



**Playful Learning not Play vs Learning in
Preschool:**
How Play Fosters Social and Cognitive Development

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PLAY IS UBIQUITOUS!



CATS PLAY



DOGS PLAY



MONKEYS PLAY



OCTOPUSSES PLAY

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It is a biological imperative...



Yet, play is under siege.

Zigler, 2004

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what happened to play?



In 1981, a typical school-age child in the United States had 40% of her time open for play. By 1997, the time for play had shrunk to 25%.

What percentage is it down to now??

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Recent research suggests that

- In the last two decades children have lost 8 hours of free play per week
- 30,000 schools in the United States have eliminated recess to make time for more academic study.



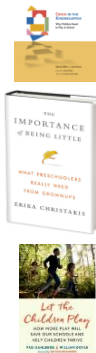
Elkind, (2008) Greater Good

Photo - Tim Gill

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New findings support the relative extinction of play

- The Alliance for Childhood 2009 survey of 142 NY classrooms and 112 LA classrooms found that
 - 25% of teachers had no time for play
 - 61% of NY teachers have no choice time
 - 79% of NY teachers do test preparation every day
- Bassok et al., (2016) report that kindergarten really is the new first grade!
 - 80% of teachers say K-garten children should be reading – up 50% from 1998
 - Time for arts? Down 16%
 - Testing? Up. 29% test children at least once a month



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And in its stead, many young children are parked in front of screens and it got worse during COVID



- 98% of 0-4 year olds use mobile devices; 75% have a tablet
- 90% started before age 1
- In 2019, we downloaded over 204 billion apps
- As of 2018, an average of 1,434 new Apple iOS apps and 6,140 new Android apps were released each day
- Apple offers over 200,000 educational apps (current) and Android had nearly 280,000 by 2018
- Most are targeted for preschoolers
- Most are called "educational"
- Most are not educational!

Hirsh-Pasek et al., 2015; Meyer et al., 2021

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These issues and more prompted a response from from the American Academy of Pediatricians

In 2006 titled: *The Importance of Play in Promoting Healthy Child Development and Maintaining Strong Parent-Child Bonds* they wrote,

These guidelines are written in response to the multiple forces challenging play. The overriding premise is that play (or some available free time in the case of older children and adolescents) is essential to the cognitive, physical, social, and emotional well-being of children and youth.

In 2012 they reaffirmed the position writing,

Play is essential to the social, emotional, cognitive, and physical well-being of children beginning in early childhood. It is a natural tool for children to develop resiliency as they learn to cooperate, overcome challenges, and negotiate with others. Play also allows children to be creative.

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Spearheaded by Dr. Michael Yogman
We released a report that...



Photo: © 2018 American Academy of Pediatrics
The Power of Play: A Pediatric Role in Enhancing Development in Young Children
Michael Yogman, Andrew Gentry, Jeffrey Matthews, Kelly Olson-Park, Robert Horvath, Dawnant COMMITTEE ON PSYCHOSOCIAL ASPECTS OF FAMILY PEDIATRIC PRACTICE, COUNCIL ON COMMUNITY CARE AND PREVENTION

Speaks to the cognitive and social advantages of play and playful learning while at the same time, suggesting that pediatricians offer **prescriptions for play!**

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And believe it or not, play is coming back



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A talk in 3 parts

- **Defining play**
 - Free play and guided play
- The advantages of play
 - Play and social learning (executive function)
 - Play and cognition
- What we can do to foster play for school readiness?
 - Playing at school
 - Playing in the community

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Defining play

Playful Learning: *HOW* children learn

(Hirsh-Pasek et al., 2009; Garvey, 1977; Hirsh-Pasek & Golinkoff, 2003; Christie & Johnsen, 1983; Zosh et al., 2018, 2021; Hirsh-Pasek et al., 2020; Hirsh-Pasek & Golinkoff 2021; Skeen et al., 2022; Hirsh-Pasek et al., forthcoming.)

