Adaptive Learning

for Entrepreneurs, Experimenters, and Creatives

SEM - 102

June 26th, 2023

MOVING FORWARD WITH PURPOSE

LEARNING ENVIRONMENTS

JUNE 25-28 2023 SUMMER CONFERENCE

CORGAN

Introductions

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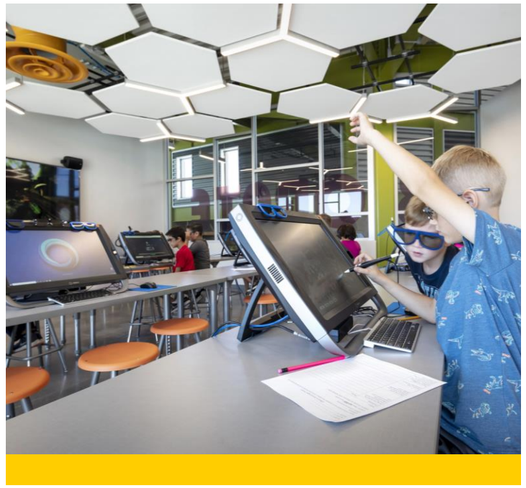
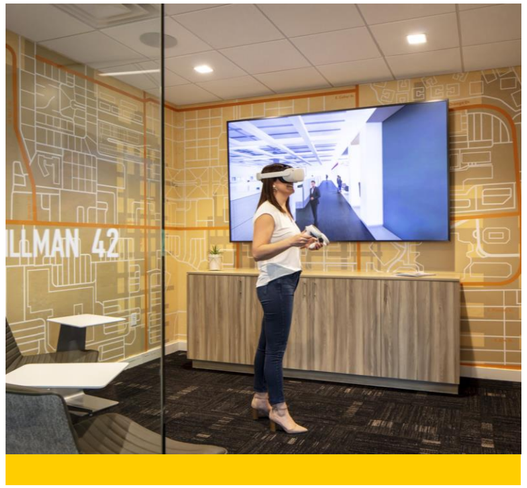
Learning Objectives



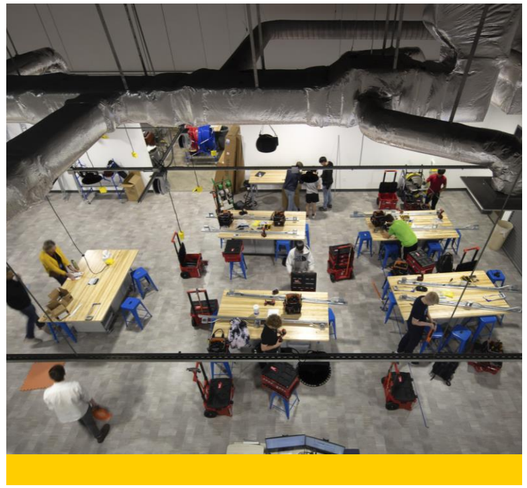
1 — Understand Adaptive Learning

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



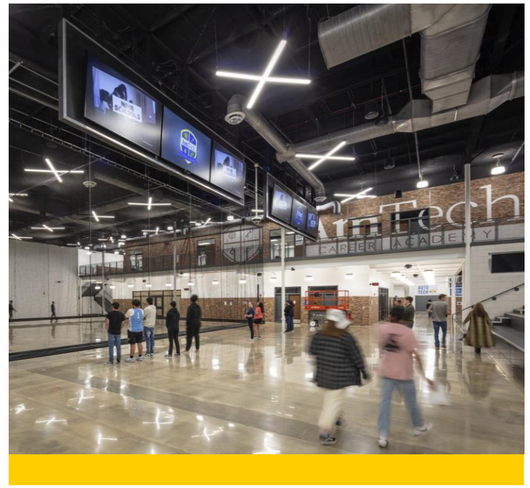
2 — Explore Current Research and Innovations

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.

Adaptive Learning for Entrepreneurs, Experimenters and Creatives

Live Polling

Please scan the QR code with your personal device or type in the link below:

PollEv.com/CorganEDU

Who is in the room?

- Educator
- Administrator
- Architect
- Interior Designer
- Researcher
- Facilities/Operations
- Technology
- Contractor or Engineer
- Vendor

In one word, what is adaptive learning?

Nobody has responded yet.

Hang tight! Responses are coming in.

