A Digital and Blended Learning Ecosystem for the Workforce of the Future

OAS: INTER - SECTORAL WORKSHOP ON "SKILLS FOR THE FUTURE: COORDINATION BETWEEN MINISTRIES OFEDUCATION AND LABOR" , Santiago de Chile

May 17, 2019

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Abdul Latif Jameel World Ed

At a time when the workforce is facing changing demands, and employment is being usurped….

Augmented Reality Program

- **SAFETY**: Highlight critical safety information in a challenging work environment
- **OPERATIONS**: Bring the ship to life in a new way by revealing data while it is in context
- **MAINTENANCE**: Enable every sailor to become a quick expert on complex systems
- **TRAINING**: Train new operators by overlaying instructions on complex equipment

G. Westerman

The Future of the CLO

Trainer → **Transformer**

Three transformations

Goals

Compliance → Enablement

Skills → Capabilities and culture

Order-taking → Partnership

Methods

Personalized
Small bits, Just-in-time
Digital + Blended
Simulation, Scenarios
Multi-modal
Peer learning

Instruction, Introspection, Immersion

Learning Unit

Smaller, more agile

Creation → Curation

Experience design

Peer/expert teacher enablement

New staff roles

Performance focus

Disruptive Innovation for Quality @ Scale

Supply

Digital Learning Innovation across supply chain of education

- **Lectures, Labs Credentials**

- **Learning Science**
  - **Cognitive Tutors for Adaptive Learning**
- **Alternate Pathways**
- **Data used to improve learning**
- **The Open Movement**
- **A new ecosystem for learning**

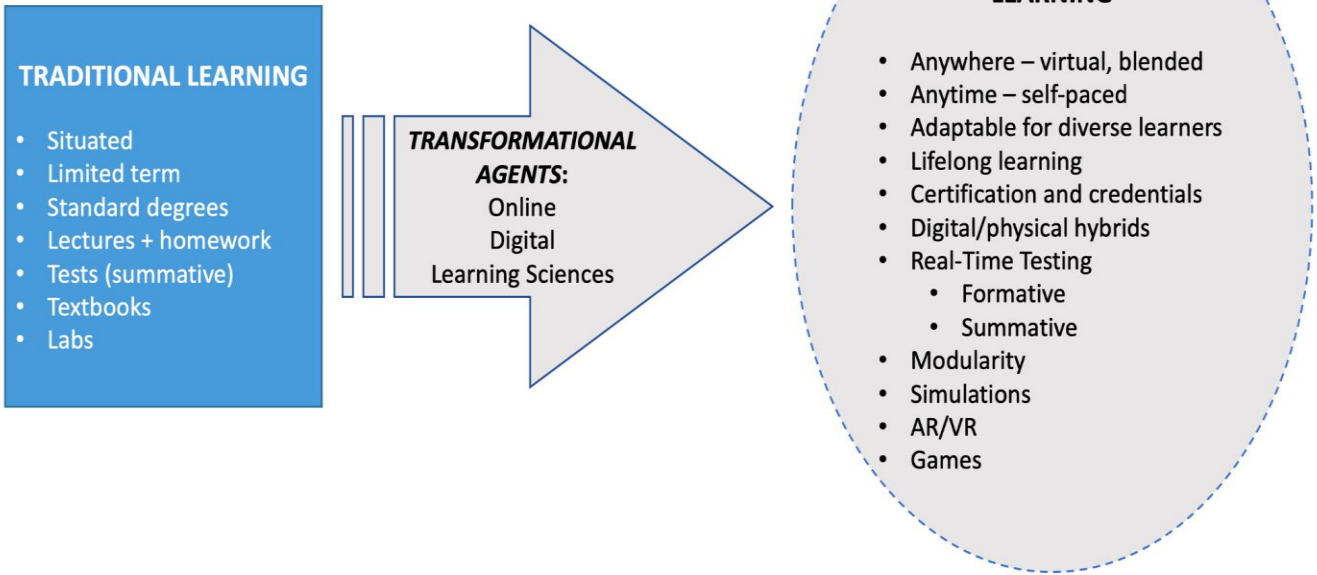
Demand:

- **Worldwide demand for well-educated workers**
- **Cost of education**
- **Rapidly changing knowledge and skills**
- **New Generation of Diverse learners**
  - **Non-Traditional Displaced**

Changing the World of Learning

Changing the World through Learning

Every element of teaching/learning is transforming

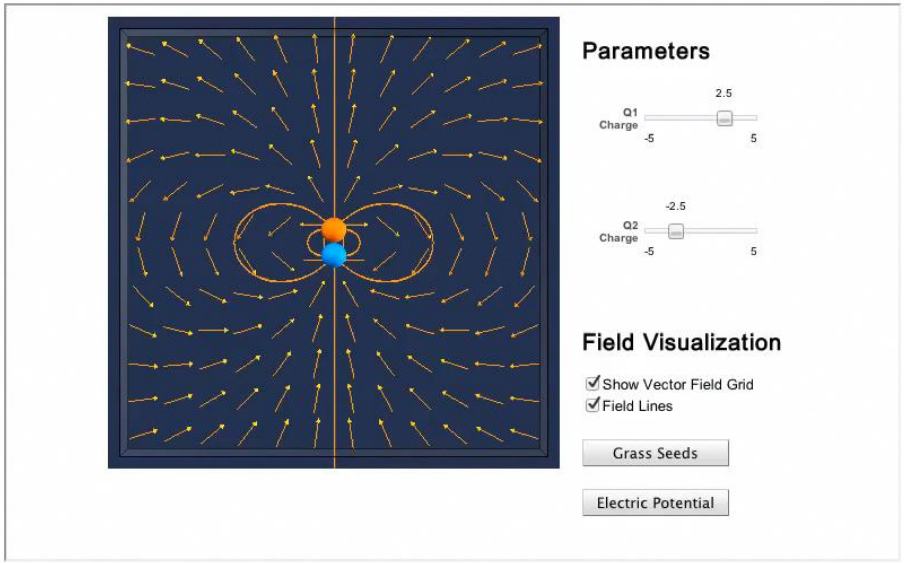


Interactive Simulations (Physics)

