

What would

Maria Montessori Say About the iPad?

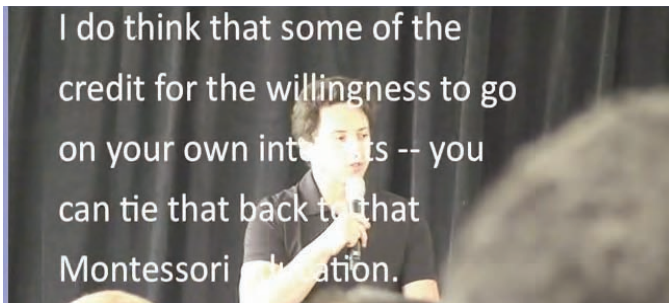
Trying to figure out the future?
Start by considering the past.

In the fall of 1913 an important visitor from Italy came to the stage at Carnegie hall. But it wasn't to star in an opera. It was to lecture about education, at the invitation of two of her big fans: Thomas Edison and Alexander Graham Bell. After an introduction by none other than John Dewey (can you imagine *that* pressure?) Dr. Maria Montessori, the 43-year-old doctor-turned-teacher described her new teaching methods for working with the "idiot" children in the Roman slums.

She apparently struck a chord. According to the New York Times coverage of her visit, 1,000 people had to be turned away at the door (<http://bit.ly/92w6w2>) all eager to hear her plans for "the eventual perfection of the human race." Maria Montessori died in 1952, but if she were alive today, she would probably be astonished by how her methods have grown and multiplied.

FAMOUS MONTESSORIANs. Graduates of programs bearing the Montessori name include some of the most famous pioneers of the information age: Jeff Bezos of Amazon.com, Sergey Brin and Larry Page of Google, Jimmy Wales of Wikipedia and Will Wright of The Sims. (For a good discussion of Will Wright's Montessori education, see Brian Crecente's article on Kotaku, at <http://bit.ly/8uiER>). All attended Montessori schools, and have mentioned the value of the experience. But she'd be shocked by the number of times her name shows up on schools -- and more recently apps, that vary widely in quality.

The Google/Montessori connection is particularly interesting, in part because of Genia Brin, Sergey Brin's mother. Since coming to the United States, Mrs. Brin has helped create a Montessori school -- the Alef Bet Montessori school in Rockville MD. So it's only fitting that you can find a tribute to her service on her son's video sharing service: YouTube <http://bit.ly/dspD2z>. Today, when Sergey Brin gives a talk, he



Secretary of Education Duncan to Deliver Commencement Address at Clark Montessori Jr. & Sr. High School
Wednesday, May 12, 2010 at 2:08pm

DR. MONTESSORI'S AIM. She Tells Great Audience That She Seeks Perfection of the Race.

Dr. Maria Montessori lectured on her method of education last night to an audience that filled Carnegie Hall. More than 1,000 persons were turned away. Dr. Montessori spoke under the auspices of the Montessori Educational Association. Dr. John Dewey, President of the National Kindergarten Association, presided. The lecture last night, it was supposed, would be Dr. Montessori's only public appearance in this city, but so much interest has been manifested that she will deliver a second lecture in Carnegie Hall on Monday.

seems fond of mentioning his and Larry's Montessori past, at <http://bit.ly/d4DeFA>.

One can't help but notice the similarities between a Montessori learning environment and Google's campus, where employees are encouraged to pursue personal interests like tending bees or planting gardens, and are served a nutritious carrot smoothie during the morning break.

During a visit I made there last fall, I spotted a life-sized replica of a T-Rex skeleton, and was inspired by the replica of SpaceShipOne: the first manned aircraft to leave orbit and land safely, hanging in the lobby.

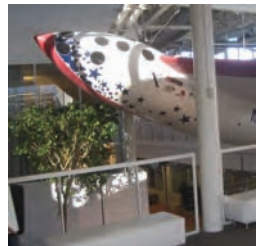
While these cool toys may seem unrelated to search engines, they are very much related to play, and how people learn.

Tapping into the power of play was part of Montessori's magic, but she was hardly unique with the idea. It was central to the theories of Johann Pestalozzi and his student Friedrich Fröbel (the guy who coined the word "kindergarten"), years before Montessori opened her school.

