

The practical aspects of implementing the living cell topic as a longitudinal axis in junior- high schools

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In the new science and technology junior-high-school curriculum in Israel, it is recommended that the cell topic be taught “longitudinally in conjunction with other study contents”. This recommendation can be considered as a fundamental or a deep change in teaching biology in general and the cell topic in particular. The central goal of my research is to identify and study the significance and perception of the approach to teach the cell topic "longitudinally". I examine the various parties involved in the curricular process, namely the scientific community, the Ministry of Education, the available learning materials, the national exams and the teachers. In light of my findings, I developed an in-service intervention that provides a theoretical and practical basis for assimilating the curricular change, thus acting to enhance the manifestation of the new approach to teaching the cell topic "longitudinally" throughout junior high school. My research methodology included semi-structured in-depth interviews with three scientists who were involved in writing the curriculum, six teachers, as well as teachers who participated in three focus groups (n=59). Furthermore, six textbooks that were published following the new science and technology curriculum were analyzed, as well as the national exams from 2001-2005, with the aim of characterizing the manifestation of the approach to teaching the cell "longitudinally" during that period. Subsequently, the change was examined among teachers (n=28) who participated in the in-service intervention that was designed by me based on my findings. My results show that teaching the living cell topic in practice differs from the declared intent of the scientists who have written the curriculum. Thus, the teachers did not undergo any deep change. The textbooks and the national exams were found as compatible, in only a very partial manner, with the declared intent of the curriculum. A positive blend of cognitive and emotional aspects of the intervention has brought about the desired change among the teachers, who changed their instructional strategies and attitudes towards teaching the cell topic. The complexity of the curricular process and the lack of appropriateness between its components' interfaces can be learned from the research. Furthermore, it can be learned that at the time of a curricular change there is a need for developing in-service teachers' interventions, based on the analysis of the curricular process, which foster cognitive aspects alongside emotional aspects that are required for realizing a change.