Trends in Education

Future Technologies

Trent Ray

Collective Education Australia

@ray_trent #WAES


What do you want to be
when you grow up?


What did you want to be
when you grew up?

App Developer


Data Miner

Social Media Manager


Cloud Services Specialist

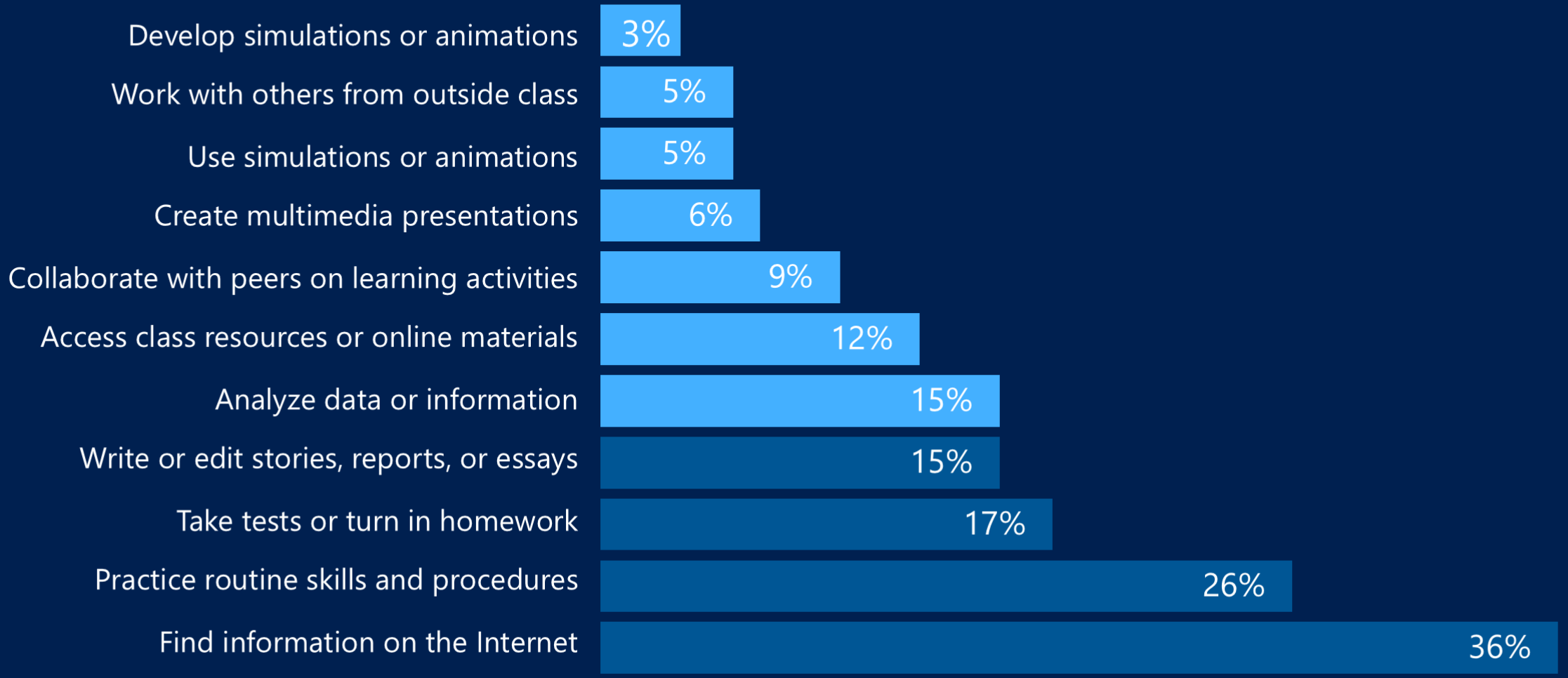

Avatar Manager


...anything but a teacher!

If a visitor to your school walks into a **typical classroom**. What might we see students doing with technology?

ITL research findings

ICT uses for class-related activity



ITL research findings

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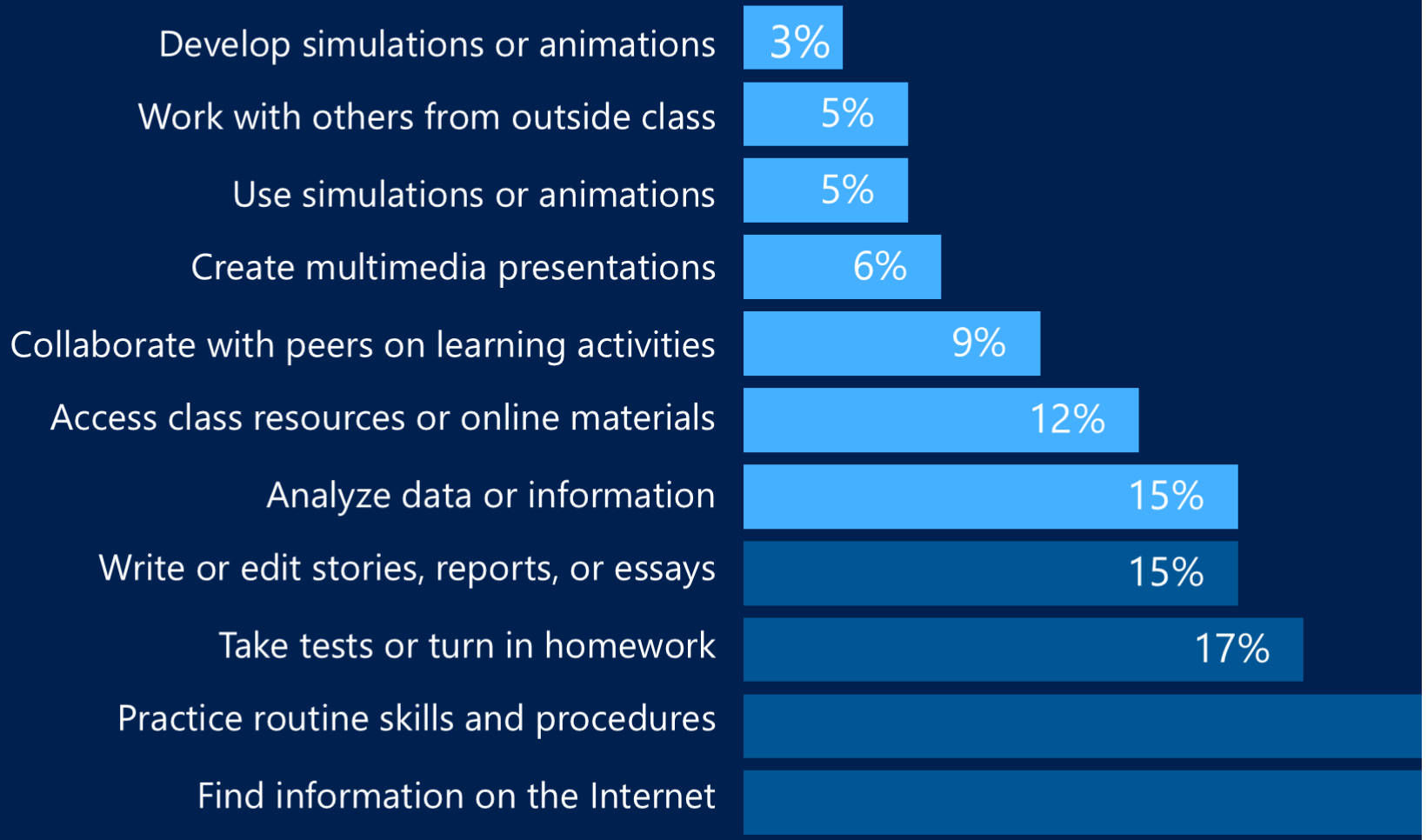
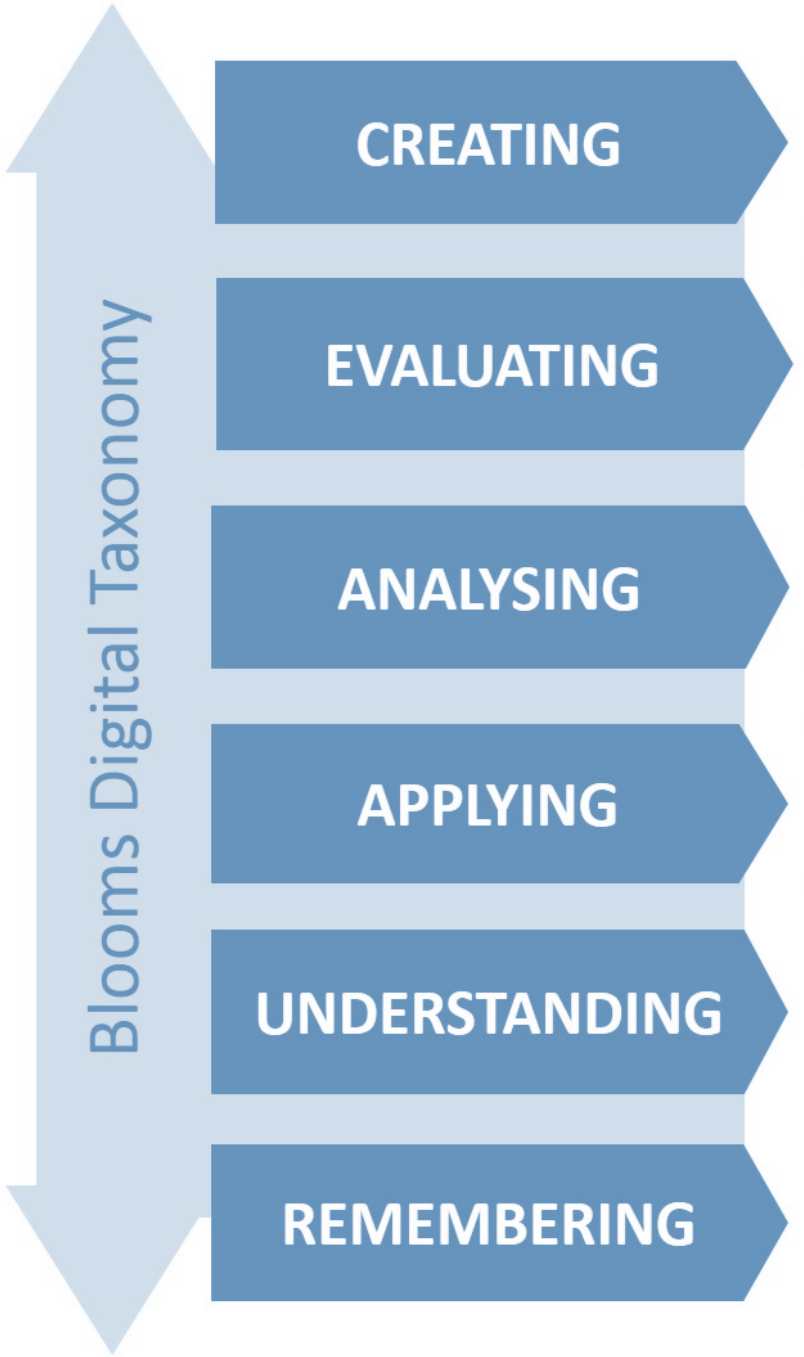
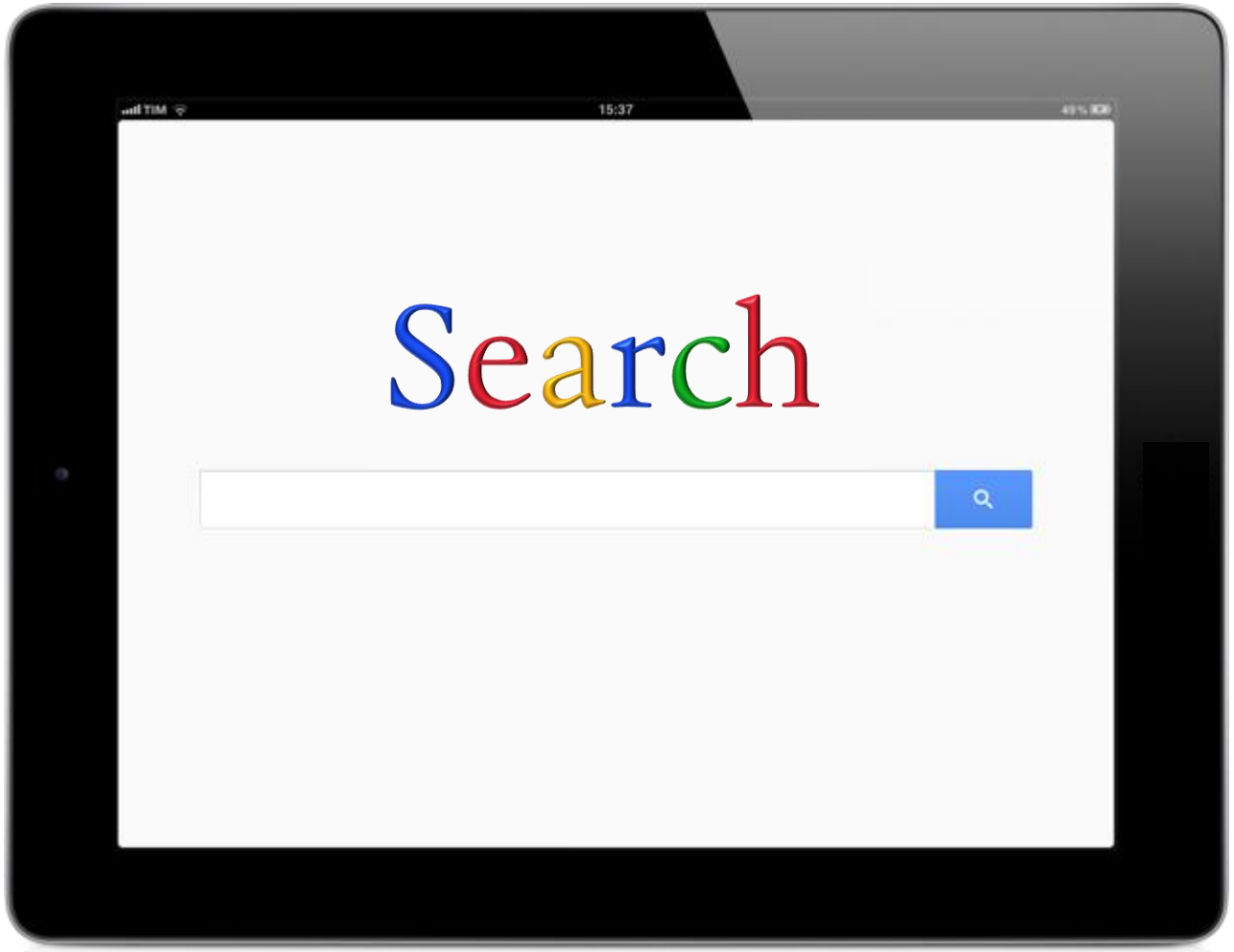






How do you use your device in class?

Trent

We use it to look up research and make things for our projects.

Josh

What subjects do you use your device in?

Trent

Mostly in Maths. We get onto Mathletics.

Josh

Can you think of any other ways you use it?

Trent

Nah, not really.

Josh


where he will learn

where he will work

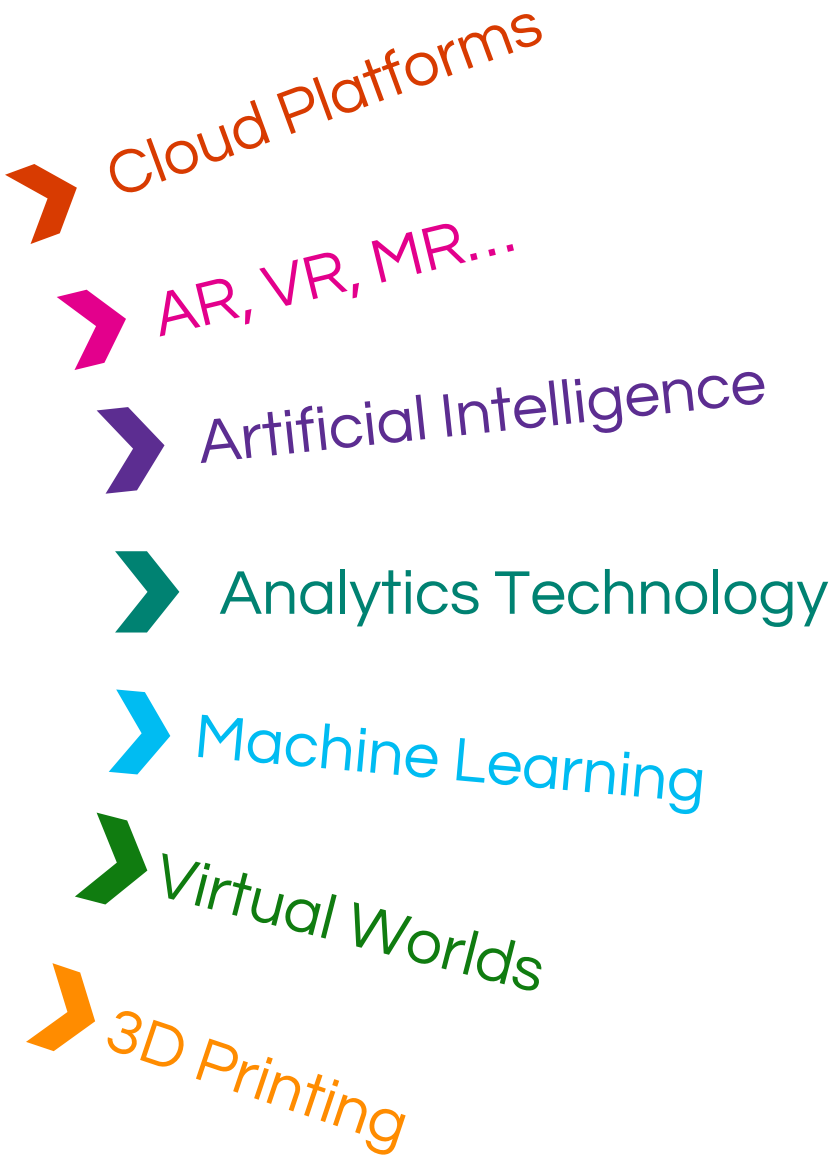

the work he does

The future

The future is here.

