

From the Natural Science Skill of Growing a *Paramecium* sp. to Observation and Recording as the Basis of Learning through Discovery using the Example of Microscopy of *Paramecium* sp.

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Abstract

Research teaching as an active method is the basis of discovery learning. It manifests itself by observing and describing natural phenomena and organisms within the framework of biological education. This paper aims to assess the students' ability to observe and record their observations. Students of the first year of teacher studies (N=31), students of the second year of teacher studies (N=34), and students of the first year of early and preschool education (N=44) of the academic year 2023/24 participated in the research. The subjects were asked to carefully observe a temporary wet preparation of the cultivated culture of the microorganism, *Paramecium* sp. A separate infusorium was prepared for research purposes. During the observation, the students took notes and illustrated their observations, that is, the results of the observation using specially structured working protocols. A total of 872 tasks were analyzed, which were subjected to analysis of level of accuracy and analysis of the level of understanding, and analysis of drawings whose answers and drawings were specifically coded. The research determined that students of early and preschool education describe their observations in more detail, while students of the first year of teacher studies are the most accurate and detailed when illustrating the *Paramecium* sp. Also, a slightly higher percentage showed partial conceptual thinking. Students in the second year of teacher studies gave correct answers in a slightly smaller percentage. Students' comments about the application of active learning methods provide insight that they like such activities as well as independent work and reasoning.