COMPUTER SCIENCE, EMPLOYABILITY & THE STEM AGENDA

"SKILLS ARE KEY TO THE PROSPERITY OF NATIONS AND TO BETTER LIVES FOR INDIVIDUALS IN THE 21ST CENTURY."

—

OECD GLOBAL SKILLS REPORT

Joel Lathrop
Microsoft US Education
Strategic Alliance Manager
jolathro@microsoft.com

More than **50%** of today's jobs require some technology skills, and experts say that percentage will increase to **77%** in less than a decade.

*Source: Pearson VUE 2015 Value of IT Certification Survey : https://home.pearsonvue.com/Test-Owner/Industries-served/value-of-certification.aspx

BY 2022, THERE WILL BE

6.2 MILLION

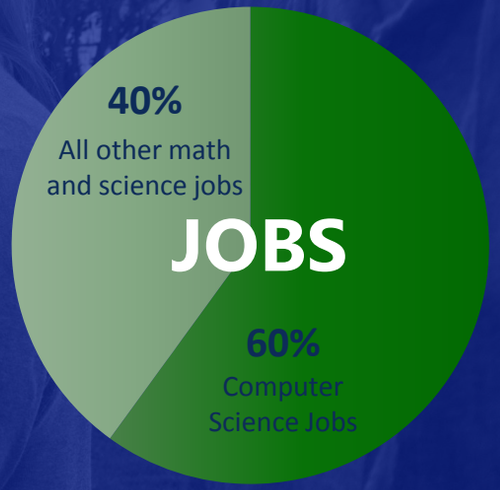
NEW IT JOBS

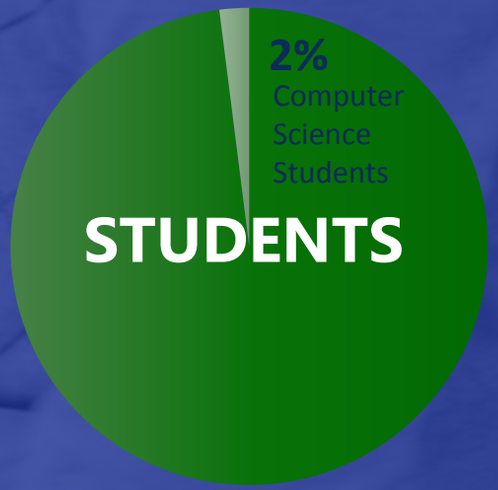
MOST IN CLOUD-RELATED FIELDS.

IT LABOR SHORTAGE REPORT

60% of STEM jobs are in

COMPUTER SCIENCE





Yet only **2%** of STEM grads

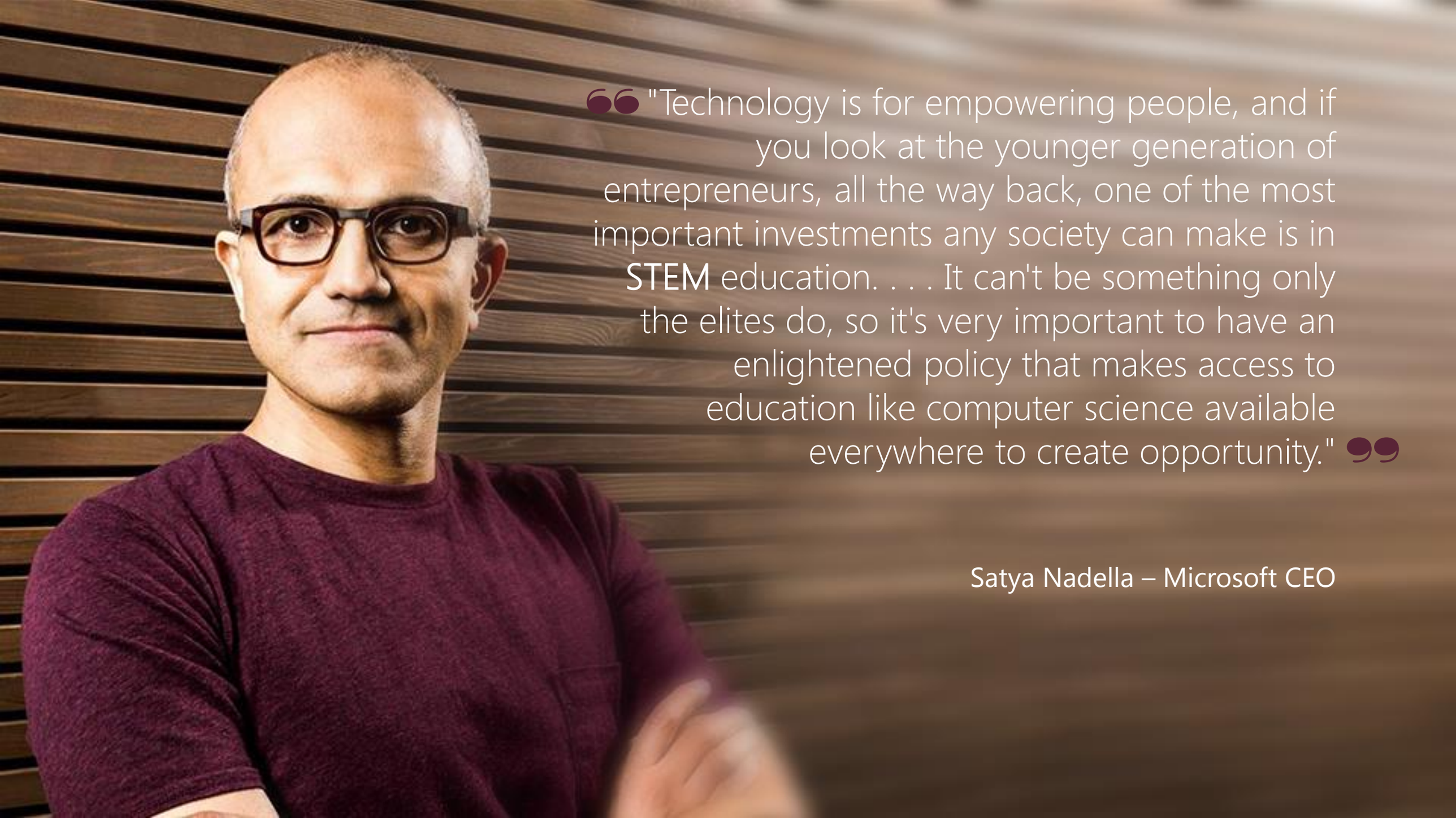
FILL THE PIPELINE

BEYOND TECHNICAL SKILLS

The top 20 most sought-after employability skills

1. Oral and written communication skills
2. Project management
3. **Microsoft Office**
4. Team-oriented, teamwork
5. Marketing
6. Creativity
7. Problem solving
8. Detail oriented
9. **Microsoft PowerPoint**
10. Integrity
11. Self-starting, self-motivated
12. Management skills
13. Analytical Skills
14. Coaching
15. Business Process Modeling
16. Work Independently
17. Strong Leadership Skills
18. Management experience
19. SAP
20. Business requirements gathering

*IDC Study, May 2016



"Technology is for empowering people, and if you look at the younger generation of entrepreneurs, all the way back, one of the most important investments any society can make is in STEM education. . . . It can't be something only the elites do, so it's very important to have an enlightened policy that makes access to education like computer science available everywhere to create opportunity."

