

A young child with short brown hair, wearing a blue and white striped shirt, is sitting in a red office chair at a desk. The child is looking intently at a large computer monitor on the left. The room is dimly lit, with light coming from a window in the background, creating a warm, focused atmosphere. The text "TECHNOLOGY FOR TEACHING AND LEARNING: TOOLS YOU CAN USE RIGHT NOW" is overlaid in white capital letters on a dark horizontal band across the middle of the image.

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



Janet S. Twyman
UMass Medical School & the Center on Innovations in Learning

CIRCA 1990



FRED S. KELLER SCHOOL, YONKERS NY

A cartoon illustration of a female teacher with brown hair in a ponytail, wearing a yellow shirt and a large gold earring. She is smiling and pointing with a yellow chalk stick at a green chalkboard. The chalkboard has a brown frame and a small orange eraser on the left and a yellow eraser on the right. The name 'MARTIN' is written in the top left corner of the board. A list of topics is written on the board, each preceded by a small circle.

MARTIN

- EdTech & Evidence
- Evaluation Rubrics
- Hands On App Reviews
- Learning Management Systems
- Creating Your Own
- Hardware
- Curation & Review Sites
- Staying Informed

THE PLAN FOR TODAY

WHAT WE HOPE TO COVER

apps resources evidence demos
accessibility safety data



device type

ownership

tech plan

procurement

os features

prof. dev.

cost-benefit

full privacy/security

learner interest
& ability

WHAT ALSO
SHOULD BE
CONSIDERED

Kahoot!