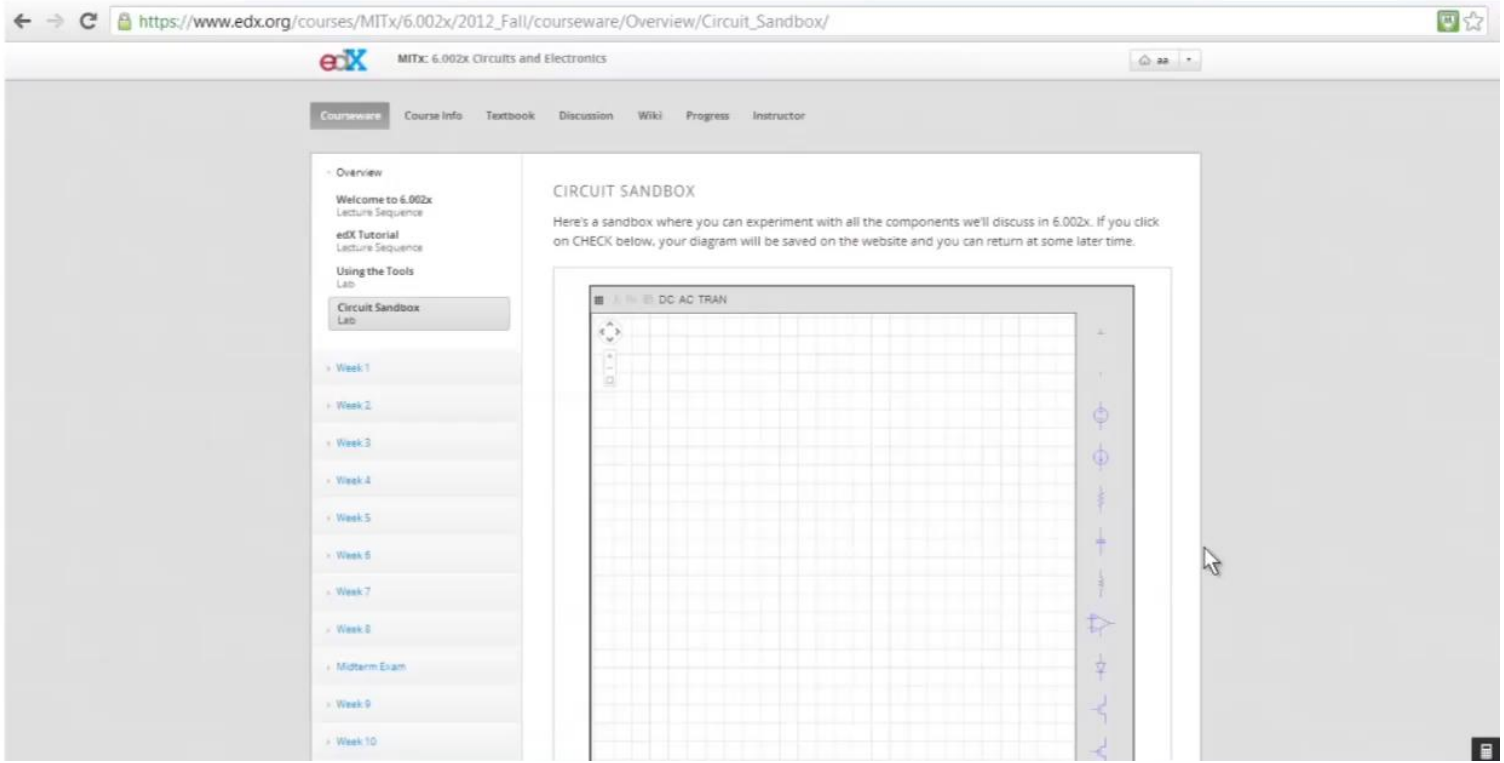
TEALSim Exploration: Point Charges

This simulation illustrates the field pattern created by two point charges with opposite signs of charge. In this simulation, the position and charge of each particle can be modified in real time, and the field configuration will update itself accordingly.
All three field visualization techniques can be applied to show the overall electric field of the two-charge configuration: vector field, field lines, and "grass seeds".

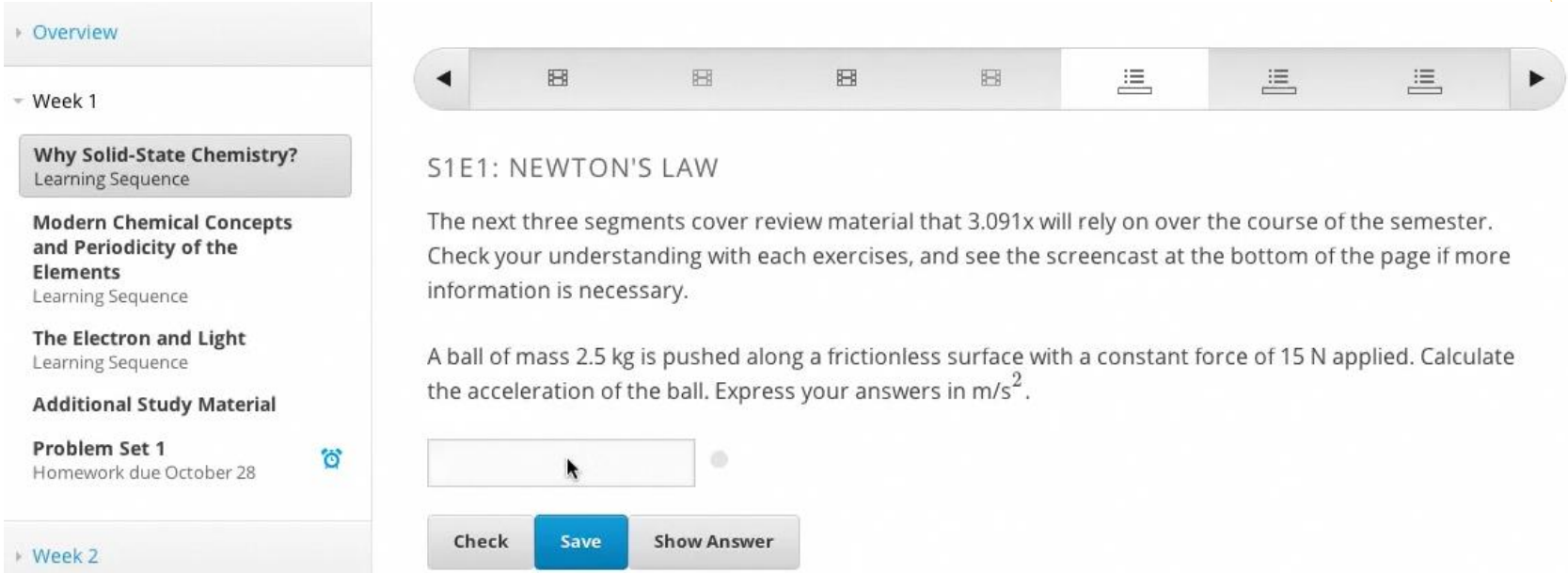
(Please be patient - the simulation may take ~20 seconds to load)