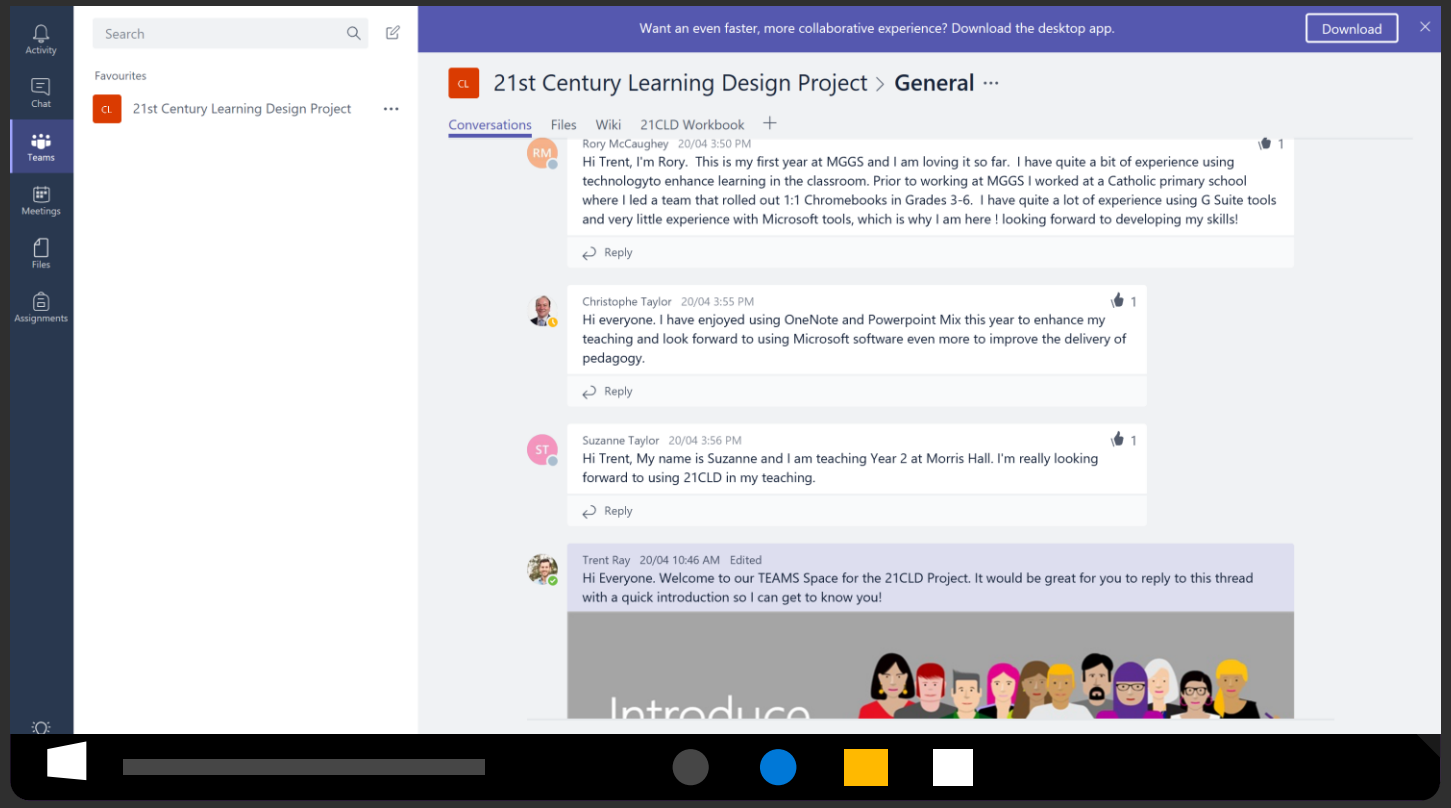
- Cloud Platforms
- Analytics Technology
- AR, VR, MR...
- Machine Learning
- Artificial Intelligence
- 3D Design & Printing
- Cognitive Services
- Virtual Worlds

How do you see these technologies impacting learning?



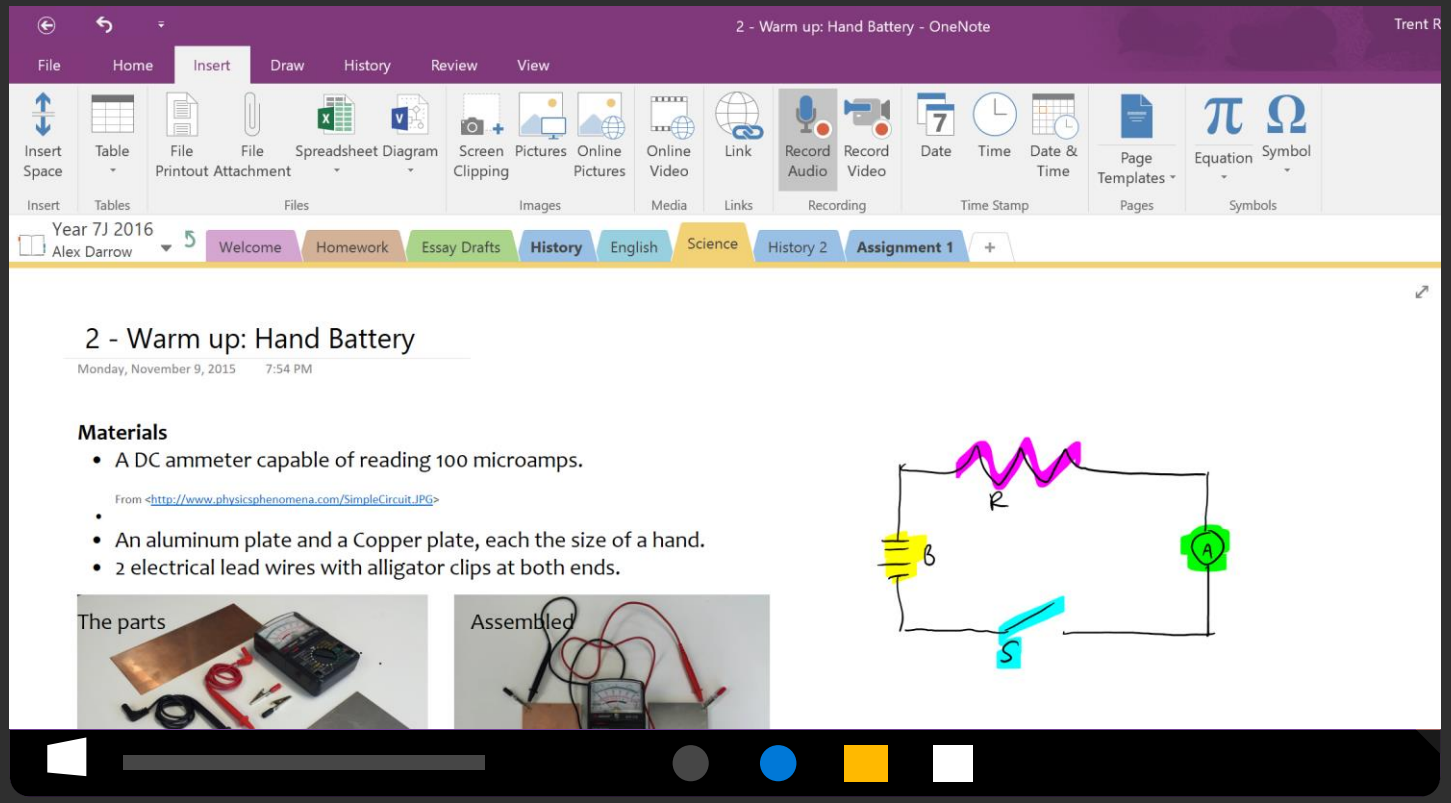
Moving to the Cloud


Office 365



Teams

Creating a culture of Collaboration



OneNote

Class Notebooks

› **Virtual** Reality

› **Augmented** Reality

› **Mixed** Reality

A New Reality

CASE WESTERN RESERVE UNIVERSITY
COLLEGE OF ARTS AND SCIENCES

MIXED REALITY

CHANGING HOW WE

LEARN

HoloLens

Kids won’t get a job out of having *experienced* AR, VR and MR….

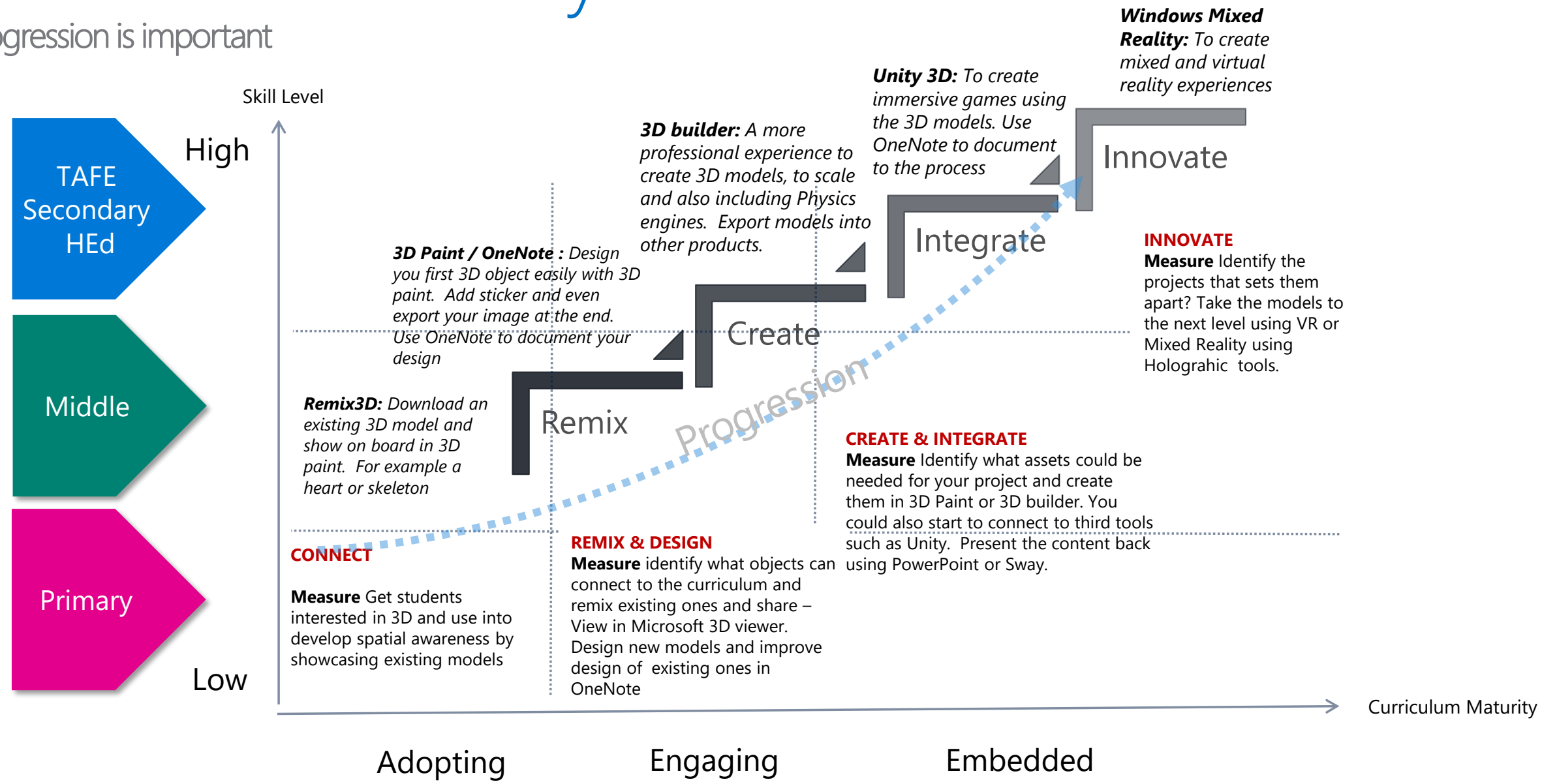

Kids will a job out of having
developed for AR, VR and MR….

from **consumers** to creators

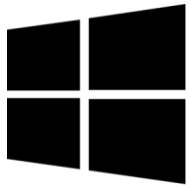
from consumers to **creators**

3D to Mixed Reality

Progression is important



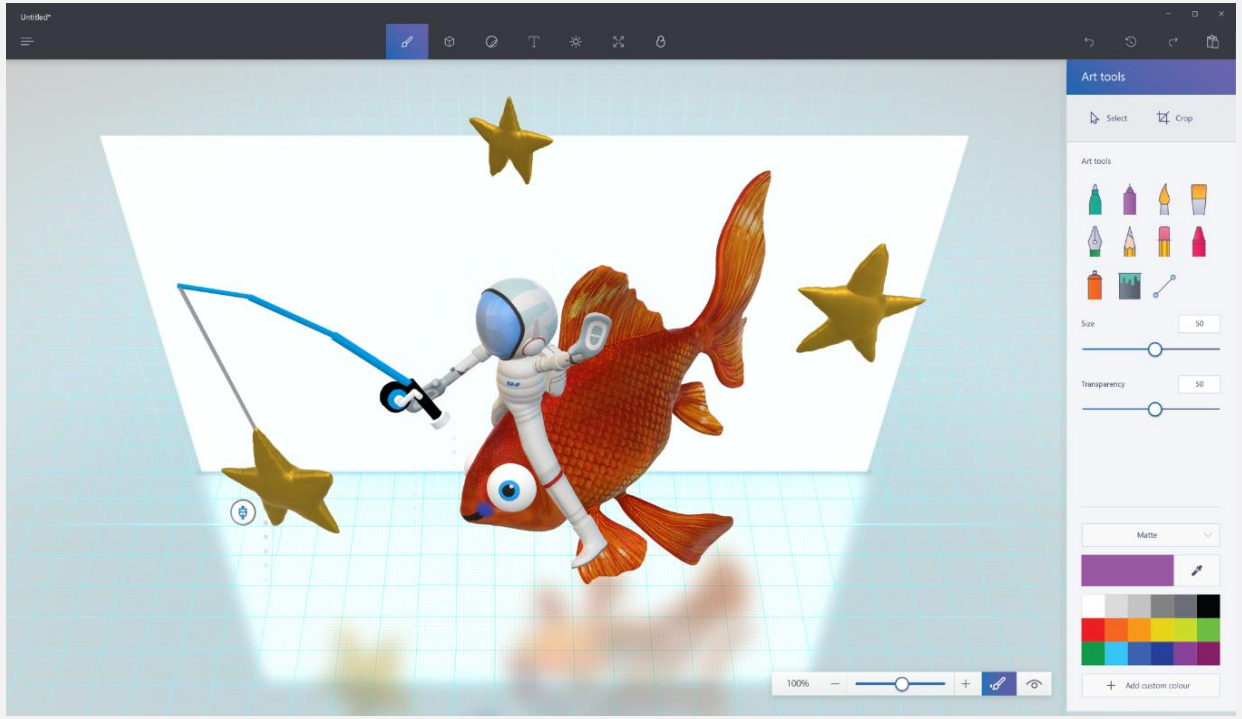
Adapted from: Simon Terry's From Adoption to Value Creation Framework: http://simonterry.tumblr.com/post/86394036804/beyond-adoption-to-value-creation

