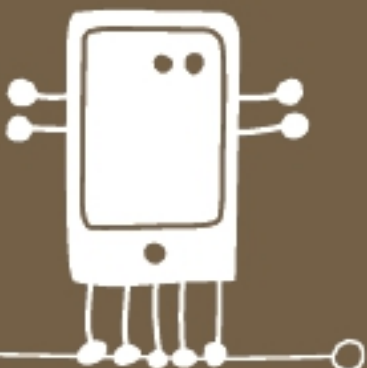


iLearn II

An Analysis of the Education Category of Apple's App Store



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With:
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January 2012

The Joan Ganz Cooney Center at Sesame Workshop

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The mission of the Joan Ganz Cooney Center at Sesame Workshop is to harness digital media technologies to advance children’s learning. The Center supports action research, encourages partnerships to connect child development experts and educators with interactive media and technology leaders, and mobilizes public and private investment in promising and proven new media technologies for children.

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executive summary

In 2007, when the iPhone made its debut, there was little doubt that it would revolutionize the mobile phone industry. However, at the time, few imagined that it would spawn a multibillion-dollar market for mobile applications (apps), and fewer imagined that this market might become a significant one for children. Yet less than five years later, more than a quarter of all parents have downloaded apps for their children to use (Common Sense Media, 2011). Babies have achieved virtual celebrity for mistaking a magazine for a broken iPad, children now learn to ‘swipe’ before they can tie their shoes, and tweens and teens coveted the iPad over any other gift this holiday season (Nielsen, 2011).

Today’s children will benefit if apps become an important force for learning and discovery. This report documents the results of an analysis of the Education category of Apple’s App Store, with the goal of understanding the market dynamics, areas of innovation, and emerging opportunities within the market for apps labeled as educational. Using the original iLearn study as a benchmark for change, this updated report examines a recent sample of top-selling apps for both the iPad and the iPhone. Through our iLearn line of market research, we hope to be a resource for developers of high-quality apps that promote children’s healthy development and learning; provide a publicly accessible, up-to-date, reliable and unbiased analysis; and act as a benchmark for change as the learning app market continues to evolve.

KEY FINDINGS & IMPLICATIONS

Apps are an important and growing medium for providing educational content to children, both in terms of their availability and popularity.

- Over 80% of the top selling paid apps in the Education category of the iTunes Store target children.
- In 2009, almost half (47%) of the top selling apps targeted preschool or elementary aged children. That number has increased to almost three-quarters (72%).
- The percentage of apps for children has risen in every age category, accompanied by a decrease in apps for adults.

Early learning apps for toddler/preschool are particularly prominent. Developers should consider potential saturation of this market.

- Apps for toddlers/preschoolers are the most popular age category (58%), and experienced the greatest growth (23%).
- General early learning is the most popular subject (47%), and there are significantly more general early learning apps than the second most popular subject (math, 13%).

Developers should not default to the lowest price point and should consider a fair price-value proposition.

- The average price of children's apps has risen by over \$1.00, however they are still less expensive than those targeting adults.

Apps are a significantly different market than television, video games, or toys.

- Of the entire sample, only two iPhone apps and zero iPad apps were based on well-known, branded characters.
- One hundred and nine different publishers were represented within the sample; 89 of these publishers were not represented in the sample two years ago.

Apps for elementary aged children may represent an important opportunity.

- While only 20% of the overall sample targets this age group, almost 50% of the top sellers (top 25) target elementary aged kids. A similar trend was noted amongst the preschool set in our 2009 analysis. Subsequently this age group experienced significant growth.

RECOMMENDATIONS FOR INDUSTRY, POLICY & ACADEMIA

Based on the findings, this report offers recommendations for further growth and development of an ecosystem rich with high-quality learning apps for children:

Address the app gap

In addition to the traditional digital divide, a new “App Gap” has developed (Common Sense Media, 2011). Ongoing work is required to ensure that the potential benefits of this new medium reach those most in need.

Create standards for products marketed as educational

Previous analyses of children’s digital media have identified a lack of standards around marketing products as educational, making it difficult for parent or educators to discern if products live up to their claims (Shuler, 2007). This has been a long-standing issue in the educational toy and game industry, and perhaps one that can be tackled early in the evolution of the app market.

Protect Children from Digital Age Commercialism

The Children's Television Act was put in place to protect children from inappropriate commercialism. This act needs to be updated for a digital age with an emphasis on the app market. In the long term, apps will be better for children, parents and businesses alike if there are policies that protect without hindering creative development and innovation.

Consider emerging market dynamics in an update to COPPA

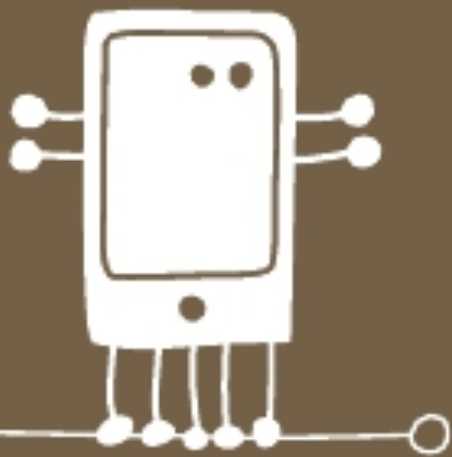
The Federal Trade Commission (FTC) recently released important recommendations for an update to COPPA. However, on the heels of these efforts the leading provider of app analytics disallowed its services to be used by developers of children’s apps, who rely heavily on such analytics to improve their products. As the FTC finalizes its proposed regulation, it should consider potential unintended consequences the policy may have on developers.

Enable sustainability and profitability

Consumers need to embrace a new pricing model that will sustain a diversity of developers to build innovative and creative content for children. Discussion of business models must be continued to enable development of apps that are innovative, high quality, educationally effective and sustainable.

Set a research agenda

Academia needs to address the rapidly growing app market by setting a research agenda regarding digital age learning. Developers and researchers should work together toward the design of effective, high-quality products.



introduction

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In 2007, when the iPhone made its debut, there was little doubt that it would revolutionize the mobile phone industry. However, at the time, few imagined that it would spawn a multibillion-dollar market for mobile applications (apps), and fewer imagined that this market might become a significant one for children. Yet less than five years later, more than a quarter of all parents have downloaded apps for their children to use (Common Sense Media, 2011). Babies have achieved virtual celebrity for mistaking a magazine for a broken iPad, children now learn to ‘swipe’ before they can tie their shoes, and tweens and teens coveted the iPad over any other gift this holiday season (Nielsen, 2011).

While apps are undoubtedly a source of fun and entertainment, many believe they have significant potential as a key ally in supporting children’s learning. In the fall of 2009, The Joan Ganz Cooney Center at Sesame Workshop found that almost half of the apps in the Education category of the iTunes App Store targeted preschool and elementary-aged children (Shuler, 2009), making it clear that apps had the potential to become an important new medium for providing educational content to children.

In the two years since that study, the market for apps has grown at a breathtaking pace. There are now over 500,000 apps available on the Apple App Store, and an additional 300,000 on the burgeoning Android Market. However, the field is emerging so quickly that empirical studies on the effectiveness of apps for learning have lagged behind, and learning apps for mobile devices have become a hotly debated educational technology topic.

What is not up for debate is that today’s children would benefit if apps become an important force for learning and discovery. To this end, numerous developers are investing significant funds and intellectual resources toward promising app-based learning development efforts, yet there remains a dearth of market information available. While numerous mainstream news and industry sources provide anecdotal descriptions of what is available for children none have undertaken a careful analysis with a focus on apps labeled as educational.

