Aviation Maintenance Technology (AMT) programs’ response to the COVID-19 pandemic: Preliminary results

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Project Overview

- Understand the learning responses and adaptations to the COVID-19 crisis among AMT programs
- Explore how programs maintained academic continuity and which digital tools were useful
- Analyze data and develop evidence-based guidelines to strengthen the academic continuity
- Disseminate findings and best practices in a variety of forums based on research and resources from multiple disciplines

Research team is a federally-funded partnership between 2-year and 4-year colleges.
COVID-19 crisis caused the abrupt and immediate halt of in-person classes

At least 4,324 higher education institutions and over 25 million college students impacted

Many schools transitioned to remote learning

Instructors and students no longer had access to classrooms, labs, offices, study spaces, and countless resources
Community college students’ challenges exacerbated by COVID-19 crisis

Challenges for Community College success
(Porter and Umbach 2019)

• Work
• Paying expenses
• Family and friends
• Online classes
• Developmental courses
• Health and disability
• Doing college-level work
Background on AMT programs

- Train students to apply knowledge and skills to repair and service aircrafts
- Significant amount of kinesthetic learning
- Accredited by the Federal Aviation Administration (FAA) under Federal Aviation Regulation 14 CFR Part 147
- 182 AMT programs in the United States, 143 are associated with 2-year institutions
Research Methods

Interdisciplinary Research Team
• IRB-approved study
• Team of 7 researchers and consultants from Engineering, Education, Social Science, and AMT

Interviews and surveys
• Completed 43 interviews
• Goal of 600 surveys
• Instructors, administrators, and students from Part 147 programs nationwide

Foci include
• Learning resources prior to COVID
• Responses in March 2020
• Adaptations for subsequent semesters
• Approaches to lab classes
Theoretical Approach: Resilience Engineering Framework

- Ability “to adjust its functioning prior to, during, or following changes and disturbances, so that it can sustain required operations under both expected and unexpected conditions” (Hollnagel 2010)

- Maintain and manage an acceptable level of risk (Madni and Jackson 2009)

- Anticipate, withstand, adapt to, and recover from disruptions to have resilient characteristic (Madni and Jackson 2009)
FAA response to COVID-19 Crisis on AMT programs

- Allowed for temporary changes to the curricula via OpSpec A026
- Required application and new approval by local FAA representative
- Only some subjects were permitted for distance learning
- No guarantee for approval for remote instruction
Responses to COVID-19 Crisis

Depended on school/state administrators and local FAA representative

- Acquire or increase use technology for remote learning
- Adapt teaching and count hours in new ways
- Modify programs in accordance with health and safety measure from government department and schools
Main Challenges adjusting to disruptions

- New balance between FAA, academic institution, and government health and safety departments
- Abrupt changes in teaching and learning styles
- Difficulty applying knowledge learned remotely
- Adjustments in peer learning
- Enrollment changes
- Reorganization of home to account for work/school
Positive Changes to Learning

Communication

• Increased communication contributed to an additional sense of community

Resources

• More resources for student learning outside of the classroom, including online library of resources to pass FAA assessments

Teaching

• Varied ways to engage students during distance learning and in-person teaching

• Instructors learned about confusing parts of their lectures and adjusted

Flexibility

• Added flexibility in programs to accommodate student and instructor needs
Preliminary Findings

AMT programs were underprepared for any switch to remote learning.

- E-learning resources not previously incorporated

Students struggled with remote learning.

- Lacked opportunities to apply and reinforce lecture material
Instructors lacked the time or resources to adequately create a robust online program.

• Uploading slideshows and lectures ≠ in-person class

Program administrators are hesitant to incorporate e-learning.

• FAA restrictions, perceived cost, reliance on kinesthetic learning tools
• FAA regulations changing per the New Part 147
Next steps

• Nationwide survey

• Analyze the survey and interview data

• Complete a literature review in education, engineering and other disciplines for comparison

• Develop evidence-based guidelines to strengthen academic continuity

• Disseminate our findings in a variety of formats
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Questions?

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