TECHNOLOGY FOR TEACHING AND LEARNING: TOOLS YOU CAN USE RIGHT NOW

At the computer by Lars Plougmann https://www.flickr.com/photos/criminalintent/5403052781/
Attribution, Share A like (http://creativecommons.org/licenses/by-sa/2.0/)
Photo Attribution by PhotosForClass.com

Twyman, NAC2015
THE PLAN FOR TODAY

- EdTech & Evidence
- Evaluation Rubrics
- Hands On App Reviews
- Learning Management Systems
- Creating Your Own
- Hardware
- Curation & Review Sites
- Staying Informed
WHAT WE HOPE TO COVER
apps  resources  evidence  demos  data
accessibility  safety

WHAT ALSO SHOULD BE CONSIDERED
device type
ownership
tech plan
procurement

os features  prof. dev.
cost-benefit
full privacy/security
learner interest & ability
Go to: kahoot.it
No need to download app
Type in a nickname
ED TECH TO ENHANCE
TEACHING & LEARNING
IS TECHNOLOGY EFFECTIVE?

- To do what?
- With whom? By whom?
- Under what conditions?
- With what learning outcomes? (compared to...?)
Use of Technology in Interventions for Children with Autism

Tina R. Goldsmith
Linda A. LeBlanc
Western Michigan University

A growing number of studies have investigated diverse applications of technology-based interventions with children with autism. The purpose of this paper is to review the growing empirical support for the efficacy of technology-based interventions with children with autism and to recommend future directions for research. This review will focus on five examples of technology introduced as a temporary instructional aid to be removed once the goal of behavior change has been met: (a) tactile and auditory prompting devices, (b) video-based instruction and feedback, (c) computer-aided instruction, (d) virtual reality, and (e) robotics. Future directions for research and practice with each technology are discussed.

Keywords: autism; technology-based interventions; computer-aided instruction; virtual reality; robotics.
A NON-SCIENTIFIC CONSIDERATION OF THE EVIDENCE FOR MOST APPS

Amount

more

less

Opinion  PerObs  AB  SSD  RCT

Type

Real-World Studies (RCTs) vs. Other Studies (SSD)
ACKNOWLEDGEMENT OF EVIDENCE


proactivespeech.wordpress.com/2012/10/10/ipad-apps-can-support-evidence-based-practice/

PAUCITY OF PUBLISHED RESEARCH


Medical apps for smartphones: Lack of evidence undermines quality and safety
Evidence Based Medicine (2013)
EVIDENCE OF EFFECTIVENESS

PAUCITY OF PUBLISHED RESEARCH
Active Student Responding
  choral responding
  guided notes
  response cards
Behavioral Momentum
Behavioral Objectives
Chaining
  backward, forward
  total task
Contingent Attention & Approval
Contingency Contract/Behavior Contract
Data-based Decision Making
Differential Reinforcement
Errorless Learning
Exclusion
Feedback (Immediate)
Fluency
Functional Behavior Analysis/Assessment
General Case/Multiple Exemplar Training
Generalization
Group Contingencies (GBG)
  dependent
  independent
  interdependent
Incidental Teaching
Modeling and Imitation
Observational Learning
Planned Ignoring
Premack Principle
Public Posting
Priming, Prompting, and Fading
Reinforcement Schedules
Response Cost
Shaping
Stimulus Control Procedures
Stimulus Discrimination Procedures
Task Analysis
Time Delay
Timeout
Token Economy

EVIDENCE BASED TEACHING KERNELS

EMBRY & BIGLAN (2008); TWYMAN (2014)
MINIMAL “EB” CRITERIA FOR APPS

- Clear and Relevant Learning Objectives
- Clear Contingent Feedback
- Instruction that adapts
- Mastery-Based
- High Rates of Active, Meaningful Responding
- Measurement, Performance Reports, Actionable Data
- Attention to Principles

Adapted from Mahon (2014)
"If research-tested programs are not available, then use those informed by evidence and measure, measure, measure."
GOOD INSTRUCTION IN ACTION

