

# ESSENTIAL TRAINING NEEDS AND RESOURCES FOR SIMULATION OBSERVER/CONTROLLERS

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The highly developed military skills of Subject Matter Experts (SMEs) are necessary for observing and assessing simulation training exercises, but may not be sufficient to ensure that unit mistakes made during exercises can be turned into positive learning experiences. A few resident Observer/Controller (O/C) training programs exist to train SMEs in appropriate skills. However, existing courses are generally site-specific and heavily dependent on “right-seat” O/C experience gained under one-to-one guidance of experienced O/Cs. Other O/C training courses focus primarily on military strategy topics without emphasizing facilitator training. Further, existing resources do *not* address simulation environment needs. Finally, existing O/C training courses may not be designed to prepare enough O/Cs for the increasing number of simulation training exercises at the large number of distributed sites. Consequently, STRICOM tasked CSERIAC to identify essential elements for inclusion in a comprehensive “*Train-the-Trainer*” course for simulation O/Cs working at distributed sites. Special emphasis was placed on identifying existing and needed resources. After conducting an O/C task/skill analysis to guide the investigation, CSERIAC developed the *O/C Task/Skill/Information Resource Matrix* delineating needed expertise and available O/C training resources to construct a comprehensive course. This paper discusses required skills taught in existing courses and makes recommendations regarding the need to extend course coverage to include the following areas: teaching/training, coaching, and group facilitation techniques; conducting or providing input to After Action Reviews (AARs); and providing tailored feedback to different users of exercise evaluation data.

## ABOUT THE AUTHORS

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## BACKGROUND

Simulations have been used in military training for many years, but advanced technology has enabled substantial changes in the uses and scope of simulated training. Simulations are providing increased opportunities for soldiers to learn from realistic practice on essential tasks while cutting cost and reducing risk to human life, equipment, and the environment. Increasingly capable simulators enable more tasks to be trained in the simulator and in distributed training among various physical locations. Likewise, these advances afford new opportunities to more effectively train collective tasks, and develop unit proficiency and readiness skills.

Evaluation of both exercise participant performance and assessment of training exercise outcomes are essential to the training enterprise. Six basic questions are embedded in any evaluation strategy that O/Cs use, and an explicit awareness of the issues represented by these questions, depicted in Figure 1, and explained below should help O/Cs perform needed evaluations more effectively: (1) "**Why** is this training evaluation being conducted?"—defines the purpose of the evaluation (e.g., to provide diagnostic feedback to exercise participants, to provide information to decision makers who are higher in the chain of command), and this purpose determines the needed data and observations. (2) "**Who** will collect needed data and observations?"—describes the specific human and technological resources necessary to gather needed data and observations. (3) "**What** data and observations need to be collected?"—identifies needed data including both process and outcome measures of individual and unit performance; they may also include data and observations concerning group process and teamwork (Bailey, Johnston, Smith-Jentsch, Gonos, & Cannon-Bowers, 1995; Cannon-Bowers & Salas, in press; Druckman & Bjork, 1994). Questions (4), "**When** are needed data and observations to be collected?," and (5), "**Where** are needed data and observations to be collected?"—both influence the

logistics for collecting needed data and observations. (6) "**How** are data and observations be evaluated?"—provides criteria for evaluating data and observations.

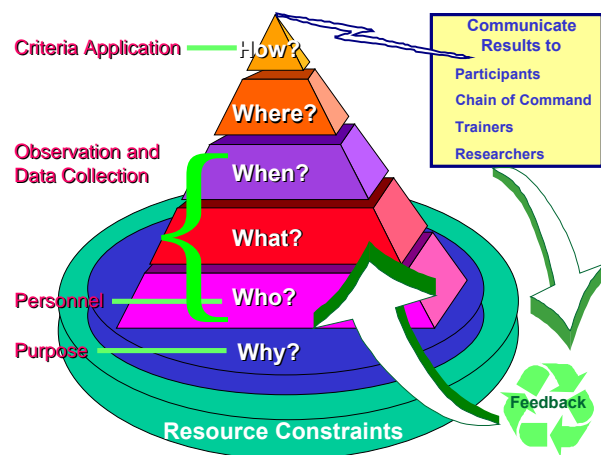


Figure 1. Basic Evaluation Questions for O/Cs  
(based on Hanson et al., 1977 & US Army, 1995b)

