29 October 2015

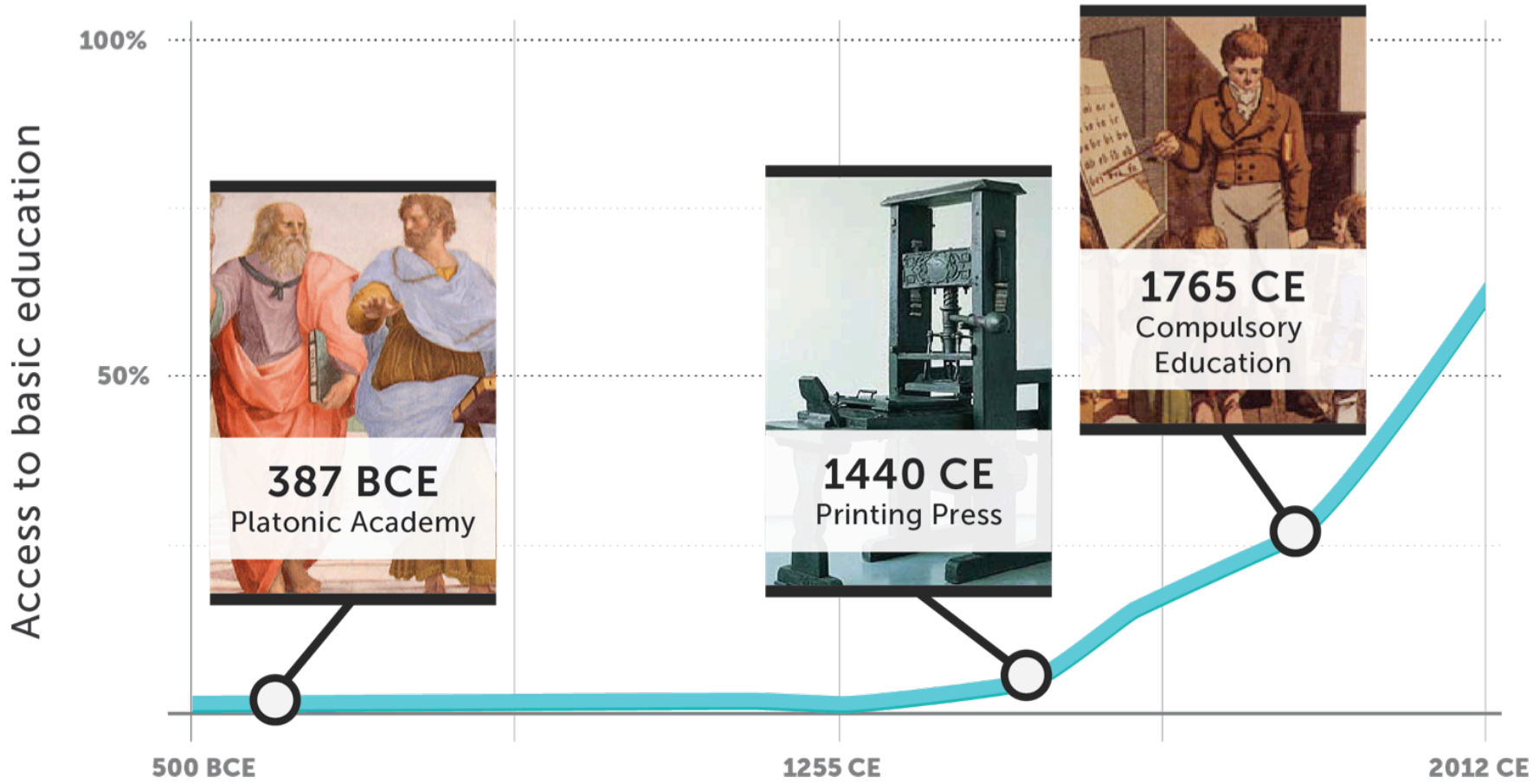
KNEWTON

The Data Revolution in Education

HSE - Moscow

Fernando Rodriguez-Villa, EMEA Business Development & Strategy

