GraphoGame®
Fact Sheet

Researched since 1993

GraphoGame (GG) was conceived during the **Jyväskylä Longitudinal Study of Dyslexia** (JLD), which followed 108 newborns with a familial risk for dyslexia and a control group of 92. Results show that children who faced reading problems in first grade could be identified years earlier by several cognitive predictors including phonological awareness, rapid automatized naming and letter knowledge. Hence, researchers began developing an educational computer game to target these predictors. Preliminary results were impressive, and garnered the support of the Finnish Ministry of Education (**Lehtonen, 2003**; **Liuha, 2003**; **Hintikka et al, 2005**).

Click here for further reading from our web archives

Finnish Children Playing since 2007

Before GG there was Ekapeli, a Finnish-language early literacy game **released for all Finnish children in 2007**. The game's initial intent was to support children with specific reading difficulties, although it soon became clear that the technology greatly advanced the process of developing reading skills in all children. By 2009, Ekapeli was used by over 50,000 students in Finland, benifitting children from diverse foreign language backgrounds and all Finnish-language proficiency levels (**Rantanen et al, 2008**; **Lyytinen et al, 2009**; **Oksanen, 2010**). These results in Finland led to more interest internationally, across academic disciplines. The new name, GG, was chosen to represent the learning environment as it changed.

Adaptive, Computer-based Learning
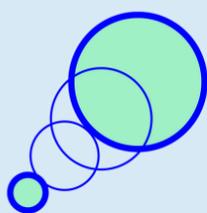
After launching in Finnish schools, the game was evaluated more broadly as an early intervention for those at risk of developing any reading disability (**Saine, 2010**). The trials results demonstrated clear advantages versus regular intervention methods (**Saine et al, 2011**, **Heikkilä et al, 2012**). Advances in neuroscience then aided the evaluation of GG, since researchers were able to gain deeper insights into critical reading-related skills from seeing corresponding changes in brain activity (see **Brem et al, 2010**; **Lovio et al, 2012**; **Serniclaes et al, 2015**). Further studies evaluated and largely confirmed GG's suitability for learners with an array of other learning difficulties, although further research is still needed (**Nakeva von Mentzer et al, 2013**; **Röthlisberger et al, 2015**; **Salmela, 2015**; **Nakeva von Mentzer et al, 2020**).

30+ Languages & Countries

With Ekapeli's success, researchers from around the world began working with **the GraphoLearn initiative**, to adapt the evidence-based methodology into their local languages. The first adaptations were in Spanish and Nyanja (**Rinne, 2008**; **Chilufya, 2008**) followed by Kiswahili, German and Greek. By 2013, it had been adapted in 20 countries and as many languages (**Lyytinen & Richardson, 2014**). The greatest feat, however, was adapting GG to nontransparent orthographies such as English and French, due to the irregularity of letter-sound correspondence (**Kyle et al, 2013**; **anr 2014-17**; **Ruiz et al, 2016**). Meanwhile, measuring the efficacy of all these new language versions remained a vital task to prove GG capable of benefitting all children, regardless of language background.

As Effective as 1-to-1 Teacher Support

Randomized controlled trials (RCTs) provide the most rigorous evidence about the quantitative effects of GG by comparing the performance of two or more groups of children. Results of RCTs allow us to clearly see how GG compares to other established ways of helping children learn how to read. Indeed, in UK English, GG is more effective than regular instruction in developing knowledge of English phonics for 6 to 7 year old's (**Ahmed et al, 2020**). This result was ascertained from a follow-up study to the **Education Endowment Fund's initial RCT** that had originally found GraphoGame Rime - an early version of our UK English game - as effective as small-group and one-to-one literacy support.

In the Classroom or at Home?

Qualitative research approaches shed more light on the role of teachers in the learning process. The positive effects of GG are strongest when teachers also had a chance to use the game, scaffolding the students' learning and adding motivation (**Ronimus & Lyytinen, 2015**; **McTigue et al, 2019**). Large-scale studies with exceptional methodological rigor further demonstrated that GG is a cost-effective addition to the conventional literacy support struggling readers receive from teachers. In one recent study, GG has been shown to give kindergarteners a head start superior to other forms of pre-reading instruction even when delivered at home (**Bempt et al, 2021**). In any case, the consensus in major studies is that completion of content, at least 16 streams, is what yields significant results (**Patel et al, 2021**).