HEADSPROUT EARLY READING
# RUBRICS FOR EVALUATING APPS

<table>
<thead>
<tr>
<th></th>
<th>4</th>
<th>3</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4</strong></td>
<td>The app’s focus has a strong connection to the purpose for the app and appropriate for the student</td>
<td>The app’s focus is related to the purpose for the app and mostly appropriate for the student</td>
<td>Limited to purpose not beneficial to student</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>App offers complete flexibility to alter content and settings to meet student needs</td>
<td>App offers some flexibility to alter content and settings to meet student needs</td>
<td>App provides some adjustability but not necessarily meet student needs</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>Student is provided specific feedback</td>
<td>Student is provided feedback</td>
<td>Student is provided feedback</td>
</tr>
<tr>
<td><strong>1</strong></td>
<td>App encourages the use of higher order thinking skills including creating, evaluating, and analyzing</td>
<td>App facilitates the use of higher order thinking skills including evaluating, analyzing, and applying</td>
<td>App minimizes higher order thinking skills</td>
</tr>
<tr>
<td><strong>0</strong></td>
<td>Student can launch and utilize independently</td>
<td>Student needs to have a teacher show or model how to use the app</td>
<td>Student needs to have a teacher show or model how to use the app</td>
</tr>
</tbody>
</table>

**Purpose for App:**
# Educational App Evaluation Rubric

<table>
<thead>
<tr>
<th>Purpose for App:</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Relevance</strong></td>
<td>The app’s focus has a strong connection to the purpose for the app and appropriate for the student</td>
<td>The app’s focus is related to the purpose for the app and mostly appropriate for the student</td>
<td>Limited connection to the purpose for the app and may not be appropriate for the student</td>
<td>Does not connect to the purpose for the app and not appropriate for the student</td>
</tr>
<tr>
<td><strong>Customization</strong></td>
<td>App offers complete flexibility to alter content and settings to meet student needs</td>
<td>App offers some flexibility to alter content and settings to meet student needs</td>
<td>App offers limited flexibility to adjust content and settings to meet student needs</td>
<td>App offers no flexibility to meet student needs</td>
</tr>
<tr>
<td><strong>Feedback</strong></td>
<td>Student is provided specific feedback</td>
<td>Student is provided feedback</td>
<td>Student is provided limited feedback</td>
<td>Student is not provided feedback</td>
</tr>
<tr>
<td><strong>Thinking Skills</strong></td>
<td>App encourages the use of higher order thinking skills including creating, evaluating, and analyzing</td>
<td>App facilitates the use of higher order thinking skills including evaluating, analyzing, and applying</td>
<td>App facilitates the use of mostly lower order thinking skills like understanding and remembering</td>
<td>App is limited to the use of lower order thinking skills like understanding and remembering</td>
</tr>
<tr>
<td><strong>Usability</strong></td>
<td>Student can launch and operate the app independently</td>
<td>Student needs to have a teacher show or model how to operate the app</td>
<td>Student needs to be cued each time the app is used</td>
<td>App is difficult to operate or crashes often</td>
</tr>
<tr>
<td><strong>Engagement</strong></td>
<td>Student is highly motivated to use the app</td>
<td>Student uses the app as directed by the teacher</td>
<td>Student perceives app as “more schoolwork” and may be off-task when directed to use the app</td>
<td>Student avoids the use of the app and might complain when its use is required</td>
</tr>
<tr>
<td><strong>Sharing</strong></td>
<td>Specific performance summary or student product is saved in app and can be exported to the teacher or for an audience</td>
<td>Performance data or student product is available in app but exporting is limited and may require a screenshot</td>
<td>Limited performance data or student product is not accessible</td>
<td>No performance summary or student product is saved</td>
</tr>
</tbody>
</table>

*Rubric based on one edited by Kathy Schrock and originated by Harry Walker*
### ievaluate app Rubric