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

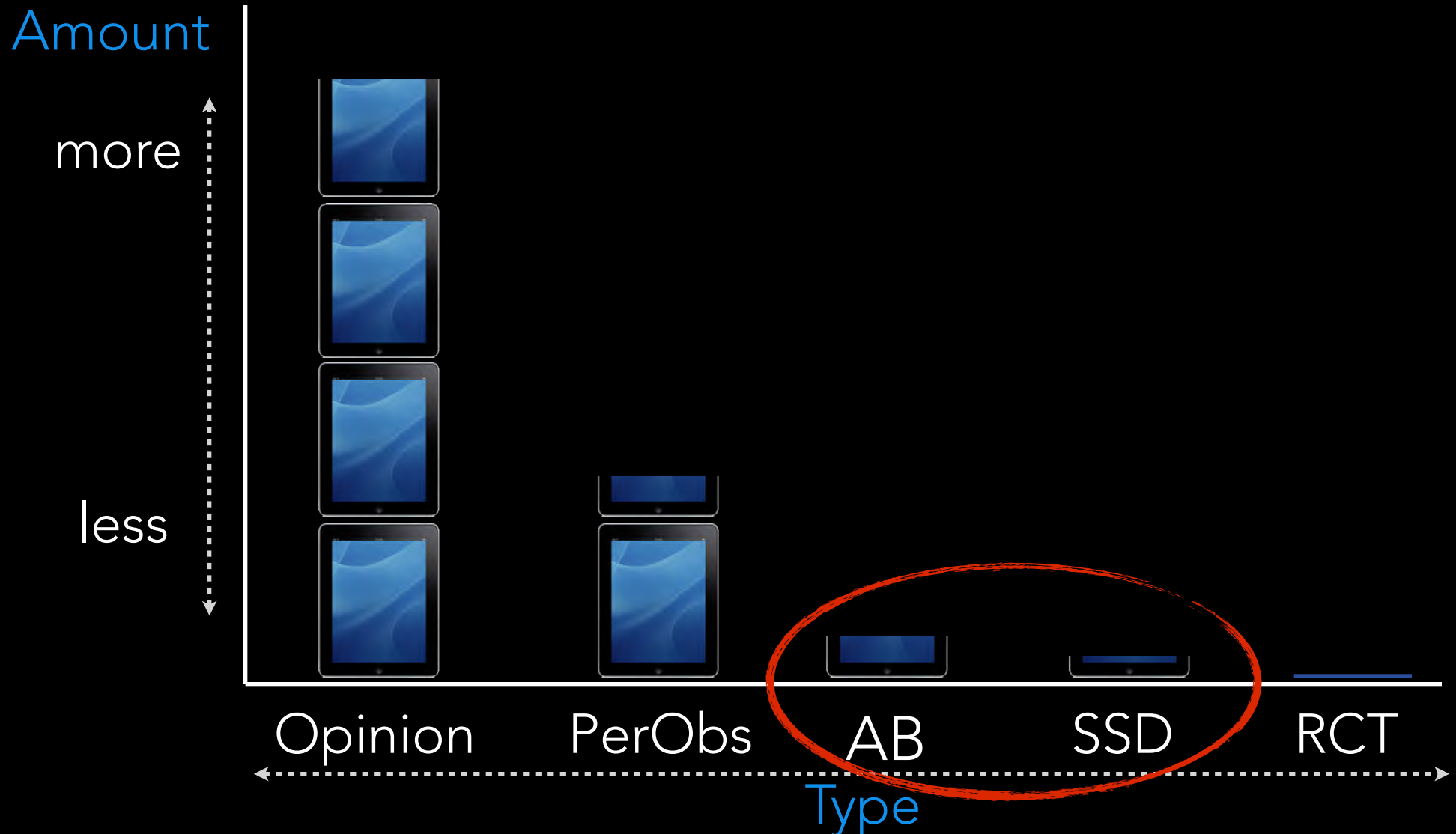
Western Michigan University

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.

<http://files.eric.ed.gov/fulltext/EJ848688.pdf>

A NON-SCIENTIFIC CONSIDERATION OF THE EVIDENCE FOR MOST APPS



ACKNOWLEDGEMENT OF EVIDENCE



[proactivespeech.wordpress.com/
2012/10/10/
ipad-apps-can-support-evidence-
based-practice/](http://proactivespeech.wordpress.com/2012/10/10/ipad-apps-can-support-evidence-based-practice/)

[http://smartyearsapps.com/
evidence-based-practice/](http://smartyearsapps.com/evidence-based-practice/)



EVIDENCE OF EFFECTIVENESS

PAUCITY OF PUBLISHED RESEARCH



Evaluation of evidence-based practices in online learning. US DOE (2010)

An introduction to the evaluation of learning technology. *Educational Technology & Society* (2000)



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

EVIDENCE OF EFFECTIVENESS

PAUCITY OF PUBLISHED RESEARCH



EVIDENCE BASED TEACHING KERNELS

LINDSLEY, KELLER, SKINNER



EVIDENCE BASED TEACHING KERNELS

EMBRY & BIGLAN (2008); TWYMAN (2014)