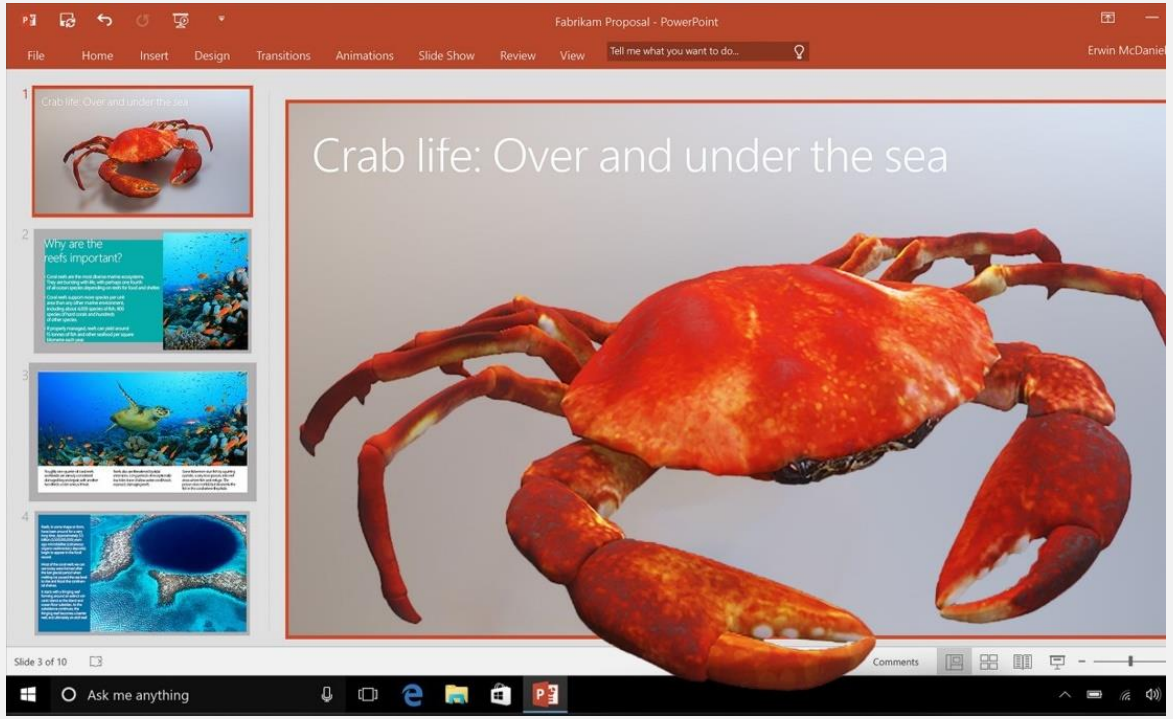


Windows 10

creators update

Learners as Creators

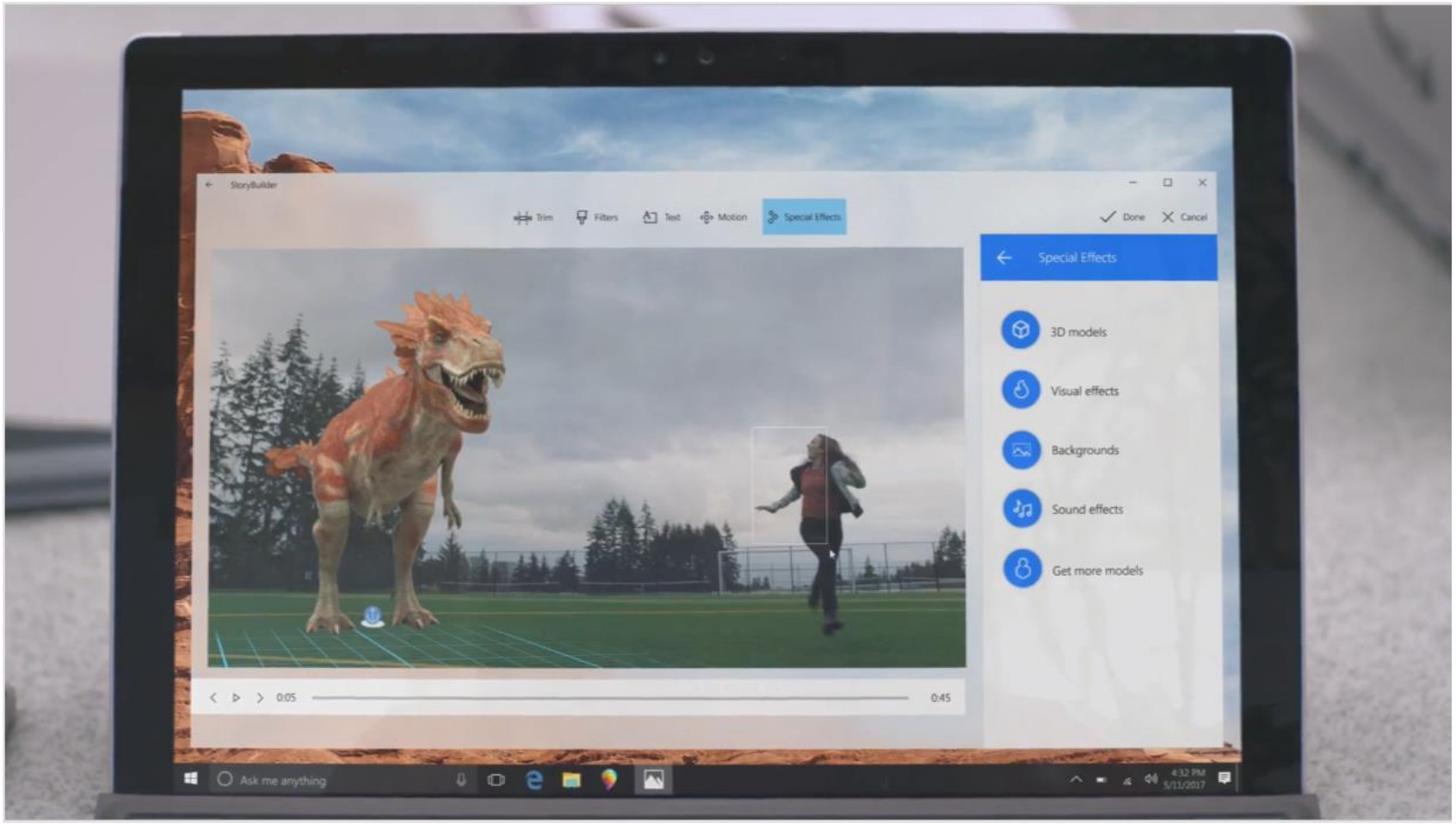




Story Remix

Windows 10

The reimagined **Story Remix** makes it so anyone can create a story with their photos and videos. You can ink directly into your videos and have it follow objects. You can add 3D objects and make your video come to life incorporating AI



Photos

Trim | Filters | Text | Motion | Special Effects

Done | Cancel

Seek

0:0

0:12

Search Remix 3D

Fireball

Microsoft

PLACE IN PROJECT

effect | fire | fireball | smoke

Description

It's a bird! It's a plane! It's a flaming meteor heading straight toward earth!

4/26/2017 | Made with Other

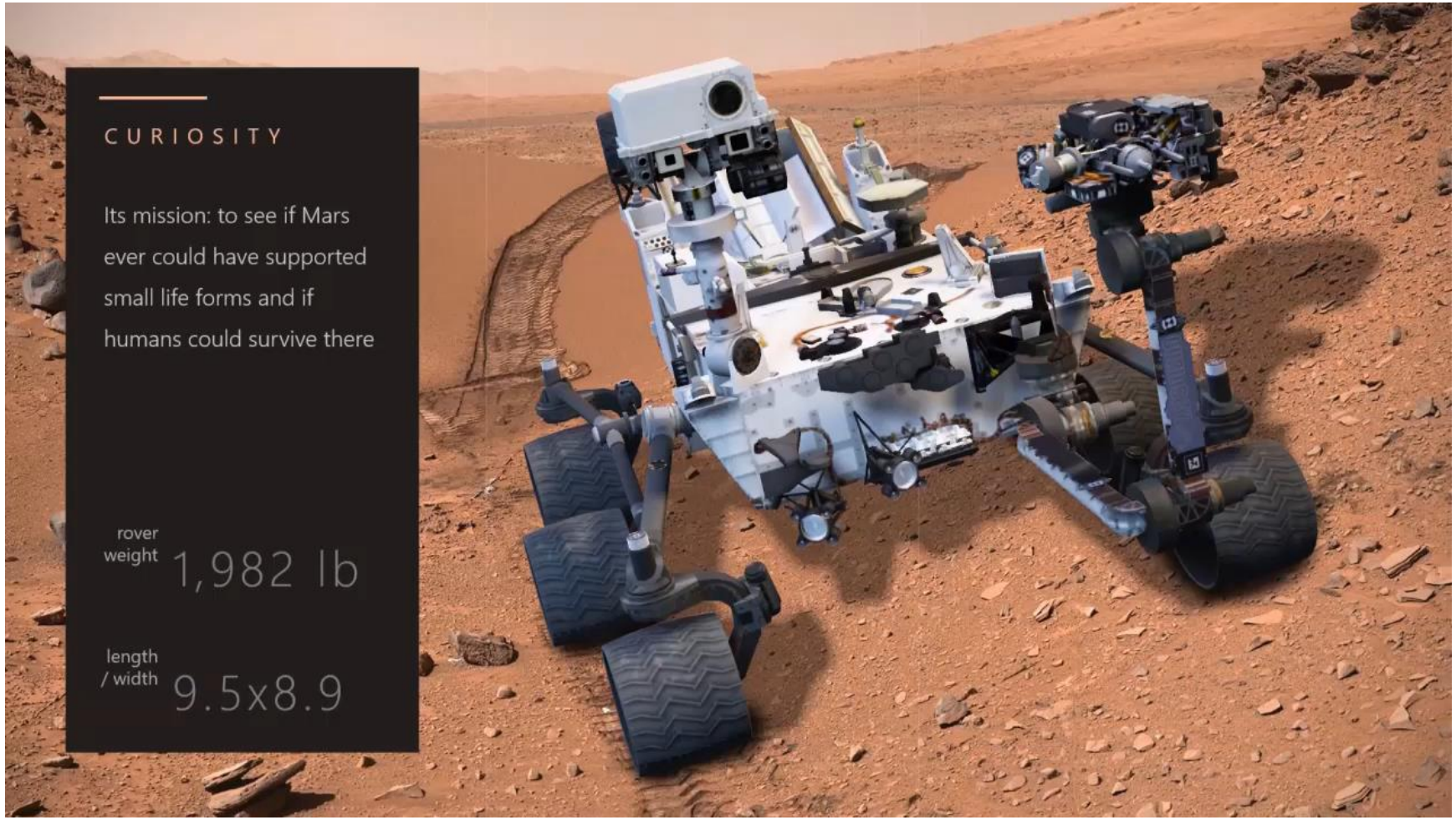
Remixes

8:48 AM
5/11/2017

Integrate 3D objects

Windows 10

You can enhance comprehension, productivity and expression of ideas by placing 3D objects into Office apps like **Word and PowerPoint.** Use the morph animation to rotate the object in different directions. View, resize, & rotate a 3D object with the 360 rotation handles.



Mixed Reality Viewer

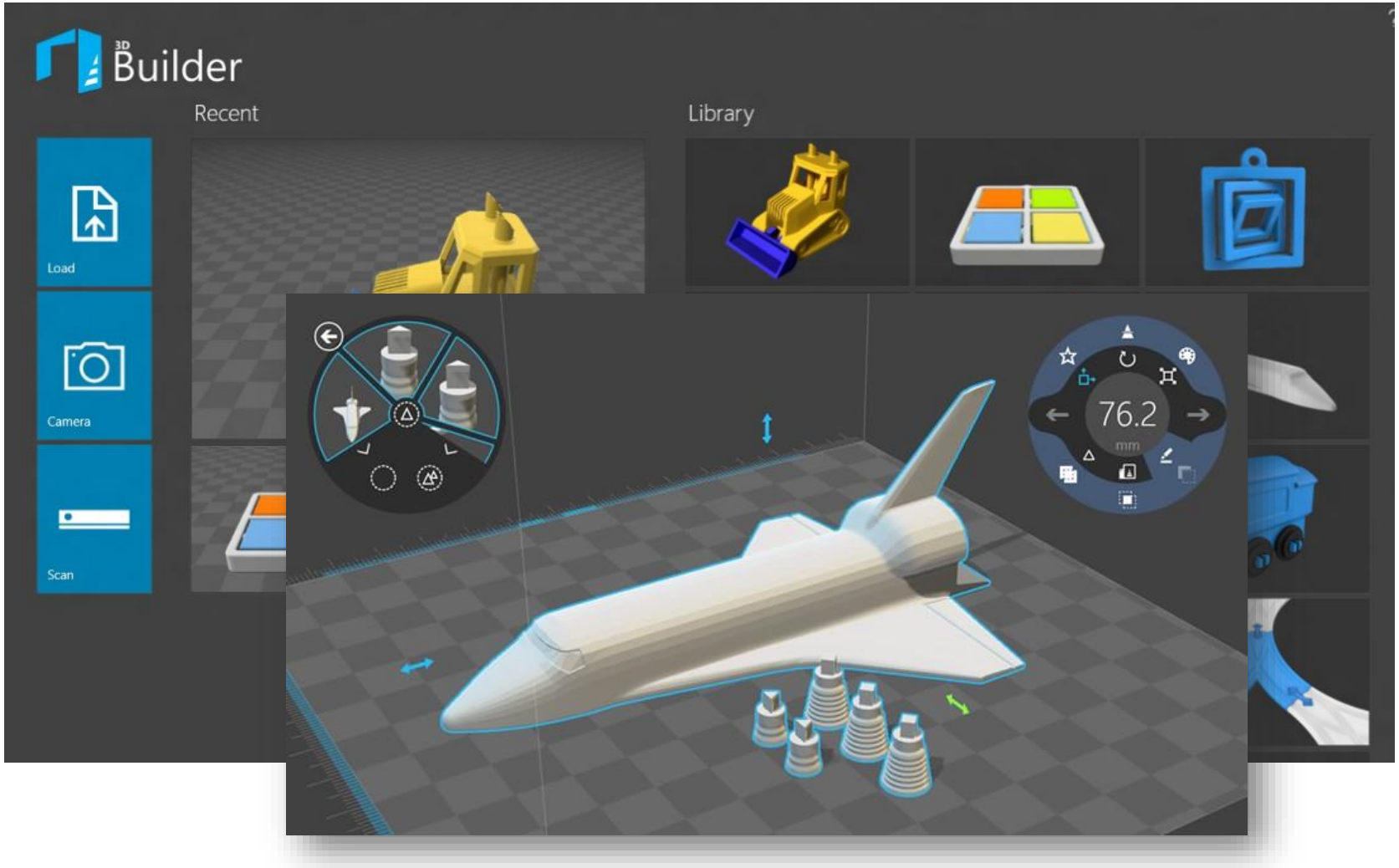
Windows 10

Transform your world by bringing digital **3D art into your real world** via View 3D. This feature utilizes your world facing camera to create magical moments. Rotate, resize, and move the object to create fun playful moments

3D Builder

Windows 10

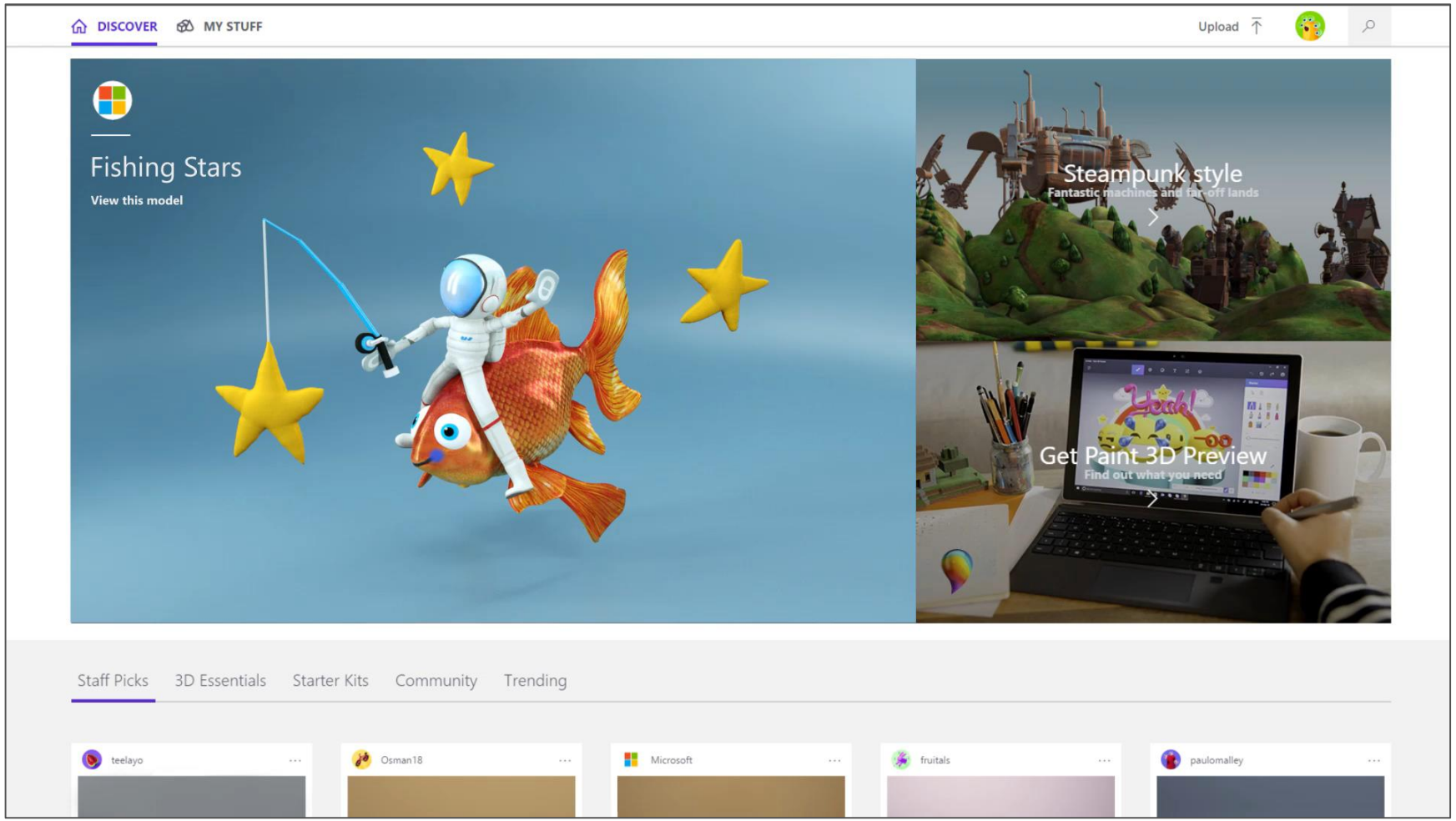
The **3D Builder** app has model visualization options and editing capabilities, and can **print to a 3D printer** that has a Windows-compatible printer driver. The app can be used as a reference and a test tool for 3D-editing, and for validating 3MF files that you create.