Virtual Game-Like Laboratory



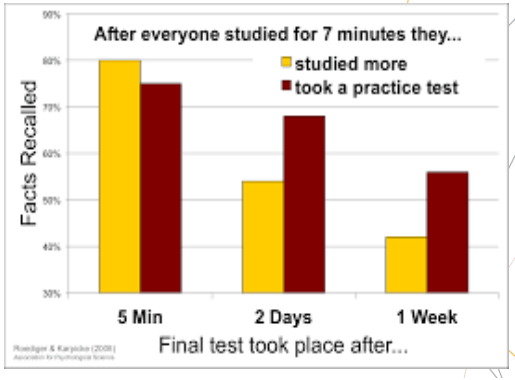
Interactive Auto-graded Problems

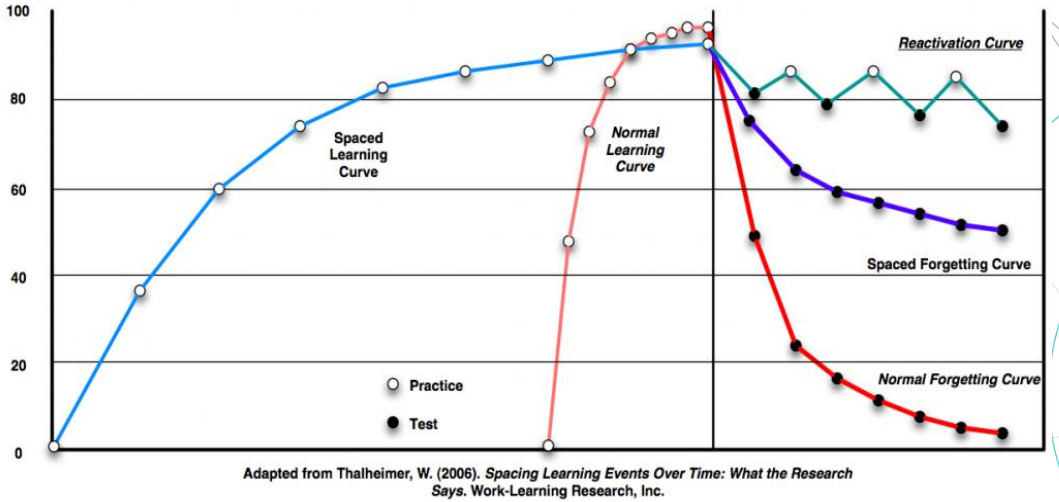


May use randomization, tolerances can be specified

The Science of Learning

1. Mind-wandering
2. Retrieval practice
3. Spaced practice
4. Hands-on
5. In-person tutoring





Adapted from Thalheimer, W. (2006). *Spacing Learning Events Over Time: What the Research Says*. Work-Learning Research, Inc.

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Judicious Blending

- Do online where online is better
  - Training versus education: video
  - Retrieval, spaced, interleaved training
  - Practice, simulations, games, practice, mastery

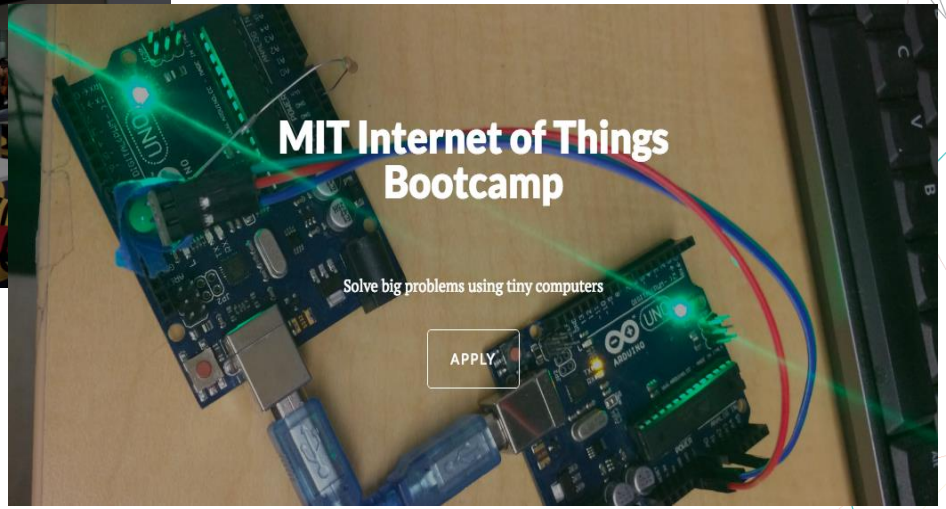
- Do onsite where what are better onsite
  - Feedback
  - Hands-on
  - Peer-to-peer and discussion

MicroMasters Credential

- New mezzanine credential for working professionals
- Fully online, credential issued by edX/MITx
- If admitted to MIT, credit for a semester of Masters
- Other universities signing up for follow-up master's
- Recognized by industry leaders (Walmart, GE, IBM, Volvo, Fidelity, Ford, Bloomberg, Equifax, etc.

https://micromasters.mit.edu/

Bootcamps



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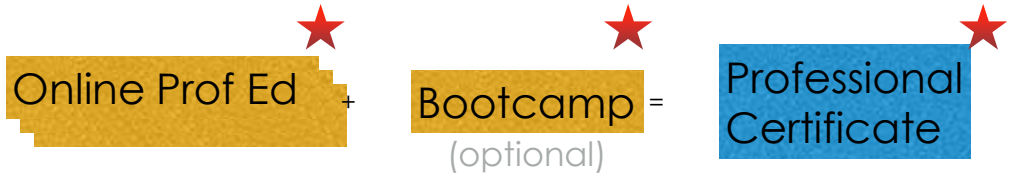
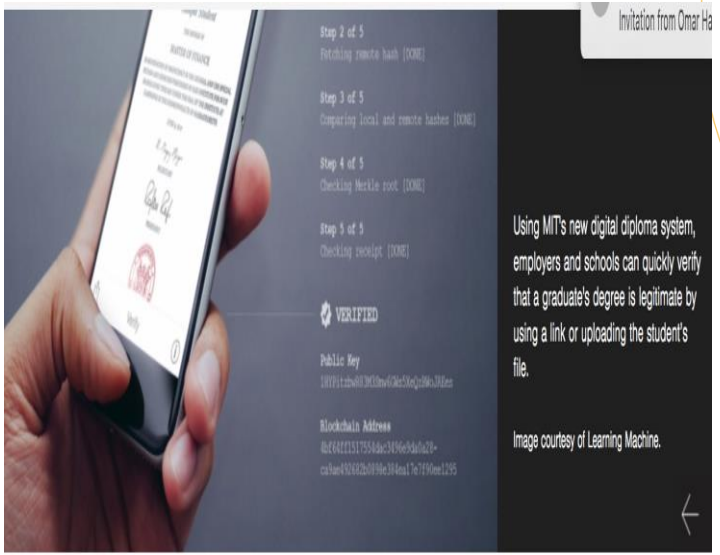
News: New pathways for learning/credentials