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

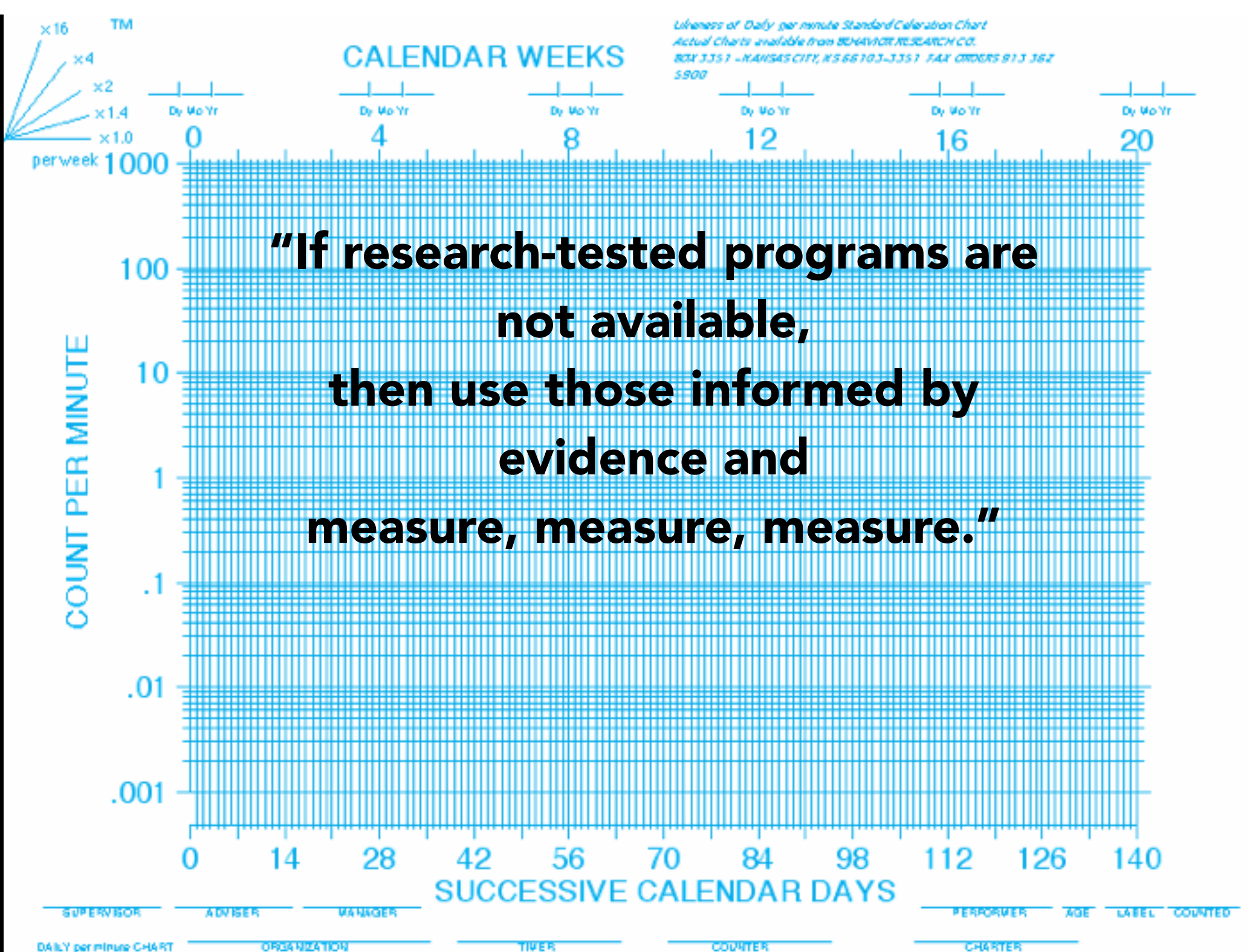
Time Delay

Timeout

Token Economy

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**



GOOD INSTRUCTION IN ACTION

HEADSPROUT EARLY READING



RUBRICS FOR EVALUATING APPS

Purpose for App:		4	3	
Relevance	The app's focus has a strong connection to the purpose for the app and appropriate for the student	The app's focus is related to the purpose for the app and mostly appropriate for the student	Limited purpose not for student	
Customization	App offers complete flexibility to alter content and settings to meet student needs	App offers some flexibility to alter content and settings to meet student needs	App adjusted to meet	
Feedback	Student is provided specific feedback	Student is provided feedback	Student feedback	
Thinking Skills	App encourages the use of higher order thinking skills including creating, evaluating, and analyzing	App facilitates the use of higher order thinking skills including evaluating, analyzing, and applying	App allows user to	
	Student can launch and use independently	Student needs to have a teacher show or model how to use the app	Student	

App Name: _____

Educational App Evaluation Rubric

Purpose for App: _____

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

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

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

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

Educational App Evaluation Checklist

App Name:

Purpose for App:



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

Educational App Evaluation Checklist

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CRITICAL EVALUATION OF AN CONTENT-BASED IPAD/IPOD APP



©2011-12. Kathleen Schrock (kathy@kathyschrock.net)

iPads in the Classroom site: <http://linky.com/ipad>

What is the title of the app? _____ Cost: _____

Creator of the app _____ iTunes URL: _____

Content area(s): _____ Grade level(s): _____

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

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.

- ☐ Student Feedback?
- ☐ Adapting Difficulty?
- ☐ Mastery-Based?
- ☐ High Rates of *Relevant* Student Responding?
- ☐ Performance Reports with Actionable Data?

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- ☐ Student Feedback?
- ☐ Adapting Difficulty?
- ☐ Mastery-Based?
- ☐ High Rates of *Relevant* Student Responding?
- ☐ Performance Reports with Actionable Data?



Poll Everywhere

1

New Message Cancel

To: 22333

75940 data pro Send

2

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



Poll Everywhere

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**

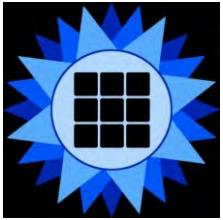
organizational **80703 your answer**

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



“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



BEHAVIORAL

LEARNING MGMT. SYSTEMS

TEACHME SKILLS

www.operantsystems.com



www.acenecc.org



www.abpathfinder.com

HANDS ON APP REVIEWS



- ☐ Student Feedback?
- ☐ Adapting Difficulty?
- ☐ Mastery-Based?
- ☐ High Rates of *Relevant* Student Responding?
- ☐ Performance Reports with Actionable Data?

