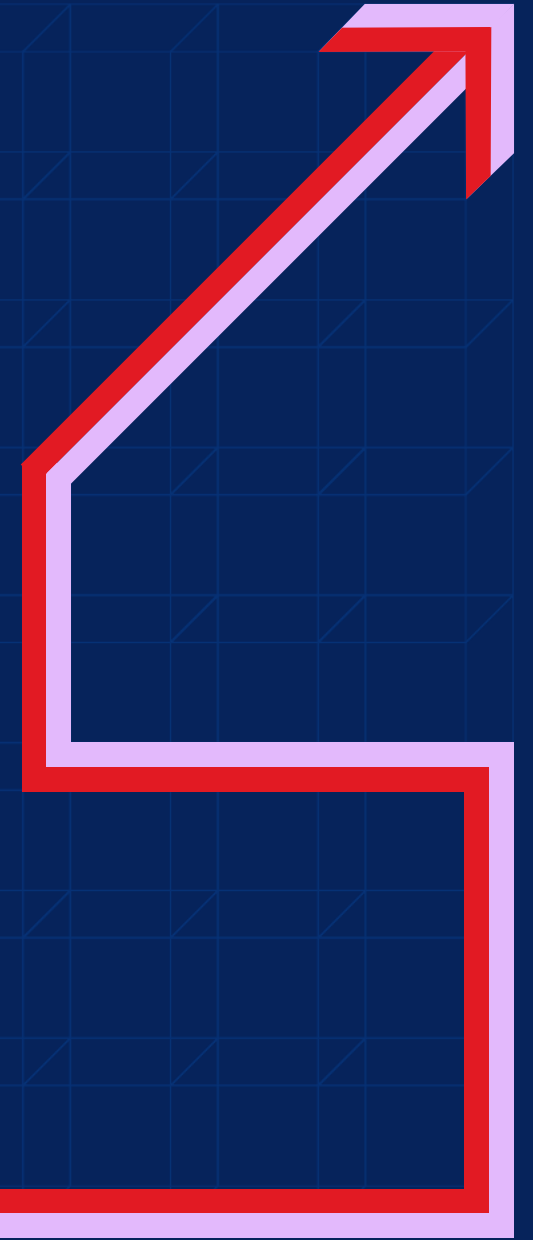


How McGraw Hill Utilizes AI and Adaptive Technology to Support Effective Learning

Nanice Khalil & Gaye Bagirsakci

February 2024





The enormity of AI in education



39%

Global AI in education market growth 2021-2027

\$3.7b

Investments in AI in education technology in 2020

90%

US universities and colleges using some form of AI to enhance the learning experience

1 in 5

Teachers worry AI will hinder educational outcomes

With transformation comes trepidation



Impact on outcomes

Will AI damage students' ability to learn?
Will they be more likely to cheat?
Will it be detrimental to their learning?
Will AI decrease human interaction and have a knock-on effect on interpersonal skills and empathy?



Equity concerns

Will those with access to platforms with AI outperform those without it?
Will AI exacerbate the 'digital divide' between different classes?
AI can also be argued to contain bias. How do we ensure that is countered?



Data and privacy

Who has access to the data?
Where is it stored and will it be safe?
What if the data is breached?
Will it be shared without my consent or the consent of my learners?



Time

Learning new systems takes time.
Building it into teaching will take careful thought.
How will I teach and show my learners how to use it ethically?
Checking for plagiarism will take time.



Job security

Will virtual tutors relinquish the need for my role?
How safe is my career?

Countering the concerns: McGraw Hill's commitment

Impact on Outcomes

We have evidence that our AI-based platforms **do** improve outcomes.

Our AI platforms have been shown to decrease dropout and failure rates.

We are building in plagiarism checkers into our platforms to alleviate cheating.

AI offers personalisation that benefits individuals.

Equity Issues

Personalized learning platforms that help create individual paths and address different preparedness levels.