Past revolutions in Access to Education



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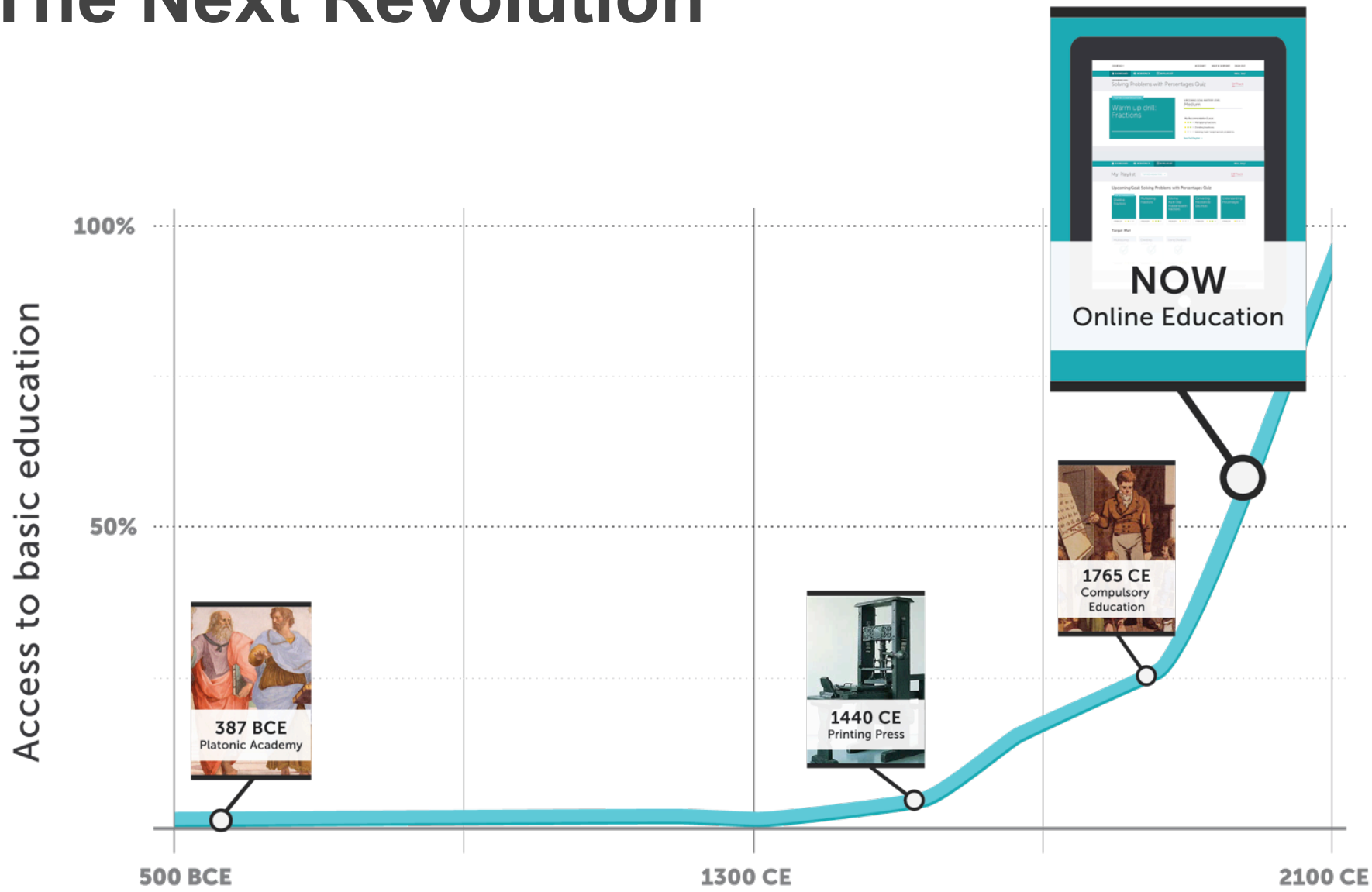
The Next Revolution



