

Individualized, iPad-based math  
instruction – Does an external,  
proximal measure reveal differences  
in students' rates of learning?

DRAFT (2/1/2020)

*Final coming soon!*

**Mari Strand Cary, Ryann Crowley, Lina Shanley & Sam Choo**

**SREE Annual Conference**

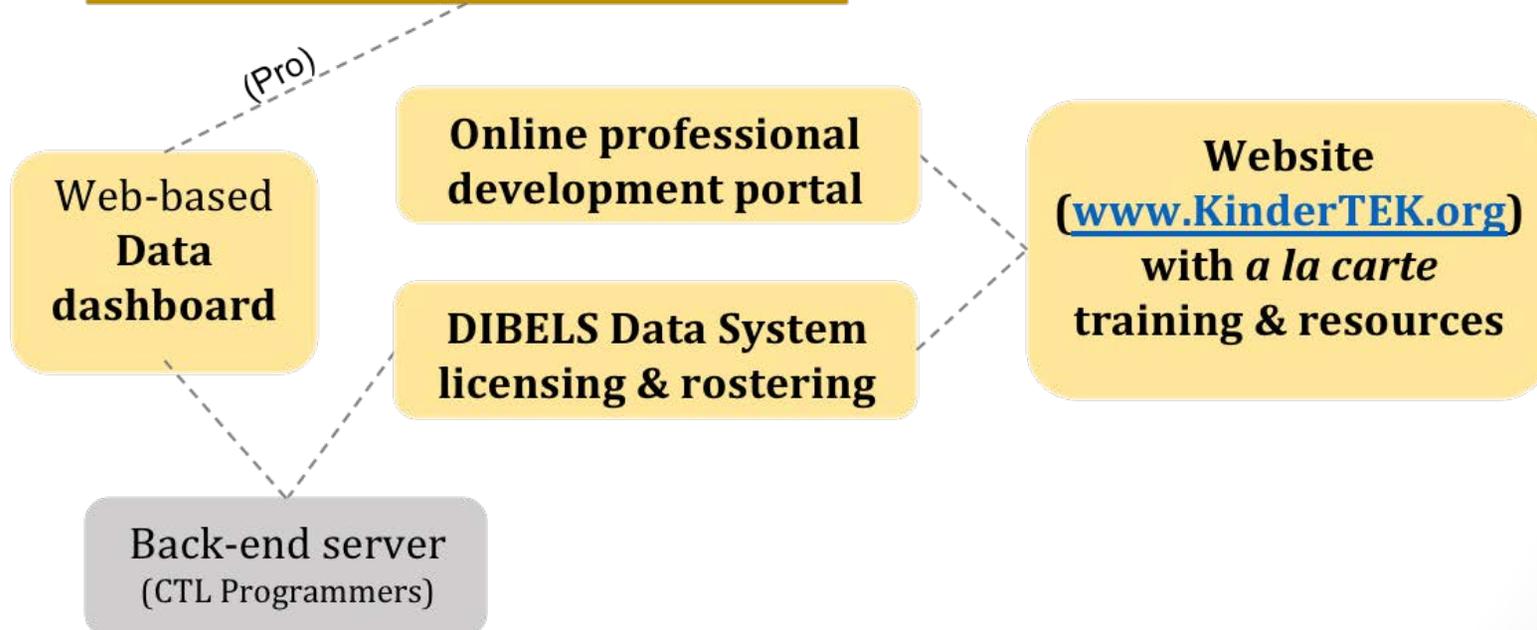
**March 2020**

# KinderTEK includes...

- iPad apps
  - Instruction (51 activities)
  - Reporting & management
  - Customizable delivery and student supports
- Data dashboard
  - Teachers & administrators
  - Researchers (fidelity checks)
- Website: [www.kindertek.com](http://www.kindertek.com)
- Implementation resource library