- ACTIVE _____ PASSIVE
- ENGAGING _____ DISTRACTING
- MEANINGFUL _____ DISCONNECTED
- SOCIAL _____ SOLO
- ITERATIVE _____ UNCHANGED
- JOYFUL _____ BORING



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And Guided play also has a clear learning goal



A planned play environment, enriched with objects/toys that provide experiential learning opportunities, infused with curricular content (Berger, 2008), Think Museums or Montessori classrooms.

Adults enhancing children's exploration and learning through:

- co-playing with children
- asking open-ended questions
- suggesting ways to explore materials

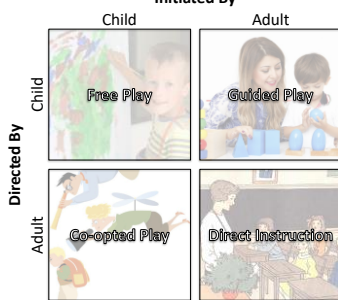
Fisher et al., 2011; Hirsh-Pasek et al., 2009; Hirsh-Pasek & Golinkoff, in press; Weisberg, Hirsh & Pasek & Golinkoff, 2015; Weisberg et al., 2016; Zosh et al., 2018, 2021

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Playful Learning

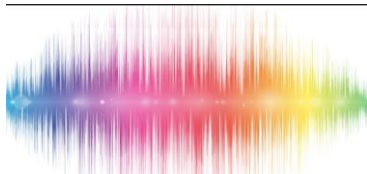
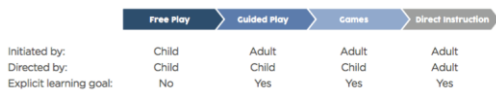


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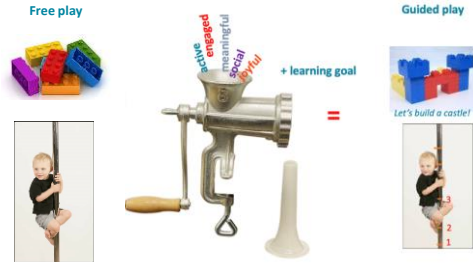
Our recent paper suggests that play might like on a spectrum....



Berger, 2008; Fisher et al., 2013; Hirsh-Pasek et al., 2009; Weisberg et al., 2016; Toub et al., 2016; Zosh et al., 2018; 2021

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And you can turn free play into guided play!



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And research suggests that playful learning enhances **social regulation** (collaboration); **language and literacy** (communication); and **STEM** (content learning), and **hypothesis testing** (critical thinking), and even **creativity**, among others

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 - Playing in the community

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Play and social regulation

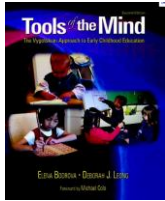
Those all-important executive function skills

- Impulse and emotion control
- Self-guidance of thought and behavior (private speech)
- Planning
- Self-reliance
- Socially responsible behavior
- Attention
- Memory

(Bronson, 2001; Kopp, 1991; Rothbart & Bates, 2006)

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Tools of the Mind as a key example of playful learning



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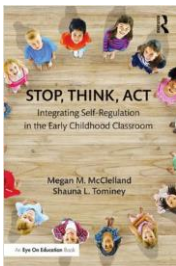
Results suggest that....

When children engage in playful learning throughout the school day – on quite well-designed tasks, their EF and social regulation go up as does their outcomes on standard tests. Later research also shows more joy in the classroom and happier teachers!

(Bodrova & Leong, 2006, Diamond et al., 2011; Blair & Raver, 2015; but see Thal, 2012, Lillard et al., 2012; Diamond et al., 2019)

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Megan McClelland's classroom games for social regulation get similar results



- Conducting an Orchestra**
Every child use a musical instrument. The circle leader used a drum stick as a conducting baton. When the conductor waved the baton, children played their instruments. When the conductor put the baton down, children stopped.
- Drum Beats**
Teachers used drum beats to represent different actions that children can do while sitting (e.g., clapping or stomping) or while moving around the room (e.g., walking or dancing). For example, children walked quickly to fast drumming, slowly to slow drumming, and froze when the drumming stopped

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Just out.....



