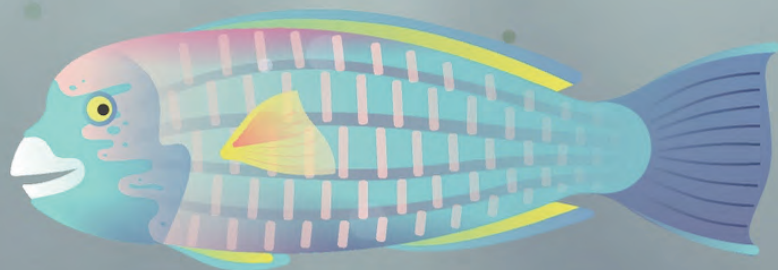




Children's
TECHNOLOGY
REVIEW EXCHANGE

March 2018



- Why have so many good publishers stopped making children's apps?
- Can Apple, Google and Amazon help? (Yes. And they should)

LittleClickers:
Exploring Coral Reef
from Home

There's a PLAGUE
Killing Off
Children's App
Publishers

On the cover: Coral Reef by Tinybop

Children's Technology Review
March 2018

Volume 26, No. 3 Issue 217

Artie's World*
Coding, the Musical
Coral Reef*
Don't Lose Your Cool
Fox & Sheep Movie Creator*
iBugs AR (iExplore Bugs)*
Magic The Gathering

Monopoly Junior Board Game
Mr. Brown Can Moo! Can You? -
Read & Learn*
My Molecularium*
Nintendo Labo Toy-Con 01
Variety Kit
Nintendo Labo Toy-Con 02
Robot Kit,
Pepi Hospital*
Piper Toolbox
VEX EDR V5 Robotics System



** Denotes "Editor's Choice."*

"If you have an ugly book, you'll get ugly AR" BRDA Jurors, from the 2018 Juror Commentary video.

Last week, we brought you the results of the BolognaRagazzi Digital Award judging. This week we can give you the final version of the video, where the jurors discuss their findings. Several of the winners and jurors will gather on March 25 at the Bologna Children's Book Fair to discuss the winners. This year there were five winners from the 116 products entered, from 25 countries. The big news? Augmented reality (AR) made some significant advances, with UK based Carlton Publishing taking the prize. Here's the video <https://youtu.be/a6bOmdQ3xIM>



LittleClickers: Coral Reef

Tinybop's 20th title in the Explorer Series was the inspiration behind this month's Littleclickers column. Learn more about the world's largest living organism at www.littleclickers.com/reef, and on page 3.

More Video from Toy Fair and Nintendo

This issue of CTR has more new tech products from Toy Fair and additional details on Nintendo Labo.

There's a Plague Killing Off Children's App Publishers

Several of the best children's app publishers have stopped making apps. The number of new children's iPad apps we've reviewed has dropped from 673 in 2013, to just 105 last year. What's going on and what should be done? See page 4.

Graph: Children's iOS titles we've reviewed since the release of the iPad.
Source: CTREX.us



Children's Technology Review March 2018

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- We don't distribute, sell or leverage subscriber information.
- Contributors are required to disclose bias.
- There is no sponsored or advertising content of any variety.
- Complete transparency. We make every effort to disclose review criteria and sources of potential bias.
- We don't skim from other reviewers.

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Dust or Magic

Save these dates!
www.dustormagic.com

March 25, 2018 • Bologna Masterclass Meet and debate current technology with children's publishers at the world's largest children's publishing event.

June 1-3, 2018 • AppCamp The West Coast edition of Dust or Magic, at the Asilomar Conference Grounds. \$1480/seat.

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5 (or so) sites & 10 videos

Coral Reef

Read this column online, with links, at www.littleclickers.com/reef



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What living organism is 1,400 miles long, can be seen from space, and is home to the millions of sharks? It's the Great Barrier Reef. This month's release of **Coral Reef** by Tinybop inspired us to take a deep dive into these natural wonders.

1. Besides warm, clean saltwater, what does every reef need to survive? At coral.org <http://bitly.com/2oMzBs5> you learn that light is the key ingredient. That's why a reef can only exist in water less than 165 feet deep.

2. What is a coral polyp, and why should you care? They are the tiny organisms that are the building blocks of a reef. Just as a huge cathedral is made of individual bricks, a reef is made of polyps. Related to anemones and jellyfish, they collect the calcium that becomes cement of the reef. Learn more at National Geographic <http://on.natgeo.com/2HWGI9T>.

3. What is largest living organism in the world? It's the Great Barrier Reef. It's bigger than Italy and can be seen from space. Here are some more amazing facts about the reef <http://bit.ly/2I368Ty> and here's what it looks like from a satellite, via Google Maps <https://goo.gl/maps/z9pBtCAu45t>.

4. Do sharks live around reefs? Yes. And so do whales. In fact there are over 3000 fish species that call a reef their home. In Sport Diver magazine, we found some photos <http://bitly.com/2oMGTvP>.