PK-12 EDUCATION

UNIVERSITY DEGREE

WORKFORCE

PK-12 EDUCATION

Challenges for Education

Learning Gap

Student and Staff Retention

Delivering Personalized Learning

Resources

Skills Gap

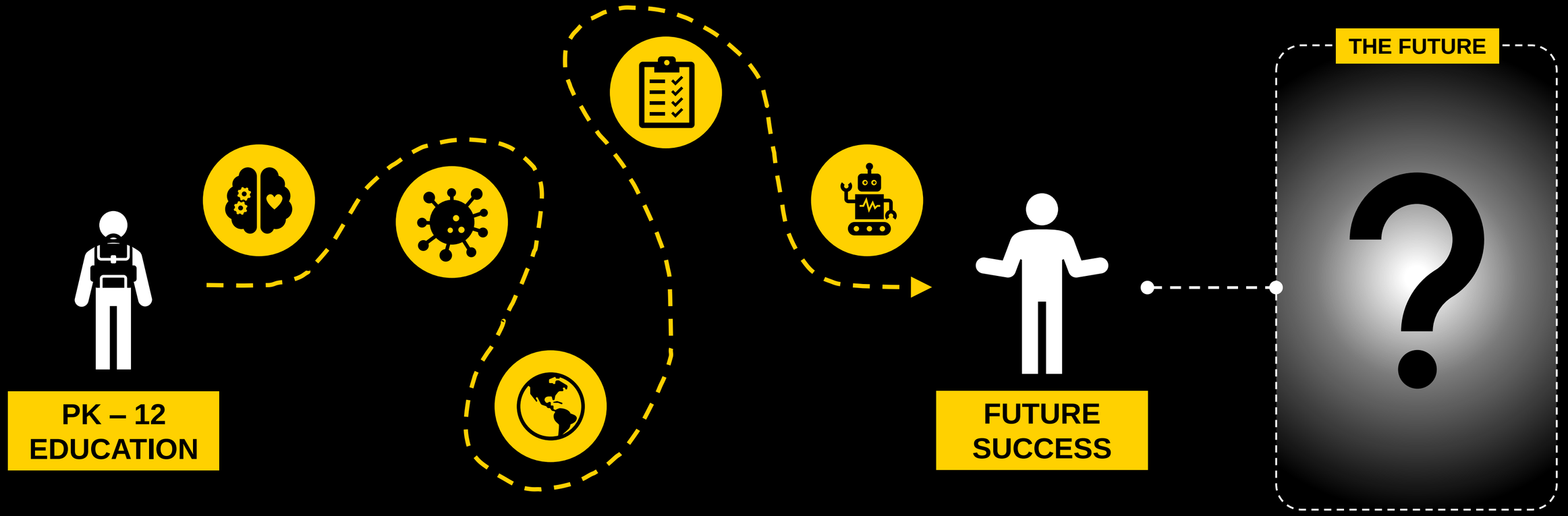
Worker Shortages

Training

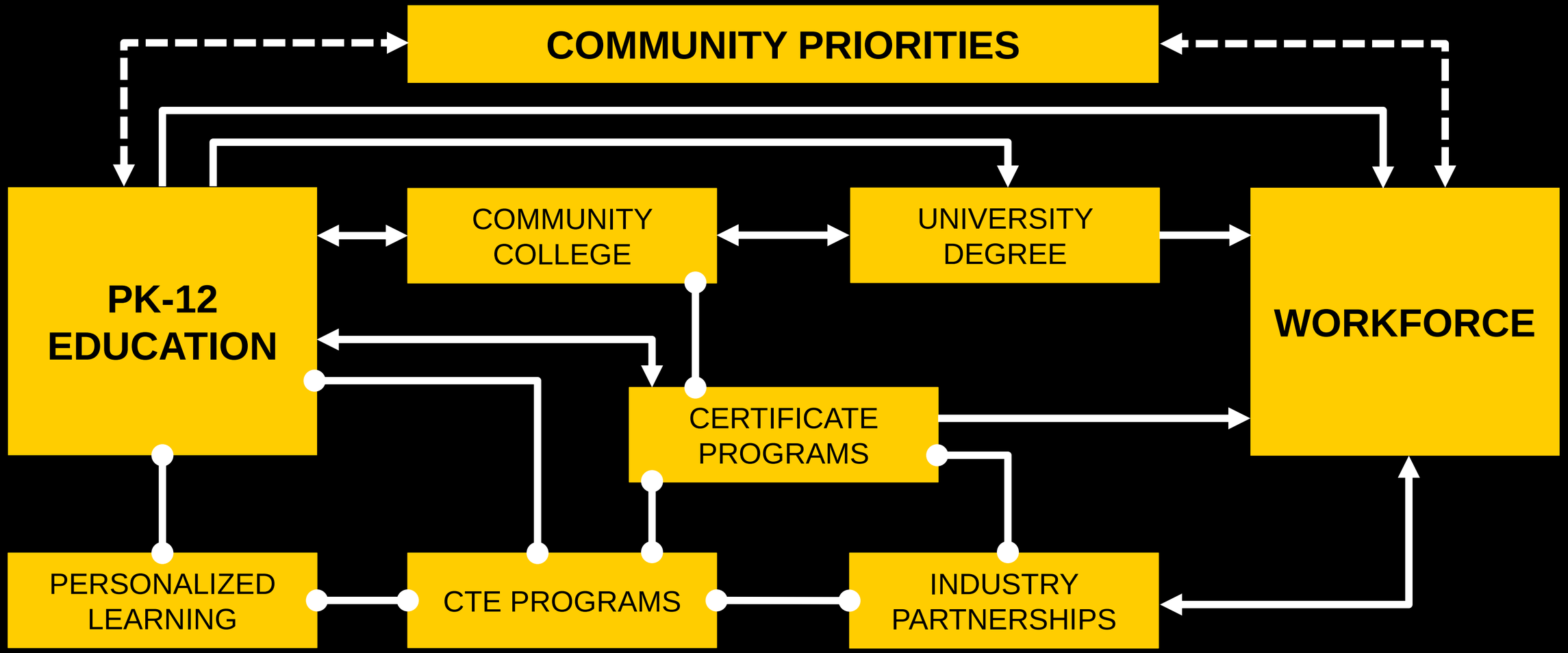
Challenges for the Workforce

WORKFORCE

Navigating an Unpredictable World



Pathways: Building Synergy Between Education and the Workforce



Jobs of Tomorrow?

1

VIRTUAL STORE SHERPA

Focus on customer satisfaction through virtually advising customers using the knowledge of the product line

2

PERSONAL DATA BROKER

Confirm consumers receive revenue from their data. The broker will establish prices and execute trades.

3

PERSONAL MEMORY CURATOR

Consult with patients and stakeholders to generate specifications for virtual reality experiences.

4

AR JOURNEY BUILDER

Collaborate with talented engineers and technical artists to develop vital elements for clients.

5

BODY PART MAKER

Will create living body parts for athletes and soldiers

6

NANO-MEDIC

Will transform healthcare

[Duggal, 2023]

In-Demand Skills for Success in the Workforce

America Succeeds
Durable Skills

- Character
- Collaboration
- Communication
- Creativity
- Critical Thinking
- Fortitude
- Growth Mindset
- Leadership
- Metacognition
- Mindfulness

World Economic Forum
Education 4.0 Framework

- Global citizenship skills
- Innovation and creativity skills
- Technology skills
- Interpersonal skills
- Personalized and self-paced learning
- Accessible and inclusive learning
- Problem-based and collaborative learning
- Lifelong and student-driven learning

Brookings Institute
Skills for a Changing World

- Collaboration
- Communication
- Content
- Critical Thinking
- Creative Innovation
- Confidence

McKinsey Global
Workforce Skills Model

- Higher Cognitive Skills
- Social and Emotional Skills
- Technological Skills

[Hirsh-Pasek et al, 2022; Roth et al, 2017; Golinkoff et al, 2016; Jezard, 2018; McKinsey Global Institute; Cole et al; 2021; Silva et al, 2022]