Analytics, data, and insights for educators to track individual student progress and provide targeted support.

Accessibility features for various assistive technologies that help meet the needs of all learners.

Data and Privacy

We are committed to maintaining the highest security and privacy standards in the industry.

We have been awarded the highest security grade in the Educational Publishing Industry.*

Our best-in-class Cybersecurity team uses robotics and data science to thwart attacks.

AES-256 encryption is used to protect data-at-rest and data-in-transit.

Time

We have evidence that our platforms save educators admin time.

We offer robust and constant support to our customers, either 1:1 or self-serve.

We offer a myriad of choices for best practice learnings and PD.

Plagiarism checkers are being built into our platforms.

Job security

We understand how AI could be perceived as a threat.

We believe **AI works best when we're using our human brains alongside it.**

We have never and will never seek to replace teachers or educators.

Our solutions are designed to **complement teaching, not replace it.**

Summary



Improved student experience through hyper-personalized journeys.



AI will alleviate time pressures to enable earlier intervention and enhance support.



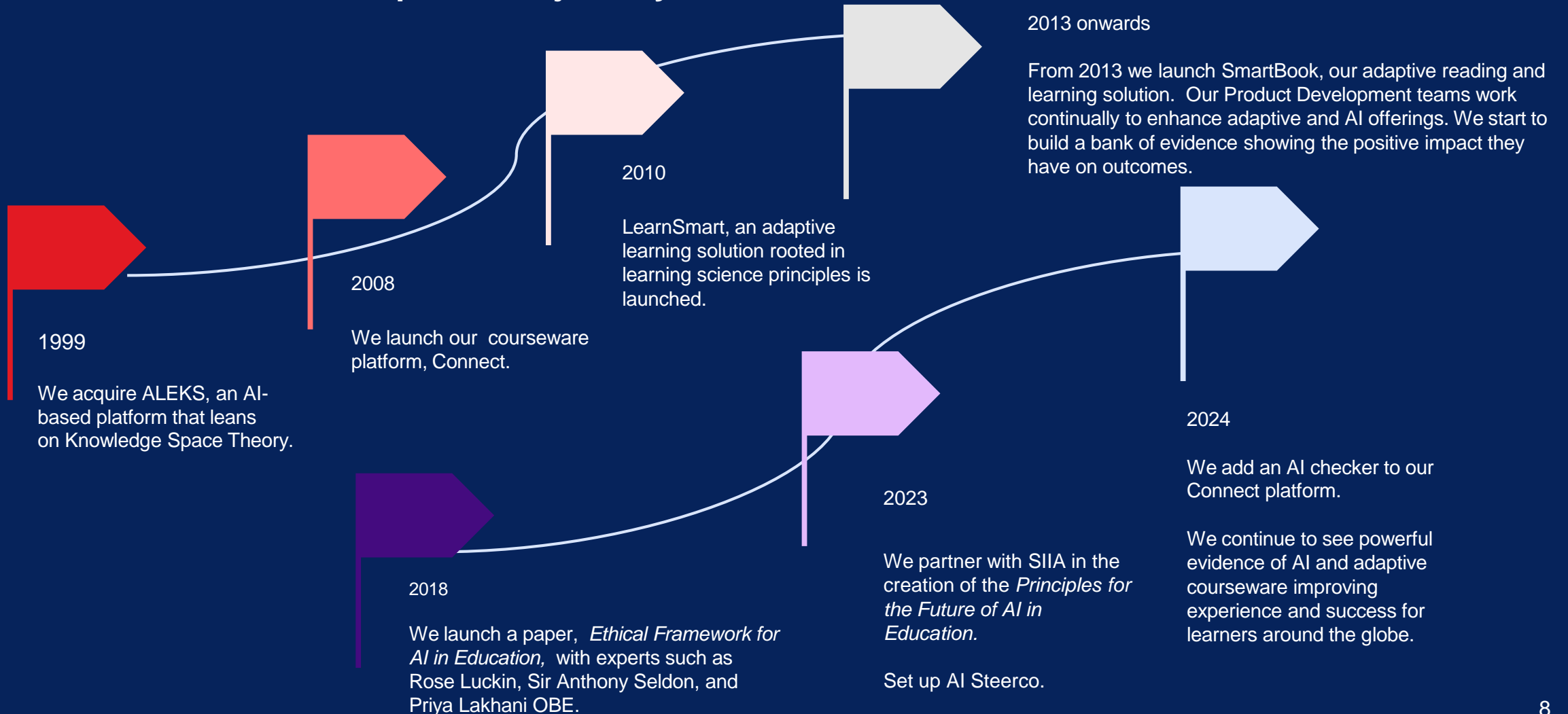
AI will help edtech companies deliver quality, effective learning content at scale.