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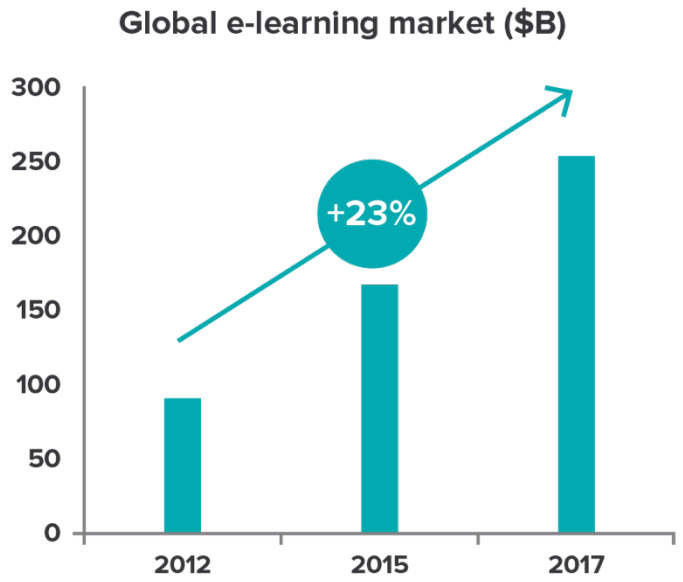
Why now?

Materials and classes moving to digital online...



Source: GSV Advisors estimate via Bank of America Merrill Lynch (Nov 2013)

...improving access, following a trend seen elsewhere

Google

NETFLIX

PANDORA internet radio

amazon.com

Baidu 百度

peixeurbano exploring the city

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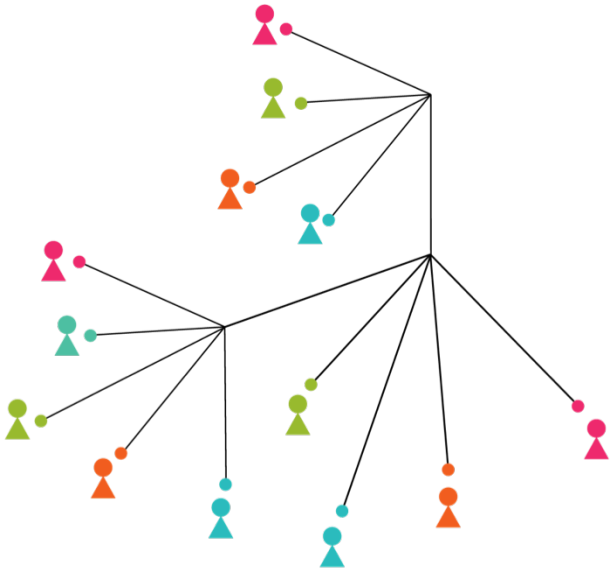
The internet does two things very well...

1. Distribution

(Accessible content)



2. Personalisation

(Data Science and Analytics)

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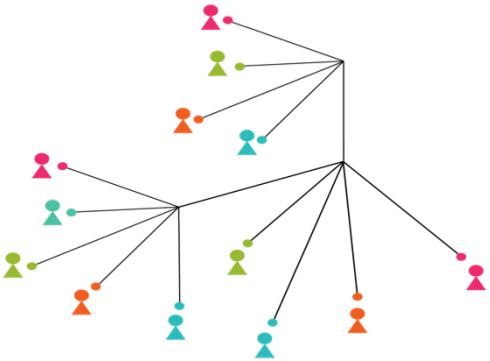
...though it has only just started to impact education

1. Distribution

(Accessible content)



KHAN ACADEMY

iTunes U

edX

chromebook

2. Personalisation

(Data Science and Analytics)

