

## Summary of the doctoral dissertation

### Digital competences of early school education teachers

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The dissertation addresses the issue of digital competences of early school education teachers in the context of changes occurring in computer science teaching at the first stage of education. In recent years a new trend has appeared in it, consisting in moving away from the tool-oriented and typically instrumental approach towards creative and critical thinking, problem solving and shaping of the IT imagination. This makes it necessary to reorganise the catalogue of digital competences of early school education teachers, as well as to verify what factors determine the process of development and the level thereof in the context of introduced changes.

In empirical research, the main aim was to identify the factors determining the process of development of digital competences and to diagnose current level thereof in early school education teachers.

The research was carried out in a correlation scheme using a quantitative data collection and analysis strategy. The whole research process involved 360 early school education teachers from 64 primary schools in Pomorskie Voivodeship. The sampling was probabilistic, including the stratified cluster sampling technique, where the teachers were picked for the sample through randomly selected schools.

The dissertation consists of five chapters, the first three of which relate to the issues being studied from a theoretical perspective, the next one presents methodological assumptions, and the last one contains an analysis of the results of the conducted research. The dissertation framing device consists of the introduction and conclusion, with the presented recommendations for the educational theory and practice.

In the first chapter of the dissertation issues related to the concept of teacher's competences and the classifications thereof are presented. Particular emphasis has been placed on terminological distinctions in digital, information and media competences. The chapter initiating the dissertation also describes the most important factors for the development of digital competences, draws attention to the existing models, and reviews the research on digital competences of teachers. The forms of further education and professional development as well as educational provisions concerning digital competences of teachers were also described.

The second chapter of the dissertation contains a review of computer science education in Poland covering the period of the last few decades from a historical perspective. It also describes the issues concerning the development of computer science education for young children both in Poland and worldwide, including the teaching of programming and introduction of robotics elements.

Chapter 3 of the dissertation presents the author's own model of digital competences of an early school education teacher, consisting of two main components: creative and instrumental practical one. The developed model is evolutionary in nature and constitutes an attempt to take into account new educational trends in the area of computer science teaching at the first stage of education. This chapter also presents the assumptions of constructivism and cognitivism as a pedagogical thought forming the basis for a modern school, an indispensable component of which is high level of digital competences of teachers.

The fourth chapter of the dissertation is devoted to methodological issues. It presents research assumptions.

Chapter five of this paper deals with the presentation and analysis of the research results. Based on the obtained research results, an attempt was made to answer the research questions. First of all, the analysis of the factors that determine the development of digital competences in early school education teachers was shown. Next, a diagnosis of the level of digital competences was presented, which was measured in the creative and instrumental practical component separately.

The research shows that there are numerous factors determining the process of development of digital competences in early school education teachers. Among the features taken into account in the model, this process is determined by the following factors: use of IT skills in the didactic and educational process, technological openness, motivation to develop IT skills, place of residence, place of work, age, IT availability at school and self-education in computer science.

Based on the analysis of research results it can also be concluded that the level of digital competences in early school education teachers is low, both in the creative and instrumental practical areas.

The last part of the dissertation is the conclusion, in which conclusions and proposals for changes, both in the educational theory and practice, were formulated.

**Keywords:** digital competences, early school education, computer science education, teacher, programming, robotics.