Satya Nadella – Microsoft CEO

Our strategy

1

MOVE STEM FORWARD

Policy, Advocacy, Access & Diversity

2

CREATE THE STUDENT JOURNEY

Skills, CS, and STEM Portfolio

3

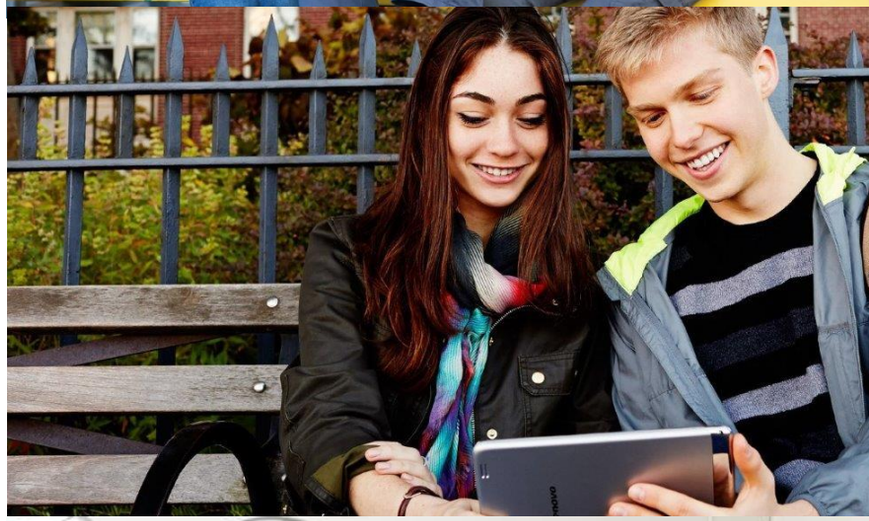
DEVELOP GREAT EDUCATORS

Community and Professional Development

Our STEM Priority

Policy, Advocacy Computer Science	Skills, CS, and STEM Portfolio	Teacher Capacity
DigiGirlz CODE YouthSpark Hub	Microsoft Imagine Academy MINECRAFT EDUCATION EDITION Microsoft Imagine	Microsoft CERTIFIED MIE Microsoft Microsoft Certified Educator

Creating a Student Journey . . .



Jobs Seeking Vendor-specific Skills & Certifications

Alaska	**705**	**30**	**21**	**54**

Data from leading job search engine indeed.com (March 2017)

Job Demands for Computer Science

Alaska data from not-for-profit *code.org* (March 2017)

607 Open Computing Jobs	**18** Computer Science Graduates	**60** High school students took AP CS exam (2016)	**$82,758** Avg. salary computing jobs in AK