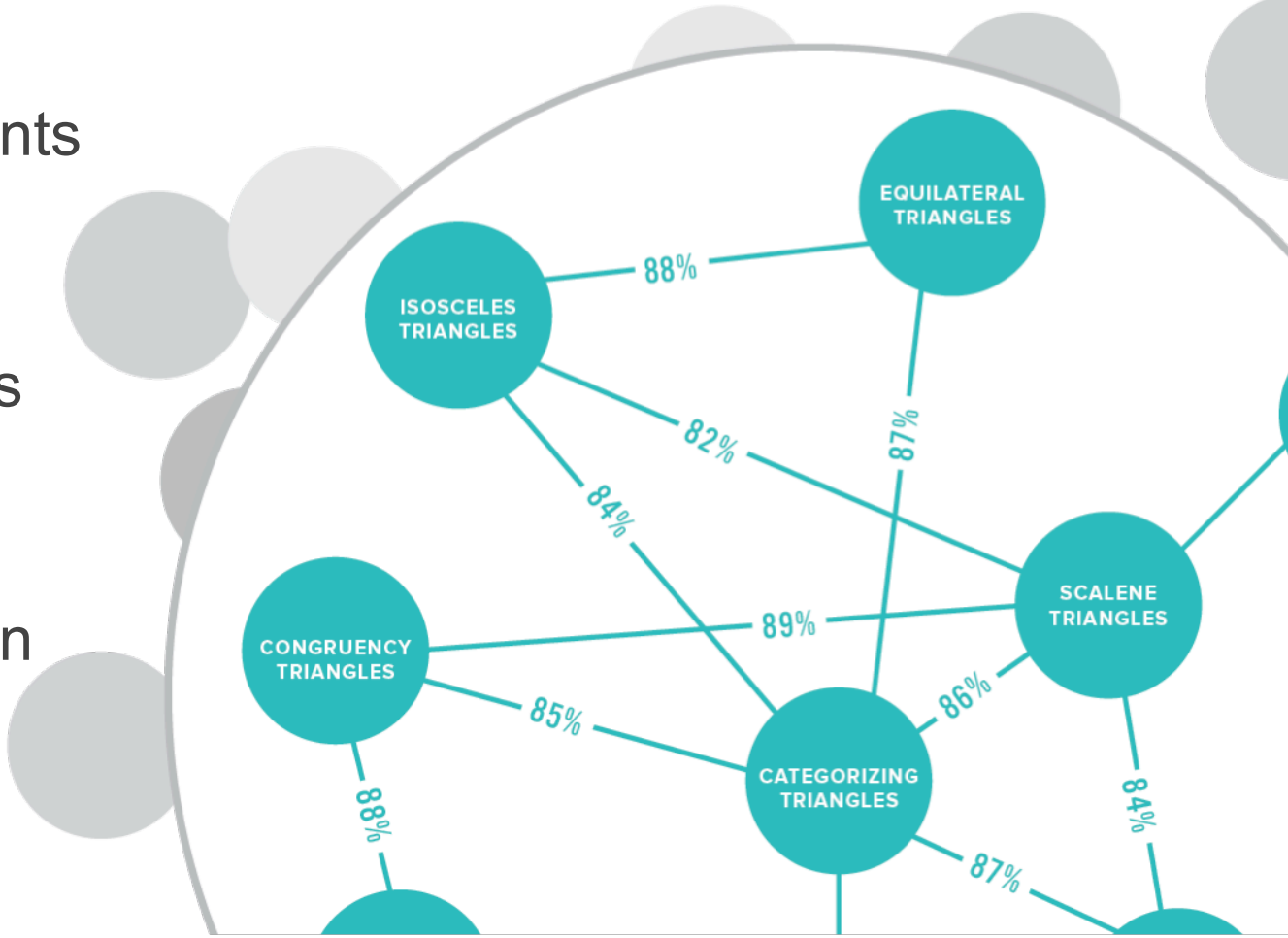
KNEWTON

What is special about data in education?

1) Massive amounts

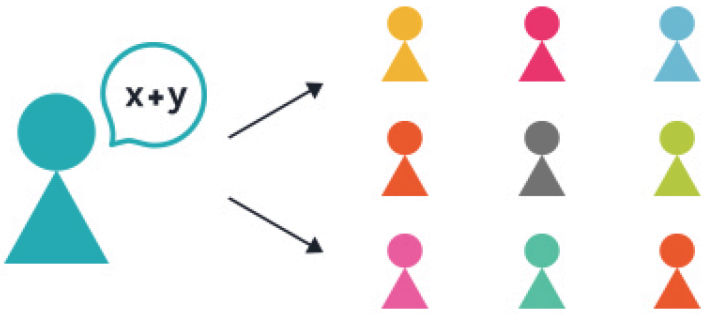
2) Smaller chunks

3) High correlation



When applied correctly, these data can make personalization possible

Instead of getting the same as every other student...



