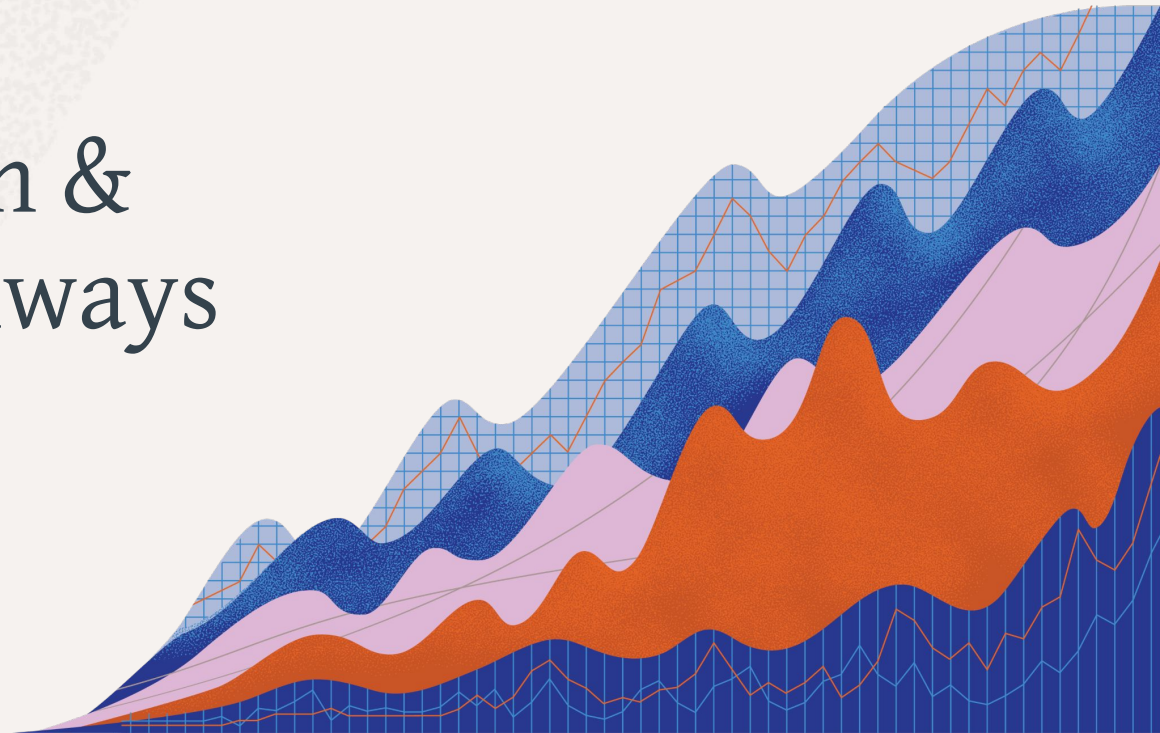
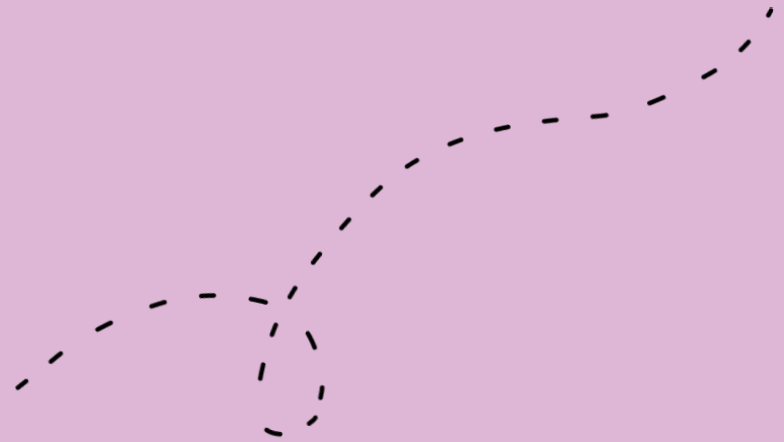
Q2 TEACHER COUNCIL REPORT

Differentiation & Adaptive Pathways



Backpack Interactive is a creative strategy and design company that leverages 20 years of experience in the edTech space to dream up, design, and build digital products that transform educational experiences for teachers and learners.



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OUR MISSION

Backpack Teacher Council

Our Backpack Teacher Council amplifies the voices of educators from across the country who contribute to our organization by lending their expertise. Through our council, we ground our design work in the needs, pain points, and goals of our users.

We're hopeful that the insights we've compiled in this report will inform your design priorities by anchoring your work in the authentic experiences of educators dedicated to meeting the growing needs of learners today.

OUR MEMBERS

Backpack Teacher Council

Daniel Nero

10th Grade English Teacher Former 11th Grade Teacher

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2nd Grade Dual Language (Spanish) Teacher

Dannielle Rivera

2nd Grade Teacher

OUR MEMBERS

Backpack Teacher Council

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OUR MEMBERS

Backpack Teacher Council

Anna Stekol

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Introduction

Our Why

Adaptive learning pathways have been at the center of a multitude of proposed tech solutions to address the **learning gap** in classrooms across the country.

However, in conversations with educators of all types, we began to hear a pattern. Sure, products utilizing adaptive pathways would help teachers differentiate in the classroom – if they were designed with today's **less than ideal educational realities** in mind. So, we decided to investigate the topic thoroughly, armed with insights from our Teacher Council and our knowledge of the edTech landscape.

Along with actionable answers to our key questions around adaptive learning, we hope that this report will give you the **clarity needed to advocate for educators and learners in your organizations.** Not based on unchecked assumptions or forecasted tech trends, but instead informed by **real people working tirelessly to best meet every learner's needs.**

Adaptive Products Defined

For the purposes of our report, we are building on the following definition provided by EdSurge:

"Education technologies that can respond to a student's interactions in real-time by automatically providing the student with individual support."

An adaptive product collects specific information about individual students' behaviors by tracking how they answer questions. It responds by changing the learning experience to better suit that person's needs based on their unique and specific behaviors and answers.

Guiding Questions

Why do teachers need adaptive learning tools?

Who are adaptive learning tools for?

What makes adaptive tech effective for educators?

What are the key requirements of a successful adaptive learning tool?

ADAPTIVE LEARNING PATHWAYS

Key Terms

DIFFERENTIATION	Adapting content to accommodate the differences in learners' readiness levels, interests, and learning profiles
PERSONALIZATION	Content created for each student with their specific needs in mind
ADAPTIVE TECH	EdTech that provides automatic, individualized support to a learner based on their input

Why do teachers need adaptive learning tools?

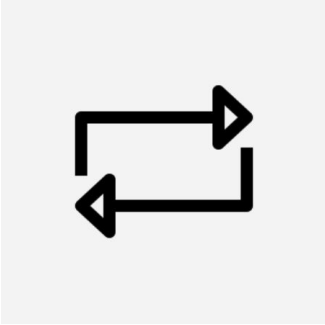
Why do teachers need adaptive learning tools?

In this section, we outline the methods teachers use to differentiate, share teacher perspectives on differentiation, and outline the responsibilities teachers must balance to differentiate successfully.

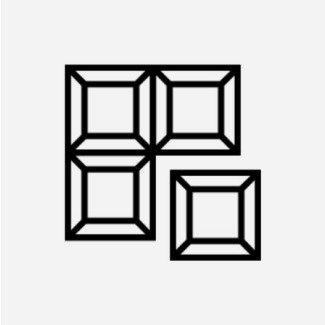
By exploring the current differentiation landscape, we were able to pinpoint guidelines that inform the optimal utilization of adaptive learning tools in classrooms.

How do teachers differentiate?