A new landscape is emerging



Digital Diploma debuts at MIT

MIT APP INVENTOR

MicroMasters

AI powered Knowledge-on-Demand

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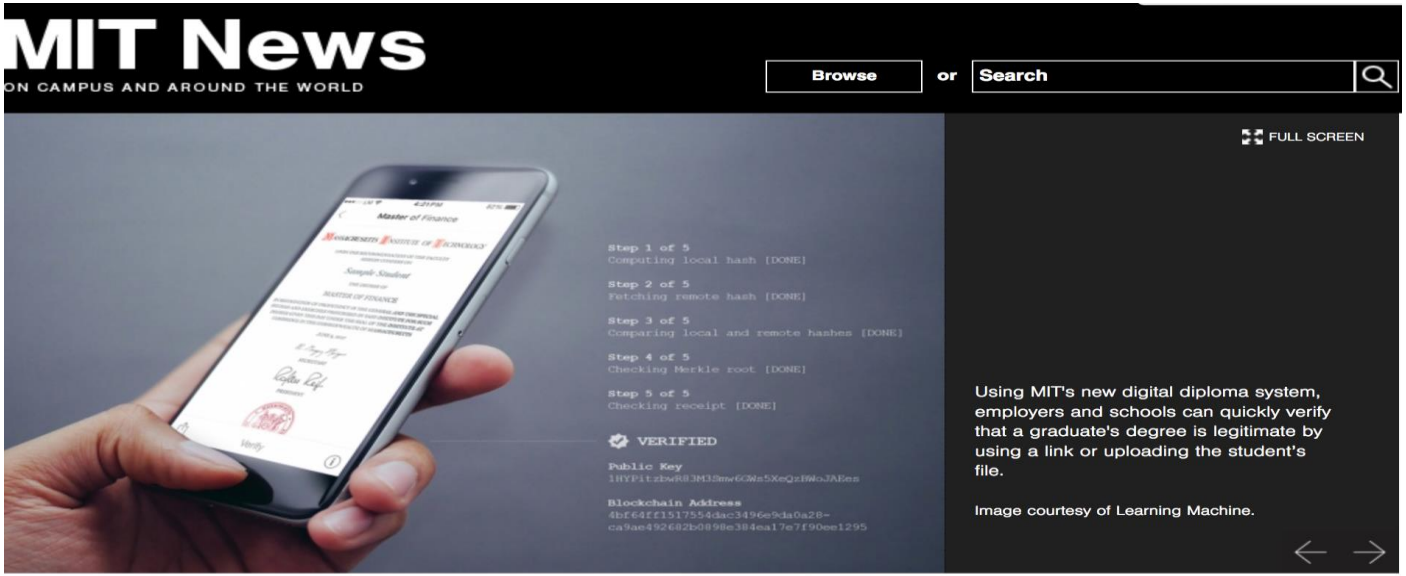

Digital Diploma debuts at MIT

Using Bitcoin's blockchain technology, the Institute has become one of the first

- Students can share their diplomas almost immediately with whomever they please, free of charge, without involving an intermediary.
- Important for students who need to prove to an employer or another university that they have an MIT diploma.
- Third party can easily verify that the diploma is legitimate without having to contact the Registrar's Office.

GYAN: AI Powered Knowledge-on-Demand

Knowledge on Demand

Provide Knowledge-on-Demand on any topic and keep it updated real time

Intuitive

Intuitive visualization and non-linear learning model using Semantic Networks in addition to conventional linear text book style material

Pedagogical Overlay

Pedagogical overlay reflecting ‘experts’ view of how to learn specific topics. Experts can easily compile a Gyan collection and overlay their expertise

Knowledge Marketplace

Marketplace facilitates rapid and relevant publication and consumption of knowledge

Self-Learning

Self-learning, adaptive engine that can tailor additional content by observing user performance

Integrated Assessment Framework

Comprehensive assessment framework for authors and administrators to assess content

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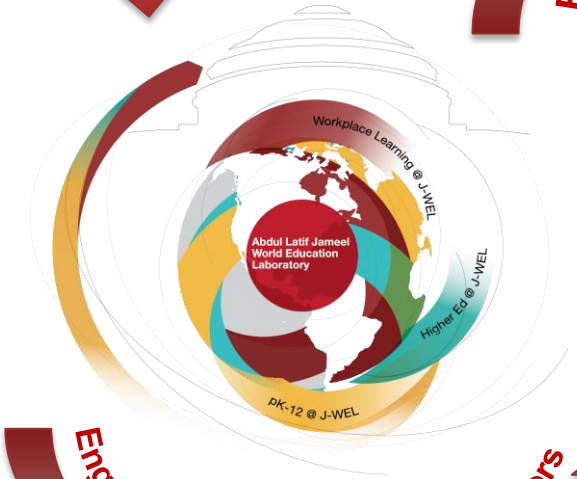
Jameel World Education Lab (J-WEL)

Leverage MIT Resources

- **Digital Learning Assets**
  - **OpenCourseWare**
  - **MITx**
  - **MicroMasters**
- **MIT Integrated Teaching & Learning Initiative**
- **MIT pK-12 Activities**
- **MIT Faculty Creativity**



Explore Design Reform

Engage Community of Collaborators

Sustainable,
High-Impact
Transformation
Of education across the world though research, policy, pedagogy and practice

Sparking a global renaissance in education for all learners

Reinvent Pre K-12

Applies systemic view to early education.

- STE(A)M Education ;
- Early Childhood Education
- Compassion and Social Emotional Supports
- Computational Thinking
- Teacher Professional Development & Leadership
- Literacy

Renew Higher Education

Aims to transform institutions.

