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1 What Is Facilitation and Why Use It?

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Facilitation, as the term is used in this book, refers to processes by which one member of a group operates to help the group analyze issues, learn from experience, and work as a team to draw conclusions. In aviation settings, the facilitator is typically an instructor, however facilitation requires the instructor to work in ways quite different from those of traditional instruction. The traditional roles of the aviation instructor have been to convey information, typically to trainees who are less knowledgeable than the instructor, and to evaluate trainee performance. Facilitation, in contrast, focuses on assisting trainees to learn and evaluate through their own inquiry. Facilitation is especially appropriate when trainees already possess substantial expertise.

Facilitation in aviation training began with the early developers of Crew Resource Management (CRM) and Line Oriented Flight Training (LOFT), who recommended that instructors facilitate crew debriefings of LOFT rather than lecture the crew on what they did right or wrong. Over the past twenty years this concept has become widely accepted: unfortunately, until recently detailed materials and methods specific to aviation have not been available to train instructors in the demanding skills of facilitation. Several individuals and organizations have experimented with using facilitation in other aspects of aviation training and operations, however until now little of this work has been published in a widely available form. We intend this book to show the innovative ways facilitation is being used in aviation and to provide a detailed account of methods of facilitation that will enable aviation professionals to apply these methods in their work.

In this chapter, we outline the basic concepts of facilitation and trace its origins from the fields of education and humanistic psychology. We compare the advantages and disadvantages of facilitation with traditional methods of instruction and discuss the circumstances in which each is best used, and we recommend an approach to training facilitators.

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Chapter 2 describes a research study of facilitation in Line Oriented Flight Training (LOFT) debriefings, and chapter 3 gives detailed guidance for using facilitation techniques in LOFT debriefings. Chapter 4 identifies other applications of facilitation in aviation training. The concept of crew-centered – as opposed to instructor-centered – debriefing can be extended beneficially to other aspects of flight operations. Chapters 5, 6, and 7, respectively, discuss debriefing of normal line operations, critical line incidents in which crews have gotten into some sort of trouble, and traumatic line incidents and accidents.

The Concept of Student-Centered Learning

The progressive movement in education advocated a shift in emphasis from the teacher to the student (Elias & Merriam, 1980). John Dewey, the chief advocate of the progressive approach to education, argued in his earliest writings that the role of the teacher is to provide a setting that is conducive to learning (Dewey, 1916; Elias & Merriam, 1980). According to Dewey, learning is something students do for themselves, so once the teacher has provided the conditions that stimulate learning, the rest lies with the learner. In later writings Dewey described teachers as leaders of group activities, who must survey the needs and capacities of individual learners and create the conditions that meet these needs (1938). Dewey also suggested that teachers should share insights that come from their own experiences without imposing their own views on the learners.

Although Dewey was primarily concerned with education of children, his concept is even more applicable to adult learning. Seaman and Fellenz (1989, p. 5) state: ‘Much of the research in teaching adults indicates that active participation by the learner and meaningfulness of content are two constant factors influencing the effectiveness of the teaching/learning process’. Zemke and Zemke (1981), reviewing studies of what adults like and dislike in the classroom and in meetings, concluded that adults dislike long lectures, that they learn best from discussions with their peers, and that their self-esteem is on the line because they tend to take things personally. Zemke and Zemke also concluded that it is critical to articulate and clarify all expectations up front and that new knowledge must be integrated with old through active participation.

Brookfield (1986) traces the idea that educators should function as facilitators of learning, rather than disseminators of knowledge, to the field of humanistic psychology, especially the work of Carl Rogers. According to Rogers (1969), there are two types of learning, divided along a

continuum of meaning. The first type involves the mind only, as in memorizing facts that have no personal meaning for the individual. Rogers refers to this type of learning as ‘from the neck up’ – it does not engage the whole person because it does not involve feelings or personal meaning. In contrast is experiential learning, which is significant, meaningful and self-initiated. Even when an outside source stimulates learning, the sense of discovery and comprehension comes from within. When we discover something meaningful for ourselves, we incorporate our thoughts and feelings by being personally involved in the learning event. This personal involvement results in learning that is more pervasive; it effects the behavior, attitudes, and possibly even the personality, of the learner.