Promoting Executive Function Skills in Preschoolers Using a Play-Based Program

Robbin Gibb, Lara Coelho, Nicole Anna Van Rootelaar, Celeste Halliwell, Michelle MacKinnon, Isabelle Piomp and Claudia L. R. Gonzalez

The program consisted of 10 simple, fun, and interactive games selected to enhance various facets of EF. The 10 games included were: dimensional change card sort, lips and ears, block building, musical freeze, opposites, pretend play, red light/green light, shared project, Simon says, and wait for it. The program was implemented with a group of children shown to have challenges with respect to kindergarten readiness.



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And another.....



Parent Provision of Choice Is a Key Component of Autonomy Support in Predicting Child Executive Function Skills

Romulus J. Castelo, Alyssa S. Meuwissen, Rebecca Distefano, Megan M. McClelland, Ellen Galinsky, Philip David Zelazo and Stephanie M. Carlson

We coded parent autonomy-supportive behaviors from a 10-min interaction between parent and child dyads working on challenging jigsaw puzzles together. Children completed a battery of EF. Overall, child EF was most consistently correlated with the offering choice subscale. Additionally, only the offering choice subscale predicted child EF while controlling for the other autonomy support subscales and child age. These results suggest that parent provision of choice is an especially relevant aspect of autonomy-supportive parenting and may be important to the development of EF in early childhood.



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Playful learning and cognitive skills: Literacy



- Telling stories
- Word play (what rhymes with "hat"?)
- Singing songs
- Dialogical reading
- Reading product labels
- Engaging conversations
- Dramatic play (Roskos & Christie, 2013)

A now classic paper by Lillard et al., 2012 suggests language and reading outcomes are the strongest examples of where even free play encourages development

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Our current research (with Dickinson and Golinkoff) is asking how playful learning can increase vocabulary for children from under-resourced environments!



Adult reads children a book like the Knight and the Dragon while highlighting new words (e.g., galloping, shield)

Photo from Sheryl Ann Crawford



- Free play
- Directed play
- Guided play

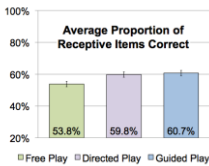
No focus, dialogue; meaning-making; child initiated and directed

Targeted focus with more closed questions; adult initiated and directed, meaning-making

Targeted focus with more open ended questions; adult initiated, child directed, meaning-making

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Results?



Children did better post that pre in all conditions

Adult supported play was better than free play in all conditions!

Book reading + adult supported play was also better than book reading plus fun flash cards!

Bottom line? When there is a learning goal – adult supported play (guided or directed) helps children learn!

Weisberg et al., 2015; Toub et al., 2018; Hadley et al., 2021

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In findings.... our most recent –very preliminary

- We used different play activities – singing, large and small group games, drama and digital.
- Our kids learned target vocabulary as well in the play condition as they did in the read condition!

Scott et al., under review

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Then we asked whether game play might help readers learn vocabulary better than flashcards and – it did!

How to Play: Teacher says, "First, spin the spinner and move to the first square that is the same color. Then, I am going to read you the word that you landed on and a question about that word. Now, your neighbor gets a turn. Let's play Snakes & Ladders!"



Figure B1. Sample Snakes & Ladders game board



Hassinger-Das, Ridge, Golinkoff & Hirsh-Pasek, 2016

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In our research, we studied **Block Play** to ask if it might build better spatial language and math outcomes

Our questions:

Do we talk more about space when we play with blocks?

Result: YES In non-block play contexts, parents use only 3 to 6% of spatial terms

Do we talk more about space in certain play situations over others? (using words like above, on top of, beside...)