# KinderTEK system

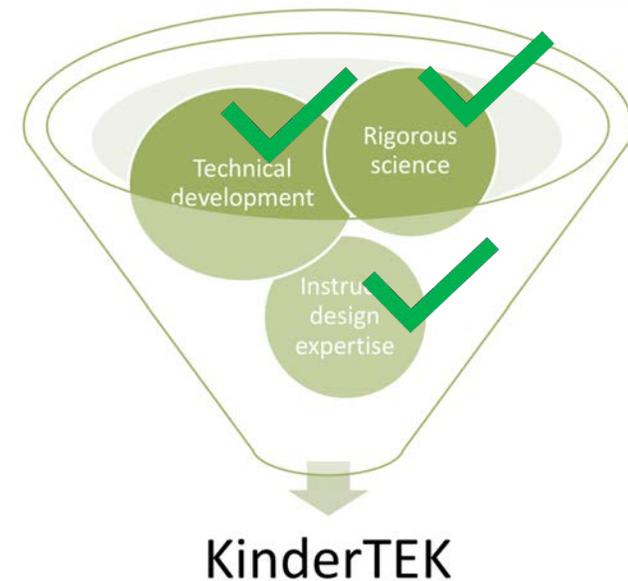


# Intended uses of KinderTEK:

- Intervention for early elementary students struggling with kindergarten math content
- Kindergarten math supplement
- Kindergarten readiness tool for preschoolers
- Positive, math-based screentime for kids at after school programs, daycares, or home



# KinderTEK's development approach:



## Plan

1. Tech partnership
2. User need(s)
3. Critical content / sound instructional design principles
4. Scope/sequence and presentation

## Iteratively Develop

1. Idea / discussion
2. Script / Mockup
3. In-house review
4. User review/test  
*(repeat 1-4, as needed)*
5. Extensive quality assurance

## Validate

1. Development studies
2. Feasibility studies
3. Pilot studies
4. Dissemination/Efficacy studies

Repeat with next study  
**(Tech is never done!)**

# Improving math instruction

Low-estimate by end of 2020 school year

## All users

5,322 students

206 teachers

94 schools

46 districts



# KinderTEK Research Projects

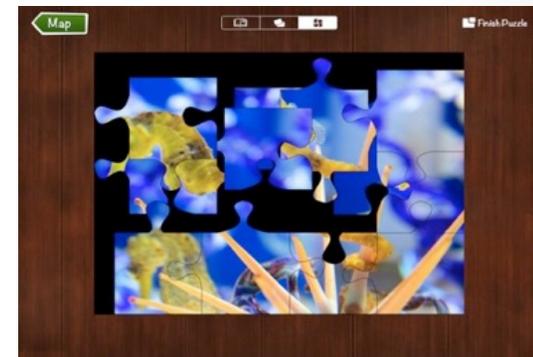
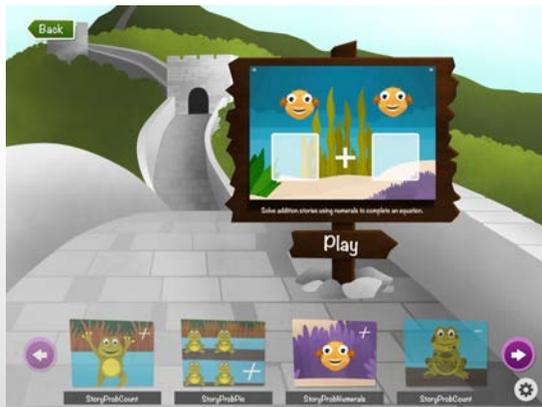