Based on his own experiences, reports of experiences of other facilitators of learning and relevant research, Rogers (1969, pp. 162-163) enunciated several principles of facilitation of learning. Three of these are particularly relevant to facilitation in the aviation setting:

- ♦ Learning is facilitated when the student participates responsibly in the learning process. Students learn substantially more by participating actively rather than passively.
- ♦ Self-initiated learning that involves the whole person of the learner – feelings as well as intellect – is the most lasting and pervasive. This ‘gut-level’ type of learning arises from activities such as developing one’s own ideas and learning difficult skills.
- ♦ Independence, creativity, and self-reliance are all facilitated when self-criticism and self-evaluation are primary and evaluation by others secondary. It is through the evaluation of our own behaviors that we learn from our mistakes and our successes so we can become self-reliant.

Closely related to Rogers’ ideas is the concept of active learning. Bonwell and Eison (1991, p. 2) list the general characteristics of active learning:

- ♦ Students are involved in more than listening.
- ♦ Less emphasis is placed on transmitting information and more on developing students’ skills.
- ♦ Students are involved in higher-order thinking (analysis, synthesis, evaluation).
- ♦ Students are engaged in activities (e.g., reading, discussing, writing).
- ♦ Greater emphasis is placed on students’ exploration of their own attitudes and values.

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The objective is to increase learning by elevating the level of student engagement with the material to be learned. Active learning promotes increased student involvement in the learning process and it supports instructional strategies such as discussion-leading and skillful questioning techniques to engage the learners in personal exploration of the subject matter. The active learning approach seeks to dispel the ‘Container-Dispenser Model’ of instruction in which knowledge is a substance, the source of power; instructors are containers, filled with content, material and facts; and students are the vessels, wanting to be filled up (Pollio, 1987).

The concept of student-centered learning is quite consistent with modern research in cognitive psychology. Active participation requires students to process information more deeply than does merely listening passively (Slamecka & Graf, 1978). Deeper processing elaborates information in long-term memory structures in a way that enables better retrieval when the information is needed (Baddeley, 1990). Perhaps most important, the student-centered approach allows the learner to incorporate new information into the established framework of the learner’s existing memory structures, which facilitates retention of the information and application to situations that may occur long after the initial learning (Anderson, 1990).

The objective of most aviation training goes beyond having the trainee simply acquire information. Typically it is crucial that the trainee incorporate that information and apply it in operations with a high level of skill; thus mastery of the information and its implications is required. In his *Taxonomy of Educational Objectives*, B. S. Bloom (1956) argued that there are six levels of mastery, arranged hierarchically by the level of mental complexity involved (see also Downing, 1995). The six levels, from least to most demanding, are knowledge, comprehension, application, analysis, synthesis, and evaluation. (Note that in the terminology of cognitive psychology what Bloom called knowledge would be termed ‘information’.) Most aviation training requires all six levels of mastery. For example, in recurrent LOFT, crews are assumed to already know and comprehend the basic principles of CRM; the LOFT simulation provides an opportunity to apply those principles. The debriefing following the LOFT should provide crews the opportunity to achieve the highest levels of mastery: analysis, synthesis, and evaluation. Crews analyze what happened in their LOFT exercise and explore the relationships among events, crew actions, and outcome. From this analysis crews can synthesize their own ideas of how to deal with situations in line operations, and they can learn to evaluate their own performance meaningfully. Facilitation helps crews achieve these higher levels of mastery.

The Role of the Facilitator

The previous section presented evidence that the student-centered approach offers advantages for aviation training; a later section of this chapter examines when to use the student-centered approach and when to use more traditional instruction methods. Taking a student-centered approach does not eliminate the need for an instructor, rather it shifts the instructor's role from dispensing information and judging student performance to facilitating student learning and self-evaluation. How does one facilitate another person's learning? To answer that question, we start by examining the origin of facilitation techniques.

