

WHAT

1. Develop recommendations to implement UDL and multimodal training approaches.
2. Evaluate training performances and suggest performance evaluation protocols.
3. Conduct ATC training content analysis.
4. Evaluate FAA Academy trainees' learning styles.
5. Benchmark best practices in other areas.

Note: Examples of 1 and 2 are provided below. Examples of 3 through 5 available upon request.

GOAL

1. Reduce training cost and time by recommending effective and enriched training methods and materials through adapting the Universal Design for Learning (UDL) pedagogy and multimodal learning approaches.
2. Identify state-of-the-art technologies to support effective training.

HOW

Information Representation

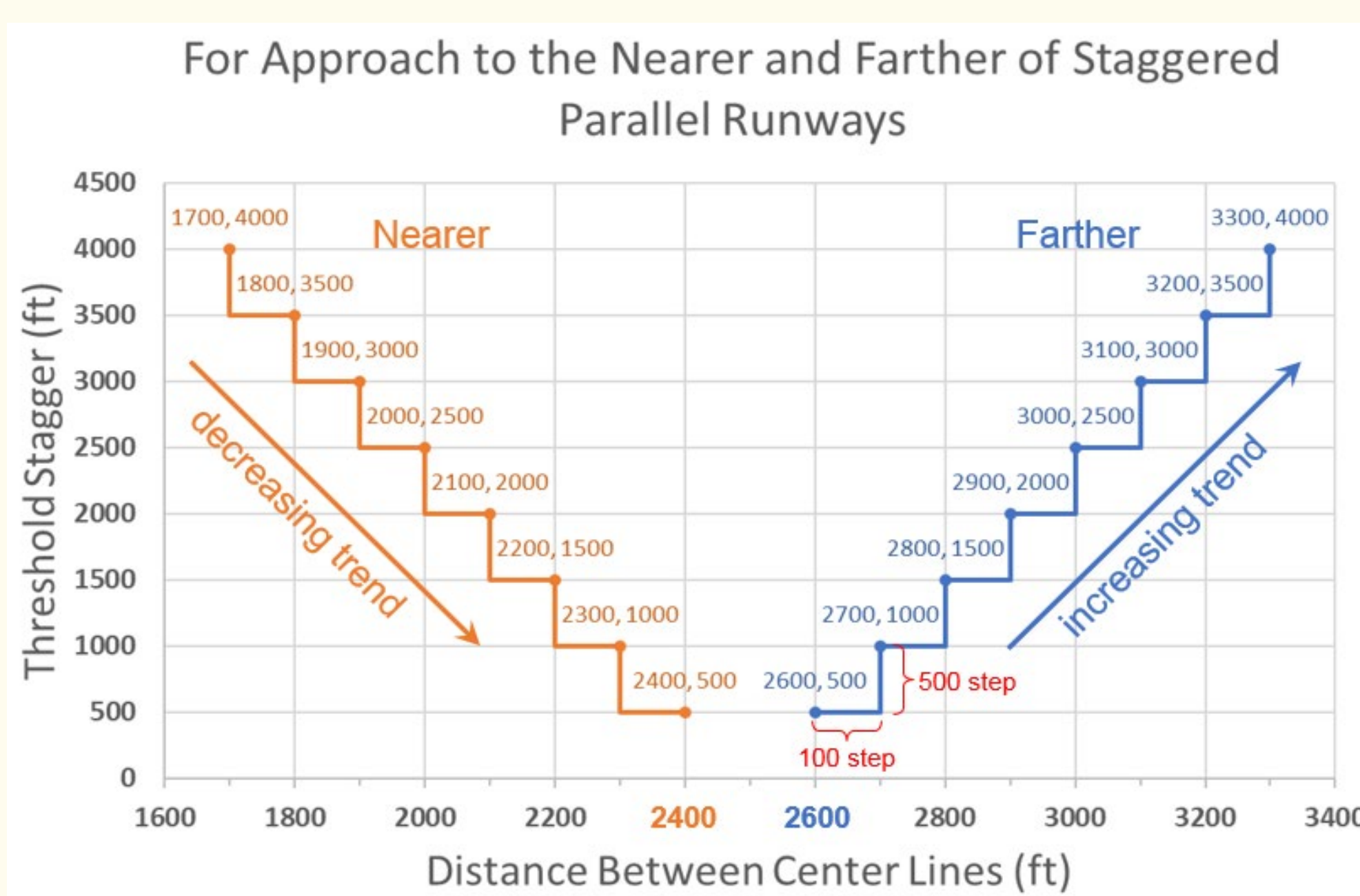
Example: UDL principle (R2.1.) – Provide additional visual guidance (e.g. visual diagrams, charts, etc.).