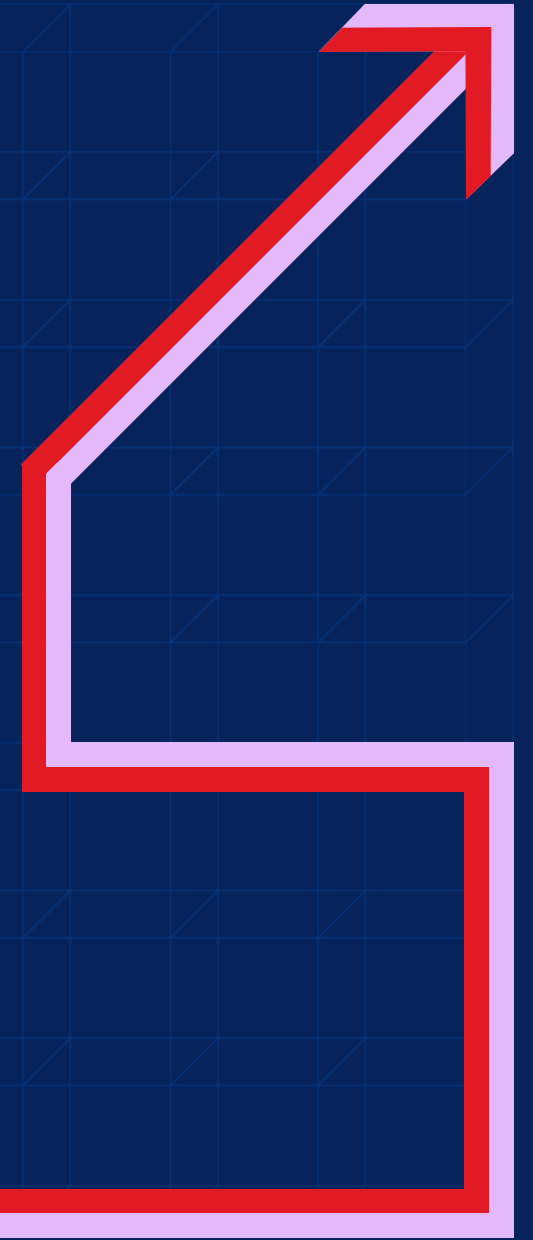
“AI is not a panacea. It is another arrow in our quiver aimed at helping students succeed.”

Simon Allen, CEO, McGraw Hill

McGraw Hill, AI and Adaptive: our journey so far



What is ALEKS?



ALEKS: Maths, Chemistry, Business Maths / Accounting

- Research-based, online learning program that offers course products and Prep products across several disciplines.
- Rooted in 20 years of research and analytics, ALEKS helps educators understand each student's knowledge and learning progress in depth, and provides the individual support required for every student to achieve mastery
- ALEKS helps students master course topics through a **continuous cycle of mastery, knowledge retention, and positive feedback** helping students to develop the maths confidence they need to succeed,
- ALEKS determines the student's baseline of knowledge to create an individual and dynamic path to success.