This report documents the results of a content analysis of the Education category of Apple’s iTunes App Store—one key segment of the app ecosystem—with the goal of understanding the market dynamics, areas of innovation, and emerging opportunities within the market for apps labeled as educational. Using the original iLearn study as a benchmark for change, this updated report examines a current sample of top-selling apps for both the iPad and the iPhone. Through our iLearn line of market research, we hope to be a resource for developers of high-quality apps that promote children’s healthy development and learning; provide a publicly accessible, up-to-date, reliable and unbiased analysis; and act as a benchmark for change as the learning app market continues to evolve.

The App Explosion

- Mobile app revenue is expected to generate \$38 B by 2015
- There are over 500,000 apps available on iTunes and over 300,000 on Android
- The App Store has paid out over \$2.5B to developers
- Two out of the four top holiday trends according to Toys R Us require children to have an iPad

ADDRESSING THE “APP GAP”

The Joan Ganz Cooney Center focuses attention on innovation in children’s learning through digital media, with a particular focus on underserved children. While recognizing that the “latest technology market trends” often impact higher-income families more rapidly than our target audience, we are committed to analyzing new technologies and their implications for all kids, even when lower-income families’ engagement may lag behind by several years.

Apps are a salient example of the creative tension we navigate. Few technologies have been touted as having as much potential for learning as touch-based mobile devices and the applications delivered through them. However, a recent study by Common Sense Media documented an alarming new digital divide dubbed the “App Gap”, finding that more than a third of low-income parents do not know what an app is (Common Sense Media, 2011).

As that study documents, for educational media producers trying to reach children most in need, the ubiquitous media platform of a prior age—namely television—is still the best bet. However, as an organization devoted to potential breakthroughs in learning and healthy development, we will be continuing to track the app market as a high potential opportunity for the following reasons:

#1. The App Gap is likely to decrease.

Most technologies experience a gap period—a time when there is a disparity in access and usage among lower-income homes. In 1950, about 10% of homes owned a television; by 1960 that number increased to almost 90% (Nielsen Media Research, 1998 in Always Connected). A similar trend occurred with the penetration of DVD players and game console systems in low-income homes over the past decade. With more than 1.2 billion new mobile devices produced each year, the pace of adoption in the mobile markets is unprecedented. It seems possible—and maybe even likely—that in the not too distant future, apps may be as accessible as traditional forms of media.

#2. Media consumption should offer time well spent.

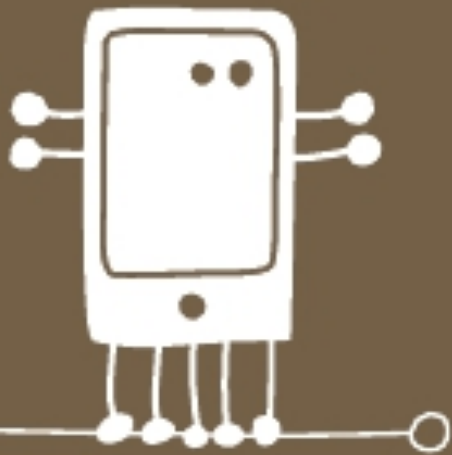
Although children who currently have access to apps are often not those most in need of educational intervention, it still makes sense to turn their media time into high-quality experiences that promote learning and creativity—particularly for a nation where performance in reading, math, and science is lagging behind other countries (NAEP, PISA and TIMMS). Considering children who *do* use mobile devices for media consumption spend an average of 43 minutes per day doing so (Common Sense Media, 2011), it makes sense to capitalize on this time by providing quality content.

#3. Historical precedence may be repeated.

Forty-five years ago, Joan Ganz Cooney charted new territory by proposing to use the power of television to educate underserved preschoolers. Mrs. Cooney was galvanized in part by a critique from FCC Commissioner Newton Minow, who characterized television as a “vast wasteland.” Her response led to the creation of the Children’s Television Workshop and Sesame Street, and in turn the revolutionary use of television as an educational medium. In this light, it is important that we do not discount technologies that have not yet made significant educational impact as not having the potential to do so.

#4. Smart mobile devices and tablets are on the horizon for schools.

The Horizon Report identifies mobile devices—especially smartphones and tablets—as one of six emerging technologies likely to have a large impact on teaching, learning, research, or creative expression within K–12 education, and as one of two that are on the near-term horizon (under two years until usage in the educational community) to become mainstream (Johnson et. al., 2011). Once smart mobile devices are pervasive in schools, apps will have an entryway into the hands of many more children. The time to start considering how to harness this media as a powerful educational tool is now.



Methods & Limitations

methods & limitations

To understand the the market dynamics, areas of innovation, and emerging opportunities for learning apps, an analysis of the top-selling paid apps in the Education category of Apple's iTunes App Store was conducted. It is important to note that this segment represents just one slice of the fluid and complex ecosystem for children's learning apps

The consumer marketplace for apps consists not only of Apple's App Store, but the burgeoning Android Market and key players like Microsoft, Samsung, RIM and others must be considered. Furthermore, apps are just one slice of the rich digital media world that today's children are growing up in. Where do the LeapPad, Innotab, and VINCI fit in? eReaders? How about the DS? Clearly, this is a complex market - all the more reason this analysis is necessary.

Limited resources forbade a comprehensive content analysis of the complete, and constantly evolving market as well as demanded a discriminating start. iLearn II was conducted to examine the Education category of **the leading source** for apps -- the iTunes App Store. With the iPad, iPod Touch, and iPhone rounding out the top three items on kids holiday wish lists this past season (Nielsen, 2011), iOS apps seemed like a good place to start.

SAMPLE COMPILATION

The top-selling paid apps in the educational category of the Apple App Store was analyzed using a content analysis, a research tool used to determine the presence and relationships of certain characteristics within content.

In July of 2011, The Joan Ganz Cooney Center compiled a sample of 200 apps that included the 100 top-selling paid apps for both the iPad and iPhone in the Education category of the iTunes App Store. Four of these apps had to be excluded from the database, resulting in a final sample of 196 apps.¹

All apps in the database were coded for the following characteristics: age, price, subject/skill-set, school usage, branding and ratings. All categories of coding except for ratings were based on the developers' marketing of their own products. Ratings were based on third party assessment of both expert and consumer sources.

Two researchers coded four characteristics that we considered particularly prone to subjectivity: age, subject, school usage, and branding. Inter-rater reliability across these categories was 87%. In instances where the coders disagreed, a third researcher consulted two external sources—Common

¹Four apps were removed for the following reasons: 2 were in a foreign language, 1 was removed from iTunes before the second coding and 1 was clearly in the wrong category.

Sense Media and Children's Technology Review (See "Sources for Assessing App Quality," P.25)—to make a final judgment.

CHARACTERISTIC CODING

All apps in the database were coded for the following characteristics:

- **Age: What age is this app's target user?**

Target age was determined by reading the app description, which often explicitly noted a target age. If a target age was not explicitly noted, the coder used other features such as app description, features, and image to determine target age. Apps could be tagged for more than one age group (for instance, one app could be noted to target both elementary and middle school aged children).

- **Price: What is the selling price of this app?**

Price was always explicitly noted, and list price (not sale price) was recorded. This analysis was of the top selling paid apps, so no free apps were included in the database.

- **Subject/skill-set: What subject or skill-set does this app aim to teach?**

Subject/skill-set was determined by reading the app description, and was often explicitly noted. If a subject was not explicitly noted, the coder used other features such as app description, features, and image to determine subject. Apps could be tagged for only one subject, and decisions were made based on what was considered the dominant subject.

- **School usage: Is this app intended for use in a school setting?**

Intention for school usage was determined by reading the app description. If the description explicitly noted school usage, the app was tagged as targeting the school market. If not, it was tagged as consumer only.

- **Branding: Is this app based on a popular property from another medium?**

Presence of a branded character was based on reviewing the app name and corresponding image for indication of a mainstream branded character. If the app was based on a popular branded character from another medium (for example Sesame Street or Dora the Explorer), the app was tagged as branded. If not, it was tagged as non-branded.

