

Science education seen through the lens of coloniality.

Aim

This paper aims to deconstruct how the practice of science is discursively attached to certain parts of the world and certain “kinds of people”. In focus is how the power technology of coloniality organizes the scientific content in textbooks as well as how different categories of science students are acted upon in the science classroom. Through illuminating how a colonial, legacy of science organizes cultural understandings of what science, and the science literate person, commonsensical understandings are disrupted.

Theory

The theoretical foundation for the article is Foucault’s (1983) work on discourse and the co-construction of power/knowledge. Power and knowledge are inseparable categories and operate together in the making of truth as well as (im)possible subjectivities and categorizations of the normal and the deviant. These makings of belief systems and humans are not innocent; they act upon thinking, acting and the living conditions of human beings (Popkewitz, 2008).

To deconstruct the power/knowledge system I employ Spivak’s (1988) concept of epistemic violence. She puts light on how notions of knowledge, civilization and education have been used to undermine non-Western methods or approaches to knowledge. She problematizes not only the colonizers use of science and technology, but also today’s efforts by providing technology, medicine and education to “uncivilized” parts of the world. Another central concept in the analysis is coloniality; patterns of power that emerged as a result of colonialism, but still organize intersubjective relations and knowledge production (Mignolo, 2011). Coloniality is claimed to be the modernity’s other face; the entanglement of scientific reason, coloniality and the idea of modernity are constantly reproduced. This strong connection between the scientific (technological) development and colonialism can be illustrated through Weber’s work (in Hobson, 2004). He positioned modernity to the Occident and its opposite, tradition, to the Orient in what he conceptualizes as the “great rationality divide”.

Drawing on these theories, the paper discusses how science and coloniality not only shape the images of the world and of the sciences, but also how science teaching is organized for different student groups. The students who are made up as object for change can be positioned “somewhere else”, but also “at home”; students considered as in need of being included into society (Popkewitz, 2008). I’ll argue that these students are objected to epistemic violence, justified by scientific reason. The analysis focuses how certain characteristics are culturally attached to certain kinds of people (Ahmed, 2010).

Methodology

This paper does not only study what is said, but also what is left un-said in the science curriculum. To capture both the silences and the taken for granted noisy discourse I have looked into different kinds of sources.

I have analyzed eleven Swedish textbooks in the subjects of biology, physics, chemistry and ‘natural sciences’. As well, I used one book from the subject of history with the purpose of capture a silence in the science discourse. The analysis of the science textbooks is guided by three themes: 1) if and how the colonial history of science is described in Swedish textbooks; 2) how science history is described and; 3) how the global South is represented. The questions, as well as the analysis, were guided by a reading of science history books and how an alternative story on science history could be told.

In the study of the science learner I use previous studies on the image of the science learner from inside and outside the context of Sweden. These studies help to draw lines between the practice of science, cultural imaginations of different places and the making of human kinds.

Conclusion

The analysis shows that what has been – and still is – made in the name of science in the colonial project is not present at all in the science textbooks. Noisier is the talk about science as rational and necessary for the societal development. The positive image of science hides the physical and epistemic violence done in the name of civilization. In other words, colonialism is more or less not described in the science textbooks, while coloniality is organizing the content, also when it comes to how different parts of the world are described. What is told about the global South is that it is the home of natural resources that can be

“refined” in the global North and the origin of humans. The South is representing pre-technology and pre-history.

How does the “great rationality divide” organize the science classroom in North populated by immigrant students? Studies show how the characteristics of the modern child – such as scientific rationality and liberal values – are culturally stuck to white children from the North, while the opposites –traditional and/or religious values - are attached to racialized, immigrant children (Gitz-Johansen, 2004). Furthermore, the biology lessons differs depending on the color and/or ethnic background of the children. Racialized children are objected to “civilization” in the name of science: eat better, sleep better and take care of their hygiene (e.g. Ideland, Malmberg & Winberg, 2011).

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