



Adaptive Learning: *Connected Innovations for Next-Gen Education*

SEM - 106

April 4th, 2023



CORGAN 

Adaptive Learning – Connected Innovations for Next-Gen Education

Introductions



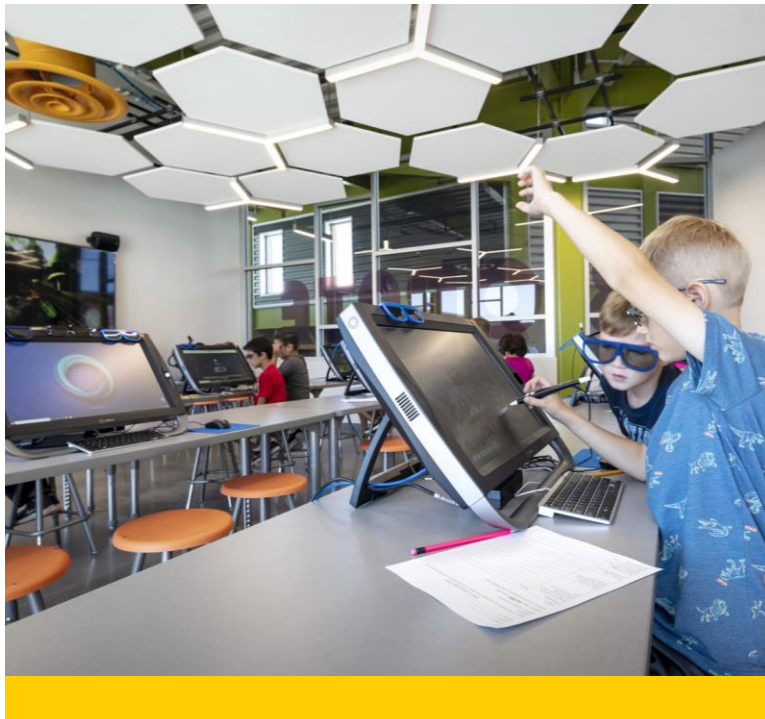
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Adaptive Learning – Connected Innovations for Next-Gen Education

Learning Objectives



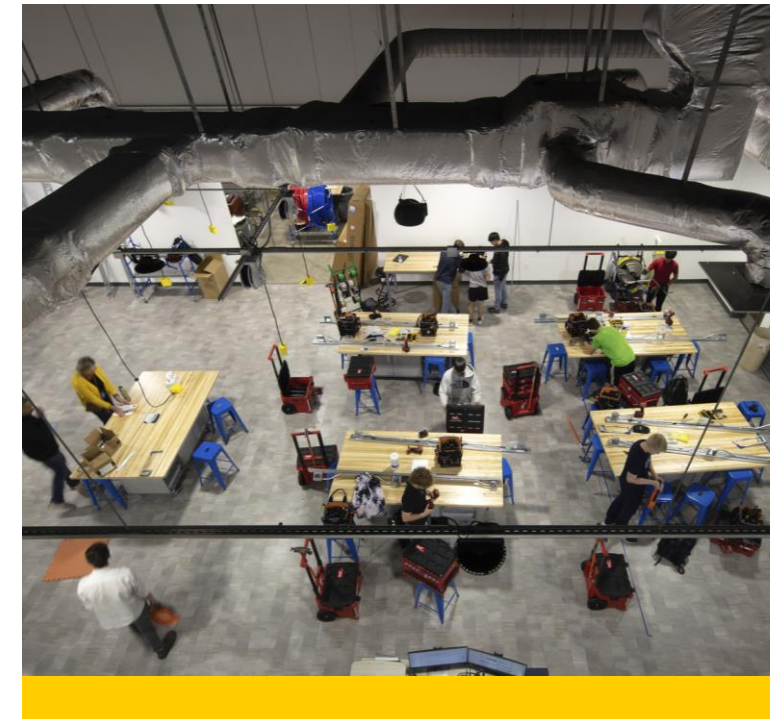
1 — Understand Adaptive Learning

Understand the definition of adaptive learning and how these systems can be implemented to support educational outcomes.



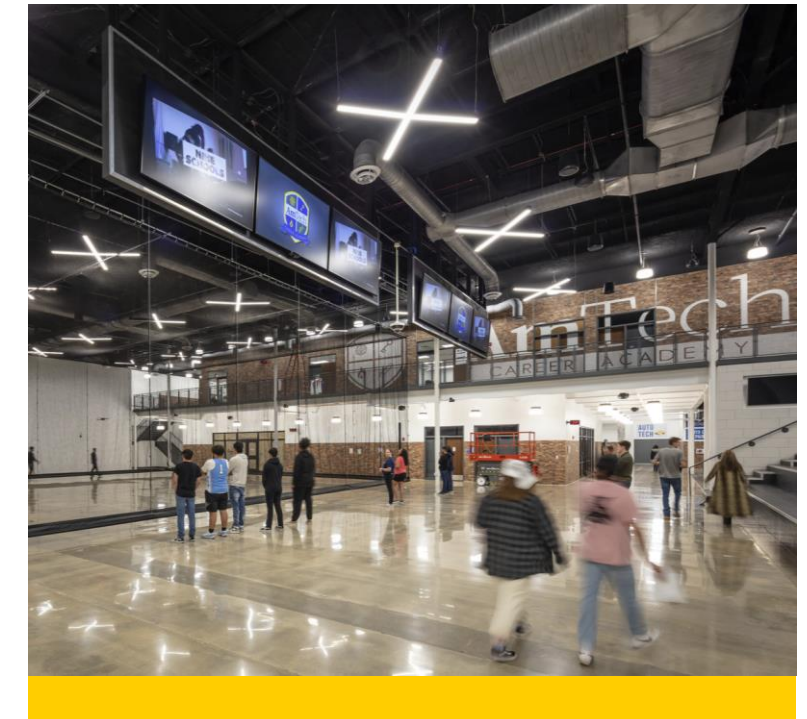
2 — Explore Current Research and Innovations

Explore current research and innovations in educational programs and technologies including adaptive learning systems, extended reality technologies, and career-technology environments.



3 — Redefine the Learning Environment

Take a deeper dive into redefining physical and virtual places of learning to facilitate future-forward, technology-driven learning experiences.



4 — Facilitate Next-Generation Learning

Gain a holistic perspective on facilitating next-generation learning by connecting student passions with learning opportunities that support content mastery, build marketable skillsets, and form desired 21st century skills.