Result: YES, there is more spatial language in guided play than in free play



Ferrara, Hirsh-Pasek, Newcombe & Golinkoff, 2011

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Why should we care?

Because spatial language and spatial play relate...

- to later spatial ability!
- and later math ability!

2-D Test of Spatial Ability (TOSA)



3-D Test of Spatial Ability (TOSA)



Verdine, B., Golinkoff, R., Hirsh-Pasek, K., Newcombe, N., Filipowicz, A. & Chang, A. (2014); Verdine, Golinkoff, Hirsh-Pasek & Newcombe, 2017; Bower et al., 2021

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Playful learning supports **Critical thinking and hypothesis testing**

Lucas et al find that...

DOI: 10.1016/j.jecp.2014.04.002
When children are better (or at least more open-minded) learners than adults: developmental differences in learning the forms of causal relationships.
 Lucas, L.J., Blöchl, S., Gilmore, J., & Gopfer, C.
 © Author information
Abstract
 Children learn causal relationships quickly and make...
Preschoolers Outsmart College Students In Figuring Out Gadgets
 ... were asked to both judge the causal efficacy...
 ... results show that children can learn the causal properties of causal...
 ... children were more likely than adults to generalize the causal properties...
 ... suggesting that they are not biased by prior assumptions and pay more attention to causal evidence. These results are consistent with the...
 ... predictions of a heuristic Bayesian model.
 Copyright © 2014 The Authors. Published by Elsevier B.V. All rights reserved.

And Gweon, Goodman, Spelke & Schultz (2010)



Find that direct instruction (while effective),
 "limits spontaneous exploration and discovery"
 relative to play! See also Bonowitz et al., 2011

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And research from our lab suggests guided play supports creativity



Evans, N., Todaro, R., Schlesinger, M. A., Golinkoff, R. M., & Hirsh-Pasek, K. (2021). Examining the impact of children's exploration behaviors on creativity. *Journal of Experimental Child Psychology*.

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A review of all of the papers on guided play suggest – IT WORKS especially for STEM development and language!



REVIEW | Open Access

Can guidance during play enhance children's learning and development in educational contexts? A systematic review and meta-analysis

Kayleigh Skene, Christine M. O'Farrelly, Elizabeth M. Byrne, Natalie Kirby, Eloise C. Stevens, Paul G. Ramchandani

First published: 12 January 2022 | https://doi.org/10.1111/cdev.13730

Horizontal lines for notes

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Why might playful learning support learning? Some hypotheses

Big Idea 1: It involves "active, engaged, meaningful and socially interactive learning" and that is how humans learn best!

Big Idea 2: Guided play is like "constrained tinkering" that lessens the "noise" and prioritizes some hypotheses over others.

Big Idea 3: Guided play creates a mise en place or positive disposition for learning and exploration

Big Idea 4: Playful learning is joyful and positive emotions help children learn!

Horizontal lines for notes

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Big Idea 6: Play allows us to develop the suite of skills we need to be school ready – the 6Cs



Horizontal lines for notes

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Hmmmm..... *The Ultimate Playbook*TM

The HOW

If play helps children learn.....

	FUN	✓	SCORING
	ACTIVE	✓	PHYSICAL
	ENGAGING	✓	DESTRUCTURING
	MEANINGFUL	✓	EMBEDDED
	SOCIOALLY INTERACTIVE	✓	BUILD

From Helen Fagan et al. (2015). *Dark Years*. Fagan et al., 2015

The WHAT

And you can learn a suite of skills that take you from cradle to career.....

	Collaboration
	Communication
	Content
	Critical Thinking
	Creative Innovation
	Confidence



Maybe I could use these two grids to create classrooms and informal learning spaces that support children and their families in playful learning! Maybe I can redefine education for the 21st Century!

