THE FEASIBILITY OF COMPUTER-BASED ASSESSMENT AT THE INITIAL STAGE OF FORMAL SCHOOLING: THE DEVELOPMENTAL LEVEL OF KEYBOARDING AND MOUSE SKILLS IN YEAR ONE

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Despite the widespread and increasing use of computer-based testing even for large-scale assessments, only a few studies have focused on testing very young learners in a technology-based environment (*Carson*, *Gillon* & *Boustead*, 2011; *Choi* & *Tinkler*, 2002). Administering online tests to young children at the initial stage of formal schooling may raise a number of questions, e.g. regarding pupils' basic computer skills, such as keyboarding and mouse skills, and concerning the feasibility of the assessment and validity of results (*Csapó*, *Molnár*, & *Nagy*, 2014).

This study explores the potential of using computer-based tests in regular educational practice for the assessment of pupils at the beginning of schooling. It describes the developmental level of keyboarding and mouse skills among children in Year One, and it defines the various operations to be used or avoided in preparing a test to measure pupils' knowledge and skills. The sample for the study was drawn from Year One students in Hungarian primary schools (n=4,952). The instrument consisted of 45 figural items (α=.87). Instructions were provided online with a pre-recorded voice. Children had to indicate their answer by using the mouse or the keyboard. Testing took place in the computer labs at the participating schools. Operations based exclusively on single mouse clicks proved to be the easiest to perform (mean=67.2%, SD=16.6). This was followed by items consisting only of typing elements, especially typing the numbers 1 to 5 or letters ($t=5.1$, $p<.01$; mean=65.1%, SD=31.1). Finally, drag-and-drop operations proved to be the most difficult (mean=61.5%, SD=20.0), though still manageable for most pupils.

The size and number of objects they had to click on or drag and drop significantly influenced the success and difficulty of the particular operation. Every procedure was easier to perform without a time limit. The assumption that these operations are easy to teach is confirmed by the finding that if we compare the difficulty indices of items appearing earlier and later on the test and requiring the same operations, we begin to see a clear trend: independent of the operation, items requiring the same operation and appearing earlier on the test prove significantly more difficult than those that appear later on the test. Generally, computer-based assessment and enhancement can be carried out even at the very beginning of schooling on normal desktop computers without modern touch screen technology. We recommend using item types requiring mouse clicks most and drag-and-drop items least. A time limit can enlarge the differences in keyboarding and mouse skills, thus decreasing the validity of the test.

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