Extramural Scientist Administrator (ESA) Training Program Process Evaluation

Final Analysis & Design Report

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EXECUTIVE OVERVIEW

The National Institutes of Health (NIH) Office of External Programs (OEP) contracted with General Dynamics Information Technology (GDIT) to assess the Orientation to NIH Extramural Activities provided to Program Officers (POs) and Science Review Officers (SROs).

As described below, GDIT used a three-phased approach to achieve the goals of the project.

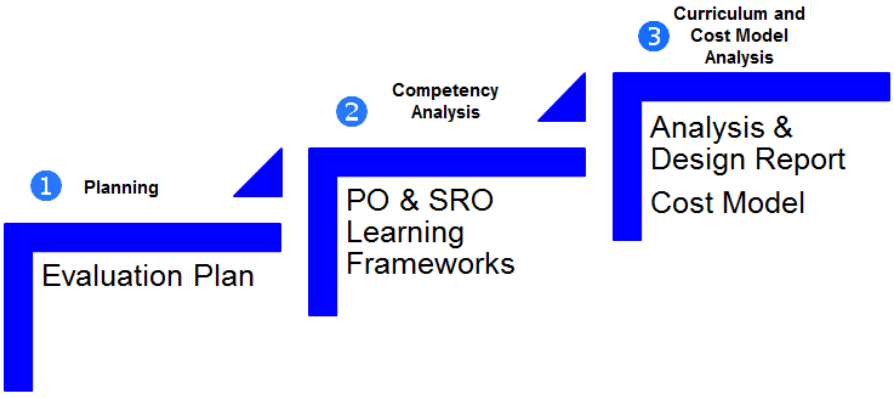


Figure 1: GDIT's Three-Phased Approach

Briefly, this approach included:

- Developing an Evaluation Plan that described the project schedule, tasks and milestones
- Developing Learning Frameworks for POs and SROs that described Areas of Performance and identified desired proficiency and risk levels
- Conducting an analysis of existing orientation programs to identify ways in which they could better meet critical learning needs and mitigate risk to NIH, the Office of Extramural Research OER and OEP
- Evaluating training practices (theories, methods, and tools) against learning industry best practices

GDIT identified four critical areas in which the Orientation to NIH Extramural Activities can be improved significantly:

1. Curriculum management
2. Curriculum structure and content
3. Curriculum evaluation
4. Application of best practices and tools

Our recommendations within each of these areas are summarized below. Additional detail is provided in the body of the report; and, supporting data and additional information is provided in the appendices.

1. Curriculum Management

Modify current curriculum management practices and procedures to support more flexible, responsive and consistent course offerings.

1.1 **Subject Matter Experts** from OEP supported by input from the Integrated Training Council should drive the design of all policy and procedure related courses.

1.2 Augment the OEP training management function (which includes all the people involved in managing, developing and implementing the Orientation to NIH Extramural Activities program) with **additional expertise** in, at a minimum, instructional system design, technology-based learning development, presentation and facilitation skills and Learning Management System (LMS) management. See *Appendix F*: American Society for Training & Development (ASTD) Competency Model for a more complete list of important training and development skill areas.

1.3 Dissolve the current ESTDC and STEP advisory groups and reconstitute a single **OEP Integrated Training Council** comprised of the OEP Training Staff Officer, OEP policy experts, and IC representatives nominated by the ICs with extramural responsibilities. This council should meet regularly to advise the OEP Training Staff Officer.

1.4 The OEP Training Officer and the OEP Integrated Training Council should develop an annual **Training Operations Plan and schedule** that presents the goals, objectives and calendar for the upcoming year's training. This would include both standard OEP courses, such as the orientation program, as courses developed in response to requests from OER.

1.5 Faculty who present material or facilitate groups at the Orientation to NIH Extramural Activities program should pursue **training and certification in presentation and/or facilitation skills**.

1.6 Send an automated message to both new employees and their managers to **inform and direct new extramural employees to the Orientation to NIH Extramural Activities** program on the employees' first day as a PO or SRO.

2. Curriculum Structure and Content

Retain the structure, but modify the content and delivery approaches of the current Orientation to NIH Extramural Activities program to better mitigate risk and provide critical knowledge, skills and attitudes (KSAs).

2.1 Modify the **content and delivery approaches** for Fundamentals of Extramural Activities (FEA) and the Core Curriculum to incorporate new learning goals, revised content, and alternative delivery approaches.

2.1.1 FEA should provide a **motivational, high-level introduction** to OEP, focused on critical knowledge and attitudes needed by new POs, SROs and Grant Managers. Content should be modified to incorporate the recommendations that arose from the ESA Training Program Process Evaluation.

2.1.2 The Core Curriculum should provide a **more detailed view of the critical policies**, **procedures and processes** used to meet OEP's strategic goals. Content should be modified to incorporate the recommendations that arose from the ESA Training Program Process Evaluation.

Note: Once the Core Curriculum is modified, the PO Handbook should be validated against the new content.

2.1.3 The ESA series should provide an **in-depth look at special topics** related to material presented in the Core Curriculum.

2.2 **Learning objectives** should drive the design, development, delivery and evaluation of all OEP courses.

2.3 All OEP courses should be developed using a **standard set of design requirements**.

2.4 OEP should provide options for POs and SROs to obtain **training in non-technical areas** such as negotiation skills, personal resilience, time and workload management, meeting management, team management and decision making.

2.5 OEP should provide at least **basic training in each high-risk area** identified in the Learning Frameworks.

2.6 FEA modules and the Core Curriculum presentations should be deployed **as eLearning modules** incorporating instructional design standards and best practices for evaluation of training effectiveness.

2.7 Develop a **communication plan** to re-launch the revised the Orientation to NIH Extramural Activities program to existing staff.

3. Curriculum Evaluation

Design and implement a training evaluation strategy to measure the efficiency and effectiveness of OEP training programs.

3.1 Develop and implement a **standard online evaluation form** (i.e., Kirkpatrick Level I evaluation) for use in all OEP courses.

3.2 Implement **pre- and post-tests (i.e., to Kirkpatrick Level II evaluation) to assess acquisition of knowledge and skills**.

3.3 **Gather post-training feedback** by meeting annually with the Training Advisory Council to determine the impact of OEP Orientation Training on IC operations. Special attention should be paid to the tasks identified as high risk in the PO and SRO Learning Frameworks.

3.4 Store data from Level I and II evaluations in a **central digital repository** to support analysis and continuous improvement of the OEP Orientation Training program.

3.5 Implement a consistent **closed-loop evaluation process** to support continuous improvement of the Orientation Training program.

4. Application of Best Practices and Tools

Enhance future courses through the **consistent use of established training best practices and current tools**.

4.1 Design and develop the OEP Orientation Program based on **learning industry best practices** such as the Instructional System Design (ISD) model and adult learning theory to achieve and maintain high quality for all OEP training materials.

4.2 Evaluate and implement **online knowledge management** to enhance the Orientation to NIH Extramural Activities program. This includes developing a strategy for more consistent maintenance of the OEP Intranet.

4.3 Make more effective use of the **Saba LMS**.

4.4 Acquire an appropriate eLearning development tool and **incorporate eLearning** within the Orientation to NIH Extramural Activities program.

The remaining sections of this report detail the methodology, findings and detailed recommendations for each of these areas.

CURRICULUM MANAGEMENT

Methodology

Curriculum management refers to the management of the people, processes and tools used to evaluate training needs, develop training materials, schedule courses, enroll students and track course completion.

GDIT evaluated current OEP curriculum management practices through staff interviews and a survey, as well as a review of recorded Orientation to NIH Extramural Activities courses and an analysis of course evaluations.

Findings

- Subject matter expertise is provided by a mix of OEP policy experts and professional staff working in the field. Participation in the design, development and delivery of the Orientation to NIH Extramural Activities program varied widely among OEP policy experts. While some felt they were closely involved in Orientation Training Program, others felt very much out of the loop.

  OEP policy experts who felt involved in the process said things like:

  - I communicate with (the Training Staff Officer) frequently.
  - (The Training Staff Officer) is good about bringing in people from across the agency to get involved.
  - I meet with (the Training Staff Officer) regularly.
  - Before the Core is delivered, I send "calls" to the owners of that subject area to get updates (annually).
  - I have presented in the past, but now I am one of the facilitators.
  - (The Training Staff Officer) often asks for content updates, content changes and areas of emphasis.

  Those who felt out of the loop made very different comments:

  - I have tried to get involved, but haven't gotten through.
  - I'm not involved at all.
  - I requested specific training to be included from (the Training Staff Officer) but didn't get it – nothing has been done yet to include it in the Core.
  - I have asked several times to be the presenter for (my topic) but it hasn't happened.
  - I'm not sure what's covered and who presents (my topic) information now.
  - Very likely, whoever presented wouldn't know the latest information or resources.
  - There is no process in place for me to give the most recent information to (the Training Staff Officer) to revise the Core Curriculum.
  - Everybody THINKS they know what it takes, but they DON'T know.

  Given that OEP's primary responsibility is the development of policies and procedures that guide extramural research, OEP staff members are the most qualified Subject Matter Experts (SMEs) to provide expertise in their respective areas. Where the interaction between the training function and OEP SMEs is good, there is a free flow of information and a reasonable certainty that the latest information is reflected in the training. However, there are some course content areas

where OEP policy experts are not involved and the content in these areas may not reflect current policy and procedures. This presents a significant potential risk.

- OEP currently lacks the full range of technical and interpersonal competencies required to develop and implement a truly successful orientation training program. As described in *Appendix F: ASTD Competency Model*, successfully managing a training program requires knowledge and expertise in:
    - Performance improvement
    - Instructional design
    - Training delivery
    - Learning technologies
    - Evaluating training impact
    - Managing learning programs
    - Integrated talent management
    - Coaching
    - Knowledge management
    - Change management

  This skill gap has wide-ranging impacts including:

    - Courses do not meet instructional design best practices
    - Courses made available online do not use appropriate learning technologies
    - The LMS is not providing the level of support of which it is capable
    - The quality of training delivery varies widely
    - Effectiveness of training is not adequately evaluated

- Oversight for OEP training activities is currently provided by two advisory councils – STEP and ESTDC – that have specific and very different responsibilities. There is no single advisory council with a comprehensive view of OEP training priorities and resources. This has a negative impact on the planning process and budget allocation.

  The Extramural Staff Training and Development Committee (ESTDC) is composed of senior extramural program officials representing each IC with extramural responsibilities. Its role is to develop and monitor the implementation of the extramural training program. The primary function of the committee is to provide input on developing training events or training policies. Members of the ESTDC are responsible for identifying newly hired Health Scientist Administrators (HSAs) and orienting them to training opportunities offered by NIH, OER, OEP and their ICs. In addition, in some ICs the ESTDC representative is responsible for tracking staff participation in the Orientation to NIH Extramural Activities program. The ESTDC also nominates presenters for the ESA Seminar Series.

  STEP is a program managed by a volunteer committee of experienced NIH staff that design, develop and offer an annual series of training activities for NIH extramural staff. In addition to providing training activities for NIH staff, the STEP program also provides professional development opportunities for STEP committee members.

  While each of these committees fills a valuable function, this comes at a cost. OEP is responsible for providing training in areas beyond the Orientation to NIH Extramural Activities program. The Orientation to NIH Extramural Activities program, additional OEP training activities and the

STEP program are all funded by OEP. Having two committees responsible for separate training programs means that there is no single group that can consider all the training needs of extramural staff, weigh OEP priorities and allocate OEP resources to meet those needs. This has made it difficult for OEP to address training priorities through appropriate resource allocation.

- There is no annual training operations plan. As a result, there is no formal procedure for gathering input for the coming year's training. Since OEP policy and procedures are subject to frequent change, gathering input on required content changes in a timely manner is essential to keeping course content current. Delivery of content that is not current presents a significant risk to training effectiveness and expected job performance.

- The Core Curriculum is delivered by a wide range of faculty. Faculty members both present lectures and facilitate scenario-based problem solving sessions. There is a wide range in presentation and facilitation skills; this has a significant impact on the quality of the courses.

- Seventy-four percent of respondents to the survey found it "Somewhat easy", "Somewhat difficult" or "Very difficult" to find out what orientation training they needed to take when they started as a member of the Extramural Research staff. As one respondent commented, "I do not recall receiving any formal information or instructions regarding training. I heard about the training through a coworker who had taken it."

Recommendations

Modify current curriculum management practices and procedures to support more flexible, responsive, consistent and effective course offerings.

1.1 **Subject Matter Experts** from OEP supported by input from the Integrated Training Council should drive the design of all policy and procedure related courses.

Involving all OEP Subject Matter Experts in course design, especially in developing course objectives, will ensure that courses reflect the most current polies and procedures. This will minimize the risk of passing incorrect information on to course participants and mitigate the risk of participants not following correct policy and procedures.

1.2 Augment the OEP training management function with **additional expertise** in, at a minimum, instructional system design, technology-based learning development, presentation and facilitation skills and LMS management.

Enhancing the OEP training management function with additional expertise will improve the training program so that it delivers a better learning experience and more effectively mitigates risk.

1.3 Dissolve the current ESTDC and STEP advisory groups and reconstitute a single **OEP Integrated Training Council** comprised of the OEP Training Staff Officer, OEP policy experts, and IC representatives nominated by the ICs with extramural responsibilities.

To achieve its goals, OEP needs a training curriculum that accurately reflects organizational needs and makes the most efficient use of limited resources.

A single advisory council, that meets regularly, will be able to assess the complete range of OEP training needs, priorities and resources and make better recommendations for financial and

personnel resource allocation. This council-driven identification of high priority areas and appropriate resource allocation will improve the overall OPE training program and reduce risk.

1.4 The OEP Training Manager and the OEP Integrated Training Council should develop an **annual OEP Training Operations Plan and schedule** that presents the goals, objectives and calendar for the upcoming year's training. This would include both standard OEP courses, such as the orientation program, as courses developed in response to requests from OER.

Implementing a training operations plan provides two key benefits.

First, the process of developing the plan provides an opportunity for broad-based input. OEP policy experts, as well as professionals in the field, can provide their perspectives. This is essential: while the policy experts are the best resource for current policy and procedure information, the field staff is in the best position to observe how training is impacting behavior. The blending of these two perspectives is essential for effective planning.

Second, publishing the Training Operations Plan allows a wide audience to see what training offerings will be available and when. This allows for better planning – both for participants and for other faculty and staff who may wish to become involved.

1.5 Faculty presenting material or facilitating groups at The Orientation to NIH Extramural Activities program should pursue **training and certification in presentation and/or facilitation skills**.

Enhancing presenter and facilitator skills will result in higher and more consistent quality. OEP may wish to develop an internal certification program in which presenters and facilitators would practice and demonstrate skills for an OEP review group. This group would also review Level 1 evaluations to assess participant comments on presenter and facilitator performance. Instructors needing additional training in this area could be supported through:

- Existing courses provided through current channels such as:
  - HHS University
  - OPM's HR University
  - OPM Management Development Center
  - The Graduate School (formerly the USDA Grad School)
  - Skillsoft courses
- An internal coaching program that pairs skilled presenters and facilitators with those needing support

1.6 Send an automated message to both new employees and their managers to **inform and direct new extramural employees to the Orientation to NIH Extramural Activities program** on the employees' first day as a PO or SRO.

An automated communication will ensure that new POs, SROs and grant managers are aware of the Orientation to NIH Extramural Activities program; increase the likelihood of attendance; and, improve OEP's ability to positively impact a new employee's on-boarding experience.

CURRICULUM STRUCTURE AND CONTENT

Methodology

Analyzing the Orientation to NIH Extramural Activities program structure and content was a key focus of this project. GDIT used three activities to support this analysis. These included:

- Developing Learning Frameworks for the PO and SRO positions
- Analyzing the existing Fundamentals of Extramural Activities (FEA) and Core Curriculum courses
- Defining requirements for modifications to the existing FEA course and the Core Curriculum[1]

Development of Learning Frameworks for POs and SROs

The purpose of a Learning Framework is to identify the major Areas of Performance (AoPs) and supporting behaviors required to perform a job. The Learning Frameworks developed for POs and SROs identify AoPs and document:

- Responsibility for training (OEP or IC)
- Associated knowledge, skills, and/or attitudes for each behavior
- Proficiency levels for entry (before training) and end-state (after training) for each behavior
- Risk level (Low, Medium, or High) for each behavior if it is not performed correctly
- Key points suggested by OEP, Steering Team and Focus Group members

Learning frameworks do not impose a sequence or process. Any single behavior may be performed multiple times throughout the scientific review process. Associated training should ensure that individuals achieve the desired end-state proficiency for the behavior so that no matter when an individual performs that behavior, it is done proficiently.

GDIT used the new Learning Frameworks to analyze OEP's "Orientation to NIH Extramural Activities" training [The Fundamentals of Extramural Activities (FEA) and Core Curriculum] in order to identify:

- Content gaps or duplication
- High-risk content areas that may require further attention
- Low-risk content that may not need to be included in formal training

SRO Learning Framework Methodology

GDIT used the seven technical competencies identified by the SRO Technical Competency (STC) subcommittee as the basis for generating an initial SRO Learning Framework. GDIT presented these seven technical competencies and associated behaviors in the context of a Learning Framework to the project Steering Team on April 8, 2013. The Steering Team members modified the high-level framework by altering the high-level AOPs and supporting behaviors. GDIT presented this modified framework to the SRO Focus Group on April 18, 2013. The SRO Focus Group further modified the framework; they added proficiencies and labeled the behaviors as high, medium, or low risk. GDIT presented the revised SRO Learning Framework to the Steering Team on May 22, 2013. The Steering Team validated the changes, and Dr. Sherry Mills identified the behaviors addressed by OEP training.

[1] Note: Evaluating the ESA program was beyond the scope of this project.

PO Learning Framework Methodology

GDIT reviewed the Program Official's Handbook for Grant Administration to generate the initial PO Learning Framework. GDIT presented seven technical competencies and associated behaviors in the context of a Learning Framework to the Steering Team on April 8, 2013. The Steering Team Focus Group members modified the high-level framework by altering the high-level AoPs and supporting behaviors. GDIT presented this modified framework to the PO Focus Group on May 16, 2013. As a result of this meeting, and additional feedback submitted after the meeting, the PO Focus Group further modified the PO Learning Framework to add and modify proficiencies, and to label the behaviors as high, medium, or low risk. GDIT presented the revised PO Learning Framework to the Steering Team on July 1, 2013. The Steering Team validated or modified the changes, and Dr. Sherry Mills identified the behaviors addressed by OEP training.

Analysis of Existing FEA and Core Curriculum

The existing FEA and Core Curriculum courses were analyzed during the Steering Team, Focus Group and Curriculum Workshop meetings and through reviews of recorded courses.

Identification of Requirements for Modifying Existing FEA and Core Curriculum Courses

GDIT conducted two Curriculum Workshops to solicit input from the Steering Team and OEP policy experts, and to identify requirements for modifying the existing FEA and Core Curriculum courses.

Findings

Learning Frameworks

In this section, GDIT will summarize the key findings resulting from developing the Learning Frameworks. These include discussions of:

- High-risk areas for both SROs and POs
- The PO/SRO relationship
- Policy and procedure variations by ICs
- The PO Handbook contents
- Non-technical skills

The complete Learning Frameworks are included in *Appendix A: Learning Frameworks*.

High-Risk Areas

A critical component of the SRO and PO Learning Frameworks is documentation of the risk associated with each behavior. The risk level documented in each Learning Framework indicates a low, medium, or high risk to NIH if a behavior is not performed at the end-state proficiency level. Note that many high-risk areas are not currently addressed in Orientation Training; they are addressed at the IC level.

Table 1 and *Table 2* list the high-risk areas identified in the SRO and PO Learning Frameworks.