ALEKS PPL

- **Placement, Preparation, and Learning**
- More than just a placement test: Accurately measure students' math readiness and repair learning loss.
- **Accurate Assessment:** Determine students' current knowledge and readiness for college math
- **Personalized Practice:** Students refresh math skills to prepare for their course or place higher
- **Proven Outcomes:** Efficacy-backed to reduce DFW rates, increase retention, and close equity gaps

What is SmartBook and Adaptive Learning Assignments?

The screenshot displays a digital learning interface for a psychology course. The main content area shows a text passage under the heading "4. DRAWING CONCLUSIONS". The text discusses how scientists draw conclusions from research and the importance of replication. A progress bar indicates 0% completion. Below the text, a question is presented: "In business, a group of people who work together, often in teams, in an attempt to achieve some specific purpose is known as:". Four radio button options are provided: "a cohort.", "an organization.", "an assemblage.", and "a cadre.". At the bottom, a "Confidence Level" section asks the user to rate their confidence to submit the answer, with buttons for "High", "Medium", and "Low".

Experience Psychology Exit Assignment

← →

4. DRAWING CONCLUSIONS

Based on the results of the data analyses, scientists then draw conclusions from their research. If the results of a study (or a series of studies) support predictions, then a theory may gain credibility. A theory, however, is always open to revision. Before a theory is accepted or changed, the scientific community must establish that the research can be replicated, or repeated, by other scientists using different methods. Replication means that one scientist tries to reproduce a study to see if they get the same result. The replicator can be the same scientist who originally produced the study, or a different scientist who originally produced the study and is repeated again across different research results of psychological experiments.

Progress 0% 25

To Questions

In business, a group of people who work together, often in teams, in an attempt to achieve some specific purpose is known as:

- a cohort.
- an organization.
- an assemblage.
- a cadre.

Confidence Level
Rate your confidence to submit your answer

High **Medium** **Low**

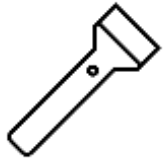
SmartBook

- Available within McGraw Hill Connect®, SmartBook personalizes learning to individual students' needs.
- It continually adapts to pinpoint knowledge gaps and focus students' learning on concepts that require additional study.
- McGraw Hill's adaptive learning solution is rooted in science, and provides an interactive, adaptive reading and learning experience.
- This helps students master key concepts and come to class prepared.
- With more than a decade of collecting data from billions of questions answered across 90+ disciplines, we've learned a lot about adaptive learning's impact on student performance.

Adaptive Learning Assignments

- All Connect courses also contain Adaptive Learning Assignments based on the power of our SmartBook technology.
- These provide standard just-in-time learning to help students with core study skills such as note taking. Rather than featuring a textbook, these feature interactive resources to help students learn on the go.
- Specific disciplines also offer adaptive prep in core topics that students need to study to succeed such as chemistry, biology and basic anatomy for A&P.
- Adaptive Learning is a powerful tool for instructors to assign to remediate students and help level up the classroom.

How SmartBook and Adaptive Learning Assignments are Driven by AI and Predictive Analytics



Identifying Knowledge Gaps

SB / ALAs analyze student interactions with the content to pinpoint where they need more practice



Adapting Content

Based on individual student performance, SB / ALAs tailors the learning path each student takes through dynamic questions to be relevant to their needs and level of preparedness / knowledge



Providing Personalized Feedback

SB offers continuous and targeted feedback and ALAs also include just-in-time learning resources based on student performance and metacognition (alongside dozens of other data points being collected)



Data Driven Insights

Both instructors and students have access to separate reports that provide deep, actionable insights