PK-12 EDUCATION



**UNIVERSITY
DEGREE**



WORKFORCE

PK-12 EDUCATION



Challenges for Education

- Learning Gap
- Student and Staff Retention
- Delivering Personalized Learning Resources

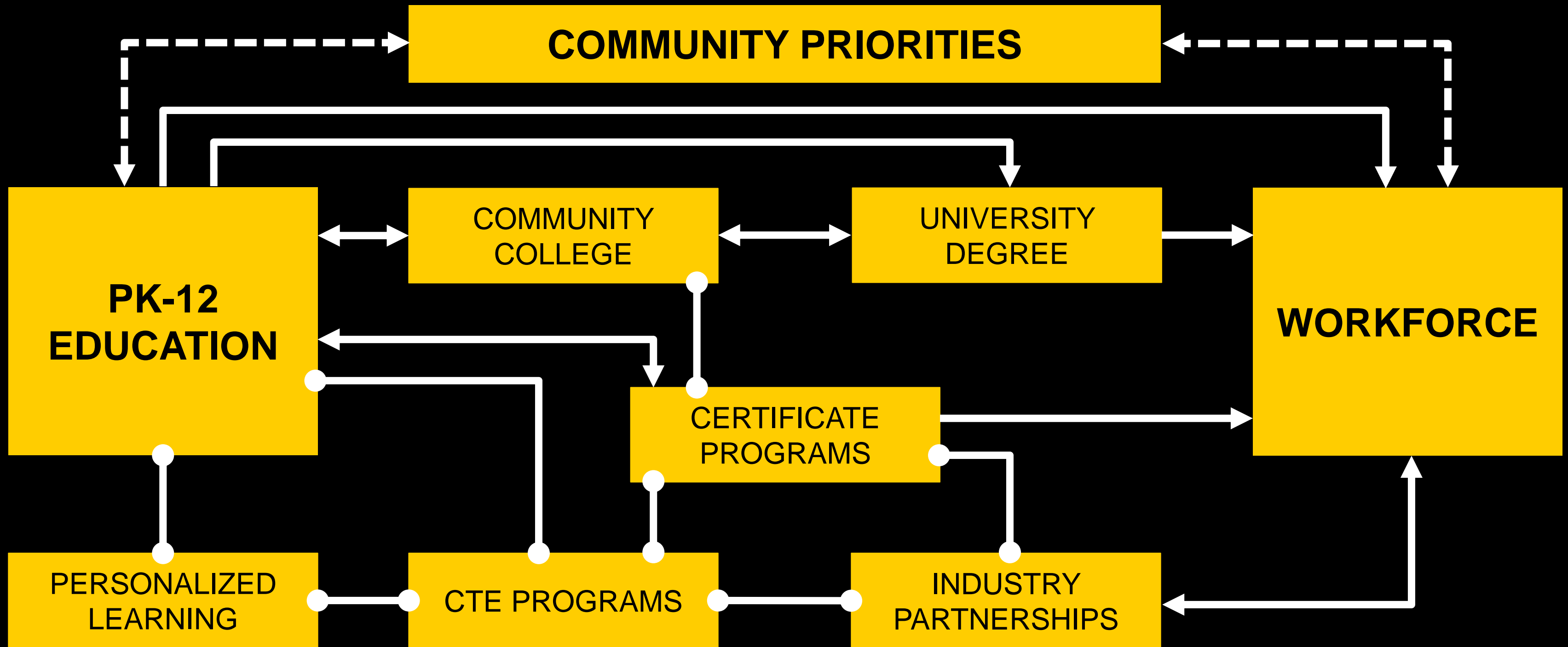
- Skills Gap
- Worker Shortages
- Training

Challenges for the Workforce



WORKFORCE

Pathways: Building Synergy Between Education and the Workforce



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Courage of Educators Required



1

COST

\$60M out of fund balance

2

CREATE NEW OPPORTUNITIES

30 out of 36 pathways requested and provided are new programs

3

BRING EVERYONE TO THE TABLE

Gather input and insight from all community stakeholders

4

INDUSTRY CONNECTIONS

Industry professionals choosing to educate the next generation

5

BE WILLING TO EXPERIMENT!

Explore new possibilities, break the mold, and approach the process with a spirit of innovation

AmTech Career Pathways



Animal Science Academy

- Animal Science (Vet Tech)

Architecture, Construction & Manufacturing Academy

- Architectural Design
- Carpentry
- Electrical
- HVAC & Sheet Metal
- Plumbing and Pipefitting
- Masonry
- Welding
- Manufacturing Technology (Machining)
- Advanced Manufacturing & Machinery Mechanics

Visual Arts & Communication Academy

- Design and Multimedia Arts
 - Animation
 - Graphic Design
 - Video Game Design
- Digital Communications
 - Audio Visual (TV) Production

Business, Marketing and Finance Academy

- Entrepreneurship
- Accounting & Financial Services
- Marketing and Sales

Culinary Arts

- Culinary Arts (Bistro, Hospitality, Barista, Pastry, and Culinary)

AmTech Career Pathways



Medical Arts Academy

- Healthcare Therapeutics
- Patient Care Technician
- Certified Medical Assistant
- Emergency Medical Technician (EMT)
- EKG Technician
- Pharmacy Technician
- Registered Dental Assistant

STEM & IT Academy

- Cybersecurity / Computer Technology
- IT Architecture
- Programming & Software Development
- Networking Systems
- Web Development
- Aerospace Engineering
- Robotics
- Drone Logistics

Law and Public Service Academy

- Emergency Services
- 911 Dispatch
- Law Enforcement
- Legal Studies / Criminal Justice
- Forensic Science