# Why is KinderTEK expected to be so effective?

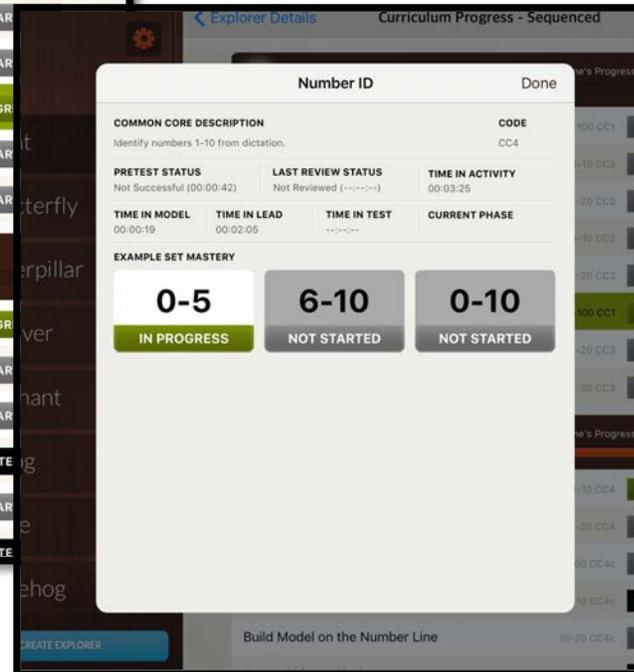
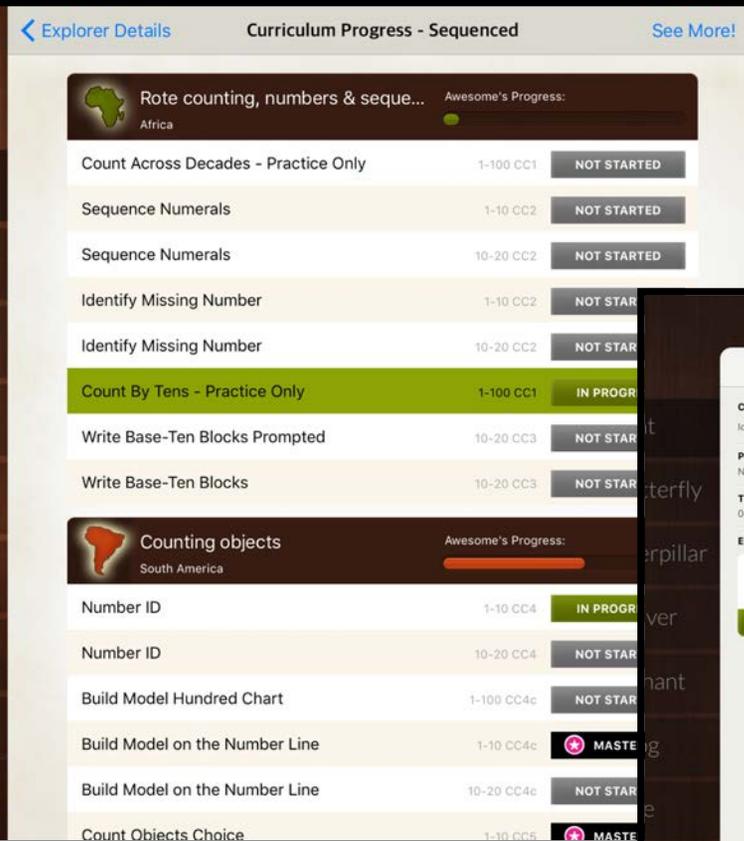
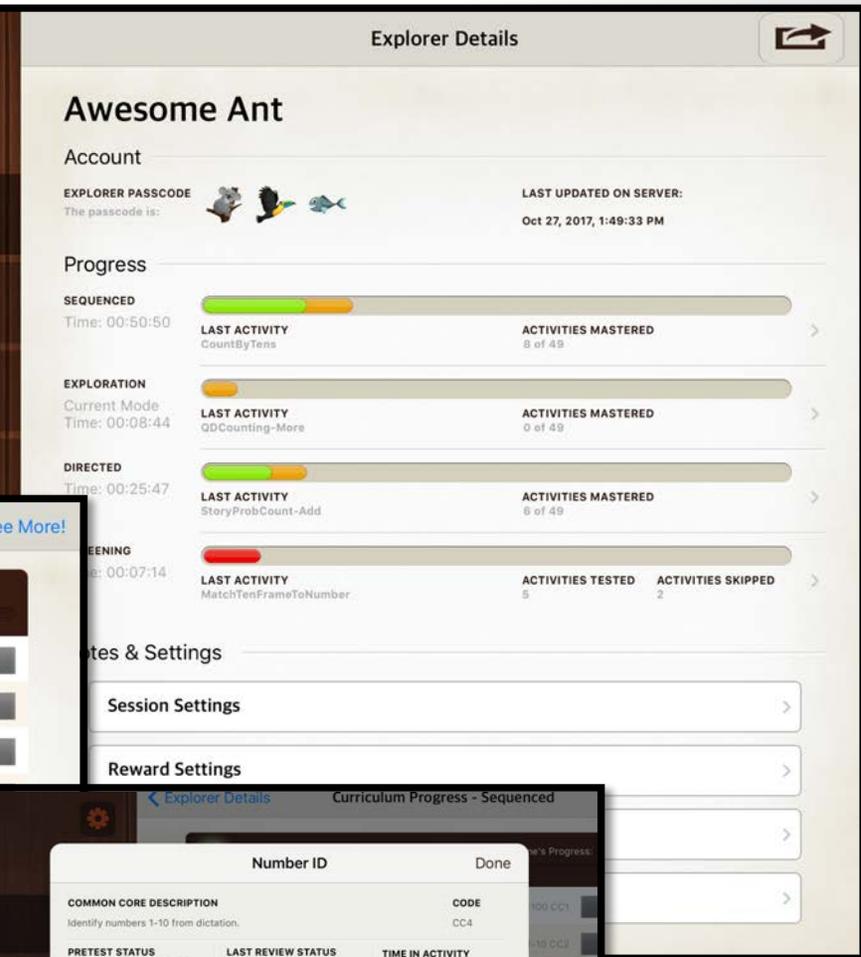
- Feasible (and fun!) for students and teachers