Data provided as a table is additionally transformed as a visual diagram to facilitate the understanding of the trends.

FOR APPROACH TO THE NEARER OF STAGGERED PARALLEL RUNWAYS	
DISTANCE BETWEEN CENTERLINES	THRESHOLD STAGGER
2,400 feet	500 feet
2,300 feet	1,000 feet
2,200 feet	1,500 feet
2,100 feet	2,000 feet
2,000 feet	2,500 feet
1,900 feet	3,000 feet
1,800 feet	3,500 feet
1,700 feet	4,000 feet

NOTE: The above table is not all-inclusive. It is meant to give you an idea of how the stagger increases as the distance between the centerlines decreases.

Original contents in Initial Tower Cab Training (50046) – Lesson 24 (PRS/SLP 24) IFR Arrival and Departure Procedures.



UDL-inspired contents: The trends and steps are clearly visible enabling the students to better understand and memorize the contents.

Action & Expression

Example: UDL principle (A4.3.) – Use story webs, outlining tools, or concept mapping tools (i.e. web applications).

Word Cloud activities allow the trainees to brainstorm key concepts and share them to foster discussions.

QUESTION: Why would emergencies and unusual situations create stress for a controller?

NOTE: Discuss reasons why emergencies and unusual situations create stress, such as:

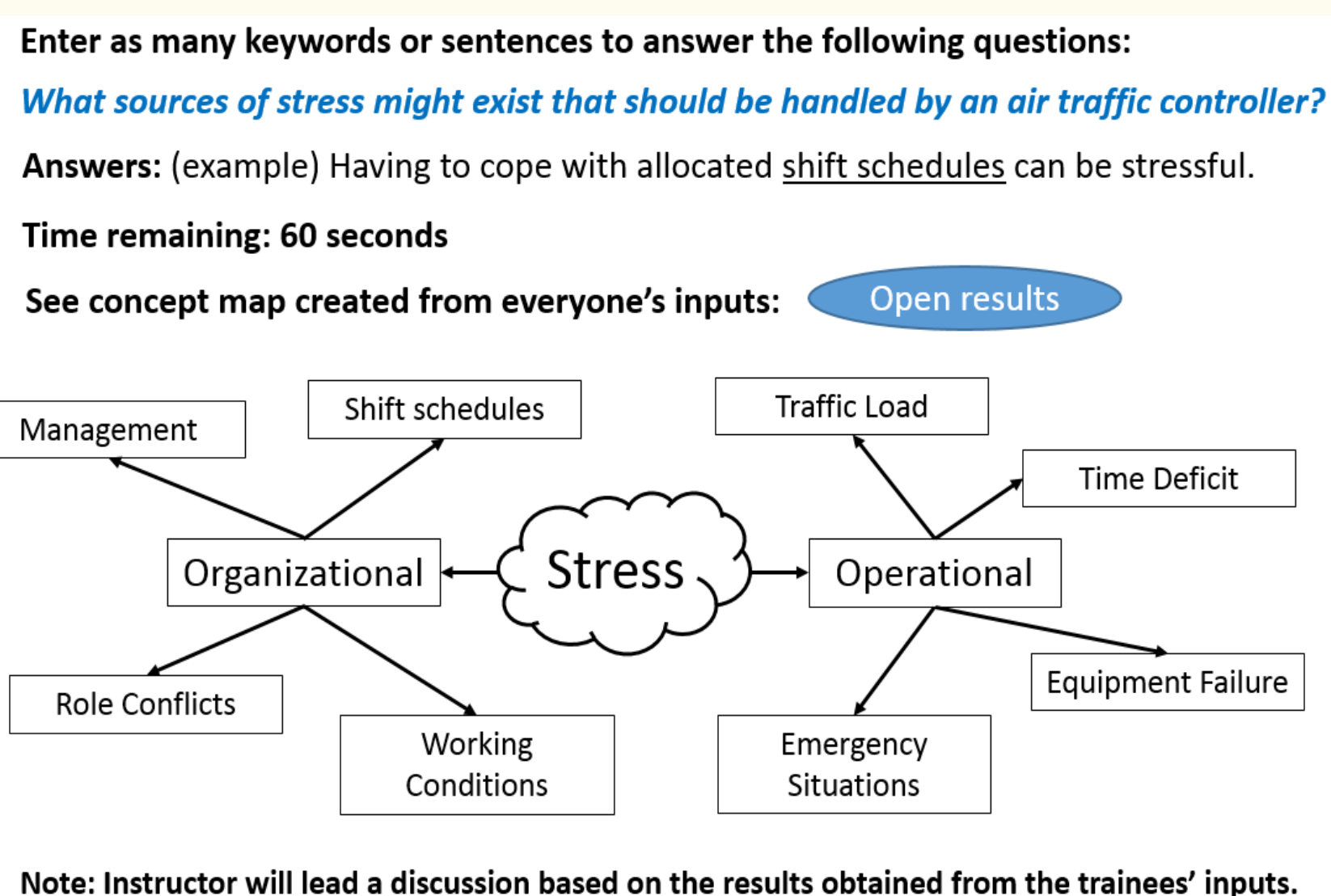
- Happen infrequently
- Unpredictable
- Controller is not sure how to handle
- Create an overwhelming sense of urgency
- Controller wants the situation to have a safe ending