Only 3 schools in Alaska offered the AP Computer Science course 2015-16

Alabama
High Schools
191/183

Arkansas
High Schools, Adult Edu & Workforce
343/79

Florida
Middle and High Schools
100/775

Georgia
High schools
441/441

Hawaii
Libraries statewide across the islands
52

Iowa
STEM Schools, MS/HS/CC
150/100

Idaho
High Schools
150/100

Indiana
High Schools and Workforce Development Offices
150/101

Kansas
High Schools
150/135

Kentucky
High Schools
187/160

Louisiana
High schools
88/192

Michigan
High Schools and Community Colleges
328/356

North Carolina
High Schools
628/400

Nebraska
High Schools
47/47

Tennessee
Higher Education/Colleges
51/51

Utah
9-12th Grade
150/99

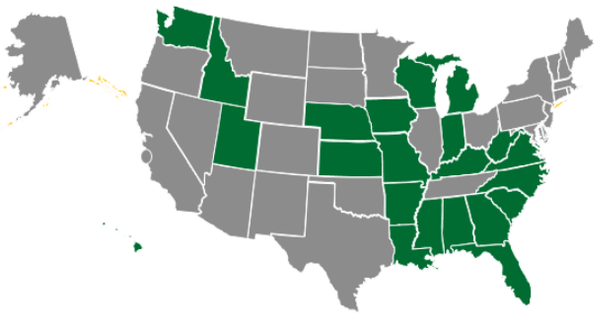
Virginia
High school
364/376

Washington
Middle and High Schools
1076/1076

Washington
Libraries
405/14

West Virginia
High Schools
160

Wisconsin
High Schools
234/200



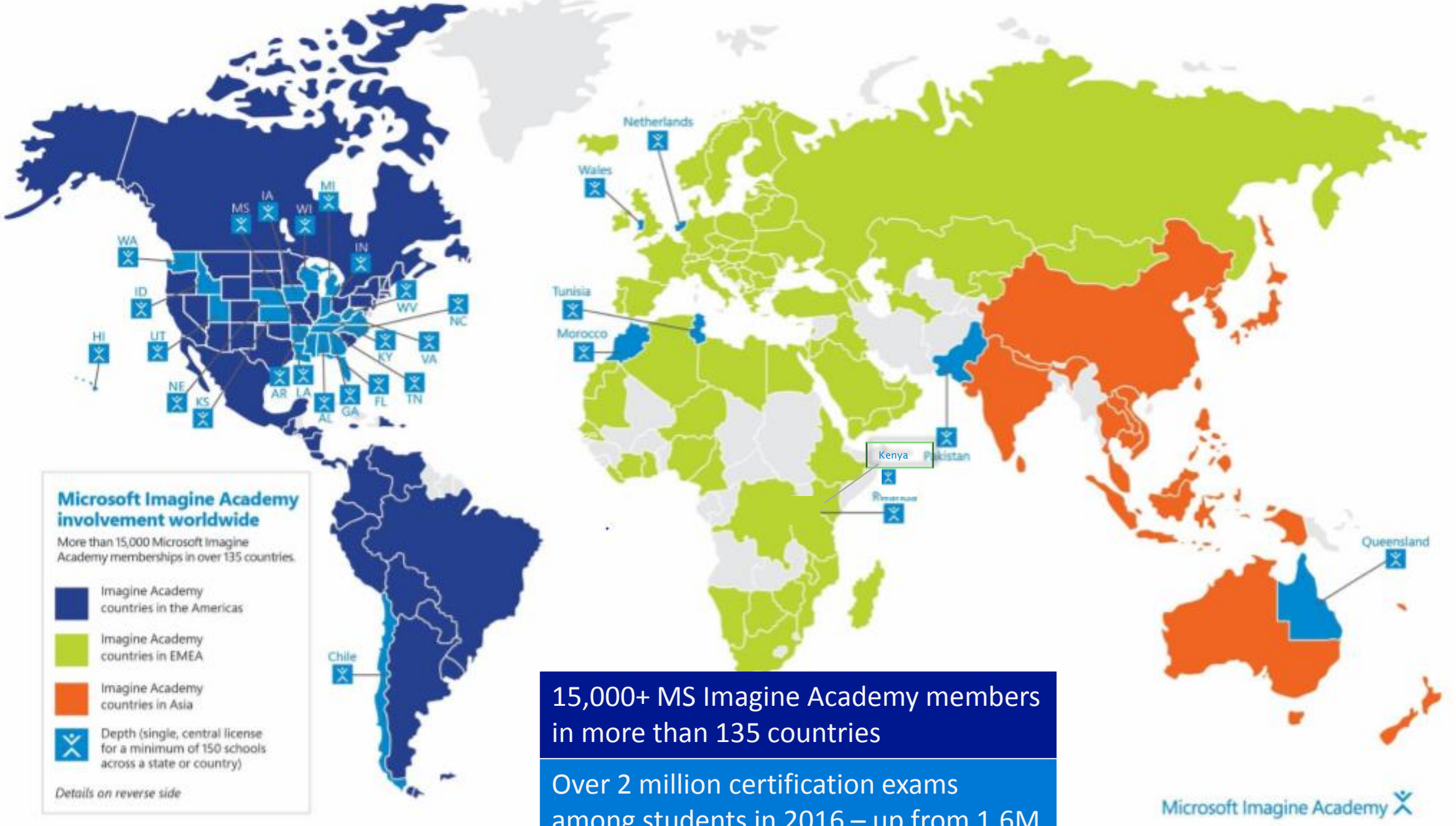
Statewide Agreements – USA

Imagine Academy/Certification Site Licenses

Washington, DC
High Schools, CCs
22/22

South Carolina
High Schools
250/150

Mississippi
High Schools
150/100



15,000+ MS Imagine Academy members in more than 135 countries

Over 2 million certification exams among students in 2016 – up from 1.6M

Microsoft Imagine Academy:
Growing Global Academic Ecosystem

Reach
8.5 million
students and educators annually

Over
16,000 educators
certified

2 million
Academic certification exams in 2015-16

15,000
Microsoft Imagine Academy member schools in 135 countries

Over 1 million
Online Learning users

Microsoft Imagine Academy Benefits

Annual license designed to save schools time and resources on course implementation and delivery

MOAC

Microsoft Official Academic Courseware

ONLINE LEARNING

CUSTOMIZABLE LESSON PLANS

STUDY GUIDES

NO COST EXAM VOUCHERS FOR EDUCATORS

– MOS, MTA, MCE

What types of academic institutions benefit from and license Imagine Academy?

- K-12 Schools
- Universities, Colleges or Junior Colleges
- Skills Centers
- Military Academies

- Vocational, Workforce Development and Trade Schools
- Scientific or Technical Schools
- Libraries and Health Academies

GIVE STUDENTS A PATH FORWARD

MICROSOFT IMAGINE ACADEMY

Computer Science
Productivity
Data Science
IT Infrastructure

+

INDUSTRY-RECOGNIZED CERTIFICATION

MTA
MOS
MCP
MCE

=

EMPLOYABILITY

ECONOMIC DEVELOPMENT

ENTREPRENEURSHIP

Microsoft Certification Journey

MICROSOFT CERTIFICATION help students and technology professionals be more likely to get hired, demonstrate clear business impact, and advance their careers.

Students and Teachers

DIGITAL LITERACY CERTIFICATE

- Computer Basics
- The Internet, Cloud Services, and the World Wide Web
- Productivity Programs
- Computer Security and Privacy
- Digital Lifestyles

MICROSOFT OFFICE SPECIALIST

- Word
- Excel
- PowerPoint
- Access

MICROSOFT TECHNOLOGY ASSOCIATE

- Windows OS Fundamentals
- Software Development Fundamentals
- Database Fundamentals
- Windows Server Administration Fundamentals
- Networking Fundamentals
- Security Fundamentals
- Mobility and Devices Fundamentals
- Cloud Fundamentals

MICROSOFT CERTIFIED PROFESSIONAL

- Server
- Desktop
- Applications
- Database
- Developer

Teachers

Microsoft Certified Educator
Teaching with Technology

MS Imagine Academy supports online, flipped, blended and traditional classroom instruction

Microsoft Imagine Academy | Classroom | Educator Development | Student Certification | Marketing | Jeff Johnson

Curriculum overview >

Your curriculum resources support technology skills and certification preparation. These curriculum resources include:

- Learning Paths
- Microsoft Digital Literacy
- Microsoft Official Academic Course (MOAC)
- Lesson Plans
- Online Learning
- Review & study guides

Curriculum downloads

Online learning dashboard >

Online Learning provides a library of multi-media, interactive courses on multiple Microsoft technologies that allow educators to manage and organize users, course assignment, and activity reports.

