

Students' ontological security and the agency in science education – an example from reasoning about the use of gene technology

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Abstract

This paper reports on a study of how students' reasoning about socioscientific issues is framed by three dynamics: societal structures, agency and how trust and security issues are handled. Examples from gene technology were used as the forum for interviews with 13 Swedish high-school students (year 11, age 17 – 18). A grid based on modalities from the societal structures described by Giddens was used to structure the analysis. The results illustrate how the participating students used both modalities for 'Legitimation' and 'Domination' to justify positions that accept or reject new technology. The analysis also showed how norms and knowledge can be used to justify opposing positions in relation to building trust in science and technology, or in democratic decisions expected to favour personal norms. Here, students accepted or rejected the authority of experts based on perceptions of the knowledge base that the authority was seen to be anchored in. Difficulty in discerning between material risks (reduced safety) and immaterial risks (loss of norms) was also found. These outcomes are used to draw attention to the educational challenges associated with students' using knowledge claims (Domination) to support norms (Legitimation) and how this is related to the development of a sense of agency in terms of sharing norms with experts or with laymen.

Introduction

A good example of an educational context where understanding of the development of agency and reasoning is important is when discussions about societal use of gene technology take place. This article uses such a context to look at the development of agency in relation to societal structures when students handle trust and security issues.

New technologies such as gene technology should be areas for on-going educational debates that explore the benefits, potential risks, norms and values connected to the societal changes that such technologies bring to society. These debates have been characterized in terms of emergent anxiety and a loss of a sense of security as society is experienced as being more fragmented and difficult to understand (Giddens, 1984, 1990). Members of society are confronted with such issues through a variety of media, presented using the perspectives of different stakeholders (Gaskell, 1992). Furthermore, in societal discussions concerning technology, 'originators and instigators' try to portray themselves as trustworthy by making truth-sounding claims, which laymen usually have tremendous difficulties scrutinizing (Kolstø, 2001b; Kolstø et al., 2006).

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