...each learner can have an experience tailored to ***them***

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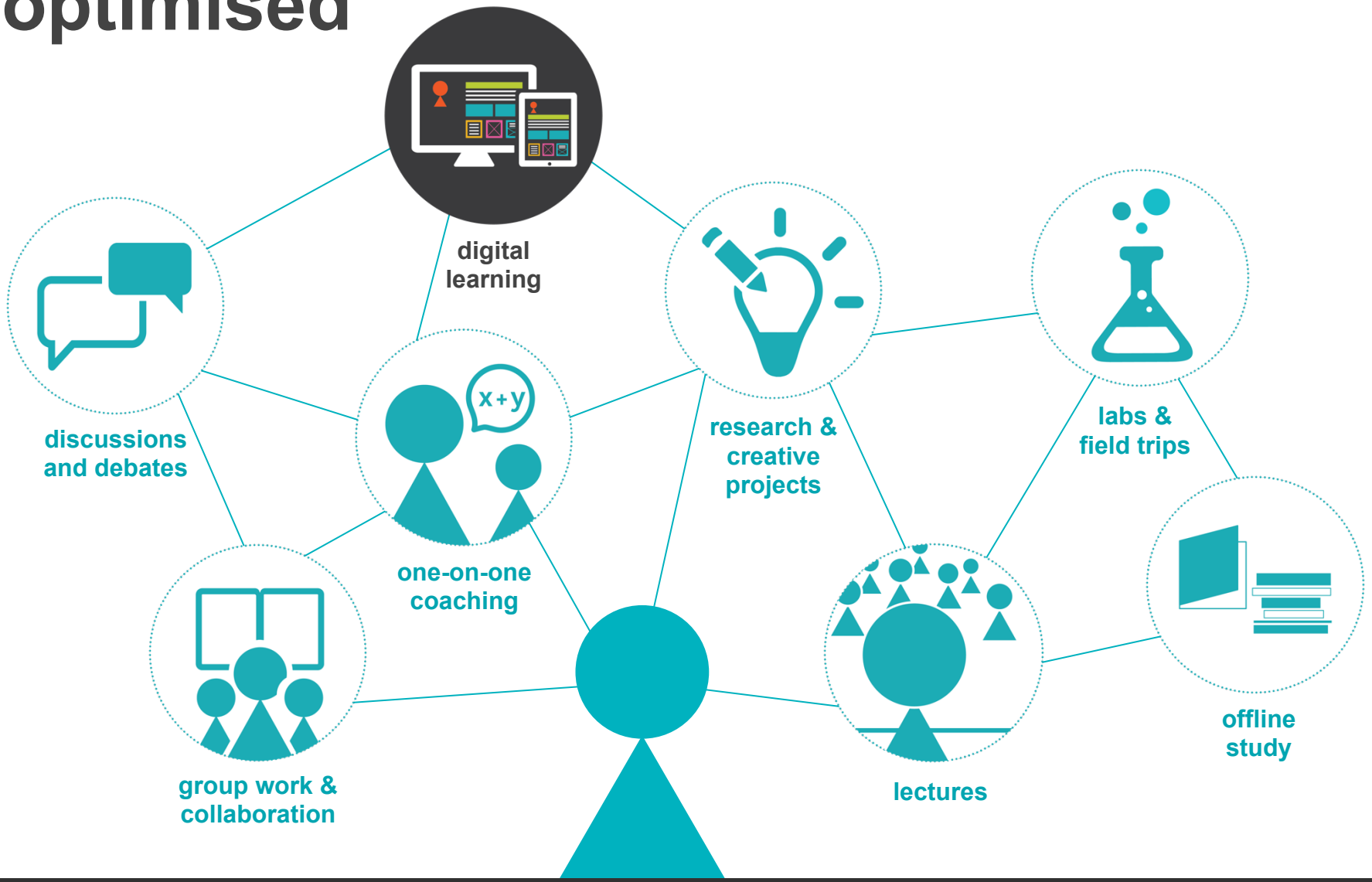
Digital learning *in particular* can be optimised



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...and it can be optimised through *adaptivity*

- Each **student** has a learning experience unique to his or her needs and goals

- **Teachers** can track their students' progress and potential at a granular level (Students can track themselves too!)

