



Becoming Brilliant: Reimagining Education for our Time

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TIME FOR FUN FACT!

St. Cloud's name comes from

- Holy clouds
- What Bill Clinton calls Hilary
- French monk
- Saint who lived in Minnesota

Answer:
#3
Saint Cloud named after town Saint-Cloud in Ile-de-France near Paris!

And Saint-Cloud named after 6th century monk Clodoald who established an abbey on the Seine

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What do you hear?



Repeat after me

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Now change the lens



Content

Collaboration (Following others)

Repeat after me

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What's going on here?



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Change the lens!



Communication

Collaboration

Perspective taking

Content learning to learn skills: Planning

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It is time to change the lens....



- On the way we think about learning and education – in and out of school
- On the way that educators, parents, and policy makers think about the social and academic value of an education fostered through play and active learning!

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Some interesting facts

- We are entering a new era, a knowledge age, in which information is doubling every 2.5 years.
- We are leaving the information age, where getting the “factoids” was enough...
- Integrating information and innovation is key.

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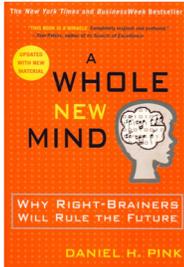


Author Daniel Pink writes...

The past few decades have belonged to a certain kind of person with a certain kind of mind – computer programmers who could crank code, lawyers who could craft contracts, MBAs who could crunch numbers.

But the keys to the kingdom are changing hands.

The future belongs to a very different kind of person with a very different kind of mind - creators and empathizers, pattern recognizers, and meaning makers. These people – artists, inventors, designers, storytellers, caregivers, consolers, big picture thinkers -- will now reap society's richest rewards....



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**Education Week article of September 28, 2017:
The Future of Work Is Uncertain, Schools Should Worry Now**

- 2013 – Oxford University study:
“Fully 47% of US jobs are at risk of being automated in next two decades”
- 2014 – Pew Foundation Study:
Interviewed 1900 experts – almost 50% agreed, “...envision a future in which robots and digital agents have displaced significant numbers of both blue- and **white-collar** workers.”

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Which jobs will go?

“Even skeptics recognize that industrial robots and artificial-intelligence-powered digital agents have already made significant inroads into fields as diverse as manufacturing, health care, logistics, and customer service.”

- Especially vulnerable: anything that can be done by computers and robots, e.g., salesperson, accountants, bus drivers
- Less vulnerable: Those that can't be automated!

Those that rely on **communication, collaboration, content, critical thinking, creative innovation, and confidence**

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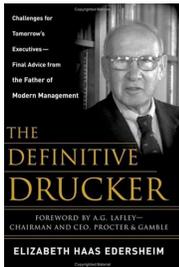


Business leaders tell us...

America's institutions – even our economy and our mind set – are designed for the individualism of an industrial economy, not a *Lego world* (p. 38, Edersheim).

In Lego world, successful businesses function by having content areas and specializations that can be rearranged to help build new structures on a moment's notice.

**The watchwords?
Flexibility and adaptability**



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A number of organizations are saying the same thing!

The *Partnership for 21st Century Skills* writes, "in an economy driven by innovation and knowledge...the ingenuity, agility, and skills of the American people are crucial to competitiveness." (Sept, 2008)

And the *Learning Metric Task Force* "presents key indicators for tracking progress in foundational skills (literacy and numeracy) as well as in knowledge and skills that go beyond these traditional indicators...to include "readiness to learn" in early childhood, skills and values for youth to be successful "citizens of the world."

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Are we preparing children for the workplace of tomorrow?

Our current model of education (and parenting) is founded on the idea that mastery of *content* is the key to success in life, but what counts as success has undergone a revolution in a Google and Wiki world where facts are at our fingertips.

The Traditional Way
Preparing Children in just:
Reading
Writing
Math

The 21st Century Way
Supporting children to include but go beyond content to be:
Happy, healthy, thinking, caring, and social so they become collaborative, creative, competent, and responsible citizens tomorrow.

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But wait: Is the traditional approach to achieving success working?

- In the US, created test driven high stress educational systems
- Even led to what some in the military call a national security risk because students know narrow facts but cannot think critically or strategically, let alone navigate socially.
- But our neighbors to the north – Canada and Ontario are way ahead of us!

