Working paper number 62 –

https://www.monash.edu/education/research/projects/conceptual-playlab/publications

This is an article published in Every Child, 1 July 2021. Available online https://search.informit.org/doi/10.3316/informit.082016671914914

Fleer, M. (2021). New worlds of play-based learning. *Every Child, 27(2)*, 16–18.
https://search.informit.org/doi/10.3316/informit.082016671914914

New worlds of play-based learning

*Working as a preschool teacher earlier in her career, Laureate Professor **Marilyn Fleer** employed various resources designed to support the development of executive function, but struggled to keep the children engaged. As an academic, she has tried to change the game for both children and educators with PlayWorlds, a new approach based on fostering imagination and creativity.*

As a preschool teacher in the [insert decade], I spent a large part of the budget on beautifully crafted laminated or Perspex cards that could be used for picture matching, memory games, sorting and classifying. The resources were lovely to touch, looked inviting and were educational. A worthy purchase, I thought.

The preschoolers thought otherwise.

At university, I learned about the importance of such resources in developing skills in visual discrimination, memory and problem-solving. Cognitive psychologists had designed these resources, and their research showed children's test scores would increase if they used them.

A lot is known about how to increase children's performance in testing, but more recent research has reported a need to develop children's working memory, self-regulation and planning (Diamond & Ling, 2016). We use games to help children regulate or inhibit their behaviours, or test their ability to plan ahead. Such games support a set of cognitive skills known as executive function (EF).

Traditional EF training: important, but boring

EF skills such as planning and self-regulation have been shown to be vital in the classroom. They help children retain information, focus their attention and resist distractions. Improved EF has also been shown to improve children's school performance and predict life success (Nesbitt et al., 2015; Diamond & Ling, 2016). Marianne Röthlisberger and colleagues (2011) found, however, that while early childhood teachers knew the importance of EF training, both children and teachers were often bored by it. As a preschool teacher, I found the same thing: it was difficult to keep children on task when using commercially available resources for cognitive development.

In 2007, Professor Mariane Hedegaard from the University of Copenhagen published the results of a study of children aged three to five years in a playgroup setting, in which a researcher observed the content of 100 traditional EF games as well as the children's competence, intentions and social interactions. Hedegaard argues that these commercially available 'instructional' games and other such materials are designed to improve IQ scores; they are 'constructed to train the child's functions such as discrimination and categorization of objects' (p. 273) rather than to orient children to their world and develop their knowledge of it. The materials did not allow for creative experimentation or imaginary play.

Hedegaard's study explained what I had long wondered about, but understanding the problem is only part of solving it. I wanted to take the available evidence into account in ways that were meaningful to children and early childhood teachers.

Building EF skills through play: effective and fun

Fast-forward to 2021. I no longer see four children sitting at a table playing memory games. Instead they are on adventures in imaginary PlayWorlds where they meet problems they want to solve. In the PlayWorld of the *Three Billy Goats Gruff*, for example, the children meet a troll who wants a secret password before the goats can cross the bridge. But on this particular day, the troll asks for the numbers to be reversed—the children's working memory is stretched as they collectively give the password in reverse and cross the bridge.

In these new EF-based programs, children don't need additional resources, just their imaginations (Fleer, Verestov, Harrison & Walker, 2017). But are these PlayWorld programs as impactful as the EF tasks usually given to teachers? To answer this question, I and other researchers undertook two studies (Fleer, Walker, White, Veresov & Duhn, 2020; Walker, Fleer, Veresov & Duhn, 2020). Our results were consistent with increases in scores from other studies into preschool EF, and demonstrated that PlayWorlds are just as effective as 'instructive' games.

PlayWorld programs with embedded EF games build on teacher strengths in designing play-based programs, and work within the children's interests and motives. These programs are also cost-neutral and connected to children's lives. Importantly, the play experience for both children and teachers is much richer than in the task-oriented tabletop games I used as a preschool teacher.

Children's motivation for play provides a rich context in which working memory, planning and self-regulation or inhibition can be developed in unity and with friends. We asked teachers if they would continue EF games in the PlayWorlds after the research period. They reported that they couldn't stop, because the children demanded it.

As Associate Professor Anna Kilderry and Emeritus Professor Bridie Raban (2020) have argued, an evidence base should be transformed into an evidence-informed approach. Had I just followed the evidence and ignored the impact, I would never have wondered why the children left the tables. An evidence-based program is more than a set of test results from research. The research must explain how the evidence was generated and how it impacted on practice.

Isn't that why we do research—to make a difference—and why impact-oriented research is so valuable?

Additional resources

To get a feel for what the PlayWorld program looks like, a collection of cost-neutral pop-up Conceptual PlayWorld starters and research papers is available from: https://www.monash.edu/education/research/projects/conceptual-playlab.

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