**Goal:** What goal from students IEP/504 does this app need to support?

<table>
<thead>
<tr>
<th>Name of App:</th>
<th>developer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content / Topic</td>
<td>developer Website:</td>
</tr>
<tr>
<td>Date reviewed</td>
<td>Version:</td>
</tr>
<tr>
<td>Review by:</td>
<td>Last up date:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Domain</th>
<th>1 Weak Quality</th>
<th>2 Quality</th>
<th>3 Good Quality</th>
<th>4 High Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curriculum Connection</td>
<td>Does not meet expectation</td>
<td>Limited or narrow scope of the topic. Under developed.</td>
<td>Skills or concept are practiced and reinforced. Limited level of consideration.</td>
<td>Very strong connection to the skill or concept being practiced. Levels of consideration offered.</td>
</tr>
<tr>
<td>Type of Skills practices</td>
<td>No skill practice only “flashcard” drill</td>
<td>Skills are practiced in gaming format.</td>
<td>Simulated learning environment (virtual tasks). Scaffolds activities (Beginner - Advance)</td>
<td>Problem based learning with simulated environment. Program monitors and advances difficulty.</td>
</tr>
<tr>
<td>Age and Grade Level</td>
<td>Level is not appropriate for audience. Not suitable for age or grade level. Directions are incomplete or inadequate</td>
<td>Level is often too easy or difficult for target audience. Features unsuitable material. Directions are unclear.</td>
<td>Level is appropriate but some portions maybe to easy or difficult. Most directions are clear but some are confusing.</td>
<td>Level is appropriate for target audience (age and grade). Directions are clear and complete.</td>
</tr>
<tr>
<td>Languages</td>
<td>More than one language</td>
<td>2-3 languages</td>
<td>4-5 languages</td>
<td>6 or more languages</td>
</tr>
<tr>
<td>Adjustable levels</td>
<td>Only 1 level</td>
<td>2-3 levels</td>
<td>4-5 levels</td>
<td>More than 5 levels</td>
</tr>
<tr>
<td>Prompts</td>
<td>No feedback offered moves forward with correct or incorrect responses</td>
<td>Prompt is limited to indicating wrong answer. Student needs to get it right to move forward</td>
<td>Prompt is specific - pre-set number of tries (can’t edit) before student moves forward</td>
<td>Prompt is specific - can set number of tries - there is a tutorial to help student</td>
</tr>
<tr>
<td>Ease of Use</td>
<td>Very difficult to use. Limited or no instructions. Student needs support on every use</td>
<td>Student needs to be cued through the process.</td>
<td>Student needs support (model) from adult or another peer</td>
<td>Intuitive student can figure out independently</td>
</tr>
<tr>
<td>Engagement</td>
<td>Does not meet expectation</td>
<td>Held the individual attention for more than 2-3 minutes</td>
<td>Held the individual attention for more than 5 minutes</td>
<td>Held the individual attention for more than 10 minutes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Domain</th>
<th>1 Weak Quality</th>
<th>2 Quality</th>
<th>3 Good Quality</th>
<th>4 High Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customization</td>
<td>None</td>
<td>Can turn prompts off and music</td>
<td>Add your own items and prompts</td>
<td>All features are customizable including fonts.</td>
</tr>
<tr>
<td>Alternative Access</td>
<td>Has no access to alternative sources</td>
<td>Specific interface access and works consistently</td>
<td>App works with at least 2 access tools works consistently</td>
<td>App works with 3 or more access tools. Is consistent.</td>
</tr>
<tr>
<td>Data Collected</td>
<td>No data offered.</td>
<td>Data is collected in percentage only. Data cannot be printed or stored.</td>
<td>Data is collected. Number of correct against total attempts. Can be printed.</td>
<td>Data is collected. Number of correct and incorrect responses against total attempts. Can be stored and printed.</td>
</tr>
</tbody>
</table>

**Subtotal from this page:**

**Total:**

**Rating:** Suitable for specific use

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**Modified on:** 201412
## Educational App Evaluation Checklist

**App Name:**

**Purpose for App:**

<table>
<thead>
<tr>
<th></th>
<th>Use of app is relevant to the purpose and student needs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Help or tutorial is available in the app</td>
</tr>
<tr>
<td></td>
<td>Content is appropriate for the student</td>
</tr>
<tr>
<td></td>
<td>Information is error-free, factual, and reliable</td>
</tr>
<tr>
<td></td>
<td>Content can be exported, copied, or printed</td>
</tr>
<tr>
<td></td>
<td>App’s settings and/or content can be customized</td>
</tr>
<tr>
<td></td>
<td>Customized content can be transferred to other devices</td>
</tr>
<tr>
<td></td>
<td>History is kept of student use of the app</td>
</tr>
<tr>
<td></td>
<td>Design of app is functional and visually stimulating</td>
</tr>
<tr>
<td></td>
<td>Student can exit app at any time without losing progress</td>
</tr>
<tr>
<td></td>
<td>Works with accessibility options like VoiceOver and Speak Selection</td>
</tr>
<tr>
<td></td>
<td>App is free of charge</td>
</tr>
<tr>
<td></td>
<td>No in-app purchases are necessary for intended use of app</td>
</tr>
<tr>
<td></td>
<td>App loads quickly and does not crash</td>
</tr>
<tr>
<td></td>
<td>App contains no advertising</td>
</tr>
<tr>
<td></td>
<td>App has been updated in the last 6 months</td>
</tr>
<tr>
<td></td>
<td>App promotes creativity and imagination</td>
</tr>
<tr>
<td></td>
<td>App provides opportunities to use higher order thinking skills</td>
</tr>
<tr>
<td></td>
<td>App promotes collaboration and idea sharing</td>
</tr>
<tr>
<td></td>
<td>App provides useful feedback</td>
</tr>
</tbody>
</table>

