

## THE TRANSITION FROM SINGLE TESTING TO COMPLEX SYSTEMS OF ASSESSMENTS

**B1**

**Gyöngyvér Molnár \*, Attila Pásztor \*\***

*\* Institute of Education, University of Szeged*

*\*\* Graduate School of Educational Sciences, University of Szeged*

*Keywords:* technology-based assessment; educational game; contextualized data

Technology revolutionizes the whole process of assessment, offers new opportunities and vitalizes testing situation. A great deal of instruments may be used for response capture, thus instead of providing single indicators, such as a test score, technology-based assessment may produce rich, contextualized data sets, which supports the transition from single testing to complex systems of assessments. The purpose of this pilot study is twofold: to investigate the opportunities and effectiveness of applying educational games to improve students' reasoning skills, second compare the possibilities of the analyses in face-to-face and game-based environment. First and second grade (age 6 to 8) students constituted the experimental group (n=123), whereas the control group consisted of 137 students. One third of the experimental group conducted game-based training in computer-based environment (n=38), while the remaining part performed face-to-face training. The effectiveness of the training was measured with an inductive reasoning test, comprising 37 figural, non-verbal items (*Cronbach*  $\alpha=.87$ ). In game-based environment beside test-based data collection, innovative assessment technologies are explored by logging metadata, such as facial expressions and head movement (captured by web camera). The experimental group managed to achieve significant development in the experimental period ( $t=-18.8$ ,  $p<.00$ ). The effect size of the training program in face-to-face environment was  $d=1.05$ , in game-based environment  $d=.87$  (both  $p<.01$ ). The distributions of the facial expressions in technology-based environment did not show significant relationships with level of reasoning skills. Our findings provided further empirical evidence that innovative assessment technology gives the possibility to monitor both cognitive and affective processes.

---

This research was funded by K75274 OTKA research program and the SZTE MTA Research Group on the Development of Competencies. *Gyöngyvér Molnár* was having Bolyai János Research Scholarship at the time of writing the present paper. We have collaborated with *András Lőrincz* and his colleagues through the whole project.