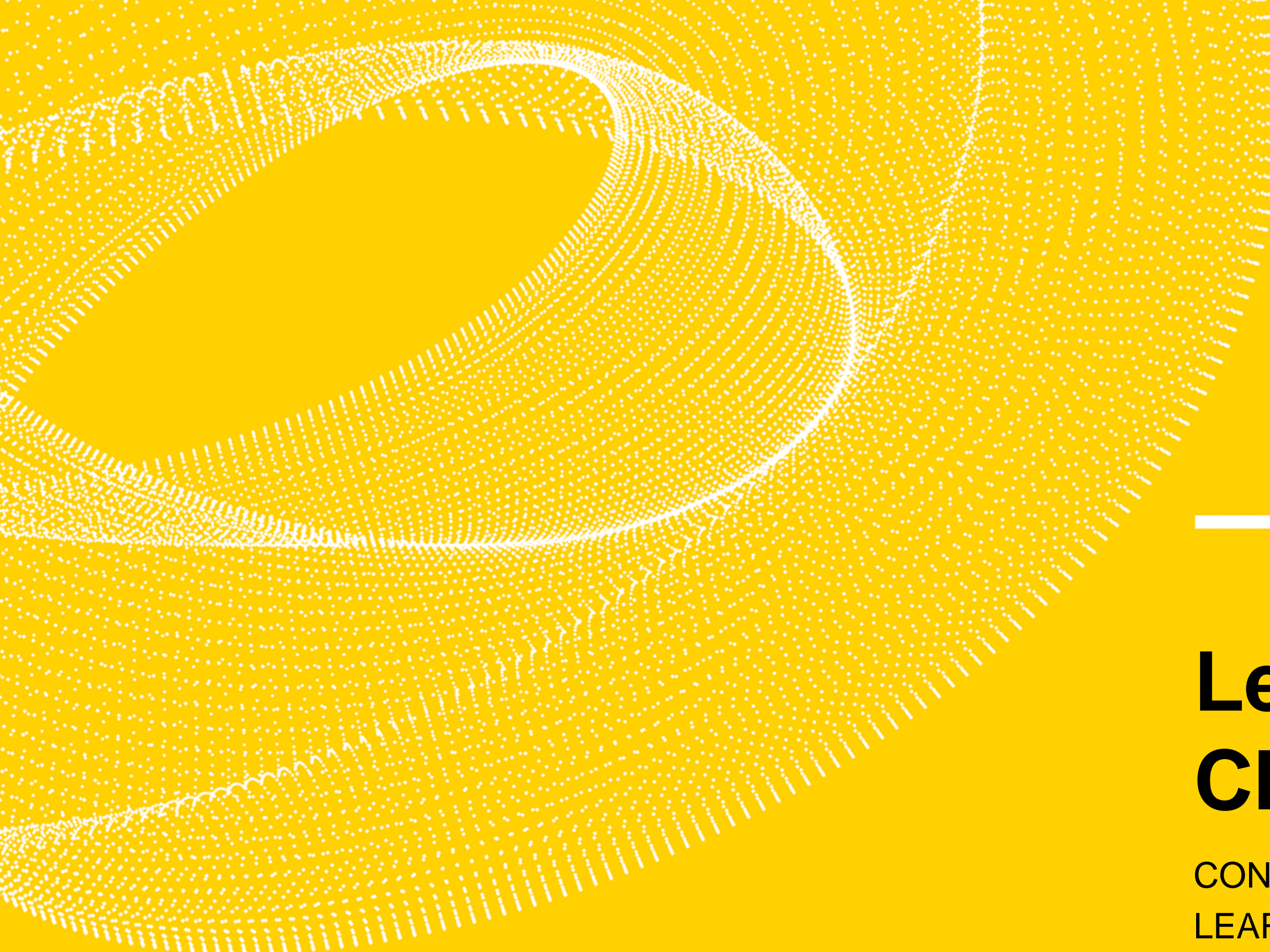
Transportation Academy

- Automotive Technology (small engine, gas engine, and diesel)
- Automotive Collision & Repair

Junior Achievement (JA)

- K-12 Education on Career Opportunities (Business Kiosk Hosting)

Education should not be limiting or prescriptive - it should be responsive to each student's needs and aspirations, adapting in real time as they learn and grow.



Learning in a Changing World

CONSIDERATIONS FOR FUTURE-FOCUSED
LEARNING



Teaching Generation Alpha

- Born 2010 – 2025: first generation born entirely in the 21st century and first to live decidedly into the 22nd century
- Shift from content mastery to **meaningful and relevant skill-building experiences**
- Skilled creators of products and services of value
- Align with Alpha's natural drive for **innovation, entrepreneurship, and knowledge-sharing**
 - High-Fidelity Learning Environments
 - Industry Partnerships
- **Personalized learning**
- **Technologically literate**

” They will be **lifelong learners**, holding multiple jobs across multiple careers. They will also need to be **adaptive, constantly upskilling and retraining to remain relevant** to the changes anticipated as they move through their working life

McCrinkle

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Brookings Institute: **Skills for a Changing World**



Skills required for **success in the workplace:**

- 1. Collaboration**
- 2. Communication**
- 3. Content**
- 4. Critical Thinking**
- 5. Creative Innovation**
- 6. Confidence**

[Hirsh-Pasek et al, 2022; Roth et al, 2017; Golinkoff et al, 2016]

Cognitive Apprenticeship

Participation in a community of practice is both the process and the goal for learning

- **Make thinking visible**
- Situate abstract tasks in a **context** that makes sense
- Culture of **authentic practices**
- Mirror professional context
- Guided practice
- Translate learned concepts into **real-world knowledge**

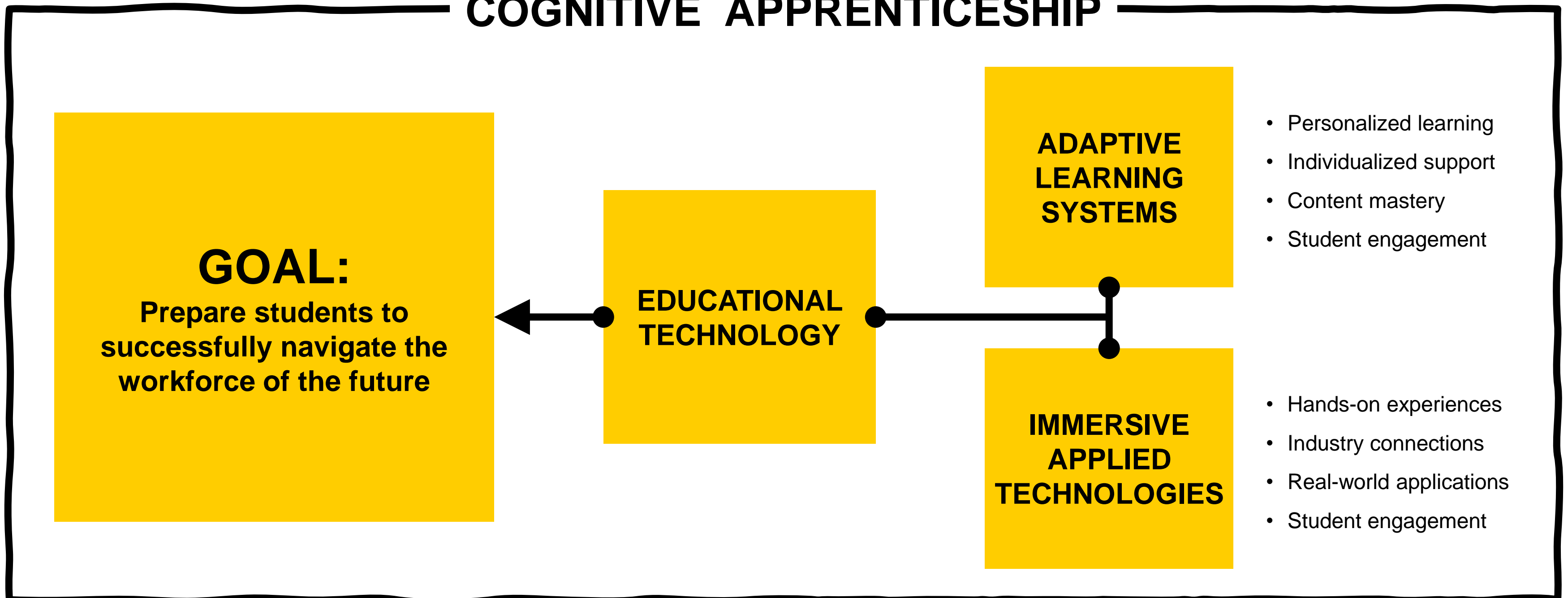
[Allal, 2001]