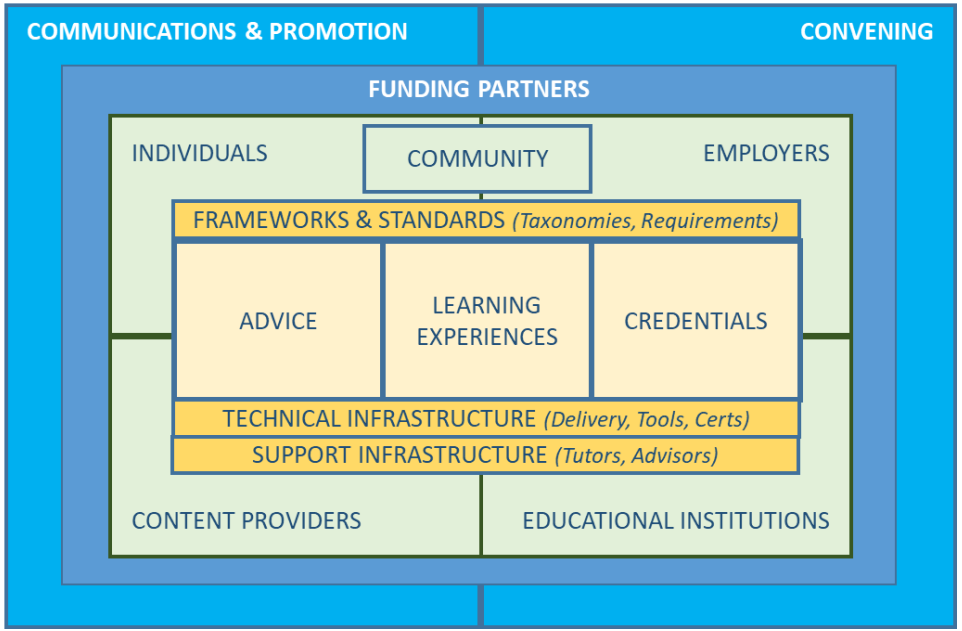
- Student achievement
- High impact research
- Healthy ecosystem
- Strong governance

Revitalize Workforce Learning

Help adults to take charge of their career development

- Workforce 2025
- Design of the workplace learning organization
- Ed tech and platforms
- Specific content

The Billion Workers Initiative



Our Dream:

Provide the right skills to the right people in the right way … at scale

Transforming:

Advice
Learning
Credentials
Industry/school linkages

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Our Goal: Provide the right skills to the right people in the right way – at scale.

- **Sensing demand** for skills and jobs
- **Assessing** worker skills
- **Advising** on good training and career paths
- Developing and curating **courses**: online, hybrid, experiential
- **Personalized** learning experiences
- Improving **job matching**
- **Collaborating** with schools, companies, and community institutions
- **Building local capacity** to execute and constantly improve the new processes
- Fostering a provider **ecosystem**
- Ongoing **innovation and research** to improve courses, experiences, outcomes