# Easy & fun to use!



# App reports



# Online data dashboard

Last refreshed: Jan 09, 2018 12:49:43 [Refresh Report](#)

[Students](#)
[Student Groups](#)
[Student Passcodes](#)
[Class Settings](#)
[Reports \(active students\) ▾](#)

## Activity status - All Students in Class

Mode: **Sequenced** [Export CSV](#) [Print](#)

[Students](#)
[Student Groups](#)
[Student Passcodes](#)
[Class Settings](#)
[Reports \(active students\) ▾](#)

## Standard status - All Students in Class

Mode: **Sequenced** [Export CSV](#) [Print](#)

**Counting & Cardinality**

Status Totals	CC1	CC2	CC3	CC4	CC5	CC6	CC7	OA2
Mastered in Pretest	0 (of 19)	1 (of 19)	1 (of 19)	0 (of 19)	1 (of 19)	0 (of 19)	1 (of 19)	1 (of 19)
Mastered in KTEK	5 (of 19)	0 (of 19)	0 (of 19)	0 (of 19)	0 (of 19)	0 (of 19)	0 (of 19)	0 (of 19)
In Progress	0 (of 19)	0 (of 19)	0 (of 19)	0 (of 19)	0 (of 19)	0 (of 19)	0 (of 19)	0 (of 19)
Skipped	0 (of 19)	0 (of 19)	0 (of 19)	0 (of 19)	0 (of 19)	0 (of 19)	0 (of 19)	0 (of 19)
Not Encountered	11 (of 19)	17 (of 19)	18 (of 19)	3 (of 19)	4 (of 19)	11 (of 19)	14 (of 19)	12 (of 19)