APPS FOR

LANGUAGE

Simple

Compound

Complex

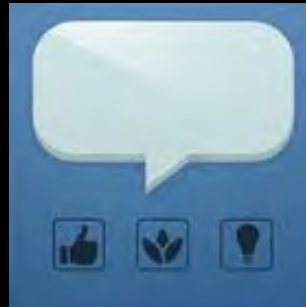
Compound-
Complex



AUGMENTED COMMUNICATION SYSTEMS



Proloquo2go



OneVoice - AAC

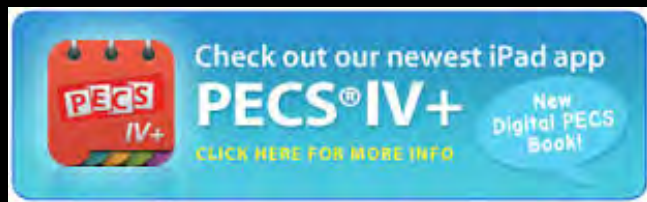


Grace App



PICTURE EXCHANGE COMMUNICATION SYSTEM

PECS



APPS FOR

SOCIAL SKILLS



WWW.CLASSDOJO.COM



DOJO

<http://www.makingfriendsapp.com>

MAKING FRIENDS APP



[About](#) [Blog](#) [Resources](#)

MAKING FRIENDS PARK

Help your child learn social skills

Start!





Making Friends Park is designed to help kids with autism learn playground social skills.

www.makingfriendsapp.com



<http://www.ifyoucan.org>

IF... (IF YOU CAN)



Emotional IQ Game



USING

LEARNING TECHNOLOGY



voice thread



chatterpix



blabberize.com



www.voki.com

APPS FOR

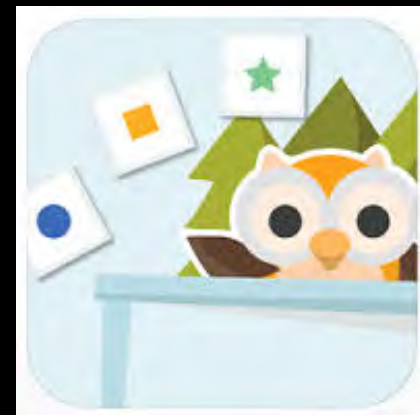
"ACADEMICS"



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



BEHAVIORAL

LEARNING MGMT. SYSTEMS

TEACHME SKILLS

www.operantsystems.com



www.acenecc.org



www.abpathfinder.com

TEACHING AND LEARNING

CREATING YOUR OWN



MARTIN

INTERACTIVE VIDEO CREATION

RAPT MEDIA



INTERACTIVE VIDEO CREATION



ENHANCING TEACHING AND LEARNING

CREATING DTT SESSIONS



GuidedVideo  ios

<http://guidedvideo.com>

Who's wearing the blue dress?



Record responses on pictures with:



<https://everyslide.com>

ADDITIONAL RESOURCES

HARDWARE



CONSIDERATIONS


ACCESSIBILITY & ADAPTABILITY



www.w3.org/WAI/

ALTERNATIVE WAYS TO CONTROL THE DEVICE

SETTINGS & GESTURES

A hand is shown in the foreground, palm facing the viewer, with fingers slightly spread. In the background, a tablet is visible, displaying a website with various elements like a header, a main content area with a large image, and a sidebar. The background is blurred, focusing attention on the hand and the tablet.

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

<https://www.apple.com/education/special-education/>



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.



SENSORS & WEARABLE DEVICES

AFFECTIVA

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



TOOLS TO ENHANCE TEACHING AND LEARNING

SWIVL (Remote Observation)



“Implementation strategies are an essential component to all educational technologies.”