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Indeed, the famous Finnish scientist and author, Pasi Sahlberg shows the US 2013 PISA scores from students who spent their entire academic career under NCLB.

BUT NOTE WHERE THE US IS!

Quality of achievement improves (Y-axis: Student achievement in reading, mathematics and science (PSA))

Equity of education system enhances (X-axis: Weakness of the relationship between achievement and family background (ESCS Index))

OECD, 2013

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Becoming Brilliant: What science tells us about raising successful children

asks parents, educators and policy makers to change the lens on how we define success for children growing up in the 21st Century!

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Achieving that success will require nurturing a breadth of skills that we call The 6Cs – skills that take us from the sandbox to the boardroom – skills grounded in the science of learning.

The 6 C's

Collaboration	Communication	Content
Critical Thinking	Creative Innovation	Confidence

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But how do our children achieve these skills both in and out of school?
Children can master these skills in part, through...

PLAYFUL LEARNING

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Free Play
- still great
but....

Guided Play
When you have an instructional goal.

Playful Learning

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A talk in 5 parts:

- The current state of play in early education
- Defining playful learning
- Playful learning and the 6Cs
 - Social skills
 - Cognitive skills
- An integrative model
- The 6Cs at home, school and in the community

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A talk in 5 parts:

- The current state of play in early education: a cautionary tale!
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And several recent pieces suggest that Kindergarten has become the new first grade

- Bassok et al. (2016) find that!
 - 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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This narrow view of success even pervades our every day activities: Check out how children can now learn during potty training!

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"Could you at least lay off the flash cards until we see a head?!"

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We are wearing out our youngest children by engaging in "drill-and-kill" Testing for "factoids" in our assessments rather than real learning

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These issues and more prompted reports from the American Academy of Pediatricians in October 2006, again in 2012, and forthcoming in 2018! They wrote...

Collaboration Communication Content Critical Thinking Creative Innovation Confidence

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. It provides time for parents to be fully engaged with their children, to bond with their children, and to see the world from the perspective of their child.

Regina M. Milteer et al., 2012

Yogman et al...Golinkoff (2018). *The Power of Play: A Pediatric Role in Enhancing Skills in Young Children.*

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The challenge is to strike a balance...

between the desire to enrich children's lives and the need to foster play as a foundation for learning skills like collaboration, communication, content, critical thinking, and creative innovation and confidence.

Where content is 1 – but only 1 of the 6Cs

Teacher: I don't teach anything that can be Googled.

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A talk in 5 parts:

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Playful Learning contains time for both free and guided play:

		Initiated by	
		child	adult
Initiated by	child	Free Play	Guided Play
	adult	Co-opted Play	Direct Instruction

Jacob Palagoud

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Where Guided play can be

A planned play environment, enriched with objects/toys that provide experiential learning opportunities, infused with curricular content (Berger, 2008)

Adults enhancing children's exploration and learning through:

- co-playing with children
- asking open-ended questions
- suggesting ways to explore materials that children might not think of

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

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A tale of two Spocks – on Collaboration and social skills



Dr. Benjamin Spock got it all along: social and emotional regulation matters – a lot



Mr. Spock did not

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Collaboration – teamwork, getting along with others, social bonds, includes... social-emotional-regulation:

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

Bronson, 2001; Kopp, 1991; Rothbart & Bates, 2006; Galinsky, 2005

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And measures of self-regulation predict?

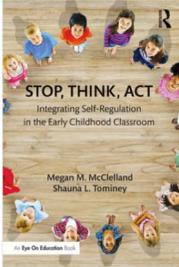
- persistence (Grit, Confidence)
- task mastery
- academic achievement (Communication; Content)
- social Collaboration
- moral maturity (concern about wrongdoing, willingness to apologize)
- sharing and helpfulness

Eisenberg, 2010; Harris et al., 2007; Kochanska & Askanan, 2006; Posner & Rothbart, 2007; Zhou, Lengua, & Wang, 2009; Berk & Meyers, 2014; and many others.

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Teach self-control through guided play! McClelland's classroom games for social regulation

- Conducting an Orchestra
When the child conductor waved the baton, children played their instruments. When the conductor put the baton down, children stopped.
- Simon Says!!!!
- Mother May I?

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Bottom Line?

- Collaboration is a foundation for skills in communication, content, creative innovation, confidence– and you can get it all through guided play!