Knowing what to do in an emergency or unusual situation will increase your confidence as a controller.

Word Cloud - Activity

Click on the link above to participate in the Word Cloud activity among your peers.

Word Cloud activity added beneath the original content in Terminal Basic Radar Training (50034) – Lesson 16 (PRS/SLP 16)



UDL-inspired contents: Upon clicking on the link, the students can participate in the Word Cloud activity that will produce aggregated results that are shared and discussed among the instructors and the students.

Engagement

Example: UDL principle (E6.1.) – Create cooperative learning groups with clear goals, roles, and responsibilities.

We can provide trainees with team-based activities that have well-defined components such as goal, roles, and responsibilities.

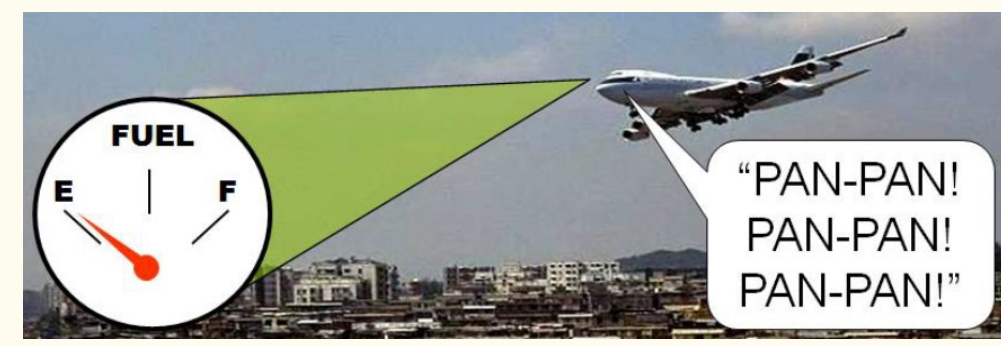
Example group activity for Terminal Basic Radar Training

A. Goals:

1. Resolve issues that occur during emergencies and unusual situations.
2. Summarize and present your group activities at the end of the class.