Students	CC1	CC2	CC3	CC4	CC5	CC6	CC7	OA2
Amazing Curis	Not Encountered	Not Encountered	Not Encountered	Not Yet Mastered	Not Yet Mastered	Not Yet Mastered	Not Encountered	
Amelia Cutiepie	Mastered in Pretest	Mastered in Pretest	Mastered in Pretest	Not Yet Mastered	Not Yet Mastered	Not Yet Mastered	Not Yet Mastered	
Amelia Adams	Skipped	Mastered in KTEK	Mastered in KTEK	Not Encountered	Not Encountered	Not Encountered	Not Encountered	
Amy Cutie	Mastered in Pretest	Mastered in Pretest	Mastered in Pretest	Not Yet Mastered	Not Yet Mastered	Not Yet Mastered	Not Yet Mastered	
Antsy Claus	Mastered in KTEK	Mastered in KTEK	Mastered in KTEK	Not Yet Mastered	Not Yet Mastered	Not Encountered	Not Encountered	
Captain Crunch	Skipped	Skipped	Mastered in KTEK	Not Yet Mastered	Not Yet Mastered	Not Encountered	Not Encountered	
Charlie Brown	Mastered in Pretest	Mastered in Pretest	Mastered in Pretest	Not Yet Mastered	Not Yet Mastered	Not Encountered	Not Encountered	
Christopher Robin	In Progress	Mastered in Pretest	Not Encountered	Not Yet Mastered	Not Yet Mastered	Not Encountered	Not Encountered	
Coco Puffs	Not Encountered	Not Encountered	Not Encountered	Not Yet Mastered	Not Yet Mastered	Not Encountered	Not Encountered	
Eli E	Mastered in Pretest	Reviewing	Mastered in Pretest	Not Yet Mastered	Not Yet Mastered	Not Yet Mastered	Not Encountered	
Emma Explorer	Reviewing	Reviewing	Reviewing	Not Encountered	Not Encountered	Not Encountered	Not Encountered	
Haley A	Reviewing	Mastered in KTEK	Mastered in Pretest	Not Yet Mastered	Mastered in Pretest	Not Yet Mastered	Mastered in Pretest	

**Class: AM**  
Total Student / Mastered Class

Last refreshed: Nov 15, 2017 10:50:32

[Active Students](#)
[Mastering Students](#)
[Student Groups](#)
[Student Passcodes](#)
[Class Settings](#)

### Standard status - All Students in Class

Status Totals	CC1	CC2	CC3	CC4	CC5	CC6	CC7	OA2
Mastered in Pretest	0 (of 7)							
Mastered in KTEK	0 (of 7)							
In Progress	0 (of 7)							
Skipped	0 (of 7)							
Not Encountered	7 (of 7)	0 (of 7)						

[Students](#)
[Diana Jolly](#)
[Eli E](#)
[Emma Explorer](#)
[Julie MacCann](#)
[Max Conzel](#)
[Mikaela Harrison](#)
[Oliver](#)
[Thomas Strick](#)



# Class: Terri's

Add Student

Test School / Terrific Teacher

Last refreshed: Jun 18, 2018 18:19:30

- Students
- Student Groups
- Student Passcodes
- Class Settings
- Reports (active students) ▾

## Students Progress and time spent progressing through KTEK.

Print

Name	Engagement Rate (Most Recent Day)	Sequenced Mode	Exploration Mode	Directed Mode	Screening Mode
Awesome Ant (Exploration Mode)	80%	72 Minutes	95 Minutes	44 Minutes	9 Minutes
Beautiful Butterfly (Exploration Mode)	49%	138 Minutes	14 Minutes	28 Minutes	39 Minutes
Curious Caterpillar (Exploration Mode)	93%	138 Minutes	27 Minutes	3 Minutes	15 Minutes
Dauntless Diver (Exploration Mode)	90%	26 Minutes	9 Minutes	0 Minutes	13 Minutes
Elegant Elephant (Exploration Mode)	33%	78 Minutes	40 Minutes	0 Minutes	46 Minutes
Fabulous Frog (Exploration Mode)	100%	62 Minutes	63 Minutes	4 Minutes	69 Minutes
Gallant Guide (Exploration Mode)	96%	26 Minutes	4 Minutes	0 Minutes	26 Minutes
Happy Hedgehog (Exploration Mode)	83%	162 Minutes	43 Minutes	0 Minutes	0 Minutes

