

DEVELOPING EARLY NUMBER COMPETENCIES THROUGH GAMES PLAYED IN SCHOOL AND AT HOME

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Most research studies show that initial number knowledge constitutes the basis for understanding several major principles of the number system. Moreover, early number competencies are considered as strong predictors of mathematics outcomes at the end of the first grade and even later on (Jordan, Kaplan, Ramineni & Locuniak, 2009). In preschool, the development of these competencies should obviously not give rise to formal learning but be developed through significant activities. However, while everyday situations offer significant contexts, they are still not sufficient to develop the basic number competencies necessary for first grade children (Cannon & Ginsburg, 2008). Adults have to create opportunities to learn mathematical competencies. Mathematical games can meet this requirement.

The MathPlay project aims to develop early number competencies through games implemented in school and/or at home. According to the literature, early number competencies consist in counting, conservation ability, magnitude comparison, and (de)composition of numbers. To develop these competencies, we decided to adapt 8 well-known mathematical games. To evaluate the effect of this play-based approach on the development of number competencies, an instrument was created and validated. A quasi-experimental research design (pre/post-test) was implemented in four countries: Luxembourg, Belgium, France and Switzerland. Seven hundred and twenty-five children from all these countries participated in this study. They were divided into one control group and one experimental group with two treatment conditions, X1 (games in school), and X2 (games both in school and at home). The post-test was administrated at two moments: just after the intervention and 8 weeks later. Data is currently being analysed. This communication will present the first outcomes and will answer our research question: ‘what is the immediate and deferred effect of this play-based approach (X1-X2) on students’ number competencies?’

References

- Jordan, C., Kaplan, D., Ramineni, C., & Locuniak, M. (2009). Early math matters: kindergarten number competence and later mathematics outcomes. *Developmental Psychology*, 45(3), 850-867.
- Cannon, J., & Ginsburg, H. P. (2008). “Doing the Math”: Maternal Beliefs About Early Mathematics Versus Language Learning. *Early Education & Development*, 19(2) 238-260.