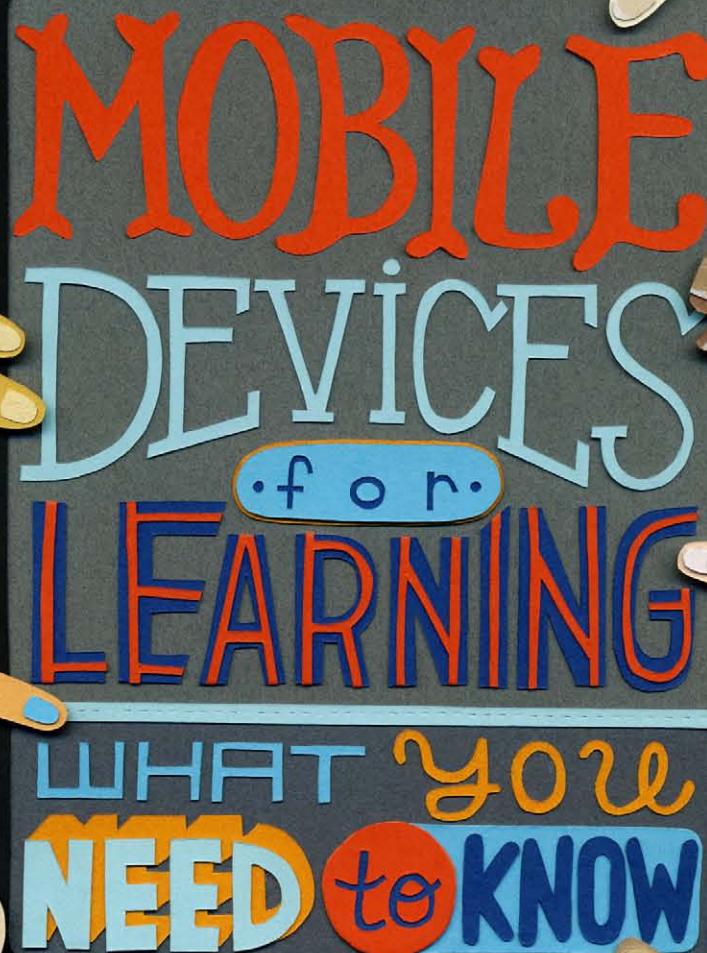


The logo for edutopia, featuring the word "edutopia" in a white, lowercase, serif font on an orange rectangular background. The background of the entire page is a colorful, woven pattern of blue and orange squares.

edutopia™

A central graphic of a tablet with text on its screen. The text is arranged in several lines: "MOBILE" in large orange letters, "DEVICES" in large light blue letters, "for" in a small blue oval, "LEARNING" in large blue letters, "WHAT you" in light blue and yellow letters, and "NEED to KNOW" in large light blue and orange letters. The word "you" is in a cursive font. The word "to" is in a red circle. The word "NEED" is in a yellow circle. The word "KNOW" is in a blue circle. The tablet is surrounded by several hands of different colors (brown, tan, light skin) pointing at it. Some hands have accessories like a watch or bracelets.

MOBILE
DEVICES
for
LEARNING
WHAT you
NEED to KNOW

Getting kids engaged
with learning, focused on
working smarter,
and ready for the future

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GOING MOBILE IN THE CLASSROOM

CELL PHONES IN THE CLASSROOM: A BOON OR BLIGHT? It's a question many educators are facing these days. The Common Core State Standards call for students to develop digital media and technology skills. One way to help them reach that goal: incorporate gadgets they're already familiar with — cell phones, tablets, and smartphones — into their learning environment. “The big potential with mobile is that it really is the primary portal for social communication right now,” says Mimi Ito, a cultural anthropologist in the departments of anthropology and informatics at the University of California Irvine and John D. and Catherine T. MacArthur Foundation chair in Digital Media and Learning. “Young people learn best when it's relevant to them, when there's social connection tied to it, and when they actually have a personal interest.”