- **Publishers** (and **developers**) can observe the effectiveness of their content and make data-driven development decisions

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Knewton's mission is to bring adaptive learning to the world

Our engine analyzes student activity to recommend the best content and evaluate progress, engagement, and more.

Our growing list of partners includes 20+ of the world's largest publishers and education companies. Knewton serves millions of students around the world.

Our team of 200+ includes data scientists, learning experts, and engineers from top academic institutions and companies.

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Knewton has benefited from the expertise of partners all over the world

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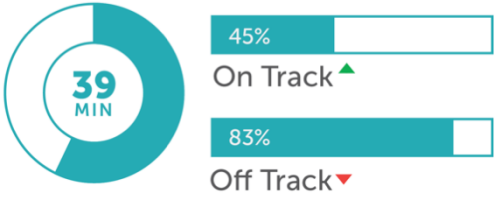
Knewton's software provides three core sources of value

Recommendations
for learners

What question or lesson should I work on next?

Learning analytics
for learners and instructors



Do my students understand this? How will they do on next week's test?

Content insights
for publishers

What do the data say about how well my content is performing?

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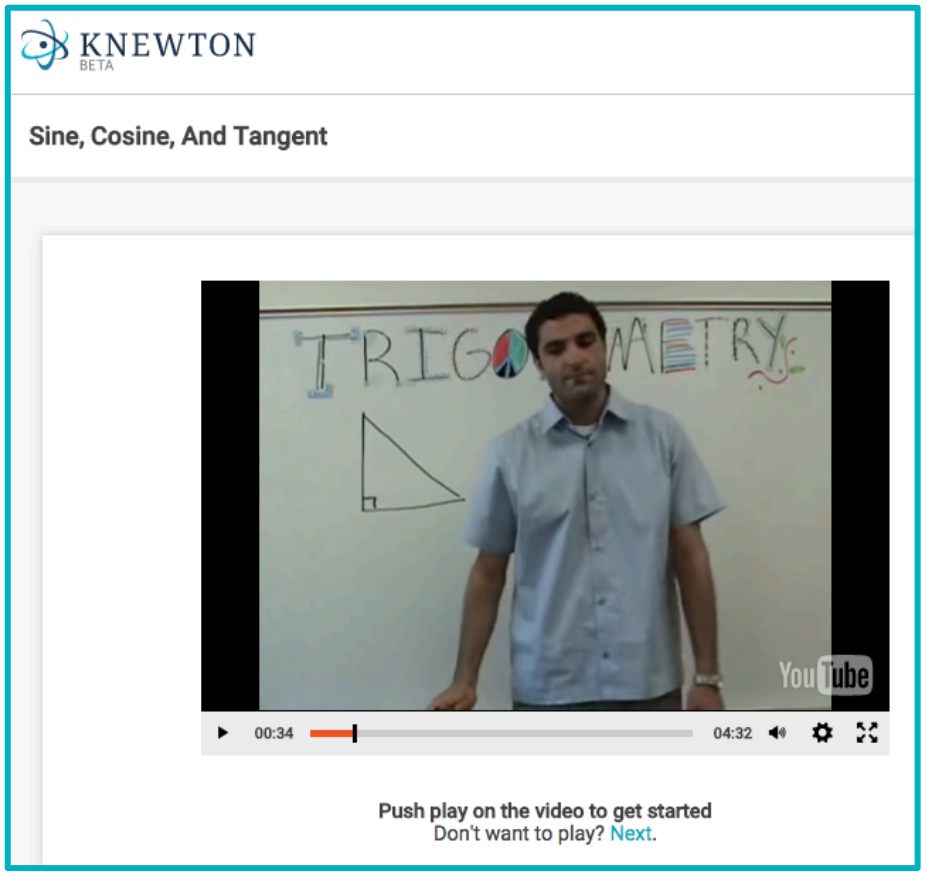
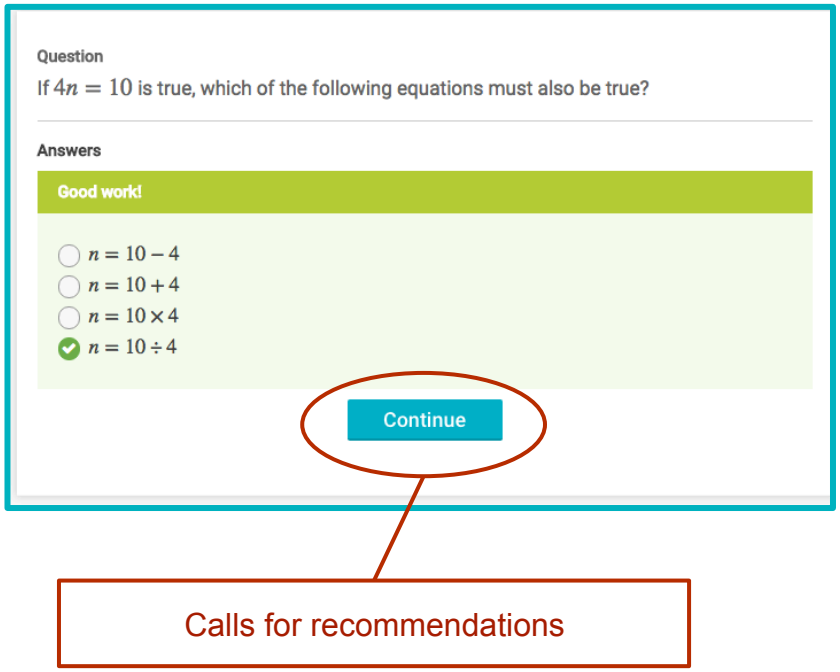
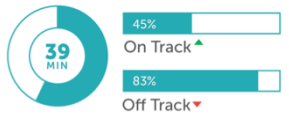
Recommendations guide students through content