- Videos
- Simulations
- Hands-on activities
- Learning plans

Additional resources >

To complement and enhance your curriculum delivery there are a range of additional resources available to you at a special Imagine Academy discount. These resources include:

- MS Press books and eBooks
- Wiley resources, including print MOAC, OfficeGrader and OfficeTrainer
- Microsoft Official Courseware (MOC)

Classroom setup >

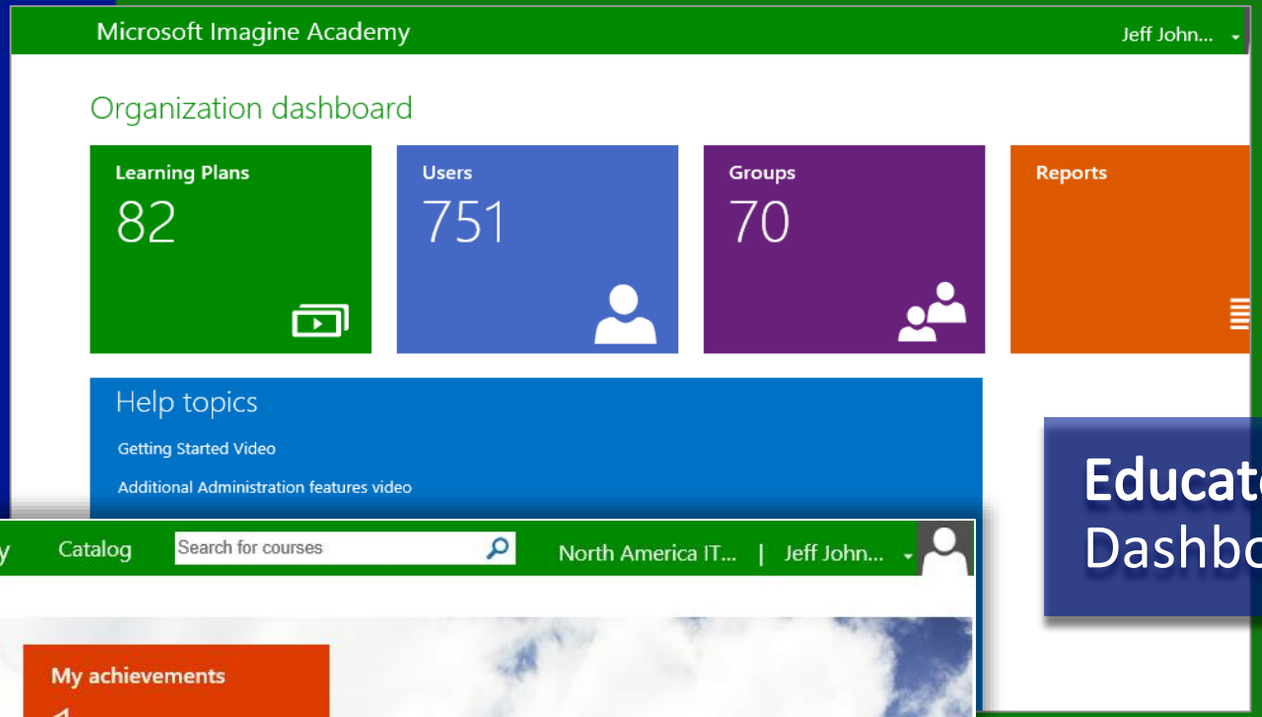
Here are some resources to help you get ready for your classes:

- IT Director Guide

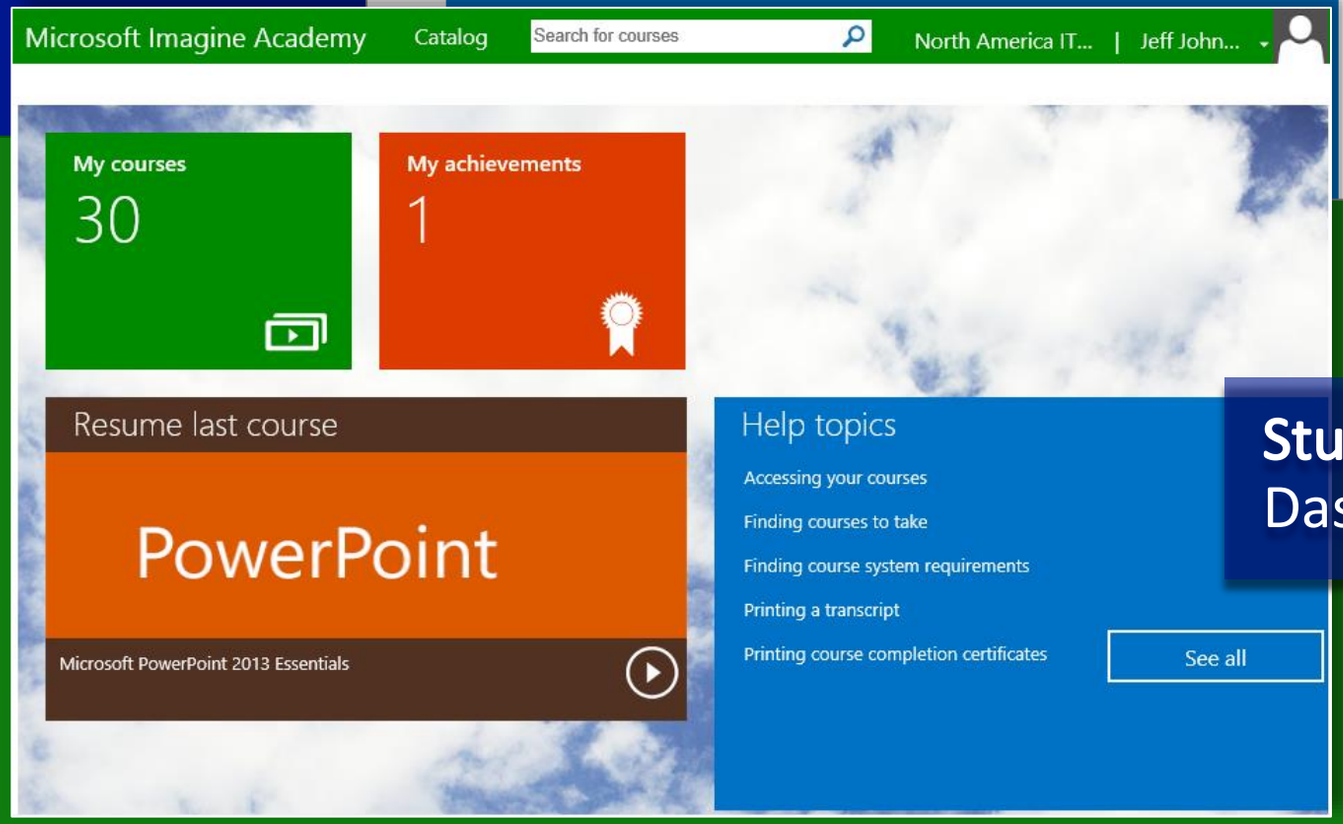
Student recognition

You can easily create course completion recognition awards to distribute to students. These are ideal for students who may not be able to take the certification exam. The award can be customized