A Future-Forward Approach to Learning

Cognitive Apprenticeship + Technology

COGNITIVE APPRENTICESHIP





Adaptivity is an approach to the design of a learning system in which **each learner is provided with the kind of experience they need** at any given time **in order to be successful** in reaching the intended learning outcome

— *Dr. Jan Plass, NYU*

Individualization vs. Personalization



Individualization

- Responding to student's knowledge base, academic performance, and learning
- Metrics-oriented
- More research-backing

Personalization

- Adapting to student interests and background to increase engagement and motivation
 - Career goals, hobbies, pop-culture, prior knowledge and experiences
- **“Utility Value”**: help students see the value of learning by connecting the topic to the real world (effective and authentic motivation)
- Difficult to scale and implement

What Could Adaptive Learning Systems *Adapt For*?



Cognitive Variables

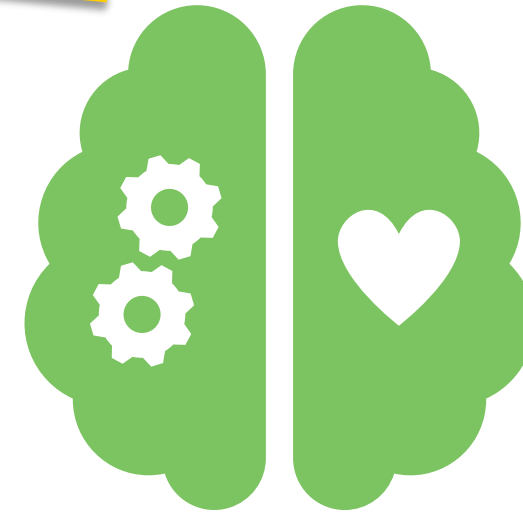
Current knowledge and skills
Developmental level
Cognitive abilities
Self-regulation
Cognitive load



Motivational Variables

Interests
Orientation with goals
Self-efficacy
Stereotype threat
Persistence

THEORY IN ACTION:
Microcredentialing at AmTech



Affective Variables

Emotional state
Appraisal
Emotion regulation
Attitude



Socio-Cultural Variables

Social and cultural context
Identity and self-perception
Relatedness
Social agency

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Activating the Educational Technology Spectrum

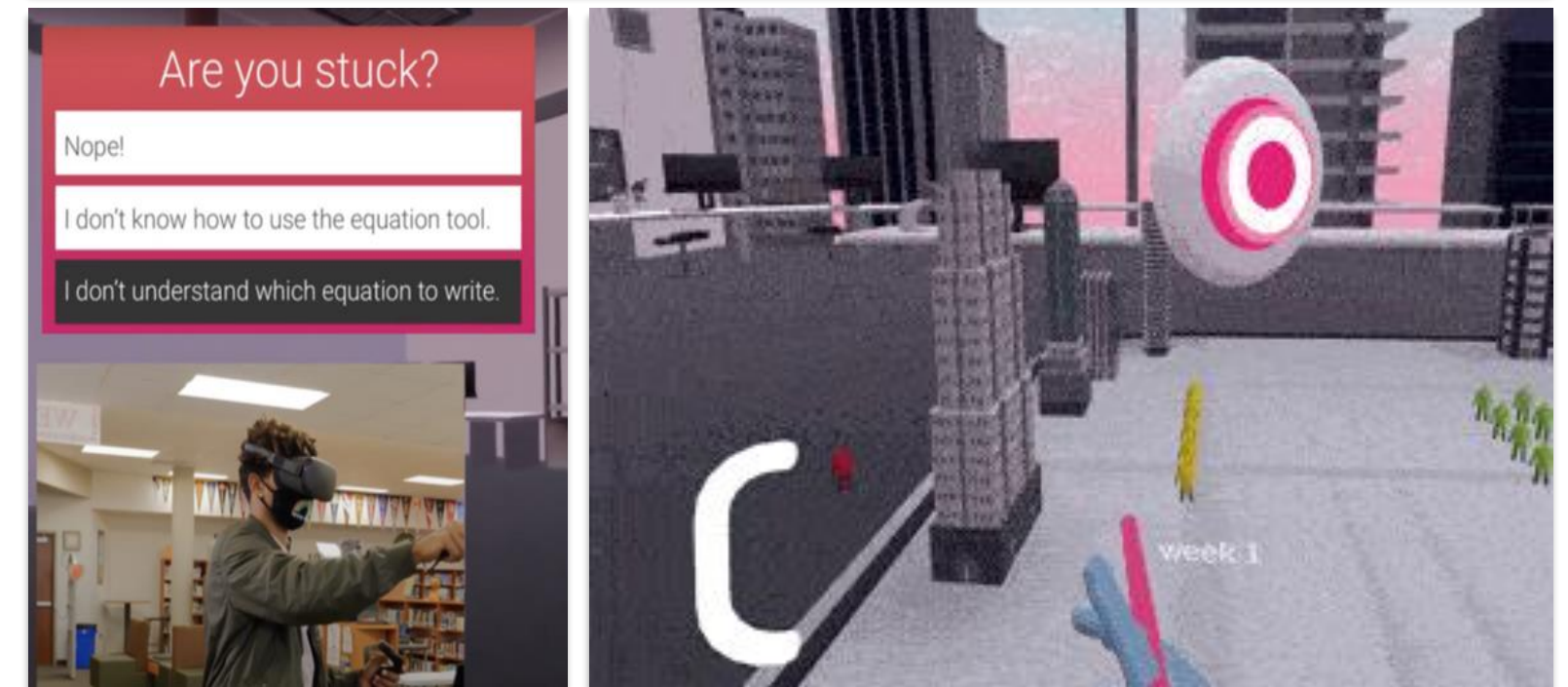
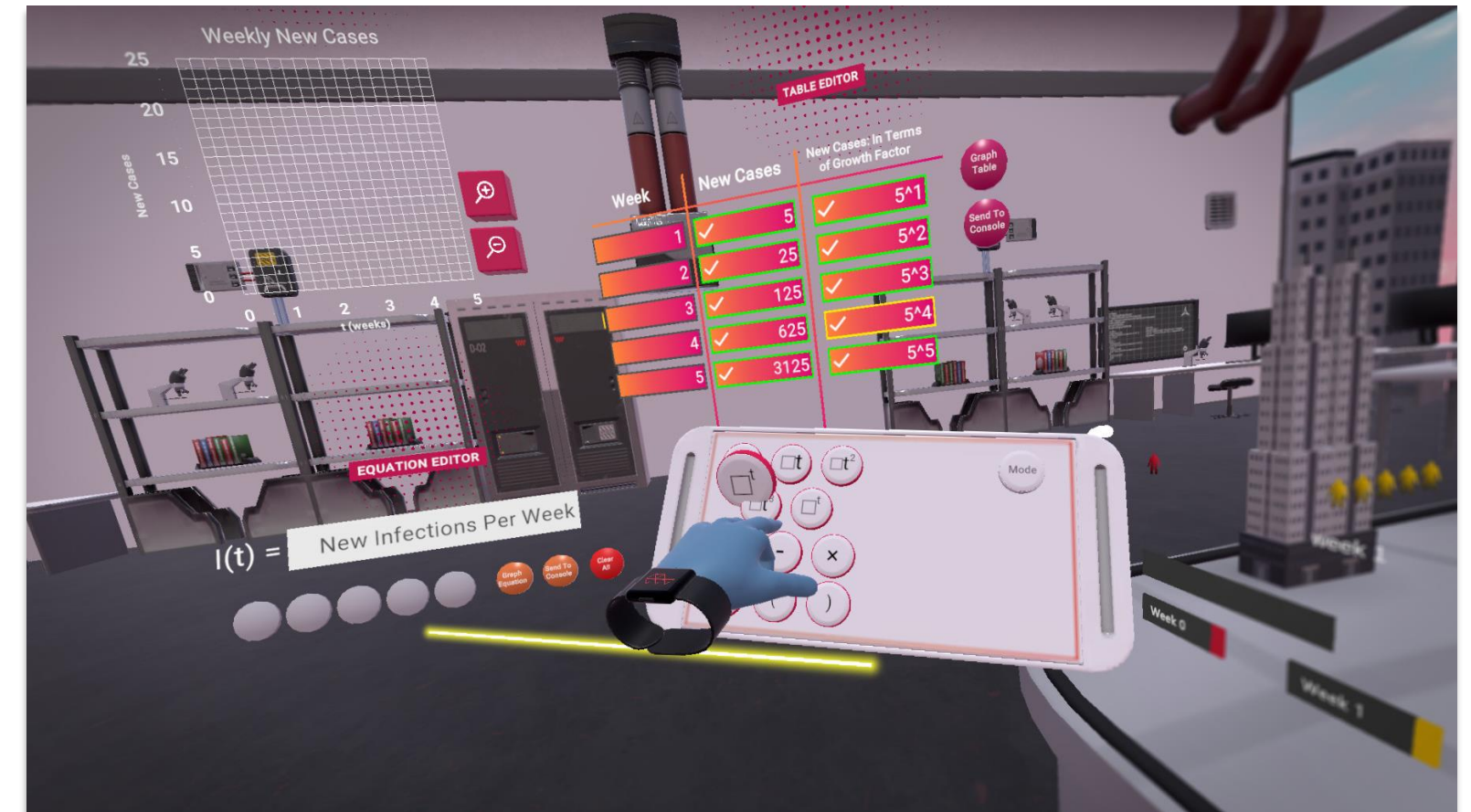


