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Connecting the Dots between Science, Technology, Engineering and Math Education and Aviation Professional Shortages

Owen D. Bruce
tuskair1@yahoo.com

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CONNECTING THE DOTS BETWEEN STEM AND AVIATION PROFESSIONAL SHORTAGES

Presented by: Owen D. Bruce

DISCLAIMER

The views expressed in this presentation are my own and do not reflect the policy or position of any agency of the U.S. government.

CONNECTING THE DOTS

EXPOSURE

- The 2019-2038 Boeing Pilot and Technician Outlook report suggests that there will be a need for 212,000 pilots and 193,000 technicians in North America alone.
- Some people are not as aware of careers in aircraft maintenance as they are for pilot careers.
- One way to increase awareness of AMT careers is to expose more people to it through high schools and community colleges.

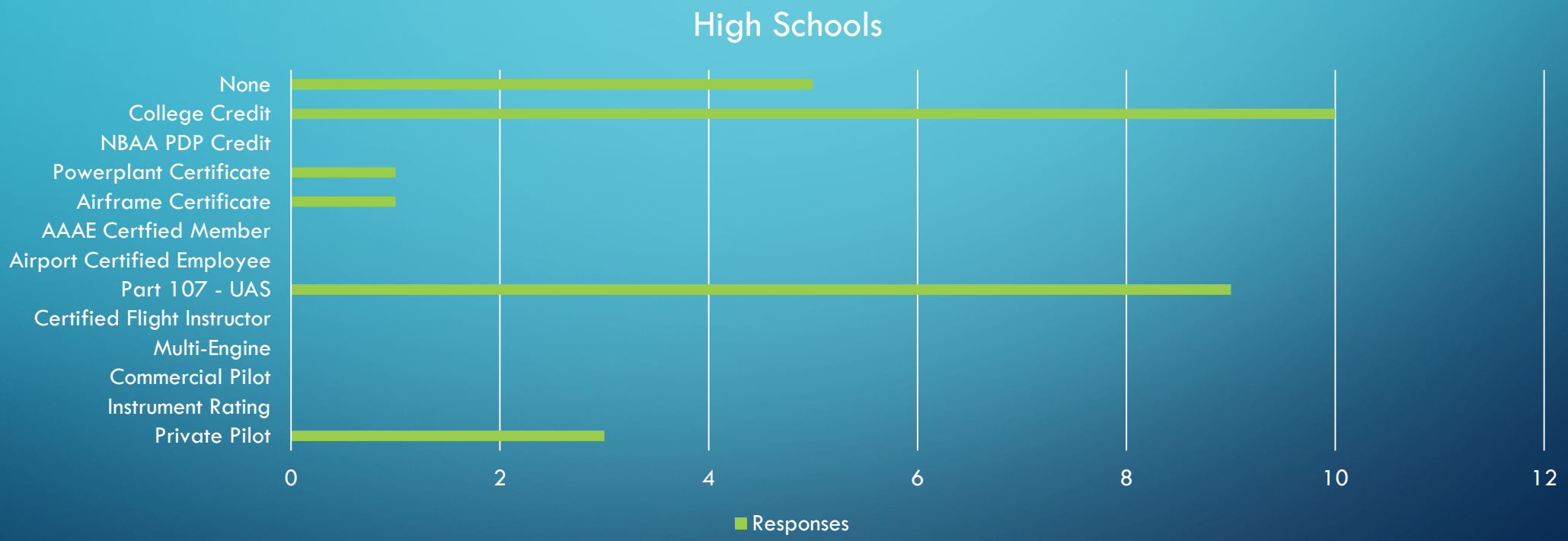
CONNECTING THE DOTS

Vocational Schools

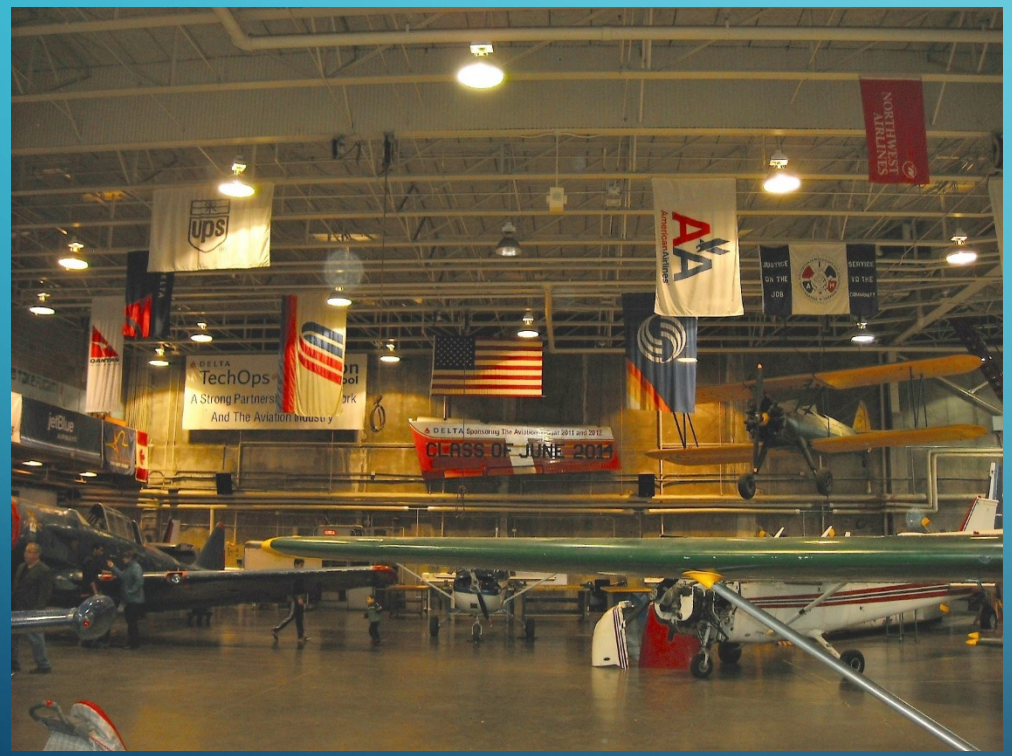
VOCATIONAL SCHOOLS

- High schools and community colleges have been identified as an immediate pool of new aviation employees.
- According to a 2019 study from the Airport Cooperative Research Program (ACRP), there are at least 106 high schools and 105 community colleges that have aviation programs.