Put simply, mobile devices are becoming as essential to students' daily lives as, say, breakfast. According to a 2011 Pew Internet Project teen survey, 77 percent of 12- to 17-year-olds have cell phones, a major jump from 45 percent in 2004. (Read the report: bit.ly/RqwPxV.)

And yet, many schools don't allow cell phones and the like. New York City schools, for example, have prohibited students from bringing cell phones, or electronic devices in general, to class. According to a United Nations Educational, Scientific and Cultural Organization (UNESCO) report, “Turning on Mobile Learning in North America” (bit.ly/PuHSS1), “only Illinois and New Hampshire have implemented state-level initiatives that focus on mobile learning.”

WHAT ARE THE PROS AND CONS?

There are, understandably, some concerns about mobile devices in the classroom. The biggest is that they distract from schoolwork. Then again, distractions are as old as the ages — we've just progressed from daydreaming and passing notes. Experts say the answer isn't to ban these devices altogether, or to postpone forming a policy on them, but to take advantage of their ability to engage students in a classroom setting.

And they do appear to engage students. Early research supports the notion that these devices can lead to measurable learning benefits, says Lucy Gray, project director of the Consortium for School Networking's (CoSN) Leadership for Mobile Learning initiative. Gray points

- ## WHAT'S INSIDE
- 1. INTRODUCTION**
What are the pros and cons? Bridging the digital gap?
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Cell phones, e-book readers, tablets, MP3 and portable media players, and smartphones
 - 3. GETTING STARTED**
Resources and tools that support mobile learning
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Ideas for elementary, middle, and high school classrooms
 - 5. PARENTS**
How to get parents on board the mobile device train

to North Carolina's Project K-Nect, a pilot program assessing whether mobile devices can effectively boost learning and math test scores. At-risk ninth graders who had little to no access to a computer and Internet at home were supplied smartphones so they could access supplemental math materials. In addition, a social networking component was built into the program, giving students the ability to connect with their teachers and peers at any time via instant messaging. The findings have been encouraging, to say the least: according to the nonprofit organization Project Tomorrow (bit.ly/OYIioT), “almost two-thirds of the students are taking additional math courses, and over 50 percent are now thinking about a career in the math field as a result of

participating in Project K-Nect.” What’s more, teachers report that Project K-Nect students “are demonstrating a greater responsibility for their learning and developing more collaborative learning skills.” Teachers also reported that their students were more “active” in their classes, as both leaders and peer tutors, contributing to problem-solving discussions and teaching each other. (Download the results: bit.ly/Qpu6IM.)

BRIDGING THE DIGITAL GAP

One big challenge for students and educators alike is deciding which devices to welcome in the classroom. Cost, of course, is a major consideration if you mandate specific devices. Some school districts may not be able to provide equipment for each student. Enter the BYOD movement — bring your own device (or alternatively, BYOT, with the *T* standing

for technology). Some experts see this as a way to democratize the process, considering the majority of 12- to 17-year-olds, especially older teens, already have cell phones. The biggest hurdle for districts, then, would be providing reliable wireless access. Loaner devices could be made available for students who didn’t own any equipment. Or, if school districts did decide to adopt one specific device (say, an iPad), they could purchase enough to equip a certain number of classrooms and have students share.

The proverbial jury’s still out though. Some say BYOD is a panacea. Gary S. Stager, executive director of the Constructivist Consortium (constructivistconsortium.org), a collaborative marketing and advocacy group of educational technology publishers, wonders in a blog (“BYOD – Worst Idea of the 21st Century?”) if BYOD merely “enshrines inequity,”

giving more-affluent students an unfair advantage. Still, plenty of others insist it’s the future — including the 2012 Horizon Report (bit.ly/Qhgzi1), which annually measures emerging technologies that will shape and mold the way we teach and learn. The influential collaborators on the research — New Media Consortium, CoSN, and the International Society for Technology in Education (ISTE) — predict mobile learning is only one to two years away from becoming mainstream in American classrooms.