Adaptive Learning Systems

Definition and Goals

Adaptive Learning systems dynamically adjust instruction to respond to learner characteristics, student interaction, and performance levels

- **Data-driven** systems that deliver instruction and remediation
- Utilize **algorithms**, assessment, and student feedback
- Can be implemented within the framework of traditional instruction
- Integrate **Extended Reality (XR)** technologies to ground learning through movement and immersive experiences
- **Amarillo ISD is utilizing Prisms VR for algebra**



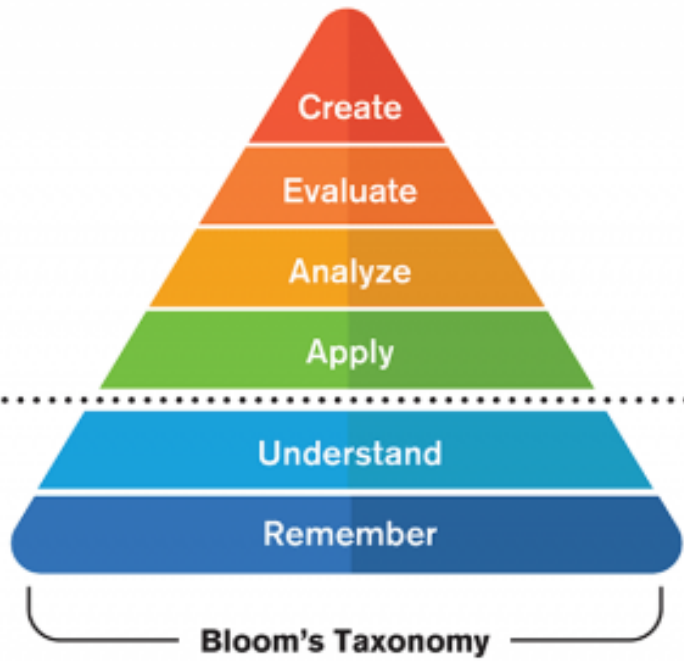
Prisms VR – “Pandemic” Algebra Learning App

[Dr. Candace Walkington; Feldstein et al., 2015; Moskal et al., 2017; Plass, 2016]

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Active Learning
In Class



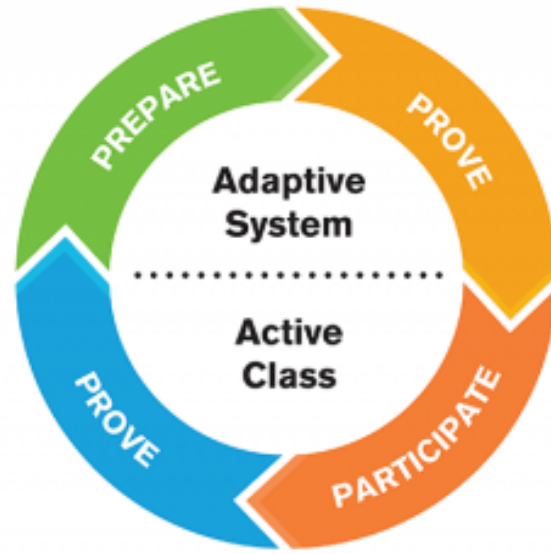
Adaptive Learning
Before Class

1. Acquire Info

Read courseware, watch video, do simulation, etc.

4. Assimilate

Write essay, solve problems, take quiz, etc.



2. Assess

Answer practice questions, check for understanding, etc.

3. Apply

Discuss key concepts, analyze scenarios, etc.