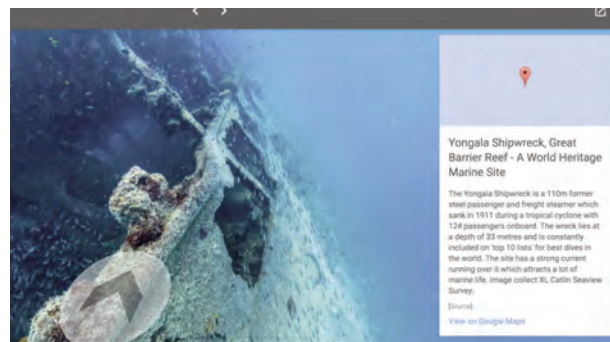
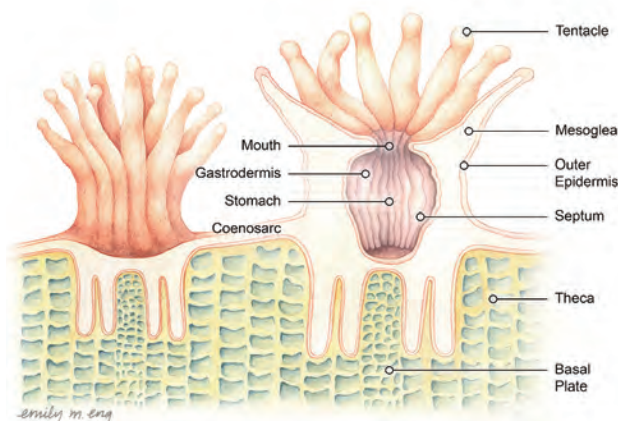
5. Can a reef die? Yes. According to the National Ocean Service things like global warming can stress kill coral, causing them to bleach. Learn more at <http://bitly.com/2HWWpy1>.

APPLICATION

1. Set up your salt water fish tank. It might be hard to grow a reef, but you can buy some living samples for as cheap as \$5 at <http://bitly.com/2HXEZRM>. We found this saltwater kit on Amazon.com for about \$150 <http://amzn.to/2I3aFp2>.

2. Take a virtual dive. Google used it's "street view" technology on a wreck. The result is a virtual dive in the Great Barrier Reef. Here's the link <http://bitly.com/2oLV4Bp>

3. Send a question to an oceanographer. Meet Nancy Knowlton. She works at the Smithsonian as a marine biologist, and her job is to increase public understanding of the world's ocean. She loves your questions, at knowlton@si.edu.



Coral Reef on YouTube

Want more? Here's a video playlist that go along with this column

<https://www.youtube.com/playlist?list=PLcBVHzUUEKwmyxI3rqcF8luTTUF0TGn4X>



There's a **PLAGUE** Killing Off Children's App Publishers

by Warren Buckleitner

If this newsletter was about farming, we'd most certainly write conditions affecting crops, like a shortage of seeds. What's going on in the children's app space is nothing short of a plague.

The plummet in the number of new releases may seem strange, because there's certainly plenty of demand. People are having more media hungry children, and the installed base of connected devices that can run children's apps has nearly tripled since 2013. In addition, tools for making children's apps, like Unity, Swift and ARKit have improved.

But releases from many ethical (see the definition of ethical, below) publishers have dropped off. In 2013, we reviewed 673 releases from studios like Toca Boca, Nosy Crow, Touch Press and Duck Duck Moose. In 2017, that number dropped to 105 -- just 15.6% of the 2013 amount.

First a definition. What is an "ethical" children's app?

An ethical children's app keeps a clear line between two types of content: editorial and commercial. It carves out a clear "safe zone" for the child, where they won't be teased or tempted by content or items that require money to purchase. It's all about intentions. It's also important to note that "free" doesn't mean unethical. Some free (or "freemium") apps were funded by grants, or are given away as playable samples to build brand awareness.

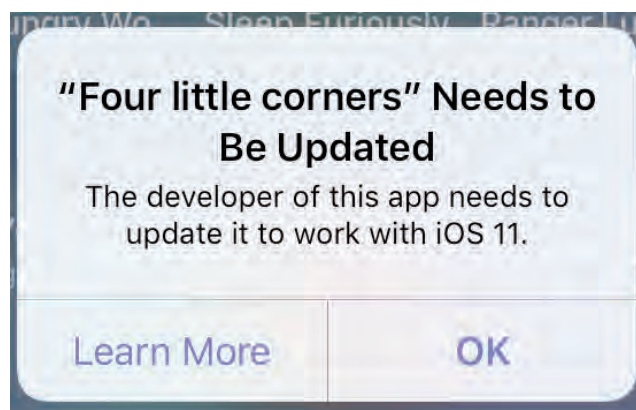
What's causing the dramatic decline in ethical content?

What's going on? We put this question out to children's app publishers on the "Developer Exchange" Facebook page. Here are some common themes.