- **Ratings: How does this app rate among experts and consumers?**

Quality was assessed by ratings from both expert and consumer sources:

- Ratings assigned by Common Sense Media (Codes: 1-5 stars, not rated)
- Ratings assigned by Children's Technology Review (Codes: 1-5 stars, not rated)
- Customer rating on iTunes (Codes: 1-5, not rated)
- Number of ratings on iTunes

STUDY LIMITATIONS

This database does not assess the quality or effectiveness of any specific product, nor does it represent an exhaustive list of every product available. Rather, it provides a basis for analyzing the kinds of products that are available and popular in the market for apps labeled as educational.

Specific limitations of this study include:

- **Definitional limitations**

This is a market analysis, not empirical research about the educational effectiveness of apps in the sample or apps in general. App category in iTunes is designated by the app developer. As such, apps included in this database are those marketed as educational.

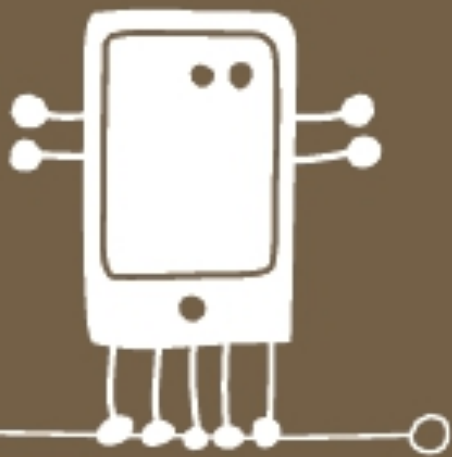
- **Market Segment**

This is an analysis of the top-selling paid apps in the Education category of the iTunes App Store, which is only one segment of the children's educational apps marketplace. Further studies that would best illuminate the forces at play in the market for learning apps include analyses of:

- Top grossing apps and top free apps in the Education category of the iTunes App Store
- The Games category of the iTunes App Store
- The eBook section of the iTunes App Store
- The Android Market, the proprietary app store of the smartphone with the largest marketshare.

- **Timing**

This content analysis is a snapshot of the market based on a point in time. Thus, a database gathered on a different date would have resulted in a different data sample. Because Apple does not reveal the algorithm behind its ranking methodology, to check the reliability of our sample the included apps (drawn initially from Apple's top 100 paid apps) were compared to the charted apps one week later and also one month later. 100% of the 100 apps we analyzed were among the top 200 paid apps within one week; one month later 94% of the apps were among the top 200 paid apps; the week of report release 76% of the apps were among the top 200 paid apps. Thus, the market trends identified in the report remained relevant.



Findings

findings

AGE

Over 80% of the apps target children

Over 80% of the top-selling apps in the Education category of the iTunes App Store target children ranging in age from toddler to high school. This makes it clear that developers are making apps marketed as educational for children, and that consumers are purchasing them. There is undoubtedly a market for learning apps for children.

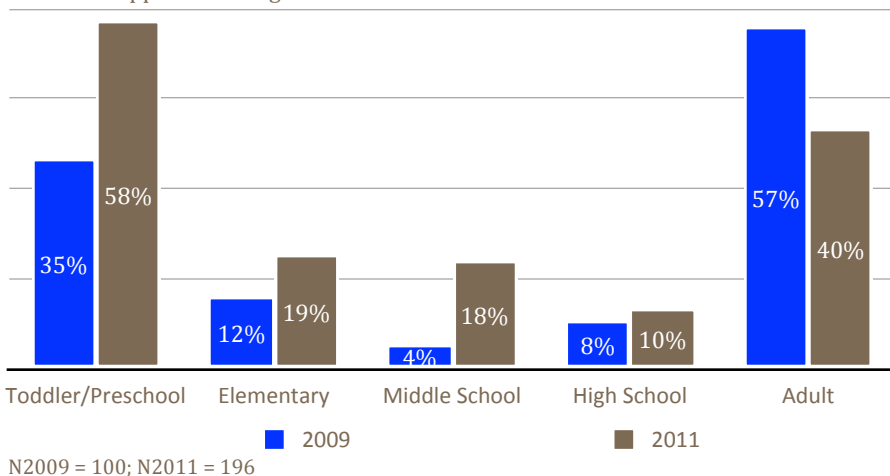
Apps for toddler/preschool children are the most popular age category

Apps for young children are the most popular age category (58%), exceeding apps for adults by almost 20%. Adults are the second most popular age category (40%), followed by elementary (19%), and middle school (18%). High school was the least popular age category (10%). This indicates strong demand for and supply of apps for young children. While there are always opportunities for innovative or exceptional content, general early learning apps for toddler/preschool children may become a saturated market and could become difficult for new developers to enter. To stand out, developers targeting young children should embrace the unique opportunities that touch screen mobile devices afford.

Children's apps are a growing market

Since 2009, the percentage of apps for children in every age category has risen, accompanied by a decrease in apps for adults. The toddler/preschool age category saw the greatest growth (23%), whereas the middle school category also saw a considerable jump (14%). In 2009, nearly half of the top 100-selling apps targeted preschool or elementary aged children. That number has increased to nearly three-quarters (72%). Children's apps are a growing market, and should be considered an important one for developers, researchers, investors, and policy makers.

Chart 1: Target Age, 2009 vs 2011
Percent of apps which target:

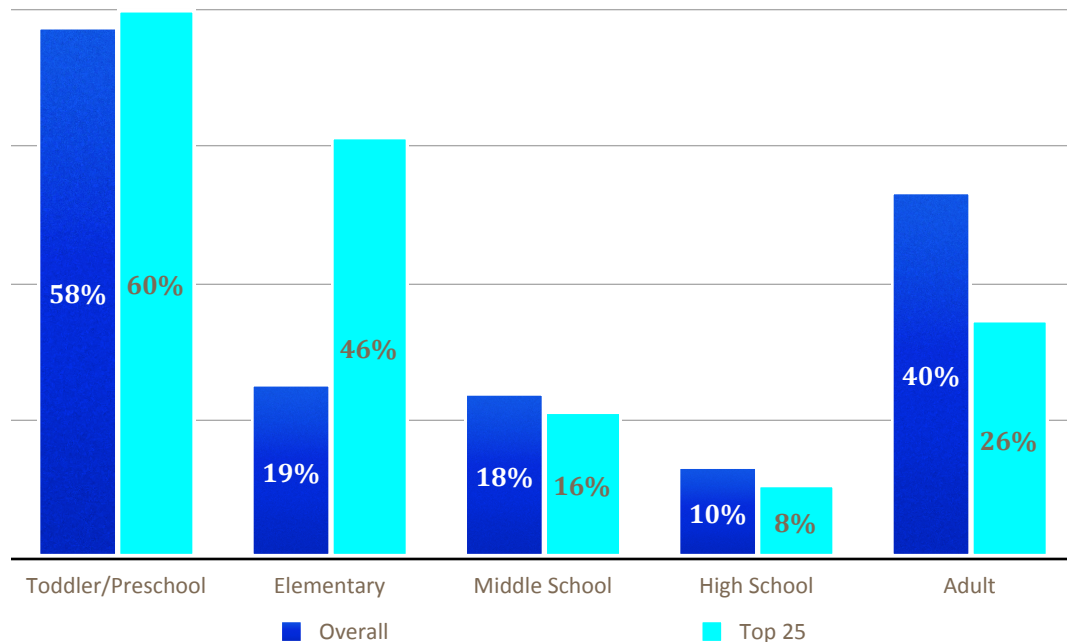


Children's apps top the charts

The analysis becomes even more interesting when the top 25-selling apps are compared to the overall sample. Sixty percent of the top 25 apps target toddler/preschool children—more than double the amount that target adults (26%). The fact that apps targeting children are so prominent amongst the top-25 list reinforces the strong demand for educational apps for children.