- Of those 106 high schools, only one allows students to graduate with the credentials (airframe and powerplant certificates) required for a career as an AMT.

WHAT CREDENTIALS/PROFESSIONAL CERTIFICATIONS/CREDIT DO AVIATION STUDENTS RECEIVE UPON (OR PRIOR TO) GRADUATION FROM YOUR AVIATION PROGRAM?



AVIATION HIGH SCHOOL, QUEENS NY



CONNECTING THE DOTS

IMMERSIVE TECHNOLOGY

- High schools looking to implement an AMT program face several challenges:
  - Do you have access to a hangar?
  - Do you have access to aircraft?
  - Do you have access to mockups and test benches?
  - Do you have access to teaching staff with aircraft maintenance experience?

IMMERSIVE TECHNOLOGY

- One way to address some of these challenges is through immersive technology.
- Immersive technology emulates the physical world through the digital or simulated world by creating a surrounding sensory feeling, which creates a sense of immersion (Wikipedia).

WHAT ARE SOME TYPES OF IMMERSIVE TECHNOLOGY?

- Augmented Reality (AR) – a computer-generated image is superimposed in the “real world” and viewed through a device
- Virtual Reality (VR) – a computer–generated content is viewed and interacted with through a VR headset.
- Mixed Reality (MR) – the combination of the physical world and the digital world (AR+VR).