Visual supports



Repeated Prompting



Breaking content into smaller chunks

Eliminating visual clutter

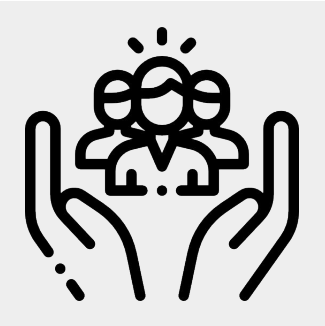
“I see the biggest thing that I'm doing is having a lot more **pictorial support** for my ELL group. Giving them smaller tidbits of information. I don't want to **overload them with information.”**

- **SASHA**

“**Repetition** [paired with] **visuals** helps [students] remember... it can be too much information at once, especially if teachers are at the front of the class and giving directions... Maybe they need **fewer choices**... or **highlighting**.”

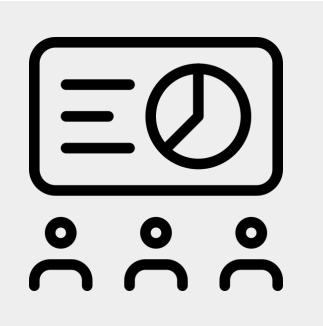
- **ANNA**

What do teachers balance when differentiating?



Individual student's needs

State standards



Classroom management

Limited support

Who are adaptive learning tools for?

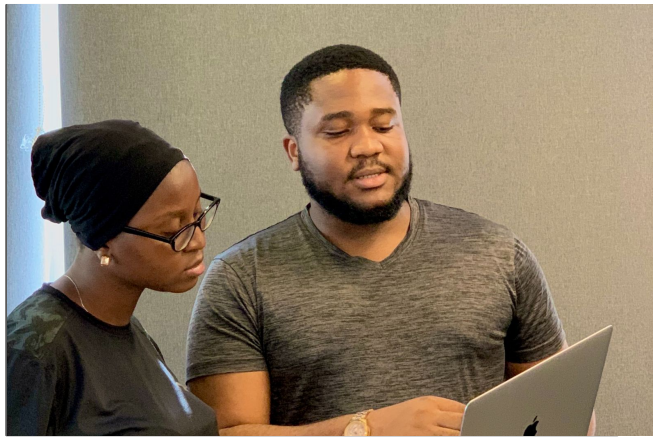
Teacher & Student Personas:
Motivation & pain points

WHAT ARE PERSONAS & HOW TO USE THEM

Personas are amalgams developed as a result of user interviews, desk research, and analysis. In product development, they serve as an ideal artifact to socialize a shared understanding of key user needs amongst product teams and stakeholders.

We formulated the following personas after interviewing members of our Teacher Council, analyzing desk research, and exploring common teacher training messaging around differentiation. Across student age range, settings, and subject matter, common pain points and user needs emerged.

We're providing you with these personas in the hopes that they guide you and your team toward user-focused design by emphasizing the themes at the forefront of educators' minds as they work to meet the needs of each student in their classroom with equity.



Max, Fourth Grade Teacher

Age: 38
City: Boston, MA
School: Lafayette Elementary

TOP PRIORITIES

- Maximizing instructional time with students
- Differentiating to meet needs of individual learners
- Teaching the mandated curriculum to fidelity

"The majority of my class is not getting the **support they need** in order to be successful. **You can only differentiate so much** when you have students who can't read or write and students who are waiting to move on."

PAIN POINTS

Diverse needs of the students in his classroom: Every lesson requires modifications that can be time-consuming to personalize, plan, and implement.

Large class size: Classroom management is difficult when attempting small group instruction given his thirty-two students.

Wide learning gap: The disparity between student learning needs across his class is so significant it can be difficult to know how to address it.

Julien, Fifth Grader

Age: 11
City: Chicago, IL
School: MS 213

TOP PRIORITIES

- Sense of belonging in classroom
- Better grades
- Agency over learning

"I don't like to ask questions in class. Everyone else seems to just get it. I'd rather try to **figure it out on my own,** but sometimes I just give up."

PAIN POINTS

Self-conscious: Feels like everyone else in the class can tell that she's struggling, so she avoids asking for help

Frustrated: Sometimes assigned work that feels "baby-ish" compared to her peers. It feel even worse when she can't complete it on his own.

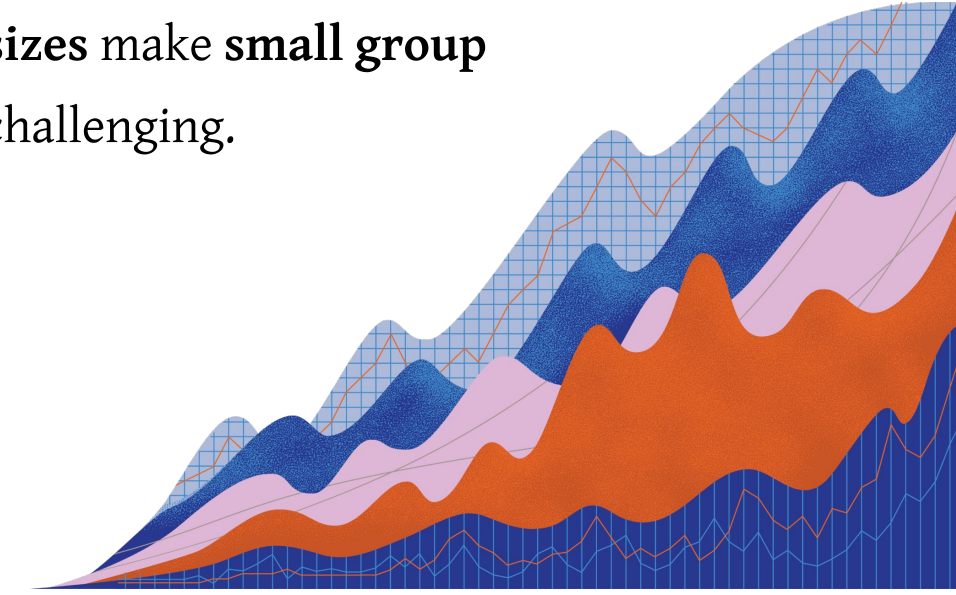
Lack of control: Isn't given any choice over what she learns or how she learns it. Wants more independence and agency.

What makes adaptive tech effective for educators?

In this section, we expand on the pain points that guide our recommendations on adaptive learning technology. Each point is followed by a quote from a member of our Teacher Council that offers a first hand perspective on this pain point.

1

Wide **disparities in student needs** and **large class sizes** make **small group** instruction challenging.



“I've only recently been able to scaffold for the high students because the high students are… not being stimulated because I'm so busy, you know, attending to all these higher need students that they weren't getting the attention they needed. So now I’m giving them more project based learning.”

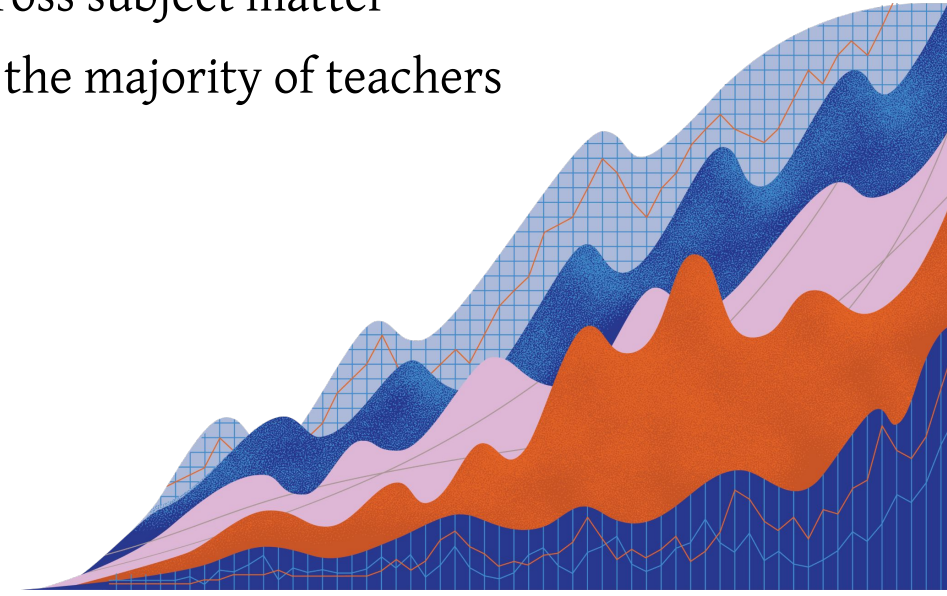
- **Danielle**

“I have a couple of students who can't read fluently, so physics is a big challenge. I have some students who are… very talented and are doing very well… it's very challenging.