**Total ✓s**  The more checks, the better the app is for education

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This checklist is based on one originated by Palm Beach County Schools & Edudemic.com
CRITICAL EVALUATION OF AN CONTENT-BASED IPAD/IPOD APP
©2011-12. Kathleen Schrock (kathy@kathyschrock.net)
iPads in the Classroom site: http://linkyy.com/ipad

What is the title of the app? _____________________________________________ Cost: ___________
Creator of the app ________________________________ iTunes URL: _________________________
Content area(s): _______________________________________________ Grade level(s): ____________

<table>
<thead>
<tr>
<th>Content and components of the app</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Curriculum connection</strong>: Are the skills reinforced connected to targeted skill/concept?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Authenticity</strong>: Are skills practiced in an authentic format/problem-based environment?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Feedback</strong>: Is feedback specific and result in improved student performance?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Differentiation</strong>: Does the app offers flexibility to alter settings to meet student needs?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>User friendliness</strong>: Can students launch and navigate within the app independently?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Student motivation</strong>: Are students motivated to use the app and select it to use often?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reporting</strong>: Is assessment/summary data available electronically to the student/teacher?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sound</strong>: Does the music/sound in the app add to the educational aspects of the content?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Instructions</strong>: Are the instructions included within the app helpful to the student?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Support page</strong>: Does the app’s supporting Web page provide additional useful information?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Level(s) of Bloom’s Taxonomy addressed with this app (check all that apply)

- [ ] Remembering
- [ ] Understanding
- [ ] Applying
- [ ] Analyzing
- [ ] Evaluating
- [ ] Creating

Summary of the app

Using the data you have collected above, explain why you would or would not recommend this application for use in the classroom. Include any specific ideas you have for its use.
Balefire Labs App Evaluation Worksheet

**Student Feedback** -
Immediate feedback is given following correct answers and errors (or series of answers as in “spelling words,” for example). Feedback for correct answers must be noticeably different from feedback given for errors. “Nothing” happening following an error is not sufficient to count as feedback. The feedback may be audio, visual, or a combination of the two.

**Adapting Difficulty** -
The difficulty of the material increases and/or decreases automatically, depending on the learner’s performance. This happens on-the-fly, without the learner or an adult needing to change settings on the app.

**Mastery-Based** -
The learner is required to achieve mastery of the current skill set before being allowed to progress to the next level. The switch to the next level is explicit with, for example, a visual unlocking onscreen of a new module or other similar cue.

**High Rates of Relevant Student Responding** -
The app provides plenty of opportunities for the learner to practice the skills related to the learning objective. To meet this criterion, there must be a minimum of one meaningful learner interaction required on every page presented by the app.

**Performance Reports with Actionable Data** -
Reports are included that have learner performance data with enough detail for a parent or teacher to target problem areas off of the computer. For example, if the app targets single digit addition problems, the report should include details of accuracy with each numeral, not a simple percent correct for the whole skill category.
RUBRICS FOR EVALUATING APPS
http://learninginhand.com/blog/ways-to-evaluate-educational-apps.html

Education App Evaluation Rubric

Education App Evaluation Checklist

Critical Evaluation of App Content
How to Respond:

Start a new text message.

1. In the To: field
   Type **22333**

2. Message:
   type #
   then add a space
   then type **your answer**

PollEv.com/jstwy
What ___________ apps do you use/prefer?

Send text To: 22333

data collection 75940 your answer

social skills 93828 your answer

language 93830 your answer

“academic” 93829 your answer

organizational 80703 your answer
APPS FOR DATA COLLECTION
Some Available iOS Data Apps

- ABC Data Pro
- Behavior Tracker Pro
- Skill Tracker Pro
- D.A.T.A.
- Catalyst
- Tally Apps

Courtesy of Ryan L. O’Donnell
Joshua K. Pritchard
“Data tools, online gradebooks and educational dashboards are no longer optional "perks" for a teacher--they are a necessity.”

–PETER BENCIVENGA, DATACATION
APPS FOR
ORGANIZATION & MANAGEMENT
TEACH ME SKILLS

www.operantsystems.com

www.acenecc.org

www.abpathfinder.com
- Student Feedback?
- Adapting Difficulty?
- Mastery-Based?
- High Rates of Relevant Student Responding?
- Performance Reports with Actionable Data?
APPS FOR

LANGUAGE

Simple
Compound
Complex

Simple
Compound
Complex
AUGMENTED COMMUNICATION SYSTEMS

Proloqo2go

OneVoice - AAC

Grace App

www.friendshipcircle.org/blog/2011/03/09/7-special-needs-apps-in-the-google-android-market/
PICTURE EXCHANGE COMMUNICATION SYSTEM

PECS

Check out our newest iPad app
PECS® IV+
New Digital PECS Book!
APPS FOR
SOCIAL SKILLS
TECHNOLOGY TO ASSIST BEHAVIOR MANAGEMENT

WWW.CLASSDOJO.COM
MAKING FRIENDS APP

Help your child learn social skills

Start!

http://www.makingfriendsapp.com
Making Friends Park is designed to help kids with autism learn playground social skills.

www.makingfriendsapp.com
Let's calm our feelings down.
Hey human being, yes you, the one who is playing this game and controlling the avatar! Breathe with us!

