Extended Reality in Cabin Safety II

Flight Attendant Training

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This Study

- **I seek to answer three questions:**
  - Does AQP+XR training **increase proficiency** in performing door opening procedures?
  - Does AQP+XR training **reduce** the training **time** required for door operation?
  - Does AQP+XR training **increase** longitudinal information **retention**?

Background

- **U.S. flight attendant training program guidance set by FAA** (Breeding et al., 2021; Operating Requirements: Training Program, 1970)
- **Currently, two approaches: Traditional (Subparts N&O) and Advanced Qualification Program** (AQP; FAA 2021)

Background

- **XR is an umbrella term for augmented reality (AR), mixed reality (MR), and virtual reality (VR)** (Çöltekin et al., 2020)

Historical Perspective of the Airline Industry

- **In 1920's, pilots were responsible for passenger safety and comfort** (Kraus, 2008)
- **Stewardesses were introduced in 1930** (Kraus, 2008)
- **Stewardesses allowed both pilots to remain on the flight deck** (Smithsonian, n.d.)

The First Stewardess: Ellen Church

- **Petitioned Boeing Air Transport to staff flights with female nurses**
- **Flew a short period for the predecessor of United Airlines**
- **Developed first training program** (Smithsonian, n.d.)

Modern Flight Attendant Training

- Aircraft familiarization
- Security
- Safety
- Service
- Basic Medical
- Standard operating procedures
- Emergency procedures
- Company policies and procedures

Potential Dangers in Flight Attendant Training

- **Aircraft evacuations**
- **Security events**
- **Opening aircraft doors while pressurized**
- **These alone make it difficult to train to proficiency**

XR Training for Dangerous Conditions

XR training provides a safe environment in which one can train for unsafe situations

Does Simulation Work?

- **Edward Link developed the "Pilot Maker" – later the "Link Trainer"** (De Angelo, 2000)
- **By 1934, airlines and U.S. government realize value, use in pilot certification** (De Angelo, 2000)
- **Simulators now a major component to pilot training**
- **Could be considered an early form of XR crewmember training**

Does XR Training Add Value?

- **As seen in other industries:**
  - XR is better than traditional training (Ke & Xu, 2020; Liou et al., 2017; Macchiarella, 2005; Rolando et al., 2018)
  - Increased motivation to self-practice (Kim et al., 2021)
  - Increased competency (Sattar et al., 2019)
  - Increased longitudinal information retention (Umoren et al., 2021)

The Missing Component

- **Many areas of the flight attendant role remain unexplored** (Safi et al., 2019); **not least of which is flight attendant training and the potential benefit of XR training**

Purpose

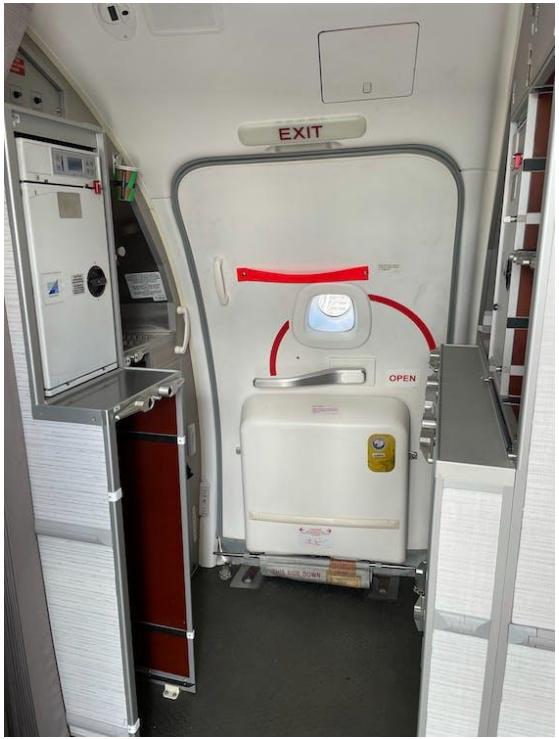
- **Understand the effectiveness of XR technology in flight attendant training**

Methodology

- **A U.S. airline will provide training performance and proficiency data from 2018 to present**
- **Flight attendant training will be evaluated in two groups: AQP+XR and AQP alone**
- **Flight attendant training data will indicate subsequent performance and proficiency in Continuing Qualification**

Participants will be:

- **De-identified (as well as airline)**
- **A line flight attendant, no additional experience**
- **Evaluated on operating the Airbus 321, Boeing 737, 777, and 787 cabin doors in normal and emergency modes**



Limitations

- **Generalizability (industries, cultures, etc.)**
- **True behavior exhibited in training**
- **Limited use of technology in this environment**

Questions and Discussion

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