Find inspiration on the **Remix 3D (remix3d.com)**

Available October 17th

The Remix 3D Community (Remix3D.com) is a free **3D sharing website** that makes it easy to explore and consume 3D content online. You can even create, remix and **upload your own 3D content** to share with others.



Virtual Worlds


GAME-BASED
LEARNING
KnoxP
MichaelT
RandyM
KettiJ
BrockP
CarmenE
ColeP
ChrisH
BenK
ChrisM
MarcellaR

Creativity and Expression

"12% increase in learning outcomes when games are used to reinforce concepts"

https://www.sri.com/work/projects/glasslab-research

EXAMPLE LESSON

SUBJECT: Ecology/Biology
AGE RANGE: Intermediate

RIVER ECOSYSTEM PROJECT:

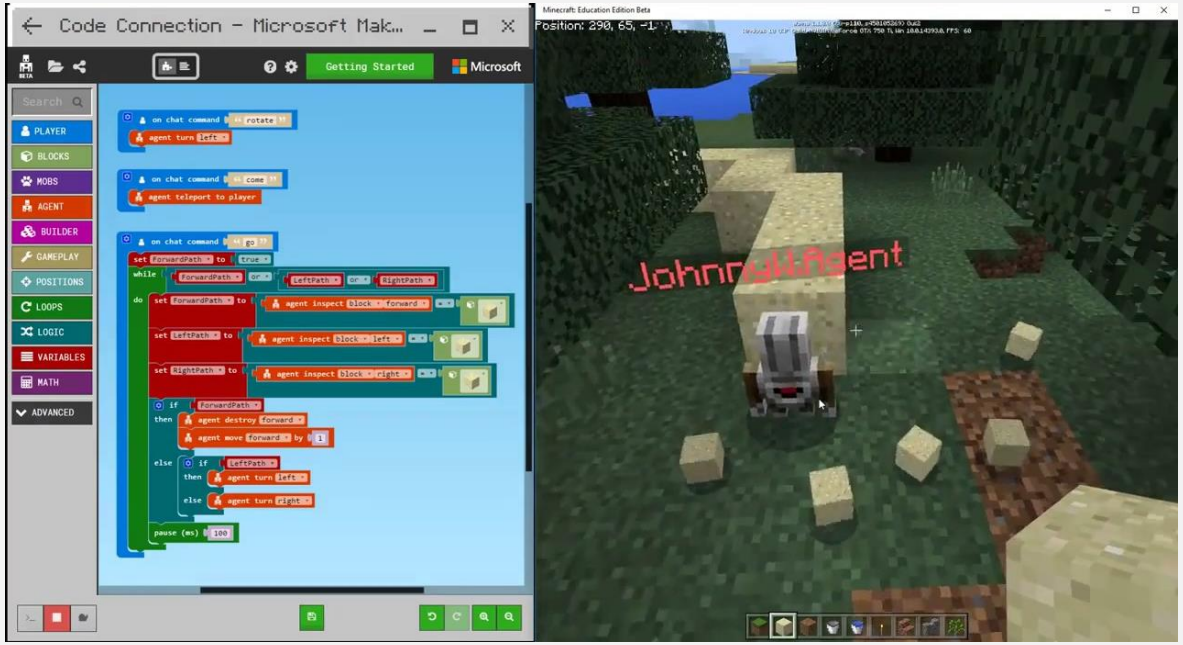
Students model a river ecosystem and present to class, use field work as baseline for measurements

LEARNING OBJECTIVES:

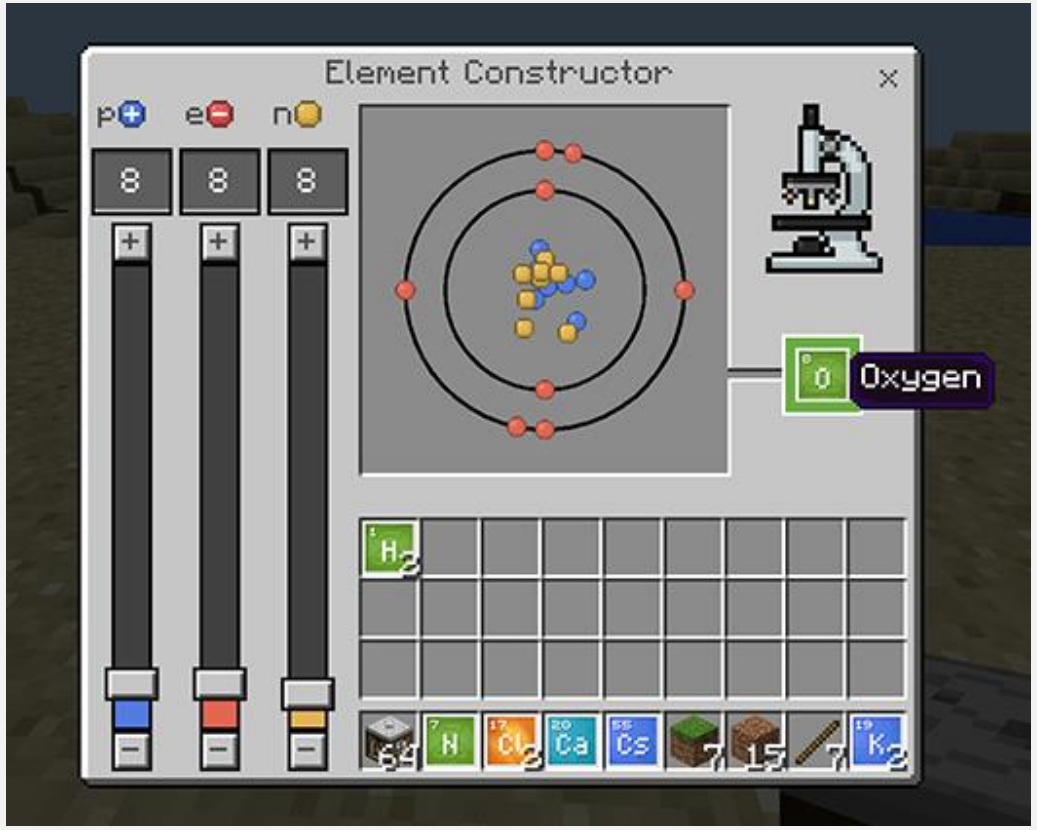
- Understand salmon habitat requirements
- Topography and cubic volumes
- Current and water flow (how use of dams affect ecosystem)

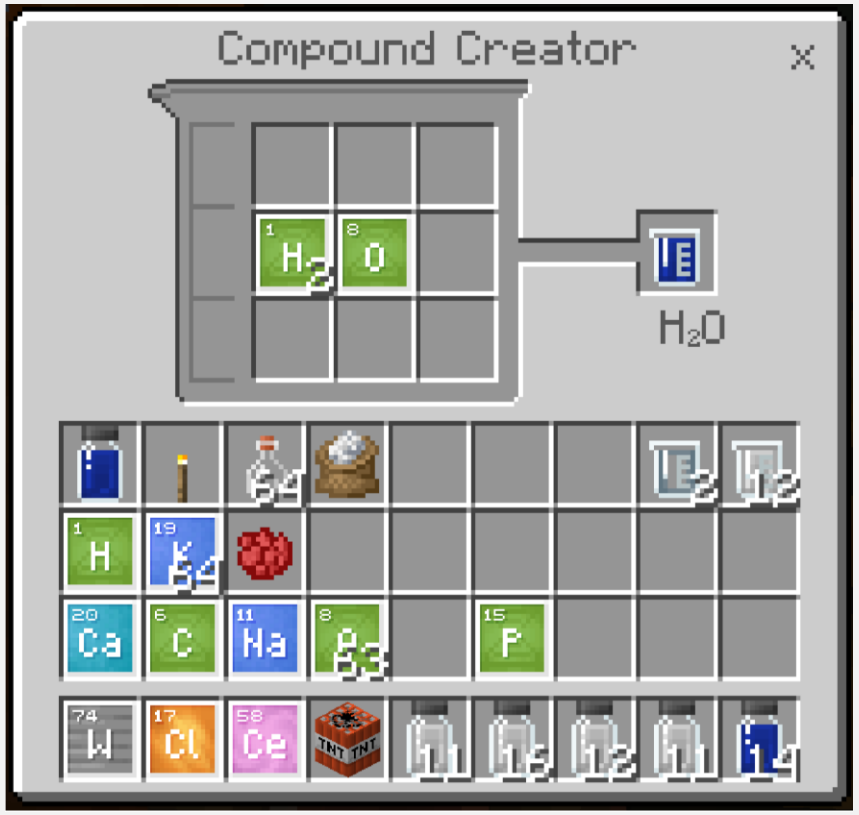
MINECRAFT EDUCATION EDITION

Computational Thinking



Chemistry





Export to 3D

Machine Learning

“You did what?”

Machine Learning

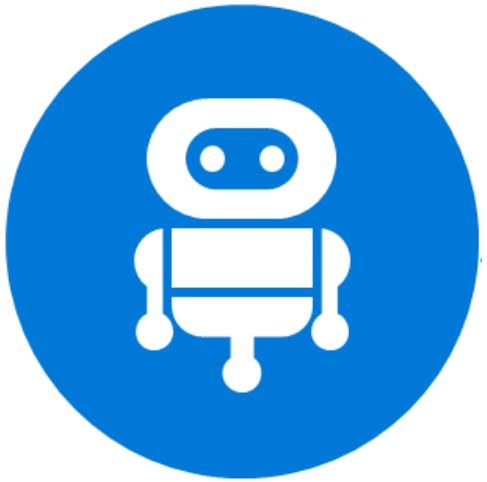
Machine Learning

www.machinelearning.ai

Artificial Intelligence

Cognitive Services

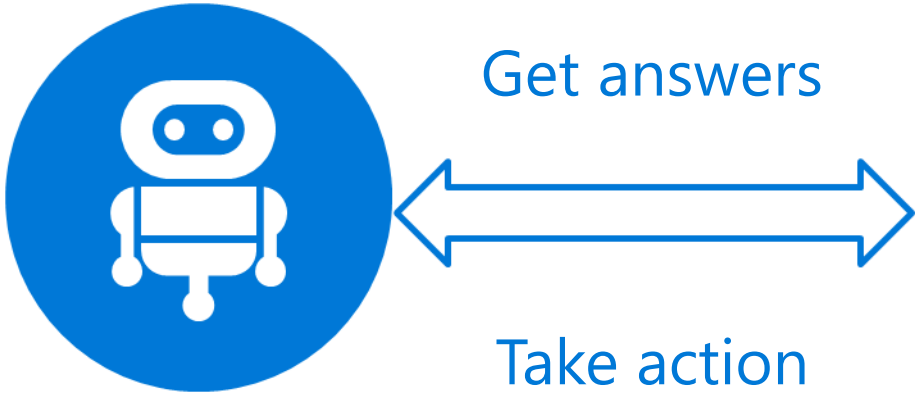
Artificial Intelligence



Make your own Chatbot!

http://qnamaker.ai

Intelligence



Get answers

Take action

‘Cognitive Services’

Vision

From faces to feelings, allow your apps to understand images and video

Speech

Hear and speak to your users by filtering noise, identifying speakers, and understanding intent

Language

Process text and learn how to recognize what users want

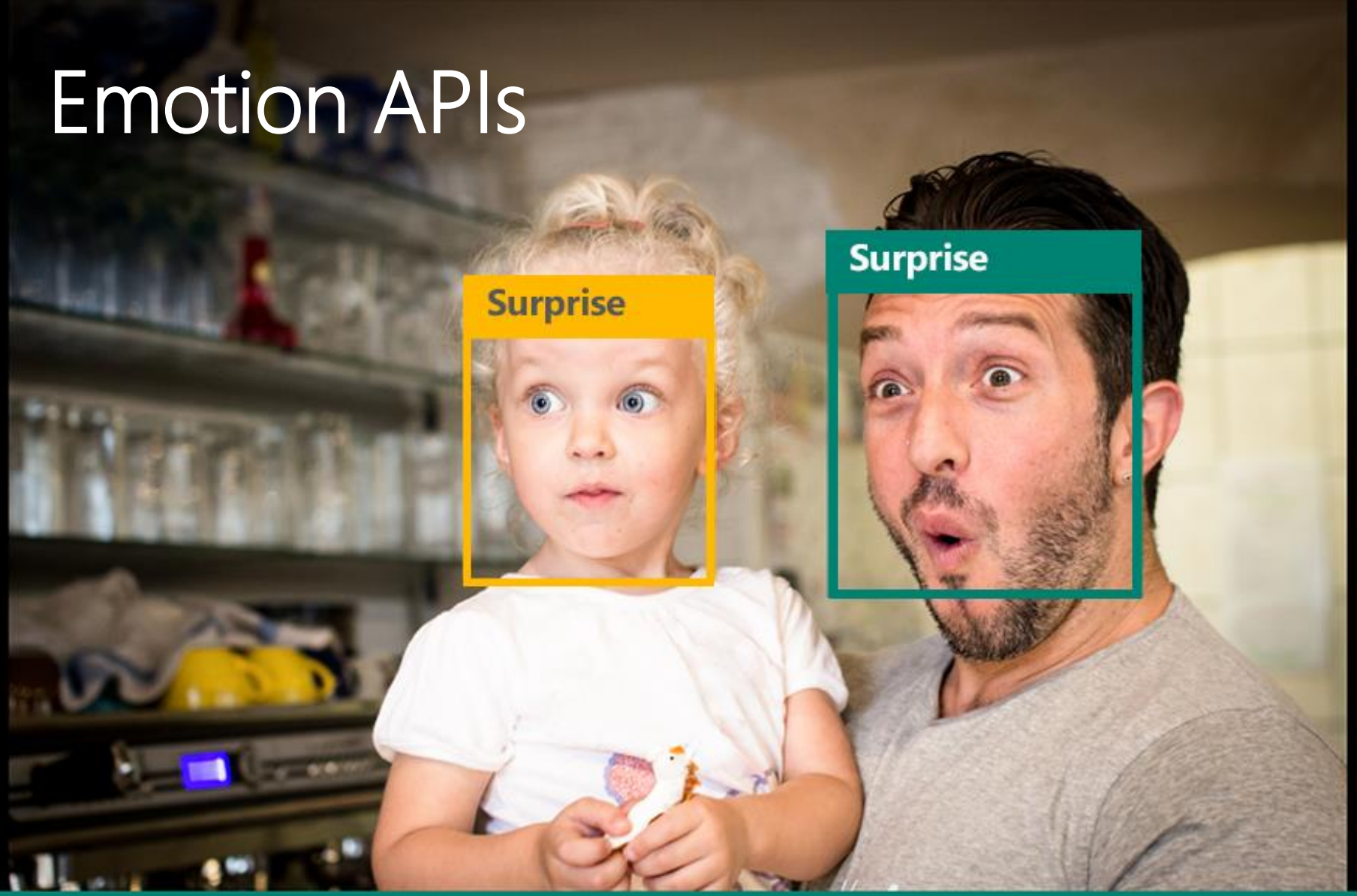
Knowledge

Tap into rich knowledge amassed from the web, academia, or your own data

Search

Access billions of web pages, images, videos, and news with the power of Bing APIs