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Using the grids, the classrooms are using project-based learning and evaluating how the theme “grows” certain skills

The HOW

	FUN	✓	SCORING
	ACTIVE	✓	PHYSICAL
	ENGAGING	✓	DESTRUCTURING
	MEANINGFUL	✓	EMBEDDED
	SOCIOALLY INTERACTIVE	✓	BUILD

From Helen Fagan et al. (2015). *Dark Years*. Fagan et al., 2015

The WHAT

	Collaboration
	Communication
	Content
	Critical Thinking
	Creative Innovation
	Confidence



An arts mural project?

Putting on a show?

A mini maker’s fair to solve a problem? (how to make the door to the outside open more easily??)

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Playful Learning in the Classroom

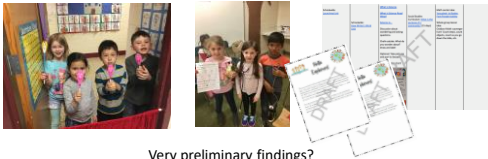
Ministries of Education around the world are beginning to embrace whole-child pedagogy



The purpose of the program is to establish a strong foundation for learning in the early years, and to do so in a safe and caring, play-based environment that promotes the physical, social, emotional, and cognitive development of all children.
- Ontario Ministry of Education

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In Pennsylvania:



Very preliminary findings?

- > reading at grade level
- > math at grade level
- < in referrals for OT
- < 79% referrals for special education
- + teachers are happier

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In Michigan at the Godfrey Lee Schools



- A small community school district in Michigan
- Nearly 80% of students are Hispanic/Latinx
- 93% of students face economic challenges
- Positive experience for teachers and students
- The classroom promoted 21st-century skills
- Gains in reading and math outcomes

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In Japan



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Playful Learning Outside the Classroom

in Child-friendly Cities and Towns

A Global Phenomenon

That transforms everyday spaces in cities and towns into child friendly playful learning spaces



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Playfullearninglandscapes.fun

Asks how we can transform everyday spaces into fun learning spaces – and does so where the families live – in their own homes and neighborhoods!



We started by asking, when is a bench not a bench?

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Example 1: The Ultimate Block Party

28 science inspired activities in Central Park, NY in 2010

Over 10 million people reached; 50,000 at event itself!

Results showed increase in parents' attitudes to the play-learning connection, which is a vital component in public awareness.



Grob, R., Schlesinger, M., Pace, A., Gollinkoff, R. M., & Hirsh-Pasek, K. (2017). Playing wideas: Evaluating the impact of the Ultimate Block Party, a collective experiential intervention to enrich perceptions of play. *Child Development, 88*(5), 1417-1434

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Example 2: The Supermarket Study

Can the introduction of signs in a supermarket increase caregiver child language interactions?

RESULTS

- A 33% increase in caregiver - child language when the signs were up in under-resourced neighborhoods.
- Replication by Melissa Libertus: University of Pittsburgh with STEM signs; Hespos et al. 2021



Ridge, K. E., Weisberg, D. S., Ilgaz, H., Hirsh-Pasek, K. A., & Gollinkoff, R. M. (2015). Supermarket Speak: Increasing talk among low-socioeconomic status families. *Mind, Brain, and Education, 9*(3), 127-135

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Example 3: Urban Thinkspace

RESULTS

- The number of families with 6 or more conversation turns increased 39% from pre to posttest.
- 35% more families at Urban Thinkspace had 6 or more conversation turns than families at the control playground.
- The number of families using number, spatial, color, or letter language increased by 34% from pre to posttest.
- Adults' following children's focus increased by 62% from pre to posttest.
- Group Total Interaction at Urban Thinkspace increased 24% from pre to posttest, and Group Total Language scores increased 27% from pre to posttest.



