>

Lucerne, 29.2.2020

The SIG 4 co-coordinators:

Kerstin Kremer, Hannover

Albert Zeyer, Lucerne