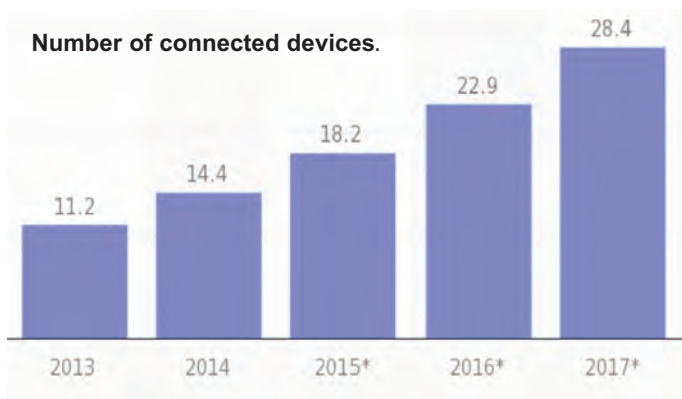
• **Nobody spends money on apps anymore.** "I asked a group of parents about their media use, mostly they say they use free apps or they have a Kindle Fire so it comes with a subscription," said one children's publisher who didn't want to be named. "Maybe one person out of 20 said they bought apps. If I'm honest with myself, I don't buy anywhere near the number of kids apps I used to. If there is something specific and educational now that my kids are in school I am more likely to. But with toy apps, so much feels the same these days and my kids already have a million of those same apps on the device. I've reached a point of 'do I need anymore of its not new?'"

• **YouTube.** Free videos turn a child's tablet into an all-you-can-eat TV. With millions of channels on just about any topic, what child has time for apps? When it's linear media vs. interactive media, the easy option usually gets the device.

We see this error message frequently. It signals the end of many older, quality apps. Reading between the lines: "the creative people who made this app didn't make enough money, and have given up."



Graph above: iPad apps reviewed in CTR from 2013 to 2017 (CTREX)
Graph below: IoT devices worldwide (in billions) from 2013 to 2017 from Hotel News Network/Statista



• **Apple's app system is a king maker. If you are featured, you get downloads. For small publishers, that is increasingly unlikely.** When you have to search to find the search icon in Apple's App Store, you have to wonder if Apple even wants you to find that obscure app. Apple wants to control what you see, to

increase the chances that you'll stumble upon something that generates income, both for their valued partners and for them. Once you do find the search icon (the small magnifying glass on the bottom right) the results are blurry. Trying to find that controller app for your new flying toy, or an AR app for a book is hard because the search results include hundreds of results, with confusingly similar titles. Free, sponsored and paid options are freely mixed. "I think the root cause is that parents don't want to spend too much time

determining what is 'good' and what isn't." said Francois Boucher-Genesse of Ululab.

- **App store ratings are polluted and diluted, and review sites of dried up.** Publishers complained that credible review sites have also gone out of business, or now charge to have an app reviewed, leaving consumers with only app store ratings to guide them. But Apple articles lack context, and the ratings can be inconsistent or inaccurate.

- **Free apps have another cost: playtime.** What is the value of childhood playtime? Some apps steal this time, by leading a child into a sand trap of time-stealing temptation. Increasingly we're seeing apps that ask a child to come back in 24 hours for a reward, or to watch a 60 second commercial to advance in a level. We fear that the children's interactive space is becoming a culture of trickery and manipulation.

- **Apple has too much power.** Imagine if farmers had to buy all their supplies from one store. The land, seeds, tractors -- even the weather forecasts -- were all from the same business entity. When it comes to apps, one single, private US corporation has a majority of the control. Apple is the curator, reviewer, editor, bank and store clerk; and they have absolute control over the hardware that makes it all work. Today's App Store features a tabloid format with click bait headlines and bite-sized editorial written by anonymous authors. Each article has the same ending -- a purchase link. This faux "journalism" with words like "editor's choice" is just sheeps clothing for a profit agenda (again, consider the intentions). The result is a "rich get richer" model -- where trending products with earning potential get featured; and unknowns are pushed to bottom of the search algorithm. Competitors to Apple could force change, but Google Play and Amazon continue to copy Apple instead of offering a better service. Amazon's all-you-can-eat model is good in theory but doesn't include enough quality interactive content. From our point of view, Jeff Bezos views children as a way to harvest future Amazon Prime subscribers, and

Where's the biline? Apples App store editorial is often very interesting. But it consists of a mix of editorial and promotional content, and you have no way of knowing if the content has been purchased.

If you could ask Tim Cook for three things, what would they be?