Chart 2: Target Age, Overall Vs Top 25

Percent of top-selling apps which target:



N Overall = 196; N Top 25 = 50

Apps for elementary children are particularly popular amongst best sellers

While only 20% of the overall sample targets elementary aged children, almost 50% of the top sellers target this demographic. This is exciting, considering there is a long-standing tendency for media developers to avoid marketing educational media for elementary and middle school. Apps for elementary children may present a significant opportunity in the Education category.

The top 25 may be indicative of future trends

In 2009, 60% of the top 25 apps targeted toddler/preschool children as compared to 35% of the overall sample (Shuler, 2009). Two years later in 2011, the percentage of apps that target toddler/preschool has increased by over 20% to 58% of the overall sample. It seems reasonable to construe that the popularity of preschool apps amongst top sellers in 2009 was an indication of what was to come. Developers should pay close attention to top 25 charts.

PROBING THE DISCOVERY PROBLEM

Prior to the inception of the app market, it was extremely difficult to deliver content through a mobile device, and developers had to struggle to get a carrier or manufacturer to incorporate apps into phones. That barrier was lowered with the launch of the iTunes program and its App Store, which enabled a new cluster of independent developers to create and deliver content, and continues to drop with the advent of other platforms such as Android.

However, with over 500,000 apps on Apple's App Store and another 300,000 on the Android Market, creation is only half the battle. As Lorraine Akemann of Moms with Apps articulated, "You can spend a long time creating an app, only to find out that the marketing is just as hard as the development."

Discovery is fundamentally important, and the most effective methods of getting found—being charted or featured—are somewhat out of the developer's control. To address this issue, Akemann and three other mom-developers created Moms With Apps, a collaborative group of developers seeking to promote quality apps for kids and families.

Below are some strategies that developers can use to get noticed, courtesy of Moms with Apps:

- Have a marketing plan in advance of your app launch. The four P's of marketing—product, price, promotion, and place—all apply.
- Branding is just as important in the app space as in other mediums, because consumers need to make sense of the fluid marketplace.
- A social media strategy is helpful for connecting with users, bloggers, and reviewers.
- Establish a relationship with children's tech bloggers and reviewers before releasing an app so they already know about you when you contact them for a review.
- Cross promotion can be effective. Think of other developers as colleagues, not competitors. For example, there is plenty of space on mobile platforms for 10 good math apps, each with a different strength.

Ultimately, making an extraordinary app is key. But if great content isn't discovered and downloaded, it's not going to have impact no matter how amazing it is. As Akemann fittingly concluded, "The key is to market without making trade-offs in design and ultimately the experience for the child."

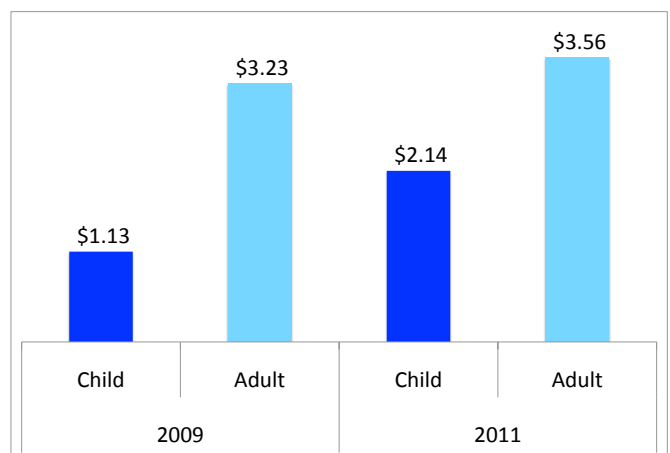
PRICE

The Average Price of Children's apps has risen by over \$1

The average price of children's apps has risen by about a dollar, from \$1.13 in 2009 to \$2.14 in 2011. Children's apps are, on average, over a dollar less expensive than those targeting adults, although the gap between the two demographics has decreased slightly since 2009. From this analysis, it is impossible to determine whether developers are pricing apps for children lower than those for adults, or whether higher priced apps exist and parents just aren't willing to pay for them. Based on industry experience, we hypothesize that developers are defaulting to lower price points, and that there may be demand for higher priced children's apps if the price is justified.

Chart 3: Average Price, 2009 vs 2011

Average price of apps that target:



N2009 = 100; N2011 = 196

Most children's apps are priced at \$0.99 or \$1.99

As indicated in Table 1, the prices of apps range from \$0.99 to \$19.99, with most children's apps priced at \$0.99 or \$1.99. In 2009, almost 90% of apps targeting children were at the lowest price point of \$0.99 (Shuler, 2009), however in 2011, this has increased, with numerous children's apps costing \$1.99 and even \$2.99. Developers should not default to the lowest price point and should consider a fair price-value proposition.

Table 1: App price, by age and year				
Percentage of apps that cost:				
	2009		2011	
Price	Child	Adult	Child	Adult
\$0.99	88%	47%	36%	30%
\$1.99	10%	8%	38%	22%
\$2.99	2%	8%	14%	30%
\$3.99	0%	0%	4%	3%
\$4.99	0%	17%	6%	5%
\$5.99	0%	3%	0%	0%
\$7.99	0%	5%	0%	3%
\$9.99	0%	7%	0%	3%
\$11.99	0%	2%	0%	0%
\$19.99	0%	0%	1%	5%
\$149.99	0%	0%	0%	0%

FROM HERE TO SUSTAINABILITY

By Andy Russell and Dan Donahoo

Today's mobile platforms enable developers to create more engaging and empowering content than ever before – groundbreaking games, toys, and tools for kids to play, learn, grow, and develop. In order to achieve the great potential of this market, however, it's time for parents, educators, and developers to collectively reassess our pricing model: an expected price point of \$.99 is not sustainable.

A "Top 50" Education app might have 100-200 downloads a day. Through regular updates, good social media support, and a strong fan base, a great app might hope to stay in the Top 50 for six months to a year. At \$.99, that translates to \$12K-\$50K in revenue (revenue after 30% platform margin). With annual development/support costs ranging from \$20K-\$200K+, we're quickly approaching a critical juncture in children's media. We can (a) increase revenue, (b) consolidate, (c) reduce quality/depth/cost, or (d) supplement income through advertising and commercial branding.

If parents, educators, and developers truly value high-quality commercial-free educational content, then we must work together to identify and embrace a new pricing model that will sustain a diversity of developers to build innovative and creative content for our children. The simple answer would be to raise prices, but that's shortsighted as upfront fees can inhibit parents from taking chances on original content and lead to more traditional licensing and advertising-driven markets like those of the toy and video game industries.

The ideal market would be a content meritocracy where apps are valued for engagement, fun, and learning over packaging, licensing, and advertising. One way to achieve this is to shift the "point-of-purchase" to inside the app, creating what is effectively a free/low-cost trial for parents and educators. In-app-purchase (IAP) has received a bad rap in children's media due largely to the irresponsible practices of certain developers selling "Pay-to-Play" consumables as if the tablet were a quarter-gobbling arcade machine. This not only exploits and commercializes play, but can also lead to astronomical "gotcha" charges reminiscent of the early days of teenage texting.

IAP subscriptions and "Content Expansion Packs" (add-on levels, stories, songs, etc.) offer a great alternative. Parents and educators can purchase apps at a nominal fee, evaluate them, and then (if worthy) invest further to expand the play experience much like they might buy a new LEGO playset. This encourages parents and educators to take a chance on unknown brands and test unique and innovative products - great for developers, the market, and ultimately kids. It also incentivizes developers to release regular updates and fixes to improve the user experience over time. With this in mind, we've outlined best practices for all parties to embrace this new model and foster a dynamic, purposeful, and sustainable world of mobile media for our children.