Differences between real-world and simulation environments exist that can make the simulation O/Cs' tasks more difficult. For example, technologies differ in fidelity and can result in "unlevel playing fields" (Fowlkes, Lane, Dwyer, Willis, & Oser, 1995, p. 274) for exercise participants. These differences must then be considered during performance measurement and evaluation. Also, technologies differ in reliability, sometimes creating bizarre effects that impact task content and performance. When a simulation node goes down, the performance of others may be affected; when it comes back up participants at that site may need to "catch up" with the current exercise status (Fowlkes et al., 1995). Finally, simulation O/Cs must be simultaneously proficient in observing military tasks and operating simulation technologies.

To use simulation technology effectively, a larger number of skilled O/Cs are needed to conduct the expected increasing number of exercises and to conduct the associated AARs that help units maximize the learning from their training experience. Existing

resident O/C training courses were found to be site-specific and heavily dependent on the experience the O/C trainee gains while riding in the "right-seat" with an experienced O/C. Other O/C training courses focus primarily on military strategy topics, leaving the "How to become a good O/C trainer" type skills for O/Cs to learn on their own. In addition, existing courses do *not* focus specifically on the simulation training environment. Finally, existing O/C training courses may not be designed to prepare enough O/Cs for the increasing number of simulation training exercises at the expanding number of distributed sites.

### TASK/OBJECTIVE

In view of these considerations, the Simulation, Training, and Instrumentation Command (STRICOM) asked the Crew Systems Ergonomic Information Analysis Center (CSERIAC) to help identify existing and needed resources to train SMEs to function as effective O/Cs for simulation training exercises. To accomplish this task, CSERIAC conducted an extensive review and analysis of the literature, then consulted with SMEs across the Army. The goal was to accomplish the following:

- Identify key core tasks that O/Cs need to perform when conducting simulation training exercises and AARs
- Analyze the expertise needed to perform effectively as an O/C for simulation training exercises
- Develop the *O/C Task/Skill Matrix* to guide efforts to locate potentially useful O/C training resources
- Locate existing training programs, background materials, and other resources that could be used to efficiently develop a course to train simulation training O/Cs
- Locate methods and tools for use in observing training exercises, in evaluating both individual and collective performance, and in assessing overall training exercise outcomes.

### FINDINGS

To determine both the needed training and available resources for preparing skilled O/Cs, CSERIAC conducted several searches and analyses. First, we examined the knowledge domains necessary for effective O/Cs. Next we identified the core tasks required of the O/C, and linked these tasks with requisite skills. Finally, we linked the required skills with available course material and background information from the literature. These analyses and findings are presented below.

### O/C Knowledge/Experience Domains

One way to determine O/C training needs is to examine required knowledge/experience domains. The fully competent O/C should possess knowledge and experience in (1) military tasks to be observed and controlled, (2) leadership, management, and supervision, (3) teaching, training, and group facilitation, and (4) effective use of simulation technologies. These domains are depicted in Figure 2, below. The first two items, are developed from years of experience in the military and attending military leadership training. Most SMEs will need training in items 3 and 4. Historically, as indicated in US Army Training Circular 25-20, *A Leader's Guide to After-Action Reviews*, the military has selected experienced SMEs to become O/Cs (US Army, 1993a). With the requisite military, leadership, and management skills, O/C training can be focused on other O/C skill areas. Accordingly, we recommend that a "Train-the-Trainer" course should focus on the last two areas of (3) teaching, training, and group facilitation, and (4) using simulation technologies effectively.



Figure 2. Domains of O/C Expertise.