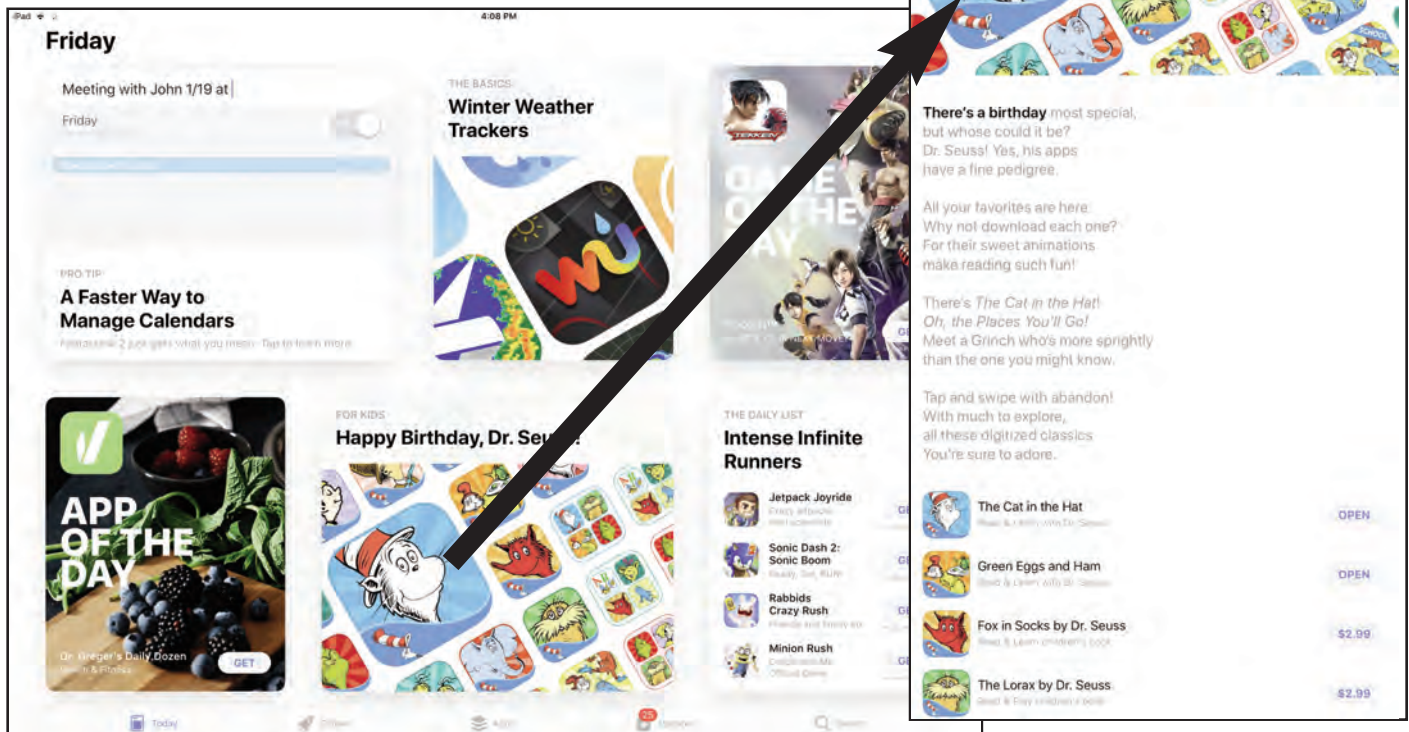
his bait is an \$80 tablet. And Google continues to operate an app store that is the wild west of copyright infringement.

- **Code rot.** Apple's System 11 killed thousands of ethical children's apps because the new operating system clashed with old code, and the developers are no longer around to do the updates. We were sad to see that the fonts in **Disney Animated** no longer display properly, and many of the prior winners of the BolognaRagazzi Digital Award no longer load. Instead, Apple asks consumers to contact the publisher to tell them to update their app.

- **A culture of manipulation.** Commercial transactions are based on trust. We've watched as this trust has eroded in app stores. Consider **Angry Birds 2**. It is featured and has high ratings. But the "free" download is nothing more than a lure into a blind alley. The game play and tutorials are amazing, but each passing minute brings more "friction" against the commercial agenda. After an hour, you'll be watching commercials or pay real money in order to advance in the game. That's not fair.

Dear Mr. Cook ... "Children's publishers need your help."

How can Apple's iTunes team help ethical children's app producers? By showing that they understand that marketing products to children comes with a responsibility to do the right thing. We asked app publishers to give us three things suggestions for Tim Cook, Apple's CEO. Kristin Heitmann of AppMedia offered five.



Mr. Cook, if you read no further, here's the short list:

- **Provide a searchable and findable App Store.** Same for Google.
- **Make it possible to browse and search VPP** (Volume Purchase Program) apps (ones that are free of IAP and "free" options).
- **Increase the revenue potential for ethical children's developers.**
- **Educate teachers and parents.** Help them identify pedagogically valid experiences without gimmicks.
- **Kick out the rubbish.**

Pierre Able of L'Escapadou agrees with the idea of making it easier for parents to shop from a list of paid apps. "I think Apple has a hidden treasure, because they know exactly which apps are bought by schools (via VPP). They could use this data to show which apps are the most used in schools to help shoppers spot the apps without IAP and no subscriptions." Here are some more ideas.

Create an Indie fund A company that earned \$28 billion from app sales (in 2016 per ZDNet) could spring for an Indie fund for ethical children's app makers. Not only is it the right thing to do, it supports Apple's hardware. Nancy MacIntyre of Fingerprint said "Apple and Google should create a fund for quality content creators to develop apps for their platforms, much like Playstation, Xbox, Amazon do. They should also offer a reduced royalty rate for kids or educational developers so it's easier to make money, and they should take no revenue share on apps sold into schools. And they should make the app store much friendlier to indie developers beyond relying on app store merchandising options."