Table 1: SRO High-Risk Behaviors (if not performed proficiently)

Framework #	SRO Behavior	Under OEP Responsibility	Comments
2.1	Recognize and handle COI situations given policy and system access	Yes	NA
2.6	Manage Reviewer COI	No	NA
2.7	Recognize and manage program and other NIH staff conflicts	No	NA
3.3	Identify the best reviewers	No	NA
4.3	Properly handle assignment records	Yes	Stress importance and need to adhere to IC policy. Stress need to clarify individual IC's system for records retention.
5.7	Facilitate the review meeting to ensure a fair, informed, and efficient review	Yes	Role of each person and how the SRO conducts the meeting. Everyone has a role to play and has to stay in character. Individual responsibilities.
6.4	Enter human subject and vertebrate codes and release meeting	Yes	Understand implications of codes.
6.5	Prepare clear and accurate Summary Statements within agreed upon timeframes	Yes	How it's put together, timeliness and formatting issues.
7.4	Describe the NIH organizational hierarchy	Yes	Critically important because it impacts efficiency. Not knowing this is a threat to organizational mission.
8.1	Recognize and handle allegations of misconduct	Yes	Emphasize skill in communicating with the reviewer.
8.2	Recognize and handle breach of confidentiality	Yes	NA

Framework #	SRO Behavior	Under OEP Responsibility	Comments
8.3	Recognize and handle appeals	Yes	NA

Table 2: PO High-Risk Behaviors (if not performed proficiently)

Framework #	PO Behavior	Under OEP Responsibility	Comments
1.3	Maintain state-of-the-art knowledge of emerging scientific research and technologies in area of responsibility	No	NA
2.1.1	Stay current on NIH policies and procedures	Yes	Reviewing critical policies and procedures, and identifying resources.
2.3.2	Compare initiative concept to existing programs	No	NA
3.1.3	Clarify IC, NIH and federal policies as needed	Yes	NA
3.4.2	Communicate effectively with irate or despondent applicants	No	NA
3.4.3	Effectively manage personal stress resulting from dealing with irate or despondent applicants	No	NA
4.12	Make funding recommendations (fund/don't fund, funding level)	No	NA
4.14.1	Monitor cooperative agreements	No	Risk level depends on level of involvement.
4.14.2	Monitor progress reports	No	NA
4.15.1	Monitor data and safety for clinical studies	No	NA
4.15.2	Monitor patient recruitment, enrollment, and retention	No	NA

Framework #	PO Behavior	Under OEP Responsibility	Comments
4.15.4	Monitor use of funds	No	NA

As mentioned previously, responsibility for these high risk areas is split between OEP and individual ICs. However, because these all represent significant risk to OEP priorities, GDIT believes they must be addressed, if only at a basic level, in the Orientation to NIH Extramural Activities program.

The PO / SRO Relationship

The project Steering Team clearly communicated the concept that cooperation and teamwork between SROs and POs is essential to achieving OEP and NIH goals. However, SROs and POs in the Steering Team and both Focus Groups agreed that cooperation and teamwork are significant challenges in many ICs. One cause of this was identified as a perception on the part of POs that the SROs do not regard them as true scientists, but more as program administrators. This, in turn, is perceived as a lack of respect, creating frustration and resentment for some POs. Although the troubled relationship between SROs and POs did not surface as a high-risk area in the Learning Frameworks, this is an important risk factor that must be addressed in the Orientation to NIH Extramural Activities program and, potentially, through an organizational development initiative.

Policy and Procedure Variations by ICs

During the PO and SRO Focus Groups participants identified variations in the application of OEP policies across the ICs as a key issue. Both groups felt that there were many situations in which minor variations reflected different operating procedures and were appropriate. However, participants also stated that there were situations where POs and SROs were instructed to follow one procedure in Orientation Training and told to do something differently by their supervisors. Deviation from accepted policy and procedure can create additional risk. In addition, this conflict created a stressful situation for new employees who were unsure how to resolve the conflict.

PO Handbook Contents

To develop the first draft of the AoPs for the PO Learning Framework, GDIT used the content of the current PO Handbook for Grant Administration as the foundation for AoPs and behaviors. When the draft was reviewed by the project Steering Team, they felt that it did not accurately reflect the requirements of the PO position. As a result, they made significant changes to the initial AoPs and behaviors presented in the draft PO Learning Framework. If the PO Handbook presents information that is in conflict with the information presented during Orientation Training, new employees may be confused and this may lead to increased risk of performance errors.

Non-Technical Skills

By focusing on AoPs and subordinate behaviors, the Learning Frameworks largely identify “technical” areas of knowledge and skill, that is, specialized knowledge and skills required to perform the duties specific to both PO and SRO positions.

GDIT also heard from several sources that there were other skills and behaviors that are critical to successful job performance and the avoidance of risk. These are non-technical skills that are required for success in many jobs:

- Managing effective meetings
- Effective work group and team management
- Efficient time/energy management
- Setting effective priorities
- Effective communication skills
- Negotiating skills
- Decision making skills

Given that a key focus of GDIT's analysis was to find potentially high-risk areas, GDIT reviewed the Learning Frameworks for behaviors that were high-risk and required application of these non-technical skills. Our findings are included in the following two tables. Entries in blue indicate areas that are currently OEP responsibilities. Areas not highlighted in blue are IC responsibilities.

Table 3: PO High-Risk Behaviors with Non-Technical Skills

Framework #	PO Behavior	KSA	Skills Required
2.1.1	Stay current on NIH policies and procedures	K,S	Priority setting skills
3.1.3	Clarify IC, NIH and federal policies as needed	K	Effective communication and negotiating skills
3.4.1.1	Communicate effectively with irate or despondent applicants	S	Efficient time/energy management (energy is the real issue) Priority setting skills Effective communication and negotiating skills Decision making skills
3.4.1.2	Effectively manage personal stress resulting from dealing with irate or despondent applicants	S	Efficient time/energy management (energy is the real issue) Priority setting skills Decision making skills

Table 4: SRO High-Risk Behaviors with Non-Technical Skills

Framework #	PO Behavior	KSA	Skills Required
2.1.	Recognize and handle COI situations given policy and system access	K	Effective communication and negotiating skills
2.6.	Manage Reviewer COI	K,S	Meeting discipline Effective work group/team management Efficient time/energy management (energy is the real issue) Effective communication and negotiating skills Decision making skills
2.7.	Recognize and manage program and other NIH staff conflicts	K,S	Effective work group/team management
5.7.	Facilitate the review meeting to ensure a fair, informed, and efficient review	S,A	Meeting discipline Effective work group/team management Efficient time/energy management (energy is the real issue) Priority setting skills Effective communication and negotiating skills Decision making skills
8.1.	Recognize and handle allegations of misconduct	K,A	Effective work group/team management Effective communication and negotiating skills
8.2.	Recognize and handle breach of confidentiality	K,A	Effective work group/team management Effective communication and negotiating skills
8.3.	Recognize and handle appeals	K,A	Effective work group/team management Effective communication and negotiating skills

As with the high-risk behaviors identified previously, GDIT believes these behaviors must be addressed as part of the Orientation to NIH Extramural Activities program. However, these behaviors are outside OEPs training mandate. As a result, GDIT will recommend alternative sources for this training in the Recommendations section.

Existing FEA and Core Curriculum Course Analysis

The following table illustrates the current content of the FEA and Core Curriculum courses.

Figure 2: Existing FEA & Core Curriculum Structure illustrates the basic structure and key delivery characteristics of the Fundamentals of Extramural Activities (FEA) and Core Curriculum programs.

Figure 2: Existing FEA & Core Curriculum Structure

Fundamentals of Extramural Activities (FEA)

FEA is the first learning event for newly hired NIH Extramural employees. It is a series of six narrated PowerPoint presentations. These presentations reside on the NIH Intranet, making them available to employees whenever they are needed – as orientation materials and as on-the-job resources. FEA currently consists of the following modules and topics:

I. NIH Structure, Mission, Budget (22 slides)
   A. NIH structure
   B. Mission
   C. Budget
II. Grant Activities (21 slides)
   A. Grants vs. Contracts
   B. Application number
   C. Type of application
   D. Types of grants
III. Fundamentals of the Grants Process: Team Players (14 slides)
   A. Grantee team and responsibilities
   B. NIH Extramural team
      1. SRO

2. PO
3. Grants staff

IV. Fundamentals of the Grants Process: Scientific Review (29 slides)
   A. CSR
   B. Application review
   C. SRO responsibilities
   D. Application review – who/how
   E. Elements of grant success
   F. Review logistics
   G. Advisory councils
   H. New application timeline

V. Program Staff: Pre-Award and Post-Award (32 slides)
   A. Role of NIH in Surveying and Guiding Science
   B. PO role in science development
      1. Program planning and initiative development
      2. Role at and after review meeting
      3. Role at advisory council meetings
      4. Pre-award grants stewardship
      5. Pre-council preparation
      6. Examination of Summary Statements
      7. Overlap with grants management and resolution
   C. Human subjects
   D. Animal welfare
   E. Sharing data and model organisms
   F. Grants to foreign institutions
   G. Human subjects protection
   H. Humane animal research
   I. PO role in funding decisions
   J. Post award grant stewardship

VI. Grants Management: Pre- and Post-Award (16 slides)
   A. Negotiation and issuance
   B. Grants management issues
   C. Notice of Award (and after)
   D. Overview of NIH grants process
   E. Web based resources

Core Curriculum

The Core Curriculum is a set of five, four-hour instructor-led training (ILT) sessions delivered once a year. The Core Curriculum, as revised for 2013, consists of two components. The first component, knowledge transfer, is accomplished with a speaker delivering a short lecture supported by PowerPoint slides. The second component, application of new knowledge, uses discussions of real-world scenarios facilitated by faculty with field experience.

New employees that join NIH at a time when the live sessions are not offered may access the online PowerPoint presentations with audio voiceover. These new employees miss out on the scenario discussion experience and, therefore, the opportunity to develop critical thinking skills and apply policy knowledge to realistic scenarios.

The current Core Curriculum consists of the following modules and topics:

I. Initiative Development (54 slides)
   A. How to identify gaps within a program
   B. PO role at NIH
   C. Trans-NIH Activities
   D. NIH Databases
   E. Case study
      1. Checking status of current research
   F. Pre-Initiative planning meetings
   G. Case study
      1. Staff interactions (Inter and Intra IC)
   H. Defining FOA requirements
   I. Case study
      1. Selecting grant activities, developing a FOA, Notifying other ICs of initiative planning
   J. Application instructions and review considerations
   K. Case study
      1. Review planning criteria, Inter-institute grant assignment, co-funding & funds-transfer
   L. Measuring the success of a solicitation
   M. Case study
      1. Data required for 5 year evaluation

II. Receipt and Referral (67 slides)
   A. Pre-app discussion of PO with presumptive applicant
   B. Case study
      1. Pre-application staff advice
   C. Advising PIs on writing cover letters
   D. Case study
      1. Questions to inform on SRG assignment
   E. Receipt and referral: acceptability of the application
   F. Receipt and referral: new resubmissions and required attachments
   G. Case study
      1. Scientific overlap case
   H. The assignment process
   I. Changes in assignment
   J. Case study
      1. RFAs with overlapping interests
   K. Analyzing application content for science-responsiveness to the RFA or RFP
   L. Case study
      1. Programmatically orphaned application

III. Scientific Review Group Meeting and Documentation (113 slides)
   A. Administrative analysis of applications (application stuffing)
   B. Case study
      1. Which materials are allowed? (publications, clinical manual, CV, sample class evaluation forms)
   C. Checking page limits and additional materials
   D. Case study

1. Which materials are allowed? (biosketches, suggested reviewers, potential disallowed resubmission)

E. Scientific content analysis
F. Reviewer recruitment
G. Case study
   1. Request to disinvite a reviewer
H. Matching applications/proposals and reviewers
I. Case study
   1. Apparent COI
J. Conflict of interest
K. Case study
   1. Personal bias
L. Coaching for writing review comments
M. Role of PO at Peer Review Meeting
N. Case study
   1. Disruptive PO during review meeting
O. Running the review meeting
P. Handling allegations of research misconduct
Q. Case study
   1. Overly ambitious SBIR reviewer
R. Post-meeting activities
S. Writing summary statements
T. Case study
   1. Sloppy lab work

IV. Pre-council activities, pre-award activities and advising PIs (138 slides)
A. Percentiling and determination of IC paylines
B. Mission statements. Select pay. Program priority setting. Supplements.
C. Case study
   1. Council confuses High Program Priority with decision to fund
D. Unobligated balances. Dual assignment. Co-funding. Council review.
E. Case study
   1. Several true/false questions
F. Contract negotiations and selection
G. Appeals to peer review outcome
H. Case study
   1. Program Staff Receives a Letter of Appeal prior to the Council Meeting
I. Just-In-Time procedures and Pre-Award administrative review
J. Case study
   1. Human subjects concerns
K. Resolution of inclusion issues
L. Case study
   1. Inappropriate assessment of gender or minority representation on application
M. Special council review: >$1,000,000 direct costs
N. Case study
   1. Council disagrees with program recommendation for PI with over $1m in NIH support
O. The method to extend research in time (merit) award (R-37)

P. Foreign grant clearances and tracking system
Q. Case study
    1. Adding human subjects from a foreign site
R. Certificates of confidentiality
S. Positive communications between POs and applicants

V. Post Award Monitoring and Closeout (150 slides)
A. Progress monitoring
B. Case study
    1. Change of scope
C. Cooperative agreement program management
D. Contract program management
E. Case study
    1. Questions arising when administering a contract
F. Inclusion reporting requirements, population tracking systems, reporting foreign collaborations, foreign grant tracking system
G. Case study
    1. Re-budgeting and change of scope
H. Delegations of authority
I. Case study
    1. Transfer of equipment to a new institution
J. Organizational status changes, re-budgeting and requests for prior approval
K. Case study
    1. Post award management/Prior approval career development award
L. Public access compliance
M. Grant closeout and data sharing
N. Case study
    1. Best way to share data after end of award
O. Contract closeout

Standard Course Design Requirements

There is considerable variation in the design and structure of the current orientation curriculum. The design of each presentation seems to depend on the individual presenter. Many presentations are supported by PowerPoint slides that do not adhere to recognized best practices for instructional and visual design. This results in slides that are confusing, hard to read or both.

Learning Objectives

As currently designed, neither the FEA nor Core Curriculum includes learning objectives. While this likely has an impact on course design and participant learning, the most significant impact is that without any definition of desired outcomes ***it is impossible to evaluate the effectiveness of the courses***. Lack of evaluation data makes it difficult to continuously improve the training and to justify funding for new training initiatives.

Learning objectives are statements of what participants will be able to do once the learning experience is completed successfully. They are a key part of most training experiences and are typically developed at the beginning of the course design process. When validated by SMEs and stakeholders, learning objectives perform several critical functions during design, delivery and evaluation.

- During the design phase, learning objectives function as targets helping SMEs and instructional designers develop course materials that deliver the required knowledge, skills and attitudes. SME or designer preferences are less likely to influence what is included in training.
- During delivery, learning objectives help both participants and facilitators. Participants can use learning objectives to preview the content to come. This helps learners form a mental map of the course content, which aids understanding and supports retention. Facilitators use learning objectives to help shape personalized content (e.g., examples) so that it contributes to the course's desired outcomes.
- Learning objectives are critically important to a course evaluation effort. Since the objectives state what participants will be able to do after successfully completing the course, they form the criteria against which learners are evaluated. If learning objectives do not exist, participants cannot be fairly assessed at end of the training. Participant mastery of learning outcomes is a critical success factor for any course. If most of the participants can meet the objectives, then the course has achieved a measure of success. If participants are not measured against objectives, the success (effectiveness) of a course cannot be evaluated for impact on performance.

Required KSAs

During the OEP interviews, GDIT asked what Knowledge, Skills and Attitudes (KSAs) should be included in Orientation Training. Although some responses included KSAs already identified in the Learning Frameworks as behaviors for which OEP is responsible, there were several responses that identified behaviors that were either (a) not listed in the final Learning Frameworks or (b) listed in the final Learning Frameworks but not classified as an OEP responsibility.

The policy experts interviewed by GDIT stated that these behaviors must either be included in training (for the first time) or given more attention if they are already included in the current curriculum. *Table 5* below provides a list of these behaviors.

Table 5: KSAs Identified for Inclusion in Orientation Training, but Either Not in Framework or Not under OEP Responsibility

Identified KSAs	In Framework?	Currently under OEP Responsibility?	Comments
Peer Review			
Explain the Federal Advisory Committee Act (FACA)	No	No	
Understanding the purpose of various computer systems and where to go for detailed training	Maybe PO 1.1	Maybe	PO 1.1: Know the available portfolio analysis techniques, tools, how to access them, and their strengths and limitations
Enter Summary Statements into the system	Maybe SRO 6	No	OEP is not responsible for training the system related to Summary Statements.
Enter scores (system and policy)	Yes	No	
Guide reviewers through scoring	No	No	Although the following two KSAs are in the SRO framework, there is nothing about guiding reviewers. Plus, they are not under OEP responsibility. 6.2. (Enter and) Review and release scores 6.3. Obtain final review comments
Manage lobbyists status	No	No	
Recognize the two policy committees (RPC and PLC)	No	No	

Identified KSAs	In Framework?	Currently under OEP Responsibility?	Comments
Recruit reviewers	Yes	No	All of SRO 3 is about recruiting reviewers. NOTE: SRO "3.3. Identify the best reviewers" also contains a High-Risk ranking.
Human Subjects			
Explain relevant history of human subjects protection	No	Maybe	This may be a part of teaching SRO "6.4 Enter human subject and vertebrate codes and release meeting," but it's not clear.
Recognize the HHS Regulations for the protection of human research subjects (The Common rule)	No	Maybe	This may be a part of teaching SRO "6.4 Enter human subject and vertebrate codes and release meeting," but it's not clear.
Recognize the role of the Office of Human Research Protection (OHRP)	No	Maybe	This may be a part of teaching SRO "6.4 Enter human subject and vertebrate codes and release meeting," but it's not clear.
Apply NIH Human Subjects policies and procedures for both applications and proposals and for monitoring awards	Maybe SRO 6.4	Maybe	SRO 6.4 is about entering human subject and vertebrate codes, but not sure whether it's for applications, proposals, and awards.
Access Human Subjects informational resources	No	Maybe	This may be a part of teaching SRO "6.4 Enter human subject and vertebrate codes and release meeting," but it's not clear.

Identified KSAs	In Framework?	Currently under OEP Responsibility?	Comments
Funding Opportunity Announcements			
Look for administrative requirements in the FOA	No	Maybe	SRO "7.6. Explain the policy development process, budgets/funding decisions, FOA development" include FOA development, but there needs to be more of a focus on it because it's high-level.
Explain application requirements in the FOA	Maybe SRO 7.6	Maybe	SRO 7.6 may include this.
Know when and how to notify an applicant	No	No	
Explain how to write an FOA	No	No	Currently not included in PO framework
Access FOA resources	No	Maybe	Current FOA training may include this, but it's not clear.
Explain the FOA development process and OER's role and expectations	Partially 7.6	Maybe	SRO "7.6. Explain the policy development process, budgets/funding decisions, FOA development" include FOA development, but OER's role and expectations isn't included.
SBIR/STTR			
Explain the programs and what they support	No	No	
Explain reauthorization	No	No	
Explain changes based on the new law	No	No	

Identified KSAs	In Framework?	Currently under OEP Responsibility?	Comments
Certificates of Confidentiality			
Describe Certificate of Confidentiality and explain its purpose	No	Maybe	SRO "8.2 Recognize and handle breach of confidentiality," but it doesn't specifically say Certificate of Confidentiality
Recognize what Certificates of Confidentiality do and don't cover	No	Maybe	SRO "8.2 Recognize and handle breach of confidentiality," but it doesn't specifically say Certificate of Confidentiality
Explain the impact on a review what an application requires a Certificate of Confidentiality	No	Maybe	SRO "8.2 Recognize and handle breach of confidentiality," but it doesn't specifically say Certificate of Confidentiality
Identify your IC liaison	No	No	This isn't happening now, but it could be a takeaway assignment.
Research Training			
Identify your IC Training Officer	No	No	This isn't happening now, but it could be a takeaway assignment.
Scientific Workforce Diversity			
Explain FOA requirements for Diversity Targeted and Diversity Related programs	No	No	SRO "7.6. Explain the policy development process, budgets/funding decisions, FOA development" is high level.
List criteria or data elements to be included in Diversity Targeted announcements (POs)	No	No	

These behaviors should be considered during the revision of the existing orientation program.

