Adaptive Learning

A COMPREHENSIVE GUIDE TO USING TRANSFORMATIVE TECHNOLOGY TO SCALE PERSONALIZED LEARNING

Introduction

Every student enters a classroom with unique needs, challenges, strengths, and interests.

The complex combinations of student needs combined with increasingly rigorous standards, limited instructor bandwidth, and a growing achievement gap has made it challenging for classroom teachers to ensure that every student receives personal, tailored support.

To ensure successful learning opportunities for each student, many educators turn to adaptive learning programs that can quickly differentiate instruction and personalize learning. While many learning programs claim to adapt to students' needs, few employ the advanced technologies necessary to truly personalize instruction to meet each student's learning style, pace, content preferences, and level of understanding.

As education leaders make resource decisions, it is critical that they understand the capabilities of adaptive learning solutions and what makes some adaptive tools more powerful than others.

What is Adaptive Learning?

High-quality adaptive learning platforms allow students to participate in digital lessons and learning experiences that continually assess interactions, decisions, answers, and timing.

> The best adaptive learning platforms use information from ongoing assessment to adjust learning in real time, filling in gaps while giving additional practice to reinforce learning, adding enrichment and acceleration when a student is ready.

Specifically, adaptive learning systems use existing knowledge of concepts connected with multiple sequences to inform which questions to ask and how to respond to student answers.

Every correct and incorrect response a student submits informs both the system and the educator what students understand or misunderstand. This feedback can then guide the next set of instructions for students – advancement, further practice, or remediation.

High-quality adaptive learning programs use sophisticated algorithms to fine-tune the pace of instruction. Students move at a pace that challenges while maintaining engagement. The pace isn't too fast, causing frustration, or too slow, causing boredom. This personalized pace allows students to work within their **Zone of Proximal Development**. Having a teacher customize the pace of instruction for every problem and every student every day is not feasible. However, digital, adaptive learning platforms make it possible.

Research and History of Adaptive Learning

The idea of adaptive software originated almost 50 years ago when computer programmers began using code that could branch to connect the next step based on previous input. These capabilities also underlie the technologies that produced the first phase of the video game era.

Educational developers initially used adaptive software with static definitions of how questions connect to each other based on single question responses. Current technologies connect to current and historical response patterns.

Over time, researchers examined whether these systems had positive effects on student learning. There's an extensive body of research on the successes, failures, and unknowns in the design and deployment of adaptive instructional technologies. The increasing speed of processing, evolving user interfaces, and transition from rare to near ubiquitous presence of technology in learning environments have formed adaptive technology.
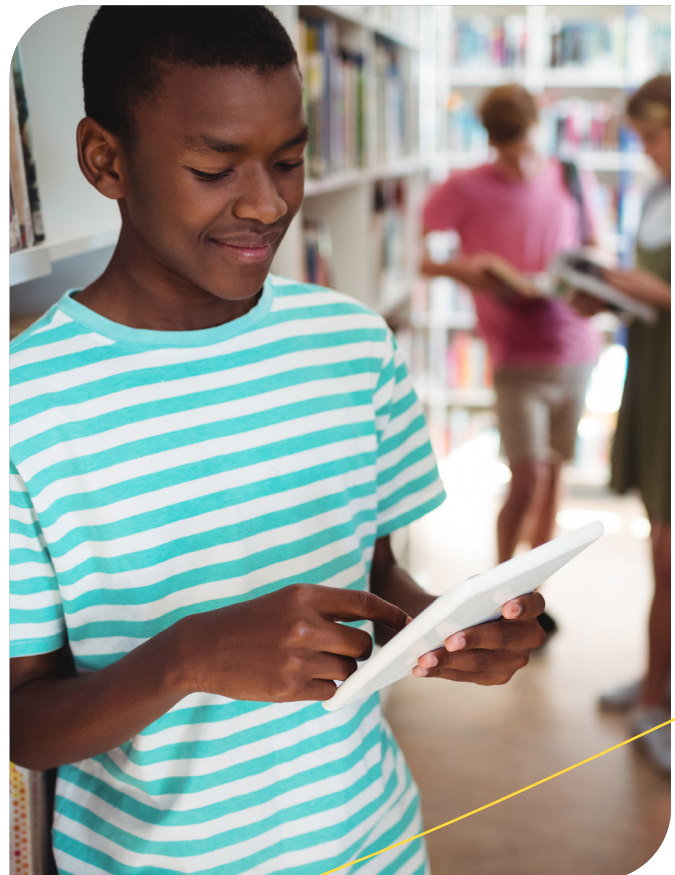
What Does Adaptive Learning Look Like?

Truly adaptive learning tools address pace and granularity of knowledge and skills, while also providing nuanced and robust analysis.

