

Abstract

A conceptual framework, along with its accompanying conceptual inventory, represents a cornerstone for effective teaching at all levels of education. In the continually evolving field of neurobiology, their significance is particularly evident. Updating teaching materials in line with the latest scientific findings is essential to ensure the delivery of relevant and accurate information. This study focuses on translating the conceptual framework for teaching the nervous system in high schools, developed by Kvello & Gericke (2021), using the TRAPD method. Based on selected concepts (4–14) from this framework, a conceptual inventory for upper secondary school students was created to measure their understanding of neurological principles and processes. Initial testing on 155 students from upper secondary schools and medical high schools led to the revision of several test items (reformulation, deletion). The revised version was consulted with Professor Pál Kvello and MUDr. Kamila Procházková, and subsequently tested on 761 students, of which 293 students participated in a pre-test and post-test design. Data analysis confirmed that the final version of the test had satisfactory parameters and allowed for the identification of factors influencing students' final scores. The conceptual framework was further used for a content analysis of 9 upper secondary school textbooks, revealing that anatomical concepts were most represented, followed by physiological concepts, with contextual concepts being the least represented. This study is a significant contribution to the teaching of the nervous system in upper secondary schools, as it highlights the importance of teaching in context using up-to-date knowledge and high-quality teaching materials.

Key words:

Nervous system, upper secondary school, conceptual framework, conceptual inventory, textbooks content analysis