- **Kylie**

2

Planning for potential **gaps in student understanding** across subject matter requires **foresight** the majority of teachers do not have.



“

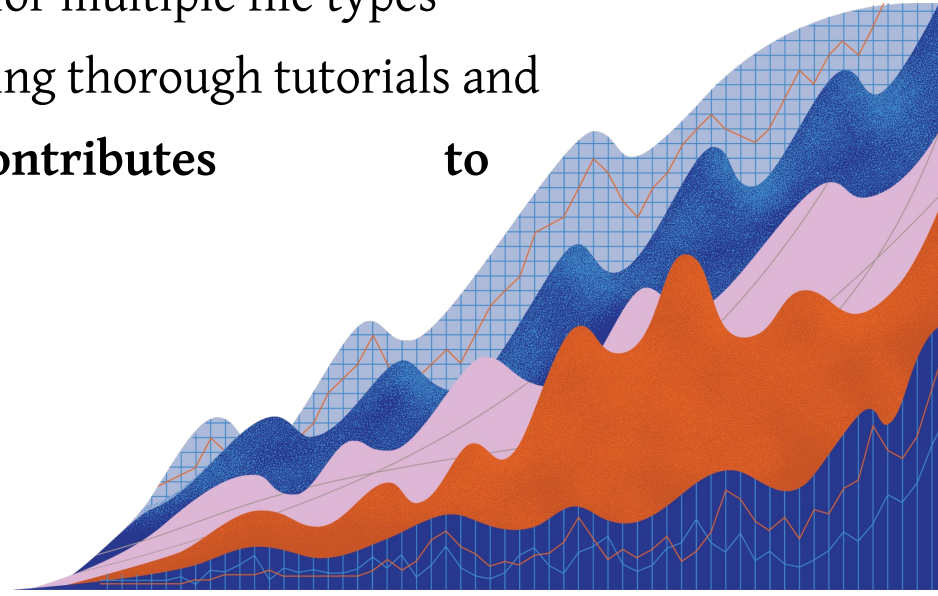
[I teach physics, but recently] we had to stop for half an hour and have a very bare bones algebra lesson. I wish I was more intentional about seeing what **gaps** you would have before you came to that lesson and what **prerequisites** are needed, but you don't really know what those gaps are. You **experience** them in the classroom... **on the spot.**

I have a couple of students who can't read fluently, so physics is a big challenge. I have some students who are... very talented and are doing very well... it's very challenging.

- **Kylie**

3

Technology that **fails to anticipate student needs** by allowing for multiple file types uploads or by offering thorough tutorials and just-in-time help **contributes to inequity**.

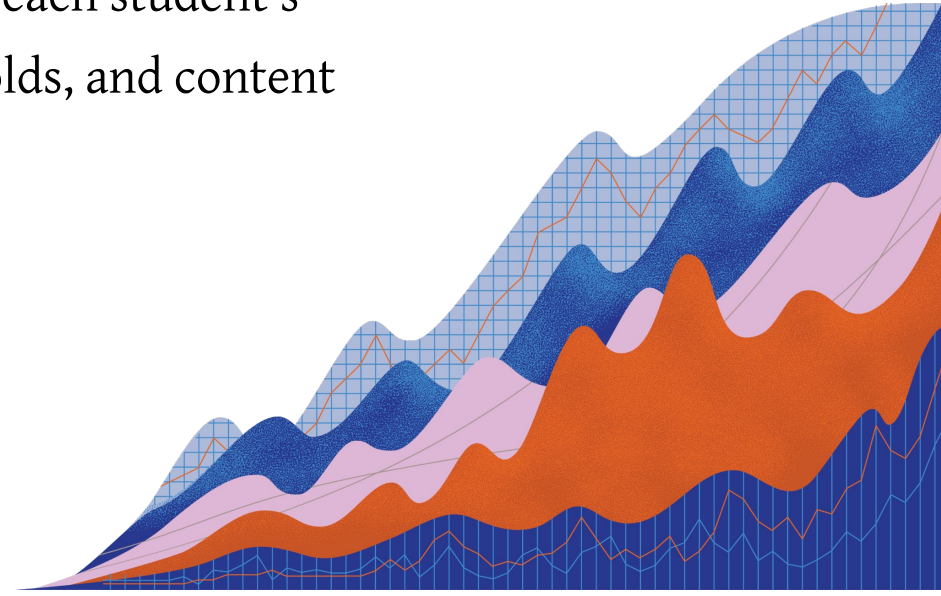


“There are definitely a lot of issues with Canvas. I tell my students they should record to a device or a laptop or phone, because you might record it like, like, oh, it **couldn't save it**, couldn’t update it – there's a problem with Canvas. **You lose that work.** Now you have to do it again. It’s messy.”

- **Cody**

4

Teachers need **convenient customization options** to address each student's assignments, scaffolds, and content sequence.

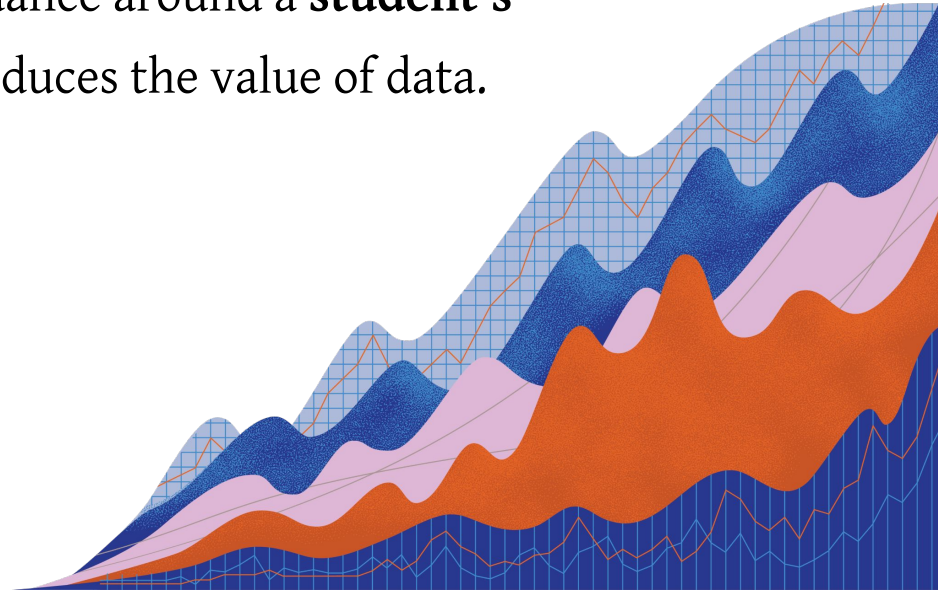


> After a while, if a student was really **struggling** the product sent me a **message** saying, ‘Hey, you need to intervene and see what... is going on here.’ That was really helpful to me because **it wasn't just letting the students go on autopilot.**

- **Scott**

5

Many digital **assessments fail to capture the context** and nuance around a **student's response**, which reduces the value of data.