Performance Impacts

In the course of their daily work, OEP policy experts gain first-hand experience with the impact of the Orientation to NIH Extramural Activities program on PO and SRO performance. In other words, these experts know what is, or is not, working well. They identified areas in which the Orientation to NIH Extramural Activities program is not providing some of the foundation KSAs required by new employees. Typical OEP policy expert comments included:

- Field perspective people aren't presenting the most accurate information.
- Principal Investigator (PI) response doesn't match requirements. PI will say, "Oh, I didn't read it."
- PO might say, "I only deal with (specific content), so I don't need (specific policy) training." Then, a year later, they work on an FOA that includes areas covered by that policy.
- POs don't know who their Guide Liaison is.
- I get many emails and phone calls about topics already addressed in training.
- I would definitely say it's not working. (Documents) don't reflect any training I would give.
- Requirements for a (document) are often not identified until Peer Review.

It is worth noting that the areas in which there were indicators that important KSAs were not being communicated during training were often the same areas in which the SMEs felt they were not as involved in the training process as they wanted to be. This reinforces our recommendation that all OEP policy experts be involved in the design and delivery of the Orientation to NIH Extramural Activities program.

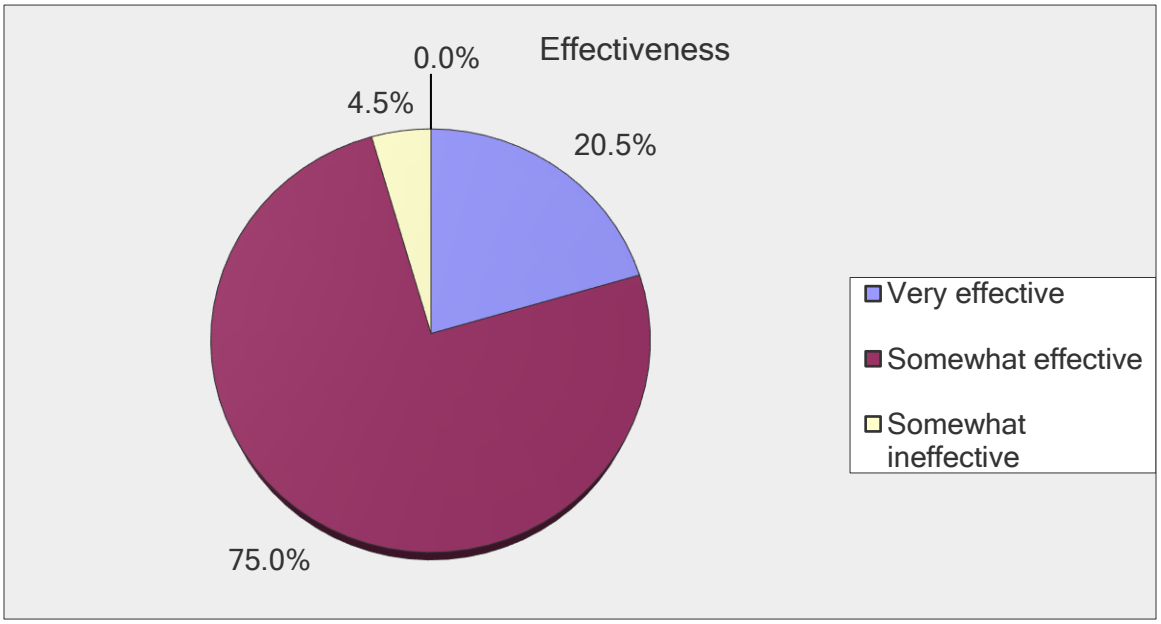
Satisfaction with Current Orientation Program

GDIT created and deployed a survey to gather data from both supervisors and employees regarding their Orientation Training Program experience. To focus responses on recent training data was gathered from those who either had employees who, or who had personally completed either FEA or the Core Curriculum within the past two years.

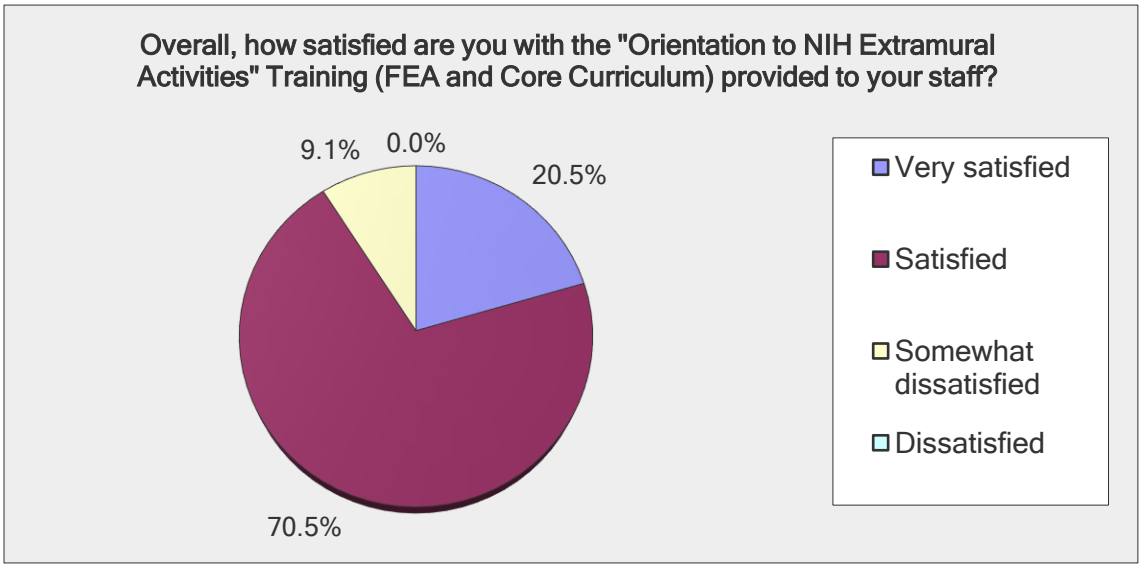
Note: The complete survey, results and discussion can be found in *Appendix B: Survey Results*.

Supervisor Responses

Forty-eight supervisors who responded to the survey had staff who had taken Orientation Training within the past two years. Of the 48 supervisors, twenty percent rated OEP's Orientation Training (Fundamentals of Extramural Activities (FEA) and Core Curriculum) as Very Effective, while 75% rated it as Somewhat Effective. Although not displayed in the graphic, SROs ratings of effectiveness were evenly divided between Very Effective and Somewhat Effective. POs had a more critical view, with a much higher percentage rating training as Somewhat Effective rather than Very Effective.

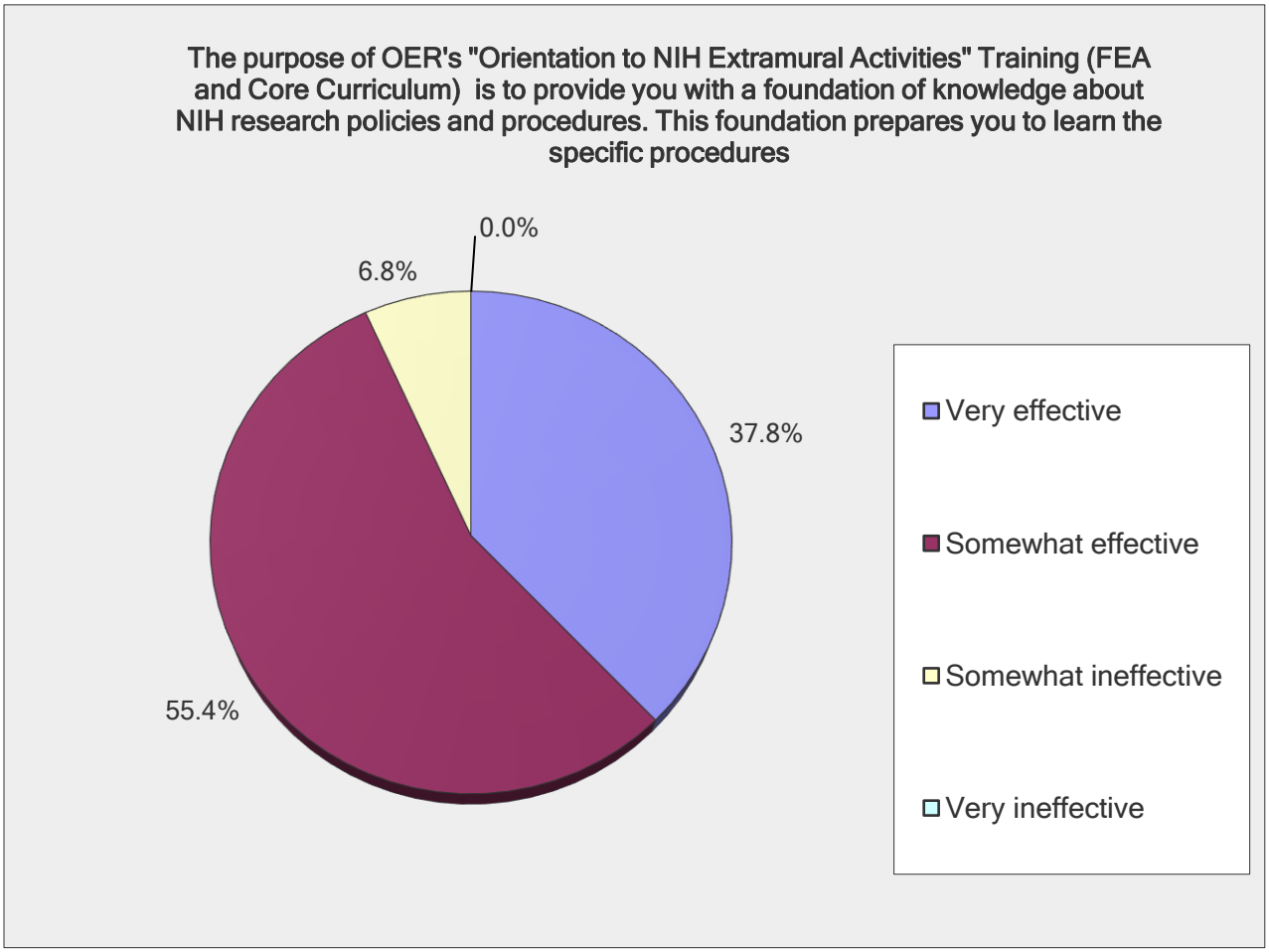


As shown in the chart below, twenty-one percent of supervisors were Very Satisfied with the Orientation training while 71% were Somewhat Satisfied.



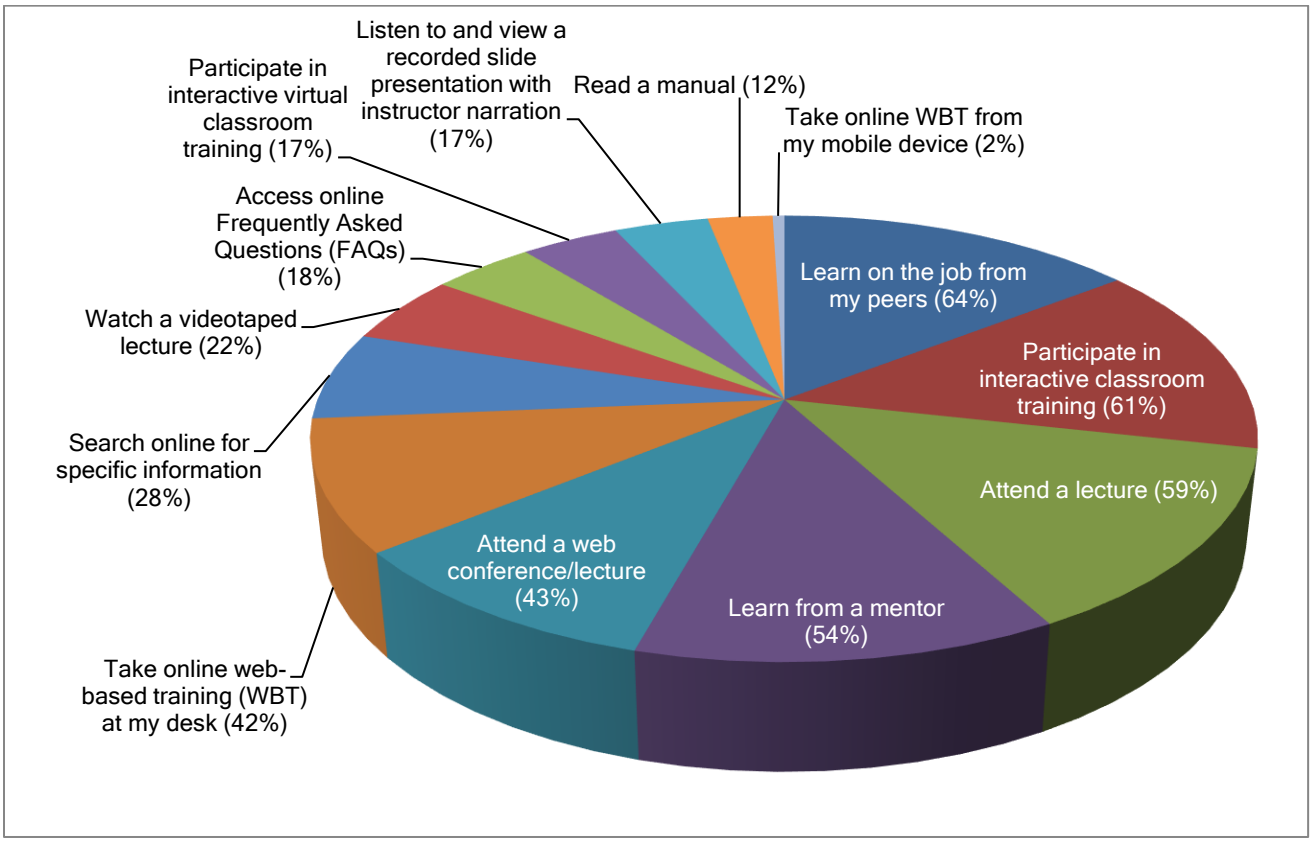
Training Participant Responses

Seventy-four respondents had personally taken Orientation Training within the past two years. Of these, 38% rated it as “Very Effective”, while 55% rated it as “Somewhat Effective”.



Participants ranked training approach effectiveness. The most effective approaches (ranked as either 1 or 2) were: lecture, case studies and group discussions. The least effective approaches (ranked as either 5 or 6) were: recorded slide presentations with instructor narration and video recordings of live lectures.

Survey respondents ranked their preferred methods of learning as follows:



GDIT was surprised to learn that live lecture ranked high on effectiveness, because it is widely accepted as a passive, trainer-focused method. When done well, lecture can indeed be an effective approach to dissemination information; however, few people are skilled lecturers. As Donald Clark, an eLearning and learning technology expert observes, lectures have several significant disadvantages as a learning strategy[2]. These include:

1. **Passive observation:** lectures turn students into passive observers. Research shows that participation increases learning, yet few lecturers do this (Brophy & Good, 1986; Fisher & Berliner, 1985; Greenwood, Delquadri, & Hall, 1984).
2. **Attention fall-off:** our ability to retain information falls off badly after 10-20 minutes. The simple insertion of three 'two-minute pauses' led to a difference of two letter grades in a short and long-term recall test (1987, Winter).

[2] Donald Clark Plan B Blog

3. **Disabilities:** even slight disabilities in listening, language or motor skills make lectures ineffective, as it is difficult to focus, discriminate and note-take quickly enough in a lecture (Hughes & Suritsky, 1994).
4. **One bite at the cherry**: if something is not understood on first exposure there's no opportunity to pause, reflect of get clarification. This 'one bite of the cherry' approach to learning is against all that we know in the psychology of learning.
5. **Cognitive overload**: lecturers load up talks with too much detail leading to cognitive overload. In addition they often go 'off on one', with tangential material.
6. **Poor presentation**: many lecturers have neither the personality nor skills to hold the audience's attention.

One explanation for respondents' high ranking of lecture might be that most employees participating in the Orientation to NIH Extramural Activities program have strong academic backgrounds.

While a skilled facilitator can enable deep learning, a poor facilitator can actually produce negative results by creating anger and resentment in participants.

Ensuring faculty members have the necessary presentation and facilitation skills, in tandem with well-designed, well-documented content, will help ensure that courses achieve their objectives.

It is also important to note that listening to and viewing a recorded slide presentation with narration was only chosen by 17% of respondents. Today, OEP relies heavily on a delivery method that is clearly not preferred by POs and SROs.

Survey results also indicated that use of mobile devices for reviewing online content was not a preferred learning strategy. This likely indicates that large numbers of Gen Y employees have not yet entered the NIH workforce. This is likely due to the high level of education and experience required for the PO and SRO positions. However, Gen Y employees will be entering the NIH workforce in the future. Many of the recommendations in this report address common learning concerns of Gen Y employees. Additional resources on Gen Y employees are found in *Appendix D*: The Gen Y Workforce.

Recommendations

2. Retain the structure, but modify the content and delivery approaches of the current Orientation Training Program to better mitigate risk and provide critical knowledge, skills and attitudes (KSAs).

2.1 Modify the **content and delivery approaches** for Fundamentals of Extramural Activities (FEA) and the Core Curriculum to incorporate new learning goals, revised content and alternative delivery approaches.

The current structure provides a sound foundation for the Orientation to NIH Extramural Activities program; however, there are several areas in which the training can be improved. These improvements are defined for each program below.

2.1.1 FEA should provide a **motivational, high-level introduction** to OEP focused on critical knowledge and attitudes needed by new POs, SROs and Grant Managers. Content should be modified to incorporate the recommendations that arose from the ESA Training Program Process Evaluation.

The six modules of FEA should be the first Orientation Training Program elements taken by a new employee. The goal of this training should be to provide an inspiring overview of NIH and OER. This program should excite and motivate new employees. Content of FEA should include organizational missions and goals – the big picture. The program should also provide an overview of the responsibilities of a federal employee, the key teams and their roles, grant activities and key policies – so that POs and SROs understand how they fit into the big picture. All of this information should be presented at a high level, providing an overview without overwhelming the new employee. Online course evaluation forms and learner assessments should be built into the course.

Suggested Delivery Approach

Because new employees join NIH throughout the year, FEA is a good candidate for Web-based Training (WBT). This approach will allow the course to be taken whenever needed and also can be used to present video, audio, relevant graphics and interactions.

Sample Learning Objectives

Prior to production of FEA online modules, learning objectives must be established so that it is clear what a participant will be able to do upon completion of the program. Sample learning objectives are provided below.

At the completion of the FEA program, participants will be able to:

- Explain and provide examples of what NIH contributes to the United States
- Explain how new employees can contribute to NIH
- Describe how NIH fits into the Federal hierarchy
- Describe the organizational structure of NIH and the responsibilities of each major organizational unit
- Explain the role of POs and SROs in facilitating science
- Describe how policies and procedures ensure fairness
- Provide two examples of how OEP policies protect human subjects

Suggested FEA Modules/Topics

Once the learning objectives of the FEA program are in place, content can be identified (validated). That content can then be "chunked and sequenced" into modules and topics. Sample modules and topics are provided below.

- Module 1: Welcome to NIH
  - What does NIH contribute to the United States?
  - What can I contribute to NIH?
- Module 2: NIH Organizational Overview
  - NIH in the Federal hierarchy
  - The NIH organizational structure
  - NIH funding and budget
- Module 3: Responsibilities of a Federal Employee
  - Facilitating science
  - Stewardship of the public trust
  - Ensuring fairness
  - Using the chain of command
- Module 4: Getting the Work Done
  - The grants process
  - The core team: POs and SROs
  - The grantee team
  - The peripheral team
- Module 5: Grant Activities
  - Grants vs. contracts
  - The application number
  - Type of Application
  - Award Activities
  - Award mechanisms
  - The 3-phase Program
  - Program Project or Center Grant Structure
  - Cooperative Agreements
- Module 6: Introduction to Key Policies
  - Human Subjects
  - Animal Welfare
  - Sharing Data and Model Organisms
  - Grants to foreign institutions
  - Human Subjects protection
  - Humane animal research

2.1.2 The Core Curriculum should provide a **more detailed view of the critical policies, procedures and processes** used to meet OEP's strategic goals. Existing content should be modified to incorporate the recommendations that arose from the ESA Training Program Process Evaluation.

The Core Curriculum should (a) build upon content presented in FEA, providing greater detail and (b) present new concepts and information. The goal is to provide a thorough understanding of the key concepts, policies and procedures required to succeed as a PO or SRO.