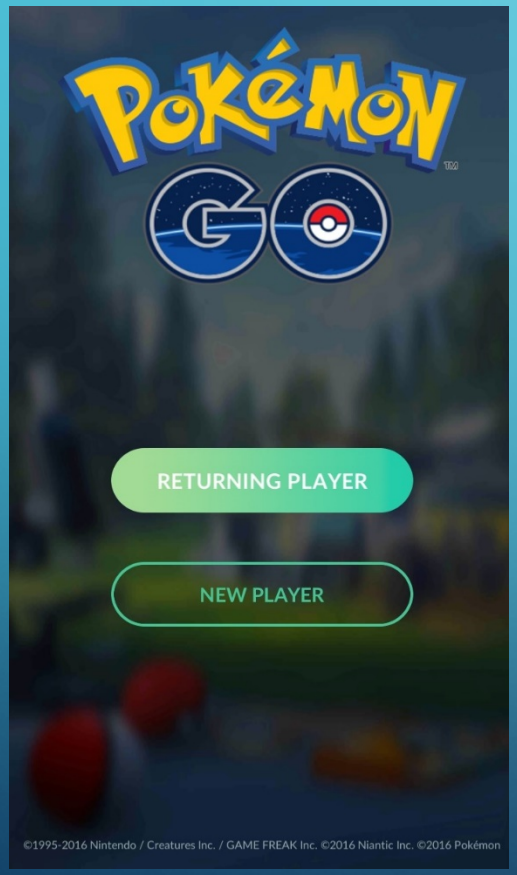
IMMERSIVE TECHNOLOGY IN EDUCATION

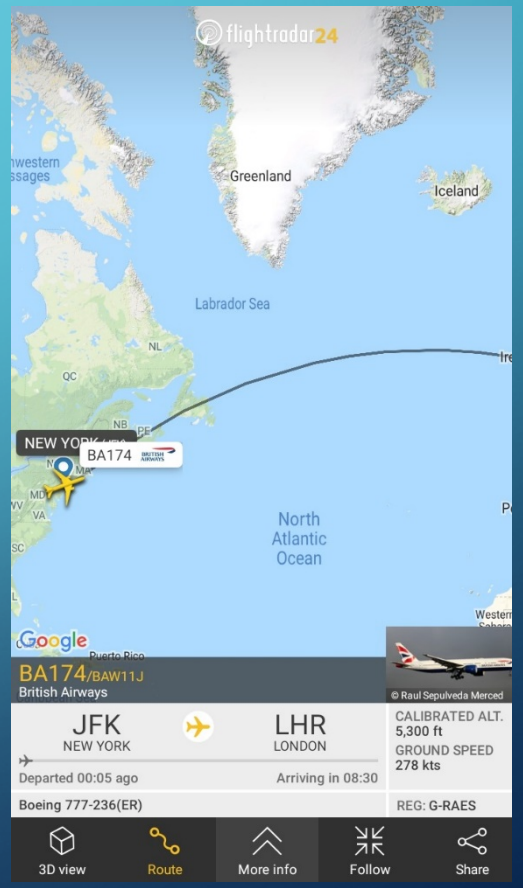
- Mixed reality has remarkable potential for the K–12 classroom.
- Immersive technologies such as virtual reality and 3D scanning are becoming so hot that educators across the country are beginning to roll them out for students of all ages.
- Studies by Pratt & Whitney and the University of Maryland found increased retention of information by using AR and VR.

IMAGINE THIS REACTION TO AVIATION!