Emotion APIs



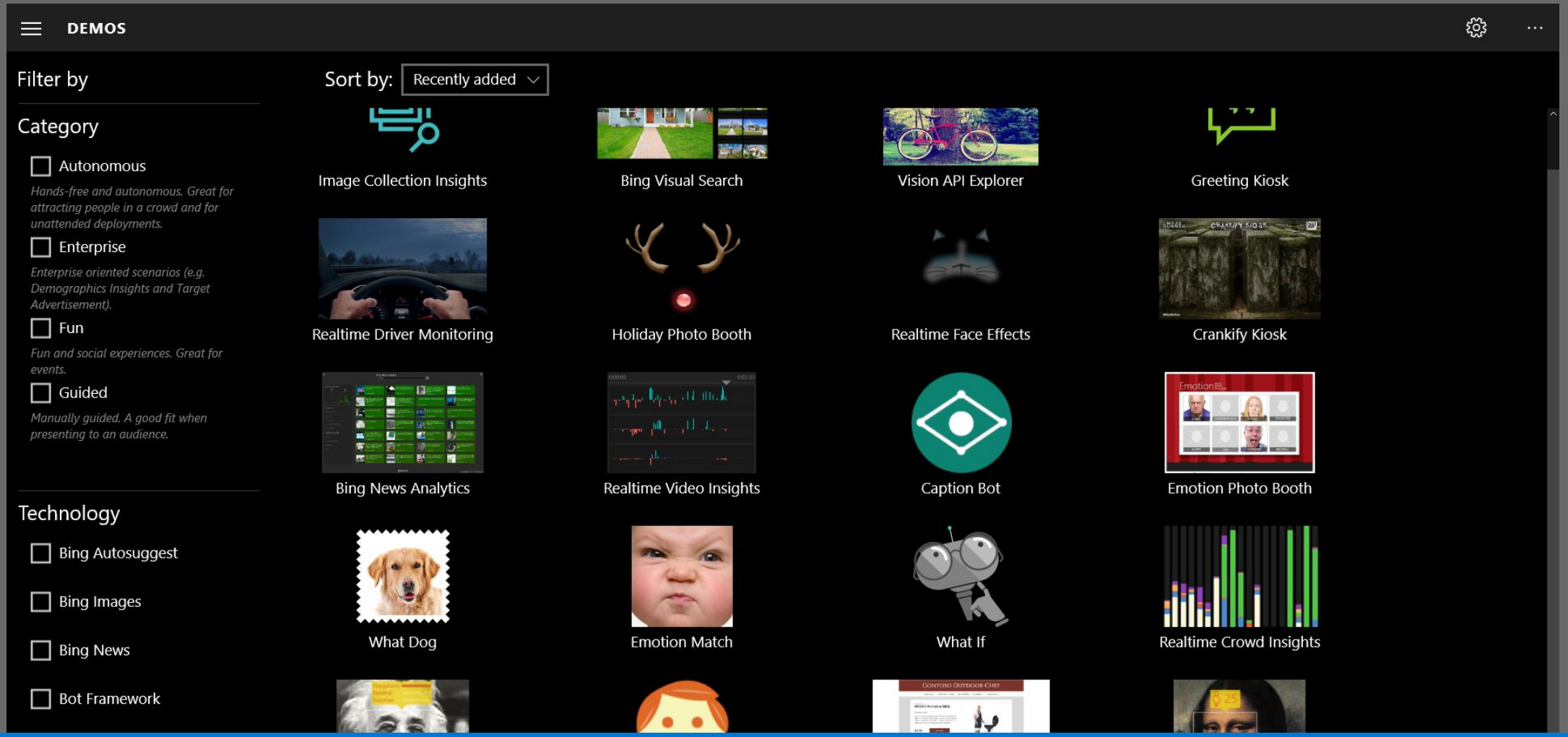
Neutral:
Happiness:
Surprise:
Sadness:

Anger:
Disgust:
Fear:
Contempt:

Microsoft

Get started for free at projectoxford.ai

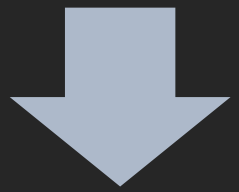
COGNITIVE APIs



https://www.microsoft.com/cognitive-services/

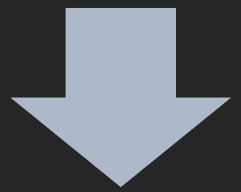
Analytics Technology

TEACHER-LED
CLASSROOMS



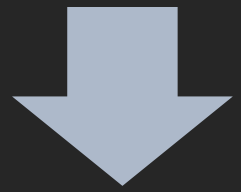
PROJECT-BASED
LEARNING

TRADITIONAL
CLASSROOMS



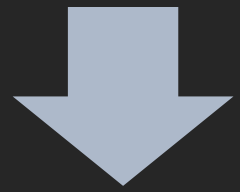
FLIPPED
CLASSROOMS

INDEPENDENT
LEARNING



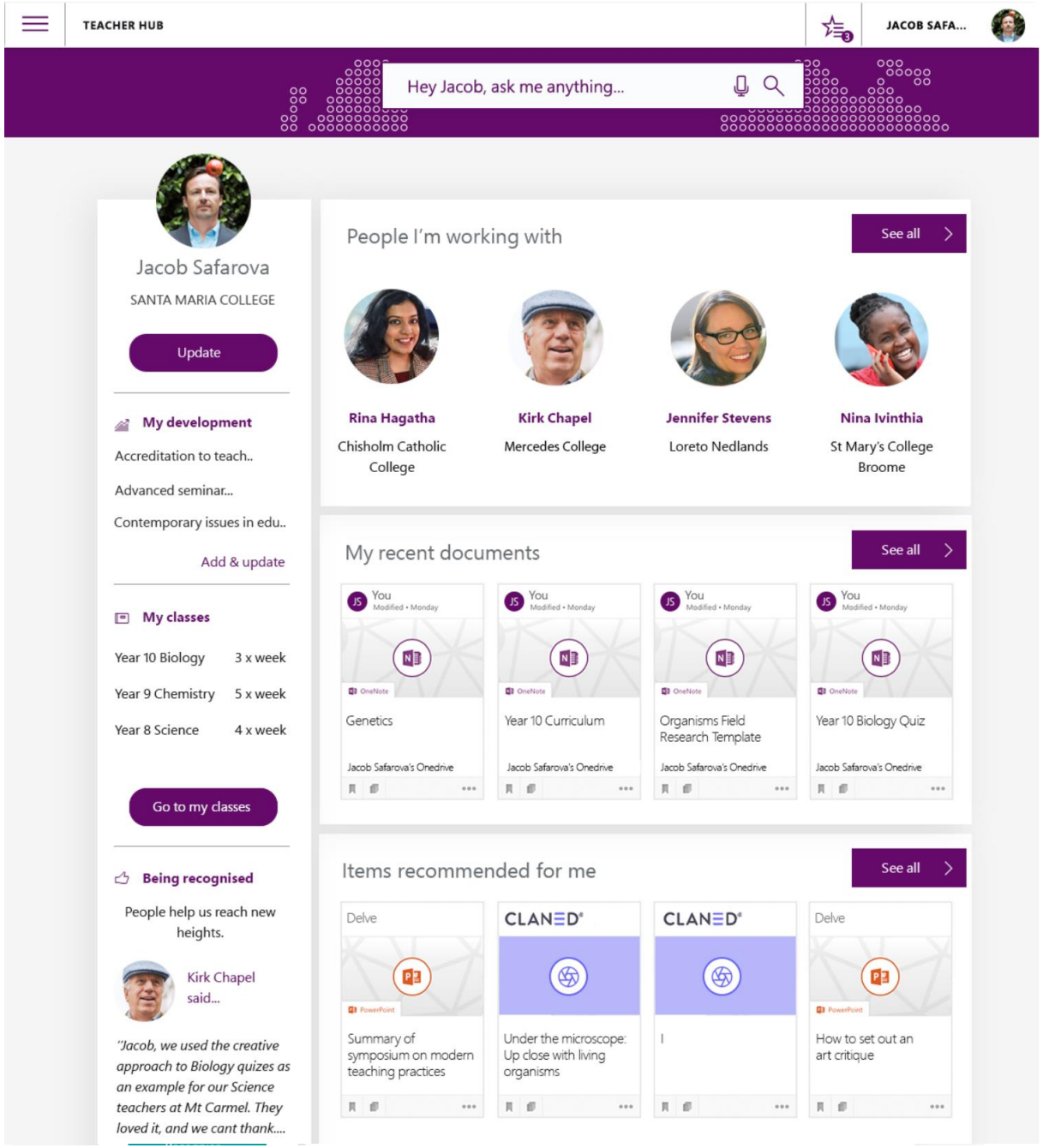
COLLABORATIVE
LEARNING

LOCK STEP
LEARNING



PERSONALIZED
LEARNING

Intelligent Platform

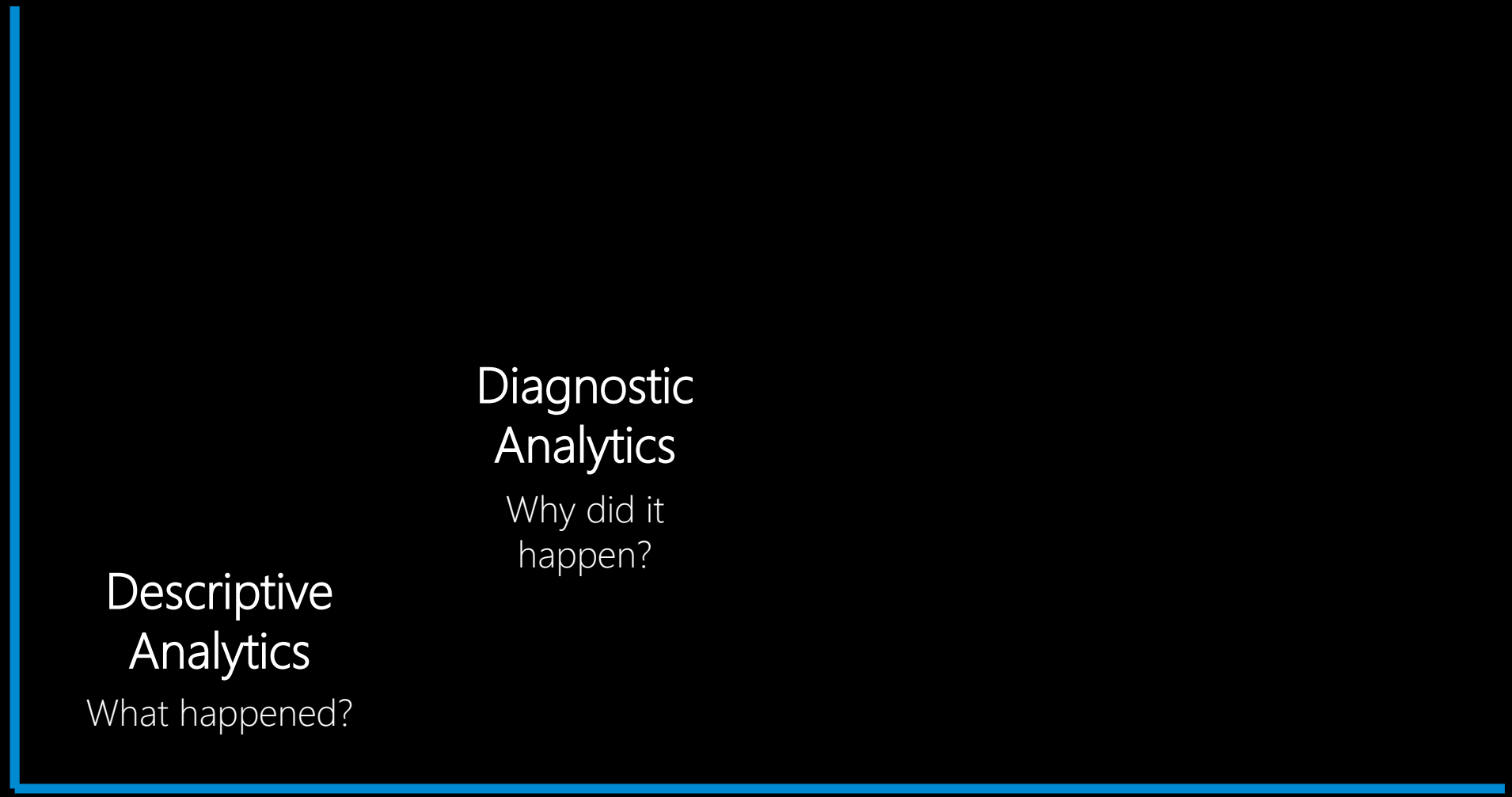


What should I teach today?....and how?


A JOURNEY
POWERED BY
DATA

Advanced Analytics

according to Gartner, INC.