THE BOTTOM LINE

According to UNESCO’s report on mobile learning in North America, “[it] involves more than merely incorporating new technology into current pedagogical strategies; it requires an instructional paradigm shift that promises to fundamentally change the way students learn.”



TIPS FOR GETTING STARTED

- * **FIRST, ASK YOURSELF WHAT YOU'RE TRYING TO ACHIEVE** by incorporating mobile devices into your curriculum. Are you trying to encourage collaboration? Hoping for students to research with more depth? Want them to publish their work online? The answers will lead you to the right apps.
- * **SURVEY YOUR STUDENTS ABOUT WHAT DEVICES THEY HAVE** and how they use them. Do they have unlimited texting? Can they post online? Are there limitations on the size of files they can upload? With this information, you will have a complete picture of what resources your students can access without having to pay massive extra fees, which may not be feasible for some of them.
- * **ENCOURAGE STUDENTS TO MAKE SUGGESTIONS** about which apps work for them. This allows everyone to contribute to your mobile learning initiative—a great way to get them on board. Plus, the class can discover new apps and become proficient at them together.
- * **FOR MORE IDEAS**, read education consultant Ben Johnson’s post on iPads in the classroom at Edutopia: bit.ly/rZ6twh.

“We tend to see [mobile devices] as a distraction from learning because adults aren’t participating in [formalizing the process],” says Ito. “It’s a bit of a chicken or the egg problem. They’re not participating in shaping the kind of influence these devices [could have].” By embracing mobile devices in our classrooms, we empower students in the learning process.

Furthermore, “the Internet ... allows us to have a thought and immediately publish it to anybody in the world. That’s an incredible power,” says Cathy N. Davidson, codirector of the PhD Lab in Digital Knowledge at Duke University and author of *Now You See It: How Technology and Brain Science Will Transform Schools and Business for the 21st Century*. In 2003, she and her colleagues at the university implemented a program that gave a free iPod to each incoming freshman, with the understanding that it would be put to educational use in classes. The enterprise helped pilot a movement to foster interactive learning, connectivity, and innovation — the first-ever academic podcast conference happened there — and demonstrated students’ achievements in devising ways iPods could support classroom scholarship.

Ultimately, what’s important in successfully integrating any technology in the classroom holds true with mobile devices: students need to play an active role in learning and receiving frequent feedback, mobile activities need to be grounded in learning materials that require students to critically analyze and create content, and technology needs to connect students to the world outside classrooms. Adds Davidson: “You have to teach it and harness it in the fashion it’s meant to be used — interactively.”

KNOW YOUR MOBILE DEVICES

Any technology tool that students have at their disposal can be leveraged in the classroom to make powerful learning inferences, says Adam Bellow, a former high school teacher who founded [eduTecher](#) a website for educators and schools seeking guidance about integrating technology in the classroom. Accessing information online is just the beginning; students can use electronic gadgets for creating interactive projects and multimedia that contribute to their inquiry-based study. Here, a rundown of available devices and how they’ve been deployed in classrooms:



CELL PHONES

The simplest of them all but still fairly powerful. They can be used for group discussions via text messaging, and since so many cell phones have cameras, they are useful for photography-based projects as well. Students can also record themselves reading stories aloud for writers’ workshops or practicing speeches.



E-BOOK READERS

Their fundamental function, of course, is for reading books and storing entire libraries. They also provide easy access to dictionaries. Many students also use their e-book readers as a replacement for the daily paper, since they can read various editions and magazines on it. Well-known brands include Amazon’s Kindle and Barnes & Noble’s Nook.



MP3 AND PORTABLE MEDIA PLAYERS (SUCH AS THE IPOD TOUCH)

Free lectures and short videos are available for downloading via the iTunes U app, or on the Internet at sites such as [Brainpop.com](#), which has animated educational videos. Apps can also be downloaded onto the devices and many are equipped with cameras students can use to shoot and to post to a website. Read the Edutopia blog “iPod, iListen, iRead” ([bit.ly/dzzqll](#)) to learn more about how these devices are used to help students master reading.



