Title: Assessing the Impact of Interactive Technology on Aircraft Rescue and Fire Fighting Training

Presenters: Dr. Rita “Rene” Herron and Professor M.K. Gorman

Abstract: The presentation will discuss the current research being conducted by the Embry-Riddle Aeronautical University-Worldwide’s Fire Science department concerning use of technology-advanced educational software at the Dallas/Fort Worth (DFW) Fire Training Research Center (FTRC). The research design is mixed methods, using quantitative data analysis to evaluate student survey results, integrated with qualitative observation and participation data, to create a sequential exploratory research strategy. DFW FTRC means to combine the latest scientific fire research and hands-on training with technology-advanced educational software. It is used as part of the aircraft rescue and fire fighting (ARFF) educational curriculum to familiarize students with the unique features of various aircraft and airports; thus, students can visualize actual disaster scenarios at specific airports with certain aircraft. This study explores the extent to which the interactive learning technology creates a better learning experience for students and how it may translate to more effective ARFF response scenarios.
ASSESSING THE IMPACT OF INTERACTIVE TECHNOLOGY ON AIRCRAFT RESCUE AND FIRE FIGHTING TRAINING

PRESENTORS: DR. RENE HERRON & MS. M.K. GORMAN
What is ARFF?

Aircraft Rescue Fire Fighter (ARFF) history
• Creation
• Military
• Commercial Airlines
• FAA & official creation of ARFF
Aircraft Rescue & Fire Fighting Working Group (ARFF WG)

The international professional organization dedicated to research and advancing the science of aircraft rescue and fire fighting
Who & What

• ARFF personnel
  • Different airports – municipal, state, national
  • Need to know airplanes landing
  • Change in culture of personnel
  • Multiple duties
    • Hazmat
    • Public Safety
FAA Requirements

FAA Federal Regulation Act (FAR), Part 139
- Hands on training
- Aircraft

Need for more in-depth training
- Civilian training
- Military training
ERAU – Worldwide and Dallas/Fort Worth Fire Training Research Center (DFW FTRC) signed a Cooperative Agreement in August, 2013.

- Operating since 1974
- Updated various times
- Newest renovation took place last year
- State of the art classrooms & training facilities
- Large student base
  - 15,000 (to date) students,
    - 24 countries
    - 29 U.S. states
Interactive classroom - embracing technology

Set up:
• Large instructor lead touch screen at front
• 4 person desk set up
Main Areas

1. Tactics and Strategies
2. Airport Familiarization
3. Aircraft Familiarization
GLOSSARY

AIRFIELD LIGHTING

TAXIWAY EDGE LIGHTS
Blue in color, spaced 200' apart, and used to outline the edges of taxiways.

TAXIWAY CENTER LIGHTS
Green in color, spaced 50' apart, and used to mark the center of the taxiway.

TAXIWAY INTERSECTION LIGHTS
Three closely yellow lights disposed symmetrically about the taxiway centerline that indicates multiple intersecting taxiways.

TAXIWAY MARKINGS

RUNWAY MARKINGS

AIRFIELD SIGNAGE
Research Questions

1. Difficulty of using the technology

2. Integration of it within the curriculum

3. Create a better learning experience for students

4. Translate from the classroom to hands-on training
RESEARCH DESIGN

Quantitative
- FTRC Student Survey Data

Qualitative
- Observation of Students
- Key Informant Interviews (FTRC Instructors)
PRELIMINARY FINDINGS

Quantitative Data Analysis Suggests:

How well does the software augment hands-on training?

- 52% “Very Much”
- 36% more than “Somewhat” but less than “Very Much”
- Only 2% of respondents did not think the software enhanced hands-on training “at all”
PRELIMINARY FINDINGS

Quantitative Data Analysis Suggests:

How would your department/agency use the software?

- 55% Strategies and Tactics
- 37% Aircraft Familiarization
- 8% Airport Familiarization
PRELIMINARY FINDINGS

Qualitative Data Analysis Suggests:

• There is some difficulty for students using the technology

• Technology is not well-integrated into the curriculum
PRELIMINARY FINDINGS
Qualitative Data Analysis Suggests:

• The technology DOES create a better learning experience for students

• The technology DOES translate from classroom to hands-on training
RECOMMENDATIONS FOR FURTHER STUDY

• How to better integrate the technology into the curriculum

• How to better manage the challenges/difficulties students have with the software

• How can the software, the curriculum, and/or the delivery method(s) be modified to leverage the utility of the software based on the 3 applications (strategies/tactics, airport familiarization, aircraft familiarization)