Make it easier to for app makers to communicate with customers "Being able to communicate with our users would be useful," says Valérie Gangnat Touze of Edoki Academy. "Normal marketing tools don't apply to children's apps so we should be considered differently. Just like iAPs cannot be shared in Family Sharing which makes absolutely no sense for our products."

Stop encouraging the free/subscription model This came up repeatedly. Apple is making it so that the only way to survive is to create "free" content with hidden hooks to get parents to pay. But these doesn't always fit when it comes to children. Pierre Abel wrote "I created a freemium version of my best-seller for this reason, but of course, the app has no visibility and the sales are much much lower than the paid version, which has visibility." Francois Boucher-Genesse agrees. "The subscription model requires a lot of work that doesn't go into producing actual quality educational content. Going subscription for us would mean getting investor money. Then we would need to work on the architecture for the subscription model, and produce content that can be done quickly but brings limited educational value, like additional hats and practice levels that are quicker to produce."

Carefully define words like "paid," "free," "sample," and "demo" It's not always easy to spot ethical apps at the point of purchase. Consider "paymium" apps -- that cost \$.99 for the initial download, that also have IAP content. "Something that would help us is a better way to provide a demo to parents," said Francois Boucher-Genesse. "We went freemium (try before you buy) on Google Play, and our ratings went down drastically because several parents thought the app was just "free." If a pre-

mium app was showing as it currently is on the App Store alongside a "demo" button to download the limited version, that would make things much clearer and help sustain the premium model."

Offer curated lists "Apple could provide a permanent categorized list of curated apps, which bundles apps from different developers together," said Francois Boucher-Genesse. "I could see a parent browsing the category they're interested in (like math) and buying the whole "conceptual math learning" bundle for example, which contains what Apple deems the best apps in that category. This could make it easier on parents, since they can rely on Apple, instead of only relying on brands (Toca Boca, Disney) like they currently do. That could help smaller developers. It would have to be an opt-in option for developers and distributors would have to be even more involved in deciding which apps can make it in the bundle."

Let you search the "paid" apps, and limite searches for children's apps to apps for children "The iOS App Store search filter offers 'free' and 'all prices', but no 'paid.' Why not?" asks one publisher. "Also 'free' isn't free anymore. That's why they changed the button from 'free' to 'get.' So why is free still a search term? Also, If you search kids, it should only return results of apps that have been included in the made for families age rating thing. I searched the other day for kids, got some gun game for adults."

Make it possible for people to "follow" developers "Our customers should be able to be notified automatically of new releases. Imagine if the App Store was like Apple Music. You spend all this time and money building up your brand, if people don't follow you outside of their device, it would be great if you could follow developers like you can with music artists," said Chris O' Shea. Francois Boucher-Genesse agrees. "It would be helpful to be able to reach my own customers to tell them I've got a new app. I have to buy search ads to target people that bought my first app, and then tell them the new app exists. A "subscribe" similar to YouTube would help tremendously, if Apple wants to keep customers emails private."

In conclusion

Paying for the development of ethical apps requires enough sales to pay the bills. Making an ethical children's app is a worthwhile activity, and app stores need to do their part, by understanding that our children deserve special considerations.

It's now been eight years since the iPad's birthday. We have an amazingly powerful device that has so much potential for the benefit of children. Android/Chrome and Amazon devices have also dropped in price and increased in power. But we can do so much better.

We have the hardware we've always dreamed of. But hardware is only as good as the software. Lets work to get quality content to every child.

Content for this article was drawn from comments from children's app publishers on the "Developers Exchange" Facebook page.

This is the start of a conversation. Special thanks to Kristin Heitmann; Pierre Abel, Tomas Zeman, Valérie Gangnat Touze, Nancy MacIntyre; Francois Boucher-Genesse, Mindy Douglass and Patrick Larson.



Feature Reviews and New Releases

MARCH 2018

Here's an alphabetical listing of both the feature reviews (with ratings) and the new and future releases. "Entry Date" refers to the date we first learned of the product.

Artie's World

If you liked Artie's Magic Pencil <http://reviews.childrenstech.com/ctr/fullreview.php?id=19316> you'll also like super-sized version, with five animal themed stories. The only drawback with the free version is that four of the five stories are locked behind in app purchase gates, and it's not always obvious which parts of the app are locked or open.


Each story is driven by a single narrative element that you build by tracing. There's a lot of fine-motor coordination opportunities with this app, as you build each part out of geometric shapes. These are things like a car, house or dinosaur. Each shape is broken into segments, so each shape is not an "all or nothing" challenge; a nice touch that helps the younger child with developing fine motor skills.

After a short tutorial, you start moving through the 20 or so puzzles that are part the level. The harder arcs are saved for the end. This is a pay once & play forever app on iOS. The Google Play version is free with in app purchases.