TABLETS

Apple’s iPad, the Kindle Fire, and the Galaxy are just a few models of tablets, and they can do anything e-book readers can do and then some. Downloadable apps, many educational, make these machines nearly comparable to computers; you can surf the Web, play games, watch (and even make) movies, as well as take photographs. Many schools have started purchasing tablets for the K-5 crowd, though they’re plenty useful for older students, too.



SMARTPHONES

The older the students, the more likely they are to be wielding one of these. Like tablets, smartphones have many computer-like functions. (They’re also phones, of course.) They can run apps and software, record audio and video, send and receive email and texts — functionalities that can easily be channeled into classroom inquiry.

RESOURCES FOR TEACHERS GETTING STARTED IN THE MOBILE WORLD

* TOOLS THAT SUPPORT MOBILE USERS

SCRATCHED scratched.media.mit.edu/

Educators can get support for the computer-programming language developed by researchers at the Lifelong Kindergarten group at the MIT Media Lab. Scratch lets students of all ages create games and animation, and master computational and mathematical skills.

GOOGLE APPS FOR EDUCATION

google.com/apps/intl/en/edu/mobile.html

Google has an extensive suite of applications that foster collaborative learning. Documents can be group edited and shared; calendars can be synced so students are all on the same page, schedule-wise; teachers and students can back up lesson plans, notes, and other materials.

EDMODO edmodo.com

Unify your classroom within a setting familiar to your students: a social network. Edmodo has tools to help you and your students collaborate on projects, and you can assess their learning through quizzes and reward good work with badges.

* PROFESSIONAL DEVELOPMENT

EDUTOPIA'S "MOBILE LEARNING: RESOURCE ROUNDUP" bit.ly/OTJhIp

Get ideas, advice, and tools from educators incorporating mobile devices in classrooms.

THE MOBILE NATIVE themobilenative.org/

Teacher and blogger Scott Newcomb shares classroom resources and helps educators make the case for mobile learning.

UNESCO'S WORKING PAPER SERIES ON MOBILE LEARNING, "TURNING ON MOBILE LEARNING IN NORTH AMERICA" bit.ly/RHhaPe

A comprehensive report discusses implementation and challenges.

NEW LEARNING INSTITUTE newlearninginstitute.org/blog

This blog is sponsored by the Pearson Foundation and covers the latest in new learning.

INTERNATIONAL ASSOCIATION FOR MOBILE LEARNING iamlearn.org

Find examples of digital initiatives in the site's "Projects" section.

CENTER FOR DIGITAL EDUCATION'S "12 KEYS TO FINDING QUALITY EDUCATION APPS" bit.ly/PsiNG1

This article can help you evaluate apps for your classroom.

TWITTER HASHTAGS

Mine Twitter.com for tips on mobile learning using these hashtags: #mlearning, #mobilelearning, #edapps, #appsforkids, #slide2learn, #ipaded, #ipadchat.

* FIND APPS AND OTHER WEB TOOLS

I EDUCATION APPS

REVIEW IEar.org

Resources are organized by grade and subject by a community of educators and app developers.

APPITIC appitic.com/

A directory of apps for learning by Apple Distinguished Educators.

COMMON SENSE

MEDIA'S APP REVIEWS

commonsensemedia.org/app-reviews

Extensive reviews on all types of media, including apps, with information about their educational potential and what types of platforms they're compatible with.

TEACHERS WITH APPS

teacherswithapps.com/

Two teachers write easy-to-read reviews on educational apps for educators and parents.

ELEMENTARY SCHOOL TRY THESE APPS & WEB TOOLS



PUPPET PALS HD

bit.ly/OYK6hH

Instead of sitting back and watching TV, why not have children create their own educational show? Puppet Pals, an app for tablets, lets students tell their stories with pictures, cartoons, audio, and video. The basic format is free. A \$2.99 Director's Pass is a good choice for schools. Although it doesn't add functionality, it's an unlocked version with no in-app purchases.