## O/C Core Tasks

The core tasks of a typical O/C can be clustered into eight major areas. They begin with the planning and preparation needed before the first simulated action; and they end with the assessment of exercise outcomes following the training exercise. These core tasks may be clustered chronologically as follows:

1. Plan AAR
2. Coordinate and prepare facilities, equipment, technologies, and materials
3. Prepare participants to engage in a simulation training exercise
4. Conduct and control the simulation training exercise
5. Prepare for AAR
6. Conduct or participate in AAR
7. Evaluate exercise participants and assess exercise outcomes

8. Prepare AAR take-home package

## Development of O/C Task/Skill Matrix

Based on a search of the literature, regulations, existing courses, O/C checklists, and consultation with training exercise experts, CSERIAC developed the *O/C Task/Skill Matrix* (see Table 1). This matrix links O/C core tasks with the skills needed to perform them. Those skills can be grouped into four categories:

1. Gathering and structuring information
2. Interacting with battle exercise participants (BEPs)
3. Using appropriate teaching/training strategies
4. Evaluating BEPs and assessing exercise outcomes.

Several essential skills are associated with each category.

| O/C TASK/SKILL MATRIX |   | SKILLS                           |                              |                               |   |                               |                   |  |  |                        |                   |  |   |                                     |
|-----------------------|---|----------------------------------|------------------------------|-------------------------------|---|-------------------------------|-------------------|--|--|------------------------|-------------------|--|---|-------------------------------------|
|                       |   | Gather and Structure Information |                              |                               | Interact with Battle Exercise Participants (BEPs) |                               |                   | Use Appropriate Teaching/Training Strategies |  |                        |                   | Evaluate BEPs and Assess Exercise Outcomes |   |                                     |
|                       |   | Use Appropriate Technology       | Make Behavioral Observations | Develop and Use Mental Models | Structure and Use Questions                       | Provide Coaching and Feedback | Facilitate Groups | Choose and Use Appropriate Visual Aids       | Provide Information (Lecture/Brief/Report) | Conduct Demonstrations | Guide Discussions | Employ Essential Background Information    | Evaluate Exercise Participant's Performance | Evaluate Training Exercise Outcomes |
| SEQUENCE              | TASKS   |                                  |                              |                               |   |                               |                   |  |  |                        |                   |  |   |                                     |
| Plan & Prepare        | Plan After Action Review  | X                                |                              | X                             |   |                               |                   |  |  |                        |                   | X  |   |                                     |
|                       | Coordinate and Prepare Facilities, Equipment, Technologies, and Materials | X                                |                              | X                             |   |                               |                   |  |  |                        |                   |  |   |                                     |
|                       | Prepare Participants to Engage in Simulation Training Exercise            |                                  |                              | X                             |   |                               |                   | X  | X  | X                      |                   | X  |   |                                     |
| Execute               | Conduct and Control Simulation Training Exercise                          | X                                | X                            | X                             |   | X                             | X                 |  |  |                        |                   | X  | X   | X                                   |
| Assessment            | Prepare After Action Review   | X                                | X                            | X                             | X   |                               |                   | X  |  |                        |                   | X  | X   | X                                   |
|                       | Conduct, or Participate in After Action Review                            | X                                | X                            | X                             | X   | X                             | X                 | X  | X  | X                      | X                 | X  | X   | X                                   |
|                       | Evaluate Exercise Participants and Assess Exercise Outcomes               | X                                | X                            | X                             |   |                               |                   |  | X  |                        |                   | X  | X   | X                                   |
|                       | Prepare After Action Review Take Home Package                             | X                                | X                            | X                             | X   | X                             |                   | X  | X  |                        |                   | X  | X   | X                                   |

Table 1. O/C Task/Skill Matrix.

