Analysis of the Effect of Use of Web 2.0 Tools in Online Science Courses on Students Achievements and Digital Literacy

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Abstract

Purpose - This research determined the effect of using Web 2.0 tools in online science courses prepared according to the 5E model on student achievement and digital literacy.

Methods - For this purpose, the research used the explanatory sequential design. The qualitative dimension of the study were used semi-structured interviews. The research participants consisted of 40 fifth-grade students studying at a private school in Istanbul in the 2020-2021 academic years. In the study, quantitative data collected via academic achievement test and digital literacy scale, while qualitative data obtained from interview and observation forms. The achievement test and the digital literacy scale administered via Google Forms and the observations and interviews carried out online via the Microsoft Teams application. While quantitative data were analysed with a package program, qualitative data were analysed with descriptive analysis.

Findings - The study found a significant difference between the academic achievement test points of the students in the experimental group. There was no significant difference found between the academic achievement test points of the students in the control group. There is no significant difference between the points obtained from the digital literacy scale applied to the students in the experimental and control groups. As a conclusion, the interviews with three students in the experimental group found that the science lessons taught with Web 2.0 tools were more interesting and catchy. As a conclusion of the observations made in the experimental group, students showed a positive tendency towards science lessons with Web 2.0 tools. To summarise, that the observations supported the interview results.

Significance - The study is important in terms of providing an example for teachers' use of Web 2.0 tools and making significant contributions to the field of science education because it supports online learning, which is carried out frequently due to unusual conditions today.

Keywords: 5E Learning model, Online education, Science education, Technology integration, Web 2.0 tools.