Advanced Analytics

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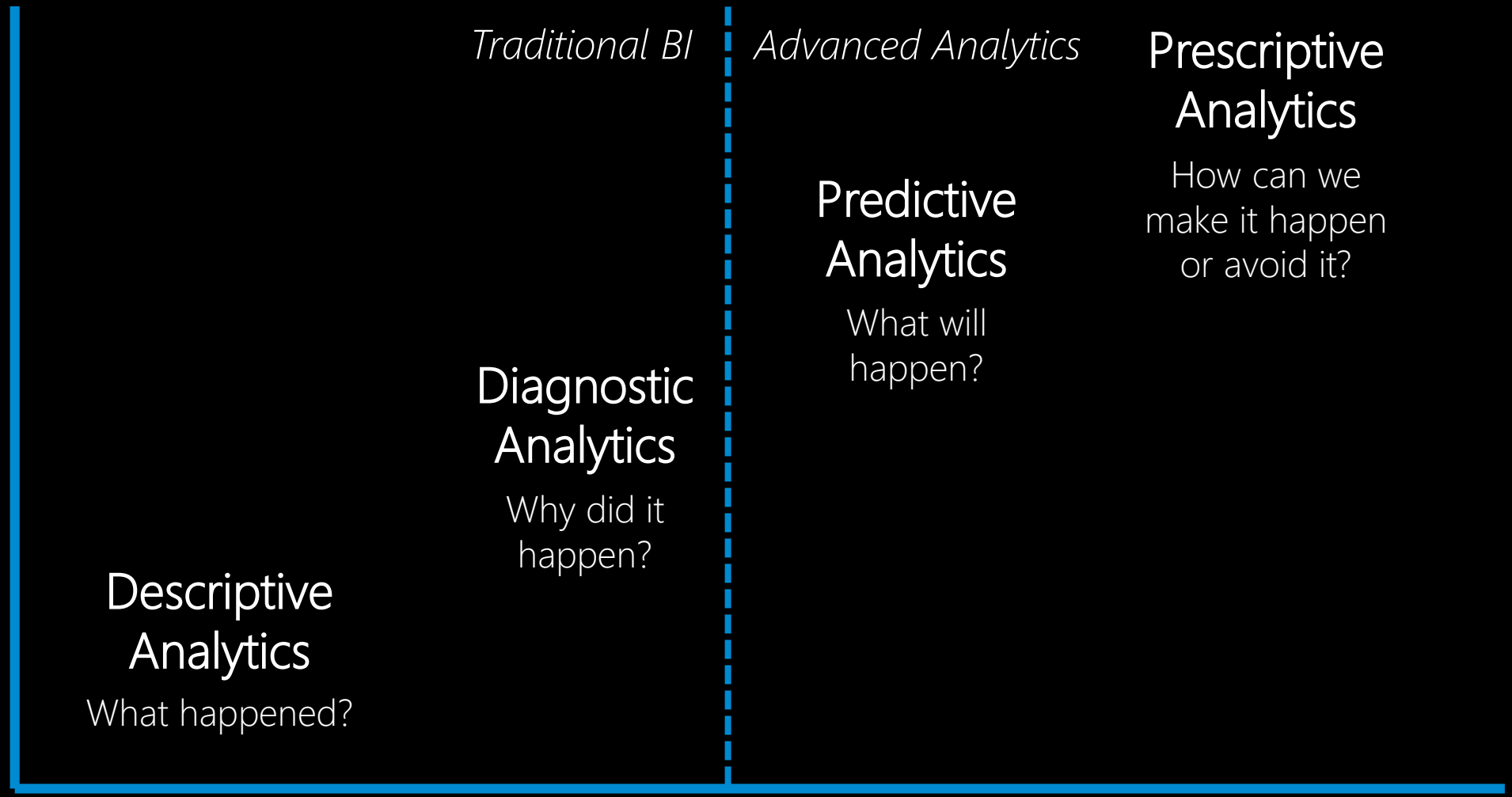
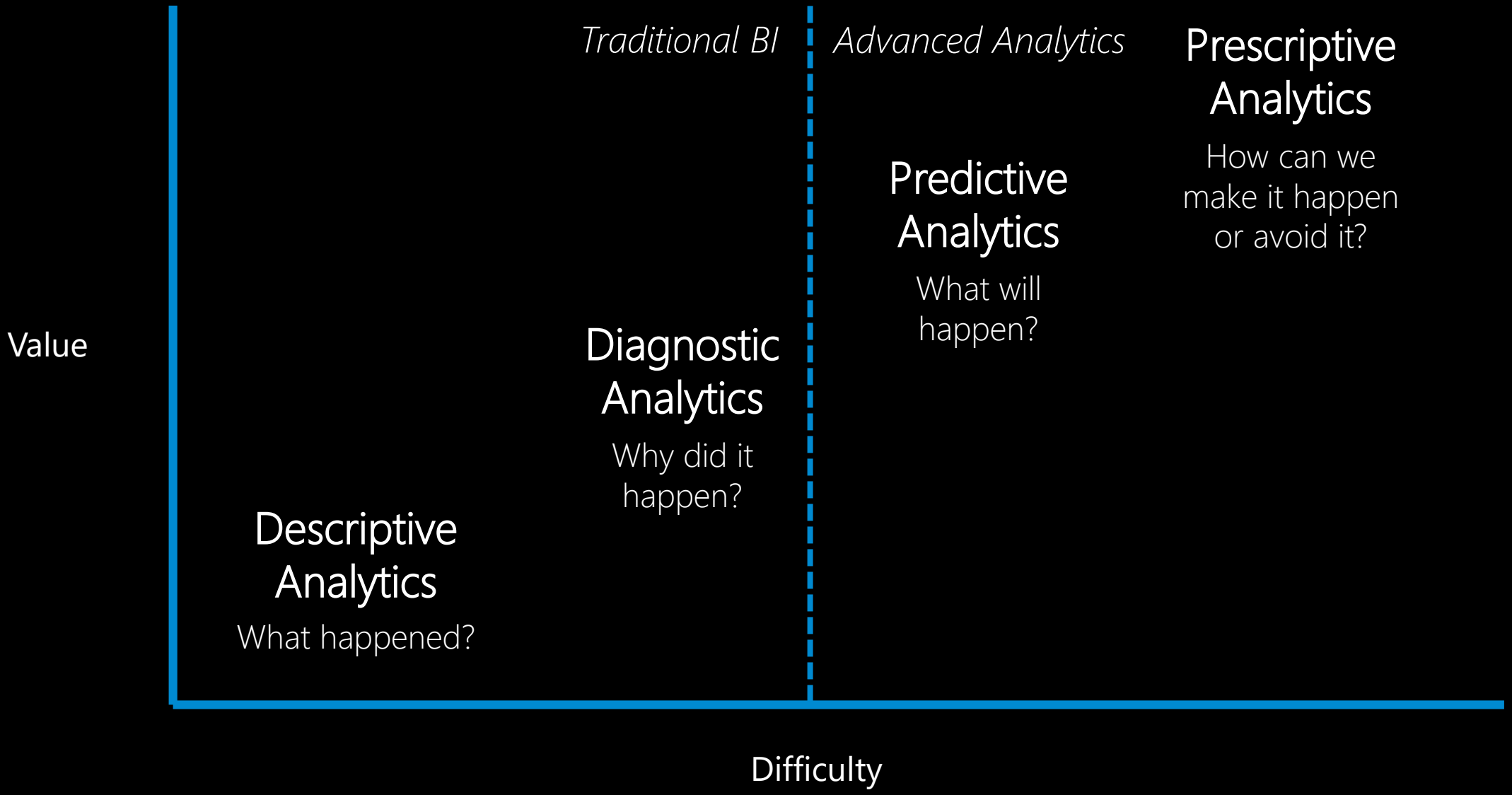


Advanced Analytics
according to Gartner



Advanced Analytics

Analysis of Grades

Descriptive Analytics

What happened?

What Caused those Grades

Diagnostic Analytics

Why did it happen?

Predictive Analytics

What will happen?

Who is 'At risk' and why?

Prescriptive Analytics

How can we make it happen or not happen?

What should we do about it?

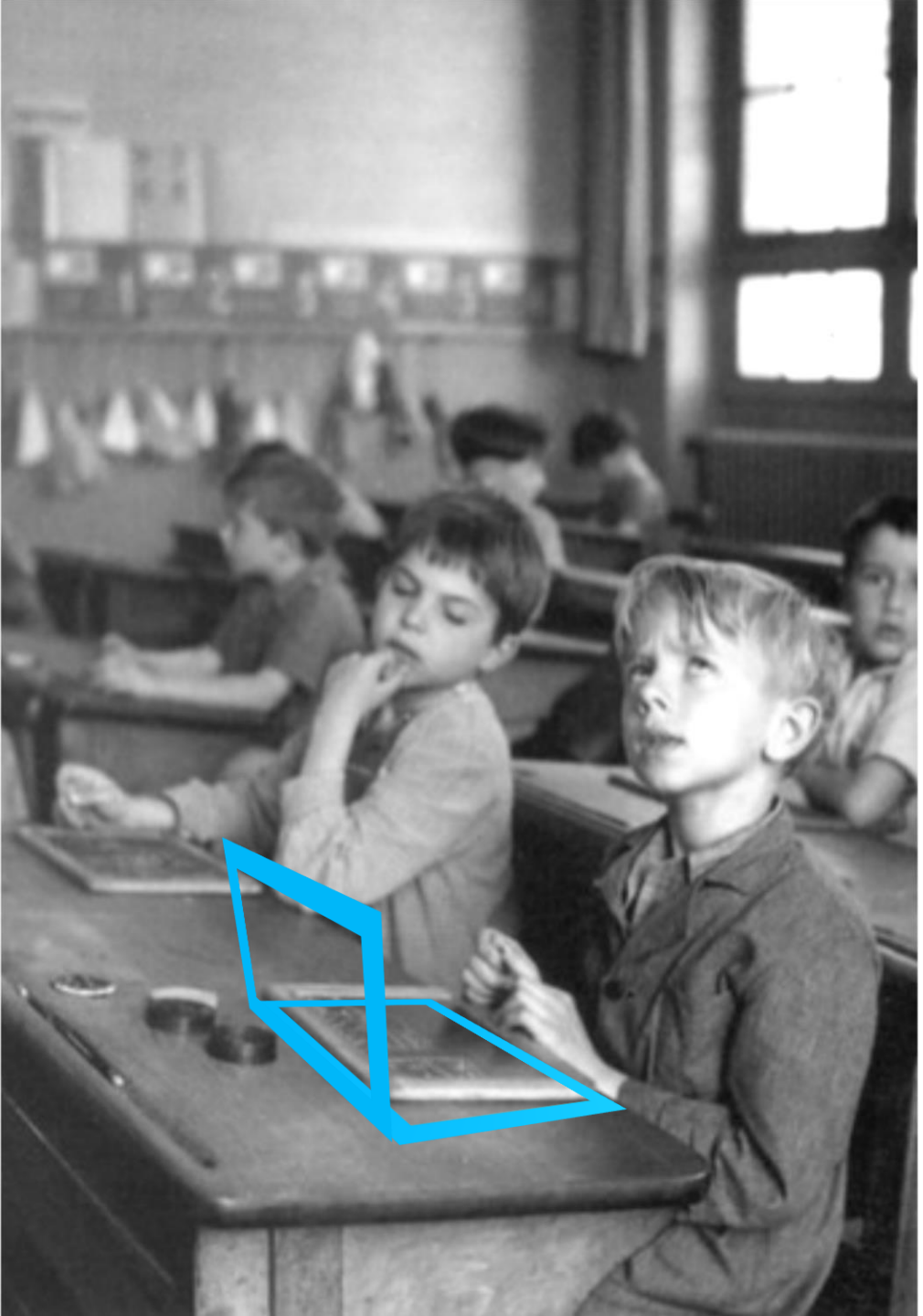

Technology
has landed

“Innovation” hubs

are popping up

Tinker Toys

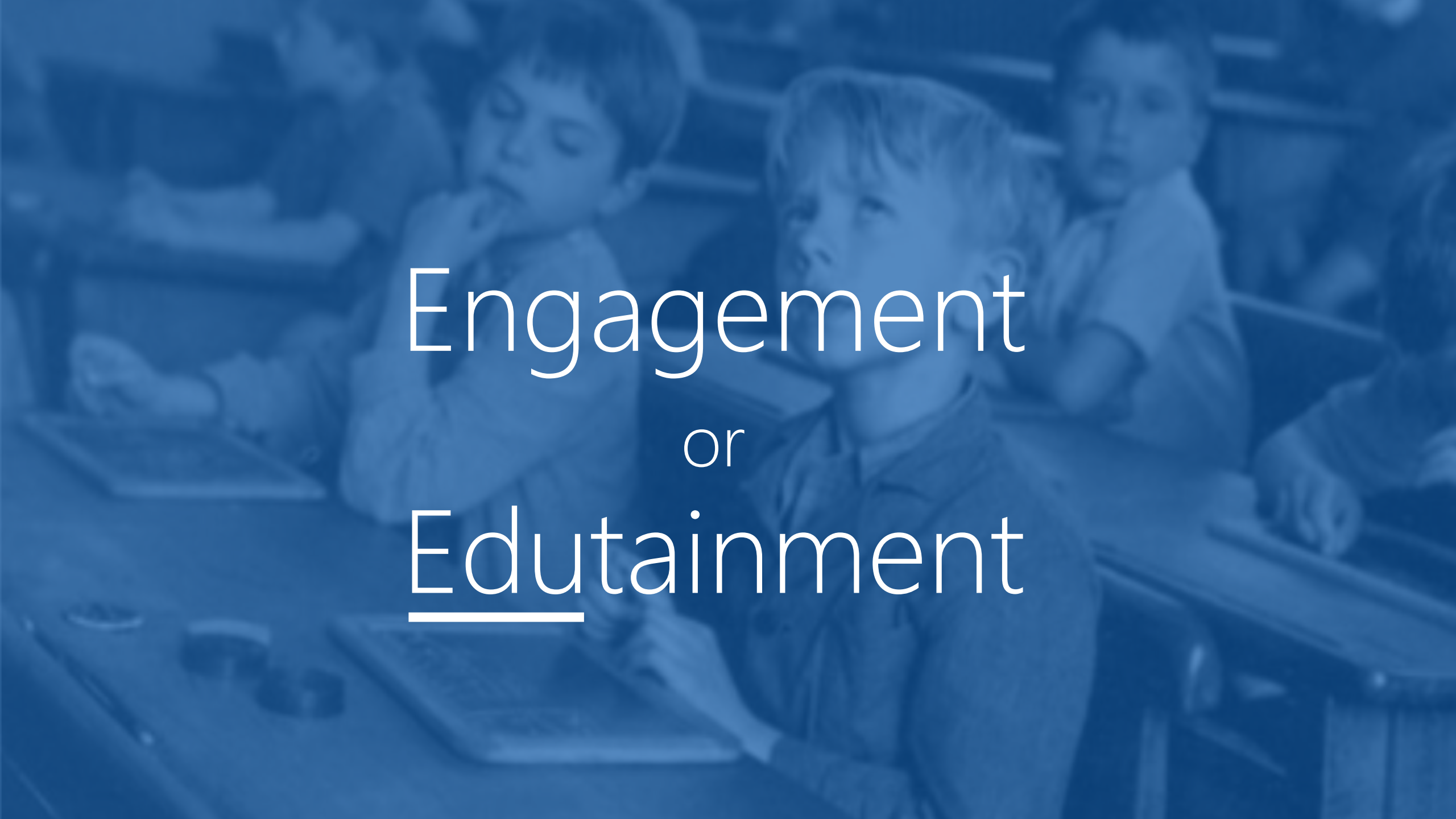
"Which ones should we buy?"



Does putting a **device** in the hands of a student automatically mean they are engaged in **deep** learning?

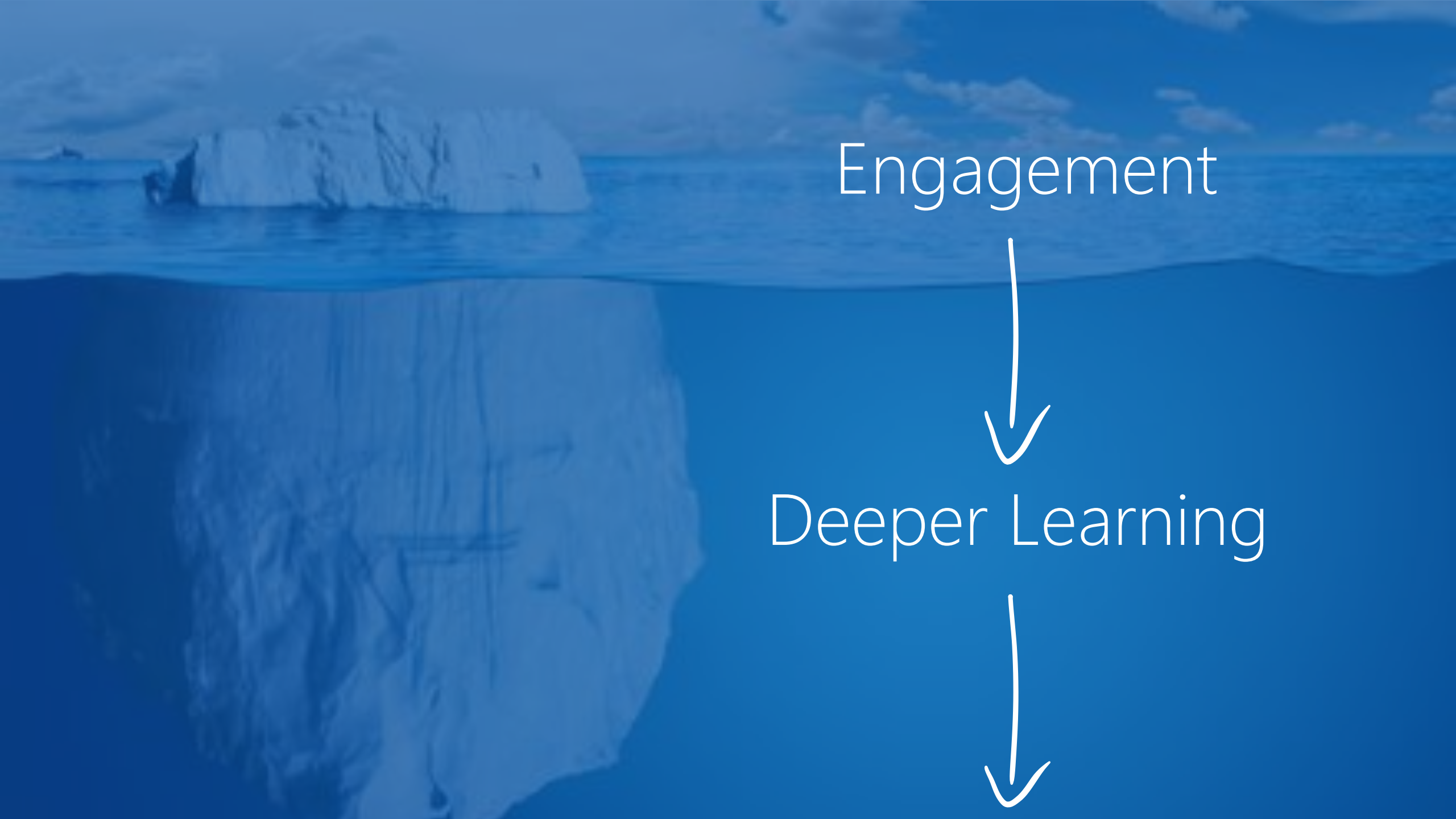
Does putting a **gadget** in the hands of a student automatically mean they are engaged in **deep** learning?

Does putting a **headset** on the face of a student automatically mean they are engaged in **deep** learning?


Engagement
or
Edutainment

“If students use technology to copy and paste prefabricated answers to questions, it is unlikely to help them to become smarter. If we want students to become smarter than a smartphone, we need to think harder about the pedagogies we are using to teach them. Technology can amplify great teaching but great technology cannot replace poor teaching.