A HOT BUTTON ISSUE. Among Montessori groups, the use of technology-based materials like the iPad is debated. One important Montessorian who doesn't seem afraid of the iPad is Virginia McHugh Goodwin, the Executive Director of the Association Montessori International/USA (www.amiusa.org). She told me in a phone interview that "Montessori would appreciate the deep, intuitive connection the iPad fosters between content and user, taking working with knowledge to another level."

Other clues can be derived from Montessori's book, "The Montessori Method" which you can read at (<http://bit.ly/MNO4D>). You'll find plenty of evidence that Montessori was a bit of a geek. She wrote about the promise of Roentgen Rays (later renamed X-rays) in 1912, and accurately predicted "wonderful things from the Marconi Telegraph" (aka the radio).

This article was written by Warren Buckleitner (warren@childrenstech.com) who has no affiliation with any Montessori organization. This is one interpretation of her theory.



Maria Montessori iPad?



Drawing Pad



Tangrams



LetterTracer



UpThere

She was also a consummate game maker, constantly fiddling with innovative materials like sand paper to perfect a new self-teaching gadget. Because she'd always put a child's interests ahead of any formal curriculum, it's a safe bet that she would've encouraged young Sergey Brin's play with a Commodore 64. Said Goodwin, "Maria Montessori would view the iPad— and devices like it— as a tool for tomorrow's mind."

So when Montessori wrote that education was "seeking the release of human potentialities," it is easy to imagine her including an iPad in her modern arsenal of materials. Let me recap the "pro iPad" reasons:

- Montessori was a scientist who was future-centric. She understood that she was living in a changing time, and that children needed to be exposed to modern materials. She was in the business of preparing children for their future, to live to their full human potential, so she would've wanted them to embrace, and feel empowered, by every element of their environment, including technology.
- She would be discriminating about the types of apps she loaded on her iPads. She'd look for non-commercial apps that promote active learning, are self-correcting, are multi-leveling, don't talk too much and empower children. Another word Montessori used frequently was "didactic" as in "didactic materials," or working toward one right answer; a feature found in many better designed apps.
- In designing apps, she'd compensate for the iPad's sensory limitation of just sight and sound, using apps in concert with real, concrete experiences. She would use the iPad to supplement and extend traditional experiences rather than to replace them. After the trip to the Apple orchard, she'd give each child their own apple, to hold, smell and taste. Only then would she read a story about the apples, or let them "pick" the abstract apples on a multi-touch screen.

SOME WORDS OF CAUTION

Before you rush out and purchase every child an iPad, consider Goodwin's (and my) words of caution. Mine are based on a close reading of Montessori's book and a review of hundreds of apps. Goodwin's have been printed in the essay following this article:

- Keep an open mind about this issue. iPads are like chameleons— they take the form of the app they are running. Some apps match a child and your learning philosophy; others don't. Like anything new, it must be observed and studied to maximize the strengths and minimize downsides. As a scientist, Montessori was trained to systematically study various techniques, use what works, and discard the rest.
- Keep things in balance. She'd urge modern parents not to upset the balance of diet, exercise



The power of a theory: (above) Montessori on Italy's 100 lire note, (below) a KLM jet bears her name.



and the development of the senses through exposure to real wood, sand and water.

Technology-based experiences can supplement this mix. For example, the camera on the new iPod Touch is an ideal tool for capturing observations on a field trip.

- Screens are abstract. Said Goodwin "She'd (Montessori) remind us that any screen is an abstract, two-dimensional object that is removed from reality." In other words, the movements of a virtual fish in the **Koi Pond HD** app (\$1.99 The Blimp Pilots, LLC, www.theblimppilots.com) might fool your cat, but one sniff tells you they're not real. What app could replace the smells and sounds of a real pond?
- Technology tends to be expensive and quickly becomes obsolete. You can buy a lot of chromatic silk frames and sandpaper letters for \$500, and anyone knows that iPad 2.0 will be "newer, better, faster and cheaper."
- Don't sugar coat the learning. She'd like apps that are simple and stripped "of all that is not absolute truth," sans licensed characters, long musical introductions, or links that steer a child toward the iTunes store. Because she frowned on the notion of shaping a child's behavior with external prizes and punishments, she'd recommend apps where the process, in itself, is rewarding. She might ask "What type of society exposes its young to manipulative tricks with commercial motives?" Montessori would probably insist that every children's app should have a "no candy lane" mode, that perhaps costs a few lire/EU more.