Emotional IQ Game

When you breathe in, hold it a moment and tap the screen when your lungs are full of air. Then let it out slowly.

IF... (IF YOU CAN)
LEARNING TECHNOLOGY

voice thread

chatterpix  blabberize.com  www.voki.com
APPs FOR

"ACADEMICS"
Autism Learning Games: Camp Discovery
By Center for Autism and Related Disorders

www.getshinythings.com/quickmath
APPs FOR

“ACADEMICS”

TODO

Learning Bundle

http://locomotivelabs.com

Handouts

http://handouts.in
APPS FOR
ORGANIZATION & MANAGEMENT
ENHANCING TEACHING AND LEARNING
CREATING DTT SESSIONS

GuidedVideo
http://guidedvideo.com
Who’s wearing the blue dress?

Record responses on pictures with:

everyslide https://everyslide.com
CONSIDERATIONS

ACCESSIBILITY & ADAPTABILITY

www.w3.org/WAI/
ALTERNATIVE WAYS TO CONTROL THE DEVICE

SETTINGS & GESTURES

Zoom
Speak Selection
Guided Access
Switch Control
Assistive Touch
Access. Shortcuts
LEAP Motion
Special Education

We believe that technology can provide great learning tools for all learning abilities. Every Mac and iOS device comes standard with innovative accessibility features.
Matthew Goodwin is using sensors, such as the device shown here on his wrist, to accurately monitor anxiety and repetitive behaviors in children with autism.

ENHANCING TEACHING AND LEARNING

AUGMENTED & VIRTUAL REALITY
TOOLS TO ENHANCE TEACHING AND LEARNING

LEAP MOTION
SWIVL (Remote Observation)
“Implementation strategies are an essential component to all educational technologies.”
In-app purchases
In-app links to social media
In-app advertisements
Push Notifications or Location Services
CURATION AND REVIEW SITES

www.inov8-ed.com
CURATION AND REVIEW SITES

teacherswithapps

teacherswithapps.com

http://a4cwsn.com/tag/aba/

Opinion
CURATION AND REVIEW SITES

BRIDGING APPS

padlet.com/ejones9/sxswautismapps/wish/22667568

Opinion; Crowd Source
CURATION AND REVIEW SITES

The Children's Institute Tech Review Blog
www.tcischool.org

“Expert” Opinion
CURATION AND REVIEW SITES

www.autismspeaks.org/autism-apps

“Expert” Opinion
CURATION AND REVIEW SITES

APPitic
APP LISTS FOR EDUCATION

www.appitic.com

“Expert” Opinion; Criteria Based; “Tested”
CURATION AND REVIEW SITES

www.graphite.org

for example

“My Video Schedule

“Expert” Opinion; Criteria Based
CURATION AND REVIEW SITES

http://www.spectronicsinoz.com

“Expert” Opinion; Criteria Based
CURATION AND REVIEW SITES

https://www.edsurge.com/products/

“Expert” Opinion; Criteria Based
CURATION AND REVIEW SITES

http://appcrawlr.com
CURATION AND REVIEW SITES

“Expert” Opinion; Criteria Based
MOBILE APPS FOR THE CLASSROOM

 Archived Webinar: www.centeril.org

Creating a Content Strategy for Mobile Devices in the Classroom

by Karen Mahon
EDSHELF

CURATION AND REVIEW SITES

www.edshelf.com

STEM

Quiz & Poll Creators – Active Responding

Assessment/Learning Analytics

Lesson Plan Resources – Learning

Common Core and Instructional Content

Mind Maps & Web Whiteboards

Presentation Creators

Screen Capture & Recording

Group Interactive Commenting & Editing (wPIP)

https://edshelf.com/profile/n0gkqt5/
Edsurge, Educlipper, Edshelf, Edutopia, Edudemic, Graphite, & Modern Lessons are often listed as go-to resources for learning about new educational technology.
STAYING INFORMED

www.scoop.it

Free Technology for Teachers
written by Richard Byrne

www.freetech4teachers.com

Educational Technology and Mobile Learning
A resource of educational web tools and mobile apps for teachers and educators

www.educatorstechnology.com