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Advice

Learning Experience

Online
Onsite
Hybrid
Simulation
Game
AR/VR

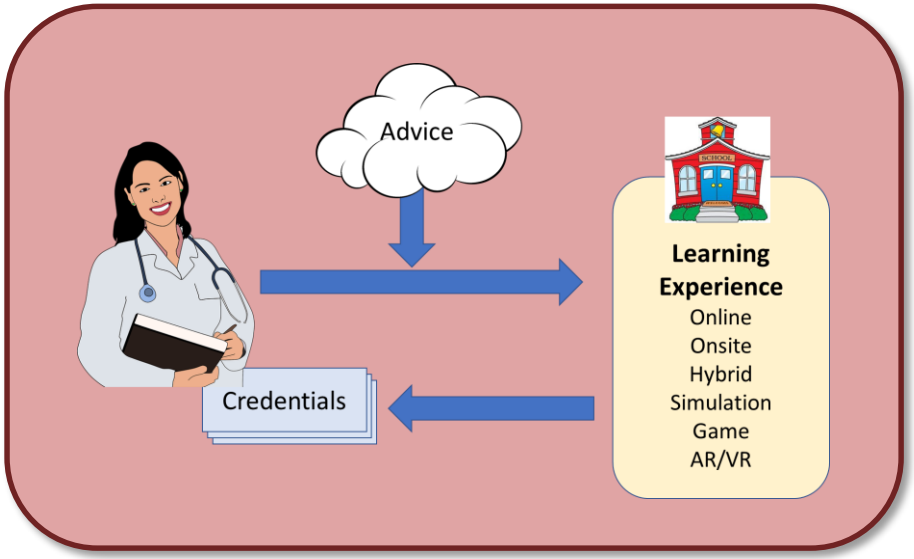
Credentials

Research and Policymaking

Agency Policy

Real-time Demand Status

Competencies
Roles
Policy Adherence



Infrastructure

Staffing

Course Design

Learning Science Research

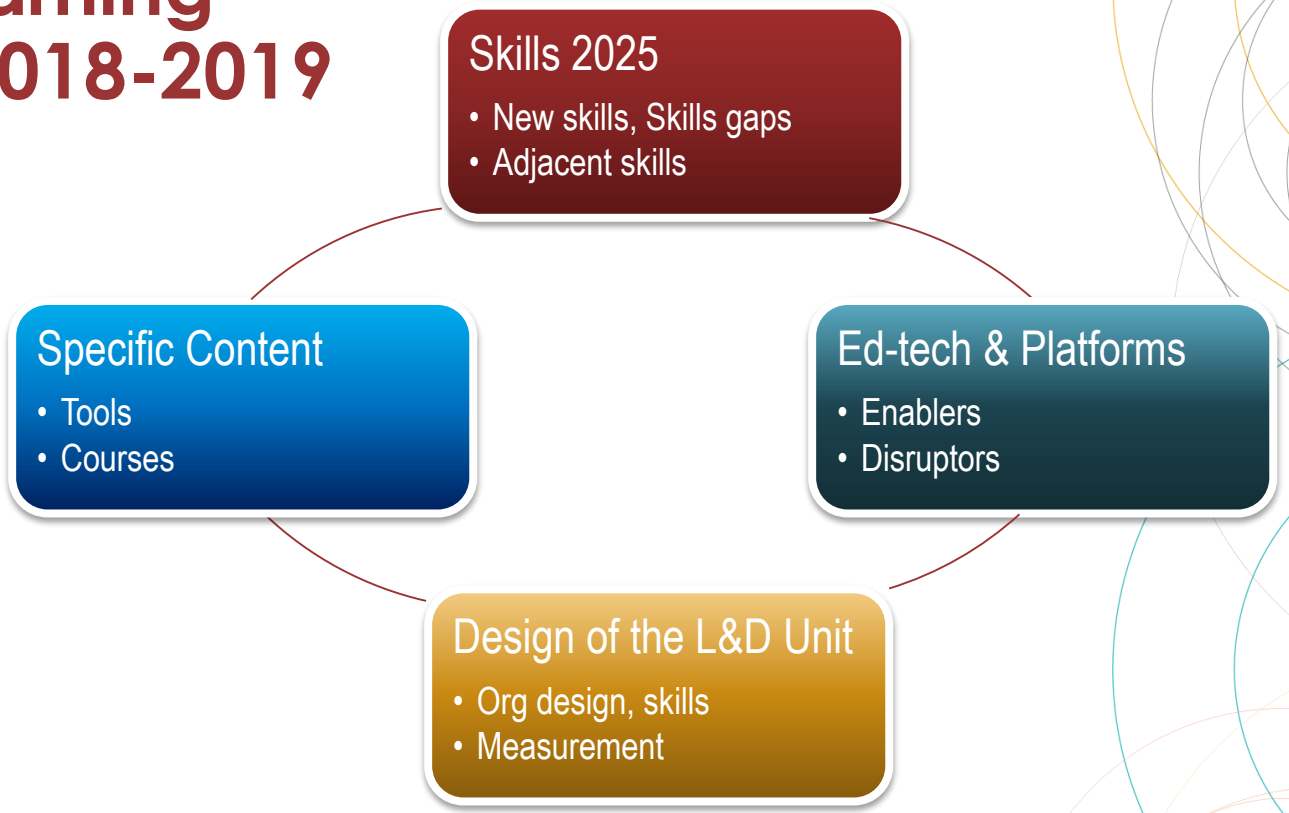
Assessments

Local Customizations

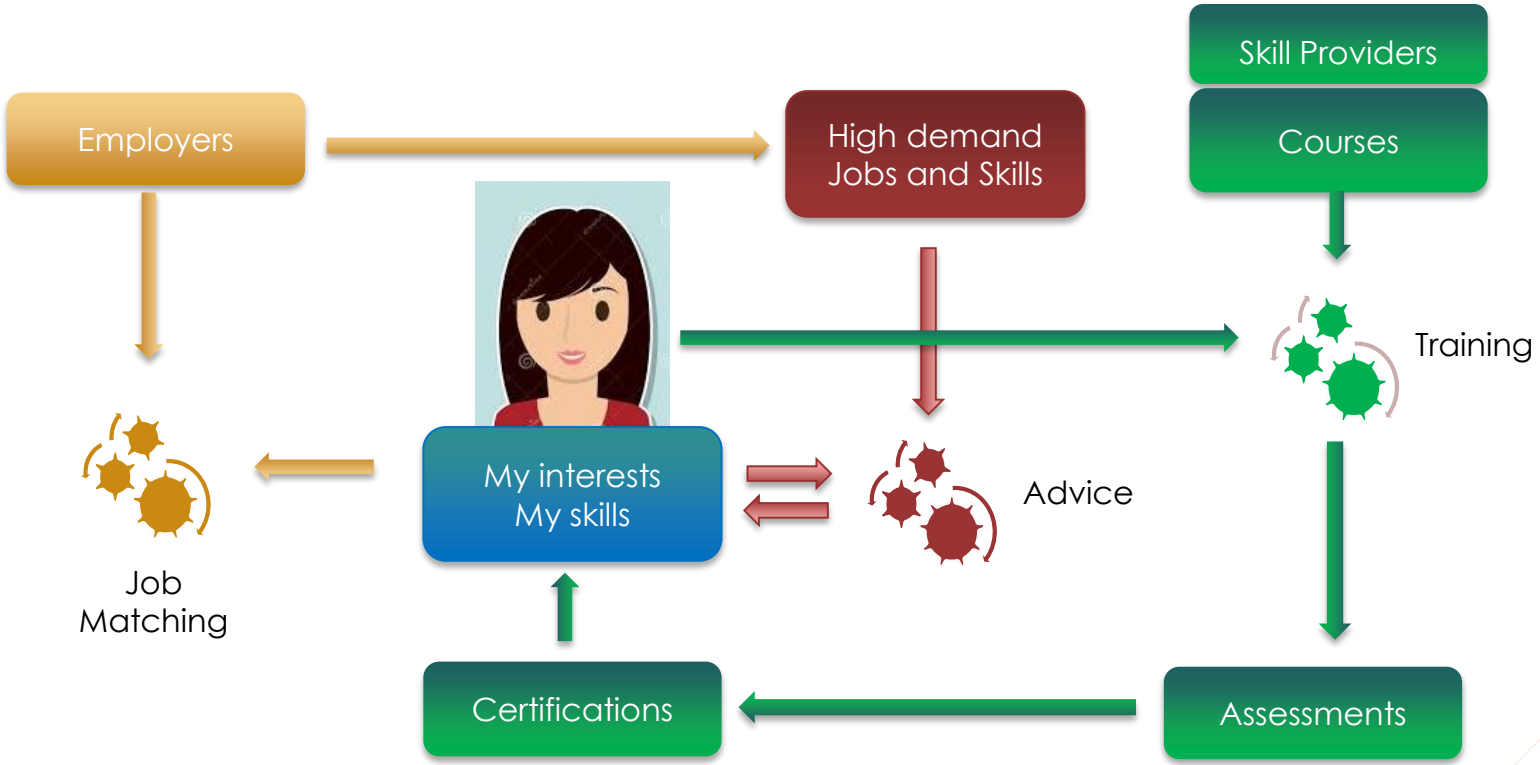
