

Proposal for a pre-conference workshop of the Special Interest Group No 4 (Science|Environment|Health) at the ESERA 2019 Conference in Bologna

Title of the preconference: **Science|Environment|Health –Towards a Science Pedagogy of Complex Living Systems**

Contact information:

Prof. Dr. med. A. Zeyer
Bern University of Applied Science
Department of Health Professions
Murtenstrasse 10
CH-3008 Bern
Switzerland
Email: albert.zeyer@bfh.ch

Dr. Alla Keselman
Two Democracy Plaza, Suite 510
6707 Democracy Blvd., MSC 5467
Bethesda, MD 20892-5467
Email: keselmana@mail.nih.gov
Phone: 1-301-496-3420

Prof. Dr. Regula Kyburz-Graber
University of Zurich
Institute of Education
Kantonsschulstrasse 3
CH-8001 Zurich
Switzerland

Requested maximum number of participants: 30

Short description of relevant areas of expertise for each workshop facilitator:

Dr. Albert Zeyer is a physician and a physicist. He worked for many years as a mathematics and science teacher and as a medical doctor in various Swiss schools and hospitals. In 2004, he started his research career in science education as a senior researcher at the University of Zurich (CH), Institute of Education. He currently is professor of medicine at Bern University of Applied Sciences., Department of Health Professions, Bern, Switzerland. His research interests include Science|Environment|Health, Cognitive Style and Motivation to Learn Science, and Public Understanding of Science. At ESERA (European Science Education Research Association) conference, Dr. Zeyer is a strand co-chair and, together with Dr. Keselman, a co-coordinator of the Special Interest Group Science|Environment|Health. He is a member of the Editorial Board of the ESERA book series.

Recent scientific publications of Albert Zeyer include:

Zeyer, A., & Dillon, J. (2018). The role of empathy for learning in complex Science|Environment|Health contexts. *International Journal of Science Education*, 0(0), 1–19. <http://doi.org/10.1080/09500693.2018.1549371>

Zeyer, A., Keselman, A., & Levin, D. (2015). For the Mutual Benefit: Health Information Provision in a Science Classroom. In C. Arnott Smith & A. Keselman (Eds.), *Meeting health information needs outside of healthcare*. Witney, Oxford, UK: Chandos Publishing.

Zeyer, A., & Dillon, J. (2014), R. (Eds.). Science|Environment|Health—Towards a reconceptualization of three critical and inter-linked areas of education. *International Journal of Science Education*, 36(9), Zeyer, A., & Roth, W.-M. (2013). Post-ecological discourse in the making. *Public Understanding of Science* 22(1), 34-49. Zeyer, A., & Kelsey, E. (2013). Environmental Education in a Cultural Context. In R. B. Stevenson, M. Brody, J. Dillon & A. E. J. Wals (Eds.), *International Handbook of Research on Environmental Education* (pp. 206-212). New York: Routledge. Zeyer, A. & Kyburz-Graber, R. (Eds.). (2012). *Science|Environment|Health. Towards a renewed pedagogy for science education*. Dordrecht: Springer.

Dr. Regula-Kyburz Graber, Dr. sc. nat., is Professor emeritus at the University of Zurich, Chair Secondary school pedagogy (teacher education). She made her diploma of biology, biology education and her doctoral thesis at ETH Zurich (Swiss Federal Institute of Technology). 1998 she was appointed as professor on the chair for secondary school pedagogy with a main focus on science education. From 2007 to 2011 she was head of the Institute for secondary and vocational education. Her main research interests are socio-ecological environmental education, interface between science and society, scientific literacy, interdisciplinary learning, teaching and learning approaches, Science|Environment|Health. Her research was recognized 2007 by the Research Award of the North America Association for Environmental Education for Outstanding Contribution to Research in Environmental Education. Recent Publications are:

Wolfensberger, Balz, Jolanda Piniel, Regula Kyburz-Graber & Claudia Canella (2017). Selbstreguliertes Lernen: Orientierungsrahmen von Studierenden im Rückblick auf ihre Gymnasialzeit. *Zeitschrift für Pädagogik*, 63(2). S. 225–244, siehe URL: <http://www.zora.uzh.ch/id/eprint/126082/>

Brugger, P. & Kyburz-Graber, R. (2016). *Unterrichtssituationen meistern. 20 Fallstudien aus der Sekundarstufe II*. Bern: hep.

Kyburz-Graber, R. (2016). Case study research on higher education for sustainable development: epistemological foundation and quality challenges. In: Matthias Barth, Gerd Michelsen, Marco Rieckmann, Ian Thomas (Eds.), *Routledge Handbook of Higher Education for Sustainable Development*, p. 126-141. New York: Routledge.