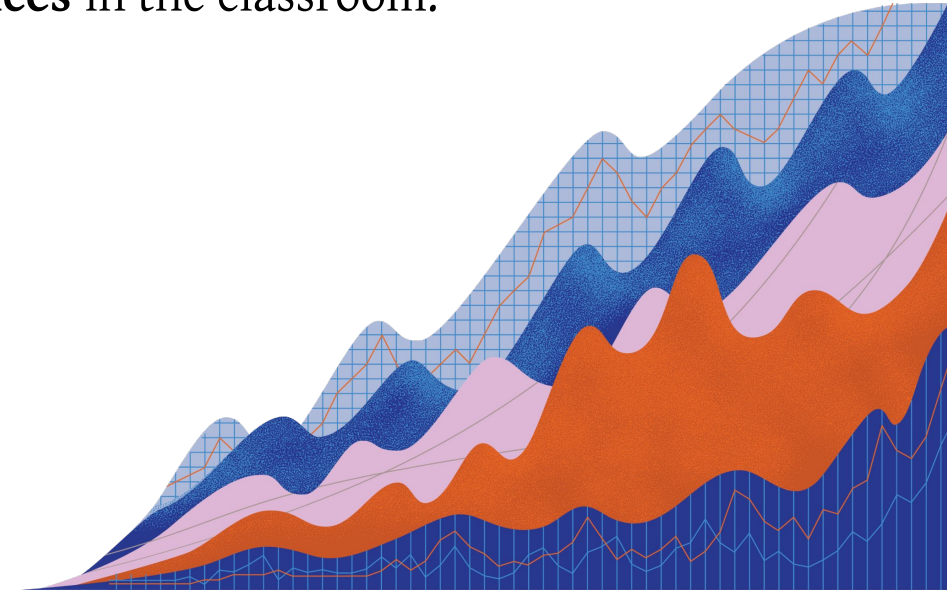
“

I think any type of adaptive program, whether it be a curriculum or a technology, needs some way to **see the students' thinking**, and that can be **challenging**.

- **Scott**

6

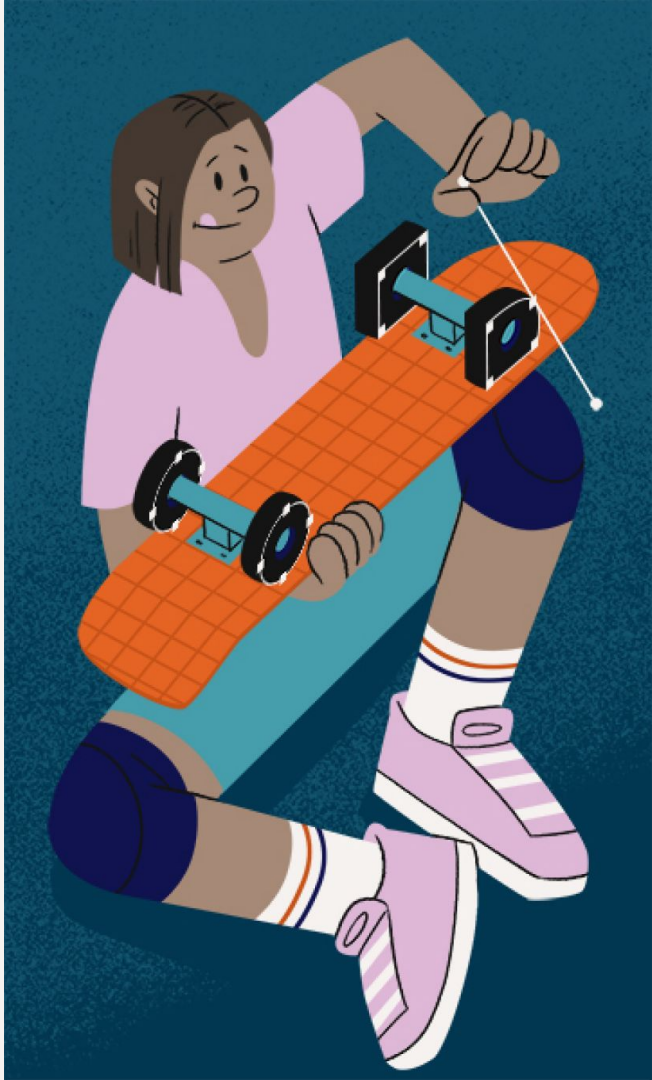
Effective adaptive edTech products **inform instructional choices** in the classroom.



“Especially in my small groups, [administration] wants to see that I'm **changing the lesson**, even if it's the same content area using the same material...

With some type of adaptive technology that could **modify appropriate content,** it would make it easier for **lesson planning** as far as **small groups.”**

- **Sasha**



What are the key requirements of a successful adaptive learning tool?

To answer this question, we audited a wide number of products that claim to be adaptive, and evaluated them with our Teacher Councils' first-hand accounts in mind.

We concluded that the best adaptive tech products **collect useful data,** then **synthesize** and **represent** that data **clearly** and **actionably**.

Instead of building adaptive products that attempt to ***replace teachers***, optimal adaptive products use data to create profiles on individual students' level of ability. These products use their data to scaffold student skill building in various ways.

Waggle and **Mathspace** are two of the products we audited that are truly adaptive, though they use adaptive features differently. We've included the overviews that follow to illustrate the ways in which they address the features we've described here in the hopes that they will inspire product teams to grow their thinking around how to best serve educators and learners.

Waggle

Waggle

- Designed for Grades K-8
- CC aligned instruction & assessment in math and ELA

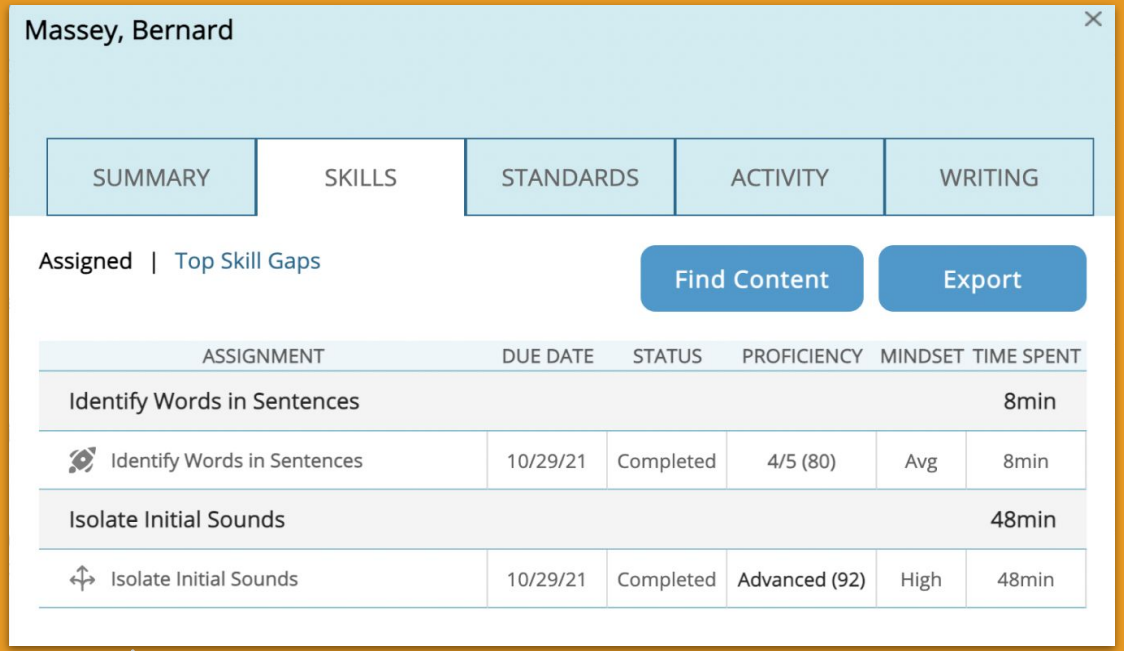
KEY FEATURES

- Adaptive Content
- Communication
- Planning
- Actionable Data
- Student Feedback

“What I liked about Waggle was I worked with the students on the regular curriculum, but then based on their scores that I entered in on assignments or assessments that I was doing in the classroom, it then took the objectives that the students were really struggling with, and gave them additional practice.”

