Perspectives on Socioscientific Issues Education

Facilitators: Aswathy Raveendran and Sugra Chunawala

Reading course (2 credits)

More than a decade has passed since the publication of Dana Zeidler's highly cited paper *Beyond STS: A research based framework for socioscientific issues* which attempts to set apart socioscientific issues (SSI) education as distinct from Science-Technology-Society Education. Prominent researchers in the area even refer to SSI education research as a "movement" in science education research. A large number of empirical studies have spawned in the area that investigate various aspects related to the ways in which various groups (mainly students and teachers) negotiate, learn and teach socioscientific issues in largely western cultural contexts. Just as every research paradigm has proponents as well as opponents, a few recent papers have emerged in the field that question the basic assumptions and values that underpin this area of research-- criticisms have been levelled at the theoretical frameworks as well as the ideological positions adopted by these studies. The course will pay close attention to these studies. In addition, a few of the classical studies in the area will also be examined critically for the methodological assumptions guiding their research designs. The readings have been chosen in consultation with potential participants of the course.

Structure of the course: The course will be a student- led reading course which would involve students leading the discussions. A set of discussion points, which could take the form of questions or reflections around the reading will need to be shared prior to the class with all the participants in the course. Facilitators will read and help to structure discussion.

Learning objectives: Productive discussions are a mark of deep engagement with the reading material. Participants should try to raise meaningful questions/thoughts around the readings that will help them steer forward their work. It is also important that connections with the Indian educational context are made through the discussions. There will be one term paper geared towards helping student/s structure their thoughts around the readings discussed in the course.

Tentative set of Readings (May change based on the course of the discussions)

Sadler, T. D., Barab, S. A., & Scott, B. (2007). What do students gain by engaging in socioscientific inquiry?. Research in Science Education, 37(4), 371-391.

Sadler, T. D. (2004). Informal reasoning regarding socioscientific issues: A critical review of research. Journal of research in science teaching, 41 (5), 513-536.

Levinson, R. (2010). Science education and democratic participation: an uneasy congruence? Studies in Science Education, 46:1, 69-119, DOI: 10.1080/03057260903562433

Levinson, R. (2006). Towards a theoretical framework for teaching controversial socioscientific issues. International Journal of Science Education, 28(10), 1201–1224. Retrieved from http://www.informaworld .com/10.1080/09500690600560753.

Levinson, R. (2007). Towards a pedagogical framework for the teaching of controversial socio-scientific issues to secondary school students in the age range 14-19. University of London. Retrieved from http://eprints.ioe.ac.uk/47. (chapters to be decided)

Levinson, R. (2013). Practice and theory of socio-scientific issues: an authentic model? Studies in Science Education, 49(1), 99-116, DOI: 10.1080/03057267.2012.746819

Christenson, N., Rundgren, S., & Höglund, H. (2012). Using the SEE-SEP Model to Analyze Upper Secondary Student use of Supporting Reasons in Arguing Socioscientific Issues. Journal of Science Education and Technology, 21(3), 342-352.

Bencze, J. L., & Alsop, S. (2014). Activist Science and Technology Education. Springer. (chapters to be decided)

Carter, L. (2008). Sociocultural influences on science education: Innovation for contemporary times. Science Education. 92(1):165 - 181. DOI: 10.1002/sce.20228

Nielsen, J. A. (2013). Dialectical Features of Students' Argumentation: A critical review of argumentation studies in science education. Research in Science Education, 43(1), 371-393.

Nielsen, J. A. (2013). Delusions About Evidence: On Why Scientific Evidence Should Not Be the Main Concern in Socioscientific Decision Making. Canadian Journal of Science, Mathematics and Technology Education, 13(4), 373-385, DOI: 10.1080/14926156.2013.845323

Hodson, D. (2009). Teaching and Learning about science: Language, Theories, Methods, History, traditions and values. Rotterdam: Sense publishers. (chapters to be decided)

Roth, W. M., & Désaultels, J. (2002). Science Education as/for Sociopolitical Action : Charting the Landscape. International Journal of Education in Mathematics, Science and Technology. Volume 5, Number 2, April 2017

Santos, W. L. P. D. (2009). Scientific literacy: A Freirean perspective as a radical view of humanistic science education. Science Education, 93(2), 361–382. doi:10.1002/sce.20301.

Tarlau, R. (2014). From a Language to a Theory Of Resistance: Critical Pedagogy, the Limits of "Framing," and Social Change. Educational Theory 64, no. 4, 369–92.