Details: Minilab Studios, www.minilabstudios.com. Price: \$5.99 . Ages: 3-6. Platform: iPad, iPhone, Android. Teaches/Purpose: Fine motor, drawing, reading, spelling. Rating (1 to 5 stars): 4.8 stars. Entry date: 2/19/2018. [buckleit]



Ease of Use	9	96%
Educational	10	
Entertaining	9	
Design Features	10	
Good Value	10	

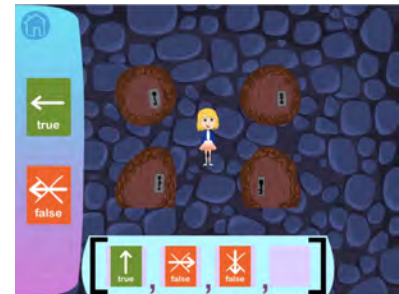


Coding, the Musical

This is an app that turns your iPad into an "interactive musical" designed to introduce basic coding concepts to kids aged 5 to 9.

Children create their own characters and build musical story worlds. Content includes 52 stories, 150 songs, 100 games and 14 coding concepts.

Details: TechSpaghetti, www.TechSpaghetti.com. Price: \$free with IAP. Ages: 5-9. Platform: iPad, iPhone. Teaches/Purpose: coding. Entry date: 2/2/2018.



Coral Reef

Turn your iPad into a hands on hands on underwater museum, with this solid collection of seven simulations. While this isn't our favorite Tinybop Explorer App (Human Body and Mammals offer more content) this app succeeds in bringing the Indo-Pacific coral reef to your fingertips, mixing scientifically accurate information with hands on activities.

There are seven options from the first menu: Cleaner Fish (help small fish clean larger animals); Seagrass (plant seeds and see how other plants and animals show up); Parrotfish (see how coral is cleaned, and how sand is made); Blacktip Reef Shark (play with the conditions a shark needs to live); Box Jellyfish (see how jellyfish contribute to the ecosystem); Peacock Mantis Shrimp (put a tiny crab in front of this amazing creature and see what happens); and Linckia Sea Star (help dead things decompose). As with other Tinybop apps, there's a well designed PDF teacher's guide, and you can toggle on labels to learn more about items shown on the screen. This is the tenth in the Explorer series of Tinybop apps, and it's well worth the download. This app was illustrated by Wenjia Tang, who also illustrated Mammals.

Details: Tinybop, Inc., www.tinybop.com. Price: \$2.99. Ages: 5-12. Platform: iPad. Teaches/Purpose: science, oceanography, reef life, fish, biology, ecosystems. Rating (1 to 5 stars): 4.8 stars. Entry date: 2/27/2018. []



Ease of Use	8	96%
Educational	10	
Entertaining	10	
Design Features	10	
Good Value	10	



Don't Lose Your Cool

Coming Fall 2018, a party accessory and pulse-sensing headband. After you slip it on, your baseline pulse is displayed on an LED display on top of your head. The objective is to get your heartbeat faster by doing silly things. The faster your pulse, the more lights go on. Three AA batteries.

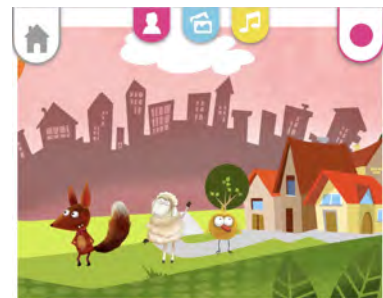
Details: Hasbro, Inc., www.hasbro.com. Price: \$20. Ages: 12-up. Platform: Smart Toy. Teaches/Purpose: Interpersonal relationships, social. Entry date: 2/20/2018.



Fox & Sheep Movie Creator

Choose your own backgrounds, characters and music to record your own animated puppet show. All content comes from previous Fox and Sheep apps like Nighty Night, Little Fox Music Box and others. Work can be saved and exported. Additional content packs (School, Effects and Deco) are sold for \$.99 each as IAP (in app purchase). Winner of the 2018 BolognaRagazzi Digital Award Cinema category.

Details: Fox and Sheep GmbH, www.foxandsheep.com. Price: \$3.99. Ages: 4-12. Platform: . Teaches/Purpose: creativity, verbal skills. Rating (1 to 5 stars): 4.5 stars. Entry date: 2/13/2018. []



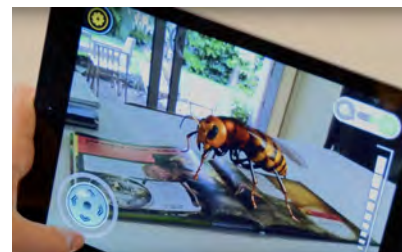
Ease of Use	9	90%
Educational	9	
Entertaining	8	
Design Features	9	
Good Value	10	

iBugs AR (iExplore Bugs)

One of the most impressive examples of non-fiction Augmented Reality (AR) combinations we've seen (as of February 2018) this app/book combination contains 11 large bugs: Hercules Beetle, Queen Alexandra's Birdwing Butterfly, Madagascar Hissing Cockroach, Little Barrier Island Giant Weta, Japanese Giant Hornet, Giant Malaysian Shield Mantis, Driver Ant, Lord Howe Stick Insect, Goliath Bird-Eating Spider, Emperor Scorpion and Amazonian Giant Centipede. Each bug is presented on the page of a picture book along with facts about diet, size, habitat and location.