One of the key goals of the Core Curriculum is to ensure that both POs and SROs understand and appreciate how each other supports the NIH mission. To this end, all current course content is presented to all participants. Unfortunately, some of the content is so job-specific that workshop participants failed to see how it related to them and paid scant attention. As a result, this approach may have worked against this goal. Those who participated in the Curriculum Workshop conducted by GDIT recommended presenting:

- Cross-functional modules with information relevant to all participants (e.g., high-level information on the roles and responsibilities of POs and SROs)
- Role-specific modules that present information for the PO or the SRO (e.g., For POs: initiative development, receipt and referral or Scientific Review Group meeting and documentation)

Prior to 2013 the Core Curriculum was largely lecture-based. The presentations were recorded and these recordings were available to new employees who did not want to wait for the live courses, or for any employee who wanted to review course content.

In 2013 the format was changed to incorporate shorter lectures followed by scenario-based problem solving sessions. In these sessions participants worked with a knowledgeable facilitator to solve problems by applying the concepts they just learned. This approach has received favorable evaluations and is a sound instructional strategy. One drawback of this approach is that while the lectures were still recorded, they were much shorter and included less information than before. The problem solving sessions, in which much of the learning happened, were not recorded. While GDIT supports the use of scenario-based learning to enhance the learning from the lectures, this approach has the potential to leave new employees waiting for months before taking full advantage of the Core Curriculum.

OEP should consider three critical factors in choosing future delivery options for the Core Curriculum: accessibility, depth of learning and maintenance. For example, the current approach is only offered once a year, so it is relatively inaccessible. The live presentations can be modified relatively easily, so they are quite maintainable. The recorded presentations are accessible, but the depth of learning isn't optimal. Finally, the recorded presentations are not maintainable, so as policy changes the presentations become outdated.

GDIT suggests OEP evaluate two alternative approaches to delivering the Core Curriculum.

Option 1: Continue to use live presentations to deliver basic content, and continue to record the presentations. Modules 1-3 would be offered on different days. The two advanced modules would be offered on the same day. Because these presentations are significantly shorter than those in the previous version of the Core Curriculum, offer the program twice a year. Include the scenario-based problem solving sessions in the program, but also create

Web-based versions of these sessions so individuals can work through the same problems with a simulated facilitator.

This option increases accessibility and offers the opportunity for deeper learning than the current approach. However, it comes with a higher maintenance cost as the Web-based components would have to be updated to reflect new policy.

Option 2: Create short WBT modules delivering the content now presented as lectures in the first three modules. The advanced modules would still be instructor-led. Schedule facilitated problem solving sessions twice a year to provide the opportunity for working with experienced faculty and peers. This approach makes basic information available on an as-needed, just-in-time basis and still allows for the in-depth learning provided by the problem solving sessions.

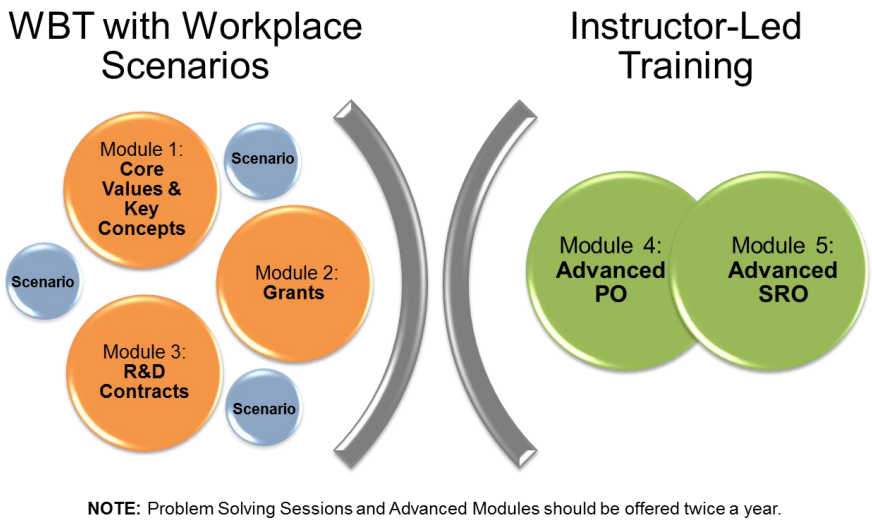


Figure 3: Core Curriculum Delivery Approach Option 2

Sample Learning Objectives

At the completion of the Core Curriculum program, participants will be able to:

- Describe how NIH protects the confidentiality of human subjects
- Explain why the concepts of adult learning are key to both POs and SROs
- Identify the key types of research misconduct
- List the steps in developing a FOA
- Explain how to respond to an allegation of misconduct
- Describe the role of an PO in advising a principle investigator
- Provide three examples of how an R&D contract differs from a grant

Suggested Core Curriculum Modules and Sample Topics

- Module 1: Core Values and Key Concepts

  - Core Values
    - Consistent application of policies in a fair and unbiased manner
    - Knowledge and behavior in support of the NIH mission
    - Proper stewardship of federal funds
    - Confidentiality and transparency (ethics)
    - Team approach to extramural management
    - Commitment to continuing education, maintaining knowledge base, and promoting an environment conducive to learning
    - Adult learning
  - Understanding and Applying Key Concepts
    - Human Subjects Protections
    - Inclusion
    - Animal Welfare
    - ClinicalTrials.gov
    - Evaluation
    - Research Misconduct
    - FACA
    - Certificate of Confidentiality
    - Privacy Act and FOIA
    - Select Agents
    - Compliance and oversight (e.g., Stem Cells, GWAS)
    - Foreign Applications
    - PRA
    - IP
- Module 2: Grants
  - Program Analysis and Development
  - Developing an FOA
  - Submission, Receipt, and Referral
  - Peer Review
  - Handling allegations of misconduct
  - Pre-council Activities, Pre-award Activities and Advising PIs
  - Post Award Monitoring and Closeout
- Module 3: R&D Contracts
  - How R&D contracts differ from grants
- Module 4: Advanced PO (Sample topics only)
  - Initiative Development
  - Receipt and Referral
  - Scientific Review Group Meeting and Documentation
  - Pre-council Activities, Pre-award Activities and Advising PIs
  - Post Award Monitoring and Closeout
- Module 5: Advanced SRO (Sample topics only)
  - Initiative Development
  - Receipt and Referral
  - Scientific Review Group Meeting and Documentation
  - Conflict of Interest
  - Pre-council Activities, Pre-award Activities and Advising PIs

- Post Award Monitoring and Closeout

2.1.3 The ESA seminar series should provide an **in-depth look at special topics** related to material presented in the Core Curriculum.

The ESA Seminars are designed to provide in-depth exploration of a narrowly focused topic. A seminar maybe be based upon one of the topics covered in the Core Curriculum, or may focus on a current issue. While both the FEA and Core Curriculum are relatively stable courses, the ESA Series is designed to be responsive to current needs. As such, the series is different each year.

While evaluating the ESA Seminars was beyond the scope of the GDIT evaluation, it is included in this report because it provides a critical addition to the Orientation to NIH Extramural Activities program.

Delivery Approach

The ESA Seminar series is delivered in an instructor-led environment. Given the volatile nature of the content, GDIT believes this is an appropriate delivery approach.

2.2 **Learning objectives** should drive the design, development, delivery and evaluation of all OEP courses.

Course objectives form the foundation of course design, delivery and evaluation. By developing objectives for all Orientation Training courses:

- Designers will know what content has to be developed
- Presenters will know what needs to be accomplished by the content
- Evaluations will have criteria against which to measure course success

GDIT included sample learning objectives for the revised FEA and Core Curriculum under sections 2.1.1. and 2.1.2.

2.3 All OEP courses should be based on a **standard set of design requirements**.

The technical quality of training materials has an impact on learner perception of the value of the materials. Standard design requirements would define:

- Accepted OEP writing styles and grammar standards
- Facilitator and participant guide formats
- PowerPoint design standards and templates
- eLearning course standards and templates
- Course assessment techniques.

Design standards and templates will help ensure consistently high production quality for all OEP training materials.

2.4 OEP should provide options for POs and SROs to obtain **training in non-technical areas** such as negotiation skills, personal resilience, time and workload management, meeting management, team management and decision making.

Successful performance of the PO and SRO positions requires mastery of a large and complex body of technical information. These technical skills are defined in the Learning Frameworks. However,

although beyond the scope of the OEP training mandate, training in areas other than technical knowledge is required for long-term success.

Both the PO and SRO positions were identified as high-stress positions by the Steering Team and the Focus Groups. Stress comes from a variety of sources including:

- Contentious meetings
- Management of varied and sometimes challenging work groups and teams
- Excessive demands on time and personal energy
- Difficult inter-personal relationships
- The need to negotiate mutually satisfactory agreements
- Making difficult decisions

Courses that address skills to better manage these situations are available from a variety of sources including:

  - HHS University
  - OPM's HR University
  - OPM Management Development Center
  - The Graduate School (formerly the USDA Grad School)
  - Skillsoft courses

It is likely more cost effective to utilize these resources than to develop OEP-specific courses. If generic skills must be practiced in specific ways to adapt to OEP processes, scenario-based problem solving sessions such as those used in the Core Curriculum could be developed.

2.5 OEP should provide at least **basic training in each high-risk area** identified in the Learning Frameworks.

The Learning Frameworks identified high-risk behaviors and whether each of those behaviors was an OEP responsibility. While some high-risk behaviors were not identified as OEP responsibility, GDIT recommends that OEP mitigate the risk of these behaviors by providing basic training in those areas. See Tables 1 and 2 for a list of these high-risk areas.

2.6 FEA modules and the Core Curriculum presentations should be deployed **as eLearning modules** incorporating instructional design standards and best practices for evaluation of training effectiveness.

As new employees join NIH throughout the year it is logistically impossible to provide Orientation Training on an as needed basis. To make this critical information available when new employees need it, eLearning modules should be developed to present the six FEA modules and the first three Core Curriculum modules. As described in Option 2 under section 2.1.2, delivering the content now presented as lectures in the first three modules of the Core Curriculum makes basic information available on an as-needed, just-in-time basis. GDIT recommends continuing to use the workplace scenarios in facilitated problem solving sessions twice a year to provide the opportunity for working with experienced faculty and peers. The remaining two advanced Core Curriculum modules should be delivered as ILT delivered twice yearly.

2.7 Develop a **communication plan** to re-launch the revised Orientation to NIH Extramural Activities program to existing staff.

One communication message should target managers with a list of benefits provided by that the new Orientation Training Program has to newly hired POs and SROs. For example the new program:

- Provides a motivational, high-level introduction to OEP focused on critical knowledge and attitudes
- Provides immediate opportunities to learn fundamental Core Curriculum opportunities
- Provides opportunities to work with experienced faculty and peers in problem-solving sessions that are offered twice a year
- Focuses Core Curriculum advanced content into role-specific (PO or SRO) perspectives
- Engages learners by incorporating graphics, audio, and video into web-based training
- Contains learning objectives so managers and learners know exactly what they will be learning

Another message should be sent to the entire extramural staff announcing the new and improved curriculum that is available to anyone. This should also include benefits of the new program and state that it may be of particular interest to those transitioning between the PO and SRO job functions.

CURRICULUM EVALUATION

Methodology

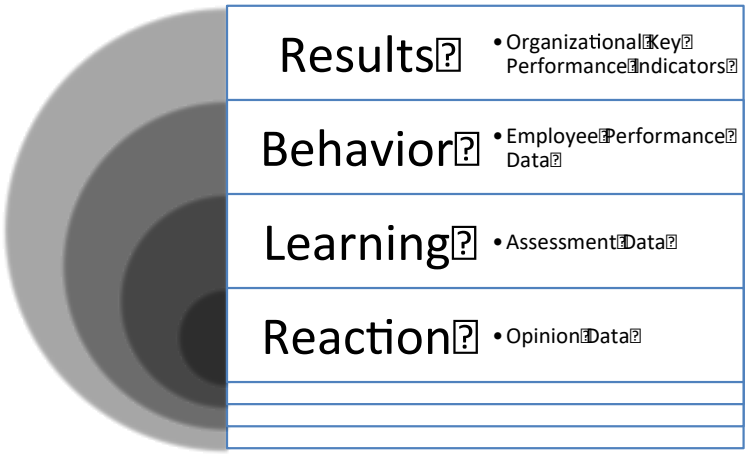
Effective evaluation is the engine that drives continuous improvement of a training program. High-performing organizations evaluate the effectiveness and efficiency of their training programs and link the outcomes of training to desired behavioral results. Effective evaluation is important in any organization, but in an organization where risk mitigation is a priority, it is essential.

GDIT analyzed the current approach to evaluation by reviewing evaluation forms for:

- Core Curriculum Training, 2013
- Core Curriculum Training, 2012
- Core Curriculum Training, 2011
- Core Curriculum Training, 2007
- Genome-Wide Association Studies (GWAS) , January and March, 2008
- ESA Financial Conflict of Interest, 2011
- Planning and Review of R&D Contracts, 2010

Findings

Successful evaluation of a training program results in the continuous improvement of the program. Information is typically gathered at five levels, as defined by the learning industry standard for evaluation of learning programs: The Kirkpatrick Model.



Level 1: Reaction

This level measures how participants reacted to the training. It is a measure of their feelings about the value of the experience and the quality of the facilitator and his/her presentation, relevance of the topic and materials and the venue. This information is important because it indicates how the training was received by the audience. It may also suggest improvements for future deliveries, including identifying important areas or topics that are missing from the training.

Level 2: Learning

Level 2 measures what participants have learned as a result of the training. The starting point for this measurement is the learning objectives created at the beginning of the course design process. Different strategies can be used to measure learning depending on the objectives, and on whether the objectives addressed changes to knowledge, skills, or attitude.
Level 2 evaluation is critical to document how effective the training was in increasing knowledge and skill and changing attitude. This data is essential for developing cost-benefit data for training.

Level 3: Behavior

Level 3 evaluation examines how participants have changed their behavior based on the training they received. Specifically, this looks at if and how trainees apply what they have learned. While Levels 1 and 2 can be assessed in the classroom, Level 3 is usually assessed "on-the-job", and usually a short period of time after the training has concluded. When conducting Level 3 evaluation it is important to remember that behavior can only change if conditions in the workplace support the change. For example, if a new procedure is introduced in training, but a unit manager requires adherence to the old procedure, the fact that the new procedure is not being implemented does not indicate that that the training failed, only that a new approach to change management may be required.

Level 4: Results

Level 4 evaluation looks at the impact of changed behavior on the organization. In most organizations, training is designed and implemented to empower employees to behave in ways that support the organization's mission and goals.

To implement Level 4 evaluation, the organization must be able to collect data on specific behavioral outcomes both before and after training occurs. This can be challenging and Level 4 evaluations are frequently not performed. This is a serious mistake because the true value of training is its ability to help an organization achieve its mission. Level 4 evaluations can provide the most effective support for maintaining and enhancing training.

Note: this brief discussion of the Kirkpatrick Model reflects the way the model was initially developed. Recently there has been pressure to revise the model to fit the current, more complex, training environment. An additional resource describing one perspective on these revisions can be found in *Appendix E*: Updating the Kirkpatrick Model.

GDIT's review found that only Level 1 evaluations have been conducted. In addition, a variety of Level I evaluation forms have been used over the years. Samples of these forms can be found in *Appendix C: Sample OEP Course Evaluation Forms*.

While the Level I evaluation data seem to indicate general satisfaction with training, a more detailed analysis is not possible. Variations in the forms used to collect data make it difficult to analyze evaluation data over time. For example, some forms used numbered scales to collect responses; others used text-based fields.

In addition, there is currently no central repository for evaluation data. As a result, evaluation data is retained on the forms completed by course participants. This makes any effort at analysis difficult and time consuming.

Analysis of evaluation data from OEP courses is complicated by an additional factor. During the Learning Framework analysis meetings with the Steering Team and Focus Groups, we identified end-state proficiencies that defined the skill level that new employees should attain by the end of Orientation Training. However, as the analysis progressed it became clear that OEP is not responsible for training new employees to the end-state proficiencies and that additional training is conducted by individual ICs. As a result, OEP is responsible for providing training only at the knowledge/awareness level. Training in specific performance related skills and behaviors is done by the ICs, and the ICs monitor the success of that training. It is common for no Level 3 data to be sent from an IC to OEP. OEP cannot currently determine whether new hires meet end-state proficiencies because the training happens outside of its influence. This structure severely curtails the effectiveness of OEP's current evaluation approach.

Recommendations

3. Design and implement a training evaluation strategy to measure the efficiency and effectiveness of OEP training programs.

   Developing and implementing consistent evaluation at Kirkpatrick Levels 1-3 will enable OEP to collect data that indicates the effectiveness of existing training and provides input on modifications required to reduce risks.

3.1 Develop and implement a **standard online evaluation form** (i.e., Kirkpatrick Level I evaluation) for use in all OEP courses.

   As mentioned earlier, a variety of evaluations forms have been used by OEP in the past. GDIT recommends developing a standardized form that includes both numeric ratings and free-form participant comments. The evaluation should measure or include:

   - Participant satisfaction with both content
   - Participant ratings for both presenters and facilitators
   - The degree to which stated learning objectives were met
   - Recommendations for course improvement

   These evaluations should be completed by participants at the conclusion of each course (or module if appropriate).

   Level 1 evaluation forms should also be developed for course SMEs and facilitators to be completed at the end of each course (or module if appropriate).

3.2 Implement **pre- and post-tests to provide Level 2 data** to assess acquisition of knowledge and skills.

   Pre- and post-tests will enable OEP to measure what participants have learned as a result of completing a class. When analyzed over time, this data helps identify areas of the course where the content may not be effective.

3.3. **Gather post-training feedback** by meeting annually with the Integrated Training Council to gain their perceptions on the impact of the Orientation to NIH Extramural Activities program on IC operations. Special attention should be paid to the tasks identified as high-risk in the PO and SRO Learning Frameworks.

   Today, OEP is not collecting Level 3 data. Employees participate in the Orientation to NIH Extramural Activities program, and then return to their ICs for additional training. There is no

formal linkage between OEP training and the training delivered by the IC. In addition, OEP does not have access to data about employee performance in the ICs.

Performance data, as measured by level 3 evaluation, is essential to evaluating the effectiveness of the Orientation to NIH Extramural Activities program. GDIT understands that contact with each of the ICs on an annual basis to collect data on employee performance may be logistically and politically unfeasible. However, the Integrated Training Council is ready-made for this type of discussion. Level 3 evaluations could be done with the Council, either through written forms, discussion or a combination of the two. This would allow OEP to gather data on employee performance which would identify areas of the Orientation to NIH Extramural Activities program that should be modified to mitigate risk.

3.4 Store data from Level I and II evaluations in a **central, digital repository** to support analysis and continuous improvement of the Orientation to NIH Extramural Activities program.

Storing data in a central, digital repository would enable rapid analysis and trend identification. This information can then be used both to modify courses and to show the impact the Orientation to NIH Extramural Activities program is having on NIH.

3.5 Implement a consistent closed-loop evaluation process to support continuous improvement of the Orientation Training program.

A closed-loop evaluation process is one in which evaluation data from previous courses is used in the planning process to modify future course designs to address current performance issues. This model is an industry standard, allows for continuous improvement of training and is a proven strategy for reducing risk in the workplace.

APPLICATION OF BEST PRACTICES AND CURRENT TOOLS

Methodology

Opportunities for the application of learning industry best practices and current tools were identified at many points over the course of the project, including Steering Team meetings, Focus Group meetings, Curriculum Workshops, staff interviews and in the staff survey results.

Findings

OEP does not currently implement many of the industry-standard best practices for training design, development, delivery and evaluation. In addition, where current tools are in use, such as the Saba LMS, many of the tools' capabilities are not implemented.