A Lens Through Which to See the World-

***Learning Mindsets** for an Ever-Changing World:*

***1-** Entrepreneurs*

***2-** Experimenters*

***3-** Creatives*

Future-Focused Learner Portraits

Entrepreneurs

Interests

Business types and trades

Skills

Visioning, strategizing, and marketing
Leadership and problem-solving
Resilience and grit

Motivations

Independent, self-starter
Project and business-based curriculum

Experimenters

Interests

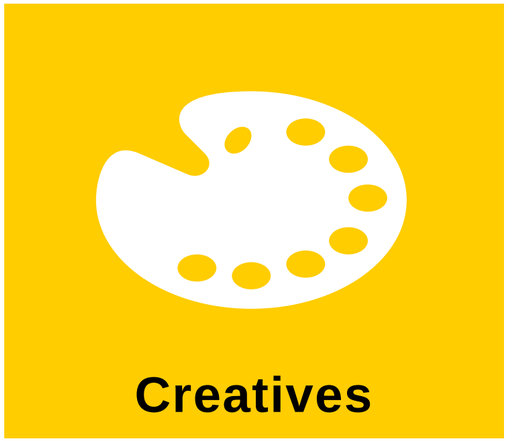
Technology and emerging innovations
Science and exploration

Skills

Research, planning, and analysis
Spirit of curiosity, ingenuity, and inquiry

Motivations

Problem-solving with a purpose
Ideating, creating, and developing



Creatives

Interests

Fine arts, writing, and design
Creative and personal expression

Skills

Honing a craft through technical skill
Expressing ideas and emotions

Motivations

Authenticity and self-discovery
Expression as a means of connection

AmTech Career Academy: New Pathways for Student and Community Success

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

AmTech CAREER ACADEMY

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

AmTech CAREER ACADEMY

Medical Arts Academy

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

Law and Public Service Academy

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

STEM & IT Academy

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

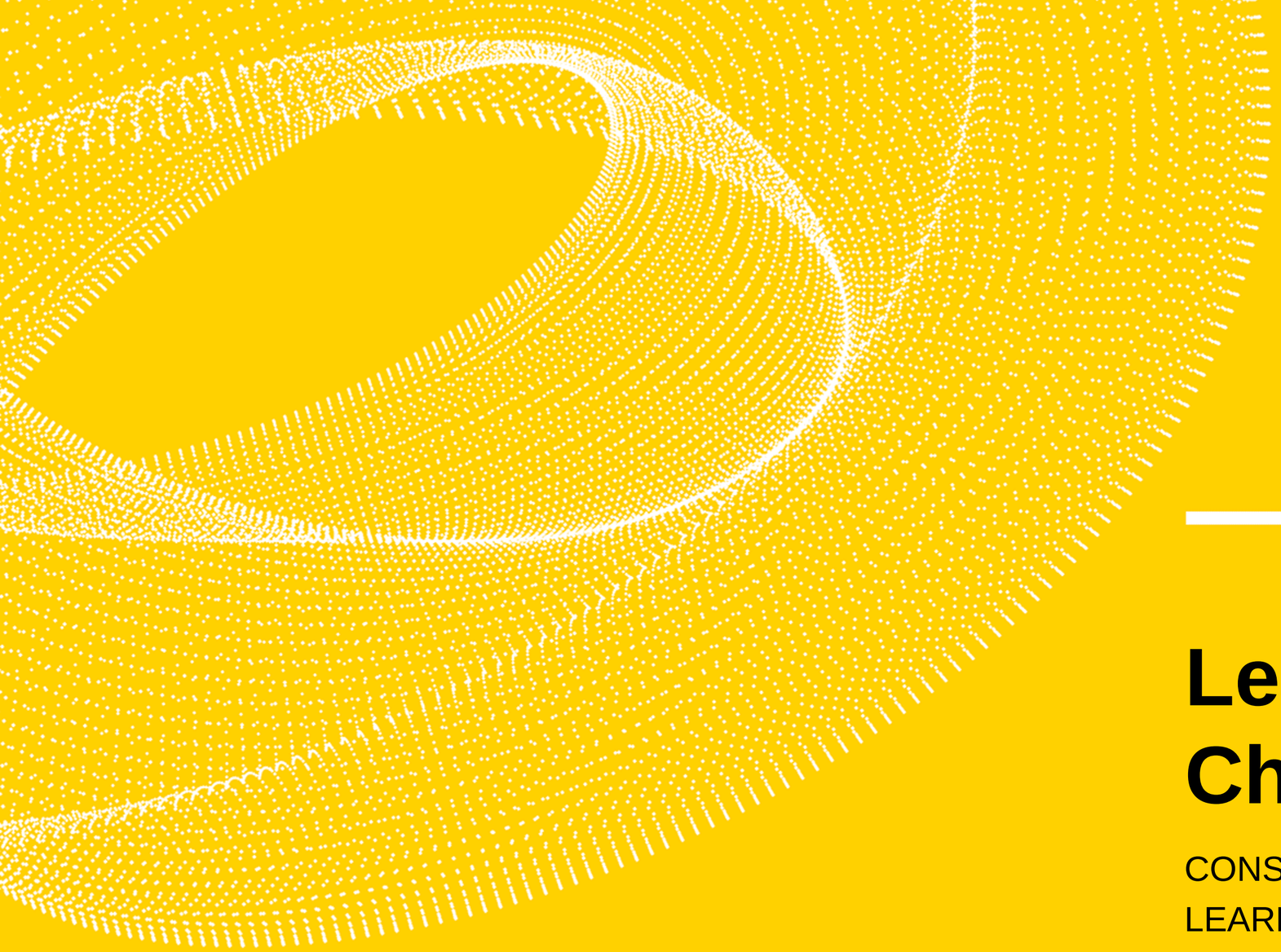
Transportation Academy

- 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**
- Support **social and emotional skills** and competencies
- **Foundation for lifelong learning** and career mobility

[Zmuda et al, 2017; McCrindle, 2020; Hughes, 2020]

> [Generation Alpha] 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.
>
> — *Mark McCrindle and Ashley Fell*