Credentialing requirements

Workforce Learning Focal Areas 2018-2019

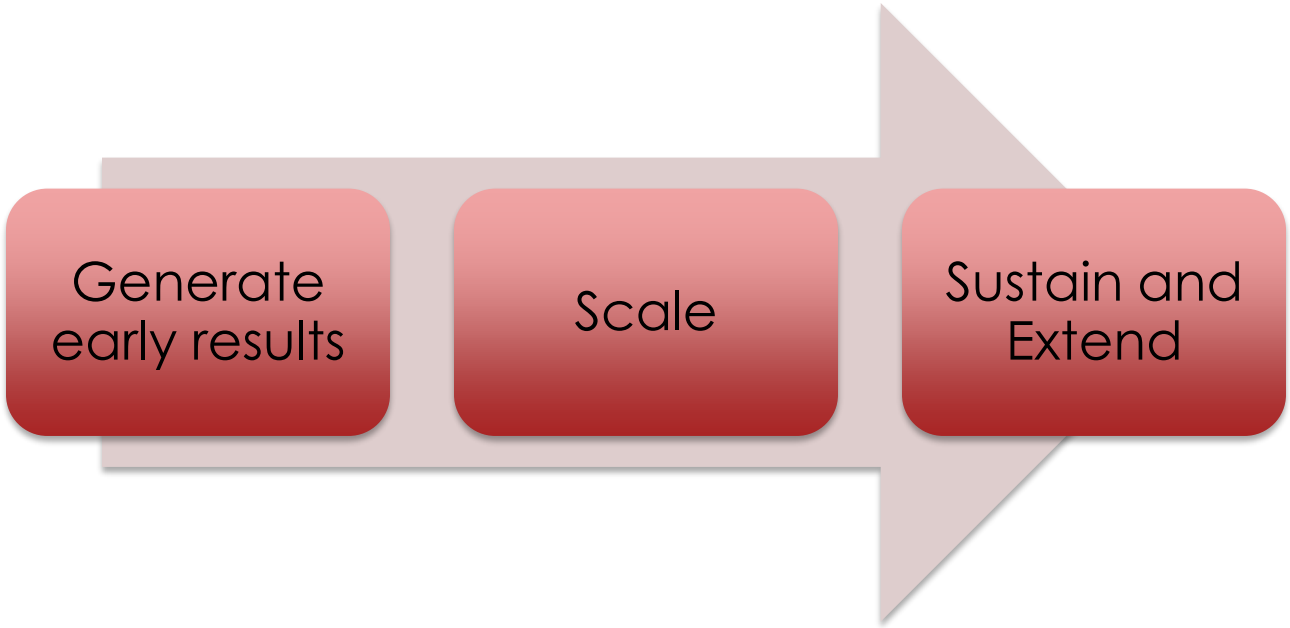
Working Collaboratively with Industry and Society



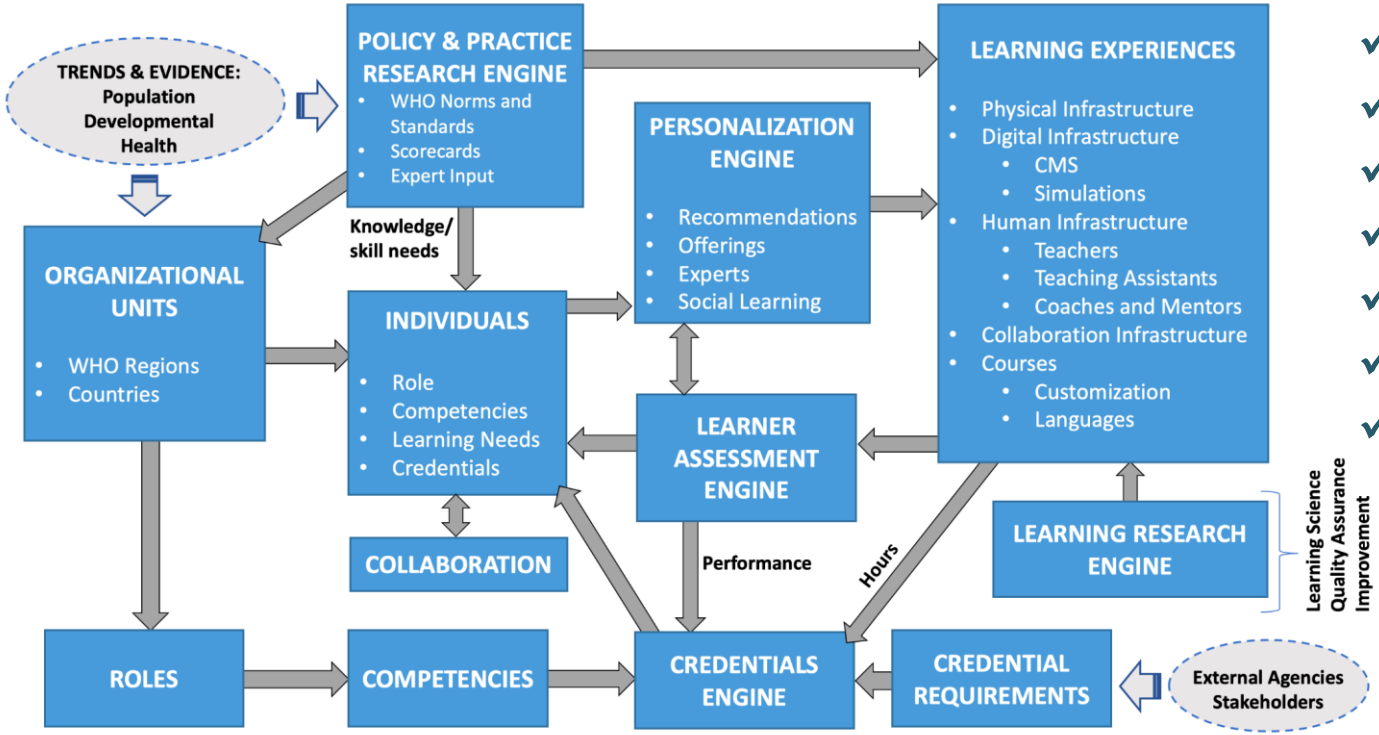
Initial Vision



Transforming workforce learning



The architecture supports many essential functions



- ✓ Personalization
- ✓ Education
- ✓ Certification
- ✓ Collaboration
- ✓ Optimization
- ✓ Innovation
- ✓ Policy support