So I, as, the teacher was still in the driver's seat… I was able to keep the curriculum going, but also provide that additional support.”

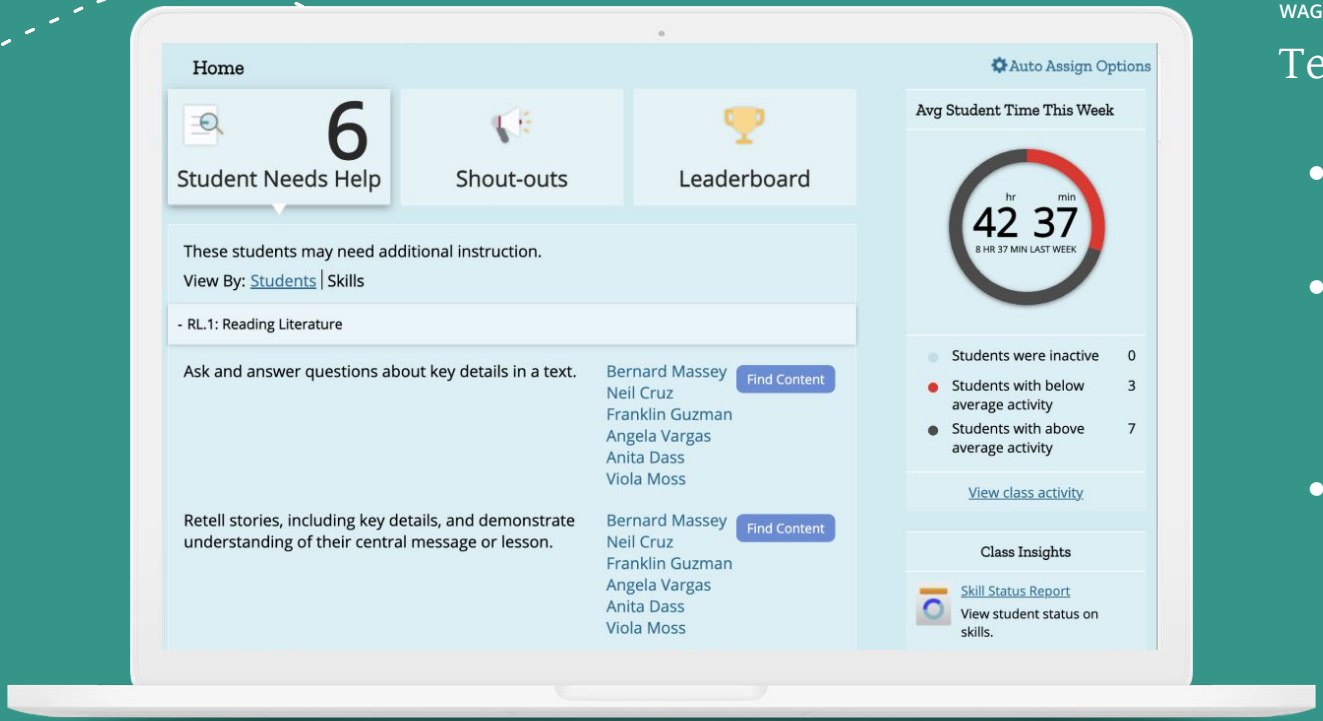
- **Scott**



WAGGLE

Adaptive Content

- Tracks individual students' performance data over time
- Provides content suggestions based on each learner's individual skill level
- Adapts assignments based on student competency and comparison of needs across class



WAGGLE

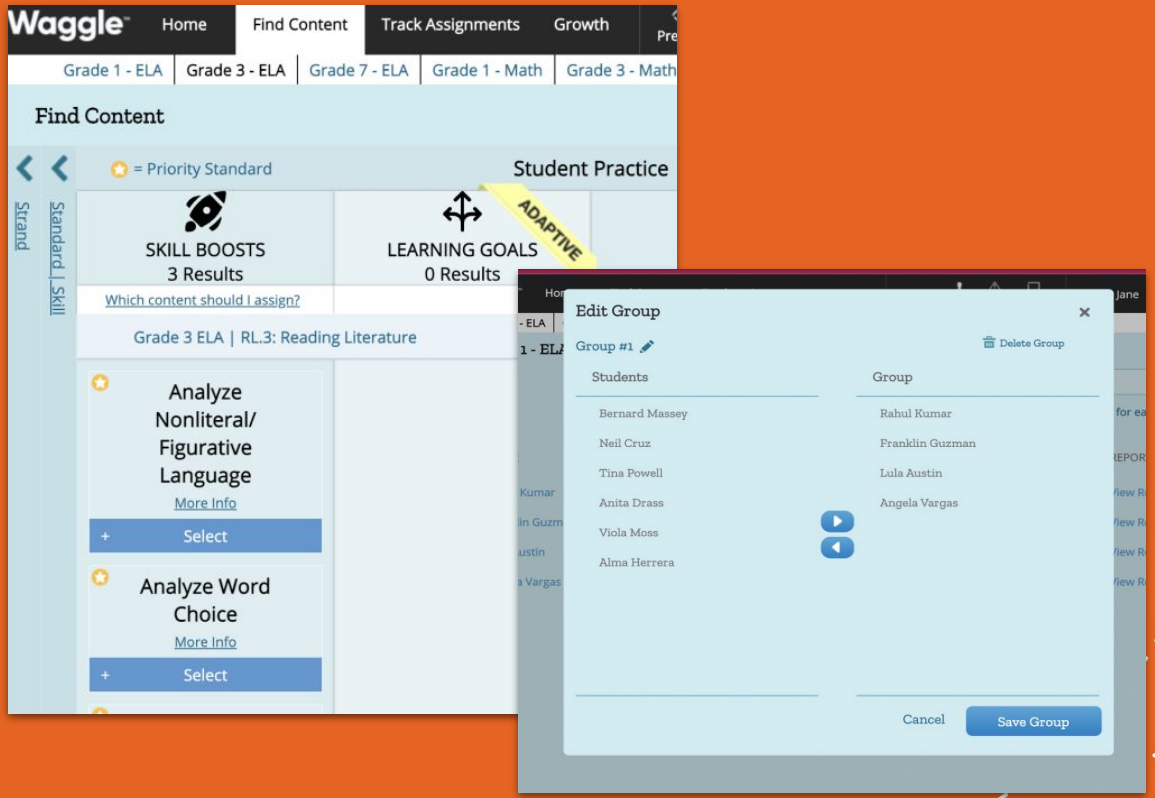
Teacher Dashboard

- Highlights students in need of immediate support
- Informs educators of learners' wins with shout-outs based on student performance
- Summarizes skill progress and optimizes content discovery

WAGGLE

Planning

- Aligns standards based content with learning gaps
- Organizes customizable student groups