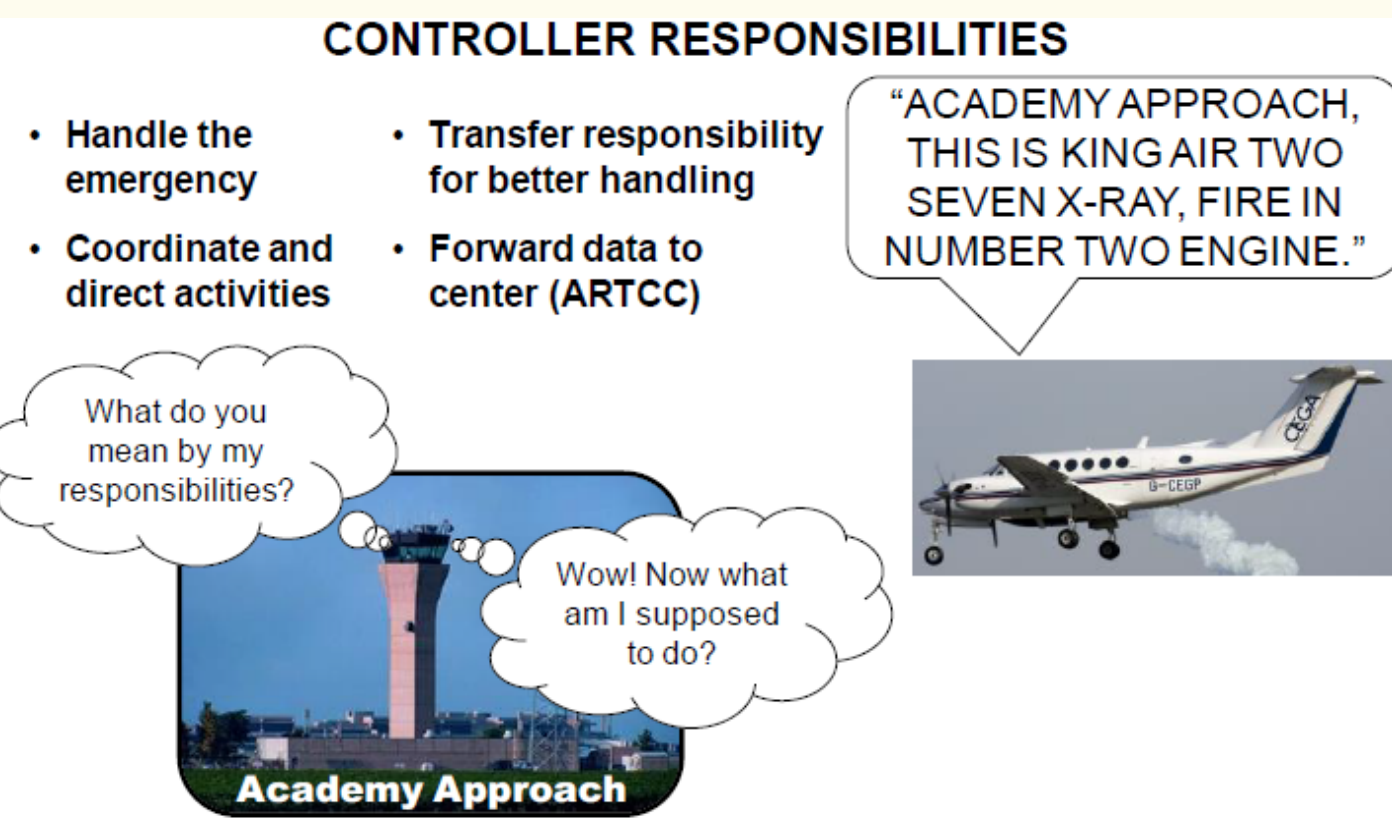
B. Case Study:

Consider an emergency when ... (instructors could include the details here)



C. Roles:

1. Each trainee takes on a role (e.g. pilot, co-pilot, controller 1, controller 2)
2. Trainees should meet the requirements provided in the figure below:



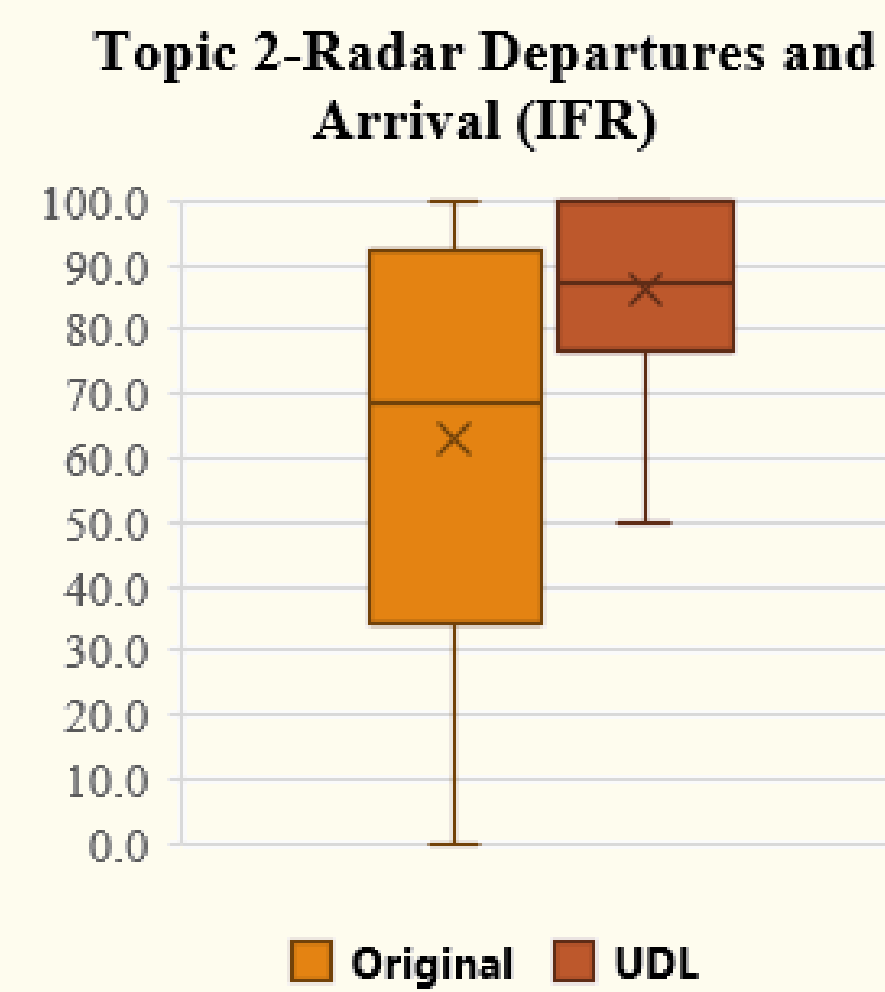
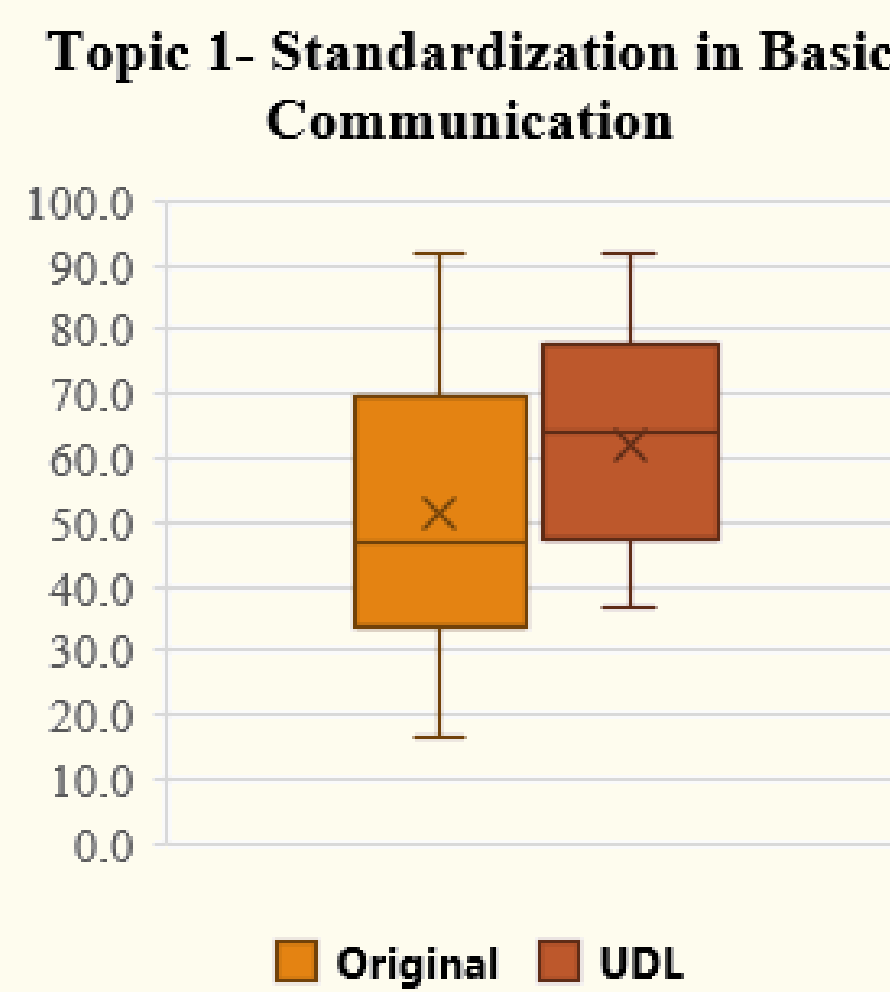
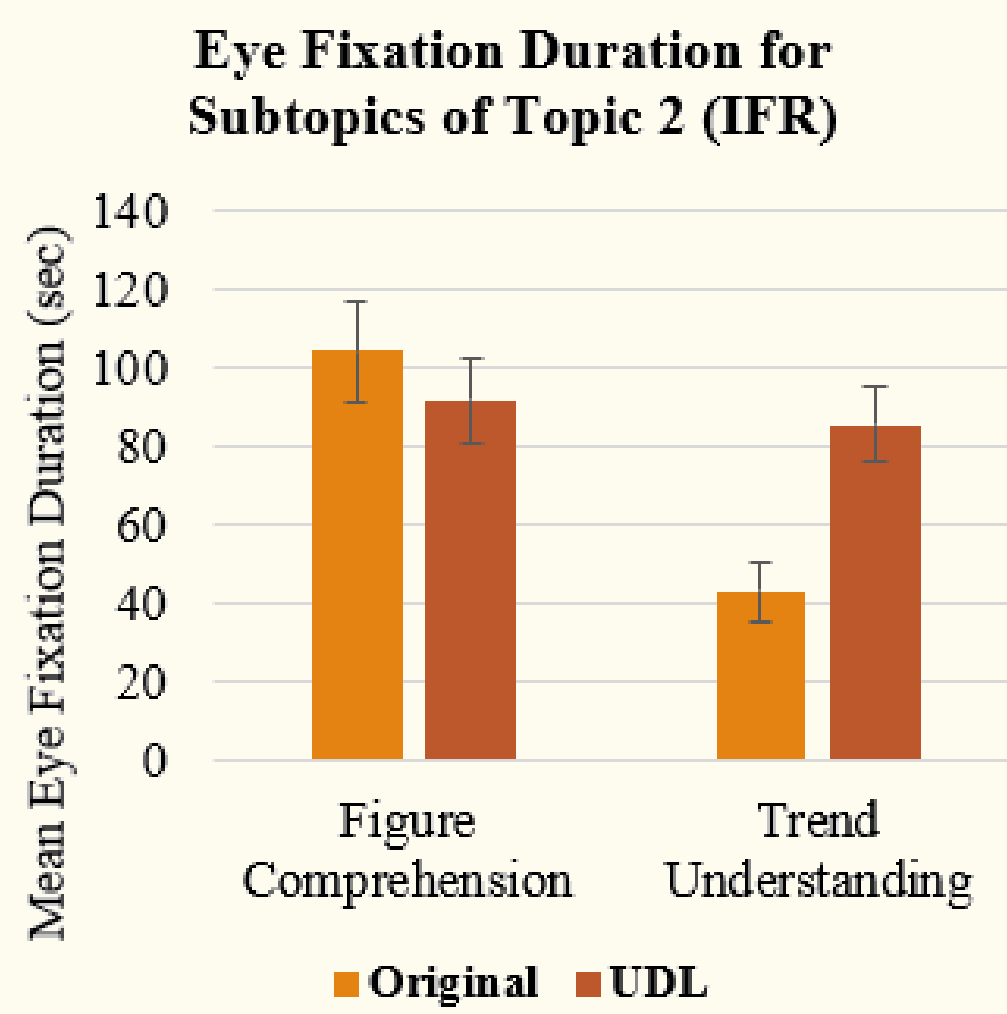
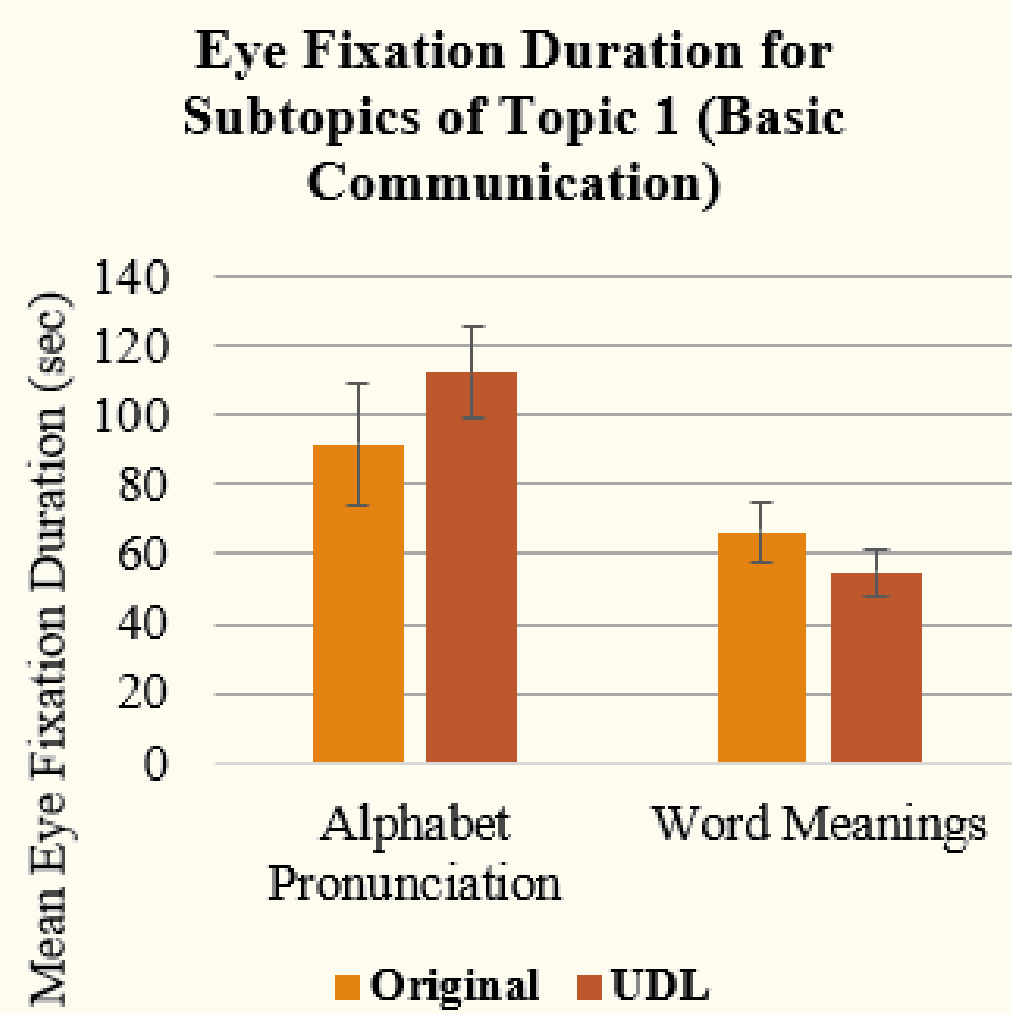
D. Execute Responsibilities:

- Record every detail
- Learn from mistakes.
- Maintain transparency.
- Ask questions to the instructor about unclear requirements and responsibilities.



WHY

Experiment was held to investigate whether the UDL-inspired contents can increase learning performance with marginal increase of learning time. Thirty-six participants (Age mean: 25.5 years, Age S.D.: 6.6 years) were recruited from the University of Oklahoma, Gallogly College of Engineering. The study consisted of two groups: original content (n = 18) and the UDL-inspired content (n = 18).



Data showed that introducing UDL principles to learning materials did not incur substantial extra time to study the contents, which can be due to the students grasping the content faster using the various UDL-inspired contents.

Analysis of the quiz results verified that those who learned using the UDL-inspired contents obtained higher scores.

IMPACT

- The FAA might substantially improve training efficiency by reducing the training cost and time through the implementation of the recommended Universal Design for Learning (UDL) principles and multimodal training approaches into the teaching curriculum.