Recommendations

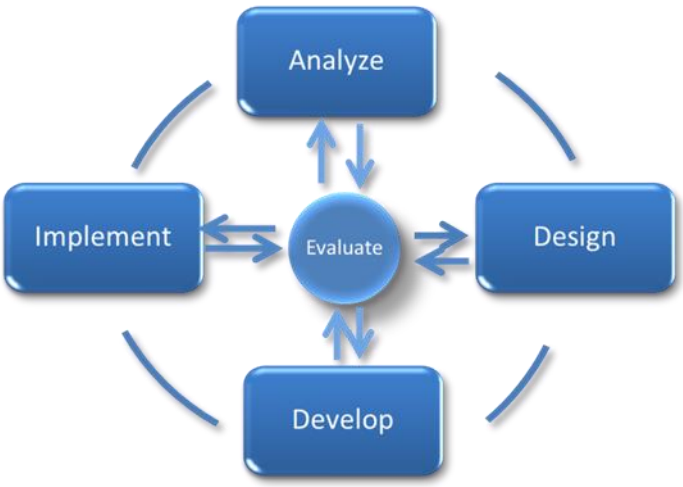
The OEP Training Orientation program can be made significantly better by incorporating the following:

4. Enhance future courses through the **consistent use of established training best practices and current tools**.

4.1 Design and develop the OEP Orientation Program based on **learning industry best practices** such as the Instructional System Design (ISD) model and adult learning theory to achieve and maintain high quality for all OEP training materials.

Instruction System Design

GDIT recommends that qualified learning developers lead the re-design of the FEA and Core Curriculum courses and that they apply the ADDIE model of instructional systems design – the learning industry gold standard.



ADDIE is a systematic process that professional instructional systems designers (ISDs) use when creating learning experiences such as Web-based training (WBT) or instructor-led classroom training (ILT). Each phase of the ADDIE model produces a tangible deliverable (e.g., a Design Plan) that feeds into the next phase. When the ADDIE process is followed, organizations can expect both efficient and effective design, development, and delivery of training. ISDs are educated (most have

master's degrees) to design learning experiences based upon both business needs and job requirements. Because client involvement is a cornerstone of the ADDIE process, OEP policy experts and other stakeholders will influence what knowledge and skills are being taught, what content is included, how training is implemented, and how learners are assessed. In our experience, when learning programs are created by skilled ISDs who follow the ADDIE process, learners are well-prepared to perform job tasks in a way that helps achieve business goals. Further, these learning programs are delivered efficiently to minimize drain on training resources and budget – without sacrificing instructional design quality or negatively impacting the learning experience.

Application of ADDIE to the re-design of the Orientation to NIH Extramural Activities program will help ensure that all learning experiences:

- Help OEP, OER, and NIH reach key business goals
- Are modularized and technology-enabled for flexible delivery
- Focus on critical knowledge, skills and attitudes
- Are weighted toward tasks that are complex (i.e., difficult to learn) and high-risk (i.e., would have serious consequences if performed incorrectly)
- Are consistent with existing and future online resources (knowledge base)
- Engage learners through discovery learning and meaningful application activities (i.e., by minimizing lecture)
- Mimic – to the greatest degree possible – the OEP/OER/NIH work environment (e.g., through realistic examples and scenario-based problem solving activities)
- Result in a consistent learner experience

Adult Learning Theory

Adult learning theory was pioneered by Malcolm Knowles. He identified several characteristics of adult learners. These concepts must form the conceptual foundation of any course intended for adults.[3]

- Adults are *autonomous* and *self-directed.* They need to be free to direct themselves. Their teachers must actively involve adult participants in the learning process and serve as facilitators for them. Specifically, they must get participants' perspectives about what topics to cover and let them work on projects that reflect their interests. They should allow the participants to assume responsibility for presentations and group leadership. They have to be sure to act as facilitators, guiding participants to their own knowledge rather than supplying them with facts. Finally, they must show participants how the class will help them reach their goals (e.g., via a personal goals sheet).
- Adults have accumulated a foundation of *life experiences* and *knowledge* that may include work-related activities, family responsibilities, and previous education. They need to connect learning to this knowledge/experience base. To help them do so, they should draw out participants' experience and knowledge which is relevant to the topic. They must relate theories and concepts to the participants and recognize the value of experience in learning.

[3] Stephen Lieb, Senior Technical Writer and Planner, Arizona Department of Health Services, South Mountain Community College, from VISION, Fall 1991

- Adults are *goal-oriented*. Upon enrolling in a course, they usually know what goal they want to attain. They, therefore, appreciate an educational program that is organized and has clearly defined elements. Instructors must show participants how this class will help them attain their goals. This classification of goals and course objectives must be done early in the course.
- Adults are *relevancy-oriented*. They must see a reason for learning something. Learning has to be applicable to their work or other responsibilities to be of value to them. Therefore, instructors must identify objectives for adult participants before the course begins. This means, also, that theories and concepts must be related to a setting familiar to participants. This need can be fulfilled by letting participants choose projects that reflect their own interests.
- Adults are *practical*, focusing on the aspects of a lesson most useful to them in their work. They may not be interested in knowledge for its own sake. Instructors must tell participants explicitly how the lesson will be useful to them on the job.
- As do all learners, adults need to be shown *respect*. Instructors must acknowledge the wealth of experiences that adult participants bring to the classroom. These adults should be treated as equals in experience and knowledge and allowed to voice their opinions freely in class.

4.2 Evaluate and implement **online knowledge management** to enhance the Orientation to NIH Extramural Activities program. This includes developing a strategy for more consistent maintenance of the OEP Intranet.

A knowledge base (searchable repository of online assets) will provide OEP learners with ready access to content – while in training and on the job. A well-designed knowledge base will reduce the current drain on policy experts to respond to a multitude of individual requests for information.

Currently, OEP manages knowledge via hyperlinks included on the pages of the Extramural Intranet. This information can be difficult to access as there is no standard process for locating hyperlinks and frequent changes to the Intranet have broken many of the hyperlinks. In addition, some of the pages on which support information is housed were designed and written by staff with no training the design and development of web-based resources.

GDIT strongly recommend that OEP improve knowledge management by populating a knowledge base with well-designed and well-written content assets such as:

- Conceptual briefings
- Work flow diagrams
- Policy statements
- Procedural information (job aids):
    - Step/action tables
    - If/then tables
    - Visuals (e.g., process flow diagrams)
- Case studies

The content assets that are housed within the knowledge base should be created using best practices in information design. Assets should be:

- Right-sized – small “nuggets” of information that can be accessed quickly using a sophisticated search engine
- Organized logically – business processes and call flows, for example

- Easily Scanned – headings, sub-headings, bullets, numbers, font attributes
- Visual – Diagrams, tables

Finally, OEP should implement a process for identifying and resolving hyperlink issues on the Intranet.

4.3 Make more effective use of the **Saba LMS.**

OEP currently has access to the NIH Saba Learning Management System. This is a powerful system that offers a wide range of functionality to support training. Currently, only a small portion of this functionality is being used. GDIT recommends that OEP explore and evaluate additional LMS functionality.

4.4 Acquire an appropriate eLearning development tool and **incorporate eLearning** within the Orientation to NIH Extramural Activities program.

An internal capacity to design, develop and deploy Web-Based Training (WBT) would give OEP a powerful new medium for meeting the needs of learners through individual online learning. Where policy experts now must travel to the ICs to provide policy updates and remedial training, an eLearning capacity would allow for short courses to be posted on the LMS and be made available to anyone who needs them. In addition to providing just-in-time training, eLearning modules also ensure that a consistent message is delivered to all learners.

There is a wide range of WBT development software available and OEP should carefully consider its needs in selecting a tool. Tools vary in:

- Cost
- Ability to import PowerPoint slides
- Steepness of the initial learning curve
- Functionality
- Customer support
- The size and responsiveness of the user community
- Access method (via the Web or installed on a PC)
- Acquisition options (purchase or monthly membership)

OEP has a strong need to develop and deploy WBT quickly. At the same time, OEP does not currently have eLearning developers on staff and will need to rely, in part, on policy experts (SMEs) to develop on-demand learning content. This is not an unusual situation. So that policy experts can author (or collaborate with an instructional designer) online courses, GDIT recommends that OEP look for a WBT development tool that:

- Has the ability to import PowerPoint slides, including animation
- Has a modest learning curve
- Provides basic functionality
- Offers strong customer support and an active, responsive user community
- Can be made available to multiple employees within OEP

SUGGESTED ROADMAP

GDIT has recommended a wide range of modifications and enhancements to the OEP Orientation Program. Many of these will also impact other training developed and delivered by OEP. GDIT recognizes that this can seem overwhelming. While OEP leadership best understands organizational priorities, the GDIT team recommends the following roadmap for moving forward on implementation of recommendations provided in this report.

Critical Area	2014 Quarter			
	1	**2**	**3**	**4**

Curriculum Management	• Gain leadership support for migrating from ESTDC and STEP advisory groups to Integrated Training Council.
	• Develop a charter and nomination process for a new Integrated Training Council.
	• Identify resources for additional expertise
	  ○ Instructional System Design
	  ○ Technology-based learning development
	  ○ Presentation and facilitation skills
	  ○ LMS management
		• Implement Integrated Training Council	• Engage new Integrated Training Council in development of the Annual Training Operations Plan.	• Complete 2014 Annual Training Operations Plan
				• Develop and implement automated notification for new employees of OEP orientation training

Curriculum Structure and Content	• Engage a professional instructional systems designer to collaborate	• Design, build, pilot and evaluate new curriculum.	• Design, build, pilot and evaluate new curriculum.	• Design, build, pilot and evaluate new curriculum.

Critical Area	2014 Quarter			
	1	**2**	**3**	**4**

	with policy experts to develop learning objectives.
	• Have policy experts:
	  ○ Evaluate current program content against learning objectives. Add/modify/ delete content, as required.
	  ○ Chunk and sequence content as described in the body of this report.
	  ○ Determine what content will continue to be presented in the classroom and what content will be delivered as WBT.
				• Develop and implement communication plan

Evaluation	• Establish a standard operating procedure for curriculum evaluation, minimally at Levels 1	• Engage a professional instructional systems designer to create pre- and		

Critical Area	2014 Quarter			
	1	**2**	**3**	**4**
	and 2 of the Kirkpatrick model. • Engage a professional instructional systems designer to create a standard online survey to collect participant reaction data.	post-tests based upon final learning objectives.		
Best Practices and Tools	**Classroom training:** • Engage a professional instructional designer to work with the Training Staff Officer to identify and document standards and styles for classroom materials. • Engage a professional instructional designer to create an instructionally-sound PowerPoint template that can be populated by individuals who do not have expertise in training development (i.e., SMEs). **Web-based Training:**	**Classroom training:** • Train SMEs on how to populate the template with content. **Web-based Training:** • Train policy experts (and other SMEs) on how to populate the template. • Provide coaching and feedback.	**Classroom training** • Provide coaching and feedback. **Web-based Training:** • Provide coaching and feedback.	**Classroom training** • Provide coaching and feedback. **Web-based Training:** • Provide coaching and feedback.

Critical Area	2014 Quarter			
	1	**2**	**3**	**4**
	• Select a WBT rapid development tool. • Engage a professional instructional designer to work with the Training Staff Officer to identify and document standards and styles for self-paced online learning materials. • Engage a professional instructional designer to create an instructionally-sound WBT template(s) that can be populated by individuals who do not have expertise in training development (i.e., SMEs). **For the LMS:** • Investigate options to expand the use of SABA functionality. • Locate and engage internal LMS administrator.			

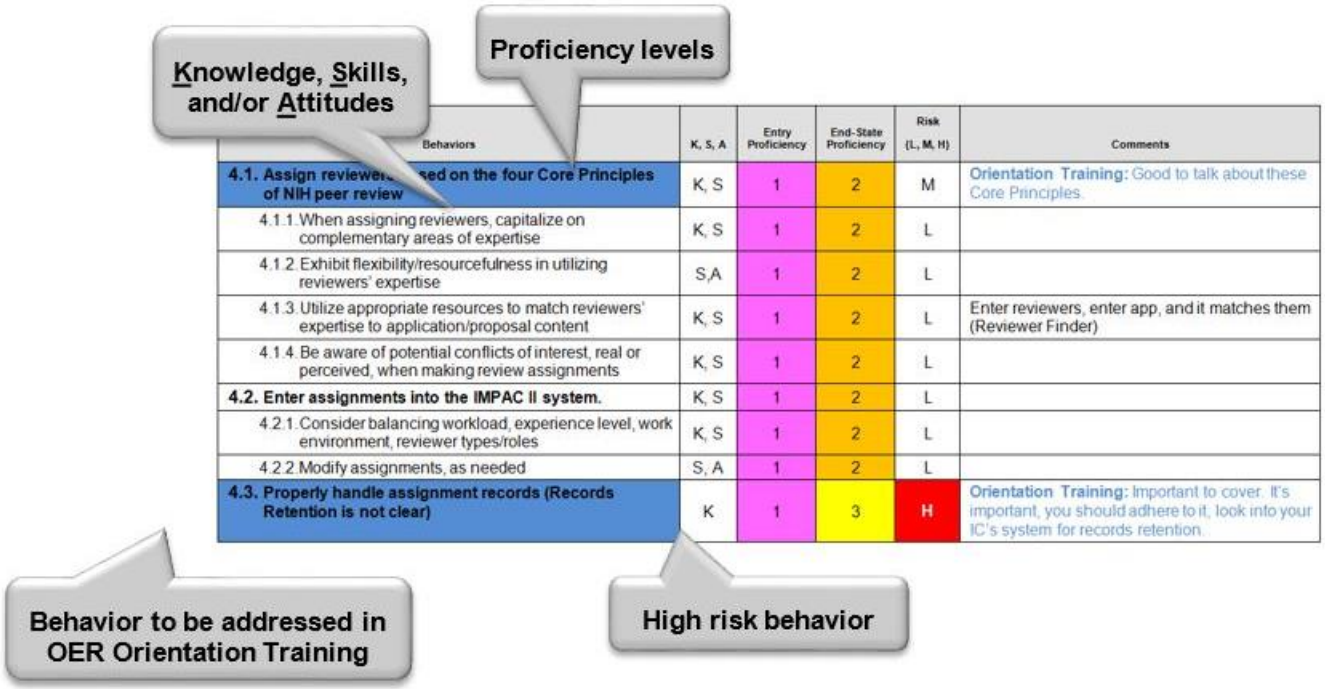
Critical Area	2014 Quarter			
	1	**2**	**3**	**4**
	For the Knowledge Management System: • Look internally for any departments that are successfully managing knowledge. Adopt tools and practices. • If no internal tools and practices are available as models, engage a knowledge base expert to guide OEP decisions on how to manage learning assets.			

APPENDICES

Appendix A: Learning Frameworks

Interpreting the Learning Framework

Error! Reference source not found. illustrates how the learning framework table includes color coding and abbreviations.



Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
4.1. Assign reviewers based on the four Core Principles of NIH peer review	K, S	1	2	M	**Orientation Training:** Good to talk about these Core Principles
4.1.1. When assigning reviewers, capitalize on complementary areas of expertise	K, S	1	2	L	
4.1.2. Exhibit flexibility/resourcefulness in utilizing reviewers' expertise	S,A	1	2	L	
4.1.3. Utilize appropriate resources to match reviewers' expertise to application/proposal content	K, S	1	2	L	Enter reviewers, enter app, and it matches them (Reviewer Finder)
4.1.4. Be aware of potential conflicts of interest, real or perceived, when making review assignments	K, S	1	2	L	
4.2. Enter assignments into the IMPAC II system.	K, S	1	2	L	
4.2.1. Consider balancing workload, experience level, work environment, reviewer types/roles	K, S	1	2	L	
4.2.2. Modify assignments, as needed	S, A	1	2	L	
4.3. Properly handle assignment records (Records Retention is not clear)	K	1	3	H	**Orientation Training:** Important to cover. It's important, you should adhere to it, look into your IC's system for records retention.

Figure 4: Interpreting the Learning Framework

Note the following important aspects of interpreting the learning framework:

- Each AoP and behavior is highlighted in blue if it is OEP's responsibility to address it during Orientation Training.
- Each behavior may require **K**nowledge, **S**kills, **A**ttitudes, or a combination of the three.
- Each behavior has a **L**ow, **M**edium, or **H**igh risk level associated with it. This identifies the risk to OER and NIH should the behavior be performed at a less than acceptable level of proficiency.

- Each behavior has entry (before training) and end-state (after training) proficiency levels. The proficiency levels are described below in *Table 6: Dreyfus & Dreyfus Proficiency Level Descriptions.*

Table 6: Dreyfus & Dreyfus Proficiency Level Descriptions

Proficiency	Description of Behavior at the Proficiency Level[4]
1 Novice	• Rule-based behavior, strongly limited and inflexible • Rigid adherence to taught rules or plans (e.g., follow a checklist) • Little situational perception • No discretionary judgment
2 Beginner	• Incorporates aspects of the situation • Guidelines for action based on attributes or aspects • Characteristics of situations recognizable only after some prior experience • Situational perception still limited
3 Competent	• Acting consciously from long-term goals and plans • Now sees actions at least partially in terms of longer-term goals • Conscious, deliberate planning • Standardized and routinized procedures
4 Proficient	• Sees the situation as a whole and acts from personal conviction • Sees situations holistically • Sees what is most important in a situation • Perceives deviations from the normal pattern • Decision-making less labored
5 Expert	• No longer relies on rules, guidelines or maxims • Intuitive grasp of situations based on deep tacit understanding • Analytic approaches used only in novel situations or when problems occur • Vision of what is possible

[4] Based on - Dreyfus **S.E**., Dreyfus H.L. (1980) *A five stage model of the mental activities involved in directed skill acquisition.* University of California Berkeley, Operations Research Center. Available from: Defense Technical Information Center

Scientific Review Officer Learning Framework

Administrative Review

Area of Performance:

1. Apply NIH and IC policies and practices in the administrative review of the application

Proficiency Level:	1 = Novice	2 = Beginner	3 = Competent	4 = Proficient	5 = Expert

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
1.1. Assess the applications/proposals scientifically and administratively	K	1	3	L	**Orientation Training:** OEP owns this at the big picture level only
1.1.1. Apply NIH policies	K	1	3	L	**Orientation Training:** Important to understand the differences between law, regulation, policy, and procedure and the repercussions of each (level based)
1.1.2. Apply organizational knowledge (hierarchy and IC mission) to determine where the application fits	K	1	2	L	
1.1.3. Apply scientific knowledge to determine how to handle the application (e.g., group it, RFA, etc)	K	2	3	L	
1.2. Confirm the administrative data of the application	K, S	1	2	L	**Orientation Training:** Big picture only
1.2.1. Assess the accuracy of administrative data and entry into IMPAC II	K, S	1	2	L	IMPAC II tasks have changed, so even current SROs need to learn newer ways to do these tasks
1.2.2. Make administrative corrections in the Grant Update Module of IMPAC II, as possible	KS	1	2	L	
1.2.3. Monitor for applications with assignments to dual ICs	K	1	2	L	Process of receipt and referral
1.2.4. Work with the Division of Receipt and Referral to correct the assignment of the application to an IC, if necessary	K	1	2	L	Procedures for how to correct mistakes
1.2.5. For PHS398 applications, identify subproject information to be entered into IMPAC II	S	1	2	L	

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
1.2.6. Provide preliminary assessment of additional review criteria including codes, if appropriate (see "Policies and Procedures")	S	1	2	L	
1.3. Confirm the completeness of the applications or proposals	S, K	1	2	L	**Orientation Training:** OEP needs to talk about the importance of doing it, but not HOW.
1.3.1. Assess completeness of the applications/proposals and monitor for adherence to instructions including page limitations, format, content, and appropriate forms	K, S	1	2	L	
1.3.2. Monitor receipt and processing of electronic applications in QVR using the SF424 queue report	K, S	1	2	L	
1.3.3. Monitor for late continuous submission applications and virtual A2 applications	K, S, A	1	2	L	Logistics and implications of handing late applications → annoying, yes, but still have to work them in
1.3.4. For PHS398 applications, review appendices before upload to the grant folder	K, S, A	1	2	L	Applicants will try to submit a lot of extra information there b/c of “loop holes” SRO could return applications
1.3.5. Determine if multiple-PI leadership plans, progress reports, introduction to resubmission and revision applications have been included, as appropriate	K, S	1	2	L	
1.3.6. Monitor for adherence to special instructions to applicants/offerors (in the funding opportunity announcement/solicitation), including submission dates, requested budget and duration, and eligibility (including foreign), (see "Funding Mechanisms")	K, S	1	2	L	