Imagine Academy: Online Learning



Educator Dashboard



Student Dashboard

150 courses

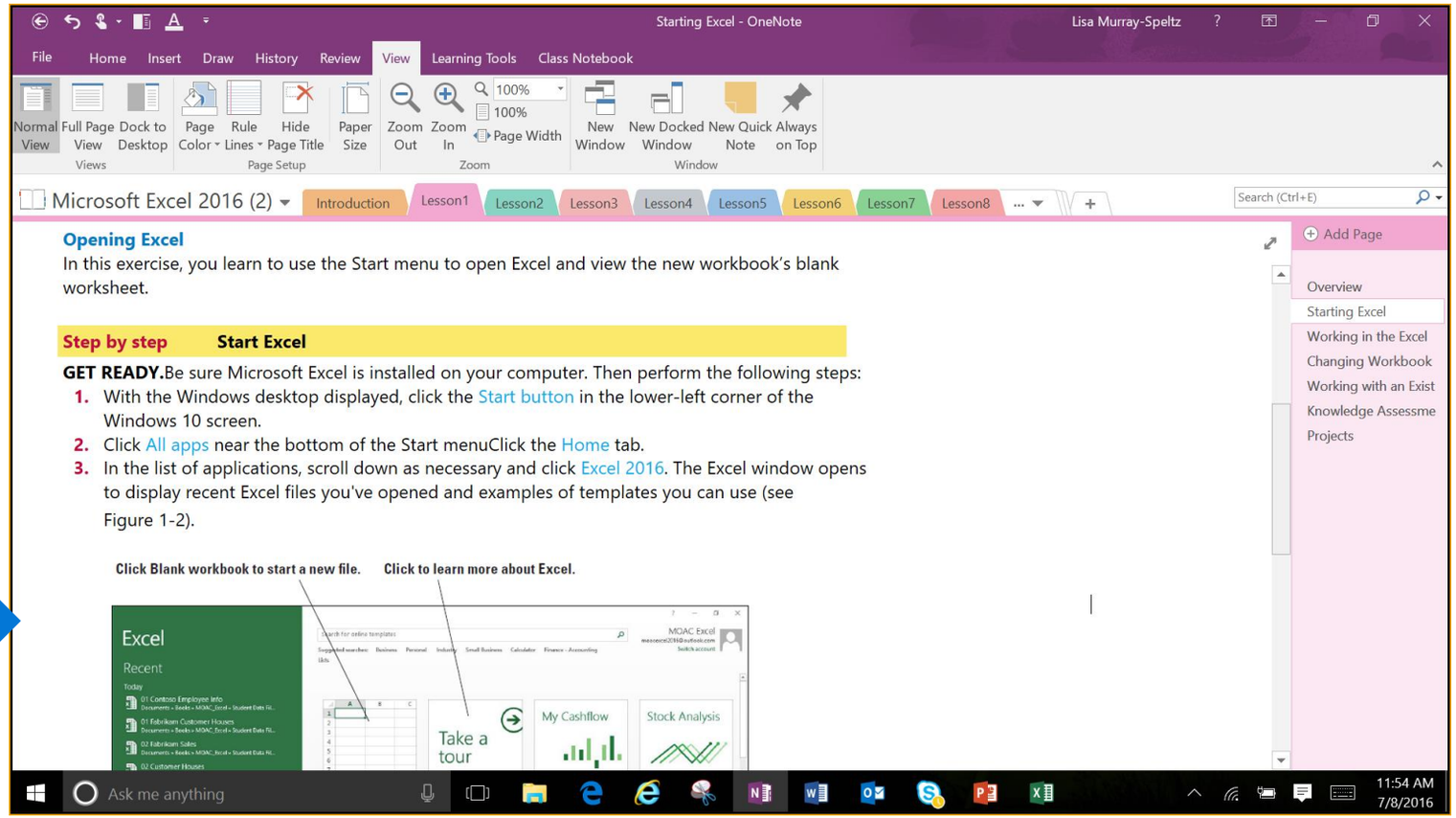
Multiple technologies

Complementary educator & student experiences

Digital Textbooks – mapped to certification

- MOAC digital curriculum for MSIA mapped to latest exam objectives
- Full text downloads for educators and students
- Take advantage of flexibility and adaptability of OneNote
- Save teachers time and save schools course costs

Hands-on lessons, quizzes, industry relevant exercises focused on students learning essential job tasks and current technologies



DEVELOP GREAT EDUCATORS

Microsoft Educator Community

Microsoft Educator Experts

Microsoft Authorized Trainers

Microsoft Imagine Academy

- Microsoft Certified Educator
- Microsoft Office Specialist
- Microsoft Technology Associate

Microsoft Showcase Schools

Microsoft Certified Educator -- Self Assessment & Individual Learning Plan for Educators, future teachers

self-assessment recommended courses all courses

Create a customized e-learning path

This 40-question self-assessment will help identify your current knowledge of integrating Information and Communication Technology (ICT) into teaching and learning. It is aligned to the Technology Literacy Approach of the UNESCO ICT Competency Framework for Teachers (ICT-CFT).

The results will help design a learning plan that us to recommend a personal learning path that competencies.

You can retake the self-assessment at any time plan and see the competencies you are achievin

Duration: About 50 minutes
Date last taken: 4/29/2012
Number of attempts: 2

start self-assessment ›

Starts with self assessment

Partners in Learning: Technology Literacy Teacher Competencies | Self-Assessment - Windows Interne

https://itacademy.microsoftelearning.com/courseAccess/coursePlayer.aspx?courseId=394781&topicId=764670

technology literacy teacher competencies | self-assessment

Print

Technology Literacy Teacher Competencies | Self-Assessment	Further Learning Recommended	Further Learning Optional
Demonstrate Understanding of the Technology Literacy Goals Described in the CFT Framework		
Identify the policy goals supported by the CFT framework.	✓	
Identify CFT and its approaches.	✓	
Identify the target student outcomes that result from implementing a CFT-supported learning experience.	✓	
Demonstrate Basic Knowledge of How ICT Resources Can Support Curriculum Outcomes.		
Given a curriculum goal, identify appropriate ICT resources and skills required to use ICT resources.		✓
Given a scenario, evaluate and select an ICT instructional resource.	✓	
Given a scenario, evaluate and select an ICT assessment resource.	✓	
Select an appropriate computer-based tool to monitor and share pupil performance data.		✓

Desktop

Aligned with UNESCO Global Standard

University Credit through Lamar University

Six core curriculum focus courses for educators

CURRICULUM & ASSESSMENT

EDUCATION POLICY

TECHNOLOGY & PEDAGOGY

ICT CLASSROOM TOOLS

ORGANIZATION & ADMINISTRATION

PROFESSIONAL DEVELOPMENT

Microsoft Certification Pathways

Computer Science

- Learn to Code Offerings:
  - TouchDevelop
  - Minecraft
- Creative Coding through Games & Apps (CCGA)
- Intro to Programming (Python)
- CS50