Carl Rogers (1969) developed the humanist concept of the facilitator as a catalyst, one who uses skilled questioning techniques to help clients draw their own conclusions from their personal experiences and create their own prescription for change. Rogers often worked in self-help and group therapy settings: In these settings, according to Rogers, the facilitator plays a key role in establishing the initial mood or climate that will shape how the group will function. The facilitator helps elicit and clarify the purposes of the individual members and the group itself. Overall, the facilitator is a flexible resource to be used by the group, a counselor or advisor to the group.

Although Rogers worked in the field of therapy, his ideas transferred to facilitation of a relatively 'healthy' population in the business and management arena. The term 'facilitator' was first widely used in Quality Circles in the 1970s. Consultants developed techniques to help business organizations analyze and solve problems. Calling themselves facilitators, these consultants expressed the notion that their job was not to solve the organizations' problems themselves but to facilitate groups within the organizations who were addressing the problems. These business facilitators, who typically lacked the specific subject matter expertise of the group members, focused on the processes by which the group worked together. Their objectives were to help the group clarify its goals and remain focused on those goals, to enable all of the knowledge and skills of the individual group members to be brought to bear on the issue, and to prevent any individual from dominating the discussion or cutting off relevant ideas.

To accomplish these objectives, Robson and Beary (1995) recommended that facilitators use certain tools, especially:

- ♦ *Developing empathy.* Facilitators must be able to see things through the eyes of the client or customer in order to develop a trusting relationship and to work effectively with that person. Facilitators can

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use specific techniques to build rapport and demonstrate empathy. These techniques include leaning forward while the other person is talking, active listening, and mirroring (echoing the physical posture of the other person).

- ♦ *Listening carefully.* Facilitators must hear what is really said, and avoid ‘selective perception’, hearing just what they want or expect to be said. Facilitators can demonstrate they understand what others are saying by reflecting back in their own words their understanding of what the other person seems to be saying.
- ♦ *Eliciting information.* Techniques include asking open questions that cannot be answered with a simple ‘yes’ or ‘no’ and using non-verbal communication (e.g., nodding, leaning forward, and smiling encouragingly while the other person is speaking). Eliciting information also requires facilitators to restrict the amount of talking they do themselves, so that the majority of the discussion is contributed by other group members.
- ♦ *Positive confrontation.* The facilitator must call attention to muddled, distorted, or inappropriate thinking in a way that enables the group to confront the problems. This must be done in a way that does not provoke defensiveness or loss of ownership by group members, and this requires great skill and tact. Positive confrontation is best accomplished by giving feedback that is descriptive but not judgmental. To avoid eliciting defensiveness, the facilitator may find it useful to preface this feedback with statements such as ‘I may be wrong but it sounds as if it might be useful to consider other interpretations’. If individuals persist in arguing that their perspective is the only correct one, the facilitator can point out that regardless of which view is factually correct, we are all affected by others’ perceptions and thus it is to our advantage to attend to those perceptions.

Although these tools were developed for use in business settings very different from aviation training, they can be applied quite effectively to facilitation in aviation settings. Chapter 3 provides detailed examples of how techniques based on these tools can be used in an aviation setting.

Facilitation in Aviation Training

Crew debriefing following the simulation is a critical part of LOFT. From its early development in the mid-1970s, LOFT philosophy encouraged instructors to act as moderators who helped crews critically analyze and

assess their own performance. Reporting on a NASA/industry workshop of LOFT held in 1979, Lauber and Foushee (1981) wrote:

...the role that the instructor plays during the debriefing session is primarily that of moderator. Because there are no 'right' solutions to many LOFT problems, it is more important for the instructor to guide the debriefing session, so that the full range of potential approaches to the problem is explored, rather than to impose his or her ideas about how the problems should have been handled. Experience has shown that crews frequently debrief themselves. Self-criticism and self-examination are almost always present in these situations and in many cases they are much more effective than instructor criticism...the instructor should do everything possible to foster this sort of self-analysis while at the same time keep it at a constructive level...the instructor should avoid lectures about what is right and what is wrong.