Parents/Educators: Commit to Supporting Excellence and Diversity in Children's Media

1. Invest in subscriptions and expansion packs for your favorite apps to expand the play experience
2. Look beyond the "Top 10" to find innovative and unknown content on mommy blogs and app review sites
3. Promote great content by writing reviews, sharing apps with friends, and posting comments via social media
4. Write to developers to offer feedback and suggestions for future apps/updates

Developers: Respect the Sanctity of Childhood and Play

5. Price apps accessibly for parents/educators to easily evaluate
6. Offer high-value expansion packs that expand the play experience instead of "pay to play" consumables
7. Do not disguise costs or manipulate children's emotions to entice spending
8. Strive for continuous improvement: Engage educators and child development experts, test your app regularly with kids throughout development, and commit to continuously improving your apps over their lifetimes

By adopting these practices, we lay the groundwork not just for a sustainable children's media market, but for a new generation of games, toys, and tools with unprecedented potential to empower kids to play, learn, laugh, create, grow, and explore—both indoors and outdoors, in school and at home, independently and collaboratively with friends, educators, and family. Digital play spaces should inspire and enable children to do what they do best: be children... with touchscreens at their fingertips and mud between their toes. For the first time in history, we have the tools to actually realize this potential; all that's left is to fund it.

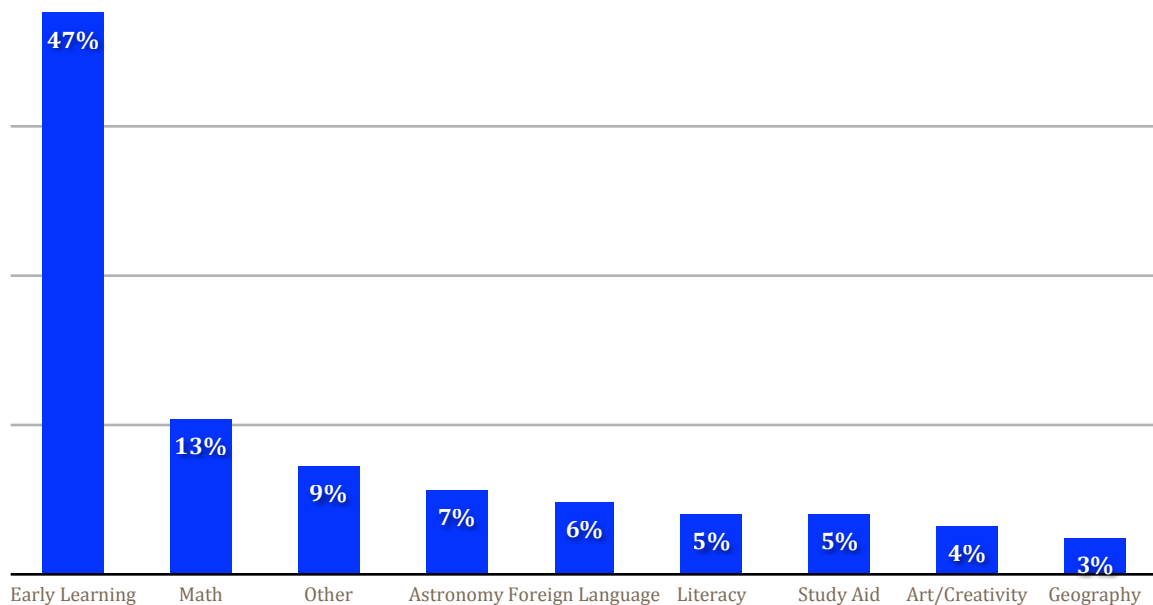
SUBJECT/SKILL-SET

General early learning is the most popular subject category

Apps are available in a variety of different subjects, including: general early learning, math, astronomy, foreign language, literacy, study aids, art/creativity, geography, and "other". Early learning is by far the most popular subject/skill-set, yet the children most in need of early learning interventions are not likely to have access to apps. Developers looking to have significant impact may want to consider apps that go beyond general early learning.

Chart 4: Target Subject

Percent of apps which aim to teach:



N2009 = 100; N2011 = 196

STEM subjects are popular

If you look past the early learning apps, it is interesting to note the popularity of apps in the Science, Technology, Engineering, and Math (STEM) subjects. Furthermore, four out of the top five apps for both iPhone and iPad teach STEM subjects. STEM based apps may represent an opportunity for developers.

Literacy apps are surprisingly sparse

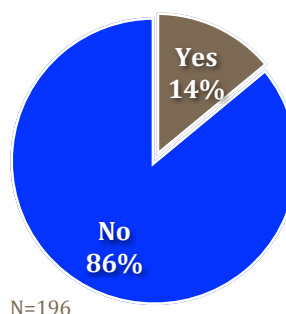
There are surprisingly few apps in the literacy category. From this analysis, it is impossible to discern whether there are apps available in these subjects that are not being purchased, there is a dearth of such apps available, or whether these apps may be in a different section of the iTunes Store (such as in the eBooks). However, it seems reasonable to suggest that this may be an underserved market and represent an opportunity for developers.

SCHOOL USAGE

Some (but not many) apps mentioned school usage

Fourteen percent of the apps mentioned intended school usage. On one hand, this number may seem quite small. On the other hand, 14% of the sample is the equivalent of 27 apps, indicating intent in marketing to the formal learning market. Anecdotally, a quick glance of these apps reveals a range, including those that are primarily marketed to the consumer (Stack the States, Toontastic, Star Walk Interactive Astronomy Guide); study aids, test prep, and practical tools (Graphic Calculator, iStudiez Pro); and a very small number of apps that are aligned to standards (US Geography by Discovery Education). At a glance, none of these apps seemed to exclusively target the school market. Although apps are primarily a consumer medium, developers should not ignore the formal learning market, and in particular the unique opportunity apps afford to bridge the technology gap between school and home.

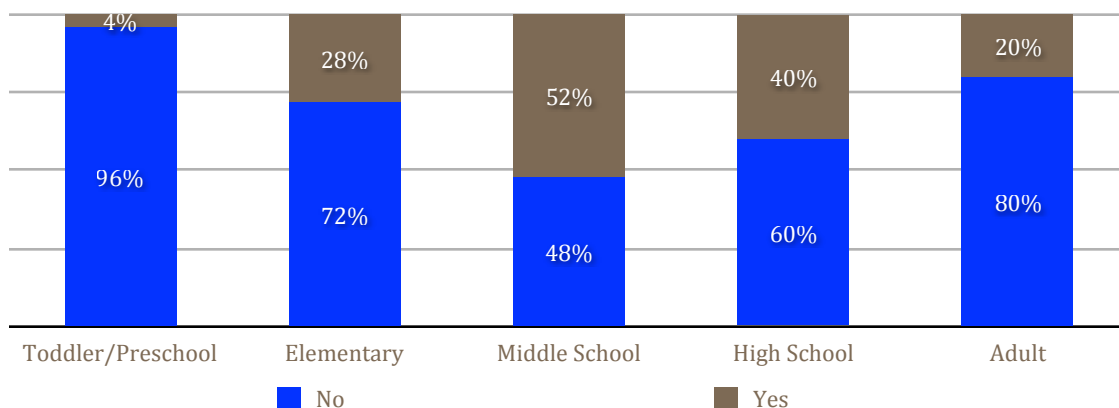
Chart 5: Intended School Usage
Percentage of apps that mentioned school usage in app description:



School usage is mentioned in over half of the middle school apps

An interesting trend was noted when school mention was analyzed by age category. Mention of school usage is lowest for the toddler/preschool demographic, and then peaks amongst the middle school demographic at over 50%. This is logical and could be a harbinger of a growing app market for older children in institutional settings.