# Why is KinderTEK expected to be so effective?

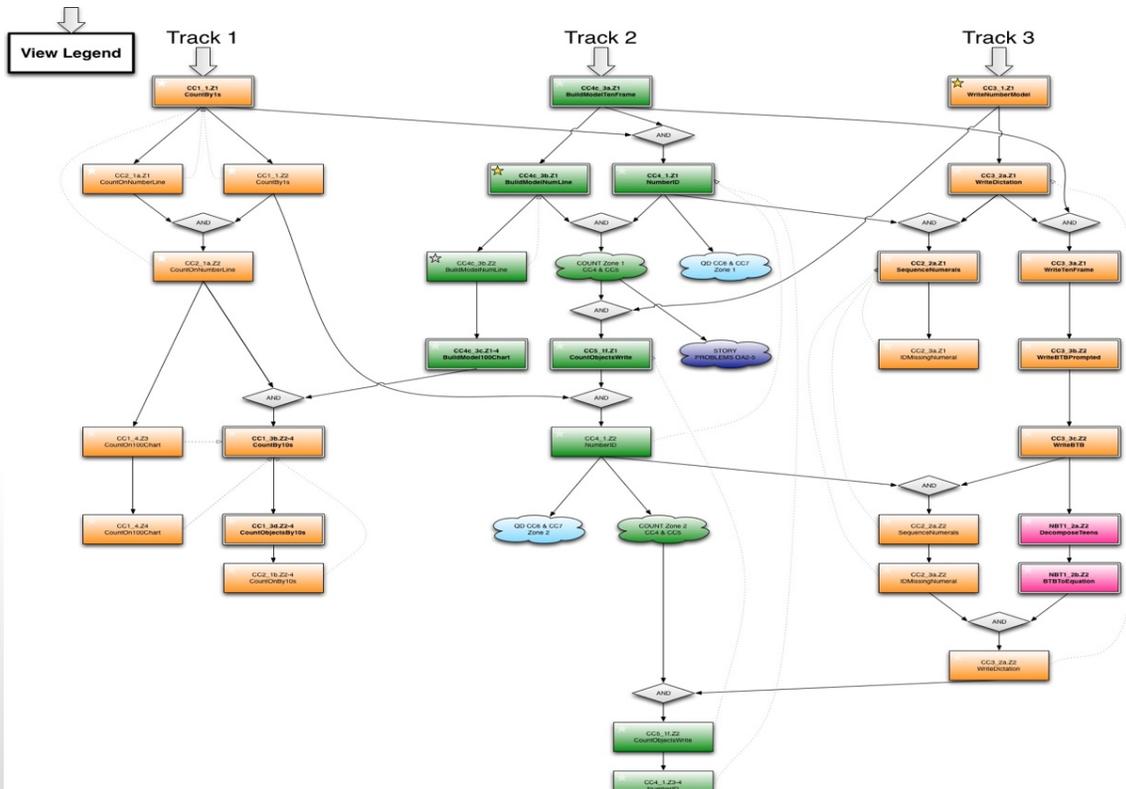
- Feasible (and fun!) for students and teachers
- **Relies on evidence-based instructional practices to differentiate instruction**