It's been 97 years since Maria Montessori gave her famous Carnegie Hall address on how to teach hard-to-teach children. We have no shortage of hard to teach kids today, but it's nice to hope that we might have better materials.

Some Apps Maria *Might* Like

Here's a list of apps that are easy to use, highly interactive, free of extraneous narration and reinforcements, and offer expanding complexity. Some also have didactic auto-correction features. They were selected by interpreting Montessori's theories, and this is only one interpretation. So make your own conclusions.

FOR PRESCHOOLERS

Let's start with Montessori's famous technique of tracing letters using sandpaper. While you'll never make an iPad surface feel anything but glassy smooth—not yet anyway—

LetterWriter: Space (for lower case) and **LetterWriter: Ocean** (for upper case, each \$.99, www.barkingdog.com) get children's fingers moving in a similar fashion. The apps contain an alphabet of letters that can be filled in by tracing over the outline. If you go outside the line, the coloring stops, gently guiding children toward mastery.

Variety packs of activities include **Tickle Tap Toddler Pack**, (\$.499, zinc Roe Design, www.zincroe.com, ages 3-6) which contains five self-correcting activities, where children can sort by tilting the screen left or right, create musical patterns by finger-tracing a shape, or count with dots that float around the screen. Because she liked materials that self-correct or "auto educate" Maria would've liked the counting game in **Tam & Tao in Numberland** (\$.99 by Les Trois Elles Interactive), a peg-counting activity where the wrong answers quietly fall to the bottom of the screen and wait for another try. On the other hand, she'd disapprove of apps that simulate a talking, over-reinforcing teacher, and she'd put this activity second after a caring adult, with real wooden pegs.

Montessori would've also liked the active play involved in the scale balancing game in **Park Math** (\$.99 for iPhone/iPod Touch, \$1.99 for iPad, www.duckduckmoosedesign.com, ages 2-up), where children can balance a see-saw by dragging and dropping mice. While she would've frowned on use of her name for marketing in **Montessorium Intro to Math**, she would've liked the way children are given audio feedback as they sort in Red Rods, where children touch and drop rods according to length, each making a xylophone-like pitch.



Tam & Tao in Numberland (above), Park Math (below)



My First Tangrams (above), Symmetry Shuffle (below)



FOR KINDERGARTEN

Montessori seemed to like classifying and seriating, so it's a fair guess that she would supplement (not replace) her regular puzzles with **My First Tangrams HD** (\$.1.99, A&R Entertainment, www.ar-entertainment.net, ages 3-up); 36 tangram puzzles -- simple figures such as a boat or truck, made out of the outlines of geometric shapes. You touch-and-drop the pieces onto their outline; and wrong answers quietly fall back to the bottom of the screen.

FOR ELEMENTARY

Candidates for Montessori-approved apps for older children abound. **Bartleby's Book of Buttons** (\$4.99, <http://octopuskite.com>, ages 6-up) looks like a traditional storybook on glass, but each page is full of hidden triggers that must be touched in correct order to unlock the next page. And math educator Daren Carsten's latestest work, **Symmetry Shuffle** (\$.1.99, by Carstens Studios, 4-up) contains an endless supply of puzzles to mentally flip and turn; an excellent exercise in spatial relations.

FOR ALL AGES

Finally, if there were just one app that might make Dr. Montessori smile, it would be **Magic Piano** (\$.99, Smule, www.smule.com, ages 4-up); a musical sandbox that makes no attempt to sugar-coat the creativity process with extraneous instructions or characters.

The graphics consist of bendable, stretchable keyboards that can morph into different forms, and if your iPad is online, a child in New Jersey could play a duet with a child in a low-income area outside Rome, Italy. Brillante!



Bartleby's Book of Buttons (above), Magic Piano (below)



Virtual vs. Reality: Montessori Education and Today's Technology

by Virginia McHugh Goodwin, Executive Director, Association Montessori International-USA (AMI/USA)

Maria Montessori was always on the cutting edge, interested in how the world evolved and changed. She was an unprecedented visionary who said in 1948, "...for the progress of the world is continually opening new careers and at the same time closing or revolutionizing the traditional types of employment." When Montessori wrote this, most of humanity still lived by subsistence farming. There had not been an information technology revolution. She also stated:

"My vision of the future is no longer of people taking exams and proceeding on that certification from the secondary school to the university, but of individuals passing from one stage of independence to a higher, by means of their own activity, through their own effort of will, which constitutes the inner evolution of the individual."

