Exploring functionings and conversion factors in biodiversity teacher professional learning communities

The study explores the conversion factors, functionings (valued beings and doings), agency and structures in Professional Learning Communities (PLCs) for Life Sciences teachers’ biodiversity knowledge. The teachers’ valued beings and doings as well as conversion factors associated with these beings and doings were discussed within the conceptual framework of the capability approach using three PLCs in South Africa. Two PLCs were in the Eastern Cape Province (Grahamstown and Idutywa district), and one PLC was in the Western Cape (Cape Town) province. The PLCs involved in this study were course initiated and were positioned in the Fundisa for Change national teacher education programme. Fundisa for Change is a partnership programme that aims to enhance transformative environmental learning through teacher education. To illuminate constrained capabilities and how and to what extent the Life Sciences teachers’ empirical actions are related to these, the concepts of the capability approach were underlaboured with critical realism’s causal view of human action. A critical realist theory of causation was useful in explaining how the teachers’ valued beings and doings, conversion factors and capability sets can be partly accounted for via an understanding of underlying mechanisms that are generative of events and empirical experience. The study used a qualitative case study research methodology. Interviews, questionnaires, observations (of PLC activities), document reviews (of teachers’ portfolios of evidence, Fundisa for Change implementation plan, evaluation forms and resources materials, and policy documents) and reflection tools were used to collect data. Using the critical realism modes of inference (induction, abduction and retroduction), the data was analysed in two phases. Phase one analysis was primarily inductive and used thick descriptions (mainly in the form of quotes) to present and discuss the teachers’ valued beings and doings and associated conversion factors in the PLCs. This phase of analysis was abductive. The study reported four main functionings valued by teachers: subject content knowledge, teaching practices, assessment practices, and use of teaching and learning support materials. These valued functionings were discussed in light of the beings and doings in the PLCs and the underlying mechanisms related to teachers’ biodiversity teaching. Conversion factors that were associated with the teachers’ valued beings and doings in the PLCs were discussed in line with capability approach’s environmental, social and personal conversion factors. The study found that most of the conversion factors within the PLCs and the Fundisa for Change professional development programme (good facilitation, collaborative learning space, site where PLC activities happened, individual teachers’ capabilities, teaching and learning support materials and policy documents) were enablers to the teachers’ capabilities for biodiversity teaching, and thus enhanced teachers’ knowledge for biodiversity teaching. The study further found that teachers realised some of their achieved functionings in their actual teaching of biodiversity content in the Life Sciences curriculum, and that factors such as lack of resources, large class sizes, learners’ abilities and lack of interest among some teachers were amongst the factors that constrained teachers’ realisation of their achieved functionings in the PLCs. The study therefore revealed that if professional development programmes take account of underlying mechanisms and respond to teachers’ capabilities i.e. their valued functionings for biodiversity teaching in the Life Sciences curriculum, the professional development programmes can be an important conversion factor that enables the expansion of teachers’ capabilities (especially their biodiversity knowledge, pedagogical and assessment practice but also other capabilities) in ways that have the potential to reshape teachers’ classroom practices related to the teaching of biodiversity.