Cognitive Apprenticeship

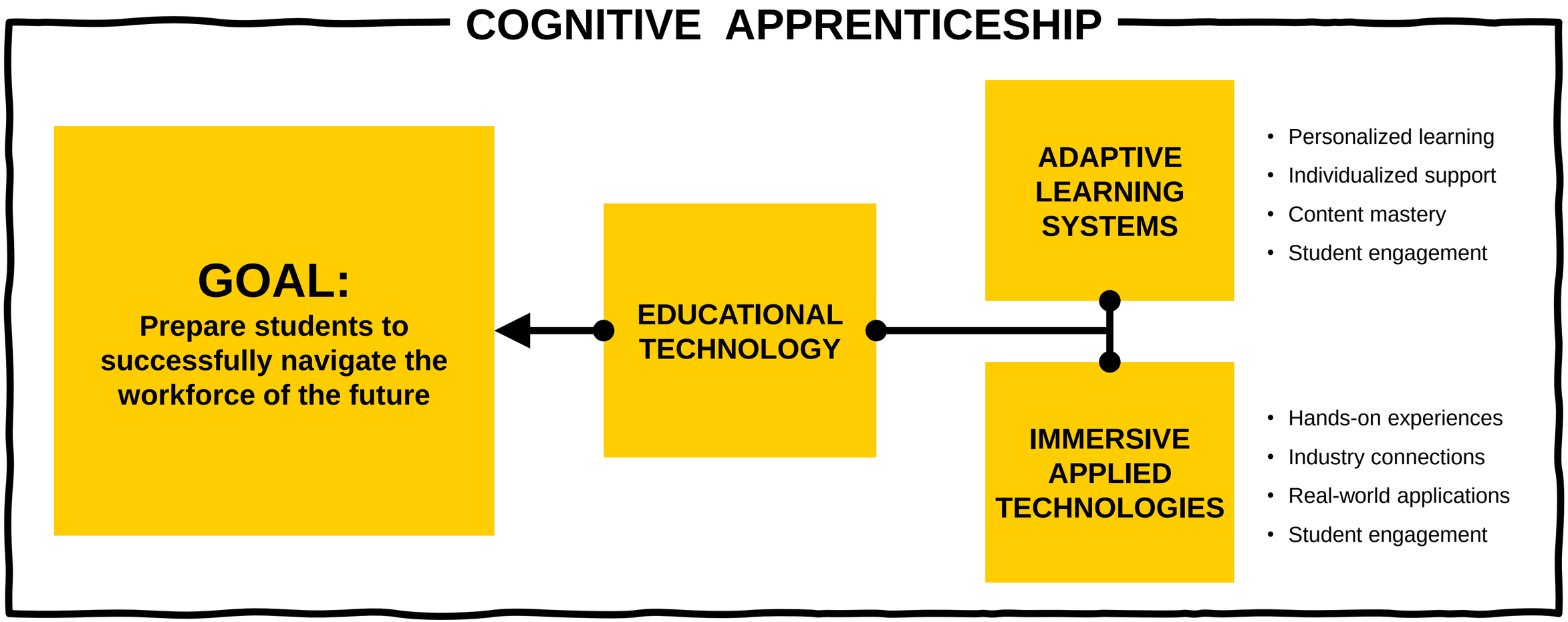
*Participation in a community of practice is **both the process and the goal for learning***

- ***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

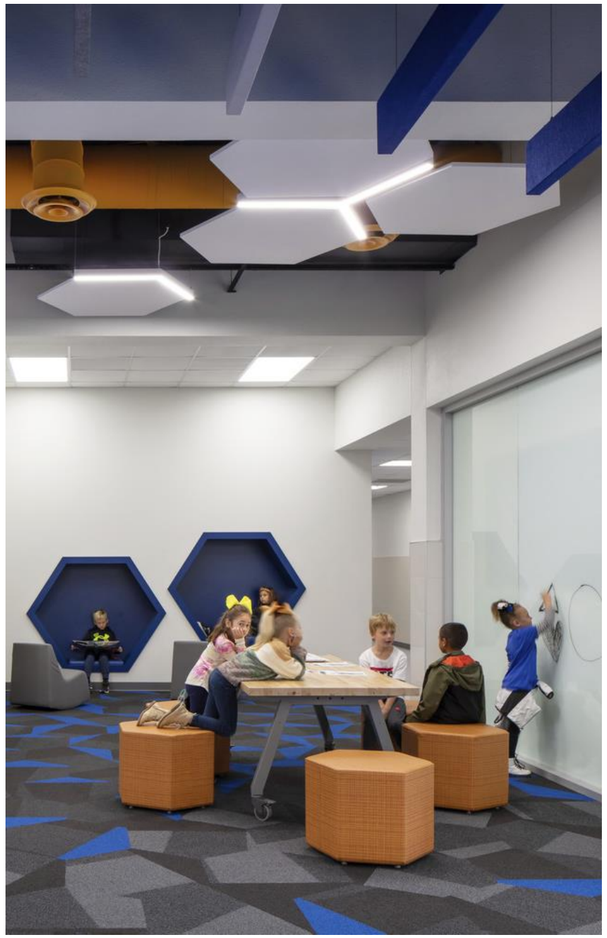
Cognitive Apprenticeship + Technology



> ***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

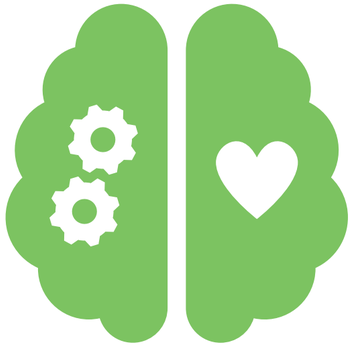
What Could Adaptive Learning Systems *Adapt For?*

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



Affective Variables

Emotional state
Appraisal
Emotion regulation
Attitude

Socio-Cultural Variables

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

[Plass, 2016]