Chart 6: Intended School Usage
Percentage of apps that mentioned school usage in app description:



Taking the Apps to School: A Case Study

Over 12 years ago, pediatric immunologist Dr. Avraham Kadar, M.D. was spending a significant amount of time explaining how the body works to his young patients and their families, and found that animation could be helpful in understanding difficult concepts. That finding led to the creation of BrainPOP, a collection of hundreds of short *Flash* animations that deliver curriculum-based content. While the company started off as an informal learning resource, through careful research and curriculum development Kadar and his colleagues ended up filling an unmet teacher need. BrainPOP now has over 11 million monthly visitors,, is in 20% of US schools, and continues to grow rapidly.

BrainPOP recently entered the app space with “BrainPOP Featured Movie”, an app with calendar-aligned digital content that rotates daily, covering a range of relevant topics. The iPad, iPhone, and iPod touch app—also available in Spanish and British English—has been downloaded more than 1.1 million times. Din Heiman, COO and General Manager, shares the reasoning behind some of their key business decisions:

For a formal learning *Flash*-based resource, iOS apps don’t seem like a natural fit. How did you decide to enter the app market?

“The creation and adoption of iOS presented both a challenge and an opportunity. For an all-*Flash* resource like ours, the devices weren’t a natural fit, but in terms of user experience they were perfect. As soon as the iPad was announced, we felt that to not play in the app market would be a disservice to our customers.”

Teachers are the primary audience for your web content. Are schools also your target for the app?

“At this point, developing apps that solely target the school market is extremely difficult as the devices (and iTunes) are primarily consumer- and not institutional-focused. Distribution, awareness and access are significant issues. As a new company or line of offerings, I wouldn’t exclusively market to the schools market through iTunes, nor would I discount it completely. Apps can be compelling enough for the consumer market—they have the unique ability to be part of student’s day in the classroom, at home, or on the go.”

What is the pricing model for BrainPOP’s Featured Movie app?

“For a long time the BrainPOP app was free. In October we upgraded it, adding two optional subscription choices. The App Store is a partnership by virtue of the revenue share and there wasn’t initially an obvious pricing model that pleased both us and Apple. We felt we were pushing the envelope in terms of business models that Apple supports.”

Does Apple offer any mechanisms for selling into schools?

“Apple offers a Volume Purchase Plan (VPP) that allows educational institutions to purchase iOS apps in volume and distribute them to their users. VPP helps with deployment and purchasing, but communication between apps or between teacher and student is still extremely tricky. To my knowledge, VPP does not apply to free apps, subscriptions, or in-app purchases. It is important that developers continue working with Apple and others to communicate what is needed to successfully work in the formal education market.”

Your app is universal on the iOS systems. How did you make this decision?

“Our content works just as well on a small screen. If your content or application is relevant you should consider a universal app—particularly for middle school students who often have access to the iPod touch/iPhone. Of course if your app doesn’t play well on a small screen, this advice is irrelevant. Oh, and maintenance of one app is much easier.”

How do you define success in the app market?

“Reviews more than anything else are an indication of success. You can invest in advertising, you can be featured by Apple, but reviews are really a window into the heart or at least the experience of the app user. Our app garnered over 5,000 reviews so far.”

How important are apps in your long-term strategy?

“A mobile strategy is key going forward, and iOS apps are one important element of a successful one. Mobile web and strategy for various app stores are equally important.”

Do you have any final thoughts for developers?

“It’s critical to understand and internalize what it means that kids have devices. Kids have the opportunity to learn wherever they are. They are curious about something that just happened and they can pull out the device and learn. That’s tremendously powerful in terms of the potential for learning; it’s powerful in terms of innovation and it’s also powerful as a business driver.”

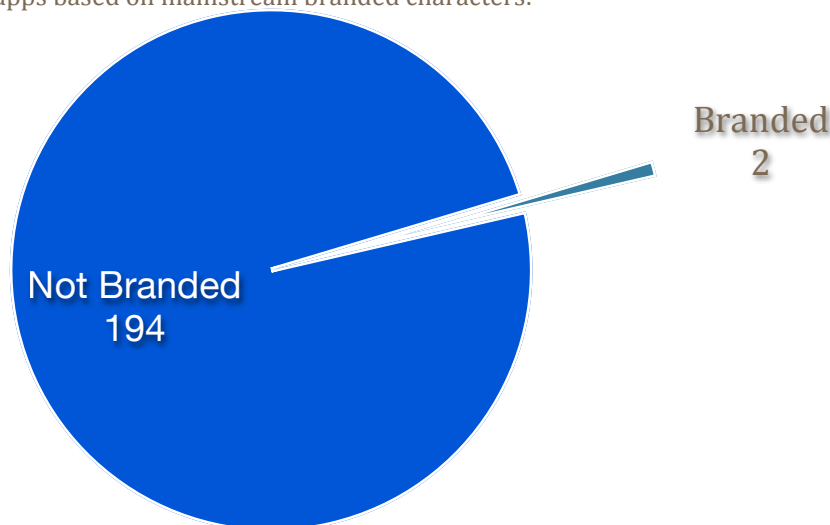
BRANDING

Of the entire sample, only two apps were based on mainstream branded characters

Of the entire sample, only 2 iPhone apps and no iPad apps were based on popular branded characters from other mediums. This was in sharp contrast to a quick glance at the top 12 iPad apps offered as the Kids Games on iTunes, in which over half of the apps were based on popular mainstream brands. On one hand this is encouraging, because the overabundance of popular characters in the toy industry for example, has made it notoriously difficult to survive on innovation or quality alone without a popular license. On the other hand, it indicates the tendency for such licenses to default to the games category, a fact that could drive parents and kids towards the game rather than education category.

Chart 7: Branding

Number of apps based on mainstream branded characters:



The Games category of the App Store was not included in this analysis; however, this branding issue highlights the importance of understanding that market in terms of leveraging technology to further children's learning. The Joan Ganz Cooney Center at Sesame Workshop intends to conduct a separate analysis on games in early 2012.

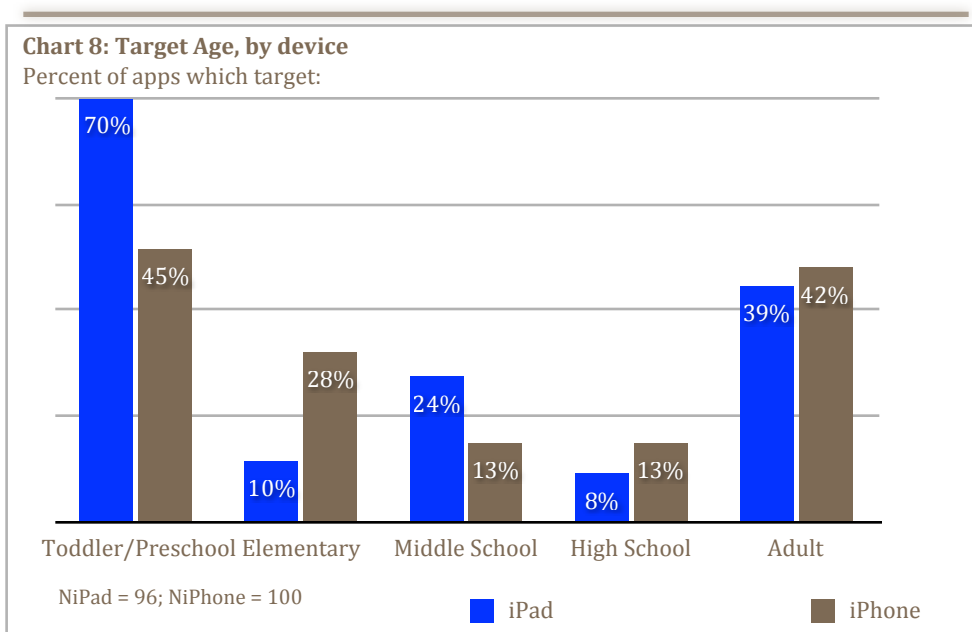
DEVICE

App popularity overlaps between devices

Interestingly, 46 apps were present in the top-selling charts on both devices. It is possible that top selling apps are not exploiting the true functionality of each individual device.

iPhone and iPad apps follow similar age trends

iPhone and iPad apps follow similar age trends, however some differences were noted. Apps for the toddler/preschool demographic were more prominent amongst the iPad apps than those for the iPhone. The opposite was noticed for the elementary age group, which was particularly prominent amongst iPhone apps. This seems consistent with access statistics amongst these demographics.



