THE RELEVANCE OF TEACHING ABOUT THE "NATURE OF SCIENCE" TO STUDENTS OF THE HEALTH SCIENCES

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ABSTRACT

This paper argues for the significance of teaching about the "nature of science" to students of Health Sciences in Norway. The national Health Sciences' curricula contain the core subjects of biological sciences as well as the philosophy of science and research methods. Biological science research has a large influence on the evolvement of professional knowledge in the Health Sciences. However, it is likely that Health Science graduates become involved in occupations in which they are exposed to lay health claims, pseudoscience, and comparative-alternative medicine counselling. The epistemologies of normal science and alternative-comparative medicine are largely different. In a scientific evaluation-test of health claims, most of the tested Health Science students failed. In a questionnaire, many students expressed quite "ambivalent relationships" with the aims of scientific research, and their consideration of "what counts as reliable knowledge" was to some extent non-scientific. Most students expressed positive attitudes towards the use of comparative-alternative medical treatments. For students to be able to achieve skills to critically evaluate health claims, teaching about the "nature of science" might be significant, especially within the core subjects of the Health Sciences.

1. INTRODUCTION

In reforms taking place in the late 1980's and early 1990's, education in the Health Sciences (HS) in Norway implemented a new course of study that included *The philosophy of science and research methods* (PS/RM) as a part of the core curriculum together with the Biological Sciences (BS). The HS in Norway include, for example, nursing, physiotherapy, social educator (caring and nursing requirements of mentally retarded persons integrated in society), and radiography. The BS curriculum consists of human biology subjects including physiology, microbiology, and pathology, and its importance is indisputable for HS professional studies. In the field of nursing and physiotherapy, background knowledge of physiology and anatomy is of uttermost importance for proper action (Roskell, Hewison & Wildman, 1998). Social educators must know the possible mental and physical expressions of common human genetic syndromes, and radiographers have to know the benefits and risks of x-ray exposure to human tissue. However, since high-school science is not a compulsory entrance requirement for most HS programmes, interest in science does not seem to be the main reason for students

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choosing this type of education; no doubt, it is quite the contrary (Kersten, Bakewell & Meyer, 1991). Some students *without* senior high school qualifications for university college studies can get entrance to the HS after evaluation of their previous health work practice.

In the HS in Norway, physicians, human biology researchers, and pharmacists are commonly used as teachers of the BS. They are often professionals lacking pedagogical training, and many do not have HS institutions as their main place of work (Pettersen, 2003a).

To be able to understand and apply new health research findings, knowledge in the BS is important (Trnobranski, 1996; Pettersen & Solberg, 2003). However, it has been claimed that social and behavioural sciences are increasingly displacing the BS in international health education (Trnobranski, 1996). In addition to the continuous decline of the number of BS lessons taught in the HS, investigators have also called attention to the risk of *omitting* the teaching of the *epistemology* of science and science research methodology in the HS. This is a concern since HS graduates are likely to become involved in occupations in which they are frequently exposed to reports of scientific research, lay health claims, pseudoscience,[1] and comparative-alternative medicine[2] (CAM) counselling. When graduate HS students do not have satisfactory skills for recognizing "true" scientific health messages and discriminating them from pseudo- and non-scientific messages, the scientific foundation of professional HS education and work practice could be undermined.

One of the teaching goals of PS/RM addresses science epistemology: (students should) acquire scientific *insight and scientific methods in order to read research material and utilize research findings in their work* (ODIN, 2003). In principle, this teaching goal might be equivalent to the teaching goals of the "nature of science", NOS (Efflin, 1999; Hogan, 2000). In broadest terms, the meaning of the concept NOS is those ideas someone has *about* science, rather then a person's scientific knowledge:

- how the body of public knowledge called science has been established and is added to;
- what our grounds are for considering it reliable knowledge;
- how the agreement which characterizes much of science is maintained (Driver et al. 1996).

The latter involves an understanding of the social organization and practices of science (social context), whereby knowledge claims are transmitted into public knowledge, and of the influence of science on the wider culture – and vice versa. Issues surrounding the application of scientific knowledge in practical situations are an important focus, as the lack of consensus about these invites a re-evaluation of

[1] Pseudoscience could be characterized by the use of theories which cannot be tested, the use of ad hoc hypotheses and the selective use of data presenting anecdotes and myths as evidence (Giuffre, 1997).

[2] Complementary medicine refers to 'not scientifically proven' therapies that are given in addition to conventional therapy (e.g. herb tea with antibiotics for pneumonia, and therapeutic touch), whilst alternative medicine often consists of therapies or remedies that are used alone in place of conventional therapy, e.g. zone therapy, healing, and homeopathy (Cassileth, 1999).