PAGE 4: OECD (2015), Students, Computers and Learning: Making the Connection, PISA, OECD Publishing


Engagement
Deeper Learning

Purposeful Engagement

PEDAGOGY

PROFESSIONAL LEARNING

PLATFORMS

Purposeful Engagement

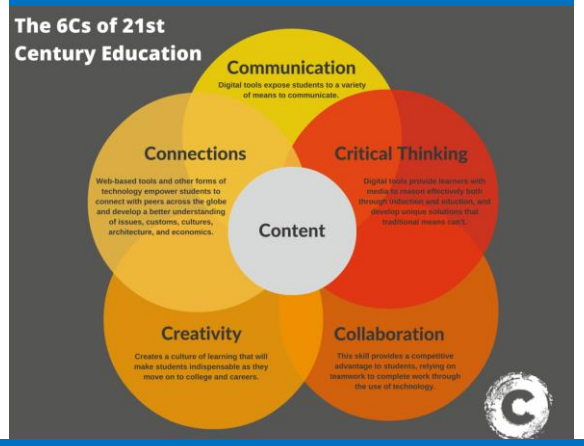
PEDAGOGY

PROFESSIONAL LEARNING

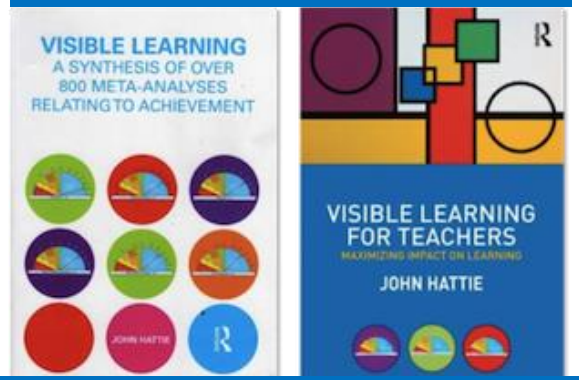
PLATFORMS

PEDAGOGY

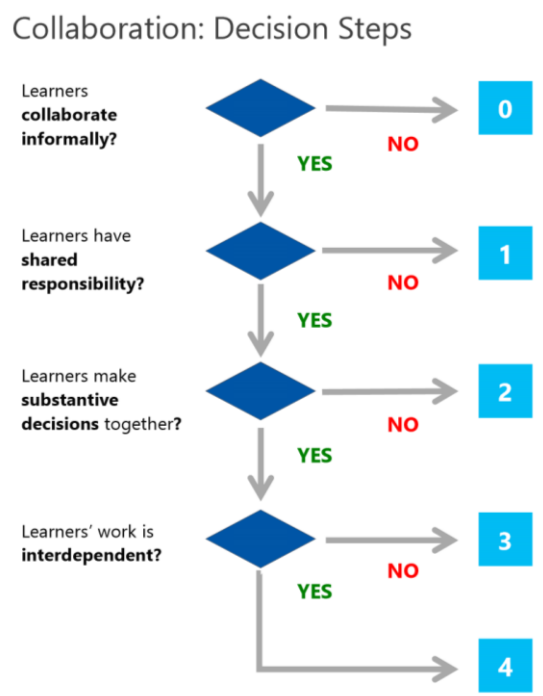
5 (or now 6) Cs



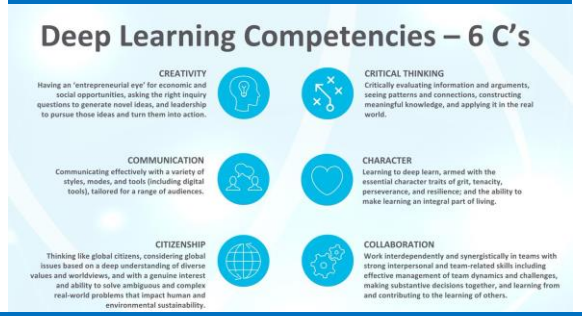
Visible Learning



21CLD Framework



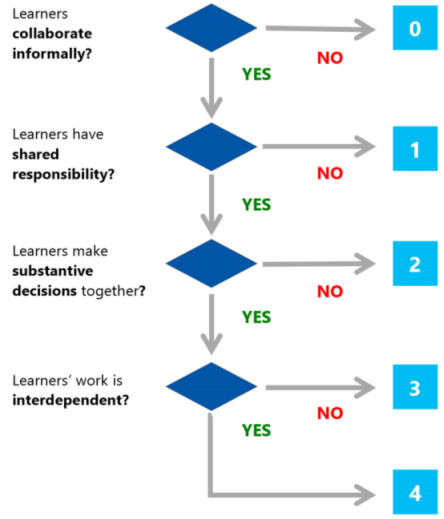
NDPL



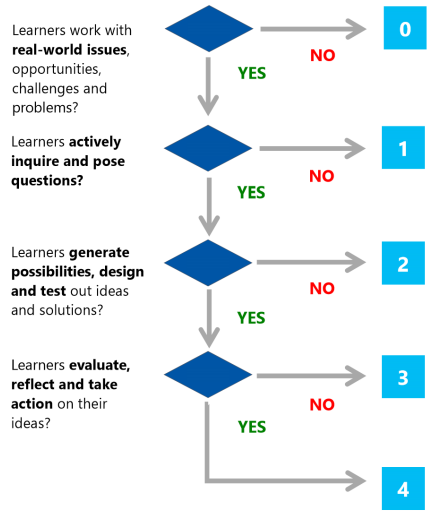
LEARNING DESIGN FRAMEWORKS

21CLD Framework

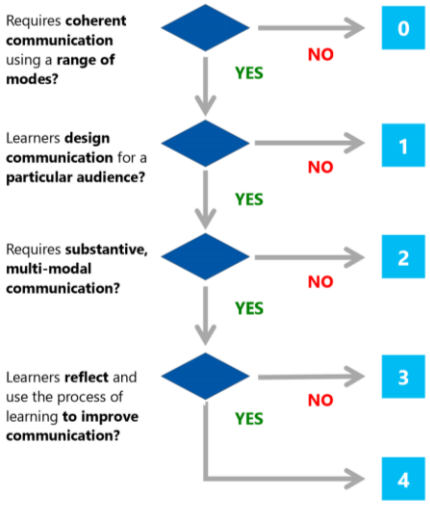
Collaboration: Decision Steps



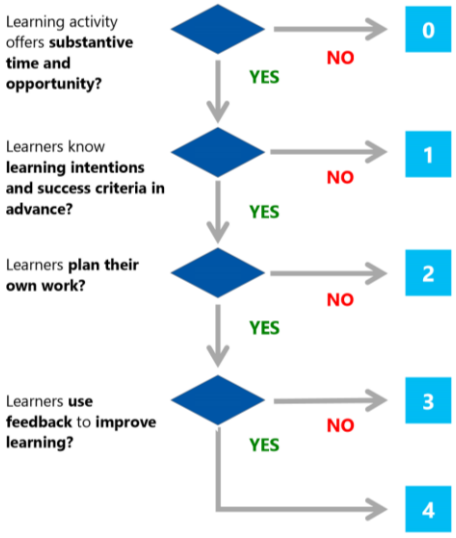
Real-World Innovation and Problem-Solving: Decision Steps