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
1.3.7. Work with Program Staff to obtain a list of nonresponsive applications; facilitate removal of non-responsive applications	S, A	1	2	L	Working with POs that don't want to "deal with application" People skills in handling attitudes Attitude of "I handle administration vs. science"
1.3.8. Review any acceptable post-submission application materials before upload to the grant folder	A	1	2	L	

Conflict of Interest Management in Peer Review

Area of Performance:

2. Identify, prevent, and manage COI to ensure a fair and objective review

Proficiency Level: 1 = Novice | 2 = Beginner | 3 = Competent | 4 = Proficient | 5 = Expert

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
2.1. Recognize and handle COI situations given policy and system access	K	1	3	**H**	**Orientation Training:** SHOULD have good case scenario. This policy just got revised.
2.1.1. Understand system levels of conflict	K	1	3	L	
2.1.2. Understand the COI policy	K	1	3	L	**Orientation Training:** Reinforce the high—risk areas identified below during the training.
2.2. Identify key personnel who may introduce Conflict of Interest	S	1	2	M	
2.3. Identify applications from a standing committee member or PO that may pose Conflict of Interest	S	1	2	M	
2.4. Screen potential and recruited SRG members for COI or appearances of COI, and use recruitment phase	K, S	1	3	M	
2.4.1. Instruct SRG members to identify applications that present a COI or appearance of a COI	K, S	1	3	L	
2.5. Prepare COI materials for Peer Review	K	1	2	M	
2.6. Manage Reviewer COI	K, S	1	3	**H**	
2.6.1. Out of Study	K, S	1	3	L	
2.6.2. Out of Room	K, S	1	3	L	
2.6.3. Deferral	K, S	1	3	L	

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
2.6.4. Request a waiver from the DDER if such situations cannot be managed within guidelines established by regulation and policy	K	1	2	L	
2.7. Recognize and manage program and other NIH staff conflicts	K, S	1	3	**H**	

Reviewer Recruitment

Area of Performance:

3. Recruit appropriate reviewers and the chair to ensure a fair and informed review

Proficiency Level: 1 = Novice | 2 = Beginner | 3 = Competent | 4 = Proficient | 5 = Expert

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
3.1. Determine the scientific areas and other expertise needed (e.g., training, statistics) for an informed and thorough peer review of an application for committee membership (standing or ad-hoc)	K, S	2	3	M	**Orientation Training:** Provide high-level review of the process • This is a very operational area. • Because the audiences are diverse, we can't even focus on the importance of this in the SRO job.
3.1.1. Determine expertise requirements for the review panel	K, S	1.67	3	L	
3.1.2. Read the cover letter and note requests for expertise and/or conflicts	K	2	3	L	
3.2. Select and educate the chair	K, S, A	1	2	L	
3.3. Identify the best reviewers	K, S	1	3	**H**	
3.3.1. Assess reviewer potential taking into consideration scientific excellence (as demonstrated by grant and publication record), respect in the scientific community, breadth of expertise, fairness and evenhandedness in review, and performance as a reviewer.	S	1	3	L	
3.3.2. Apply policies/practices for maintaining equitable representation and diversity in recruitment	S	1	3	L	

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
3.3.3. Utilize appropriate resources to search for and identify potential reviewers (interpersonal and technical resources) • [Work with members of the scientific community, including the chairperson of the review committee, and NIH staff to identify the most qualified individuals.] • [e.g., QVR, RePORT, PubMed, Scopus, etc. [see also Scientific Knowledge and IT Systems]	K, S	1.5	3	L	
3.4. Negotiate with prospective reviewers	K, S, A	1	3	L	
3.4.1. Communicate the positive aspects and importance of peer review, as appropriate, and identify/resolve potential obstacles	K, S, A	1	3	L	
3.4.2. Solicit information from reviewers about their areas of scientific expertise and interest	S, A	2	3	L	
3.4.3. Articulate specific expectations with regard to review service, as appropriate and ensure that the appropriate review criteria and NIH policy are properly followed	S,A,	1	3	L	
3.4.4. Exhibit flexibility/resourcefulness in accommodating prospective reviewers' interests and needs	S, A	1	3	L	
3.4.5. Negotiate with reviewers regarding workload, content expertise and interest	S, A	1	3	L	

Reviewer Assignment

Area of Performance:

4. Assign reviewers to applications/proposals to ensure appropriate expertise is brought to bear

Proficiency Level: 1 = Novice | 2 = Beginner | 3 = Competent | 4 = Proficient | 5 = Expert

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
4.1. Assign reviewers based on the four Core Principles of NIH peer review	K, S	1	2	M	**Orientation Training:** Present and discuss Core Principles.
4.1.1. When assigning reviewers, capitalize on complementary areas of expertise	K, S	1	2	L	
4.1.2. Exhibit flexibility/resourcefulness in utilizing reviewers' expertise	S,A	1	2	L	
4.1.3. Utilize appropriate resources to match reviewers' expertise to application/proposal content	K, S	1	2	L	
4.1.4. Be aware of potential conflicts of interest, real or perceived, when making review assignments	K, S	1	2	L	
4.2. Enter assignments into the IMPAC II system.	K, S	1	2	L	
4.2.1. Consider balancing workload, experience level, work environment, reviewer types/roles	K, S	1	2	L	
4.2.2. Modify assignments, as needed	S, A	1	2	L	
4.3. Properly handle assignment records (Records Retention is not clear)	K	1	3	**H**	**Orientation Training:** Important topic to cover. Stress importance and need adhere to IC policy. Stress need to clarify individual IC's system for records retention.

Review Meetings

Area of Performance:

5. Effectively plan and facilitate the review meeting

Proficiency Level: 1 = Novice | 2 = Beginner | 3 = Competent | 4 = Proficient | 5 = Expert

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
5.1. Plan the peer review timeline	K, S	1	2	M	**Orientation Training:** Provide a high level overview addressing types and options. **PROCESS ISSUE:** This can be a real trouble area between POs and SROs. If SROs can be involved in the development of FoA, then it would be helpful.
5.1.1. Use project management skills to help design, implement and manage the peer review meeting and direct the related resources, personnel and activities to successful completion	K, S	1	2	L	
5.1.2. Collect and file letters of intent, if applicable; estimate initial peer review workload, assess potential conflicts, and begin planning review	K, S	1	2	L	
5.2. Determine purpose and goals of the review meeting	K	1	3	L	
5.2.1. Establish who needs to attend (ensures that those with COI are absent)	K	1	3	L	
5.3. Determine the type of review meeting	K	1	3	L	
5.3.1. Special Emphasis Panel (SEP)	K	1	3	L	
5.3.2. Standing Committee	K	1	3	L	

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
5.4. Determine the Meeting Format	K, S, A	1	3	L	**Orientation Training:** Just talk about options and how they're treated equally.
5.4.1. Plan logistics for a Face-to-face	S	1	2	L	
5.4.2. Plan logistics for a Teleconference	S	1	2	L	
5.4.3. Plan logistics for Other	S	1	2	L	
5.5. Complete Pre-Meeting Planning		1	2	L	
5.5.1. Prepare and verify meeting materials (FRN, agenda, roster, etc),	K, S	1	3	L	
5.5.2. Facilitate pre-review communication, as necessary (webinar, MeetingOne, etc)	K, S	1	2	L	
5.5.3. Execute the logistics	A, K	1	2	L	
5.6. Prepare for the Meeting		1	2	L	
5.6.1. Ensure all scores, critiques, and COI forms are submitted	A	1	3	L	
5.6.2. Review critiques and identify potential problems	K	1	2	L	
5.6.3. Establish order of review and plan streamline	K, A	1	2	L	
5.6.4. Handle last minute logistical issues	A, S	1	2	L	

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
5.7. Facilitate the review meeting to ensure a fair, informed, and efficient review	S, A	1	3	H	**Orientation Training:** Have the discussion about decorum during the meeting. Role of each person, how the SRO conducts the meeting. Everyone has a play and has to stay in character. Individual responsibilities. → Captured in Practice document.
5.7.1. Handle logistical issues in the moment (e.g., flight is delayed, no lunch)	S, A	1	2	L	
5.7.2. Clearly communicate the orientation (COI, confidentiality, scientific misconduct) purpose of the meeting, and review roles (chair and reviewers) • Ensures that the participants are fully oriented for the meeting and that everyone knows the purpose and their role in the meeting	K, S, A	1	3	L	Distinguishes between experienced vs. newer SRO (confidence, etc)
5.7.3. Apply interpersonal skills • Accommodate needs of NIH staff stakeholders • Listens attentively and responds to questions with clear and straightforward information • Relates to participants in an open, courteous, tactful, patient, and professional manner • Accurately interprets non-verbal communications and responds appropriately • Demonstrates diplomacy about sensitive issues • Discusses subjects in a constructive manner, with all levels of staff • Fosters cooperation, collaboration, and communication to accomplish peer review • Fosters an environment conducive to open, transparent communications among all levels • Remains neutral; avoids interjecting evaluative comments	S, A	1-3	3	L	
5.7.4. Encourage participation from all attendees including the unassigned reviewers and manages participant behavior and group process	S, A	1-3	3	L	
5.7.5. Capture agreements (with an agreed phraseology) and evaluative statements for preparing resume and summary of discussion	K, S	1	2	L	

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
5.7.6. Ensure compliance of federal regulations and NIH peer review policies, and handle COI and scientific misconduct issues	K, S, A	1	2	L	
5.7.7. Monitor the agenda and keep time	S, A	1-3	3	L	Telephone reviewers are particularly difficult
5.7.8. Appropriately use authority as a federally designated official to ensure that a fair and informed review is attained	S, A	1	3	L	
5.7.9. Ensure that reviewers' comments reflect their final opinion and match scores	S	1	2	L	

Post Meeting Activities

Area of Performance:

6. Complete required activities following review meeting

Proficiency Level: 1 = Novice | 2 = Beginner | 3 = Competent | 4 = Proficient | 5 = Expert

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
6.1. Finalize meeting documents (minutes, COIs, certificate of attendance)	K	1	3	M	
6.2. (Enter and) Review and release scores	K, S	1	3	L	
6.3. Obtain final review comments	S,A	1	3	L	PO gets upset when comment doesn't get modified to reflect score Reviewers don't always do this
6.4. Enter human subject and vertebrate codes and release meeting	K, S	1	3	**H**	**Orientation Training:** This should be its own stand-alone topic in the course. Don't embed in peer review. Understand implications of codes
6.5. Prepare clear and accurate Summary Statements within agreed upon timeframes	K, S	1	2	**H**	**Orientation Training:** High-level. How it's put together, timeliness and formatting issues.
6.5.1. Format and edit draft Summary Statements • Include the appropriate Headers, Section Headings, and Footers • Use appropriate style for Summary Statements	K, S	1	3	L	

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
6.5.2. Prepare well-composed and accurate Resumes and Summaries of Discussion • Accurately summarize additional review criteria and considerations • Edit reviewer critiques and, as necessary, contact reviewers for clarification • Proofread, monitoring for erroneous, absolute, and inflammatory statements • Add administrative note • Budget comments • Display proficiency in "Written Communication" for style of Summary Statements	K, S, A	1	2	L	SRO must understand the purpose of the Summary Statement and its audience(s)
6.5.3. Coordinate the process for timely release of final Summary Statements • Talk with POs to establish timeline for release • Make available to stakeholders for review prior to release (per ICs)	S	1	2	L	
6.6. Respond to or provide post-meeting communication • Reviewers • Stakeholders	A	1	2	L	

Community and Self Improvement

Area of Performance:

7. Encourage and participate in activities that improve the NIH community and self

Proficiency Level:	1 = Novice	2 = Beginner	3 = Competent	4 = Proficient	5 = Expert

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
7.1. Encourage and perform outreach to recruit additional SROs, become familiar with other scientists in the scientific community, and connect with the external community	K, A	1	2	L	**Orientation Training:** Identify mutual benefits of this regardless of role
7.2. Encourage and participate in networking opportunities to share knowledge and best practices between Program and Review	K, A	1	2	L	**Orientation Training:** Materials developed during the Retreat might apply here.
7.3. Maintain administrative, scientific, and technical skills	K, S, A	1	2-5	M	**Orientation Training:** ST felt there is an attitude to just “show up” and do this. Need to emphasize importance
7.4. Describe the NIH organizational hierarchy	K	1	2	**H**	**Orientation Training:** Critically important because it impacts efficiency. Not knowing this is a threat to organizational mission
7.5. Recognize the core practices of peer review that are trans-NIH and the nuances of ICs and CSR	K	1	2	M	
7.6. Explain the policy development process, budgets/funding decisions, FOA development	K	1	2	M	**Orientation Training:** Need to know this. FOA development needs additional focus.
7.7. Solicit feedback and be receptive to input from review panel members and stakeholders regarding any advice and/or suggestions offered.	S, A	1	2	L	

Appeals, Misconduct, Breach of Confidentiality

Area of Performance:

8. Recognize and handle appeals, misconduct, and breach of confidentiality

Proficiency Level:	1 = Novice	2 = Beginner	3 = Competent	4 = Proficient	5 = Expert

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
8.1. Recognize and handle allegations of misconduct	K, A	1	2	**H**	**Orientation Training:** High level – awareness of the process. Emphasize skill in communicating with the reviewer
8.2. Recognize and handle breach of confidentiality	K, A	1	2	**H**	
8.3. Recognize and handle appeals	K, A	1	2	**H**	**Orientation Training:** High level – awareness of the process. Peer Review Appeals apply across ICs

Program Officer Learning Framework

Administrative Review

Area of Performance:

1. Identify new opportunities for research based on current portfolio and NIH/IC priorities

Proficiency Level: 1 = Novice | 2 = Beginner | 3 = Competent | 4 = Proficient | 5 = Expert

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
1.1. Know the available portfolio analysis techniques, tools, how to access them, and their strengths and limitations	K,S	2	3	L	**Orientation Training:** Focus on importance and high level overview of the tools
1.2. Use available tools effectively to assess the scientific content of portfolios in relation to the NIH and IC mission	S	2	3	M	
1.3. Maintain state-of-the-art knowledge of emerging scientific research and technologies in area of responsibility	K	4	5	**H**	
1.4. Identify opportunities for new research in the context of IC, NIH, federal and other priorities	K	1	3	M	
1.5. Communicate portfolio analysis data to others within NIH and the scientific community	K,S	2	3	M	
1.5.1. Provide factual and objective, qualitative and quantitative program analysis of the status of the scientific field, potential for future development and productivity of current research	K,S	2	3	M	

Initiative Development

Area of Performance:

2. Develop funding plans to address under-served areas of research

Proficiency Level: 1 = Novice | 2 = Beginner | 3 = Competent | 4 = Proficient | 5 = Expert

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
2.1. Identify areas of research that are under-served	K,S	2	3	M	**Orientation Training:** Focus on importance
2.1.1. Stay current on NIH policies and procedures	K,S	2	3	**H**	**Orientation Training:** Focus on reviewing critical policies and procedures, and identifying resources
2.1.2. Monitor research progress and scientific advances	K,S	2	3	M	
2.1.3. Identify basic and applied problems	S	2	3	M	
2.1.4. Prioritize new areas of science for emphasis	S	2	3	M	
2.1.5. Establish scientific goals consistent with the general public's aspirations for improved health and better understanding of disease	S	2	3	M	
2.1.6. Establish program objectives by working with advisory panels, technical consultants, councils, boards, or similar groups	S	2	3	M	
2.1.7. Assess the feasibility of undertaking major developmental activity or large-scale field studies	S	2	3	M	
2.1.8. Identify the means to exploit significant advances in biomedical knowledge (e.g. new or modified support mechanisms)	S	2	3	M	
2.1.9. Contribute to establishing program priorities by documenting funding priority recommendations for grant applications according to IC practices (“high” or “low” priority)	K,S	2	3	M	

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
2.2. Facilitate scientific collaboration through meetings, conferences, and workshops	K,S	1	3	M	**Orientation Training:** Need to explain why to do this and describe options
2.2.1. Sell leadership on the idea that this needs to happen	S,A	1	3	M	
2.2.2. Identify the right people	K	1	3	M	
2.2.3. Design an agenda to accomplish goals	S	1	3	M	
2.2.4. Moderate and/or present during the meeting	S	1	3	L	
2.2.5. Report results and develop recommendations for action items	K,S	1	3	M	
2.2.6. Prepare white papers, workshop reports, conference proceedings	S	1	3	M	
2.3. Lead the development and implementation of new funding opportunity announcements.	K,S	1	3	M	
2.3.1. Evaluate the state of scientific fields, and input from other NIH staff, and advisory councils	S	1	3	M	
2.3.2. Compare initiative concept to existing programs	S	1	3	**H**	
2.3.3. Present concepts for clearance at council	K,S	1	3	M	
2.3.4. Consider initiative evaluation plan with goals and measures of success	K,S	1	3	M	
2.3.5. Develop and publish funding opportunity announcement	S	1	3	M	
2.3.6. Work with other program staff to develop funding plan and funding recommendations	K,S	1	3	M	
2.3.7. Evaluate success of the initiative	K	1	3	M	

Advising Applicants/Recipients

Area of Performance:

3. Provide advice and support to applicants and recipients

Proficiency Level:	1 = Novice	2 = Beginner	3 = Competent	4 = Proficient	5 = Expert

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
3.1. Complete pre-application activities	K,S	2	3	M	**Orientation Training:** High level process overview
3.1.1. Communicate IC mission to prospective applicants	K,S	2	3	M	
3.1.2. Write a clear program description	S	2	3	M	
3.1.3. Clarify IC, NIH and federal policies as needed	K	2	3	**H**	
3.1.4. Provide advice and information on grant mechanisms, regulatory requirements, grant writing, and grant submission process	K,S	2	3	M	**Orientation Training:** Detailed review of grant mechanisms and regulatory requirements Overview of grant writing and submission process: address how to advise the applicant without helping them write it
3.2. Complete pre-review activities	K,S	2	4	M	
3.2.1. Follow polices on applicant contact	K	2	4	M	
3.2.2. Evaluate the scientific content of the application for IC mission relevance and program referral	K,S	2	3	M	Key skill is to distinguish between a quality issue and a referral issue.
3.2.3. Conduct administrative review of applications (policy compliance, scientific or budgetary overlap, review panel assignment, etc.)	K,S	2	3	M	
3.2.4. Monitor the grant application review process and assignments	K	2	3	M	

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
3.3. Complete post-review activities	K,S	2	3	M	
3.3.1. Interpret summary statements	K	2	3	M	
3.3.2. Communicate review results to applicants	S	2	3	M	
3.3.3. Inform and advise on peer review grievances and appeals procedures	K	2	3	M	**Orientation Training:** Focus on finding the right person to call to get the right information
3.3.4. Provide council and guidance to concerned applicants	K,S	2	3	M	
3.4. Complete post - decisional activities	K,S	2	3	M	
3.4.1. Communicate funding decisions and results of council discussions with applicants	K,S	2	3	M	
3.4.2.Communicate effectively with irate or despondent applicants	S	2	4	**H**	Cover at awareness level Listening in on calls as a way to train (observation) Identify available resources
3.4.3.Effectively manage personal stress resulting from dealing with irate or despondent applicants	S	2	3	**H**	Some people tie their rejection to divorce, suicide threats, etc. Listening in on calls as a way to train (observation) Could use PO Best Practice document
3.4.4. Refer non-funded applicants to other sources of funding outside of NIH	K	2	3	L	This can be IC-specific Provide information and guidance on federal and other available resources

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
3.5. Provide advice during periods of interrupted or delayed support	K	2	3	M	

Program Management

Area of Performance:

4. Effectively manage current programs

Proficiency Level: 1 = Novice | 2 = Beginner | 3 = Competent | 4 = Proficient | 5 = Expert