Just as the release of the Montessori method revolutionized the way that the world looked at how children learn, Apple's iPad appears to be revolutionizing the way that the world looks at computing and technology

Today's child has the world at their fingertips. Current technology allows instant access to a seemingly endless stream of media in countless forms. The integration of technology into the classroom provides innumerable opportunities for the teacher to supplement a child's educational experience and expand the child's creative horizons. That being said, technology also has the potential to stunt a child's educational growth and counteract much of the progress that is crucial to successful development.

There is a place for the iPad in the Montessori world. Montessori education helps children develop into adaptable adults who are comfortable shifting paradigms. This goes beyond being "linked-in" to technology. Montessori herself would appreciate the deep, intuitive connection the iPad fosters between content and user, taking working with knowledge to another level.

That being said, the iPad does not seamlessly lend itself to use in the Montessori educational environments for children. While it has enormous promise as a research tool, it still remains a two-dimensional object. An object that remains virtual instead of actual and visual rather than tactile. It serves as an experience once removed, and a representation of reality instead of actual reality.

Montessori education is rooted in reality - true hands-on learning and materials that can be concretely manipulated. A thorough mental mapping of these concrete concepts emerges from this hands-on experience. The iPad is a tool to further inform an already formed mind, rather than for use in forming it.

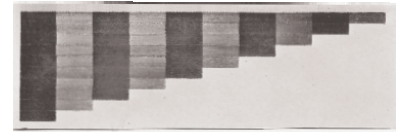
Today, there is no shortage of Universal App entrepreneurs, who profess to act out of a desire to propagate Montessori in the larger mainstream but also intend to reap enormous profits from vulnerable parents. Several of these companies are creating educational apps for Montessori stalwarts such as sandpaper letters, number rods and other materials. They profess to recreate a "touch" sensation as the control of error for the child. A vibrating sensation or visual or auditory cues are used to direct the child's hand in these screen exercises. Red rods are ordered with sound cues emanating as the control of error. Sandpaper letters are directed by an auditory scraping sound of sandpaper on or one device, a vibrating sensation created by the proper drag track. Lightness or sensitivity of touch is not at all involved. Correct touch is subject to the informed state of an adult who may or may not be supervising the introduction of the child to the exercise.

Maria Montessori wrote extensively about tactile sense, and in describing the connection between the tactile sensation and muscle memory with the sandpaper letters in her book *Discovery of the Child*, said:

"With the very small child, it is not the visible image which leads him to trace the shape with such great interest. It is the feeling to touch which induces his hand to perform this movement, which will then be fixed in his muscular memory. We notice then that the muscular memory is most tenacious in the small child and at the same time the readiest. Sometimes he does not recognize the letter when he looks at it, but does so when he touches it."

She goes on to explain the fixation of the graphic symbol with the specific language sound by virtue of the "visual sensation, the tactile and the muscular."

Montessori education is far from technophobic, and the use of technology has great potential when used to supplement a child's education. Far from fleeing from the world of technology, graduates of Montessori programs have actually been pioneers on the inside, taking the



world of computing a step further by creating new paradigms (Google, Sim City, Amazon), and changing the behavior and ways of thinking of whole segments of our economy. Able to do so, because of the extensive preparation their Montessori education afforded these individuals to be able to grow with and explore their world through technology. However, this new technology ignores many of the developmental needs of the child and at times, speeds them up. If we ignore the importance of a child's developmental stages and scientifically proven education methods, in effect, we ignore the child's potential for educational and personal growth.

It would be safe to say that Maria Montessori would view the iPad as a tool for tomorrow's mind. She has said, "Give the world to the young child" and this new technology has the potential to do this. The iPad could provide a useful learning tool to supplement Montessori education, but at the same time, is no substitute for the immeasurable amounts of knowledge gained from real-life encounters and hands-on, three-dimensional learning experiences. Overall, especially in the early stages of childhood development, we firmly stand begin Maria Montessori's timeless statement, "Never give more to the mind than you give to the hand."

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