Overall, iPad apps are slightly cheaper than iPhone apps

iPad prices ranged from \$0.99 to \$4.99, whereas iPhone prices ranged up to \$19.99. The average price for an app on the iPad was \$2.07, compared to \$2.76 on the iPhone. It is somewhat surprising that iPad apps are cheaper than those for the iPhone, considering that in many (but not all) cases, designing for the larger screen may be more expensive.

Table 2 App price, iPad compared to iPhone									
Percentage of apps that cost:									
Price	\$0.99	\$1.99	\$2.99	\$3.99	\$4.99	\$7.99	\$9.99	\$19.99	Average
iPad	34%	40%	16%	4%	6%	0%	0%	0%	\$2.07
iPhone	36%	30%	19%	4%	5%	1%	1%	3%	\$2.76

PUBLISHER

109 different publishers were represented within the sample

One hundred and nine different publishers were represented within the sample of 196 apps. This highlights one of the significant differences between this market and others such as television, video games, or toys where a significantly smaller number of producers create the bulk of top-selling products.

Seven publishers had five or more apps within the sample.

Out of the 109 publishers who had apps in the sample, seven publishers had five or more apps in the sample. Those publishers included:

Publisher	Number of apps
Duck Duck Moose	10
Dan Russell-Pinson	8
ABCya.com	6
Kids Place	6
22learn LLC	5
Grasshopper Apps	5
Vito Technology Inc.	5

89 publishers were not represented in the sample two years ago.

Only 18 publishers were present amongst both the 2009 and 2011 samples. This further indicates the uniqueness of the app market as compared to other industries, as well as pricing and sustainability dynamics (See “From Here to Sustainability, P. 17). It is also indicative of the relatively low barriers to entry and and highlights opportunity for developers looking to innovate in this area.

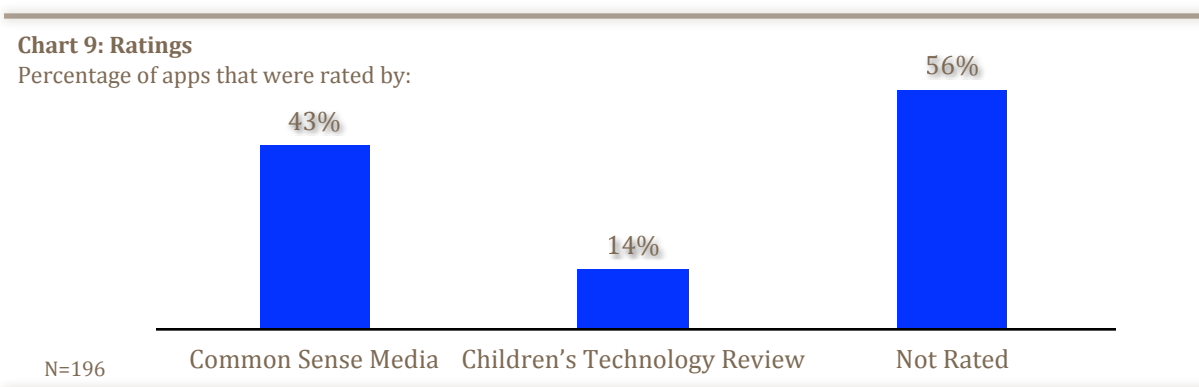
RATINGS

Assessing quality and learning value is difficult in the educational app market

There are currently no firm and independently verified standards of educational value in the app market, and there is a dearth of empirical evidence about the effectiveness of apps for learning. To help assess overall quality of the sample of best-selling apps in the Education category of the iTunes App Store, third party sources including Children's Technology Review (CTR), Common Sense Media (CSM) and a consumer rating on iTunes were consulted.

More than half of the apps were not rated by either expert source

Only 27 apps (14%) out of the entire sample were rated by Children's Technology Review, which currently has the most rigorous review instrument. Common Sense Media has rated more apps (43%).



Of the small sample that was rated by CTR, the average rating was high

The sample of 27 apps that were rated by Children's Technology Review ranged from 3.2 to 4.9 (out of 5). The average rating across all apps was 4.51. This is higher than the mean CTR rating of 4.0 (CTR Website).

Of the sample that was rated by CSM, the average rating was high

The sample of 85 apps that were rated by Common Sense Media ranged from 1 to 5 stars. The average quality rating across all apps was 4.35, and the average rating for educational value was 4.21. Most apps (over 85%) rated a 4 or 5 on both criteria.

The average number of consumer ratings is 880

The number of consumer reviews for an app in the iTunes App Store ranged from 0 to over 36,000. Most apps (75%) had between 0 and 1000 ratings, with an average of 880 ratings. The average rating in the iTunes Store was 3.85. Overall, consumer opinions seemed to be aligned with expert opinions; of the apps that were rated 4 or 5 by CSM or CTR, the average consumer rating was 4.13.

SOURCES FOR ASSESSING APP QUALITY

Children's Technology Review

Children's Technology Review (CTR) is a searchable database of reviews and a corresponding monthly PDF newsletter—modeled in the spirit of Consumer Reports—designed to summarize products and trends in children's interactive media. CTR was created by Warren Buckleitner in 1993, and is based on a systematic assessment system for evaluating children's software. CTR's instrument is designed to broadly measure five factors that apply to most children's interactive media experiences: ease of use, educational value, entertainment value, design features, and overall value.

Common Sense Media

Common Sense Media (CSM) is a national nonprofit organization dedicated to helping children and families thrive in a world of media and technology. Currently, CSM rates media based on age appropriateness. CSM recently announced a new education rating and review program for digital media designed to help parents and educators assess the learning value of digital media products. Similar to CSM's current media ratings, the education rating and reviews will address age appropriateness and entertainment value, and they will guide users on learning potential along with offer advice on how to get the most out of playing a game, exploring a website, or using a mobile app.

NAEYC & Fred Rogers Center Quality Statement

The National Association for the Education of Young Children (NAEYC), in partnership with the Fred Rogers Center, is working to create a position statement on best practices for technology, media, and early childhood. The statement, which is currently in draft form, updates a similar statement from 1996. The new version takes into account the broad range of media now available for this age group (beyond just television). After gathering feedback on their most recent draft in May 2011, the groups hope to release the final statement in early 2012. The Fred Rogers Center is also leading an initiative to create a “framework for quality” on how to identify superior media tools across a range of platforms, including guiding principals for media producers.

The CTIA Mobile Application Rating System with ESRB

The Wireless Association (CTIA) and the Entertainment Software Rating Board (ESRB) recently announced a newly developed rating system for mobile apps that will utilize the recognized age rating icons that ESRB assigns to computer and video games. When developers submit their applications to a participating storefront, they will be able to complete a detailed yet quick multiple-choice questionnaire that is designed to assess an application's content and context with respect to its age-appropriateness. Six mobile app storefronts are voluntarily supporting the new ratings as part of their application submission process. Currently the two biggest players in the app arena, Apple and Google, are not attaching themselves to the new initiative.

implications

In the Joan Ganz Cooney Center's 2009 report, *Pockets of Potential*, we argued that mobile devices had potential to be a key ally in supporting learning experiences. That same year, in our original iLearn study, we commented on the striking presence of child-focused apps amongst the top sellers in the Education category of the iTunes App Store. This report confirms that the market for children's educational apps is not only important, but growing. Apps are rapidly emerging as a new medium for providing educational content to children nationwide, both in terms of their availability and popularity.

