

ABSTRACT

STANKOVIČOVÁ, Mária: *Specific needs of students with visual impairment in studying computer science subjects in tertiary education*. [Doctoral dissertation]. Comenius University, Bratislava. Faculty of Mathematics, Physics and Informatics. Assoc. prof. Ľudmila Jašková, PhD. FMFI UK, 2024, 132 p.

In this dissertation research, we focused on further exploring the specific needs of students with visual impairments in tertiary education when studying programming subjects. Our goal was to describe the challenges students face in the process of building algorithmic thinking and programming skills. We used a qualitative case study strategy, with the research sample consisting of students with different types of visual impairments (blind, low vision). We used direct and participant observation methods, interviews with students and their teachers and analysis of student learning outcomes to collect data. The research was conducted in four main stages. In each stage, we focused on identifying problems and looking for the causes of the problems from different perspectives. The output of the first stage is an analysis of the problems that occur in the use of learning materials and digital technologies in the educational process. In the second stage, we analysed the problems perceived in the educational process by students with visual impairment and their teachers. The results of the research activities of the third stage highlight the current needs and problems of secondary education students with visual impairment who are preparing for higher education. The outcomes of the fourth stage provided valuable information about the problems that blind students may have in solving programming problems with graphical output. The problems and their solutions described by us represent valuable information that educators can use in the future when educating students with visual impairments.

Keywords: students with visual impairments, assistive technology, accessibility, programming skills