Hassinger-Das, B., Palla, L., Godoloff, K. M., & Hirsh-Pasek, K. (2020). Urban Thinkspace: Infusing public spaces with STEM conversation and interaction opportunities. *Journal of Cognition and Development, 21*(1), 125-147; Hassinger-Das et al. 4921

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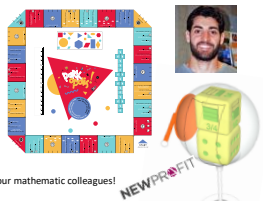


Example 4: Parkopolis

- The Human Sized Board Game for early mathematical skills and scientific reasoning.

RESULTS

- 79% more children used math language (whole numbers, fractions, measurement, patterns) in Parkopolis compared to children in the control STEM exhibit.
- 47% more adults used math language (whole numbers, fractions, measurement, patterns) in Parkopolis compared to children in the control STEM exhibit.
- 18% more parents asked questions in Parkopolis than parents in the control STEM exhibit.
- 25% more families had conversations 6 or more conversation turns than families in the control STEM exhibit.



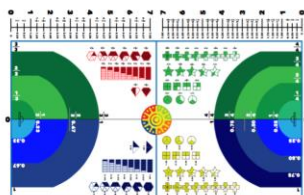
Thanks to Fei Xu, Silvia Bunge and all of our mathematic colleagues!

Bustamante, A. S., Schlesinger, M., Begolli, K. N., Golinkoff, R. M., Shahidi, N., Zoghbi-S., Riesen, C., Evans, N., & Hirsh-Pasek, K. (2020). More than just a game: Transforming social interaction and STEM play with Parkopolis. *Developmental Psychology, 56*(6), 1041-1056; Bustamante et al., 2021

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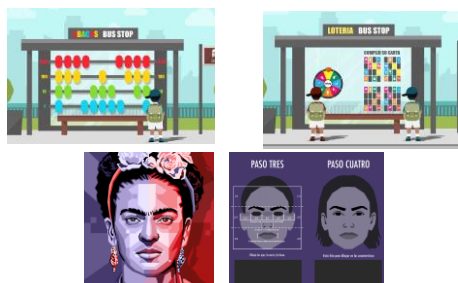
Example 5: Fractionball



Preliminary results? N=70; Increase in decimal to fraction conversions

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Sneak peek at designs by the community in Santa Ana, CA



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Rich scientific evidence supports these approaches!

The image shows three academic article thumbnails. The first is from Springer, titled 'Playful Learning Landscapes: Convergence of Education and City Planning'. The second is from 'Library and Information Science Research' titled 'Play-and-learn spaces: Leveraging library spaces to promote caregiver and child interaction'. The third is from 'Journal of Cognition and Development' titled 'Brief Interventions Influence the Quantity and Quality of Caregiver-Child Conversations in an Everyday Context'.

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Take any theme that you want to explore – digital or live, in or out of school

The diagram shows a spectrum of social interaction styles. On the left, there are five categories: FUN, ACTIVE, ENGAGING, MEANINGFUL, and SOCIALLY INTERACTIVE. On the right, there are five categories: BORING, PASSIVE, DISTRACTING, DISEMBODIED, and SOLO. Below this is a table titled 'Then add the WHAT' with columns for Collaboration, Communication, Content, Critical Thinking, Creative Innovation, and Confidence. The table lists activities for each level from 1 to 4.

Level	Collaboration	Communication	Content	Critical Thinking	Creative Innovation	Confidence
4	Building together	Tell a joint story	Expertise	Evidence	Vision	Drive to fail
3	Back and forth	Debate	Working connections	Options	Hope	Calculated risk
2	Side by side	Show and tell	Who leads? Shared understanding	Truths offer	Measure and	When do I want?
1	On my own	Rare attention	Early learning/ shared activity	Being in learning	Experimentation	Barrel on

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So you...



Can introduce the science of playful learning into the classroom

And, when you do you will re-imagine learning for our time....and will teach in the way children best learn!

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Thanks to our funders



Roberta Golinkoff, Ph.D.



The most wonderful postdocs, graduate students and undergrads.

And to the families who make the research we do possible!

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