Kyburz-Graber, R., Odermatt, F. & Canella, C. (2014). "Meine Vorstellung von gutem Unterricht war eine 45-Minuten-Show des Lehrers" - Wie angehende Lehrpersonen das Unterrichten im Gymnasium erfahren. *Beiträge zur Lehrerbildung*, 32 (1), 101-119.

Zeyer, A. & Kyburz-Graber, R. (Eds.) 2012. *Science/Environment/Health. Towards a renewed pedagogy for science education*. Dordrecht: Springer.

Dr. Alla Keselman holds a doctorate degree in Human Cognition and Learning from Columbia University. She is a Senior Social Science Analyst in the Division of Specialized Information Services at the US National Library of Medicine (NLM), National Institutes of Health. Dr. Keselman conducts research into lay conceptual understanding of health, as well as the relationship between formal science education and health reasoning in everyday contexts. She has contributed to several foundational Science | Environment | Health publications, including *Science | Environment | Health: Towards a Renewed Pedagogy for Science Education* volume and Science | Environment | Health special issue of the *International Journal of Science Education*. Dr. Keselman leads an NLM team that specializes in developing Science | Environment | Health resources (Web sites, lesson

plans, animations and games) and conducting outreach among students and teachers. Dr. Keselman is a co-founder of the new ESERA Science | Environment | Health SIG.

Workshop abstract (for recruiting participants):

This interactive workshop is organized by the ESERA special interest group 4 **Science|Environment|Health**. The focus will be on texts of the **newly up-coming 2nd edition** of the Springer book:

Zeyer, A., & Kyburz-Graber, R. (Eds.). (2012). *Science | Environment | Health. Towards a Renewed Pedagogy for Science Education*. Dordrecht, Boston, London: Springer Verlag.
<http://doi.org/10.1007/978-90-481-3949-1>

The 1st edition of this book has been the programmatic flagship of the Special Interest Group. It has inspired new research and developments in this area, and has attracted both experienced and young researchers in a burgeoning research community.

In this pre-conference workshop, raw versions of **chapters for the 2nd edition** will be presented by the authors, and discussed by the participants. There will be two goals:
1) to interactively develop and rebalance the book content. Authors will receive ideas and suggestions from participants and will become aware of related work of other researchers of the community.
2) to foster participants' reception, promotion and acquaintance with current SIG 4 work.

In this context, participants will also be able to determine their own research priorities, discuss teaching and teacher education strategies, identify funding sources and publication venues, propose innovative methods for studying Science|Environment|Health issues and pedagogies, and establish potential collaborations with other participants.

The **target audience** includes all professionals whose work touches upon environmental and health aspects of science.

Activities:

The activities of the workshop will be structured by three main parts:

Part 1. *Presentation Round, and Introduction to Science|Environment|Health Projects and Activities in Europe*

In this part, the workshop organizers will shortly introduce themselves, their work, and the preconference structure. Then, participants will introduce themselves to each other and shortly present their own S|E|H activities.

Topic 2. *Group Discussion on first versions of book chapters*

This topic contains a series of structured discussion on selected **first versions of book chapters**. Depending on the number of participants, these discussions may be conducted in the whole-group format or in smaller discussion circles. Each discussion round will result

in a set of notes which will serve for further development of the book chapters and for rebalancing and organizing the book as a whole.

Topic 3. Networking among the participants

Participants will be offered to share their thoughts about visibility of Science|Environment|Health in published research, as well as about available and potential funding opportunities, and find potential partners for further activities.

Expected Roles of Participants

Participants in this workshop will be active discussants and contributors, generating content and establishing the agenda for the Science|Environment|Health SIG for research and practice.

List of Literature Relevant to the Workshop Topic and/or Format

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

Keselman, A., Devetak, I., Enzinger, S. M., Fink, A., Devetak, S. P., Simon, U. K., ... Zeyer, A. (2018). On the Value of Health and Medicine in Science Education : Notes From A Science | Environment | Health Sig Symposium. In O. Finlayson, E. McLoughlin, S. Erduran, & P. Childs (Eds.), *Proceedings of the ESERA 2017 Conference. Research, Practice and Collaboration in Science Education*, (pp. 1178–1187). Dublin: Dublin City University.

Zeyer, A., Álvaro, N., Arnold, J., Benninghaus, J. C., Hasslöf, H., Kremer, K., ... Keselman, A. (in print). 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*. Dordrecht, NL: Springer Verlag.

Materials or Artefacts Needed

Materials needed involve a computer, a projector, and a screen; large poster boards or large sheets of paper; markers; scotch tape.