Adaptive Learning for Entrepreneurs, Experimenters, and Creatives

Activating the Educational Technology Spectrum

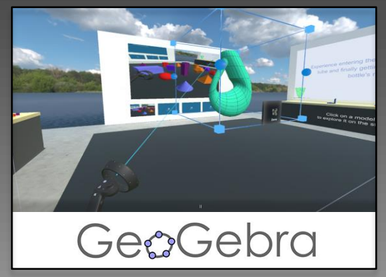
ADAPTIVE LEARNING SYSTEMS

CARNEGIE LEARNING

SMART SPARROW

Khan Academy

Pearson



GeoGebra

DREAMSCAPE

CogBooks™ Adaptive Learning

ASU

prisms

IMMERSIVE SIMULATION TECHNOLOGIES

APEX OFFICER

National Healthcareer Association®

GigXR

APPLIED TECHNOLOGIES

PAINT BOOTH

MACHINE SHOP

DENTAL TECH

911 DISPATCH

CULINARY

CMA/EMT/PCT

VET TECH

MANNEQUINS

ROBOTICS ARM

Pedagogical Applications for XR Technologies

1

REINFORCE CONCEPTS

XR expands the range of topics that can be learned as skills, rather than as abstract knowledge.

2

ACTIVE TECHNOLOGY

Encourages students to meaningfully engage with their learning through creative problem-solving, embodied experiences, and building connections.

3

LEARNING GAINS

Cognitive, psychomotor, and affective learning.

4

EXPERIENTIAL LEARNING

Providing students access to artifacts, resources, experiences, and situations that may not be accessible otherwise.

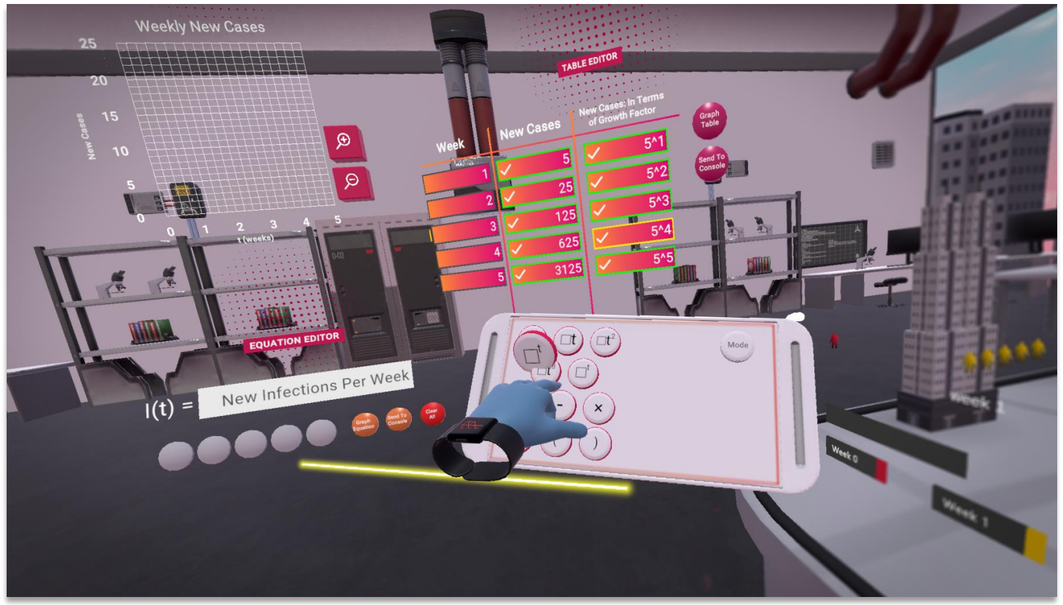
[Pomerantz, 2018; Pomerantz, 2019; Herold, 2019; Hoogendoorn, 2015; Lindgren et al, 2016]

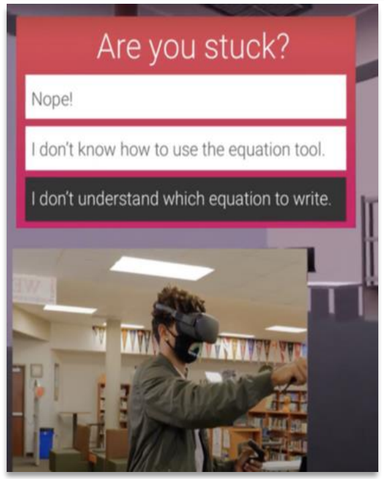
Adaptive Learning Systems
Definition and Goals

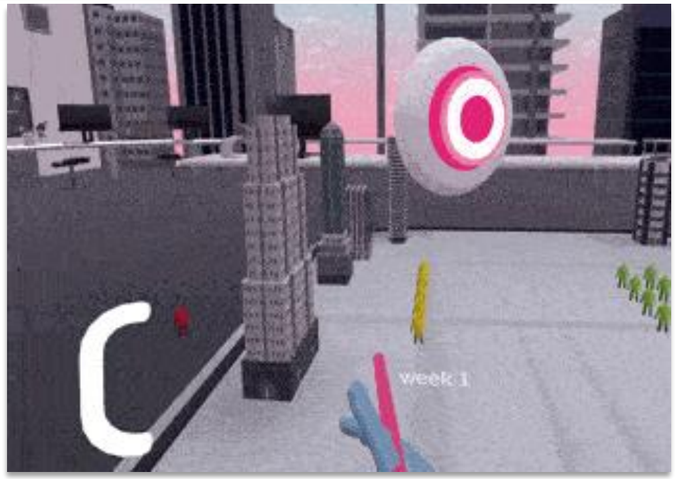
Adaptive Learning systems ***dynamically adjust instruction to respond to learner characteristics,*** *student interaction, and performance levels*

- **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**

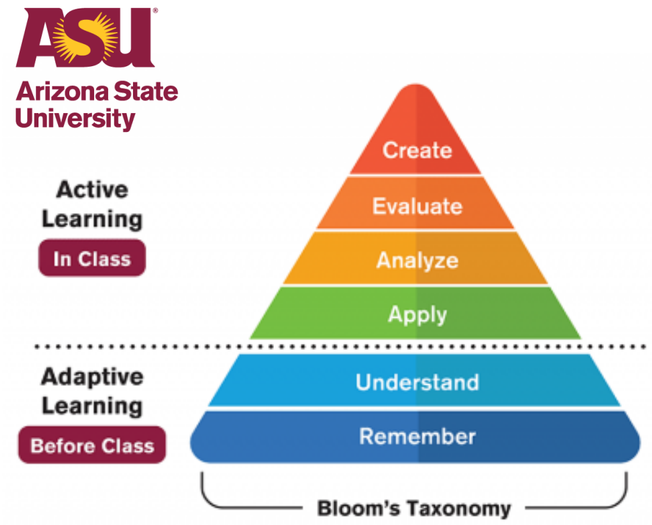
[Dr. Candace Walkington; Feldstein et al., 2015; Moskal et al., 2017; Plass, 2016]

