Apollo 13

Activity: Participants view video/DVD clips of Apollo 13 and discuss problem solving features.

Purpose: Participants identify some of the features of workplace problems that make engaging in problem solving an educational experience for youth and think about how to involve their interns in problem solving.

Materials: Video/DVD clip of Apollo 13
Newsprint pad and markers
Handout, “Guide to Teaching and Learning”

Time: 45 minutes

Introduce Activity

Employers say they need workers who can solve problems, work in groups, think critically, and learn new things. One reason for the increased emphasis on problem solving is that so many routine, repetitive tasks are either handled by computers or performed by low-skill, low-wage workers, often out of the country. As a result, young people need to learn how to cope with the unexpected. This activity uses a film portrayal of a life-or-death situation that really was “rocket science” to stimulate discussion among mentors about problem solving in their workplaces and ways to engage interns in it.

View Film Segments

Use of the scenes from the film requires careful advance preparation. We have identified which segments to include. If you are unsure how best to prepare, we suggest seeking technical assistance. Show film segments.
**Apollo 13 Scene Descriptions**

**Clip A**  ⌛ 1 minute, 10 seconds

Video/DVD: Go to Chapter 19 (“Houston, we have a problem”)

Start 49:45  (Control room personnel) “We have a couple of house-cleaning procedures for you. We’d like you to roll up right to 0-6-0 and know your rates.”

(Kevin Bacon) “Roger that. Rolling right. 0-6-0.”

End 50:55  (Tom Hanks close-up) “Houston, we have a problem.”

**Clip B**  ⌛ 45 seconds

Video/DVD: End of Chapter 19. Go to beginning of Chapter 20 and rewind a few segments.

Start 53:55  (Control room with headphones) “Roger, Odyssey. We copy, you’re venting.”

(Babble and chaos in control room)

(Ed Harris enters) “Quiet down!....”

End 54:40  (Ed Harris) “Let’s work the problem, people! Let’s not make things worse by guessing.”

**Clip C**  ⌛ 1 minute, 58 seconds

Video/DVD: Go to Chapter 28 (“The New Mission”).

Start 67:18  (Ed Harris walks in, waves paper above head) “Okay, people. Let’s listen up! I want you all to forget the flight plan. From this point on we are improvising a new mission.”

(Overhead projector)

(Chalkboard)

End 69:16  (Ed Harris close-up) “Unfortunately, we’re not landing on the moon. I don’t care about what anything was designed to do. I care about what it can do. So let’s get to work. Let’s lay it out.”
Clip D  3 minutes, 37 seconds
*Clip D contains two separate clips viewed continuously
(Segment D1 + Segment D2 viewed right after one another, without a break).

Segment D1:  2 minutes, 4 seconds
Video/DVD: Go to Chapter 35 (“The CO₂ Problem”). Segment D1 is actually all of Chapter 35.
Start
79:55  (“Earth Moon Transit” sign)
(Control room personnel) “Gene, we have a situation brewing with the carbon dioxide.
We have a CO₂ filter problem....”
(Materials dumped on table.)
(Staff problem solve)
End
81:59  (Mumbling as they work) “Let’s get some coffee here.”

Segment D2:  2 minutes, 34 seconds
Video/DVD: Go to Chapter 39 (“With Every Breath. . .”)
Start
88:00  (Newscaster in background) “The deadly CO₂ gas is literally poisoning the astronauts with every
breath...”
(Man walking down hall with gadget the staff made) “Heads up! Heads up!”
(Drops the tube)
(Astronauts try to build it)
(News conference)
(Astronaut rips bag)
(Newscaster speaking) “They still have a long way to come. They are now working on the back-up
facilities, the emergency facilities. And the problem is, if anything more goes wrong, they’re in real
trouble.”
End
90:34  (Zoom out from spaceship)

What Do You Think?  30
Pose the following questions for discussion. Have the recorder summarize responses on newsprint.

1. How would you describe the problem the NASA engineers and scientists are dealing with?

Suggestions to stimulate discussion, if needed:
- Novel; not previously encountered
- Loosely defined. Isn’t laid out
- Requires knowledge from multiple domains, including:
  - Human biological needs and limitations
  - Available materials and supplies
  - Time boundaries
  - Capabilities of spacecraft
  - Calculations despite uncertainties (math, but uncertain values)
- Not likely to be solved by any one person working alone
2. What types of competence did the engineers and scientists bring to solving this problem?

Look at the Guide to Teaching and Learning if that helps.

Label newsprint (either two columns on one sheet or on two separate sheets):

Technical Competence    Personal and Social Competence

Place suggestions under one of these headings to illustrate the distinction.

Suggestions to stimulate discussion, if needed:

- Teamwork: interactive process, dependent on working together, more effective than individuals working alone
- Adaptive: competence enables them to deal effectively with new situations
- Judgment: more than rote learning, decisions based on incomplete knowledge
- Breadth: able to use knowledge and skills from different areas

3. How is the problem portrayed in the film different from and how is it similar to the kinds of problems encountered in your workplace?

If you are preparing youth for participation in a high-performance workplace, they need to be able to deal with novel, unstructured problems that require teamwork to solve.

4. Can you learn to do this sort of thing in school? What are the strengths and limitations of school learning as preparation for problem solving? List on newsprint.

What are the strengths and limitations of work-based learning as preparation for problem solving? List on newsprint.

5. What workplace experiences can you design for youth to help develop these competencies and to meet both the employer's and the school's goals? List experiences on newsprint beside competencies, but in different color.

How can you involve a teacher or school adviser in a problem solving activity?

How can you engage interns in deeper (more adaptive, transferrable) learning?

How can you engage youth in learning that sticks?

What are some challenges you experience in trying to achieve this goal?

Alternative Activity

Although we have not tried it because our training was designed for new mentors, one suggestion is to ask experienced mentors about problems that arose in their workplaces and how they involved interns in coping with them. Many of the same questions posed above would be equally appropriate. One advantage of this approach is that most participants' problems will be more realistic than the ones portrayed in the film clip.