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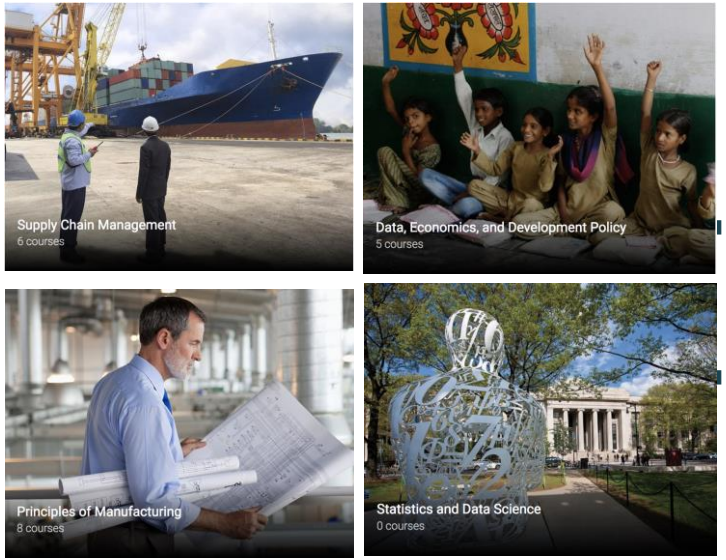
Micromasters



- Online learners that obtain the MITx MicroMasters credential in supply chain management now have a faster path to a master's degree at MIT and also at Curtin University and the University of Queensland.
- Twenty three universities adopt MicroMasters and launch 46 new programs via edX
- Recognized by industry leaders (Walmart, GE, IBM, Volvo, Fidelity, Ford, Bloomberg, Equifax, etc.

Disruptive Innovation for Quality @ Scale

Supply

Digital Learning Innovation across supply chain of education

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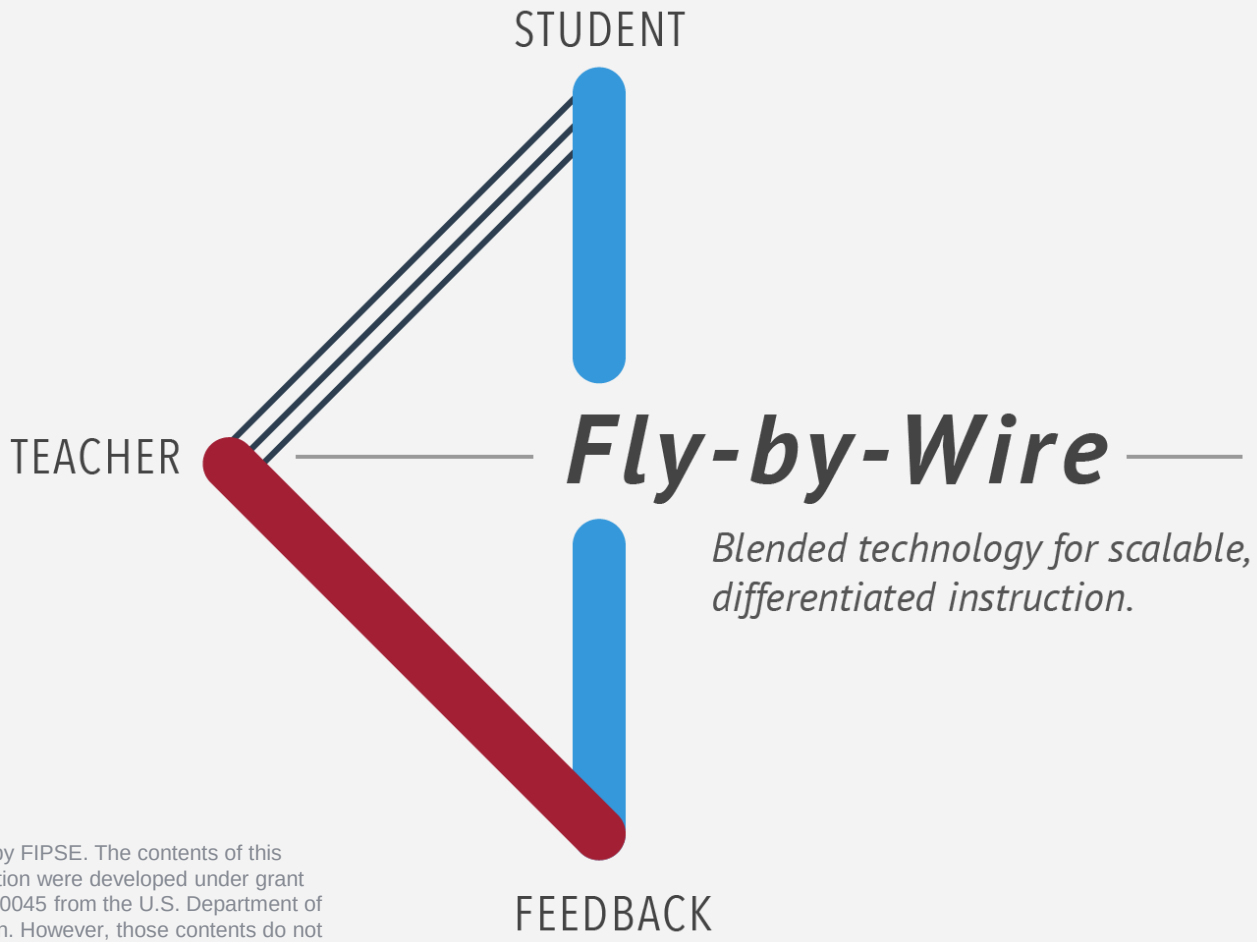

Funded by FIPSE. The contents of this presentation were developed under grant P116F150045 from the U.S. Department of Education. However, those contents do not necessarily represent the policy of the U.S. Department of Education, and you should not assume endorsement by the Federal Government

Fly-by-Wire

Scalable differentiated instruction through technology-enabled, competency-based, dynamic scaffolding

- Relate curricular content to student skills and outcomes
  - Modularity and curriculum mapping to create competency-based mappings
- **Enable teachers to differentially guide students towards competencies**
  - Fly-by-Wire" technology, inspired by aeronautics and control theory,
- Deploy these approaches at Scale to meet the needs of many learners cost-effectively.
  - Interoperable online technology architecture

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From
(MM/DD/YYYY)

To
(MM/DD/YYYY)

SEARCH

MIT launches MITx MicroMasters in Principles of Manufacturing

New program offers alternative learning pathway to mastering fundamental skills needed for global manufacturing excellence and competitiveness.

January 9, 2

Worldwide change takes global effort

The American University in Cairo is the first school to grant master's credits to MITx Data, Economics, and Development Policy MicroMasters program learners.

January 5, 2018

GE offers to interview Mass. residents who complete MITx MicroMasters in supply chain management

Gov. Charlie Baker and industry leaders are promoting the MicroMasters program and digital learning to expand access to education.

December 11, 2017

A truly global supply chain of knowledge

After only online collaborations, four MicroMasters students meet in person for the first time — and go on to win a worldwide competition.