Clearly, by the time of the 1979 workshop the airline industry was envisioning a non-traditional role for instructors leading LOFT debriefings; however the workshop proceedings do not discuss techniques instructors might use when acting as 'moderators'. It is not clear who first introduced the concepts and techniques of facilitation into LOFT debriefing. The UK Royal Air Force was using the term facilitation in training ground and flight instructors in these new concepts in 1984 (N. McCloud, personal communication, January 2000). Delta Airlines was training instructors in facilitation skills in 1989 (Byrnes & Black, 1993). Continental Airlines provided its instructors a guidebook dated 1992 that explicitly described the advantages of learner-centered training and described the kinds of facilitation techniques used in business settings (Continental Airlines, 1992).

Adapting facilitation to debriefing requires some modification of the process because the debriefing differs in several important respects from both business and therapy settings. In most business and therapy settings individuals participate in groups more or less voluntarily. In contrast, airline companies mandate that crews participate in LOFT debriefings. Authority and responsibility for meeting training objectives lie with the instructor, and the crews do not necessarily bring specific ideas of what they want out of the training. In contrast to facilitators in business settings, LOFT instructor/facilitators have deep subject matter expertise; furthermore from their vantage point in back of the simulator cab they observe aspects of technical and CRM performance that the crew might not observe themselves.

These differences, however, do not impose any insurmountable obstacle, and LOFT instructors can readily work within the general

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concepts of facilitation if they are adequately trained to do so. Airline pilots are highly professional; most take pride in their performance, seek out ways to hone it constantly, and enjoy helping other crewmembers to do the same. Thus the crew's motivation is consistent with the objectives of facilitation. Instructors can integrate their own expert observations into the crew's discussion in the debriefing by acting as a jumpseat member of the crew, whose expert observations and knowledge are highly relevant – as are those of all the crewmembers.

Facilitation Versus Traditional Instruction

We do not want to give the impression that traditional instruction should be replaced across the board with facilitation in aviation training. Both facilitation and traditional instruction have advantages and disadvantages. The particular objectives of the training should determine which approach is taken.

Traditional instruction is oriented toward transfer of information from the instructor to students in situations in which the instructor knows substantially more about the subject than do the students. In situations appropriate for facilitation, the emphasis is on applying existing knowledge and gaining insight, although information is often exchanged among the group participants. In these situations group members may have as much or more knowledge and expertise in the domain being discussed as the instructor. Traditional instruction can transfer large amounts of information fairly rapidly, but facilitation is often a fairly slow process.

Because the flow of information in traditional instruction is predominantly from instructor to students, the instructor does most of the talking and keeps any discussion tightly focused on predetermined objectives. In facilitation the facilitator strives to help the group determine its own objectives and encourages other group members to do most of the talking.

Traditional instruction typically requires testing to ascertain whether students have correctly assimilated the information transmitted to them. Facilitation deals with situations in which there is usually no one right answer; in these situations the facilitator is concerned with helping the group perform its own evaluations and reach its own conclusions.

For lecturing, the most intense period for the instructor is preparation – working up detailed information in advance so that it can be delivered effectively. Facilitation generally does not require extensive preparation before each session, but it is intensely demanding on the facilitator to draw out quiet members of the group, stimulate thoughtful analysis, keep track

of the discussion, and help the group keep on track – all without dominating the discussion.

With these differences in mind, it is easy to see that some kinds of training are much better suited to traditional methods. It would be silly to try to use facilitation to teach the use of the flight management system to pilots who have never used the system. Conversely the LOFT debriefing is well suited to facilitation because the crews have substantial experience in flight operations, and they need to use their existing technical and CRM knowledge to analyze what happened in the LOFT simulation, to evaluate what they did well and not so well, and draw conclusions that they can carry back to everyday line operations. Facilitation is also well suited to other aspects of aviation training and operations described in chapters 4 through 7.

What Can Go Wrong?

Most U.S. airlines that we observed in the study described in chapter 2 provide at most very modest training in facilitation for their instructors. This is unfortunate, since facilitation requires skills substantially different from those of traditional instruction. An instructor minimally trained to facilitate LOFT debriefings – perhaps never even having seen a debriefing facilitated effectively – may find that crews do not respond as desired and conclude that facilitation is a poor method. Indeed in this situation the crews learn little.