CONSIDERATIONS

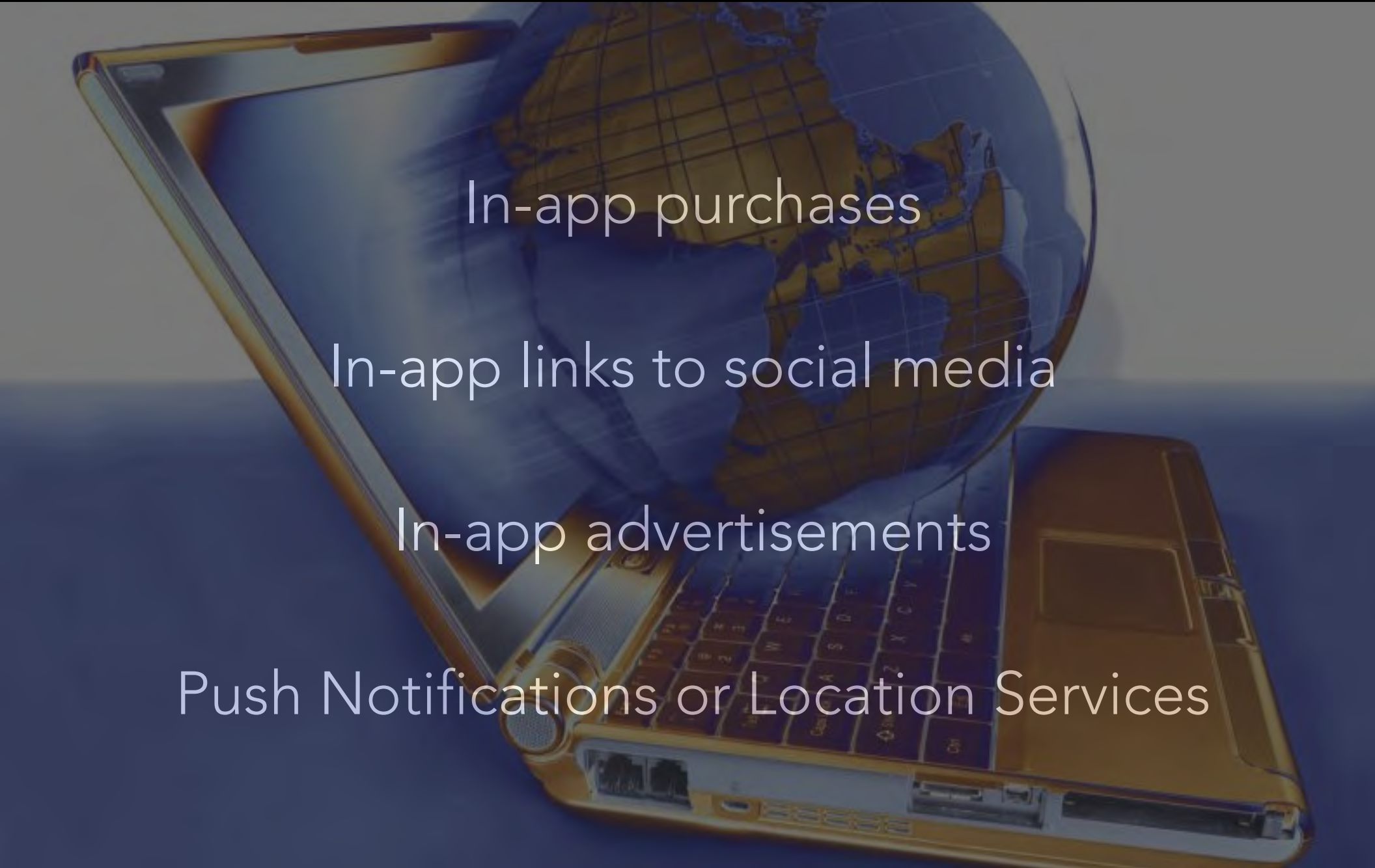
PROTECTION & PRIVACY

In-app purchases

In-app links to social media

In-app advertisements

Push Notifications or Location Services



FINDING APPS

CURATION & REVIEW SITES



Teaching and Learning - Digital Ed Tech Resources

CURATION AND REVIEW SITES



www.inov8-ed.com

CURATION AND REVIEW SITES

teacherswithapps

teacherswithapps.com



APPS FOR CHILDREN WITH SPECIAL NEEDS

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

Opinion

CURATION AND REVIEW SITES



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



www.appitic.com

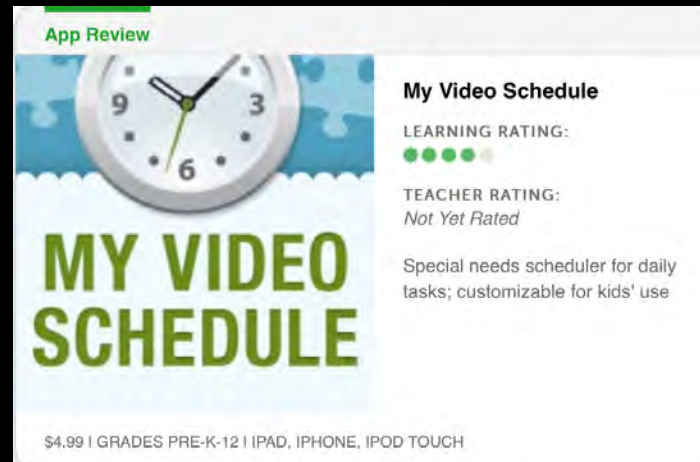


"Expert" Opinion; Criteria Based; "Tested"