Benefits for Students

1 Respects Prior Knowledge

2 Responsive to Learning Needs

3 Reduces Gaps in Understanding

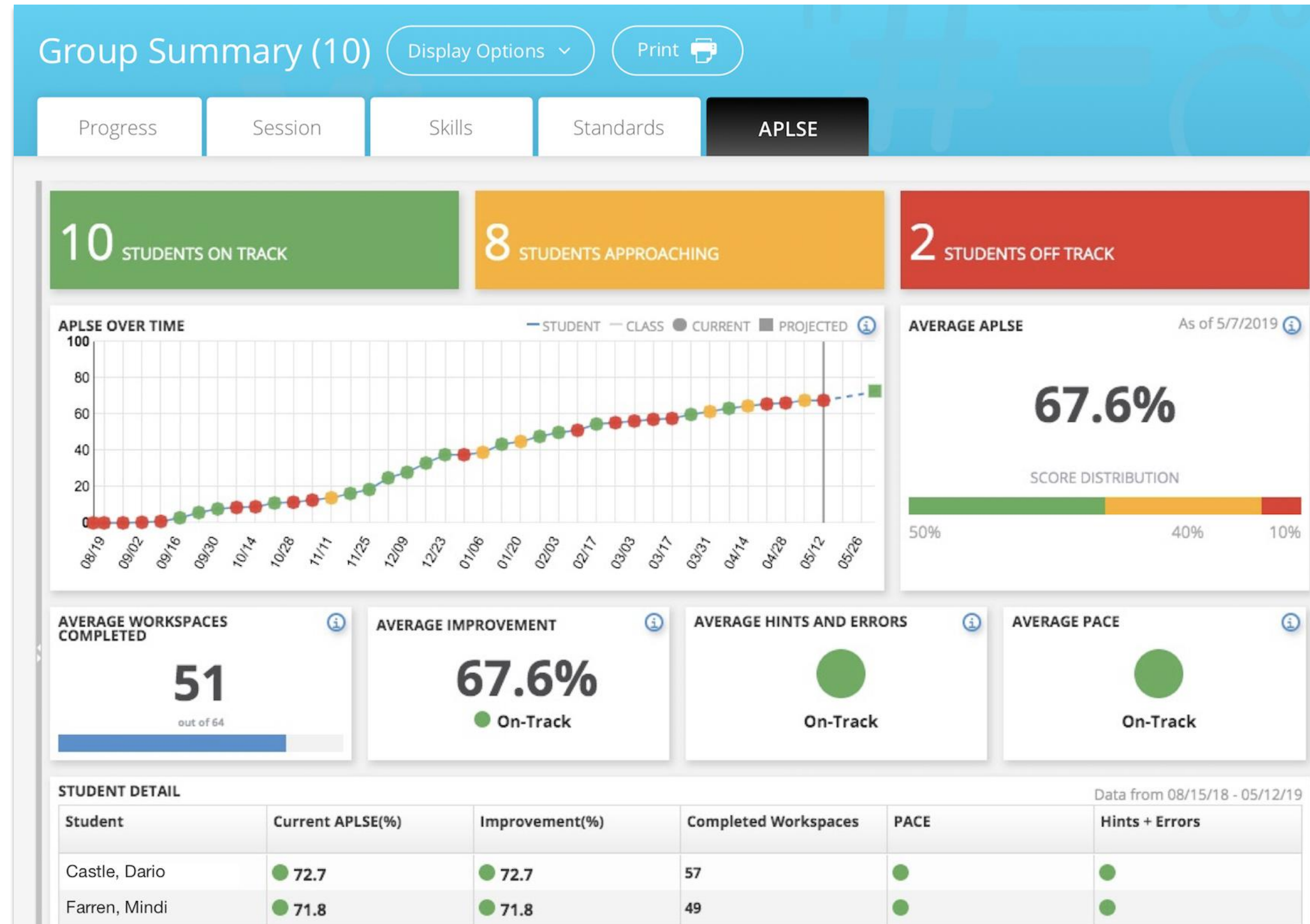


Arizona State University BioSpine Initiative - Adaptive Learning Biology Degree utilizing CogBooks and Dreamscape Learn

[Feldstein et al., 2015; Moskal et al., 2017]

Benefits for Educators

- 1 Monitor Student Progress
- 2 Measure Performance
- 3 Maximize Learning Outcomes



Carnegie Learning - APLSE Report (Adaptive Personalized Learning Score)

[Feldstein et al., 2015; Moskal et al., 2017]

For AmTech students, experiences with immersive, **applied technologies** are a **gateway** to their **future**.