## Analysis of O/C Task/Skill Matrix

From this analysis of core tasks and necessary skills, one can next determine whether existing courses are available to train SMEs on requisite skills. Our search found a few existing courses capable of training O/Cs for field exercises; however, these courses appeared incomplete when compared to the requirements shown in the *O/C Task/Skill Matrix*. No course, or combination of courses, appears to address all needed areas. Course materials from resident courses, when available, consist largely of viewgraphs used for the classroom portions of a course. In addition, an important component of these courses is On-the-Job Training (OJT), often conducted in the field while riding in the "right seat" with an experienced O/C. This individualized OJT is extremely labor intensive, often with a one-to-one student-instructor ratio. This restrictive training

process could prevent development of sufficient numbers of O/Cs to take advantage of the emerging opportunities to use simulation-based combat training.

To facilitate new course development, CSERIAC developed the *O/C Task/Skill/ Information Resource Matrix* (see Table 2) depicting needed expertise and available O/C training resources. In this matrix, existing course material and, where missing, potential sources for the information needed to construct a comprehensive training course are identified. Information and skills recommended for O/C training are shown in the far left column. Army courses with written information about recommended information and skills are indicated in the alternating shaded columns in the center. The far right column shows additional sources that could be used to develop training for O/Cs who conduct simulation training exercises. Major gaps in course content are explained in footnotes.

**Table 2. O/C Task/Skill/Information Resource Matrix.**

| CONTENT   | ARMY COURSES |  | OTHER SOURCES  |
|---|--------------|--|--|
|   |              |  | Battle Focused Instructor Training Course (US Army, 1991a, 1991b)  |
|   |              |  | Small Group Instructor Training Course (US Army, 1996c, 1996d)   |
|   |              |  | Battle Command Training Program (BCTP n.d.; US Army, 1993b)  |
|   |              |  | National Training Center (US Army, 1994, 1996a, 1996b, n.d.)   |
|   |              |  | Other Army Courses (US Army, 1995a)  |
| <b>ESSENTIAL BACKGROUND INFORMATION</b>         |              |  |  |
| <b>USE OF SIMULATIONS IN TRAINING/EDUCATION</b> |              |  |  |
| Military uses                                   |              |  | <i>Distributed interactive simulation of combat</i> (US Congress, 1995)  |
| Importance of participant preparation           |              |  | <i>Improved tactical engagement simulation training techniques: Two training programs for the conduct of AARs</i> (Bosley et al., 1979)<br><i>Models of Teaching</i> (Joyce & Weil, 1996)  |
| Importance of AAR                               |              |  | <i>From debrief to AAR</i> (Hoare, 1996)   |
| Challenges of simulation environment            |              |  | <i>Deriving useful lessons from combat simulations</i> (Hiller, 1994)<br><i>Team performance measurement issues in DIS-based training environments</i> (Fowlkes, Lane, Dwyer et al., 1995)<br><i>The challenge of distributed training</i> (Moses, 1995)   |
| <b>GROUP BEHAVIOR</b>                           |              |  | <i>Guidebook for Air Force instructors</i> (US Air Force, 1994)  |
| Group develop stages                            | X            |  |  |
| Content versus process                          | X            |  | <i>Facilitation skills: The ASTD trainer's sourcebook</i> (Kinlaw, 1996)   |
| <b>LEARNING THEORIES</b>                        |              |  | <i>Aviation instructor's handbook</i> (FAA, 1977)  |
| Experiential                                    | X            |  | <i>Reference guide to handbooks and annuals</i> (Pfeiffer, 1994)   |
| Discovery                                       |              |  | <i>Teaching strategies</i> (Orlich et al., 1985; 1990)<br><i>Ways of teaching</i> (Hyman, 1974).   |
| Adult   | X            |  | <i>Basic training for trainers: A handbook for new trainers</i> (Kroehnert, 1995)  |
| Transfer of learning/training                   |              |  | <i>Application of training transfer principles in developing the HITT methodology</i> (Finley, Sanders, & Ryan, 1996)<br><i>High Transfer Training (HITT): Instruction development procedures and implementation strategies</i> (Finley & Sanders, 1994)<br><i>In the mind's eyes</i> (Druckman & Bjork, 1991)<br><i>Learning, remembering, believing</i> (Druckman & Bjork, 1994)<br><i>Training: Research and practice</i> (Patrick, 1992) |