Validation

- MTA Software Development Fundamentals
- MTA HTML5 App Development Fundamentals
- MCP Programming and HTML5 JavaScript and CSS3
- MCP Essentials of Developing Windows Store Apps Using JavaScript and HTML5
- MCP Advanced Windows Store App Development Using HTML5 and JavaScript
- MCSD Windows Store Apps

Exploration

- CS AP Java Exam Prep Lessons

Productivity

- Digital Literacy
- MOS One Note: One Note 2010, 2013
- MOS Word: Word 2010, 2013, 2016
- MOS PowerPoint: PowerPoint 2010, 2013, 2016
- MOS Excel: Excel 2010, 2013, 2016
- MOS Word Expert X2: Word 2010, 2013
- MOS Excel Expert X2: Excel 2010, 2013
- MOS Access: Access 2010, 2013, 2016
- MOS Master

IT Infrastructure

- MTA Security Fundamentals
- MTA Networking Fundamentals
- MTA Cloud Fundamentals

Windows 10

- MCP Configuring Windows 10
- MCP Supporting Windows 10
- MCP Configuring Windows Devices
- MCSA Windows 10

Windows Server

- MCP Installing and Configuring Windows Servers 2012
- MCP Administering Windows Servers 2012
- MCP Configuring Advanced Windows Servers 2012
- MCSA Windows Servers 2012

Azure

- MCP Developing Microsoft Azure Solutions
- MCP Implementing Microsoft Azure Infrastructure Solutions
- MCP Architecting Microsoft Azure Infrastructure Solutions

Supported Languages:

Arabic
Chinese
Dutch
English
French
German
Japanese
Korean
Portuguese
Spanish

Microsoft Certified Educator (MCE) Certification

MCE demonstrates that educators have achieved technology literacy in six content areas, mapped to the UNESCO ICT Competency Framework for Teachers, Technology Literacy:

- Education policy
- Organization and administration
- ICT/technology book
- Pedagogy
- Curriculum and assessment
- Professional development

Microsoft Imagine Academy Learning Pathways

Computer Science

Hour of Code → Minecraft (STEM) → Minecraft Redstone (Computer Science) → Creative Coding Games and Apps → Technopreneurship → Introduction to Python → Harvard CS50 AP Computer Science Principles

- Java "AP A in-a-box" → Programming with C# → Querying Data with T-SQL → **Software Engineer**
- Web Technologies (Python)/HTML, CSS, JavaScript → C# Fundamentals Development for Absolute Beginners → Xamarin Fundamentals → Technopreneurship 2 → **Entrepreneur**
- Job Readiness → **Programmer**

IT Infrastructure

Windows Server Administration Fundamentals → Networking Fundamentals → Security Fundamentals → **MTA IT INFRASTRUCTURE** ★

Software Development Fundamentals → HTML5 App Development Fundamentals → Software Testing Fundamentals → **MTA DEVELOPER**

Microsoft Technology Associate (MTA)

Windows OS Fundamentals
Software Development Fundamentals
Database Fundamentals
Windows Server Administration Fundamentals
Networking Fundamentals
Security Fundamentals
Mobility and Devices Fundamentals
Cloud Fundamentals

Microsoft Technology Associate (MTA)

Data Science

in development

Excel 2016 and Excel Expert 2016 → Introduction to Data Analysis Using Excel → Introduction to Databases → Querying Data with T-SQL → Analyzing and Visualizing *or* Data with Excel or Power BI → Introduction to Python for Data Science *or* Introduction to R for Data Science Querying Data with T-SQL → **Data Scientist**

Productivity

Digital Literacy → **MOS One Note:** One Note 2010, 2013 → **MOS Word:** Word 2010, 2013, 2016 → **MOS PowerPoint:** PowerPoint 2010, 2013, 2016 → **MOS Excel:** Excel 2010, 2013, 2016 → **MOS Word Expert:** Word 2010, 2013, 2016 → **MOS Excel Expert:** Word 2010, 2013, 2016 → **MOS Access:** Access 2010, 2013, 2016 → **MOS Master**

- Early Skill Development
- Basic Skill Development
- Intermediate Skill Development
- Advanced Skill Development
- Live Learning Experience
- Live Learning Experience with Certification

SYSTEM-WIDE CHANGE IN NORTH CAROLINA, USA

In 2010 North Carolina became our first partnership to deploy MSIA system-wide in all high schools in the state.

Their goal…. to develop a pipeline of information workers to attract new business and higher paying jobs.

- 234,000 certifications earned to date
- From 16 to 58,485 per year
- Created a pathway to two year Community Colleges

FLORIDA (USA)

Key Performance Indicator	Students without Certifications	Students with Certifications	CAPE Academy Students with Certifications
Average GPA	2.64	**2.88**	**2.98**
Dropout Rate	2.7%	**.6%**	**.3%**
Graduating 12th Graders	71.9%	**92.1%**	**94.9%**
Chronically Absent	18.3%	**16.2%**	**11.3%**
Disciplinary Action	16.4%	**10.3%**	**9.9%**

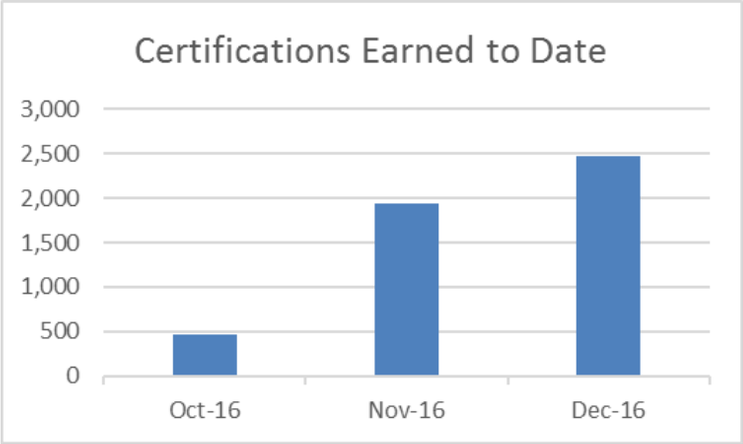
Impacts of Skills & Certifications Attainment on School Performance Measures

Annual study across more than 1,500 Florida high schools and middle schools

Students with industry certification outperform non-certified peers on key performance indicator for schools

The career program is in its 6th year in Florida high schools. Over time, industry certification earner graduates outperformed the overall average high school population with consistently higher placement rates in employment or postsecondary education.