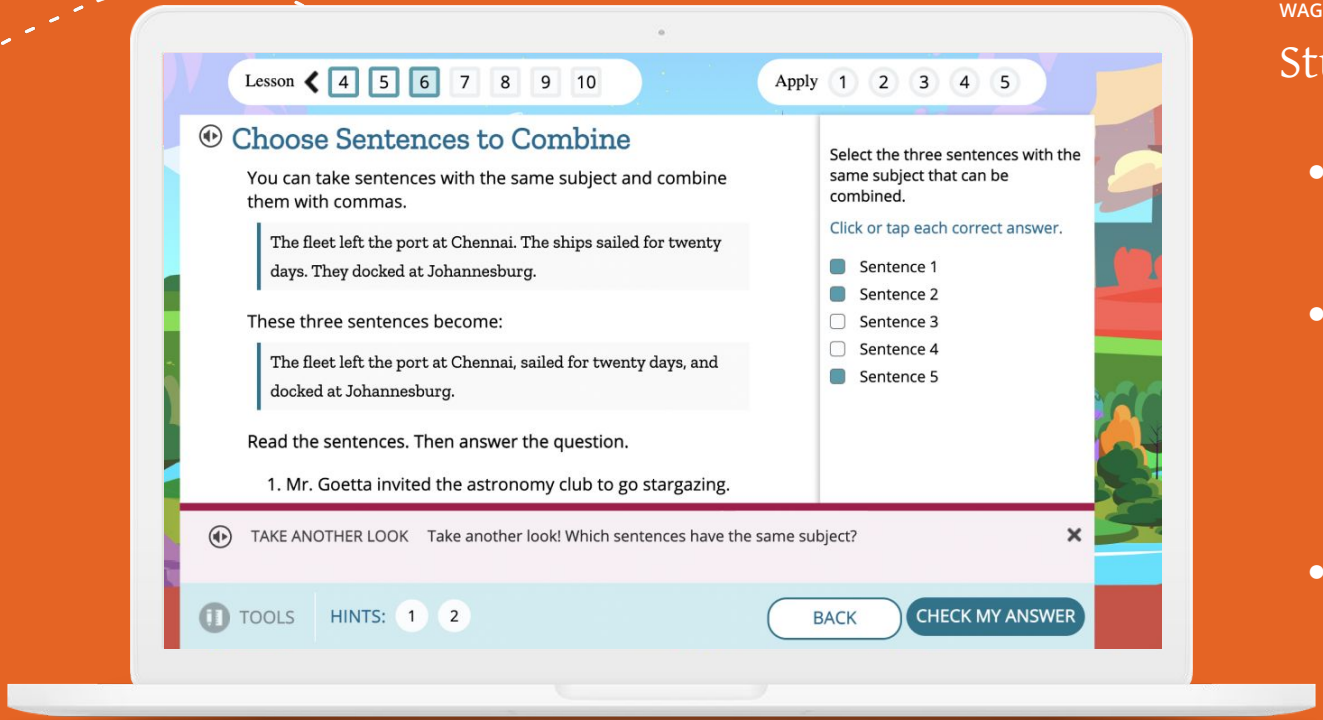
WAGGLE

Data

- Summarizes key metrics: assignment progress, skills proficiency, and student activity for both students and the class overall
- Presents assignment progress status in an easily scanned visual bar

WAGGLE

Student Feedback



- Provides learner with immediate feedback
- Hints and visual point indicator guide the user through their journey for encouragement and support
- Personalized help and hints

WAGGLE

Why we recommend it

- An educator like our persona, Marc, would benefit from using Waggle to differentiate individually, strategize grouping for small group instruction, and directly intervene when needed based on the data Waggle synthesizes on his teacher dashboard.

- Our Teacher Council member, Kylie, pointed out how gaps in understanding or foundational skills don't always present themselves until you are in the moment, teaching a lesson. With Waggle, teachers are informed as soon as students demonstrate weakness in a key skill. Teachers can easily assign individual students content to address that skill. If done manually, without an adaptive product like Waggle, this task could potentially take research, consulting with an expert in another subject, and one-on-one extra help sessions.

Mathspace

Mathspace

- Adaptive math instruction from grades 3 - High School
- CC aligned instruction & assessment in math

KEY FEATURES

- Adaptive Tasks
- Communication
- Planning
- Actionable Data
- Learning Goals
- Student Feedback

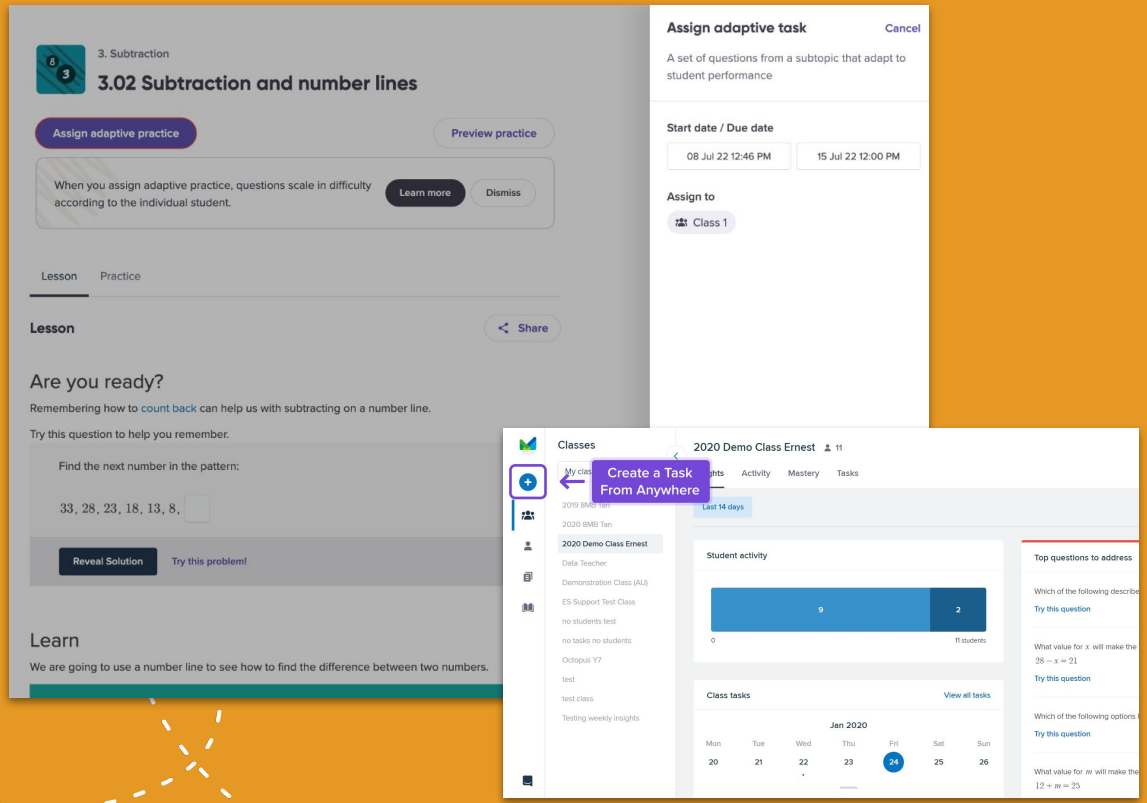
> Mathspace... is devoted to understanding how students get their answers, because that's where the learning takes place.
>
> I'm not sure I have seen anything remotely like Mathspace for its ability to tailor on the go, provide rolling guidance and automated feedback, and deliver accurate data on student progress.
>
> It breathes energy and passion, it offers 10 times the interactivity of a textbook and it focuses on grit and growth."
>
> - **John Dabell,** *Teachwire.net*

"With Mathspace, I feel like there are two teachers and one is available 24/7 for students! My students are able to accomplish more than they had prior to implementing the program. I was hesitant to start Mathspace, but this quickly changed when I was exposed to all the amazing things that the program offers! It has helped me truly meet the needs of ALL my learners!"