I-NIGMA

i-nigma.com/i-nigmahp.html

Quick Response (QR) and Data Matrix codes, the barcode-like square boxes, are cropping up everywhere in print these days, from newspapers to magazines and books. With i-Nigma, students with phones can scan QR or Data Matrix codes to access additional information via text, websites, and videos that supplement classroom resources. Or they can create QR codes themselves and embed them in their work.

NEARPOD

nearpod.com

Want to create a multimedia presentation that all of your students can follow at the same pace on an iPad? Try Nearpod, a free app (good for K-12) that lets you put together interactive displays and allows students to submit feedback, offering you a real-time way to assess their performance.

MARTHA SPEAKS DOG PARTY

to.pbs.org/NWrYnI

An app created by PBS KIDS designed to help kids expand their vocabulary. According to a 2010 PBS KIDS-sponsored study of 90 children between the ages of three and seven who played with it for about two and a half hours over two weeks, the app was able to enrich vocabulary by as much as 31 percent.

MOTION MATH

motionmathgames.com

Another app with a lot of buzz. According to a 2011 study by GameDesk, commissioned by Motion Math, this game for the iPad improved the understanding of fractions in 120 children by an average of 15 percent.



MIDDLE SCHOOL TRY THESE APPS & WEB TOOLS



TEXTPLUS

textplus.com

This application takes the genius and immediacy of texting and combines it with the power of social networking, allowing for instant out-of-classroom communication. Create a group for each class and you'll be able to text everyone basic reminders, questions to ponder between lessons, and more. You can text via a Wi-Fi-connected device (cell phone, iPod touch, etc.), so students don't have to pay for every text.

DROPBOX.COM

dropbox.com

No more misplacing papers or presentations. Dropbox provides syncing and storage for users (up to 2 gigabytes worth is free, and it's enough to store hundreds of written homework assignments and pictures). Files can be shared with a few clicks, making collaborating a breeze.

WORD JOUST

play.wordjoustapp.com

Students can go on knightly quests, do battle with trolls, and learn vocabulary words to win points. Kids can compare their performance with classmates.

BRAINPOP

brainpop.com

As far as Web and app resources go, this one could be considered an old-timer, having been around since 1999. The app lets kids watch an educational movie on various humanities and STEM (science, technology, engineering, and math) subjects and then quizzes them to see how much they learned. BrainPOP Jr. is specially configured for the younger grades; there's also GameUp, a free portal for math, science, health, and social studies games.

POLLEVERYWHERE

polleverywhere.com

An audience-response system app built on text messaging that lets you poll students (think formative assessment) and share their responses immediately. Students can respond via text from their cell, smartphone, or computer browser, or from Twitter.

FROG DISSECTION

frogvirtualdissection.com/

Biology lab without the mess and the smell? Now that's a revolution. Students dissect a virtual amphibian to learn about the parts of a frog and how it functions.



HIGH SCHOOL TRY THESE APPS & WEB TOOLS



EVERNOTE

evernote.com

Students can keep notes and gather sources for their projects, all of which can be shared with their teachers and classmates.

TWITTER

twitter.com

Twitter is an information network that's available online and in app form. Conversations may seem trivial, but the valuable tool lets users share their thoughts, questions, links, photos, and videos. Students can tweet in journalism classes, posting reports online in real time, for instance, or on field trips, sharing what they're discovering on their trips.

THE CHEMICAL TOUCH

bit.ly/UgOTgz

The periodic table comes alive with an app that provides detailed info on the elements, standard amino acids, and nucleobases.

SHAKESPEARE PRO

readdle.com/products/shakespeare/

The complete works of the Bard, including 41 plays, are available with a few swipes and clicks of this iPad- and iPhone-enabled app.

SOCRATIVE

socrative.com

Want to know if your students have absorbed a lesson and are ready to move on? Available for any device with a browser (smartphones, tablets, iPod touch), this Web-based student-response system enables you to assess in real time — via multiple-choice, short-answer, and true-false questions — how much of the material your students understand. Students enter their answers on their own devices, allowing them the privacy to answer candidly, and results are tabulated immediately. Instant feedback!