Kentucky Department of Education



- 187 Microsoft Imagine Academy high schools and tech centers
- 160 Microsoft Certification Site Licenses
- O365 Statewide K-12
- Strong Focus on Computer Science & Student Certifications

COMPUTER SCIENCE MOMENTUM

The Hour of Code with Minecraft provided new inspirational learning opportunities in classrooms in Shelby County, Kentucky, USA

90+ Kentucky, USA, educators gained insights for teaching Computer Science and MTA track with MSIA in Louisville

"So many of our industries and businesses are asking for our students to have those skills in Computing. It does give our students a little leg up." Laura Raganas, MSIA program manager, KDE Office of Knowledge, Information and Data Services

Kentucky students featured at ISTE for [winning Math competition]

Computer Science

TURNER USD VIDEO

Students and educators:

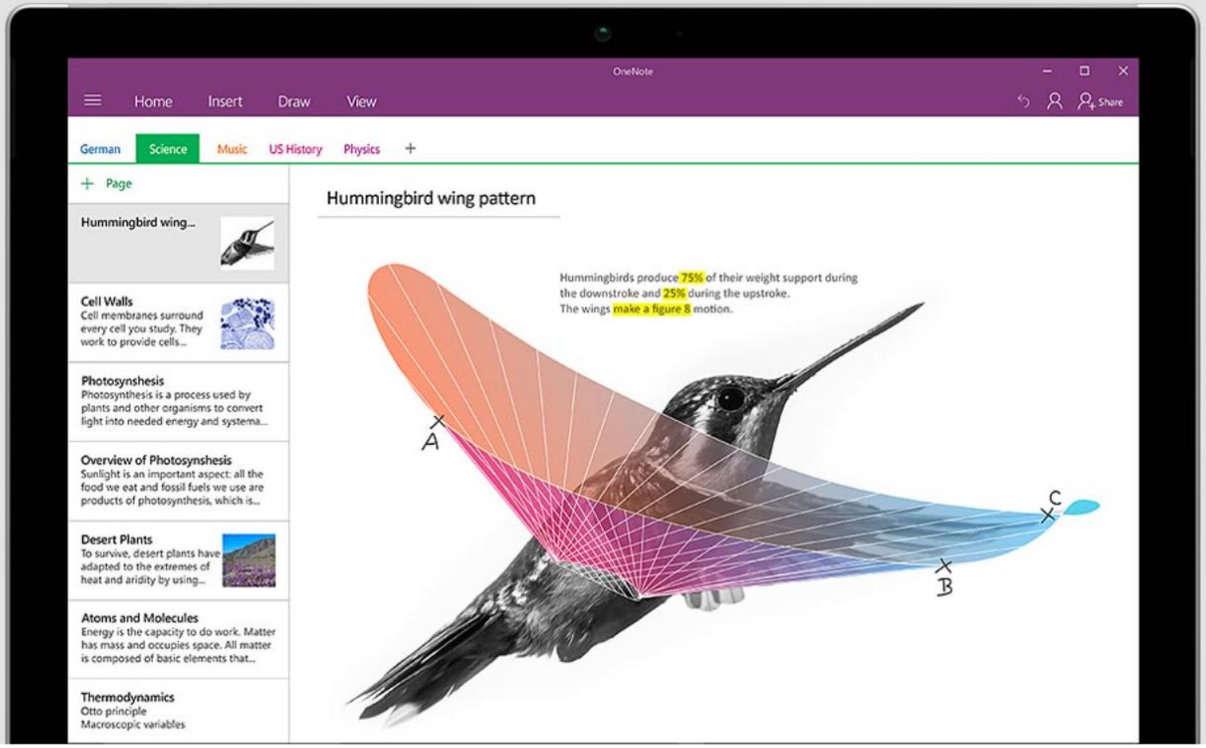
Get Office for free

Transform your classroom with Office 365 Education. It's free, it's not a trial, and it includes Word, Excel, PowerPoint, OneNote, and more with your valid school email address.

LEARN HOW IT WORKS >

Enter your school email address | Get Office for free

IT PROS, SIGN UP YOUR ENTIRE SCHOOL >



Get started with free Office apps

Organize

Microsoft Classroom | OneNote | Outlook | OneDrive

Collaborate

Word | Excel | PowerPoint | Skype

What's new in Office 365 Education?

Collaboration and communication in the classroom

Class Notebook add-in (preview) with Classroom & LMS assignments
Professional Learning Community (PLC) Groups
Office Online collaboration improvements—scale and chat

Managing the online classroom

Class Notebook add-in (preview) with Classroom & LMS assignments
Microsoft Classroom (preview) for Office 365 Education
Microsoft Forms (preview) and Microsoft Forms Grader add-in

Student empowerment

Learning Tools for OneNote (preview) add-in
Sway—add audio narration, embedded quizzes with Microsoft Forms

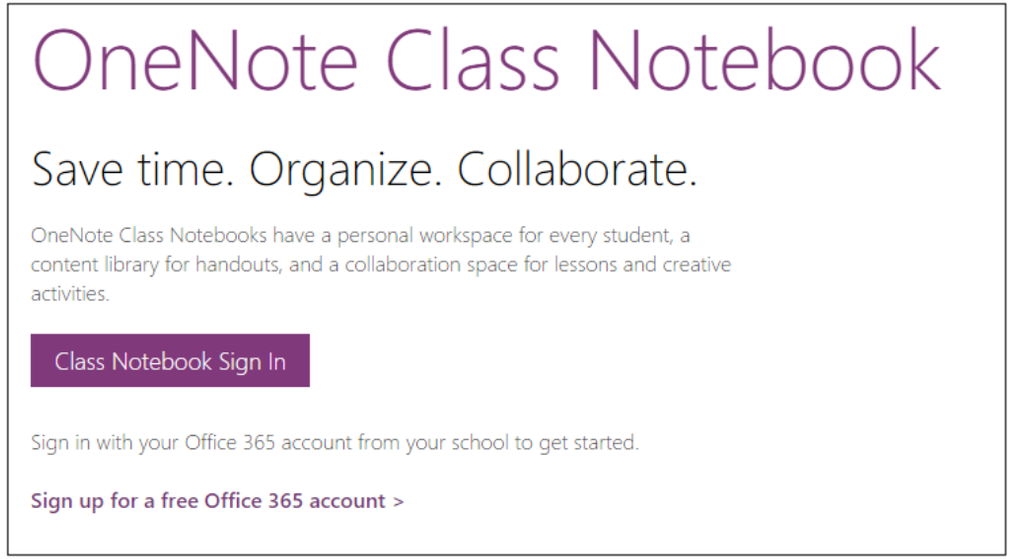
Saving time

Teacher-to-Student invites in the Class Notebook
School Data Sync (preview)