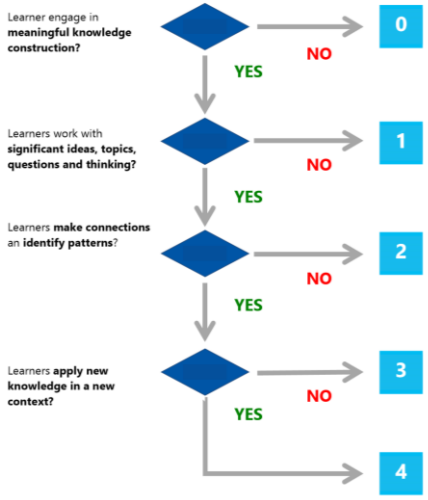
Skilful Communication: Decision Steps



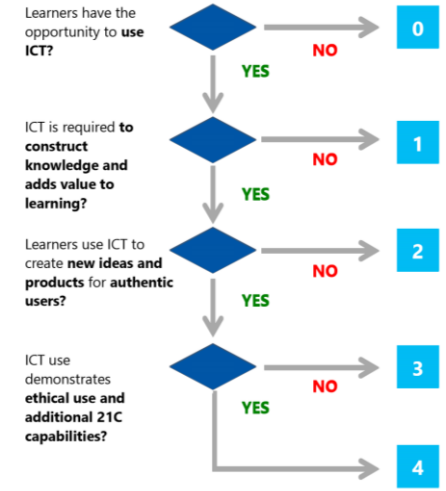
Self-Regulation: Decision Steps

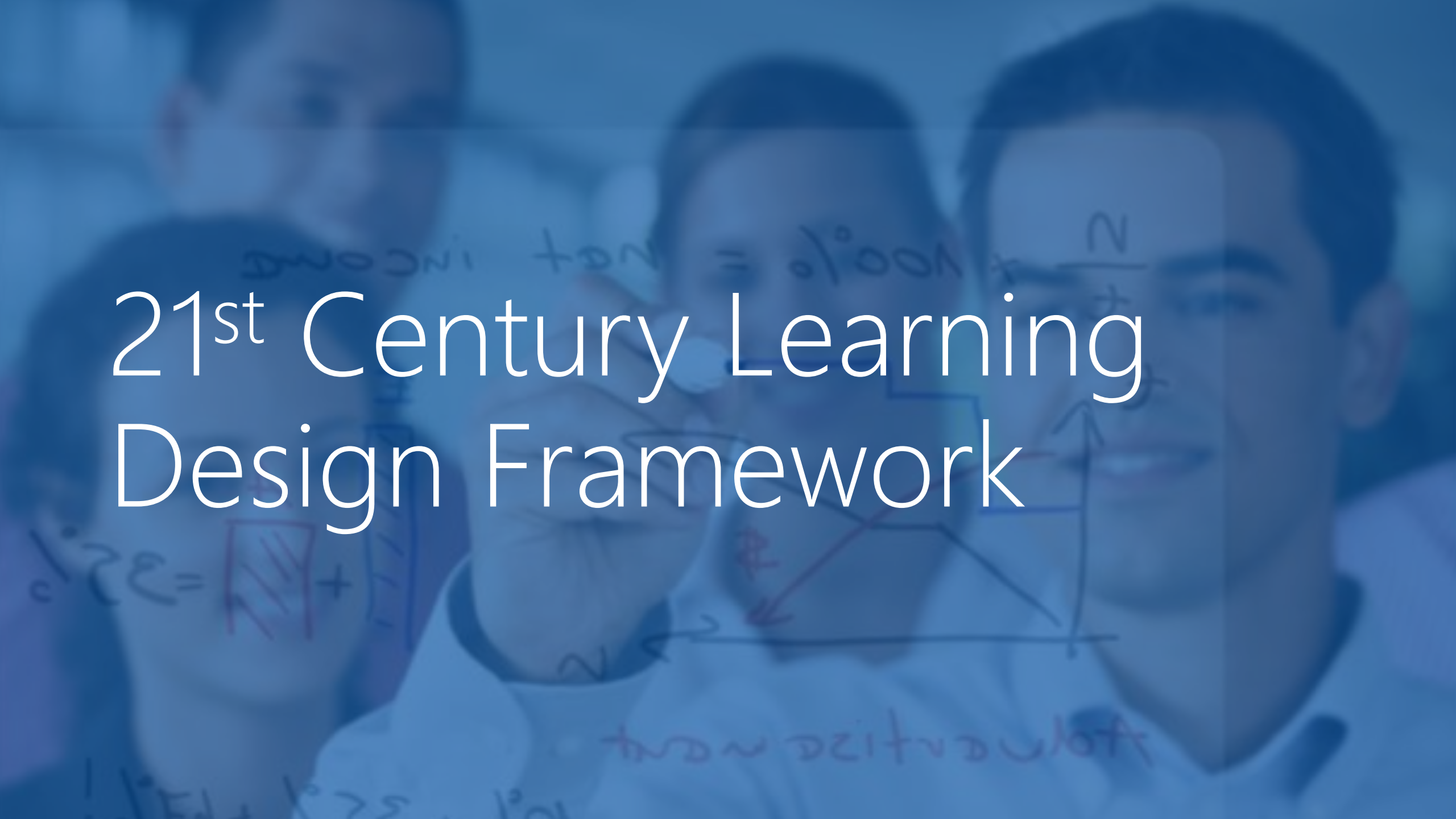


Knowledge Construction: Decision Steps



ICT for learning: Decision Steps

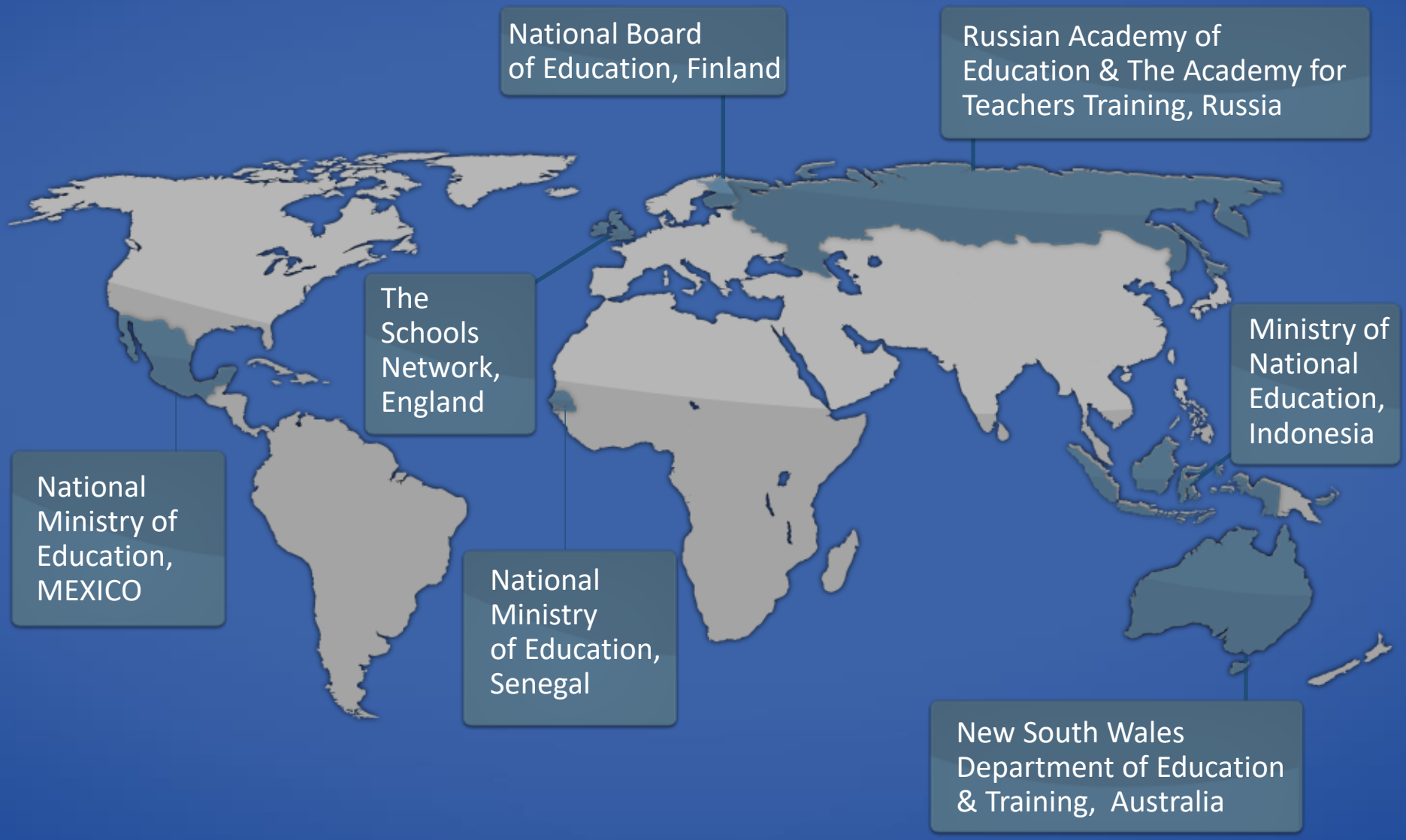




21st Century Learning Design Framework

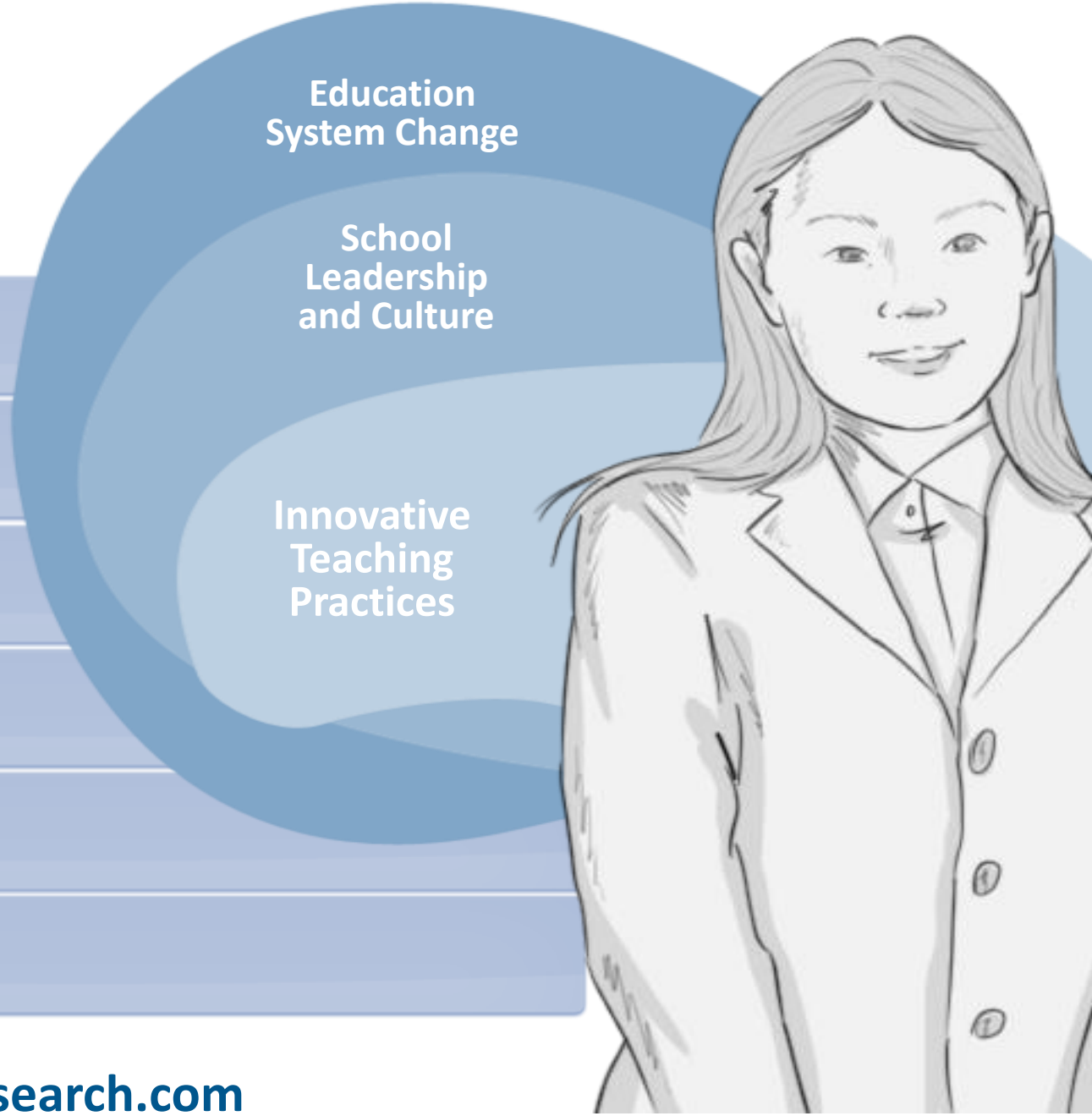
7 COUNTRIES PARTICIPATING IN ITL

45+ COUNTRIES USING METHODS



ITL RESEARCH

Across	**159** survey schools **24** site visit schools
Teacher & School Leader Interviews	**86** teachers **18** school leaders
Teacher & School Leader Surveys	**4,038** teachers **159** school leaders
Classroom Observations	**81** classrooms
Learning Activity Analysis	**967** learning activities
Student Work Analysis	**3,367** student work
Student Focus Groups	**33** focus groups



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21CLD Research & Resources

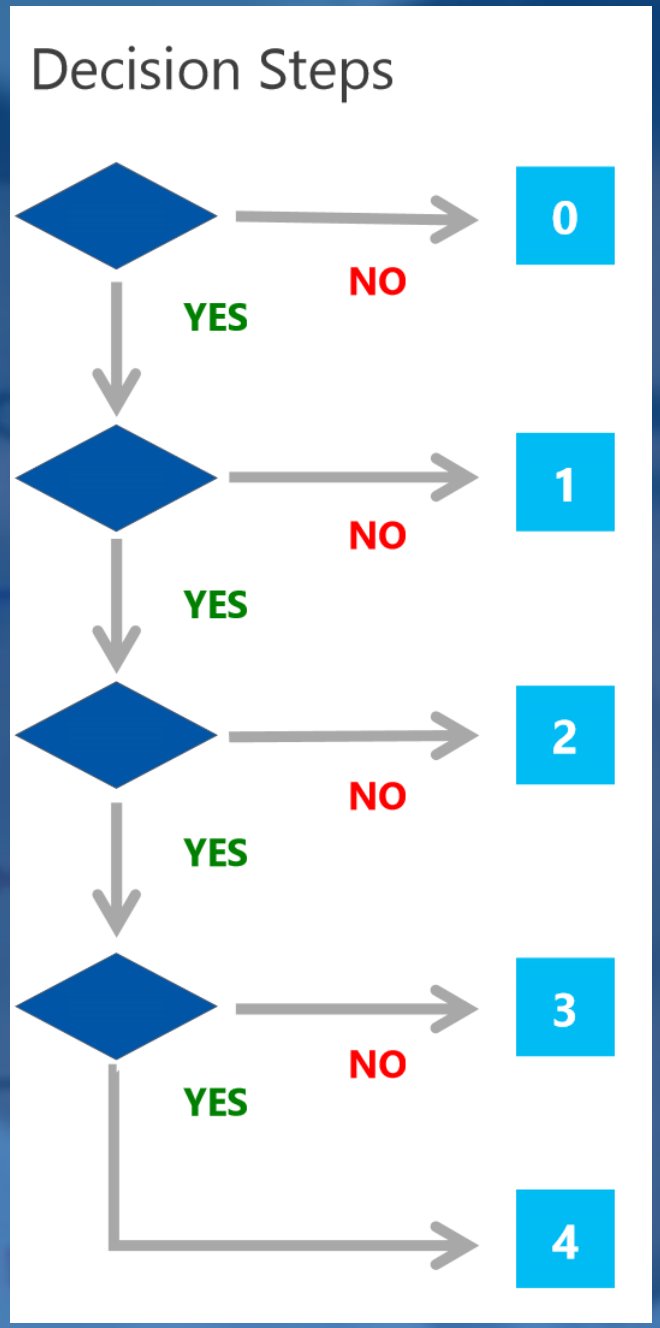
Search **“Microsoft ITL Research”**

https://education.microsoft.com/GetTrained/ITL-Research

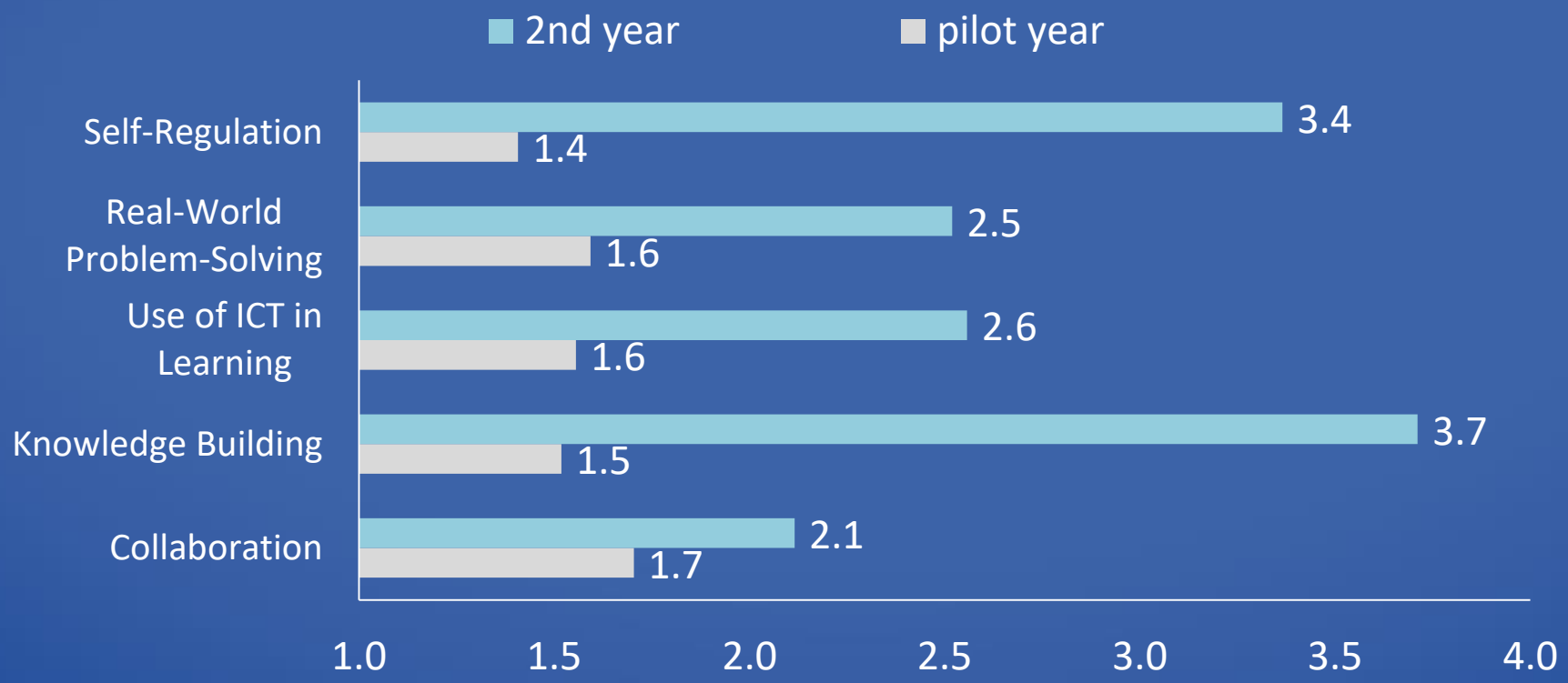
21CLD

How do we design learning to develop these skills?

21CLD



LEARNING
CAN CHANGE, DRAMATICALLY



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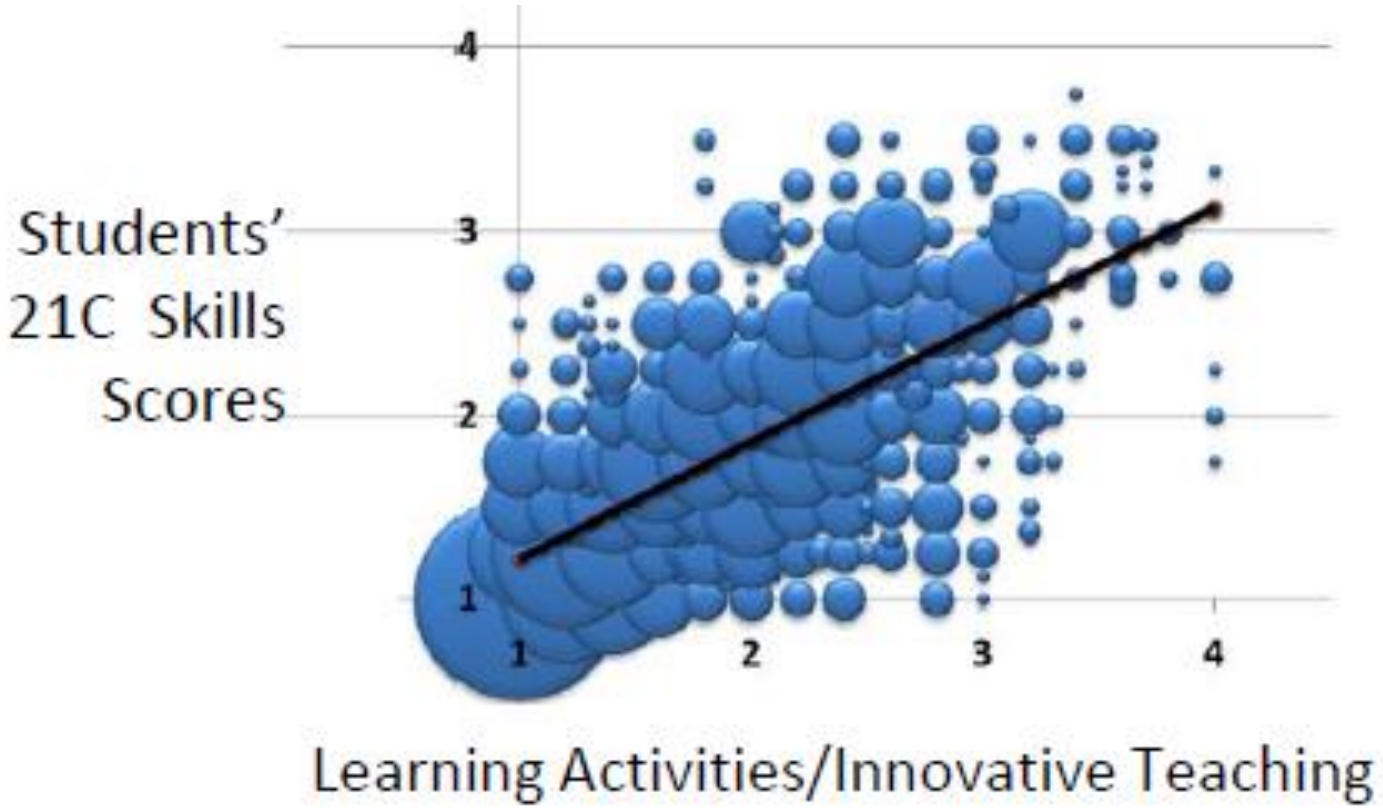
The quality of teacher's assignment strongly predicts the quality of the work that a student does in response.

3,367 student work



Based on Analysis by SRI International

Figure 2: Learning Activity Scores Predict Student Work Scores

Notes:
a. For a given learning activity, this chart plots the learning activity's score (collapsed across dimensions) to the mean score for its corresponding pieces of student work. A larger bubble represents a higher concentration of data points.
b. LA and SW score points can range from 1-4.
c. Source: ITL LASW data, 2011

http://www.itlresearch.com/

Over 90% of the variance in student work scores on 21st Century skills was not due to the differences in the students but due to the task they were asked to do.

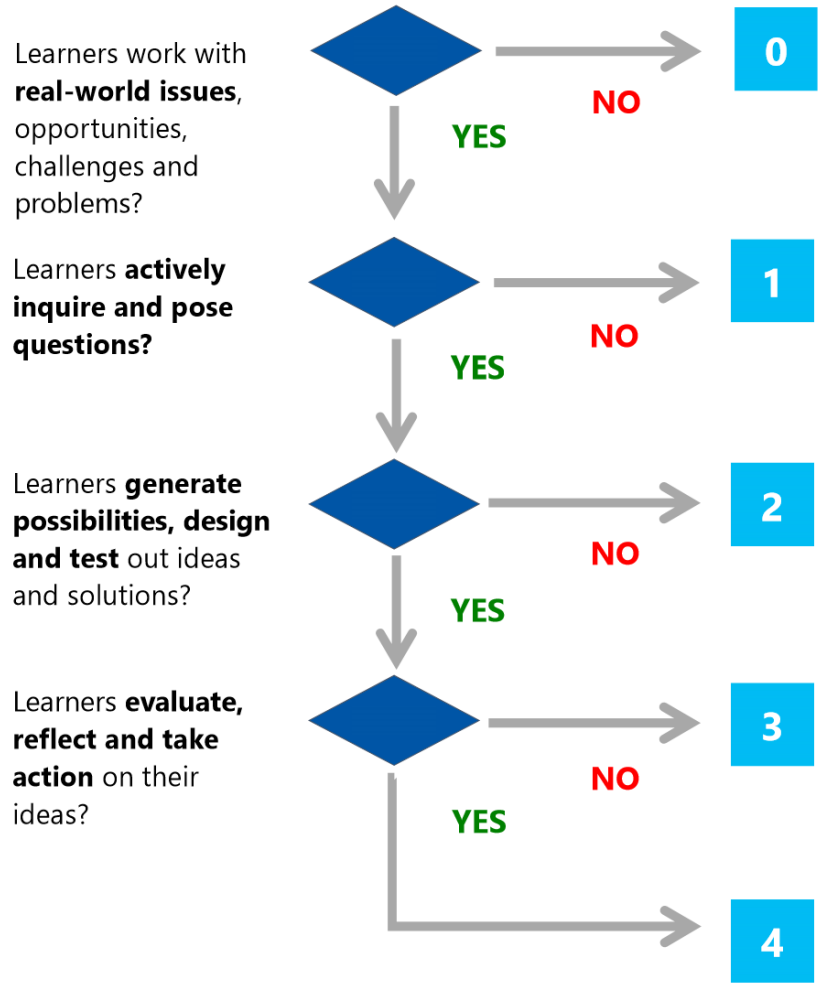
The data suggested a ‘ceiling effect imposed by teacher assignments: while it is possible for students to build and exhibit a greater level of 21st Century skills than their learning activities call for, they rarely do so.

While innovative teaching practice was typically a goal at these schools, learning activity analysis suggests that most actual classroom instruction does not yet reflect these goals.

21CLD

Real World Problem Solving

Real-World Innovation and Problem-Solving: Decision Steps




Problems
Solve
What do you want to be
when you grow up?

Trent Ray

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