**Table 2. O/C Task/Skill/Information Resource Matrix (continued).**

| CONTENT  | ARMY COURSES  | OTHER SOURCES  |
|--|---|--|
|  | Battle Focused Instructor Training Course (US Army, 1991a, 1991b)<br>Small Group Instructor Training Course (US Army, 1996c, 1996d)<br>Battle Command Training Program (BCTP n.d.; US Army, 1993b)<br>National Training Center (US Army, 1994, 1996a, 1996b, n.d.)<br>Other Army Courses (US Army, 1995a) |  |
| EVALUATION IN TRAINING & MILITARY ENVIRONMENTS |   | <i>How to evaluate unit performance</i> (Scott, 1984)<br><i>Training: Research and practice</i> (Patrick, 1992)  |
| Diagnose/remediate performance problems        |   | <i>How to evaluate unit performance</i> (Scott, 1984)  |
| Assess readiness/training needs <sup>1</sup>   |   |  |
| <b>ESSENTIAL SKILLS</b>                        |   |  |
| <b>GATHER &amp; STRUCTURE INFORMATION</b>      |   |  |
| Make behavioral observations                   | X X   | <i>Tactical engagement simulation AAR Guidebook</i> (Scott, 1983)  |
| Develop & use mental models <sup>2</sup>       |   |  |
| INTERACT WITH BEPs                             |   | <i>OC handbook</i> (Battle Command Training Program, n.d.)<br><i>Training for individual and group effectiveness and resourcefulness: A handbook for trainers</i> (Hanson et al., 1977)<br><i>Training for non-trainers: A practical guide</i> (Figueroa, 1994)  |
| Structure & use questions                      | X X   | <i>Basic training for trainers: A handbook for new trainers</i> (Kroehnert, 1995)<br><i>Faultless facilitation: A resource guide for group and team leaders</i> (Hart, 1992)<br><i>Guidebook for Air Force instructors</i> (US Air Force, 1994)<br><i>How to evaluate unit performance</i> (Scott, 1984)<br><i>Questioning strategies</i> (Gall & Artero-Boname, 1994)   |
| Provide coaching & feedback                    | X X X   | <i>Analysis of feedback in AARs</i> (Downs et al., 1987)<br><i>Coaching for commitment: Managerial strategies for obtaining superior performance</i> (Kinlaw, 1989)<br><i>Faultless facilitation: A resource guide for group and team leaders</i> (Hart, 1992)<br><i>Guidebook for Air Force instructors</i> (US Air Force, 1994)<br><i>High performance OJT</i> (Zsombok, 1995)<br><i>Making meetings work: A guide for leaders and group members</i> (Bradford, 1976)<br><i>OJT: Models, programs, and related issues</i> (Zsombok et al., 1994) |
| Facilitate groups                              | X X   | <i>Facilitation skills: The ASTD trainer's sourcebook</i> (Kinlaw, 1996)   |
| USE RECOGNIZED TEACHING STRATEGIES             |   | <i>Aviation instructor's handbook</i> (FAA, 1977)  |
| Use visual aids                                | X   | <i>AARs: Lessons learned from structured training</i> (1996, Summer)   |
| Lecture/brief                                  | X   | <i>Guidebook for Air Force instructors</i> (US Air Force, 1994)  |
| Demonstrate                                    | X   | <i>Guidebook for Air Force instructors</i> (US Air Force, 1994)  |
| Guide discussions                              |   | <i>Guidebook for Air Force instructors</i> (US Air Force, 1994)  |
| Conduct Evaluations <sup>3</sup>               |   | <i>Deriving useful lessons from combat simulations</i> (Hiller, 1994)<br><i>Teaching Strategies</i> (Orlich et al., 1985)  |

<sup>1</sup> Individual and unit task performance standards are available. Specific standards for assessing training needs and readiness were not found.