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
4.1. Maintain knowledge of, and consistently apply, NIH policies and procedures regarding research requirements	K	2	3	M	Orientation Training: Detailed coverage of policies and procedures
4.2. Provide advice on IC policies and administrative issues (when requested by the SRO, other POs or others in the institute)	K	2	3	M	
4.3. Interpret program policy and program guidelines for reviewers during IRG meetings, if requested to do so	K	2	3	M	Orientation Training: Good place for scenario-based training
4.4. Identify and recommend the most appropriate potential reviewers for scientific review group and council if requested.	K,S	2	3	M	Orientation Training: High-level overview of desired reviewer characteristics
4.5. Observe and record the scientific merit discussion of the application	S	2	3	M	Interpret more of what's going on than what can go in the summary statement. Also, if this goes to appeal, how does what's going on impact that. Some ICs require notes.
4.6. Evaluate responsiveness of applications for funding	K	2	3	M	
4.7. Discuss questions related to outcome with principal investigators	K	2	3	M	

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
4.8. Analyze and evaluate programs	K,S	2	3	M	
4.9. Participate in project site visits as peer review observer	K,S	1	3	M	There are occasions such as cooperative agreement retreats where site visits are still needed. The frequency may be low but an offsite visit may still be essential.
4.10. Communicate with review staff on program initiative and review matters	S	1	3	M	
4.11. Maintain appropriate communication with the SRO both before and after the review meeting	S	1	3	M	
4.12. Make funding recommendations (fund/don't fund, funding level)	K	1	4	**H**	
4.13. Conduct Pre-Award activities	K,S	1	3	M	
4.13.1. Advise applicants on how to resolve issues impeding the award process	K	1	3	M	
4.13.2. Evaluate scientific and mission relevance of individual projects	K	2	3	M	
4.13.3. In conjunction with grants management specialists, evaluate sufficiency of pre-award administrative requirements	K,S	1	3	M	
4.13.4. Conduct Administrative Reviews	K,S	1	3	M	Look for overlap, make sure targeted enrollment, determine if this is a foreign grant
4.13.5. Present a prioritized list of recommended grant applications	K	1	4	M	
4.13.6. Negotiate project scope and budget	K	2	3	L	
4.13.7. Document, consistently follow, and regularly review all plans for program implementation	K,S	2	3	M	
4.13.8. Inform and advise on peer review grievances and appeals procedures	K	2	3	M	

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
4.13.9. Participate in award decisions according to IC practices, which may include drafting the award recommendations that management elevates and discusses, as well as any adjustments to aims or other adjustments that result from reviewer comments, IC financial management plan, or other sources	K	2	3	M	
4.13.10. Develop cooperative agreement plan or milestone plans	K,S	2	3	M	
4.13.11. Use the program checklist to provide a standardized and regular summary of project operations and accomplishments	S	2	3	M	
4.13.12. Initiate and organize pre-council discussions	K,S	2	3	M	
4.14. Conduct Post-Award activities	K,S	2	3	M	
4.14.1. Monitor cooperative agreements	K,S	2	3	**M/H**	Risk level depends on level of involvement
4.14.2. Monitor progress reports	K,S	2	3	**H**	
4.14.3. Use the program checklist to provide a standardized and regular summary of project operations and accomplishments	K,S	2	3	M	
4.14.4. Evaluate and respond to requests for supplements	K,S	2	3	M	
4.14.5. Evaluate progress by interacting with principle investigator	K,S	2	3	M	
4.14.6. Provide for orderly phase-out or termination of supported projects and programs	K,S	2	3	L	
4.14.7. Resolve award restrictions	K,S	2	3	M	
4.14.8. Document regulatory approvals	K,S	2	3	M	

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
4.15. Monitor Progress (Post-Award)	K,S	2	3	M	
4.15.1. Monitor data and safety for clinical studies	K,S	2	3	**H**	
4.15.2. Monitor patient recruitment, enrollment, and retention	K,S	2	3	**H**	
4.15.3. Monitor scientific progress	K,S	2	3	M	
4.15.4. Monitor use of funds	K,S	2	3	**H**	
4.15.5. Evaluate progress report against original proposal	K,S	2	3	M	
4.16. Manage day-to-day operations efficiently	K,S, A	2	3	M	
4.16.1. Prioritize workload effectively	K, S	2	3	M	
4.16.2. Use resources efficiently – both personal resources and documentation	K,S	2	3	M	
4.16.3. Facilitate effective communication and teamwork with SROs	K,S, A	1	3	M	

Reporting

Area of Performance:

5. Evaluate program results and prepare program reports

Proficiency Level: 1 = Novice | 2 = Beginner | 3 = Competent | 4 = Proficient | 5 = Expert

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
5.1. Develop program reports	K,S	1	3	L	Scientific Advances
5.1.1. Write Scientific Advances report	K,S	1	3	L	
5.1.2. Write Scientific Reviews plans and mission statements	K,S	1	3	L	
5.1.3. Write internal meeting summaries and distribute to the public	K,S	1	3	L	
5.1.4. Write long-range plans and mission statements	K,S	1	3	L	
5.2. Report on cumulative, current, and projected program activities	K,S	1	3	L	Vary by IC
5.3. Provide data and information to NIH officials who respond to inquiries from Congress, the national media, and the general public in a timely manner, through established IC and NIH procedures	K,S	1	3	M	**Orientation Training:** Talk about the need to do this, why it's important, and review the process
5.4. Evaluate program results	K,S	1	3	M	
5.5. Develop annual reports	K,S	1	3	L	Vary by IC

Scientific Community Development

Area of Performance:

6. Develop and maintain networks (inter-IC, intra-IC, inter-agency, scientific community, patient advocacy groups, voluntary health organizations, and policy makers) to support effective communication

Proficiency Level: 1 = Novice | 2 = Beginner | 3 = Competent | 4 = Proficient | 5 = Expert

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
6.1. Support Program Officer recruitment	K,S	1	3	L	
6.2. Become familiar with other scientists in the scientific community	K,S	2	3	L	
6.3. Communicate scientific topics with the general public (NIH, PR)	K,S	1	3	L	
6.4. Actively seek and coordinate synergies when program interests span multiple ICs	S,A	1	3	M	
6.5. Work with trans-NIH committees to develop awareness of current and future initiatives	S,A	2	3	M	
6.6. Participate in NIH-wide committees and interest groups	K,S, A	1	3	L	
6.7. Help craft, facilitate, and monitor progress of interagency and intra-agency agreements and memoranda of understanding	K,S	1	3	M	**Orientation Training:** Review what are they, how to use them. Discuss use of funds and carry-over, enrollment (#s as well as race, ethnicity)
6.8. Share best practices with other POs	K,S, A	1	3	L	
6.9. Participate in council meetings	K,S, A	1	3	L	
6.10. Chair and/or participate in committees as required by the IC	K,S, A	1	3	L	

Behaviors	K, S, A	Entry Proficiency	End-State Proficiency	Risk (L, M, H)	Comments
6.11. Sponsor, organize, and support scientific conferences, workshops, and symposia	K,S, A	1	3	L	
6.12. Know where to find technical, specific information across NIH domains and throughout the community	K	2	3	L	

Appendix B: Survey Results

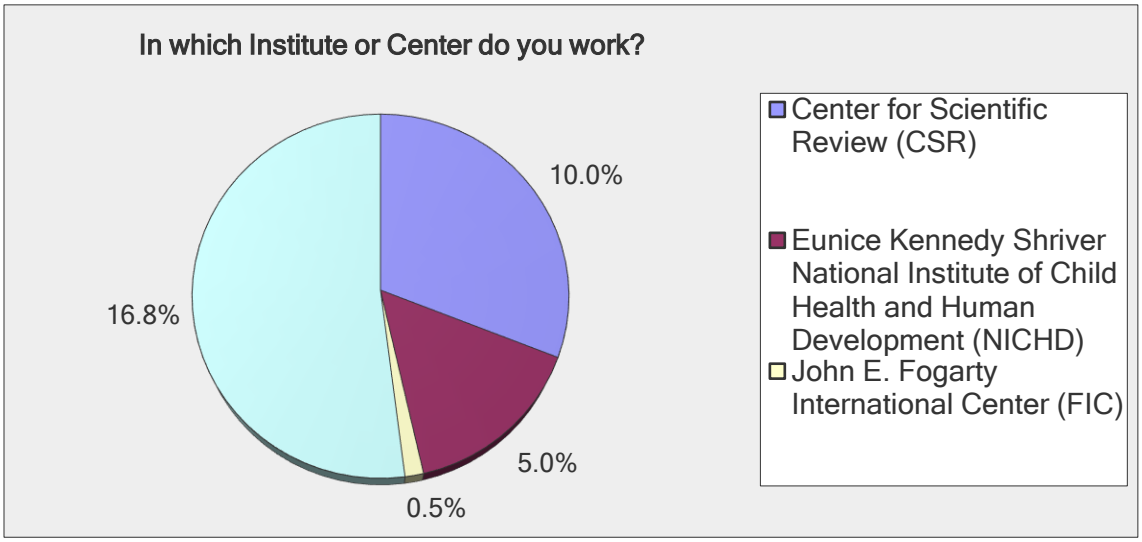
Question 1: Consent

421 people responded to the survey and 419 consented to participate.

Note: 419 people participated in the survey. However, the actual number of respondents to many questions was far less as a result of our intention to focus on experiences with Orientation Training within the past two years.

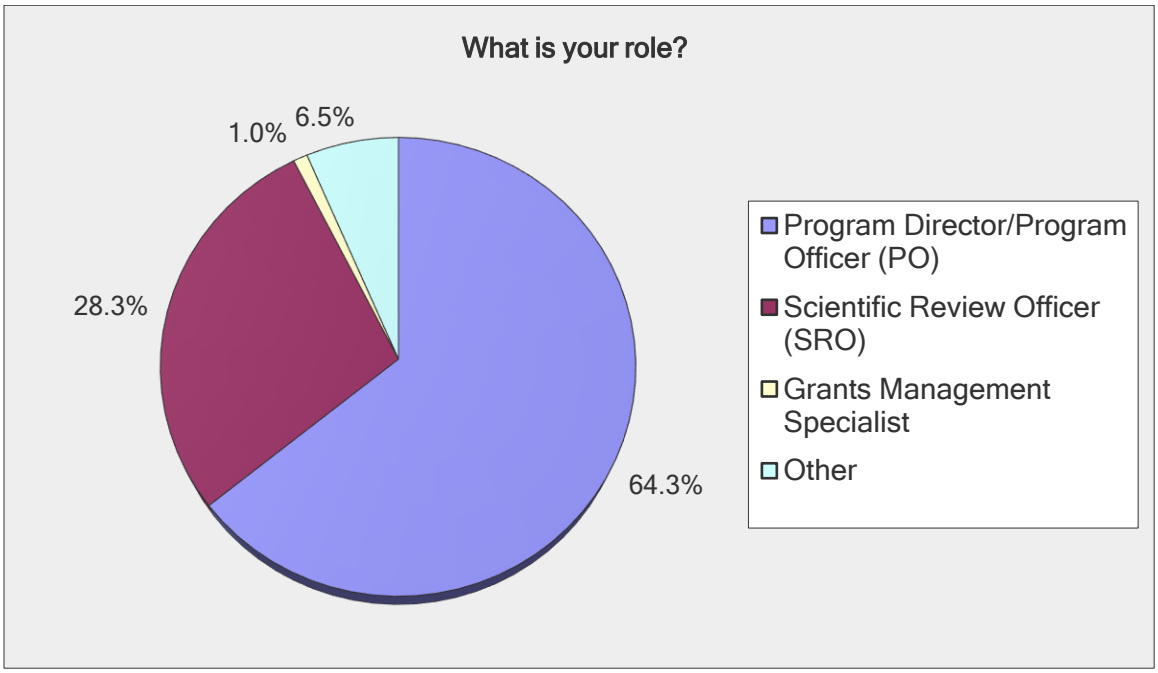
Question 2: In which Institute or Center do you work?

Most participants came from three Centers: NCI- 17%, NIAID- 11%, CSR 10%,



Question 3: What is your role?

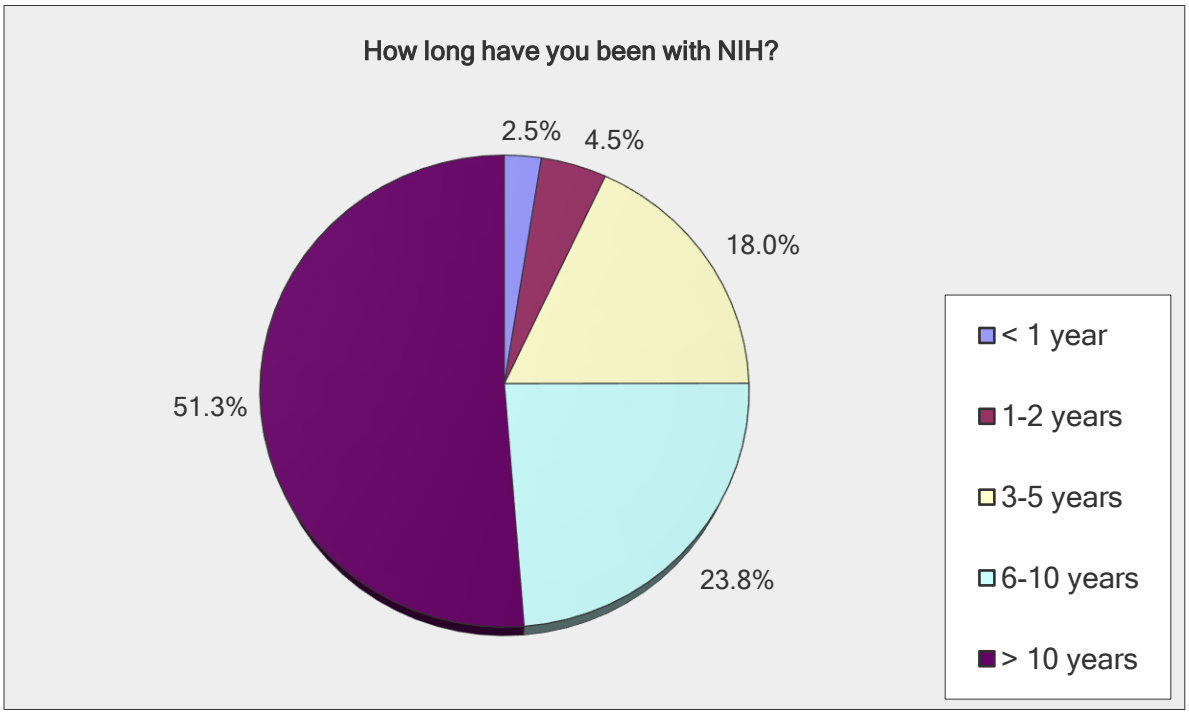
Respondents identified their job role as: PO- 64%, SRO- 28%, GMS- 1%, Other- 6%



Note: Within the four ICs with the most respondents, roles broke down as follows:

Answer Options	Center for Scientific Review (CSR)	National Cancer Institute (NCI)	National Heart, Lung, and Blood Institute (NHLBI)	National Institute of Allergy and Infectious Diseases (NIAID)
Program Director/Program Officer (PO)	0	54	16	34
Scientific Review Officer (SRO)	38	6	10	8
Grants Management Specialist	0	1	0	0
Other	2	6	2	3

Question 4: How long have you been with NIH?

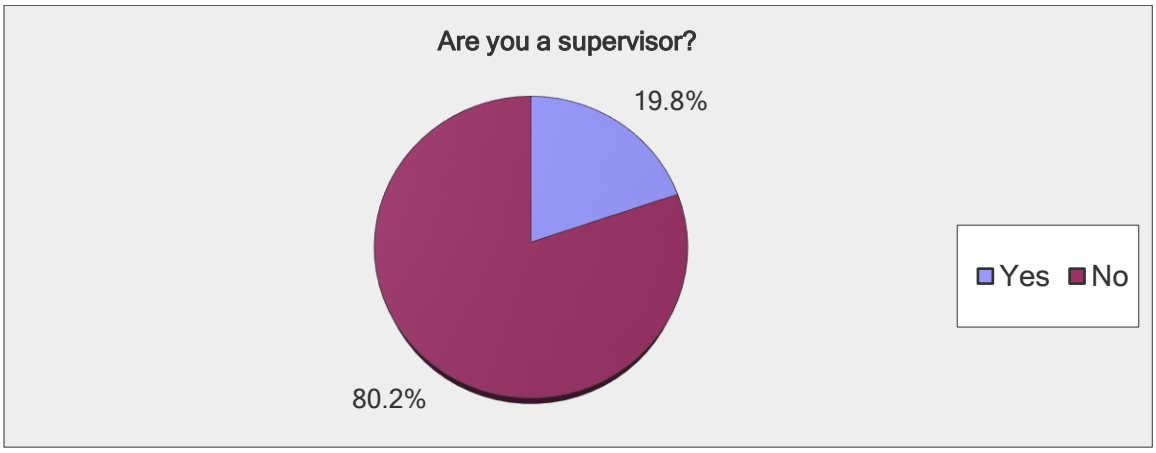


Note: Over half of all respondents had been with NIH for over 10 years, while 7% had been with NIH for 2 years or less.

Answer Options	Response Percent	Response Count
< 1 year	2.5%	10
1-2 years	4.5%	18
3-5 years	18.0%	72
6-10 years	23.8%	95
> 10 years	51.3%	205

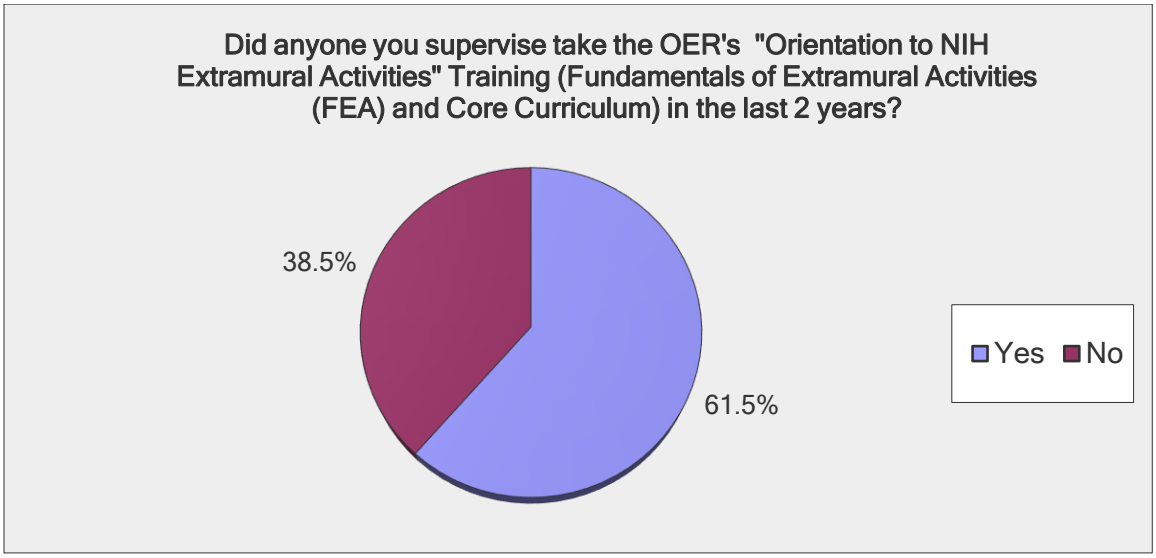
Question 5: Are you a supervisor?

20% (79) of respondents were supervisors.