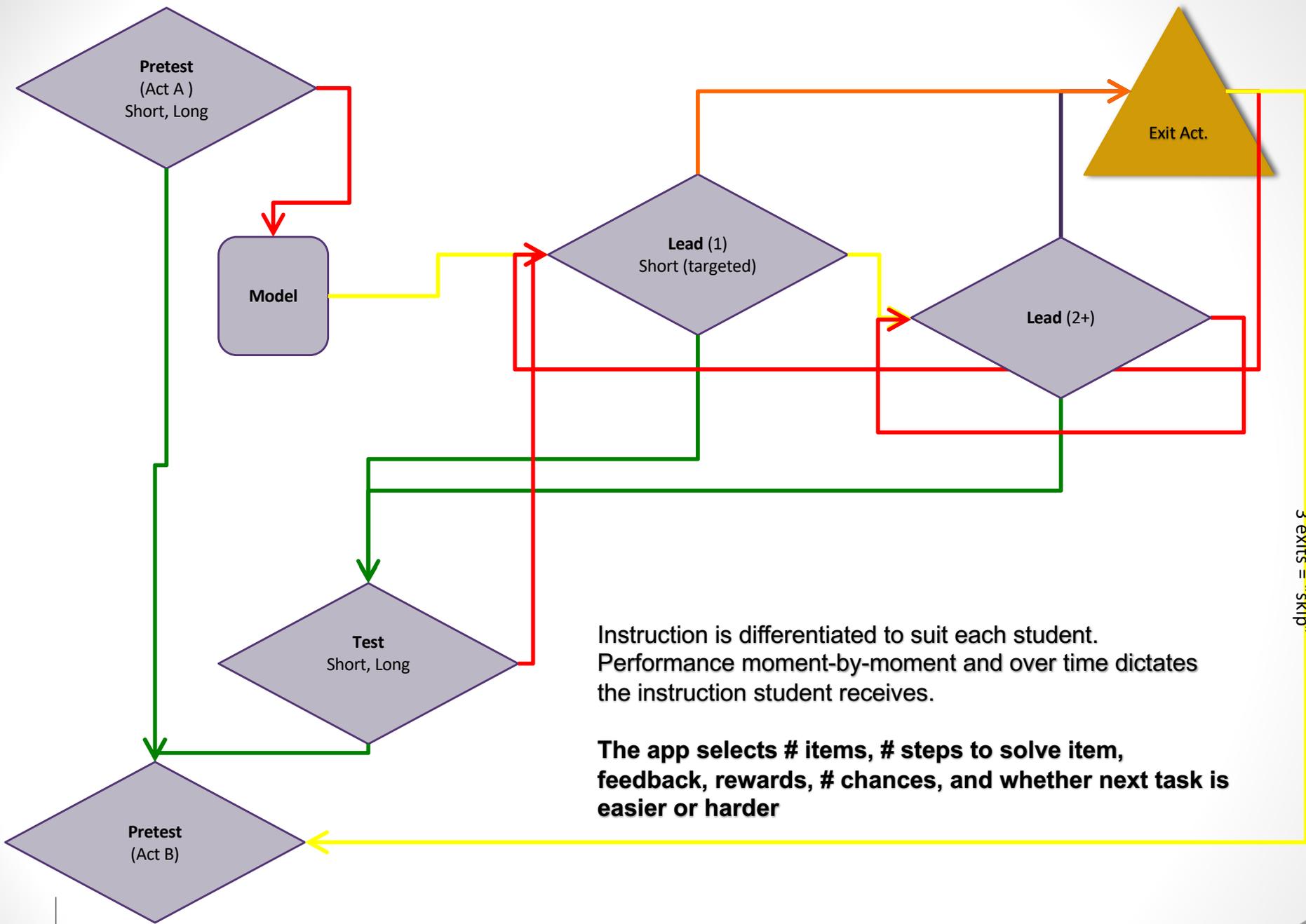
# Why is each student experience different?



Students choose activities in *exploration* mode



Student performance within web of prerequisites dictates flow of activities in *sequenced, directed, & screening* modes



Instruction is differentiated to suit each student.  
Performance moment-by-moment and over time dictates the instruction student receives.

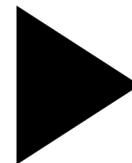
**The app selects # items, # steps to solve item, feedback, rewards, # chances, and whether next task is easier or harder**

3 exits = "skip"



# Why is KinderTEK expected to be so effective?

- Feasible (and fun!) for students and teachers
- Relies on evidence-based instructional practices to differentiate instruction
- **Takes advantages of iPad affordances**
- **Customization options**



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- Relies on evidence-based instructional practices to differentiate instruction
- Takes advantages of iPad affordances
- Customization options
- Implementation resources



**IES NCSEER Goal 2 Dev't  
(2011-15)**

Strand Cary, M. & Clarke, B.

**IES NCER Goal 3 Efficacy  
(2017-21)**

Strand Cary, M., Shanley, L., & Clarke, B.

Institute of Education Sciences  
U.S. Department of Education



**OSEP Stepping Up  
Technology  
(2014-19)**

Strand Cary, M. & Clarke, B.



KinderTEK has been supported by the Institute of Education Sciences, U.S. Department of Education, through Grants R324A110286 & R305A170044 and by the Office of Special Education Programs, U.S. Department of Education, through Grant H327S140019 to the University of Oregon.

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Strand Cary, M., Crowley, R., Shanley, L. & Choo, S.. (February, 2020) Individualized, iPad-based math instruction – Does an external proximal measure reveal differences in students' rates of learning? DRAFT research-in-practice poster for SREE 2020 [PPT slides downloaded from conference website]

# Discussion!

*Mari Strand Cary*

*541-346-8357*

*MSCary@uoregon.edu*



[www.KinderTEK.com](http://www.KinderTEK.com)