<sup>2</sup> Mental models are often used for purposes of diagnosis and troubleshooting. *The tactical engagement simulation After Action Review Guidebook* (Scott, 1983) does not use the language of mental models, but it does include a section on "training diagnosis" (pp. 6-16).

<sup>3</sup> In teaching, evaluation is used for two distinct purposes: (1) to provide feedback to the students through diagnosis of problems and prescription of solutions, and (2) to provide feedback to the teacher for instructional decision-making (Orlich et al, 1985). Clarity of purpose is essential for effective evaluation, because the most useful information for each of these purposes is likely to be different. The written materials from Army courses reviewed for this study did not appear to address this issue in a way that could be readily adapted for purposes of O/C training.

**Table 2. O/C Task/Skill/Information Resource Matrix (continued).**

| CONTENT  | ARMY COURSES  | OTHER SOURCES  |
|--|---|--|
|  | Battle Focused Instructor Training Course (US Army, 1991a, 1991b) |  |
|  | Small Group Instructor Training Course (US Army, 1996c, 1996d)    |  |
|  | Battle Command Training Program (BCTP n.d.; US Army, 1993b)       |  |
|  | National Training Center (US Army, 1994, 1996a, 1996b, n.d.)      |  |
|  | Other Army Courses (US Army, 1995a)                               |  |
| <b>EMPLOY ESSENTIAL BACKGROUND INFORMATION<sup>4</sup></b>   |   |  |
| APPLY RELEVANT ARMY DOCTRINE; TACTICS, TECHNIQUES, & PROCEDURES (TTPs); & RULES OF ENGAGEMENT (ROEs) |   |  |
| ENHANCE LEARNING FROM SIMULATIONS USED IN MILITARY TRAINING  |   |  |
| Use the simulation model of teaching   |   | <i>Models of Teaching</i> (Joyce & Weil, 1996)   |
| EMPLOY BACKGROUND INFORMATION ABOUT GROUP BEHAVIOR   |   |  |
| Group develop stages   | X   |  |
| Group communication: Content vs. process   | X   |  |
| EMPLOY BACKGROUND INFORMATION ABOUT THE LEARNING PROCESS   |   |  |
| Experiential learning  | X   |  |
| Discovery learning   |   |  |
| Adult learning principles  | X   |  |
| Transfer of learning   |   |  |
| APPLY BACKGROUND INFORMATION ABOUT EVALUATION IN SPECIFIC SIMULATION TRAINING EXERCISES              |   |  |
| <b>INTEGRATED APPLICATION OF INFORMATION &amp; SKILLS</b>  |   |  |
| Plan, prepare, conduct AAR   | X X X   | <i>A leader's guide to AARs</i> (US Army, 1993a)<br><i>AAR pocket reference guide</i> (US Army, 1988)<br><i>How to evaluate unit performance</i> (Scott, 1984)<br><i>Improved tactical engagement simulation training techniques: Two training programs for the conduct of AARs</i> (Bosley Onoszko, Sevilla, 1979)<br><i>Tactical engagement simulation AAR Guidebook</i> (Scott, 1983) |
| Use simulation model of teaching   |   | <i>Models of teaching</i> (Joyce & Weil, 1996)   |

**Need for Trained O/Cs to Conduct Simulation Exercises**

Specific findings concerning simulation training exercises include: (1) Simulation-based training exercises can provide systematic guided practice with feedback from periodic AARs to achieve specific training objectives. (2) Skilled O/Cs are needed to conduct and control simulation exercises, and to conduct or contribute to AAR assessments. (3) Skilled O/Cs are needed to help units maximize learning from events experienced in simulation-based exercises. (4) Without structured training and skilled O/Cs, learning will occur more by chance than by plan.