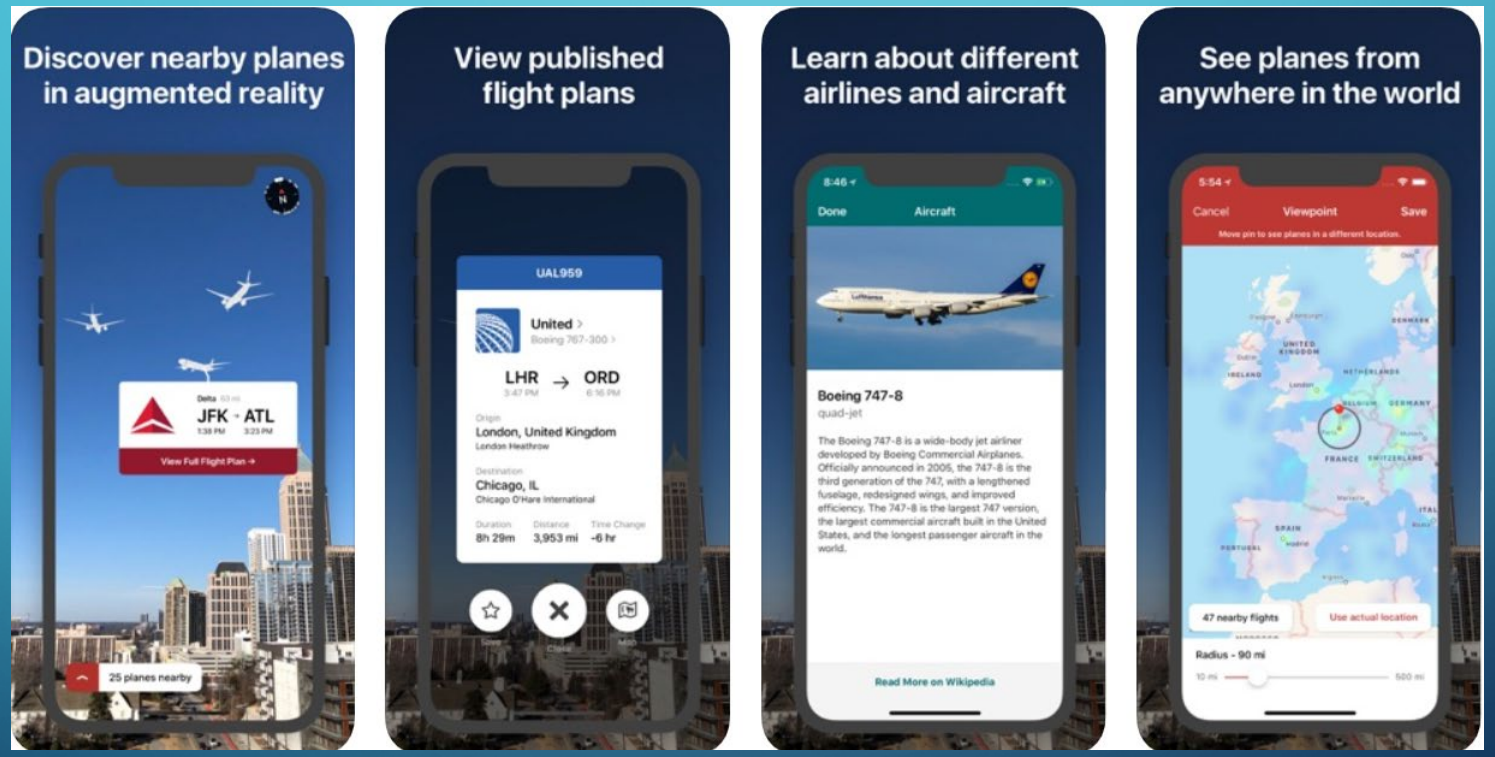
See streaming video on metadata page

WHAT HAPPENS WHEN POKÉMON GO MEETS A FLIGHT TRACKER?





FLIGHTRADAR24 AUGMENT REALITY APP



OVERFLIGHTS NEAR BWI AIRPORT

POTENTIAL LEARNING OBJECTIVES FROM USING FLIGHTRADAR24 APP

- Aircraft recognition (B787-9, A320)
- Domestic and International Airlines (Delta, British Airways)
- Airline flight paths
- City Pairs (CDG-MCO, BWI-ATL)
- Exposure to aviation via immersive technology
- Get out of the house and explore!