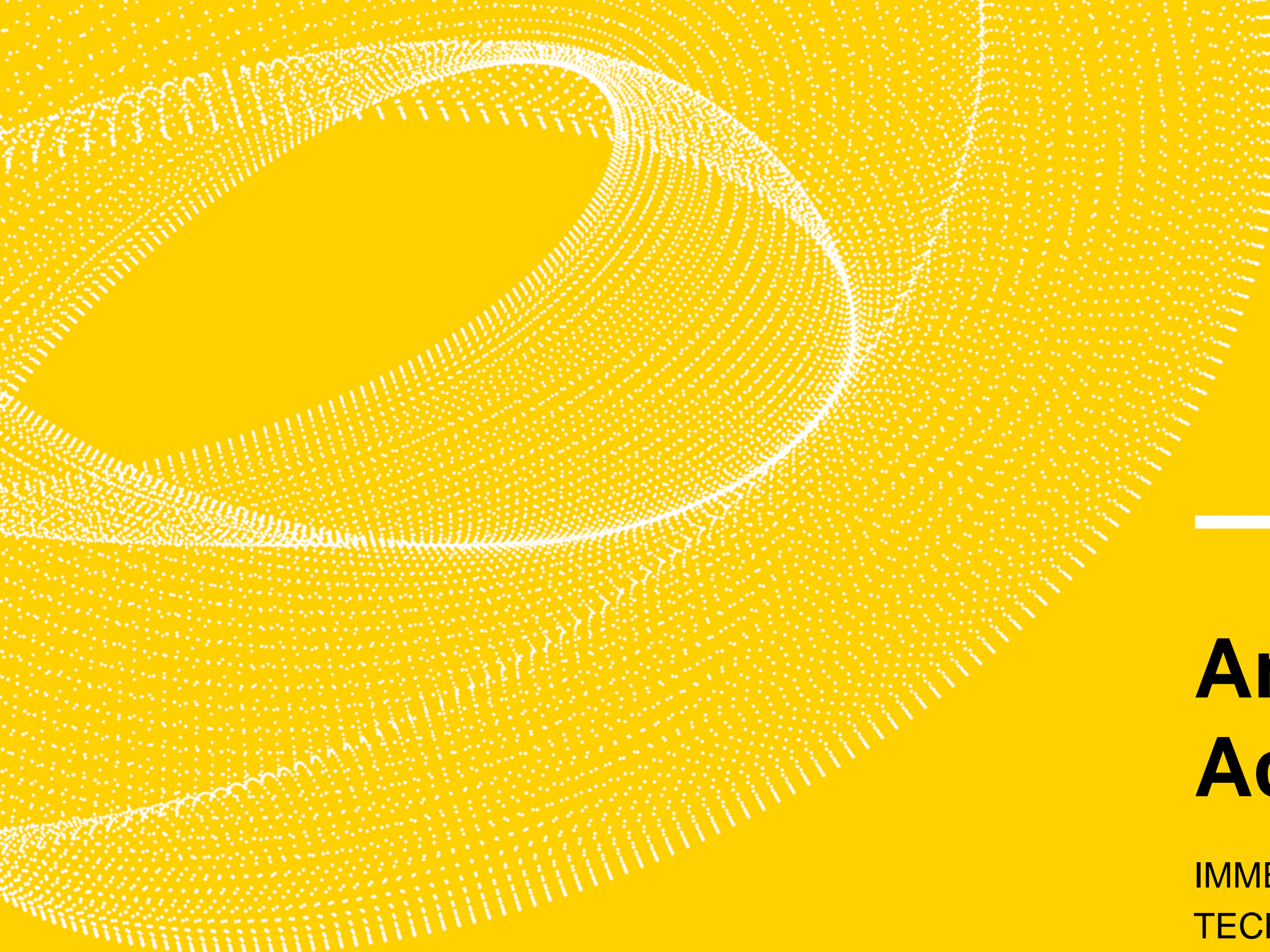
VIDEO



Amarillo ISD
Our mission is to graduate every student prepared for life and success beyond high school.

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AmTech Career Academy

IMMERSIVE, APPLIED EDUCATIONAL
TECHNOLOGIES IN AN INNOVATIVE LEARNING
ENVIRONMENT

VIDEO



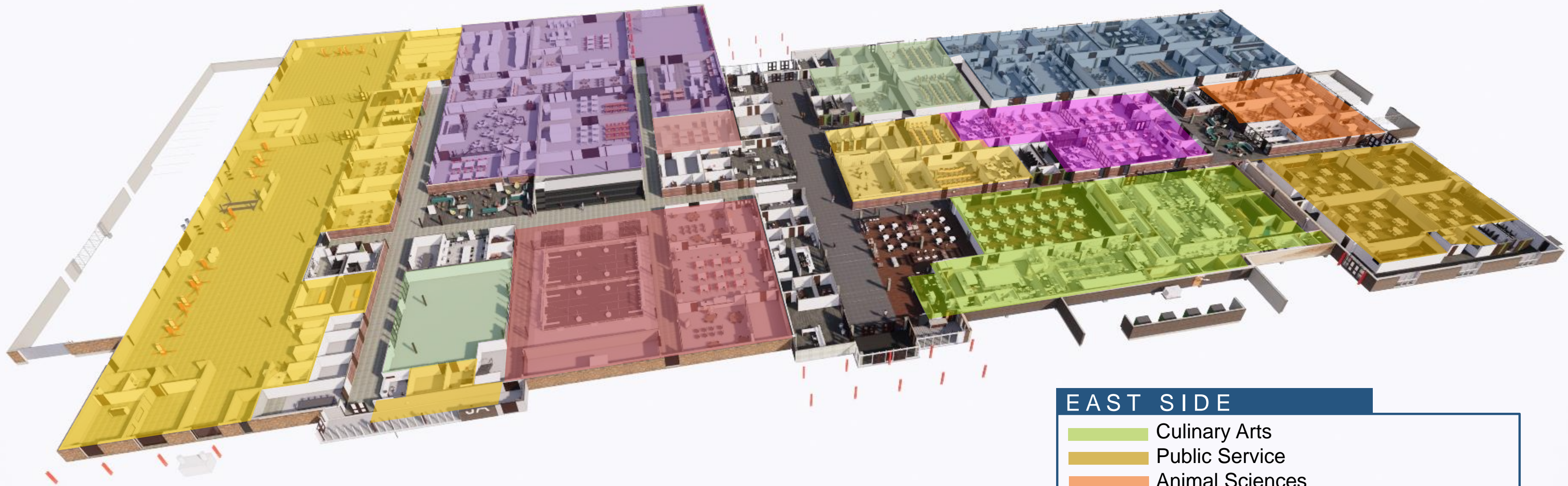


AmTech

CAREER ACADEMY

WEST SIDE

- STEM / Robotics / Drone
- Architecture / Construction / Manufacturing
- Junior Achievement
- Transportation



EAST SIDE

- Culinary Arts
- Public Service
- Animal Sciences
- Medical Arts
- Business / Marketing / Finance
- Information Technology
- Visual Arts & Communication

AmTech provides an **unparalleled variety of opportunities** for learning and growth—
all under one roof.

VIDEO





**Architecture,
Construction &
Manufacturing
Academy**



**Transportation
Academy**



**Law and
Public
Service
Academy**

Students build in-demand skills, well-aligned with local needs, to set the whole Amarillo community up for success.

Together with local industry partners, **AmTech is building a workforce** that is “second to none”



**STEM
and IT
Academy**

Adaptive Learning for Entrepreneurs, Experimenters and Creatives

Building Partnerships on the Cutting-Edge of Industry Innovation



EXIT



**Medical
Arts
Academy**



Amarillo ISD

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**Culinary
Arts
Academy**

At AmTech, every student is **engaged in meaningful learning** and given the **opportunity to thrive.**



Strengthening the Community

- **Building opportunities for students that strengthen the local workforce**
- Reach out to businesses to discover their needs
- Help kids discover their interests and goals early in their education (through early outreach)
- Build flexibility into the space to accommodate different programs as needs change