The accompanying app, which can be download at no cost, is large (450 MB). Once it's downloaded and installed, you can start your camera and open the book to an insect that you want to learn about. The bug pops out and flies around. You can use the controls in the app to control the motion of the bug, or expand their scale, for a much closer look. The BRDA jurors were impressed by the amount of detail in the bugs (you can see the individual hairs on the spider). Jurors couldn't figure out how to make the "dual user mode" work, however. Winner of the 2018 BolognaRagazzi Digital Award, for Augmented Reality.

Details: Carlton Books Limited, www.carltonbooks.co.uk. Price: \$11 for the book. Ages: 6-12. Platform: iPad, iPhone. Teaches/Purpose: science, bugs, insects, AR. Rating (1 to 5 stars): 4.8 stars. Entry date: 2/13/2018. []



Ease of Use	9	96%
Educational	10	
Entertaining	10	
Design Features	9	
Good Value	10	



Magic The Gathering

Founded in 1993 by a mathematician (akin to Dungeons and Dragons), Magic the Gathering is a card collecting game that was acquired in 2000 by Hasbro. Today there are 18,000 cards. We interviewed Brand Manager Matthew Danner at Toy Fair for a 2018 overview.

Details: Hasbro, Inc., www.hasbro.com. Price: \$25 and up. Ages: 8-up. Platform: Smart Toy. Teaches/Purpose: logic, reading, problem solving, math. Entry date: 2/26/2018.

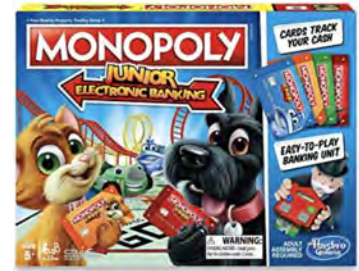


Monopoly Junior Board Game

This "modern" Monopoly banking experience replaces paper money with bank cards and a battery powered electronic reader. You use plastic cards with a magnetic strip to buy property, pay rent, and collect money when passing Go. The electronic banking means fewer parts and a lower cost.

The game comes with 4 tokens: Little Hazel, Little Scottie, Toy Car, and Toy Boat. Players move their tokens around the board, buying the properties like the ice cream parlor, the toy store, and the skate park. Includes gameboard, banking unit, 4 bank cards, 4 Junior tokens, 20 Chance cards, 48 sold signs, 4 Who's Your Token Character cards, 1 die, and game guide.

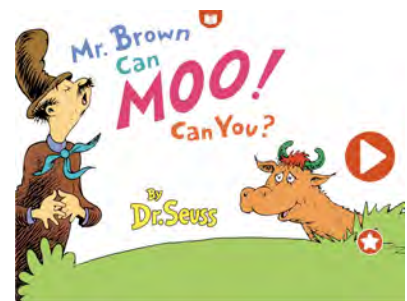
Details: Hasbro, Inc., www.hasbro.com. Price: \$20. Ages: 5-12. Platform: Smart Toy. Teaches/Purpose: math, business, logic, money, banking. Entry date: 2/27/2018.



Mr. Brown Can Moo! Can You? - Read & Learn

Another Dr. Seuss classic comes to your iPad with interactive animations and touch-and-hear text. This is an excellent early reading experience. As you explore the illustrations, you discover structured phonics activities. Make sure to explore the parent options -- this app is highly customizable. Other features include a well designed index that makes it easy to jump to any page. You can track minutes spent reading, pages read, and more in the Parents section. As with others in the "Read & Learn" series, you can discover hidden stars that lead to bite-sized phonics games. This app is highly recommended for beginning readers.

Details: Oceanhouse Media, www.oceanhousemedia.com. Price: \$3.99. Ages: 3-6. Platform: iPad, iPhone. Teaches/Purpose: reading, phonics. Rating (1 to 5 stars): 4.8 stars. Entry date: 2/4/2018. []



Ease of Use	9	96%
Educational	10	
Entertaining	10	
Design Features	9	
Good Value	10	



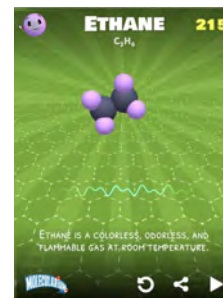
My Molecularium

Angry birds meets nano science, with this sling-shot style molecule building game.

Your job is to launch atoms at target bond sites to assemble molecules of increasing complexity and difficulty. To aim, you move your device. Good targeting earns you more points, while misses cause elements to fly off into space. Structural formulas help make a range of molecules, from water to adrenaline, and each molecule is introduced with a fun fact.

A video features Oxy, Carbón and the crew of atom characters. Content includes 30 molecular models. Note that a Rapid Fire Power Shot option is available for a \$99 as an in- app purchase. The bottom line? This is a fun game that is well worth the download.