CURATION AND REVIEW SITES

graphite

www.graphite.org



for example

“Expert” Opinion; Criteria Based

CURATION AND REVIEW SITES



<http://www.spectronicsinoz.com>

“Expert” Opinion; Criteria Based

CURATION AND REVIEW SITES

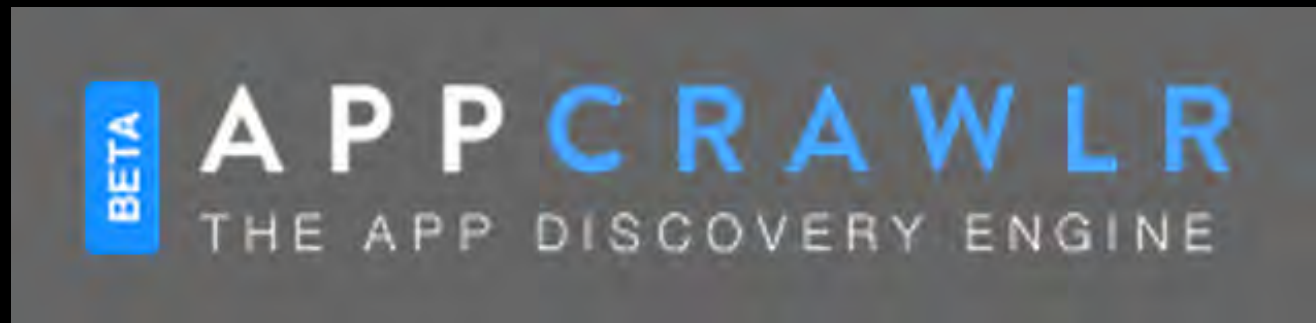
edSurge

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

“Expert” Opinion; Criteria Based

Teaching and Learning - Digital Ed Tech Resources

CURATION AND REVIEW SITES



<http://appcrawler.com>

CURATION AND REVIEW SITES



www.balefirelabs.com

“Expert” Opinion; Criteria Based

Feedback for Correct Responses

Error Feedback

Adapting Difficulty

Error Remediation

Mastery-Based Instruction

Frequent, Meaningful Interaction

Clearly-Stated Learning Objectives

Relevant Screen & Sound Use

Learner Support Available

Easy-to-Use Interface

Age-Appropriate Reading Level

Performance Reports

CENTER ON INNOVATIONS
IN LEARNING

MOBILE APPS FOR THE CLASSROOM

Archived Webinar:
www.centeril.org

Creating a Content Strategy for **Mobile Devices** in the **Classroom**



by
Karen Mahon

CURATION AND REVIEW SITES

EDSHELF

www.edshelf.com

The screenshot displays the Edshelf website interface, which is organized into a grid of categories. Each category is represented by a light gray box with a title, a collection of tool logos, and the curator's name, Janet Twyman. The categories shown are:

- STEM**: Includes logos for T, a green alien, and a cat. by Janet Twyman.
- Quiz & Poll Creators – Active Responding**: Includes logos for K!, a bar chart, TEACHER, a document, a poll, a green box, a circular arrow, and a book. by Janet Twyman.
- Assessment/Learning Analytics**: Includes logos for a bar chart, a network, Noiku, metryx, and gn. by Janet Twyman.
- Lesson Plan Resources – Learning**: Includes logos for read write think, a colorful swirl, BL, NL, a book, a green box, and READ WORKS. by Janet Twyman.
- Common Core and Instructional Content**: Includes logos for a green box, read write think, a triangle, gooru, Cc, KHAN, Brain POP, and Quiz let. by Janet Twyman.
- Mind Maps & Web Whiteboards**: Includes logos for a red box, a green box, a document, a puzzle, a green box, a blue box, a red box, and a white box. by Janet Twyman.
- Presentation Creators**: Includes logos for a blue box, a colorful swirl, a brown box, visme, emaze, a yellow box, a blue box, and a red box. by Janet Twyman.
- Screen Capture & Recording**: Includes logos for a blue box, a green box, a yellow box, a blue box, a blue box, and a blue box. by Janet Twyman.
- Group Interactive Commenting & Editing (wPIP)**: Partially visible at the bottom left.
- Tools**: Partially visible at the bottom right.

A dark gray banner at the bottom of the page contains the URL: <https://edshelf.com/profile/n0gkqt5/>

STAYING

INFORMED



STAYING INFORMED

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.freeteach4teachers.com

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

www.educatorstechnology.com

THANK YOU