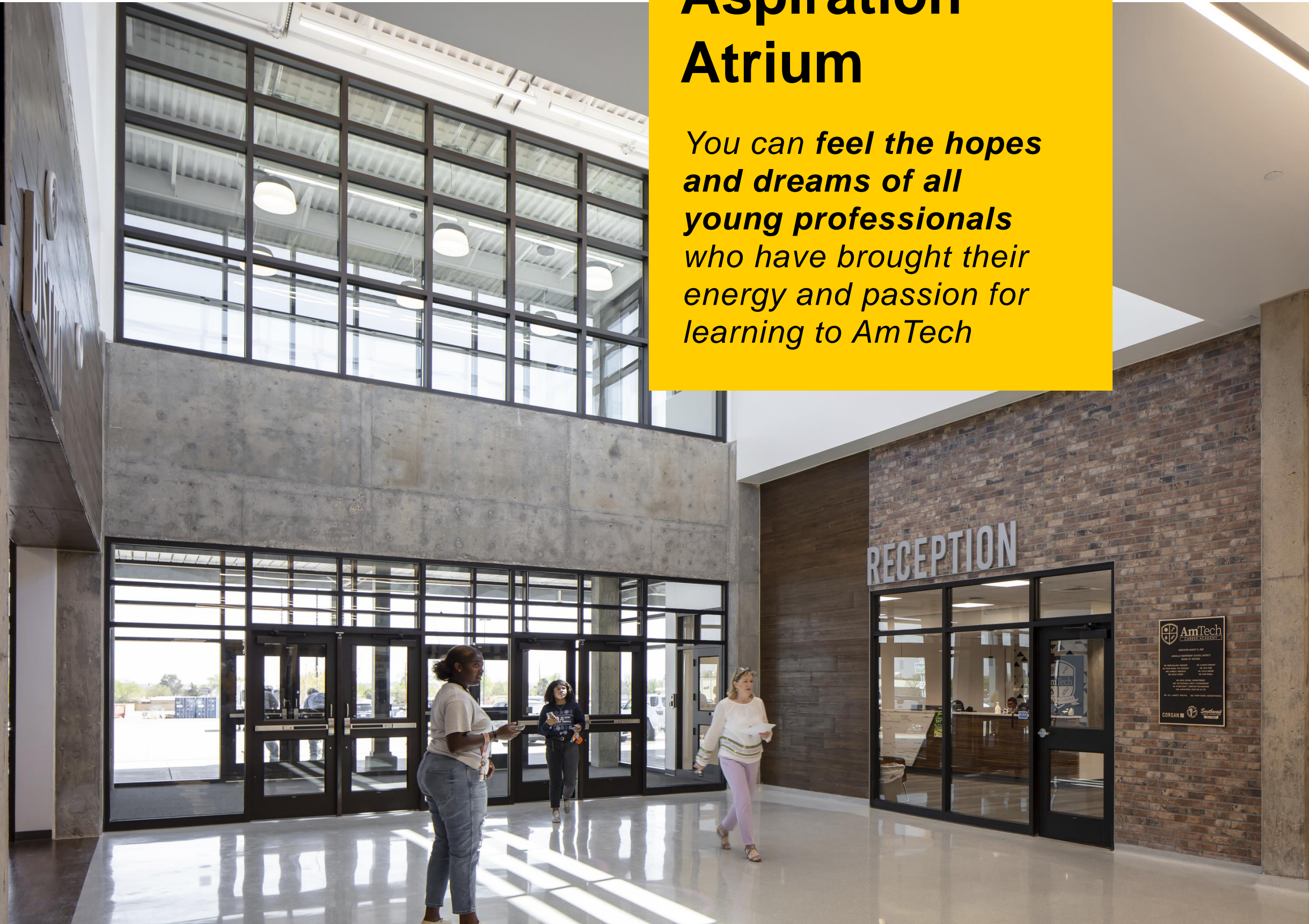
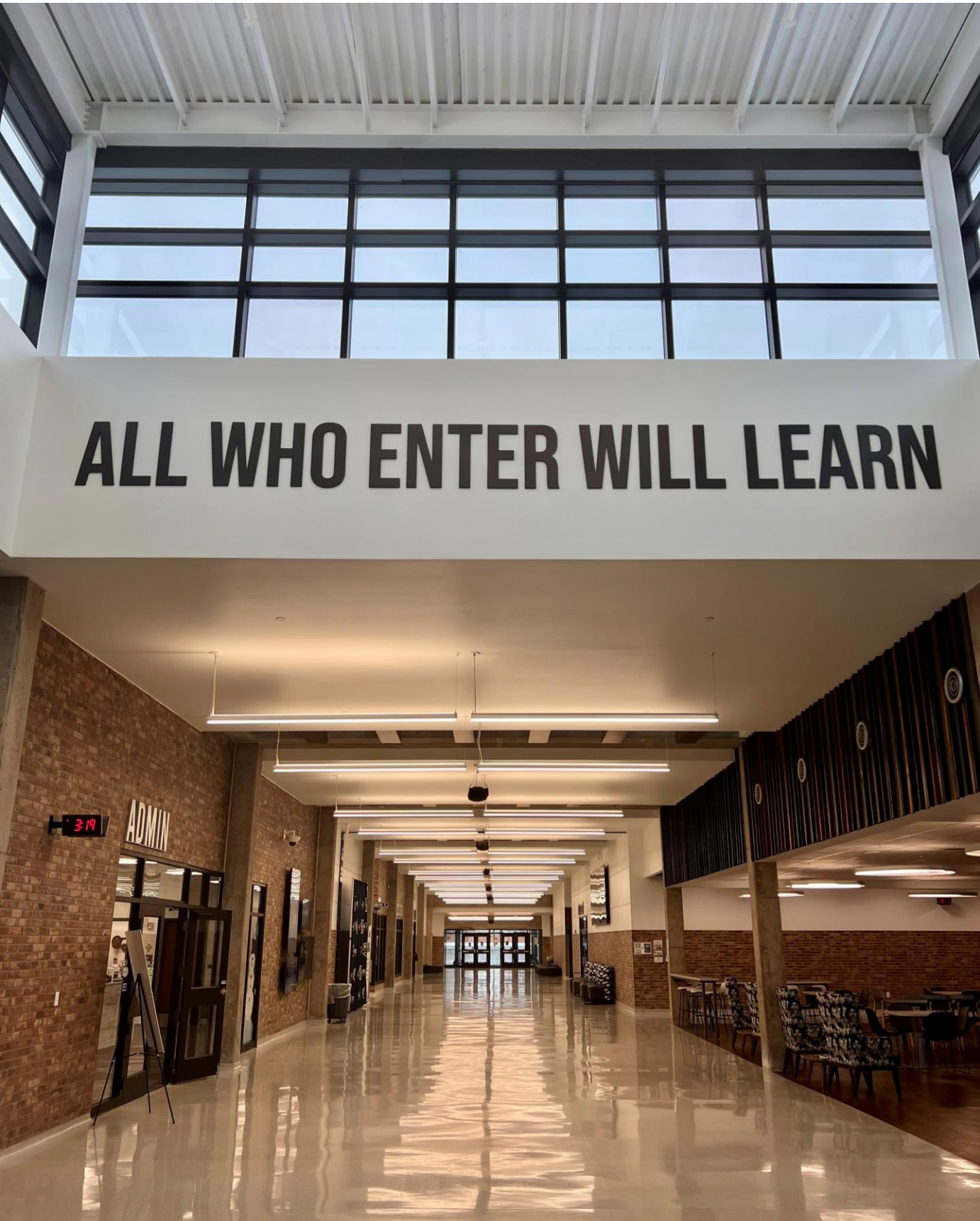
VIDEO



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Aspiration Atrium

You can feel the hopes and dreams of all young professionals who have brought their energy and passion for learning to AmTech

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Questions?

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