Learning analytics for teachers



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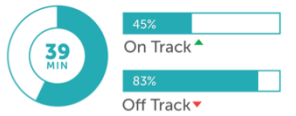
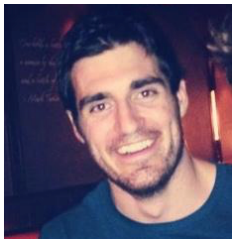
Learning analytics for students



Rodriguez-Villa Fernando

Print report Share



Proficiency

Engagement

Keep working

Your engagement has been LOW - spend more time for better results! Your overall course proficiency is Low.

Your TOP topic is: Angles Your most DIFFICULT topic is: Area of Polygons.

In progress

Topics	Progress	Expected score	Active time	Deadline
Angles	Keep working	80%	5 min	112 days
Area of Polygons	Let's get started!		0 min	112 days
Geometry	Keep working	63%	3 min	112 days
The Coordinate Plane	Let's get started!		0 min	112 days
Three-Dimensional Geometric Figures	Let's get started!		0 min	112 days
Two-Dimensional Geometric Figures	Let's get started!		0 min	112 days

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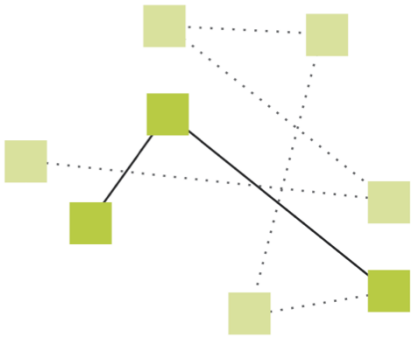
Content insights for publishers and developers

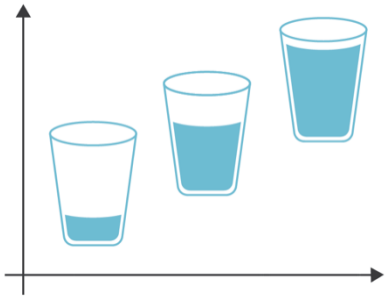
Assessment Quality

How well do individual questions assess underlying topics?



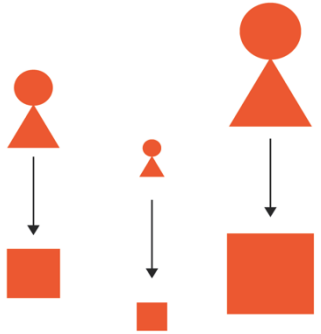
Exhaustion

How much content are students utilizing, relative to proficiency achieved?



