ASSESSING THE DEVELOPMENT OF TECHNOLOGICAL LITERACY IN EARLY EDUCATION

Zsuzsa Pluhár *, Gyöngyvér Molnár **
* Faculty of Informatics, Eötvös Loránd University
** Institute of Education, University of Szeged

Keywords: technological literacy; computer-based assessment; early childhood assessment

The use of information and communication technologies (ICT) in modern society and the need to develop relevant skills in order to participate effectively in the digital age (*Fraillon* et al., 2013) have increased. In education it has become a key competence (ACARA, 2012), and assessing and developing it is one of the main aims of schooling in many countries (NAGB, 2013). Nevertheless, empirical studies examining ICT literacy or part of it in early education are scarce at best (ACER, 2013).

The aim of this study is (1) to examine whether pupils in early education are technology literate enough to solve computer-based tests; (2) to outline the developmental tendencies of technological literacy from grade 1 to 4 and (3) to depict the most influential factors on the development of technological literacy.

E1

The samples of the study were drawn from 1st to 4th grade students of Hungarian primary schools (N=1,195). The instruments of the study were computer-based tests administered in the eDia platform. Due to the young age of the target population, pre-recorded voice instructions were given online to avoid measuring students` reading skills, and pictures corresponding to the age of the targeted cohort were used in each of the 41 tasks. Learners had to give answers to the items in many different forms. By using the mouse they had to mark, click, move or rearrange items or they had to use the keyboard for typing letters, words or texts with different features. Two tests with different levels of difficulty were constructed that varied by grade. The tests were connected by common anchor items that allowed the expression of all results on the same scale. The Rasch model was used for scaling the data. Plausible values were computed to compare the cohort-level achievement differences.

While internal consistencies of the test for grade 1, 2 and 4 were high (Cronbach's α=.79, .70, .79), there was a noticeable drop in reliability in grade 3 (α=.65). For this reason we excluded the data for grade 3 from all further analyses. According to the item/person analyses the difficulty levels of the items fit to the students' ability level. Across all grades, the development of technological literacy was significant. However, students with the lowest achievement had the same ability level in each grade, while there was a noticeable change by higher technological literate students. Students' socio-economic factors and gender did not influence their test scores either in general or at grade level. Home internet access proved to be an influential factor in each grade (r=.21, .26, .24, p<.01), however, frequencies of computer- and/or internet-usage did not result in significant achievement differences.

Findings support the view that pupils in early education are ready to use computers for learning and assessment purposes with no drawback regarding gender or socio-economic status and that it is „an essential cultural technique which can significantly improve the quality of education" (*Pedersen* et al., 2006).