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A talk in 5 parts:

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- Defining playful learning
- **Playful learning and the 6Cs**
 - Social skills
 - **Cognitive skills**
- An integrative model
- The 6Cs at home, school and in the community



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Focus on reading...



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

Lillard et al. (2012) suggests language and reading outcomes fueled by socio-dramatic play

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And, focused game play helped preaders learn Communication in the form of vocabulary

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. Next, your neighbor gets a turn. Let's play Snakes & Ladders!"

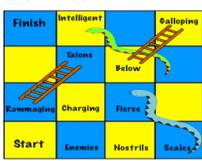
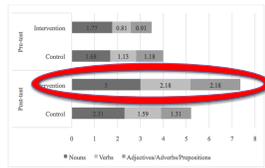



Figure 81. Sample Snakes & Ladders game board

Hassinger-Das, Ridge, Golinkoff & Hirsh-Pasek, in press

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What about Content and Communication in STEM??

- Finding patterns
- Dividing candy and sharing
 - Squire & Bryant, 2002
- Sorting trail mix
- "I spy"
- Noticing more and less
 - ("She got more ice cream!")
- Playing with blocks, trains and puzzles
- Playing board games
 - Ramani & Siegler, 2008; Ramani, Siegler & Hitti 2012



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Focus on playful learning with blocks



Research supported in part by Mega Bloks
See also Levine, Vatterlocher, Cannon, Pruden, Ratliff & Saunders, 2008

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- Do we talk more about spatial relations in certain play situations over others? (using words like *above*, *on top of*, *beside*...)
- Do we talk more about space when we play with blocks?




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Our design....

- 3-to 5-year-olds participated with a parent.
- They differed on which condition they had **first**.
- For their **first** experience they either had:
 - **Free play** (“Here are some blocks, do what you will”)
 - **Guided play** (“Can you build a heliport/ garage using these pictures?”)
 - **Preassembled play** (“Here’s a heliport! Have fun”)

All groups had GUIDED PLAY for their second experience.
 “Can you build a heliport/ garage using these pictures?”

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Pre-assembled Play



Free Play



Guided Play

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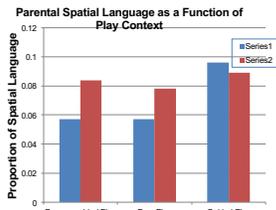
- **So what condition prompted the most spatial language from parents?** Words like *above*, *around*, *over*, *through*...
 - Preassembled play?
 - Free play?
 - Guided Play?
- And did playing with blocks offer any advantage for hearing spatial language over playing with other toys?

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GUIDED PLAY WINS!

Parental Spatial Language as a Function of Play Context



Play Context	Series 1	Series 2
Pre-assembled Play	~0.05	~0.08
Free Play	~0.05	~0.07
Guided Play	~0.09	~0.08

First, the play context makes a difference!
 In guided play, 10% or 1 in 10 words were spatial

Second, block play made a difference
 In non-block play contexts, parents use only 3 to 6% of spatial terms

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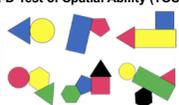


But does this spatial language and spatial play relate...

- to later spatial ability?
- and later math ability?

YES!
Many studies!

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 et al. SRCD Monograph in press.
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On the "C" of Critical thinking -- and hypothesis testing



This toy is neat!

I tell you:

"Look what this can do!" [phone call]

Or I tell you: "What can this do?" [phone call]

Gweon, Goodman, Spelke & Schultz (2010)

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A talk in 5 parts:



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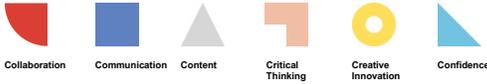
Of course, though each of the skills can be grown through playful learning, these skills do not act solo – but build on one another

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LEVEL	Collaboration	Communication	Content	Critical Thinking	Creative Innovation	Confidence
4	Building it together	Tell a joint story	Expertise	Evidence	Vision	Dare to fail
3	Back and forth	Dialogue	Making connections	Opinions	Voice	Calculated risks
2	Side by side	Show and tell	Wide breadth/ Shallow understanding	Truths differ	Means-end	Where do I stand?
1	On my own	Raw emotion	Early learning/ Situation specific	Seeing is believing	Experimentation	Barrel on

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LEVEL	Collaboration	Communication	Content	Critical Thinking	Creative Innovation	Confidence
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Further, the model is dynamic

in that we continue to revisit the 6Cs at higher and higher levels over development to create more than a linear model – but a spiral of learning.



