

Crew Resource Management (CRM) Video Storytelling Project: A Team-based Learning Activity

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Part 1: Activity Planning

1.1 Name of the Activity

Crew Resource Management (CRM) Video Storytelling Project

1.2 Target Audience and Teaching Situation

The target audience are junior and senior levels aviation students (e.g., major in flight science, aviation management) who are enrolled in a Crew/Team Resource Management (C/TRM) course. The accident free High Risk Organization (HRO) necessitates mutual interdependency and careful coordination of all team functions. The roles of the team leader and of each team member will be examined in order to facilitate an understanding of the techniques and dynamics required to seamlessly act as a contributing member of the HRO team. This C/TRM course is designed to prepare students to build high-performance teams in critical sectors such as flight, maintenance, safety, and quality. Concepts of team building and technology management under normal, as well as emergency conditions are discussed. Case studies are used to analyze team performance in a variety of high-consequence sectors.

This project is designed for students to work in 4-5-person teams for over eight weeks (an half of an academic semester). Students must review the basic theory of C/TRM and aviation accidents/incidents that were attributed to poor CRM skills in the areas of crew coordination, communication, collaborative decision-making, situation awareness, and so on.

1.3 General and Specific Objectives

General Objectives:

This project contributes to achieving the following expectations of a student's knowledge, value, and skills when the course is completed.

1. To provide students of aviation with a basic understanding of C/TRM, its background, evolution, theories/principles, and of how the principles may be applied to the many aspects of aviation operations.
2. To prepare students to successfully function as a (flight) crew member in aviation operations.
3. To provide an opportunity to develop students' critical thinking, communication, and teamwork skills.

Specific Objectives:

This project is intended for the following learning outcomes:

1. The students will demonstrate the knowledge, skills, and abilities required of an aviation professional in at least two of the following areas:

- CRM background knowledge (CRM definition, five generations of CRM, goals of CRM, theoretical background: social loafing, management decision styles, intra-cockpit authority gradient, basic behavior dimensions)
 - Leadership (types of leaders, leadership/followership, leadership vs. management)
 - Communication (communication theory and model, type of communication, functions of aviation communication, communication and aviation safety)
 - Decision Making (decision making process and models, limits in decision making, Skill-Knowledge-Rule Model of behavior, decision making in cockpit)
 - Assertiveness and Team Performance (assertiveness vs. aggressiveness, general principles for an assertive statement, assertiveness as a multidimensional skill, team-performance related assertiveness)
 - Conflict Resolution (conflict defined, sources of conflict, how to manage conflict)
 - Advanced Cockpit (basics of automation, stages and levels of automation, pros and cons of automation, automation in aviation, automation management, automation and crew coordination)
 - Cross-cultural Perspective (culture defined characteristics, Hofstede's approach to cultural differences and its application to aviation)
2. Students will demonstrate the ability to (a) work effectively on multi-disciplinary & diverse teams, (b) communicate effectively, using both written and oral communication skills, and (c) apply pertinent knowledge in identifying and solving problems.
 3. Students will practice the team-building skills that apply interpersonal communication skills and decision making skills to resolve conflicts, manage challenges, and build high-performing teams.
 4. Students will practice critical thinking and analytical skills to solve problems.
 5. Students will practice oral, written, and communication skills to plan, execute, and present team projects.
 6. Students will explore contemporary issues (e.g., airline merging)

1.4 Suggestions for Development of the Activity

This activity is one of the two 8-week team projects required in the course. For at least one group project, we recommend that students are randomly assigned into groups as opposed to allowing students to self choose groups among their friends. After the initial forming of the team, it is helpful to specifically ask students to exchange their contact information and select a team lead. It is suggested to set up online groups for students to collaborate in a virtual space, which houses project related documents and logs activities.

It is recommended to have students participate in some class group exercises in their project groups to facilitate team building. It is highly recommended to allocate some time (10 minutes) during several regular classes for students to work in team and obtain a project status update, especially if the class meets only once a week and/or if the students' flight training schedules make it difficult to coordinate physical meetings outside the classroom.

In addition to distributing clearly written requirements (including project deliverables and deadlines), it is important to use a couple of midpoint milestones to check on student

performance and status of the project, for example, requiring students to submit a draft script and revise the draft based on instructor's feedback.

Nowadays, students have more access regarding media software and hardware than ever. However, it is recommended for the instructor to provide at least one set of hardware (e.g., video camera, tripod), software support (e.g., video/audio editing software, media lab), and a facility (e.g., flight simulators, airport facilities) for students' access.

It is critical for students to reflect on their team work by conducting a self-evaluation on individual and team performance. This should be integrated into the final grading of this project.

In addition to the class presentation, it is recommended to showcase and recognize students' work through other venues, e.g., online or public student work display case.

Part 2: Activity

This CRM Video Storytelling Project asks students to work in a team (4-5 people per team) to create (write and produce) a video story. The story should demonstrate lacking and ill practices of CRM knowledge and skills, or positive skills used to create a successful scenario in aviation (e.g., flight training, commercial aviation, airport management). It is the instructor's discretion as to how the team members of the groups are chosen. By the end of Week 1, each team must elect a team lead who delegates responsibilities and roles for the project (e.g., writer, director, cameraman, actors, producers, etc.).