Outlined below are selected key findings and emerging opportunities based on this analysis of the top-selling paid apps in the Education category of the iTunes App Store. We conclude with high-level considerations to help mobile apps become a dynamic force for children's learning.

KEY FINDINGS

- Over 80% of the top selling paid apps in the Education category of the iTunes Store target children.
- In 2009, almost half (47%) of the top selling apps targeted preschool or elementary aged children. That number has increased to almost three-quarters (72%).
- The percentage of apps for children has risen in every age category, accompanied by a decrease in apps for adults.
- Apps for toddlers/preschoolers are the most popular age category (58%), and experienced the greatest growth (23%).
- Most children's apps cost \$0.99(36%) or \$1.99(38%). The average price of an app has risen by \$1 since 2009.
- Fourteen percent of the apps mentioned school usage in their descriptions.
- Of the entire sample, only two iPhone apps and zero iPad apps were based on well-known, branded characters.
- One hundred and nine different publishers were represented within the sample; 89 of these publishers were not represented in the sample two years ago.

NOTEWORTHY EMERGING OPPORTUNITIES

- Apps for elementary aged children may represent an opportunity. While only 20% of the overall sample targets this age group, almost 50% of the top sellers (top 25) target elementary aged kids. A similar trend was noted amongst the preschool set in our 2009 analysis, and subsequently this age group experienced significant growth.
- Apps for toddler/preschool children are the most popular age category and general early learning is the most popular subject category. To stand out, developers targeting young children should go beyond skill/drill for early learning and embrace the unique opportunities that touch screen mobile devices afford.
- Although the average price of children's apps has risen by over \$1.00, they are still less expensive than those targeting adults. Developers should not default to the lowest price point and should consider a fair price-value proposition.

RECOMMENDATIONS FOR INDUSTRY, POLICY & ACADEMIA

Address the app gap

This market scan identifies a growing ecosystem of app-based learning products that have the potential to play an important role in children's lives. However, in addition to the traditional digital divide, a new "app gap" has developed amongst young children (Common Sense Media, 2011). Thirty-eight percent of lower-income parents say they don't even know what an app is, whereas 47% of higher-income parents have downloaded apps for their children. If apps are to become a force for learning and discovery, it is of fundamental importance to consider how this medium can avoid widening the digital divide.

Create standards for products marketed as educational

Previous analyses of children's digital media have identified a lack of voluntary or regulatory standards around marketing products as educational, making it difficult for parent or educators to discern if products live up to their claims (Shuler, 2007). This has been a long-standing issue in the educational toy and game industry, and perhaps one that can be tackled early in the evolution of the app market.

Protect children from digital age commercialism

Concern about children's ability to understand and evaluate advertising and commercialization has been the topic of research, debate and policy-making for the past four decades. Policies such as The Children's Television Act were put in place to protect children from inappropriate marketing and to promote quality media production. National policy needs to be re-focused on a digital age with an emphasis on the app market. In the long term, apps will be better for children, parents and businesses alike if there are policies that promote learning and healthy development without hindering creative innovation.

Consider emerging market dynamics in an update to COPPA

The Children's Online Privacy Protection Act (COPPA), has not been updated since 1998—well before apps (and many other pervasive digital media) were part of our vernacular. The Federal Trade Commission (FTC) recently released recommendations for how the law might be updated, suggesting steps to protect children in

today's ubiquitous media environment. However, responding to these recent efforts, the leading provider of app analytics disallowed its services to be used by developers of children's apps, who rely heavily on this immediate feedback to improve their products. As the FTC revises its Children's Online Privacy Protection rule, it should take into consideration the unintended consequences the policy may have on developers.

Enable sustainability and profitability

Today's mobile platforms have the potential to enable developers to create innovative educational experiences. In order to realize the potential of this market, we need to collectively reassess the expected pricing model. Discussion of business models must be continued so development of apps that are innovative, high quality, effective and sustainable can happen.

Set a research agenda

Academia needs to address the rapidly growing app market by setting a research agenda regarding digital age learning. This scan confirms both supply and demand for educational apps for children. Developers and researchers should work together toward the design of effective, high-quality products.

A RESEARCH AGENDA

By Jennifer Kotler

Given the proliferation of apps across a variety of mobile devices, we need more empirical studies on how apps are used, and how they can support children's development and well-being. Outlined below are key areas of research which would be critical in addressing some important issues:

What are the effects of app use on spatial and motor development?

We need better data on whether app use on touch screens supports spatial relations and motor development as we've learned that other video games can sometimes do. Does it really matter if a child is using a joystick or a finger to do a particular task?

Do joystick maneuvers help develop skills that finger sliding does not? Do touch screens support different types of spatial and motor skills compared to other gaming technologies?

What is app use displacing?

Given concern about the time children spend with screens, we need to know what activities time with apps are displacing and whether those alternative experiences are generally more enriching than what children do on touchscreens. One of the early arguments against television was that time with TV displaced other creative or educational activities in the home that would be better for learning. The actual research suggests that those who experience educational television are also more likely to be engaged in other educational experiences such as reading. Might the same thing be true for touchscreen use?

How can we increase positive interactions between parents and children around apps?

We need on better data on how to increase positive interactions between parents and children around touchscreen technologies. Many apps are designed to be solitary experiences. Is there a way to encourage co-use and co-discussion?

Can app use improve attention, focus & persistence?

Another important area of inquiry would be to study how app use may improve executive functioning. Do children persist more around games/tasks that are on the iPad or other touch screen technology compared to other activities because they are new and different? If there is a difference now, will that change as touch screens become more commonplace and less novel?

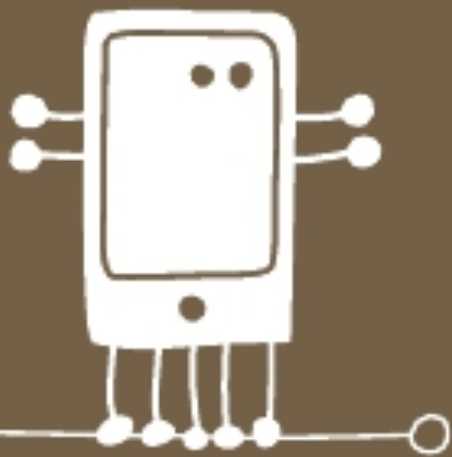
Can app use foster creativity as much as a similar non-electronic activity?

Do freestyle activities such as drawing and constructing new ideas tap into and promote the same skills whether they are done with crayons and a paper versus the art tools in an app?

How can we maximize the app experience to be used in formal education settings to individualize learning?

The education community could greatly benefit from more research around the use of iPads, iPods or other individualized portable devices with apps to help individualize experiences that are tailored to a child's readiness level. Would this practice have promising effects even for the youngest children? Would an intervention around the use of apps for assessment and teaching be scalable?

There are likely many more questions around app use that researchers will answer in the coming years as more and more individuals and



Appendices

appendices

ABOUT THE AUTHOR

Carly Shuler is a researcher, developer, and author in the children's media and toy industry. As The Joan Ganz Cooney Center's inaugural Fellow, Carly researched and authored a number of Cooney Center reports, including *D is for Digital* and *Pockets of Potential*. Since her fellowship, Carly has continued her work with the Center, leading many industry initiatives and research projects with a particular focus on consumer trends, informal learning, and mobile devices.

Throughout her career, Carly has worked with a host of children's media and entertainment groups, including Sesame Workshop, Spin Master Toys, the Michael Cohen Group, and WGBH. She holds a master's degree in Technology, Innovation, and Education from the Harvard Graduate School of Education, where she studied how media and technology can be used to educate children effectively. Carly frequently tweets, blogs, and speaks at conferences worldwide on the topic of children's informal learning through technology. Carly is passionate about the magic that happens when fun, research, and education converge, and is dedicated to working on quality children's products that inspire thought and creativity.

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This study was independently conducted by the Joan Ganz Cooney Center without involvement of the Apple corporation.

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