Abstract

In my dissertation project, I explored opportunities to develop mathematical thinking and, secondarily, computational thinking, through playing video games. I also studied how upper secondarily school pupils perceive the presence of mathematics in video games. I followed up on previous research that confirmed the connection between mathematical thinking and playing video games, and I also exploited the work of researchers who pointed out the learning processes that occur when playing video games, as well as new theories of learning mathematics that correspond with the needs of life in the 21st century. I did not intend to formulate and verify any hypotheses at the beginning of my research. Instead, I strived to understand the phenomenon itself as much as possible, therefore I decided to follow a qualitative research design.

The project had two main parts. In the first one, I focused on the content analysis of video games in order to identify the opportunities that the games offer for the development of mathematical thinking and computational thinking. In the second part, I researched how the participants (a small sample of upper secondary school pupils) evaluate their encounter with mathematics when playing video games, what they identify as mathematics in video games and what is their attitude to such mathematics. I was also interested in how they perceive mathematics in video games compared to school mathematics. Through the findings of this dissertation, I sought to contribute to better understanding of the meaningful learning of mathematics at school.