Like the instructor/facilitator, the crewmembers are expected to operate differently in LOFT debriefing than they have in traditional training. If they have not previously participated in an well-facilitated debriefing, and if the instructor/facilitator does not provide a clear and convincing rationale for the crew-centered approach to debriefing, the crew may not grasp how they should participate.

A less obvious obstacle to facilitation arises because LOFT instructors must wear two hats. In most U.S. airline training programs the visit to the training center for LOFT is combined with recurrent technical training and proficiency checking. During the visit the same instructor may be providing traditional instruction and evaluating the crew's performance on maneuvers on which they will be tested later in the visit. In many cases the crews practice maneuvers ('batting practice') in the simulator between the LOFT and the LOFT debriefing (this problematic intermixing is discussed in chapter 2). Crews may find it hard to fully accept that the instructor's role in the LOFT debriefing is quite different from the rest of the visit, and they may at first be reluctant to expose themselves to the instructor by

discussing problematic aspects of their performance. Furthermore, it is not entirely easy for the instructor to jump back and forth between two roles with such different objectives, and thus the instructor may unintentionally slip back into the more familiar role of lecturing, especially when he or she has noted shortcomings in the crew's performance in the simulator.

Training Instructors to Facilitate

Facilitation requires techniques and skills quite different from those of traditional instruction. Most of the LOFT instructors interviewed in the study in chapter 2 reported they felt inadequately trained in facilitation. An hour or two of training and possession of a casually prepared company booklet on principles of facilitation are far from adequate preparation for becoming a facilitator. Little has been published to guide training of airline facilitators; what is available is often informally prepared and sketchy. We outline here our concept of the basic ingredients that should go into training LOFT instructor/facilitators. This training could also generalize to facilitation of other types of aviation training.

Initial classroom training should introduce instructors to the principles of facilitation and provide specific techniques that can be used. This chapter and chapter 3 give examples of the material that should be covered. Instructor/facilitator trainees should then be given ample opportunity to practice these principles and techniques, using their classmates as mock crews reenacting a simulated flight. Instructors are often quite good at mimicking typical crew behaviors and attitudes in debriefing. Each trainee should have several opportunities to facilitate a mock debriefing and encounter several of the most common problems that sometimes occur in debriefings. Among these problems are crewmembers who are reluctant to speak up, crewmembers that tend to be domineering, crews that fall into arguments, and crews that drift off into minute discussion of purely technical issues.

After each mock debriefing, the crew actors can give the facilitator trainee telling feedback on their experience of his or her efforts. This feedback is especially effective because those giving it are peers of the trainee. The facilitator trainees need specific criteria with which to evaluate their own performance and that of their classmates. We have found that this can be accomplished by giving the trainees the Debriefing Assessment Battery (DAB) described in chapter 2. Trainees report that the DAB helps them identify concrete goals for facilitation.

In order to conduct these mock debriefings realistically, the facilitator and crew actors must have a specific flight scenario in mind. Videos re-

creating line incidents or accident re-creations can provide this background very nicely. After viewing the video re-creating a problematic event, the trainees playing the crew know what behaviors and attitudes to mimic, and the facilitator trainee knows what aspects of performance require examination.

After the classroom training, new facilitators should be assigned to a mentor, an instructor with substantial experience in facilitation and who is recognized to be effective at it. The new facilitator should have a chance to observe the mentor facilitate several debriefings and discuss those debriefings afterward with the mentor. Then the mentor should observe the new facilitator run several actual debriefings and give private feedback afterward.

It is helpful for LOFT instructor/facilitators to meet at least once a year to discuss their experiences in debriefing, to share problems encountered and brainstorm on techniques for getting around those problems. Facilitation techniques should not be considered carved in stone; once the basic principles are understood, facilitators can be quite creative in devising techniques to address the specific needs of the crews with whom they work.

We do understand that in the airline training business time is money, and that the facilitation training outlined here requires more time than most airlines have devoted historically. Nevertheless, few things can have more impact on the efficiency and safety of flight operations than enabling crews to analyze and improve their own performance. That is the goal of facilitation.

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