Concerning skilled O/C performance specific findings include: (1) Highly developed military skills are necessary, but not sufficient for effective O/C performance. (2) O/C contributions to the AAR process require analysis and synthesis skills. (3) When

conducting an AAR, O/Cs need the ability to ask open-ended questions and to conduct guided, interactive discussions. (4) Many O/Cs need guidance in using measures of task performance and teamwork. (5) Current O/C training opportunities emphasize doctrine and depend heavily on labor intensive OJT. They do *not* provide instruction concerning the learning process or how to facilitate group process interactions. (6) Most O/Cs lack specific instruction on how to fully use the capabilities of the simulation system being exercised.

**RECOMMENDATIONS**

**Need for Comprehensive Course**

Based on the identified O/C core tasks and essential expertise, and on the search for relevant

<sup>4</sup> The concepts listed in this section are derived primarily from non-military literature. However, the application of these concepts in the military simulation training environment is needed.

training resources, it appears that a comprehensive simulation-oriented O/C Train-the-Trainer course does not exist. Such a comprehensive course could be developed for use with the simulation training program using much existing material and could pay big dividends in preparing O/Cs to make the most of each simulation exercise they conduct.

### Recommended Course Content

Specific recommendations concerning the development of such a course include:

(1) Adapt or develop a training program to meet the most pressing needs for preparing SMEs to serve as effective O/Cs for simulation training exercises. These needs include skills in the following:

- Applying the experiential learning cycle and the discovery learning process
- Using the simulation model of teaching
- Making behavioral observations and linking these observations to training objectives and Army doctrine
- Asking questions to promote thinking, learning, and transfer of learning
- Leading guided, interactive discussions
- Developing a structured AAR approach
- Using the automated authoring tools and data collection processes for the simulation environment being used.

(2) To save development costs and time, use existing Army courses where possible. Where applicable, use other military or commercial course materials. Where necessary, develop new materials, basing them as much as possible on existing materials from the literature and capabilities of common commercially available products.

(3) Use the *O/C Task/Skill/Information Resource Matrix* and available training resources identified in this study to guide development of a training program targeted for simulation O/Cs.

(4) Define the O/C's needs for AAR *process* information and the unit leader's needs for *outcome* information in simulation training exercises to ensure that evaluation strategies used adequately meet both types of needs.

- *Process* measures provide information about the procedures and teamwork used to achieve specific positive results and are useful in diagnosing performance problems.

- *Outcome* measures provide objective information about the results of an exercise.
- Then, train O/Cs to gather and assess the needed data and observations in a systematic manner.

(5) Conduct a *cognitive task analysis* of expert O/Cs to understand the analysis, synthesis, evaluation, and decision-making skills used, and to identify how expert O/Cs differ from novice O/Cs.

- A *cognitive task analysis* is an analytic technique used to determine the *why* and *how* that underlie *what* a subject matter expert does. It is designed to differentiate the expert from the novice
- Conducting a *cognitive task analysis* should provide information about the *mental models* (sets of expectancies about what should occur) that expert O/Cs use when they conduct, control, observe, and evaluate simulation training exercises.

(6) Then, use the information gained from the cognitive task analysis to improve O/C training.

### CONCLUSIONS

Effective use of simulation training devices to conduct meaningful training exercises requires a "total system" perspective. This system will include not only hardware, software, and facilities, but also O/Cs who conduct, control, and evaluate effective training exercises. Development and "calibration" of these human system elements needs the same kinds of care and attention as the more physical and technological elements of the system. A Train-the-Trainer course for simulation O/Cs would help improve this critical human part of the simulation training system. Competencies in the following area are considered essential: knowledge of the tasks to be trained; personnel leadership, management, and supervision skills; teaching, training, and facilitation of unit discussions of what happened, and how to improve performance by sustaining strength and improving weak areas; and finally, effective use of the capabilities to be found in specific simulations. A comprehensive O/C training course which focuses on "train-the-trainer" and simulation technology skills could be built economically by using much existing material. If constructed, it could help meet the growing need for simulator O/Cs who can ensure that the Armed Services receive the maximum training effectiveness from their dollars invested in hardware and

courseware. Skilled and competent O/Cs are the critical element for maximizing training effectiveness from training system investments.

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