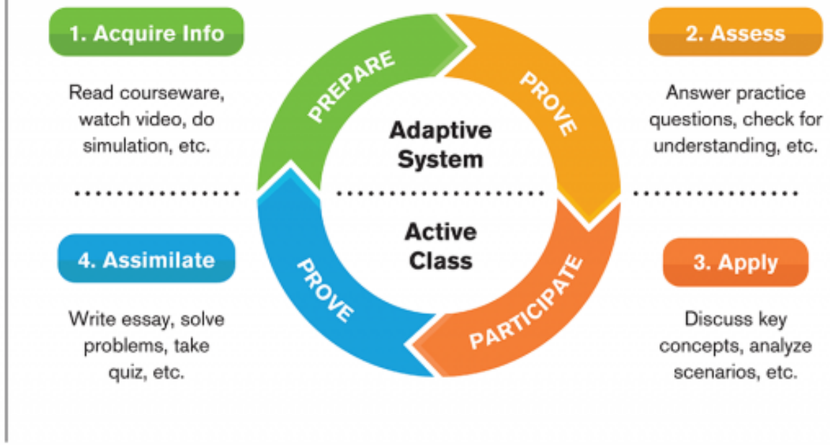






Prisms VR – "Pandemic" Algebra Learning App





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

Benefits for Students

1 **Respects Prior Knowledge**

2 **Responsive to Learning Needs**

3 **Reduces Gaps in Understanding**

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

Benefits for Educators

1 **Monitor Student Progress**

2 **Measure Performance**

3 **Maximize Learning Outcomes**

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

Carnegie Learning - APLSE Report (Adaptive Personalized Learning Score)

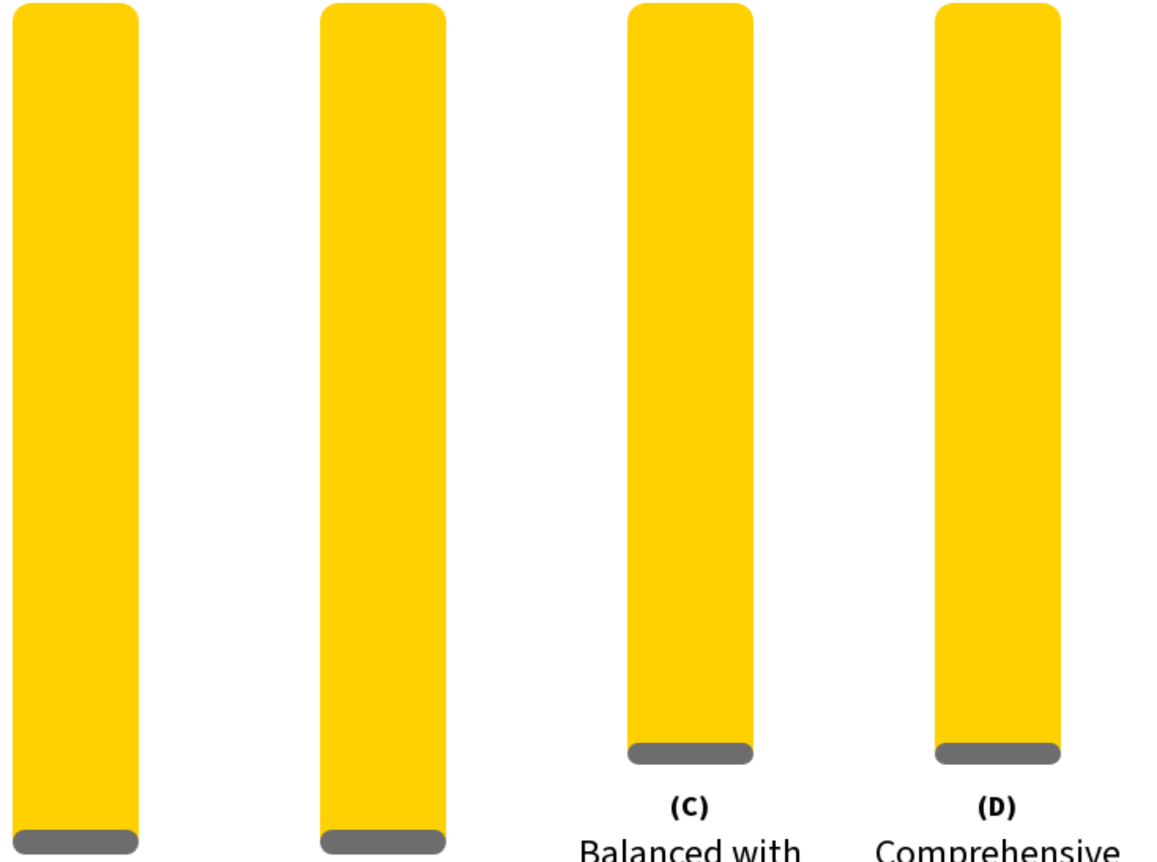
A Foot in Each Universe:

Striking a Balance with Digital Learning

- Prioritize **live, socially interactive, connected, collaborative experiences** between real people (not avatars)
- **Balance** technology-driven opportunities and grounded experiences
- Focus on how children learn: **playful learning and exploration**
- Engage educators, researchers, and designers to develop data-driven ***educational*** tools and experiences
- Consider how **digital overlays can enhance the real world**
- **Integrate teachers** as an active “guide on the side” to facilitate learning, not merely a supervisor

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

How do you believe adaptive learning systems should be implemented to support future-ready learners?