The activity is composed of two parts:

Part 1: Create a Video Story of CRM in Aviation

1. Each team creates a 5-8 minute long video clip of its story. This story must be originally created by the team to educate pilot and/or aviation management students on good practices of CRM in aviation. Accidents and incidents can be used as a reference to inspire ideas. However, this project is not to re-create any previous CRM accidents/incidents.
2. The video story needs to be self-contained. It can address two or more aspects of CRM specified in the Federal Aviation Administration's Advisory Circular 120-51:

Communication and Decision Making

- Assertiveness
- Communications
- Decision making
- Conflict resolution

Team Building and Maintenance Skills

- Leadership
- Team management

Workload Management and Situational Awareness

- Mission planning
- Stress management
- Workload distribution

3. During Week 4, each team needs to submit a video story script and may need to revise the script based on the instructor's comments.
4. By the end of Week 8, the video story needs to be submitted to the instructor on a CD/DVD-ROM in one of the following acceptable formats: .wmv (Windows Media Audio/Video) or .mov (QuickTime Movie).
5. Students are encouraged to be creative and make the CRM story informative, engaging, and unforgettable.
6. Video, audio, and texts in the deliverable should be legible to support optimal viewing.

Part 2: Group Presentation

1. In Week 8, each team will present its video story to the class.
2. During the presentation following the video, each team will discuss the CRM problems (or invite audience to identify CRM problems) and explain what CRM practices were performed, and what practices should have been performed. This presentation also should describe how each team worked together in order to complete this project (i.e., good and bad CRM practiced).
3. The presentation must include the use of PowerPoint or similar software and additional multimedia visual aids. The presentation itself will last no more than 17 minutes in length, including the actual video story (each group has additional 3 minutes to set up prior to the presentation).
4. All references to others' work, including web pages, must be appropriately cited. If a team copies text as well as figures and tables from other sources (e.g., books, journals, websites, etc.) and does not appropriately cite it, it will be treated as an instance of plagiarism.

Evaluation:

The group project will be evaluated based on three deliverables: (1) the video story, (2) an in-classroom presentation, and (3) team member evaluation.

- The video story is worth of 125 points (among which, the script and its revision count 20 points)
- The presentation is worth of 50 points
- The team member evaluation is worth of 25 points (in most cases, every member in the team will get the same grade, unless for a student whom was consistently rated as a low contributor by his/her teammates.)

Sample Grading Criteria:

Video Story Content

_____ (Max 50) **Content Scope:**

- Provides enough information to peak interest from audience. At the end of the presentation, the audience should be able to understand the story and CRM problems.
- Without an introduction to the story, the video story is complete, understandable and logical. It clearly demonstrates more than two aspects of CRM problems.
- Illustrates well researched and realistic (of course certain exaggeration is allowed) scenarios.

- Summarizes how CRM issues in the story connect with related CRM theory and principles, and best practices.

____ (Max 30) **Performance:**

- This project is not an opportunity for stardom. The emphasis is on the content and not the actor(s). A sound script followed by a simple performance is what instructors think is most important. As the saying goes “Give me the steak, not the sizzle.”
- Genuine and accurate interpretation and transformation of the scripts.

____ (Max 25) **Overall Quality of Production:**

- Make sure the video, audio, and texts are legible to support optimal viewing.

____ (Max 20) **Scripts:**

- The first draft of script meets the requirements and contains a good amount of details.
- Revise the draft by address instructors’ comments in a timely fashion.

Presentation Evaluation

(Note to students: Participation in your team’s presentation and attendance at the other teams’ presentations are required. Individuals who are absent without a *formally documented* excuse will receive a zero for the presentation)

General

____ (Max 5) **Time length** – 17 minutes this is presentation time, question and answer time is additional. Each group has 3 additional minutes to set up prior to the presentation.

____ (Max 5) **Formal presentation** – well-done, professional, orderly, informative

Presentation Style

____ (Max 5) **Demonstration Style**

- Practiced familiarity with your presentation.
- At least semi formal attire; no jingling, tapping, etc.

____ (Max 5) **Appropriate Introduction to presentation** – Greet and acknowledge those present, introduce your group members, overview of presentation, etc.

Appropriate closing to presentation – Thank those in attendance THE AUDIENCE, follow-up work to be accomplished, how to get more information, *invite questions*, etc.

____ (Max 5) **Professional Quality of Presentation**

- Parts fit together well and in an orderly sequence
- No too many lines on slide (max six)

- Aesthetically appealing
- Graphics such as photos clear and appealing
- Include photos where appropriate
- Accompany items that cannot be seen by all in audience with handouts (or just use the handout with points on PowerPoint)
- No bugs or hiccups
- Screens in sync with what is being said
- Data used as appropriate examples

Content

____ (Max 20) **Content Scope (combination of video story and presentation):**

- Provides enough information to peak interest from audience. At the end of the presentation, the audience should be able to understand your story and CRM problems (e.g., its investigation, causal factors, related human factors issues, safety recommendations).
- Without an introduction to the story, the video story is complete, understandable, and logical. It clearly demonstrates more than two aspects of CRM problems.
- Avoids information overload and getting into too many details.
- Summarizes how team connected CRM issues in your story with related CRM theory and principles, and best practices.

____ (Max 5) **Response to questions from accident investigation, human factors, and other interested prospects (fellow class members) – professional and adequate; demonstrates knowledge**