SAT PREP APPS

1. The Official SAT Question of the Day, from the College Board:
bit.ly/PMZLBk
2. SAT Score Quest, the Princeton Review's iPad app:
bit.ly/QhjLLB
3. SAT Connect for Apple:
bit.ly/Q2NjjZ

Students can get quizzed on the SAT's different sections via subject-organized practice questions; they can take tests (timed and untimed), which are scored immediately to provide them with feedback on potential problem areas and how to correct them.



GETTING PARENTS ON BOARD THE MOBILE TRAIN

Mobile learning may be a new frontier to you, but it might be even more foreign to parents who don't work in the field of education and technology. To allay any potential concerns about allowing devices in the classroom, or to thrill them — some may be excited at the thought that their children will be mastering digital skills — consider outlining your academic goals and policies when it comes to cell phones, tablets, and other devices. Be clear about expectations, financial and otherwise, so parents can support their children at home. And consider polling parents for their favorite apps — they, too, may be able to participate in your vision of connected and interactive learning.

OTHER RESOURCES ON BYOD AND THE DIGITAL DIVIDE

The Innovative Educator encourages asking the salient questions about BYOD: bit.ly/Ponf7c.

MindShift covers technology revolutionizing education and shares “How to Launch a Successful BYOD Program”: bit.ly/OVykhFH.

Georgia's Forsyth County Schools is a public school district that has been implementing a BYOT program. They share valuable resources online: bit.ly/NPpdfRt.

To address the issue of equity, see Edutopia's “Digital Divide Resource Roundup”: bit.ly/rDINOa.

Some questions you may hear from parents:

1. What types of devices are you allowing?
2. What if my child doesn't have any of the gadgets you plan to use?
3. Will it cost us anything?
4. Are these devices really necessary to your curriculum? How do they add to, or improve, learning in the classroom?
5. Will the knowledge my child gains become obsolete as apps morph over time?
6. How can I help my child become a responsible user of mobile devices?

Some articles parents may benefit from reading:

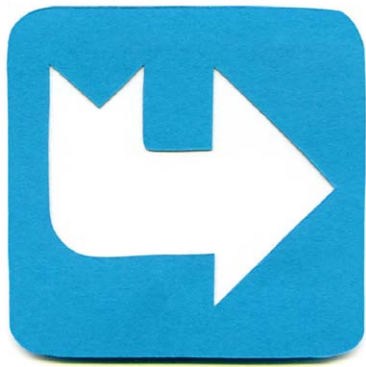
“Making the Case for Mobile Computing” (Education Week) bit.ly/RQZggu

“Amidst a Mobile Revolution in Schools, Will Old Teaching Tactics Work?” (MindShift) hbit.ly/HizkID

“Expert Interview — The Joan Ganz Cooney Center on Mobile Learning,” (Common Sense Media) bit.ly/PMZVsv

“How the iPad Can Transform Classroom Learning,” (Edutopia) bit.ly/NhLKNx

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MOBILE DEVICES FOR LEARNING

ABOUT EDUTOPIA

Edutopia is produced by The George Lucas Educational Foundation and highlights what works in education. We are a nonprofit operating foundation dedicated to improving K-12 learning by documenting, disseminating, and advocating for innovative strategies that prepare students to thrive in their future education, careers, and adult lives.

Through our award-winning website, videos, and growing online community, Edutopia is supporting and empowering education reform by shining a spotlight on real-world solutions and providing proven strategies, tools, and resources that are successfully changing how our children learn.

To find and share solutions, visit Edutopia.org.

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IDENTIFY key attributes of successful learning environments



BRIDGE THE GAP between those who are struggling and those who have solutions



IMPROVE ONLINE TOOLS AND RESOURCES for educators to collaborate and share with one another



HIGHLIGHT DISTRICTS AND SCHOOLS that have impactful and replicable solutions



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