(A)
Not At All
0%

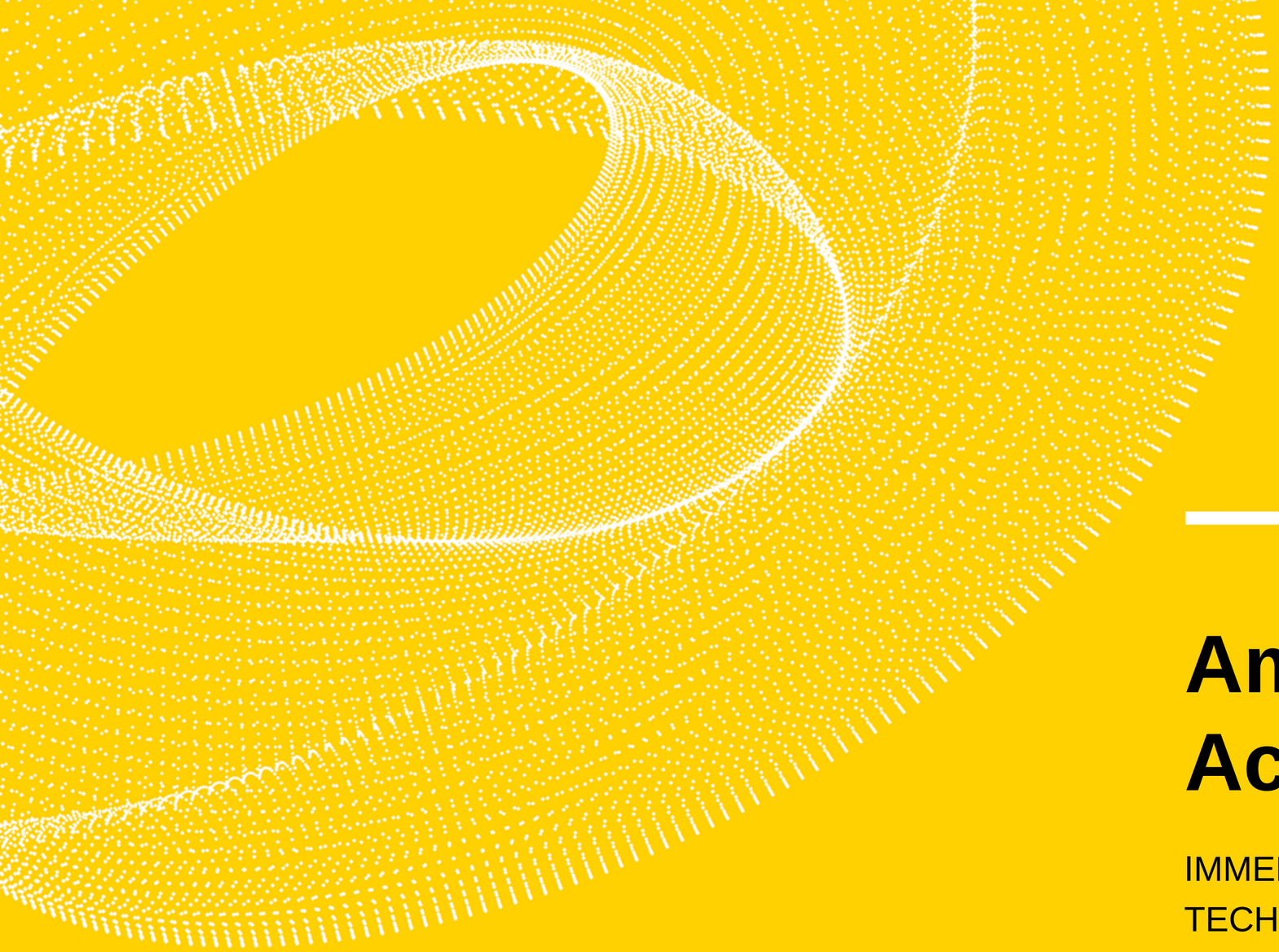
(B)
Intervention Only
0%

(C)
Balanced with Experiential Learning
0%

(D)
Comprehensive Adaptive Learning Programs
0%

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


Amarillo ISD
CORGAN
Educator testimonial video clip



AmTech Career Academy

IMMERSIVE, APPLIED EDUCATIONAL TECHNOLOGIES IN AN INNOVATIVE LEARNING ENVIRONMENT

Drone footage: existing building, to rendering, to completed project

CORGAN

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.

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

Educator testimonial video clip

Architecture, Construction & Manufacturing Academy

Amarillo ISD CORGAN

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"