Instructional Impact

How much do pieces of content contribute to learning?



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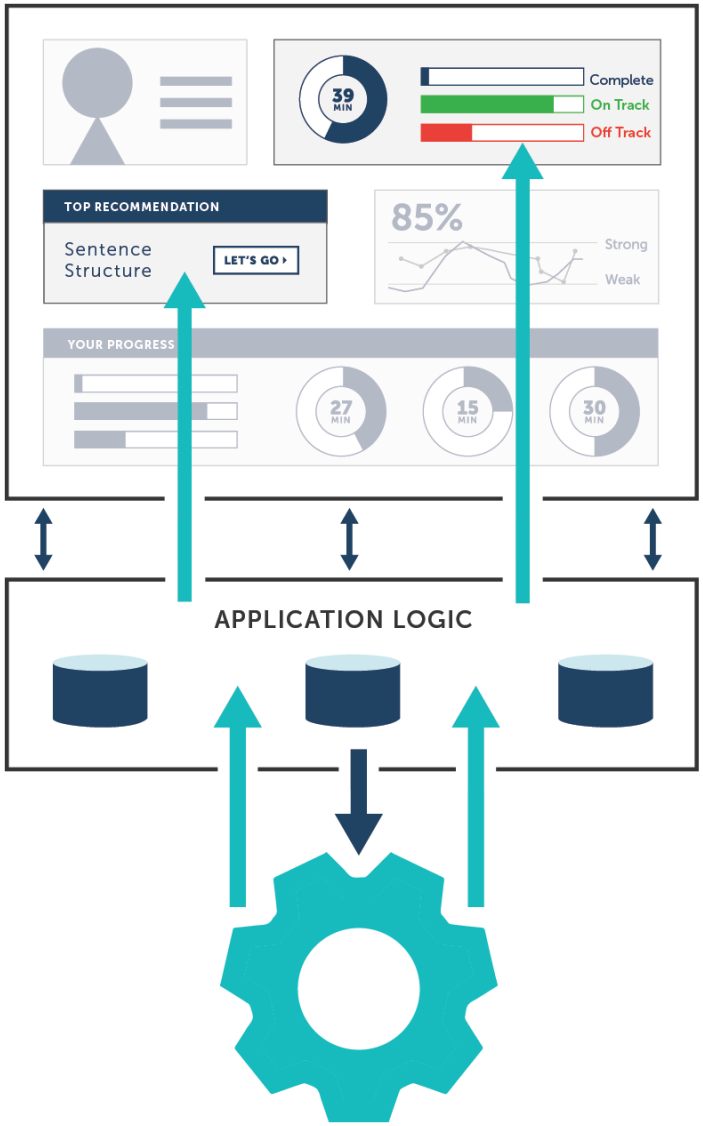
Knewton as an “intelligence layer”...

What the student or teacher sees:

The partner’s product:

Knewton’s engine



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...with an engine that considers many factors

Learner's knowledge

- LEARNER PROFICIENCIES
- ASSESSMENT NEEDS
- NEED FOR REMEDIATION
- WHERE TO MOVE FORWARDS

Learner's activities

- LEARNER PACE
- REPETITION OF MATERIAL
- LEARNER STRATEGIES

Content factors

- ASSET RELATIONSHIPS
- INSTRUCTIONAL VALUE
- ASSESSMENT VALUE
- QUESTION DIFFICULTY
- CONTENT DURATION
- ENGAGEMENT

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Knewton's infrastructure helps partners use data to improve results

- Cloud-based adaptive learning software company
- Founded in 2008
- HQ in New York City
- c. 200 Employees in 3 offices (NYC, London and Tokyo)
  - 80% Tech
  - 20% Business/Support

Operating at Scale

- **20+ enterprise partnerships** across Higher Ed, K12, ELT
- **7M learners** on platform at EOY 2014
- **9B+ recommendations** served to date

Built for Flexibility

- High-performance infrastructure
- Content, pedagogy, and language agnostic
- Experience across domains (Reading, Writing, Math, Hard and Soft Sciences)

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KNEWTON

Thank you

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