Allows instructors to focus their teaching based on knowledge gaps

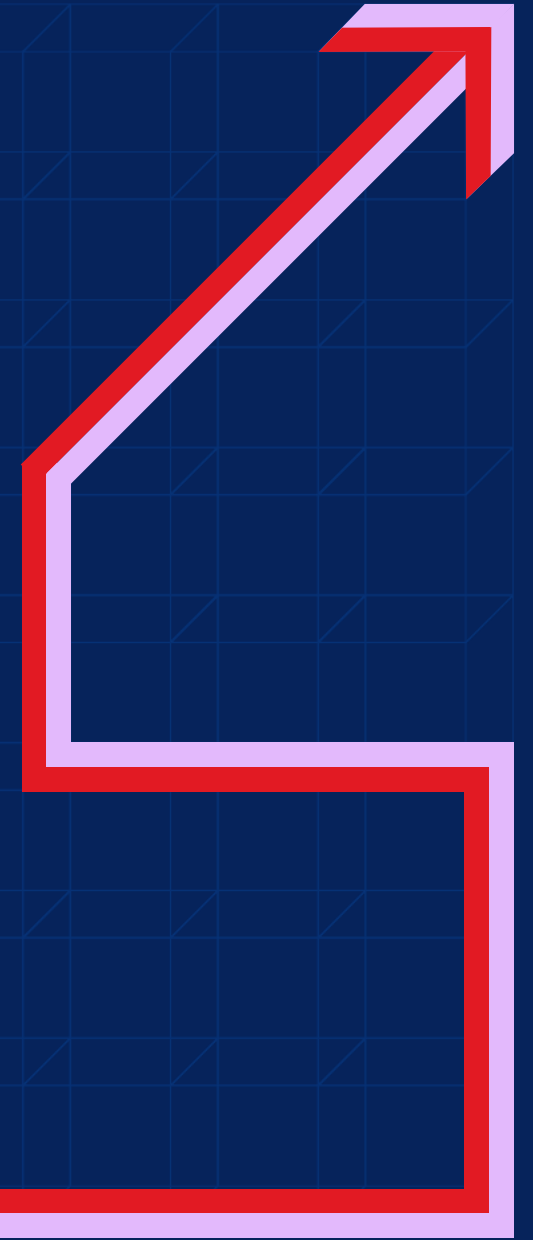


Grounded in Learning Theory

AI functionality is based on: Mastery learning

- Cognitive load theory
- Scaffolding – differentiated instruction
- Spacing practice
- Chunking information
- Interleaving
- Self-efficacy theory / Motivation / Metacognitive theory

What Else Are We Doing?





What is MH is
doing to
protect the
content we've
developed?

Instructor Grading View Only

1 **2**
Draft Final Submission ⓘ
Submitted: 06/16/23 12:58 PM EDT Draft Due: 06/19/23 11:59 PM EDT Status: Draft review in progress

Prompt: Test prompt

[View Rubric](#)

Here is some text that I want to check for use of AI. Here is some text that I want to check for use of AI. Here is some text that I want to check for use of AI. Here is some text that I want to check for use of AI. Here is some text that I want to check for use of AI. Here is some text that I want to check for use of AI. Here is some text that I want to check for use of AI. Here is some text that I want to check for use of AI. Here is some text that I want to check for use of AI. Here is some text that I want to check for use of AI. Here is some text that I want to check for use of AI. Here is some text that I want to check for use of AI.

Words: 188

[Exit](#) [Review Complete](#)

Tools

- [Writing Feedback](#) ⓘ
- [Inline Comment](#) ⓘ
- [Overall Feedback](#) ⓘ
- [Grammar and Writing](#) ⓘ
- [Originality](#) ⓘ
- [AI Usage](#) ⓘ **Beta**

Linguistic and sentiment analysis indicates a high probability that this submission was generated using AI.

[Feedback](#)
Was this information helpful?
 Yes No

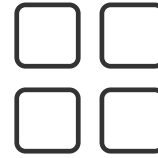
Tell us more. (Optional)

[Submit](#) [Cancel](#)



AI Detector

Homegrown Generative AI
detection tool.



Neural Network Trained

Trained on more than 200+ separate
natural language structures.



ChatGPT Focused

Can detect if ChatGPT has been used.



Proprietary Technology

Built in-house and with a proprietary design,
not replicated by other products.

Thank you!
And Q&A