We constantly revisit each of the skills as we gain new integrative experiences.

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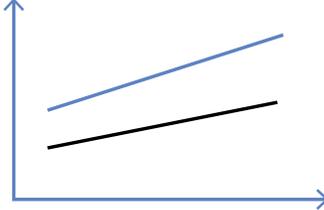
Importantly each of these skill areas and levels is measurable

- Collaboration**
Reading the Mind in the Eyes Test
The Delay of Gratification tests,
Observation (CLASS)
- Communication**
QUILS , PPVT, NIH Toolbox
Referential Communication,
Writing, Observation (CLASS)
- Critical Thinking**
Deanna Kuhn's Levels



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Each of these skills is malleable!



We can change outcomes on the 6Cs with positive experiences

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And the 6Cs allow us to re-imagine what education could be – giving us a kind of report card for the 21st century

	Collaboration	Communication	Content	Critical Thinking	Creative Innovation	Confidence
LEVEL 4					✓	
LEVEL 3						
LEVEL 2		✓	✓			✓
LEVEL 1	✓					

Using this grid, we can ask

- Where do we ourselves stand?
- Where do our children stand?
- Where does our school stand?

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The question for each of us then... is how we create environments to nurture each of the 6C's *in* and *out* of school where children spend 80% of their waking time?



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We are using the 6Cs to change communities:

URBAN THINK SCAPE
TRANSFORMING CITYSCAPES INTO OPPORTUNITIES FOR PLAYFUL LEARNING



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Creating playful environments where families can use the 6Cs to strengthen skills in everyday "trapped" spaces, e.g., supermarkets, laundromats

the fresh grocer

In low income neighborhoods in Phila and Wilm, we got a 33% increase in parent/child language when the signs were up.

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What changes could we make in our CLASSROOMS? Use the grid....

An arts mural project?

Putting on a show?

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

- How might each of these activities help grow the 6Cs? How might teachers use them to help parents change the lens?
- What are you already doing in playful learning that can feed the 6Cs?
- How can you make the link from activity to outcome more obvious?

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What changes could we make in our homes? Use the grid....

Building a couch fort?

A mini maker's day to invent something out of old parts? (old toilet paper or paper towel rolls; taking apart the broken blender)

Cooking together

Even bath time (how does that water go down that drain?)

- How might each of these activities help grow the 6Cs? How might parents, teachers here use them to help OTHERS change the lens?
- What are you *already* doing in playful learning that can feed the 6Cs?

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The 6C's framework helps us think differently as we prepare children for the challenges of today and the workforce of tomorrow.

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Evidence from the science of learning supports a wider discussion about the importance of a **breadth of skills** in education.

The 6Cs make visible the connections from the sandbox to the boardroom. And it helps us achieve this education *in and out of school* – through playful learning.

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RE-imagining global education requires re-imagining our definition of success!

In *Becoming Brilliant*, we suggest that a new definition should prevail:

Society thrives when we craft environments, in and out of school, that support happy, healthy, thinking and social children who become collaborative, creative, competent and responsible citizens tomorrow.

Modified from Ontario Ministry of Education!

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It is time

to change the lens on the way we think about success and about learning!



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Thanks to our funders



- My long term collaborator Dr. Kathy Hirsh-Pasek



The most wonderful postdocs, graduate students, and undergrads.

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

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The next 3 slides were part of the breakout session after the keynote

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Personal exercise!

Use the grid.... To rate how you are in your own life! Where would you place yourself? What do you want to improve?

	Collaboration	Communication	Content	Critical Thinking	Creative Innovation	Confidence
LEVEL 4 Building it together	Tell a joint story	Expertise	Evidence	Vision	Dare to fail	
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CHANGE: Starts with US!

Who would like to share an area in which they would like to improve?

Our job: Suggest ways to get there!

What would you like to be better in?

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 **WORK TOGETHER TO GENERATE ACTIVITIES!**

How can we bring the 6C's into our lives and our children's lives? Both in and out of school?

	CAR	BEFORE DINNER	CLASSROOM	AFT SCHL PROG
Collaboration				
Communication				
Content				
Critical Thinking				
Creative Innovation				
Confidence				

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