CONNECTING THE DOTS

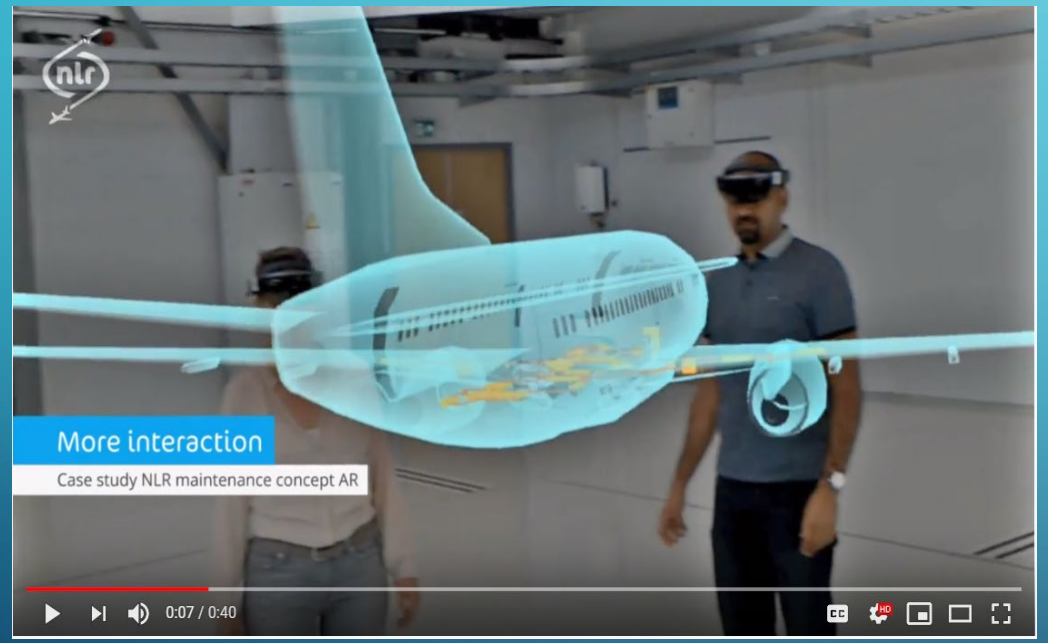
Expands outreach

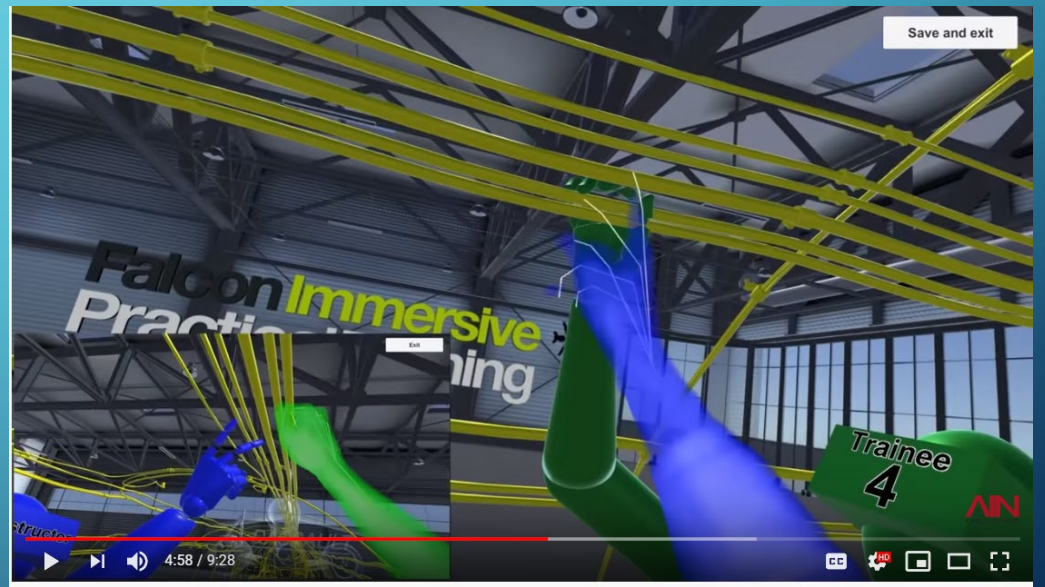
EXPANDS OUTREACH

- By using immersive technology, aviation outreach and recruiting officials can bring the airport and the aircraft to students.
- Students can get “hands on” experience and exposure to aspects of aviation, such as aircraft maintenance, they would not normally have and determine if a career in aviation is for them.