Details: Rensselaer Polytechnic Institute, <http://molecularium.com/>. Price: \$free with IAP. Ages: 10-up. Platform: iPad, iPhone. Teaches/Purpose: science, chemistry. Rating (1 to 5 stars): 4.7 stars. Entry date: 2/6/2018. []



Ease of Use	8	94%
Educational	10	
Entertaining	9	
Design Features	10	
Good Value	10	

Nintendo Labo Toy-Con 01 Variety Kit

This kit has the lowest entry price, and it comes with enough materials to make two RC cars, a fishing rod, house, motorbike and piano. Start with this one...

Details: Nintendo of America, www.nintendo.com. Price: \$70. Ages: 7-up. Platform: Nintendo Switch. Teaches/Purpose: Spatial Relations, logic, following instructions. Entry date: 2/27/2018.



Nintendo Labo Toy-Con 02 Robot Kit

Nintendo's Labo Robot Kit lets is the second, slightly more expensive Nintendo Labo project that is also a bit harder to make. So get this one only if you've already mastered a few of the more basic "toys" like the RC cars. This kit lets you make your own robot costume, consisting of a flip visor, backpack, handles and straps for your hands and feet which you can use to control a giant on-screen avatar. We tried the game use a pre-constructed robot kit, and found it to be very fun, with plenty of smashing and flying. Parts of the kit include: Cardboard sheet x 19; Cardstock sheets x 4; Reflective sticker sheet x 1; color coded string, straps and grommets.

Details: Nintendo of America, www.nintendo.com. Price: \$80. Ages: 7-up. Platform: Wii U. Teaches/Purpose: spatial relations, creativity. Entry date: 2/20/2018.





Pepi Hospital

This well designed app is nearly identical to Toca Life: Hospital, with a more zany cast of characters including a talking robot called Pepi Bot that follows you around. There are eight areas of the hospital to freely explore and 14 characters. There is no movie recording feature.

Areas of the hospital include a cafe, pharmacy, operating room, an ambulance. It is remarkable how much this app resembles the Toca Life: Hospital. We liked the number of machines that can be operated (like the ultrasound in the maternity ward). If you've already purchased the Toca Life title (for the same price) don't bother with this app.

The bottom line? This is a well-designed open-ended experience that lets you play with ideas related to a hospital.

Details: Peplay, www.peplay.com. Price: \$2.99. Ages: 4-12. Platform: iPad, iPhone, Android, Kindle. Teaches/Purpose: health, the hospital, doctors, medicine, language, representation, creativity. Rating (1 to 5 stars): 4.5 stars. Entry date: 2/27/2018. []



Ease of Use	9	90%
Educational	9	
Entertaining	9	
Design Features	9	
Good Value	9	

Piper Toolbox

Minecraft meets Raspberry Pi (plus an assortment of wood, a 7 inch screen, wires and switches) with Piper Toolbox, a DIY kit that requires (and celebrates) assembly.

You can use the physical electronics to control a buggy, as you drive through a leveled set of challenges in a Minecraft world. The problems require physically assembling electronic parts.

Contents of the kit include a 7 inch LCD display, a power supply, and an assortment of electronics. After the kit is assembled, you see an adventure map in Minecraft on the LCD screen. Tutorials help you with the building process, and you get power-ups and abilities in the game.

Created by Shree Bose and Mark Pavlyukovskyy, a Piper kit was initially funded by a Kickstarter campaign.

Details: Piper, Inc., www.withpiper.com. Price: \$299. Ages: 10-up. Platform: linux, Raspberry Pi. Teaches/Purpose: STEM, robotics, electronics, programming. Entry date: 2/23/2015.



VEX EDR V5 Robotics System

VEX EDR V5 is the brand name of middle and high school metal robotics assembly system. Note that "EDR" is not an acronym.

The 2018 edition, released January 2018 for later in the year, includes updated sensors and controllers and a new VEX Coding Studio. The coding studio can be installed on tablets or laptops Components include.

Robot Brain: This is a key component -- it now has a color touch screen, bluetooth, and 21 new ports; plus eight older 3 wire ports for older VEX parts. The color touch screen makes controlling and interacting with your robot much easier.

Vision Sensor: a version of the Pixy Camera that offers machine vision processing. The camera can see colors and patterns, and can track up to seven object colors at once.

V5 Wireless Controller: two analog joysticks make it easy to drive your robot; and 12 buttons can be programmed. The LED screen helps you connect your phone or tablet via bluetooth.

Smart Motor: modifiable gear ratios and a clear window so you can see which gears you are using. A color coded LED system shows you which port and switch controls the motor.

The kits aren't cheap, but the parts are metal and made for serious robotics competitions.

Learn more at <https://www.vexrobotics.com/v5>

Details: VEX Robotics, www.vexrobotics.com/. Price: \$300 and up. Ages: 10-up. Platform: iPad, iPhone, Android, Chrome, Windows, Mac OSX. Teaches/Purpose: robotics, programming. Entry date: 2/4/2018.

