

The Education of Nature of Science in the Internet Era

Qing Zhang

Jiangsu Second Normal University, Nanjing 211200, Jiangsu, China

“There is no education without nature.”

—Charlotte Mason

MODERN science and technology can not only promote social development for the benefit of mankind but may also cause catastrophic consequences if improperly employed. They are the two sides of the same coin. Science education plays an increasingly important role in the rapidly developing human society. With the rise of new educational strategies in the “internet plus education” era, the education of nature of science (NOS) exhibits its significant value in contemporary primary science curricula (Zhu & Yu, 2008). Science is not about conclusive truth. The history of science has witnessed numerous controversial issues which often sparked intense debate. The introduction of socio-scientific issues (SSI) to science education allows students to experience the process of scientific development. NOS education concerning scientific questioning, experimentation, and investigation and the establishment of scientific laws and theories as well as their application is of great significance to the development of teaching philosophy and methods in pre-service primary school teachers (Liu, 2003). It also poses new requirements and challenges in the reform of basic education in the internet era.

Pre-Service Primary School Teachers’ Application of the Features of the Nature of Science to Socio-scientific Issues in this issue of the journal (Saka, 2023) attempts to examine the ability of pre-service primary school teachers to transfer their knowledge of NOS to socio-scientific decision-

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making using a socio-scientific scenario “Babies with Three Parents”. Science education in the internet era includes controversial socio-scientific issues such as genetic engineering, vaccine research (Ekborg et al., 2013), etc., which can deepen students’ understanding of the characteristics of scientific knowledge and guide them to think like scientists. SSI education also help stimulate inquiry interest and initiative of students, cultivate scientifically literate citizens who are able to apply evidence-based scientific knowledge to real-world socio-scientific scenarios, and promote critical thinking skills, such as analysis, inference, explanation, evaluation, and interpretation.

Relevant research findings demonstrate that for many people, science education does not necessarily lead to understanding how scientific knowledge is constructed and applied. The education of NOS is one of the pathways to the solution of this issue (Inêz et al., 2021). It enhances students’ comprehension of science concepts and enables them to make informed decisions about personal and societal issues. Traditional science education emphasizes the mastery of content knowledge. Even though a series of reforms have been implemented in science education, they have not been successful enough in inspiring autonomous inquiry of students and integrating NOS - in other words, the characteristics of scientific knowledge - in regular teaching. The teacher who can only deliver conceptual knowledge but lacks scientific literacy including practical, explorative skills is not fit for science instruction in the new era. To improve scientific literacy and critical thinking skills of pre-service primary teachers, it is necessary to incorporate NOS education in their curriculum.

SSIs can draw students’ attention to the relevance of social life in science education and develop their scientific creative thinking (Develaki, 2012). Facing the ever-increasingly complicated SSIs, pre-service science teachers should be well trained to integrate the characteristics of scientific knowledge into lesson planning. Colleges and universities of teachers should make use of SSIs in their science training to inform future educators of the potential issues that the development of science and technology may cause and the relationships between science and technology and social life. In the internet era, “interaction between science, environment, and health” can be used as a teaching concept to help students comprehend the true meaning of science, to heighten their commitment to scientific endeavors, and to develop their ability to address complex issues in real-world situations using transdisciplinary knowledge (Yan & Zhai, 2021). Improved scientific literacy, including the understanding of NOS can effectively enhance critical thinking skills and socio-scientific decision-making of the public.

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Correspondence to:

Qing Zhang
PhD
Jiangsu Second Normal University
Nanjing 210000
China
E-mail: zhangq12_0102@126.com

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