SO INSTEAD OF HAVING THIS…

WE CAN HAVE THIS…





How Virtual Reality Tools Train Dassault Falcon Aircraft Mechanics – AINtv

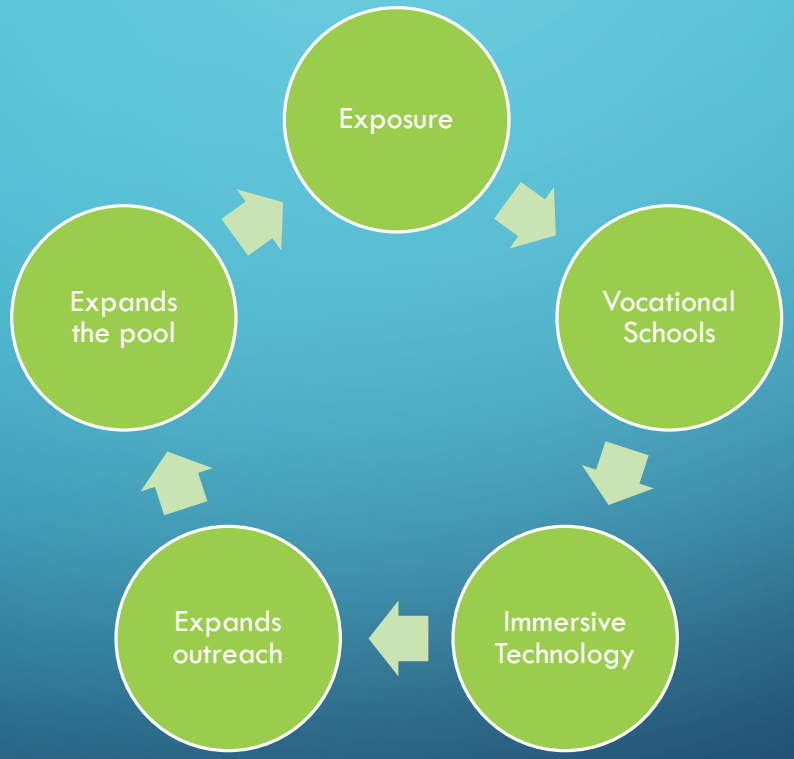
CONNECTING THE DOTS

Expands the pool

EXPANDS THE POOL

- Immersive technology can also be used to expand the pool of potential AMT employees.
- Skilled workers in other fields that are in decline can be exposed to AMT careers through immersive technology.
- This will compensate for the Millennials and Generation Z population who may be attracted to careers in coding, robotics and e-sports (**the competition**).
- In addition to immersive technology, grants and scholarships may also entice new talent to consider a career in aircraft maintenance.

CONNECTING THE DOTS



SUMMARY

- In order to solve to the shortage of aircraft maintenance technicians:
  - Expose potential talent to the career
  - Promote the vocational schools that provide aviation training
  - Consider immersive technology to bridge the gap for schools that want to expose students to ATM but do not have the resources
  - Use immersive technology to expand aviation outreach efforts by bringing the aircraft and airport to students
  - Use immersive technology to expand the pool of applicants by introducing skilled workers in other fields to aviation

NEXT STEPS

- Continue to investigate the benefits of immersive technology in aviation education.
- Collaborate with academia and companies that have immersive technology capabilities.
- Collaborate with AMT subject matter experts to develop the content.

NEXT STEPS

- Collaborate with educators to develop age appropriate lessons using immersive technology.
- Explore the lessons learned on how coding and robotics made it into school systems.
- Pick up where we left off from the 2018 Aviation Workforce Symposium!

QUESTIONS?