Amarillo ISD
CORGAN
adidas
STEM
and IT
Academy

Building Partnerships on the Cutting-Edge of Industry Innovation

Amarillo ISD CORGAN

Medical Arts Academy

Amarillo ISD CORGAN

Culinary Arts Academy

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

Strengthening the Community

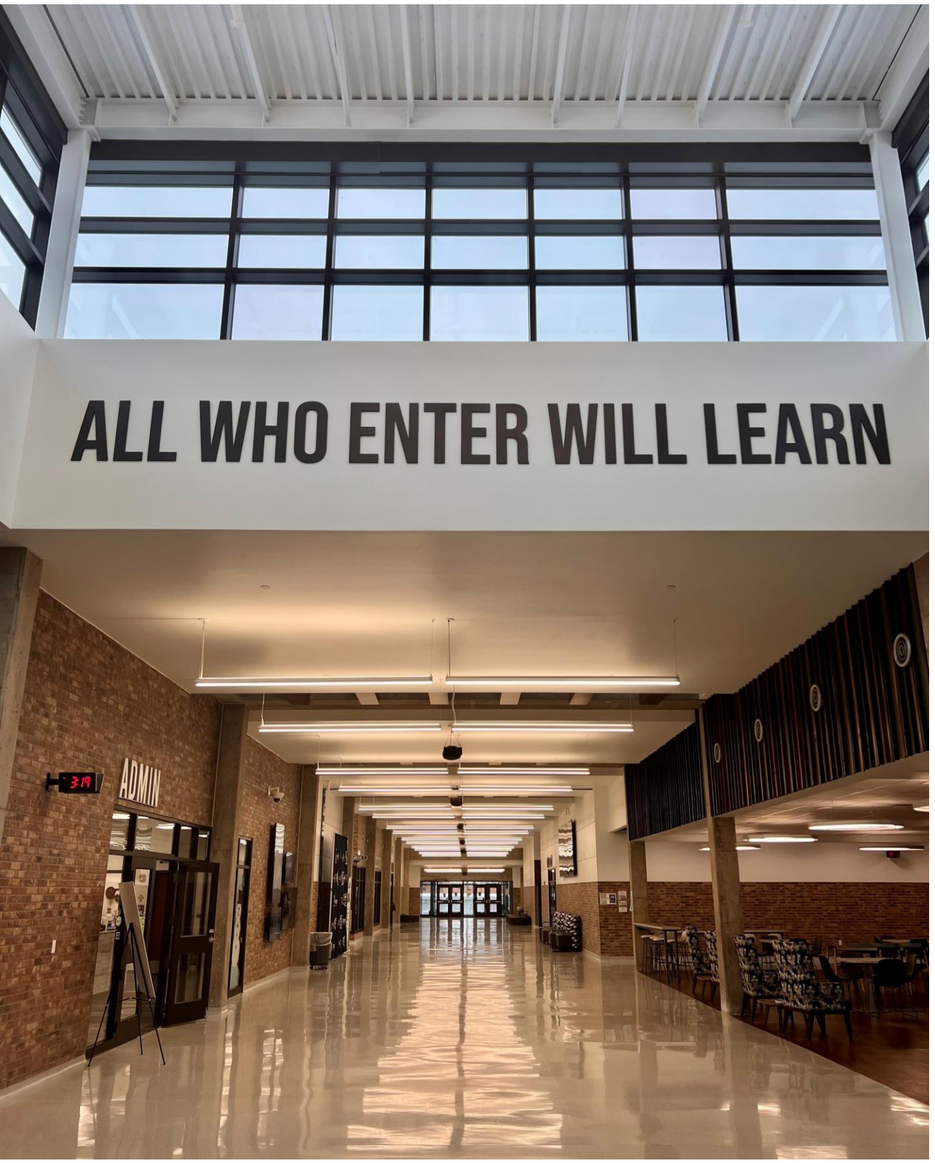
- **Building opportunities for students that strengthen the local workforce**
- Reach out to businesses to discover their needs
- Help kids discover their interests and goals early in their education (through early outreach)
- Build flexibility into the space to accommodate different programs as needs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

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

Student and educator testimonial video clip

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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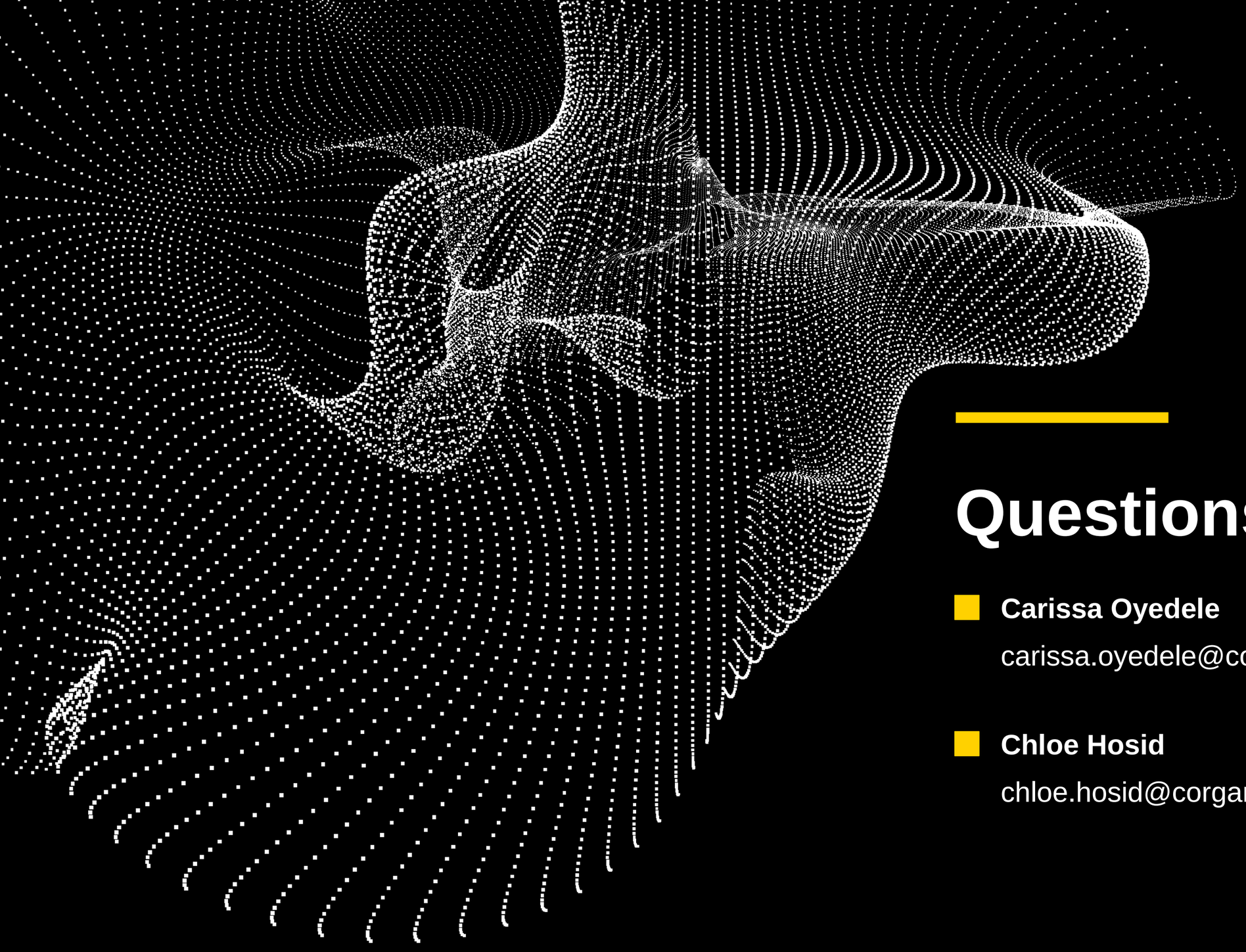

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