INSTITUTIONAL WORKSHOP

ASSESSMENTS AND CULMINATING EXPERIENCES

Mr. Bill Kohlruss - Dr. Mark Sherman
CO-CHAIRS, GUIDANCE COMMITTEE

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• FOCUS concept first proposed in 2009 by Dr. Paul A. Craig
• Received NASA grant in 2010 to study team decision-making
• Project would address best practices for communication, disruption management, teamwork, and group situational-awareness
• Conceptualization and construction began in 2010 with a small research team comprised of faculty and graduate students
• Students began with tabletop discussions and now has evolved to include:
  • Complex and real-world scenarios
  • Immediate feedback and ramifications to decisions
  • Real-time performance analysis
  • In-depth after action reviews
• All concentrations take aerospace core classes
• MTSU AEROSPACE program comprised of 5 concentrations:
  • PROFESSIONAL PILOT
  • MAINTENANCE MANAGEMENT
  • AEROSPACE ADMINISTRATION
  • FLIGHT DISPATCH
  • TECHNOLOGY
• After specializing in their chosen concentrations, students return to take a capstone course
• Prior to FOCUS lab, capstone course only addressed industry topics, résumé, and interview preparation
CULMINATING EXPERIENCES

• Surveys of industry experts revealed that newly-minted aviation professionals required 5-10 years to fully understand their role and impact within an organization.

• Research revealed that new aviation professionals lacked:
  • operational understanding of others’ roles in the organization
  • basic understanding of how their decisions and job performance impacts others
  • the ability to communicate and coordinate effectively with others to meet organizational objectives
  • the use of foresight, planning, and time management in making decisions and performing tasks
• The FOCUS project is specifically designed to address teamwork deficiencies of new employees in the aviation industry.

• Students are placed in a realistic simulated airline flight operations control center.

• Here, students from all aviation disciplines are placed in teams to practice working with others.
CULMINATING EXPERIENCES
Project Concept

• Teams work to meet organizational goals like safety, on-time performance, customer satisfaction, and disruption management.

• Teams are given various scenarios (or triggers) that require the students to work together to resolve issues quickly and effectively.

• Teams are monitored and evaluated by graduate student and faculty observers.
CULMINATING EXPERIENCES

WHAT IS FOCUS?

Flight Operations Center Unified Simulation

• FOCUS is a high-fidelity replication of a part 121 regional airline operations control center

• Students participate in a 3 hour simulated work shift working for a virtual airline we call “Universal E-Lines”

• Universal E-Lines operates 30 CRJ-200 aircraft on 16 flight routes throughout the southeastern United States.

• Utilizing a hub and spoke system, Nashville and Jacksonville act as the airline’s hubs

• Students manage up to 80 flight events in a 3 hour simulation session
CULMINATING EXPERIENCES
PROJECT CONCEPT

Universal e-lines
CULMINATING EXPERIENCES
CULMINATING EXPERIENCES
Photos
There are 10 distinct positions in the FOCUS Lab. They are:

- Flight Ops. Coordinator
- Weather & Forecasting
- Crew Scheduling
- Fuel/Cargo Management*
- Flight Tracking & Schedule Management*
- Maintenance Planning
- Maintenance Control
- Ramp Tower
- Pseudo Pilot
- CRJ Simulator Crew
The MTSU and its industry partners pioneered the ability to electronically link to a CRJ-200 simulator located at the flight school. Pilots in this simulator can communicate with anyone in the operations center. The CRJ simulator even appears on flight tracking monitors and is displayed in the ramp tower as a photo realistic aircraft moving about the airport environment.
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**Photos**

- CULMINATING EXPERIENCES
Scenario Design & Control:

- Graduate Students
- Monitoring team performance and status of the operation
- Provide real-world feedback and consequences
- Issue disruptive ‘triggers’
  - Library
  - Taxonomy
  - Disruptive potential scale
- Monitor response to triggers
- Evaluate effectiveness
The Aerospace Department collaborates with the Psychology Department on the FOCUS project. Studies include:

- Occupational stereotypes & attitudes
- Group dynamics
- Individual & team cognition

After-Action Review:

- Engages students to discuss events of simulation
- Feedback from team members and observers
- Discussion of unfavorable outcomes
  - How to prevent in the future?
  - Anticipating problems
  - Communication & time management
- Reinforces positive behaviors and solutions
- Teams establish goals and new strategies
CULMINATING EXPERIENCES

ADVANTAGES

- Active learning experience
- Students provide performance feedback to peers
- Has the potential to reveal holes in curriculum
- Encourages faculty to incorporate a greater ‘real-world’ perspective in the classroom
- Allows students to use knowledge gained from their coursework to creatively solve problems
- High motivation to succeed and learn from mistakes
- Students learn to consider multiple solutions to a problem, weighing likelihood, impact, and other downstream implications
- Gives students a sense of time sensitivity while problem solving
- Internship & job opportunities
- Students enjoy it!
CULMINATING EXPERIENCES QUESTIONS

thank you

Dr. Paul A. Craig
Ms. Andrea Georgiou
Mr. Paul R. Carlson

paul.craig@mtsu.edu
a.georgiou@mtsu.edu
prc2h@mtmail.mtsu.edu

Dr. Glenn Littlepage
Dr. Mike Hein
Dr. Richard Moffett
Mr. Gerald Hill

glenn.littlepage@mtsu.edu
michael.hein@mtsu.edu
rick.moffet@mtsu.edu
gerald.hill@mtsu.edu