- **Jenna Ross, Knox Middle School**

MATHSPACE

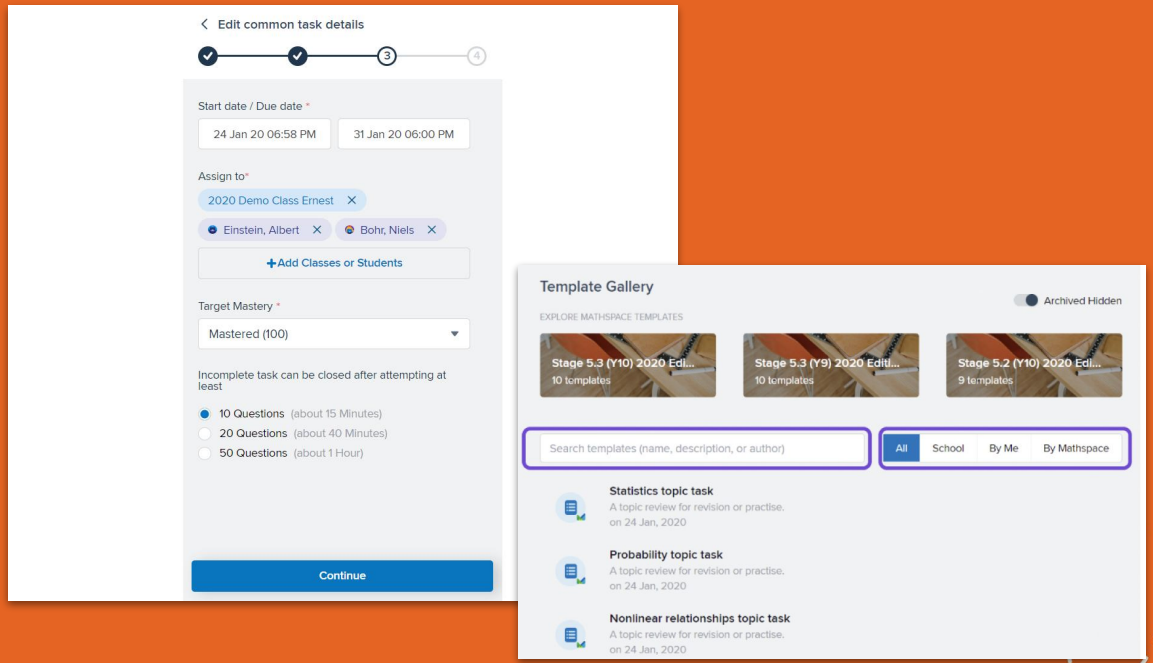
Adaptive Tasks



- Teachers can choose a subtopic to assign to students
- Mathspace selects questions for each individual student based on their prior mastery of the sub-topics
- Questions grow in difficulty as student demonstrates skill and understanding of each concept required for that sub-topic

MATHSPACE

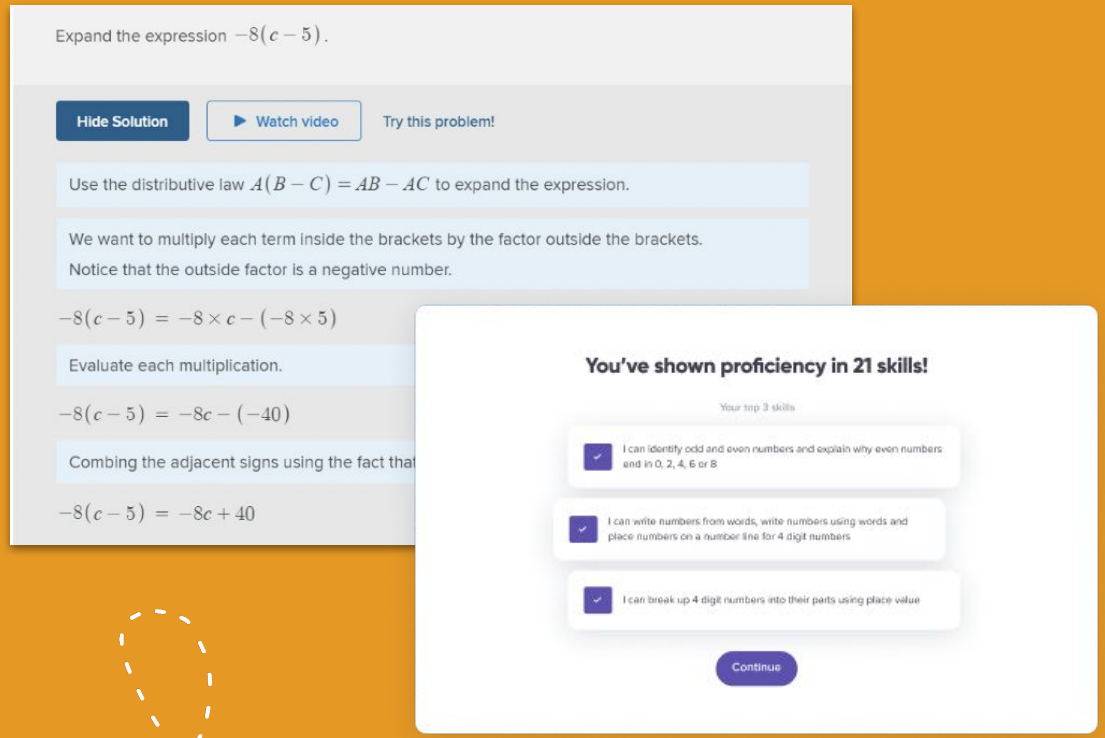
Planning



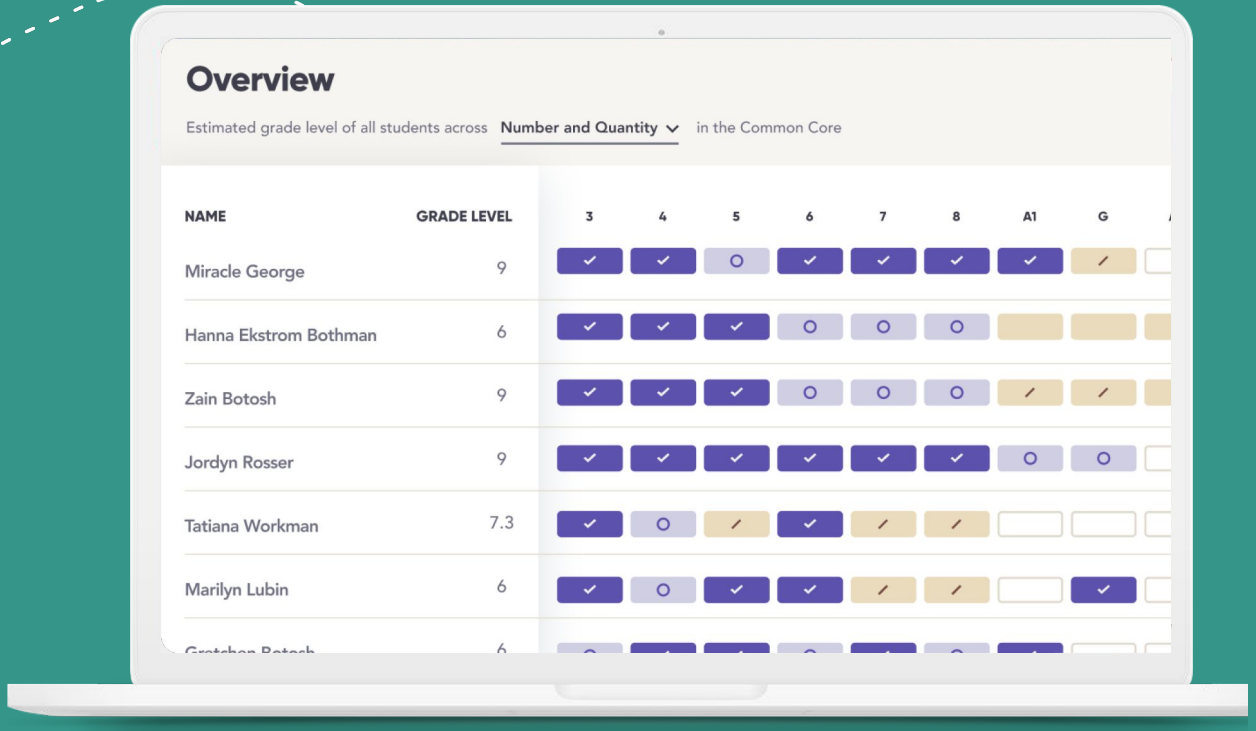
- Provides common task templates for guidance and support
- Simplifies collaboration between team members school-wide through Template Gallery