In math, adaptive learning tools can determine if a student struggling in algebra has a gap in understanding the order of operations from their 4th grade standards versus a misunderstanding of common denominators from their 7th grade standards. The learning tool appropriately reteaches the missing concept to strengthen understanding through practice.

In reading, adaptive learning tools can identify foundational components of a student's struggle to read and understand a vocabulary word — whether it's misunderstanding decoding, misreading context clues, or reading too fast. The tool adjusts the instruction to respond to student learning data..

In short, a well-designed adaptive learning tool can identify what keeps a student from mastering a more advanced skill, while providing appropriate intervention. For students who show proficiency, the tool can discern enrichment that might benefit their growth, or if they are ready to move to new concepts or skills.

Misconceptions of Adaptivity

Because these technologies have not been deployed equally in educational materials, many potential users are unclear, have been misled, or have misconceptions of what adaptive learning tools are capable of and appropriate for in schools.

Many interested parties confuse the concept of adaptivity with other pedagogical strategies, approaches, and trends. Or they aren't fully aware of the depth and breadth of adaptive learning and its potential.
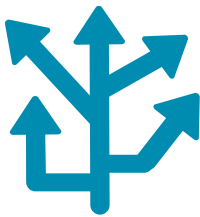
Adapting is not just changing pace

Many programs claim adaptivity by simply increasing or decreasing the learning pace, while failing to adjust the path itself. Though adaptive learning can, at times, result in changing the pace of learning concepts, that's just one component of ensuring the best fit of learning for a specific student. Effective adaptive learning takes into account a much broader context of specific learning gaps for each student, areas of struggle or success, and fluency and confidence with the content.

Individualized vs. personalized/adaptive learning

It's not uncommon to hear the phrase individualized used interchangeably with adaptive or personalized learning. Although they're related, they're not the same. Individualized learning refers to a targeted response or approach that fits the needs of a student at a given point in time. Adaptive learning is an ongoing process that uses technology to identify the nuances of a student's strengths and challenges. It responds to the student's readiness by providing appropriate learning. At the same time, it continually monitors growth and emerging needs as a student learns and develops.

More than tracking right and wrong answers

High-quality adaptive learning platforms can assess students' responses beyond right or wrong answers. It evaluates their processing and understanding. These platforms take into account the time a student takes to answer questions, how they complete interim steps, or which wrong answer they select. The data provides insights about student progress and next steps. This mitigates guessing that seems to show success, but actually masks gaps in learning.

Expanding Educator Capacity to Personalize Learning

As educators strive to create the best learning environment and path for each student, adaptive learning can transform administrators' and educators' ability to personalize learning. With these adaptive learning platforms, teachers can serve many more students simultaneously.

Better Data

A high-quality adaptive learning platform empowers educators with robust, nuanced, and precise data and insights about each student's needs, strengths, and struggles. The insights gleaned can help teachers know when students are succeeding — at the individual, sub-population, or whole group level. It monitors them as they encounter struggles or areas of frustration. The data helps teachers track common errors across groups to help uncover learning misconceptions that should be revisited. The insights can help identify ongoing trends by school, teacher, or demographics.

More effective differentiation that supports growth

All of this saves valuable instructional time from unnecessary assessments. It gives educators the tools, resources, and information to better and more quickly differentiate instruction as needed. By providing teachers with analytics on individual students and class trends, teachers can use their judgment to gather students for small group instruction and what to teach.

Unleashing the Power of Adaptive Learning

A truly adaptive learning platform can identify — with precision — each student's challenges and strengths. It increases a teacher's reach and can transform teaching and learning for reading and math within a classroom, school, and district.

There are many products on the market that claim to be adaptive and personalized, but don't have the features highlighted above. Such products exaggerate the degree to which they respond to the current diagnostics, previous performance, or common expectations.

Truly adaptive learning platforms are built on good design principles. They consider how knowledge is integrated with questions and responses, the importance of engaging content and questions, and the types and quality of data captured and insights offered. With these high-quality adaptive learning tools, educational leaders have the opportunity to ensure effective and equitable learning for all students within their school or districts.

About DreamBox

Districts partner with DreamBox Learning to provide educators and students with tools that work. DreamBox Intelligent Adaptive Learning solutions for math and reading are independently proven to accelerate student growth. By becoming part of the DreamBox community, districts connect with a team of experienced professionals dedicated to supporting successful implementation. Educators, from the classroom to district office, are empowered with robust, actionable insights from data analytics and engaging, relevant, and flexible professional development that builds educator capacity. With DreamBox, students engage in personalized learning specifically designed to meet their unique needs, developing essential skills for long-term success.

Learn more about how adaptivity can be successfully implemented with DreamBox.

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