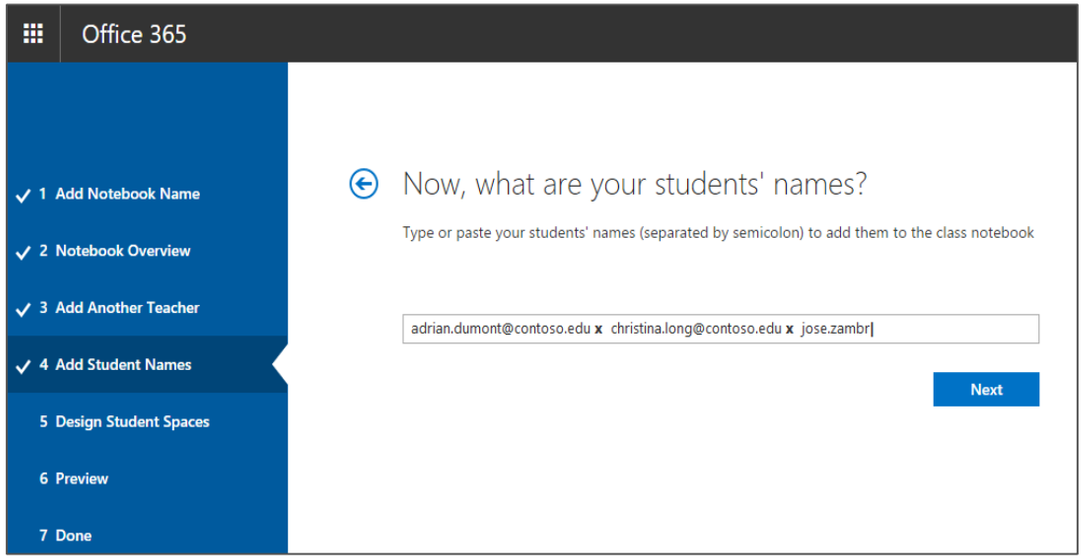
Teacher training and CPD

Docs.com—content download and publishing for Learning Registry
Microsoft Educator Community

Class Notebook—invite new students quickly



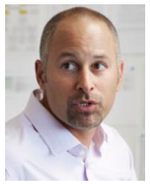
Invite



1. Teachers—sign up for Office 365 Education, create OneNote Class Notebooks for their classes, and easily add students to a Class Notebook
2. Invites students to Office 365 without any help from IT!
3. Go to onenote.com/classnotebook and use the Class Notebook app

OneNote Staff Notebook

1



Collaboration space

Content library

Staff member notebooks

2

School administrators can quickly set up a shared, permissioned OneNote notebook with an easy Office 365 app. Uses include:

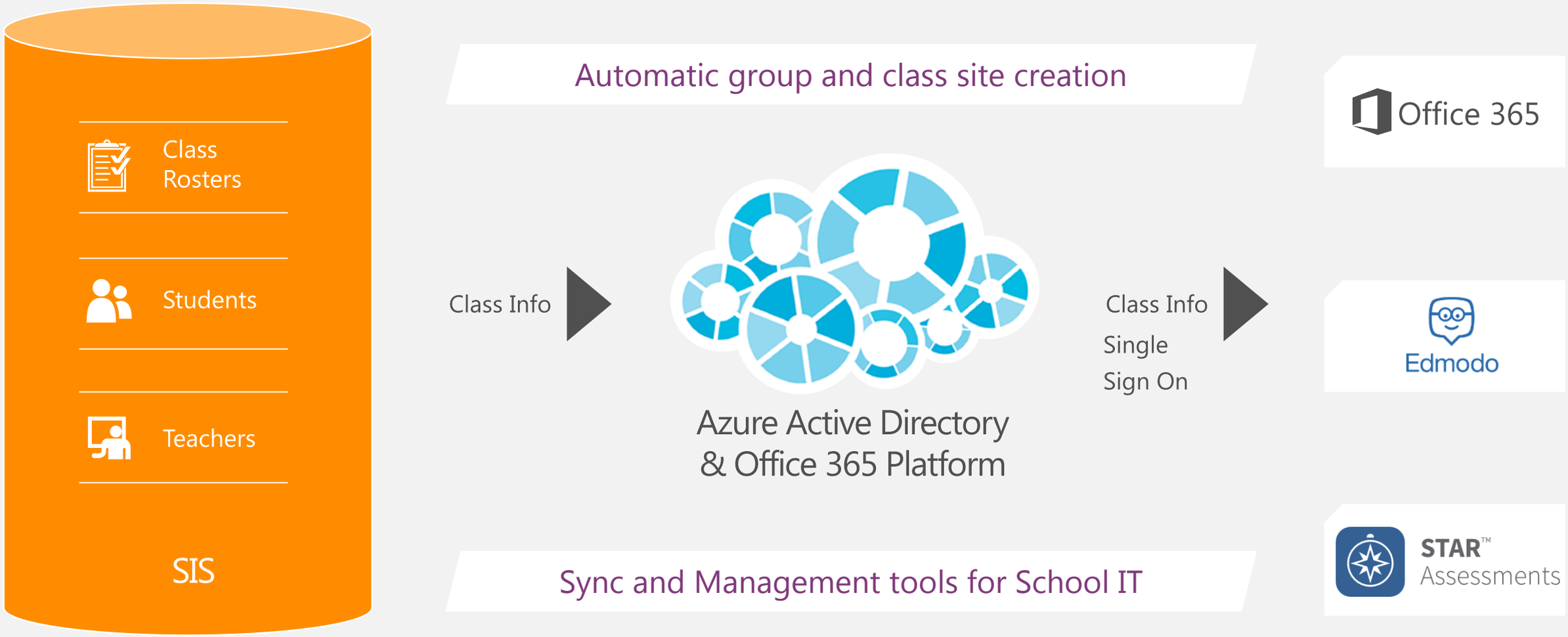
Collaboration: staff meeting notes/staff initiatives/shared lesson plan development/data chats/scope and sequence across content and grades/fundraisers/book studies/PLC's

Content Library: policies and procedures/various school planning and calendar activities

Staff Member Notebooks (private): professional development/ classroom observations/lesson plans/parent communication/ evaluations/classroom data progress

Microsoft School Data Sync

A service in Office 365 Education



THANK YOU

Microsoft

Questions, Follow-up:
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