MATHSPACE

Data



- Visually indicates progress
- Individualized practice tasks scaffold learning
- Check-ins allow learners to unlock new skill progress - provides agency over learning
- Provides self-guided learning including step by step question reviews



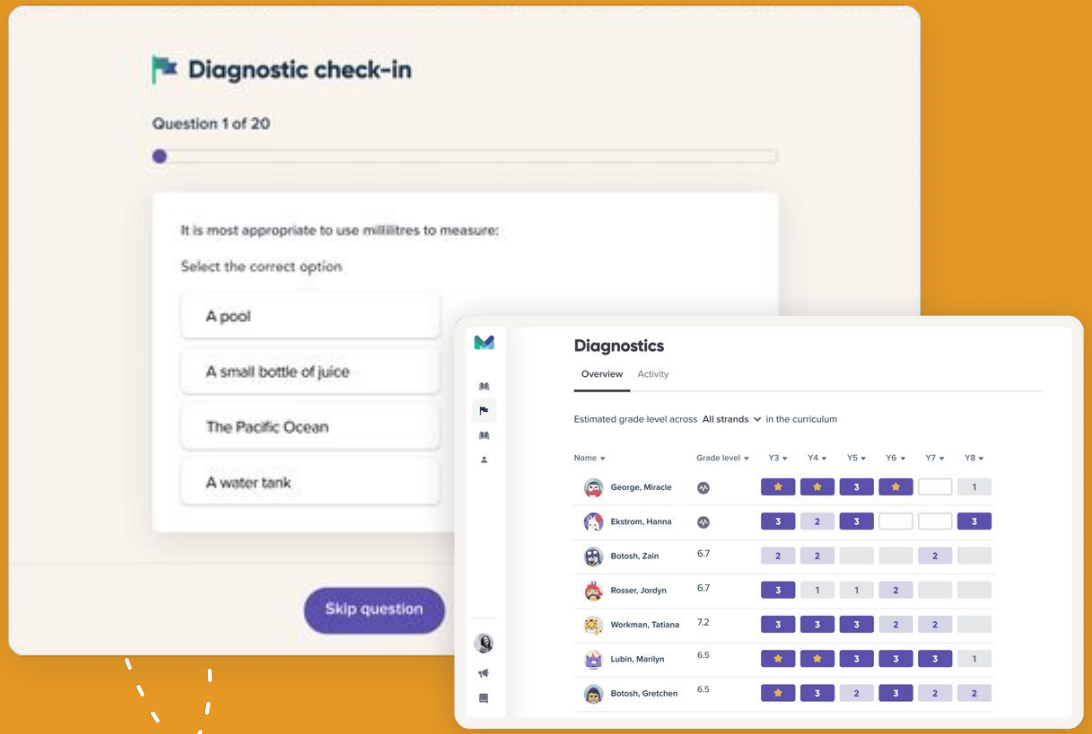
MATHSPACE

Data

- Displays skill proficiency overviews *and* student specific visuals to identify classwide patterns and outliers
- Reports are linked to Common Core State Standards for easy alignment

MATHSPACE

Data



- Regularly conduct individual diagnostic check-ins to provide growth data
- Learners can measure track strengths and weaknesses

MATHSPACE

Why we recommend it

- An educator like Marc would benefit from a product that adapts like Mathspace because it provides context-specific feedback for each learner automatically. Instead of having to prep materials for all potential learner needs, Mathspace provides recommended tasks based on learner performance.

- A learner like Julien might excel by utilizing Mathspace. Julien is self conscious about frequently having to ask his teacher to explain a concept again in front of his classmates. Sometimes, it can difficult to identify what skill he's struggling with – all he knows is that he "doesn't get it." Mathspace provides learners with hints for each question, and after a lesson, it provides a score that shows areas of weakness. Learners can watch refresher videos to revisit a confusing concept. They can also choose to perform additional practice questions to build their confidence with a new skill.

Putting it all together

“So I think we need to find a way... that is most effective to walk alongside the teacher,

not replace what the teacher should be doing.”

“So I think we need to find a way... that is most effective to walk alongside the teacher,

not replace what the teacher should be doing.”

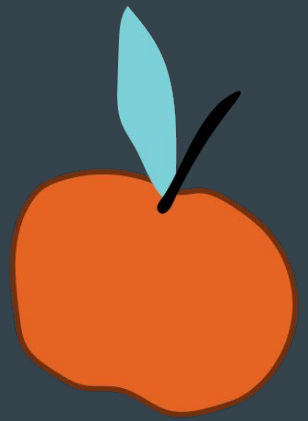
Maximize opportunities for teachers to customize students' learning experience.

Provide teachers with actionable feedback and built in checkpoints to optimize efforts.

Maximize opportunities for teachers to customize students' learning experience.

Provide teachers with actionable feedback and built in checkpoints to optimize efforts.

Design Takeaways



Design Takeaways: *Content Areas*

- There are few existing Social Emotional Learning (SEL) *adaptive* products. Adaptive techniques could provide new opportunity to meet students where they are and introduce new social skills.
- Adaptive Math products continue to dominate the market, but new, innovative ELA products are entering the landscape regularly.
- By combining adaptive learning with innovations in voice recognition technology, differentiated ELA instruction may become more viable and powerful in and outside the classroom.

Design Takeaways: *Assessments*

- Design questions that provide insight into student thinking
- Provide contextual metrics, i.e. time spent on each question, self-correction, etc.
- Weave progress monitoring into assessment pathways to encourage student progress

Design Takeaways: *Planning*

- Draw connections between assessment data and actionable next steps that can inform teachers' instruction, i.e. content suggestions, grouping recommendations, or scaffolding approaches that extend into the classroom
- Provide appropriate content for each learner's independent work to keep them engaged which will support classroom management and optimize educator's instructional time with small groups

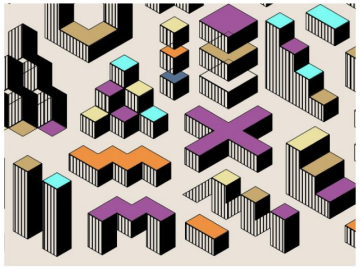
Design Takeaways: *Teacher Voice*

- Design goal-setting features that teachers can customize on a student & class level
- Notify teachers when a new intervention is suggested based on data recently collected

SOURCES

- “What Is Adaptive Learning?”
- Blair, Kelly. “Decoding Adaptive .” Edsurge, Pearson
- Godor, Brian. “The Many Faces of Teacher Differentiation: Using Q Methodology to Explore Teachers Preferences for Differentiated Instruction.” Taylor & Francis
- Teach Thought: “Personalized Learning: A Definition for Teachers”
- Waggle
- Mathspace
- Backpack Interactive Teacher Council (2022) Transcripts

Read more of our insights



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Not Just for Kids–Gamification is For Teachers Too

Gamification for teachers? Not a bad idea. Read on for three ways game mechanics...

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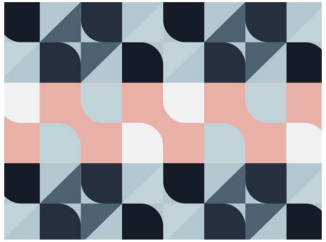

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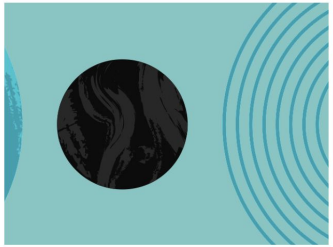

JANUARY 24, 2022

Better Teacher Personas Lead to Better Product Design

Teacher personas need an update. New methods in classroom testing and more, her...

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We look forward to hearing from you!

At Backpack Interactive, we're all about equipping our clients in the edTech space with the tools they need to create better digital products: strategic insights, product ideation, visual design and UX.

As education technology specialists, we believe in the power of thoughtful design and delightful user experience to enable better teaching and learning. If you've been thinking about getting help from a team like ours, we'd love to start the conversation!

Email us at:
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