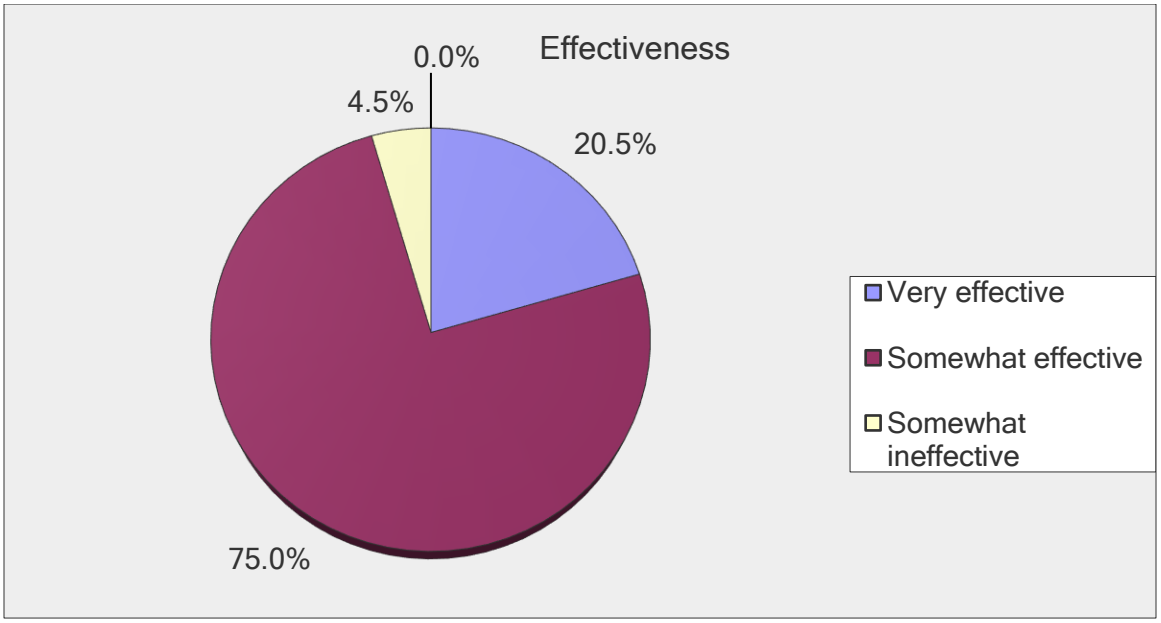
Question 6: Did anyone you supervise take the OER's "Orientation to NIH Extramural Activities" Training (Fundamentals of Extramural Activities (FEA) and Core Curriculum) in the last 2 years?

61% had staff take the orientation program within the past two years (48 staff).



Question 7: The purpose of OER's "Orientation to NIH Extramural Activities" Training (Fundamentals of Extramural Activities (FEA) and Core Curriculum) is to provide Extramural Research staff with a foundation of knowledge about NIH research policies and procedures. This foundation prepares them to learn the specific procedures followed by your IC.
How effective would you rate OER's "Orientation to NIH Extramural Activities" Training (FEA and Core Curriculum) given the knowledge your staff had after receiving the training?

20% of supervisors rated OER's Orientation Training (Fundamentals of Extramural Activities (FEA) and Core Curriculum) as Very Effective, while 75% rated it as Somewhat Effective.



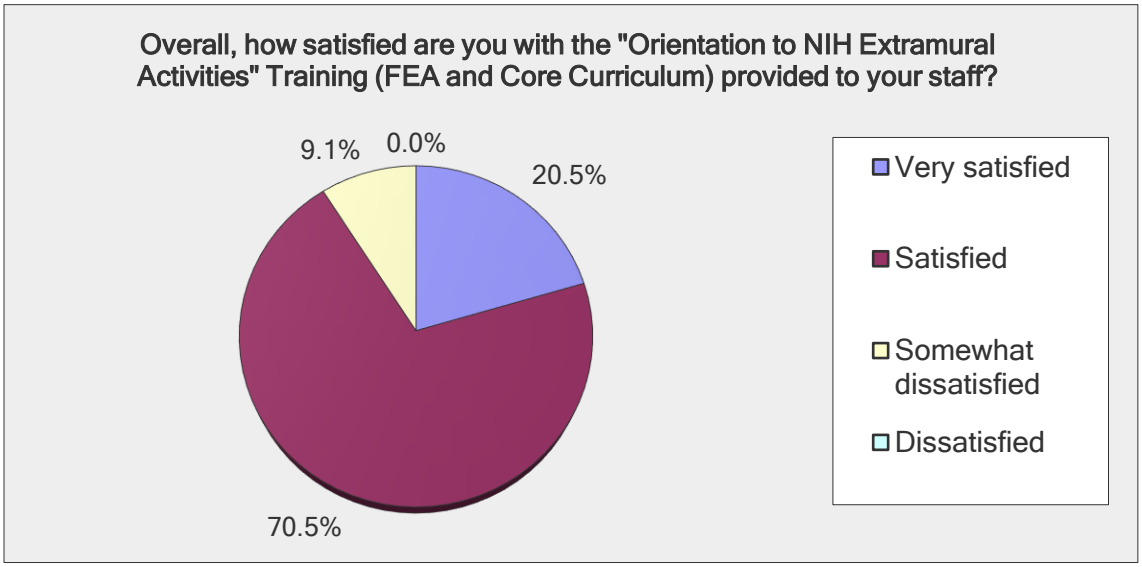
Note: Nearly equal numbers of SROs rated training effectiveness for their staff as Very Effective or Somewhat Effective. A much higher percentage of POs rated training for their staff as Somewhat Effective than Very Effective.

Sample comments:

- It's a good starting point, but there will always be IC specific aspects of the job that OER can't address.
- Some policies and procedures are Institute-specific, and are not taught in NIH courses.
- Because it is oriented to pan-NIH I spent a lot of time on NIAID Specific training
- It is not about the curriculum or content, but it will take a new PD time to apply the knowledge acquired. The immediate outcome is as ranked.
- As an experienced NIH scientific administrator and an experienced faculty member for the Core Curriculum, I think that the training provides excellent (and large amounts of) information. I often refer back to the materials on the OER website now - even after 20 years - to keep up to date on policy, etc. The new staff in my Division who have taken the training have either come from outside of NIH or from the Intramural Program, and they took the training very quickly after they were hired. I think that this may be too soon - I think a new HSA or Medical Officer needs a few months (maybe 2-3 months) to get oriented to their job enough to be ready for the core course orientation. If this Core Course is taken too early, the new person can very easily get lost without the proper context

Question 8: Overall, how satisfied are you with the "Orientation to NIH Extramural Activities" Training (FEA and Core Curriculum) provided to your staff?

21% of supervisors were Very Satisfied with the Orientation training while 71% were Somewhat Satisfied.



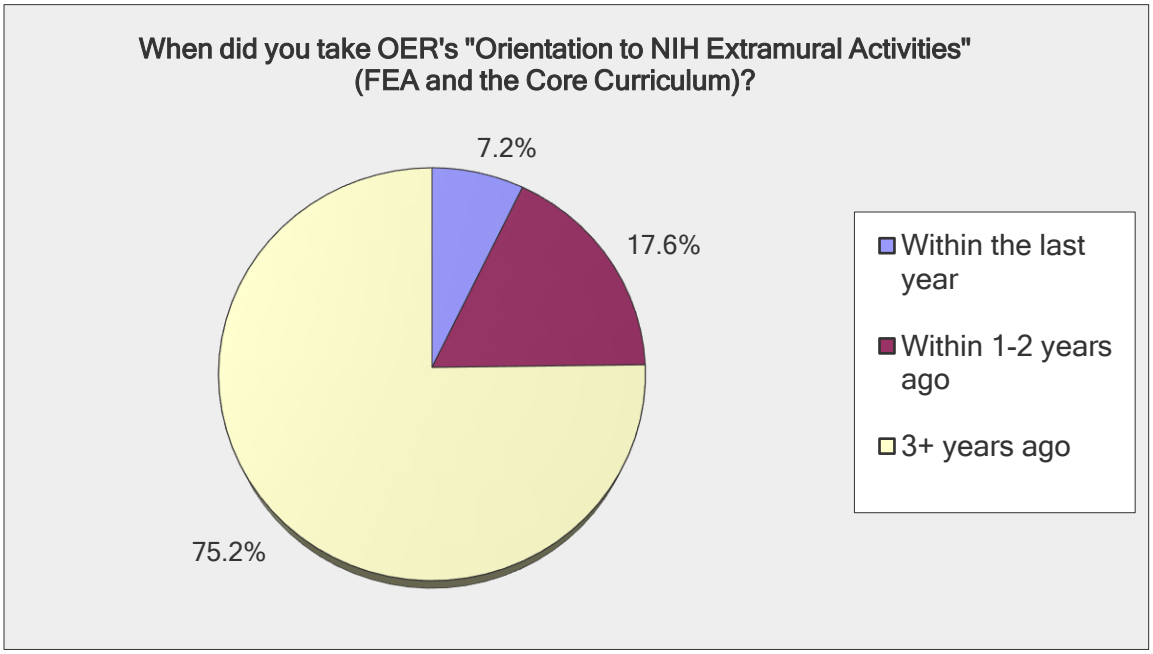
Sample comments:

- They got the basics, but there's still a lot they need to learn on the job. I took the course years ago and was on the faculty for a long time. I think the most effective tool is looking at case studies - it makes for a more interactive experience.
- It would be good to have more senior staff, preferably those nominated by the ICs to be given presentations or serve on panels. It seems more junior staff has been involved so far.

Note: As with Question 7, a much higher percentage of POs were Satisfied with the training their staff received than were Very Satisfied. Again, SROs rated their level of satisfaction about equally Very Satisfied and Satisfied.

Question 9: When did you take OER's "Orientation to NIH Extramural Activities" (FEA and the Core Curriculum)?

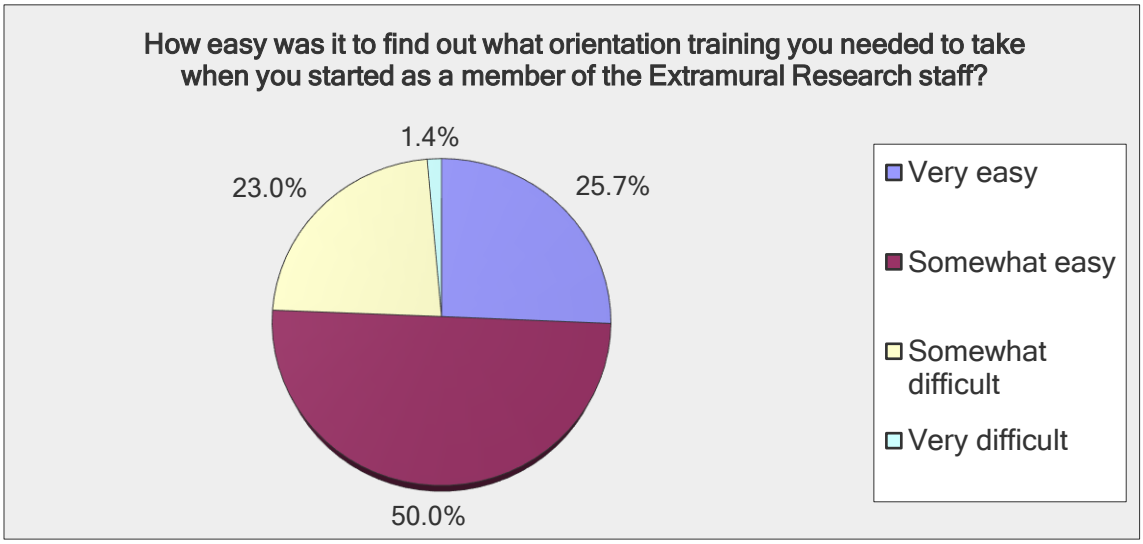
75% (239) of respondents took Orientation Training 3 or more years ago, while 28% (79) took it within the past two years.



Note: The focus of the survey was to gather information on experiences with Orientation Training in the past two years. As a result, the number of respondents to some questions was small.

Question 10: How easy was it to find out what orientation training you needed to take when you started as a member of the Extramural Research staff?

76% of respondents found it Very Easy or Somewhat Easy to find out what orientation training they needed to take. 24% found it Somewhat Difficult or Very Difficult.



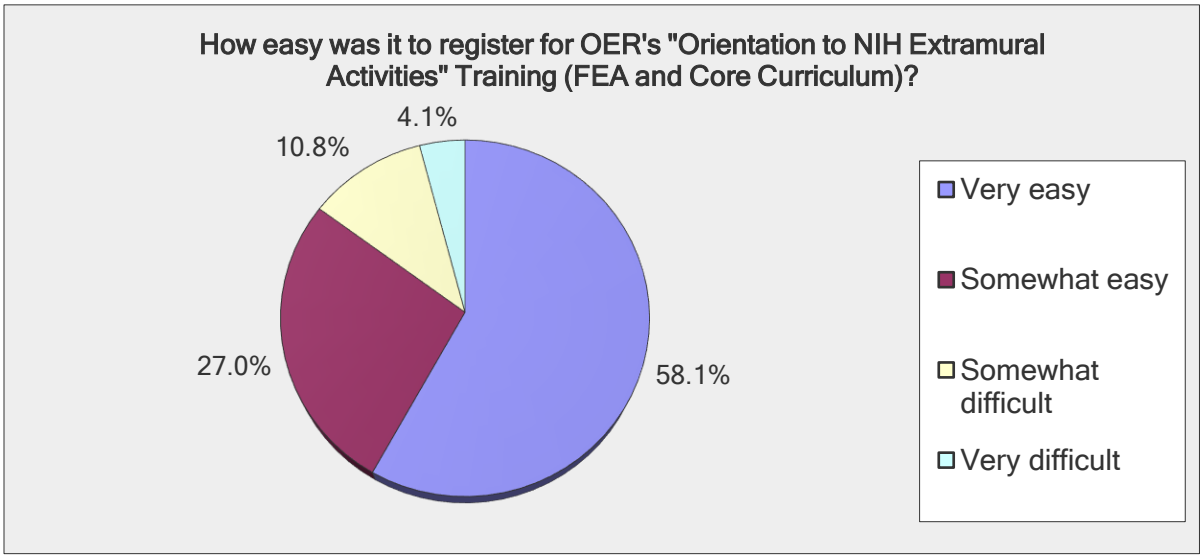
Note: Respondents who took Orientation Training within the past year rated the ease of finding out what training they needed to take almost equally "Very Easy" and "Somewhat Easy". Nearly three times as many respondents who took training 1-2 years ago rated it "Somewhat Easy" to find out what training they needed to take as opposed to "Very Easy". Note: A significant number or respondents had a difficult time finding out what orientation training they needed to take.

Sample comments:

- A lot of training on the list on our intranet site was outdated or links broken
- My supervisor and mentor told me about this training.
- The OER website was easier to follow than my own IC website
- It was originally difficult to find someone who could point me to the training resources. This being addressed at an institute level, but it would be nice if NIH provided more training resources for specific positions at the NIH orientation or in a subsequent email.
- I do not recall receiving any formal information or instructions regarding training. I heard about the training through a coworker who had taken it.
- A training orientation booklet was provided.
- The Suggested Training Timeline for New Health Scientist Administrators was useful but it is not clear where this can be found online and it is not in the PO Handbook.
- My super was great and told me. If I had to look on the extra net it would have been more challenging.

Question 11: How easy was it to register for OER's "Orientation to NIH Extramural Activities" Training (FEA and Core Curriculum)?

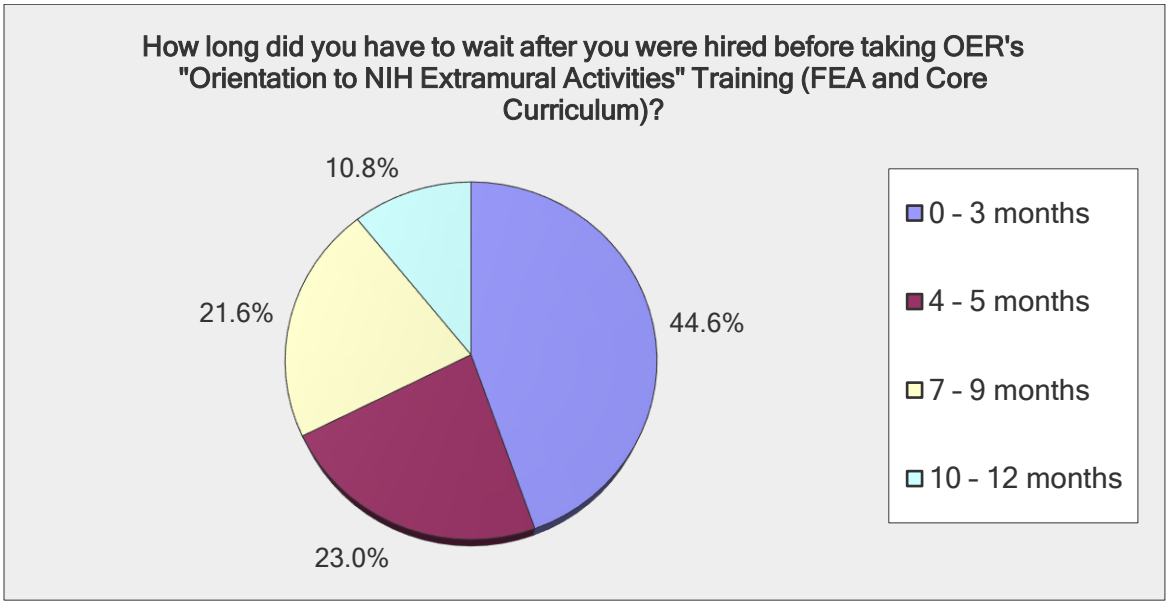
85% of respondents found it Very Easy or Somewhat Easy to register for Orientation Training while 15% found it Somewhat Difficult or Very Difficult.



Sample comments:

- Online registration was very difficult to follow with non-intuitive links etc
- I started out in another role. My role changed, and I was never informed about the orientation. I eventually discovered it myself.
- The course registration for the Core Curriculum opened very close to the start date for the series, this was slightly stressful as I had been warned that there is often a waiting list and I was not sure if the class was full or just not listed yet.
- It became much easier after the "new" registration procedures were instituted (in 2012, I believe).
- I found the online site for registration very difficult.
- It was a little difficult to find the exact course in the IMS system

Question 12: How long did you have to wait after you were hired before taking OER's "Orientation to NIH Extramural Activities" Training (FEA and Core Curriculum)?

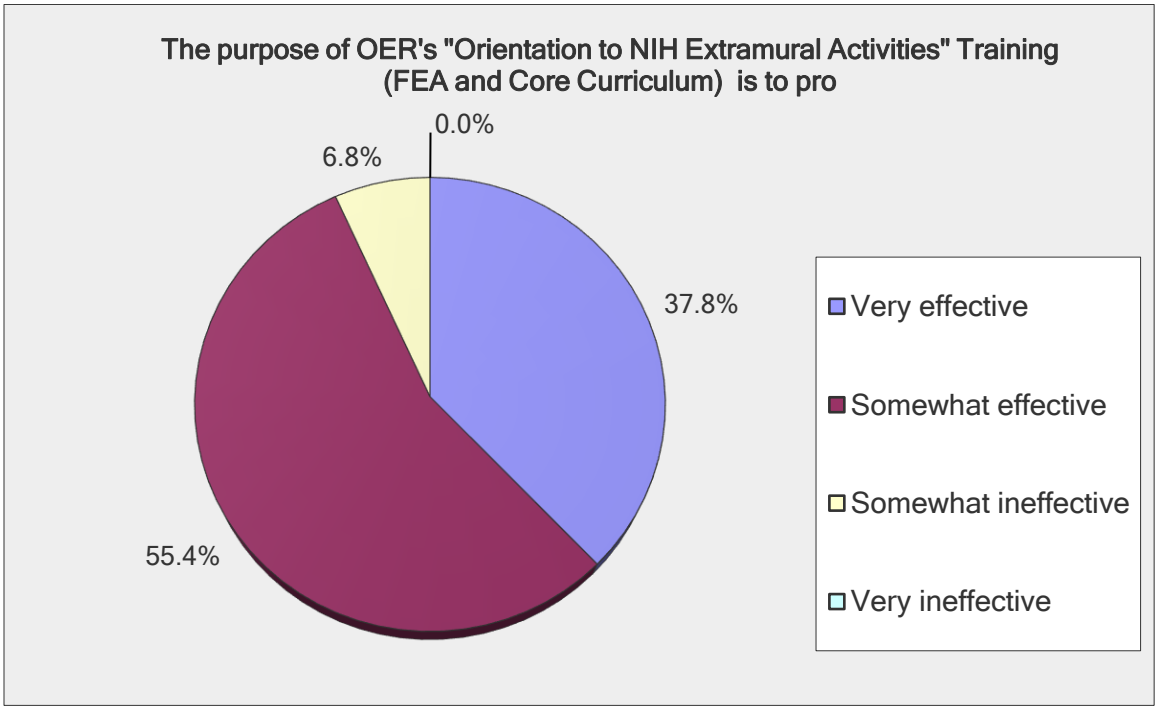


Note: 32% of new employees waited 7 months or longer before taking Orientation Training. This could be seen as a problem as new staff waited many months for basic training. However, comments in other questions indicate that acquiring job experience may be of benefit before taking the Core Curriculum.

Answer Options	Response Percent	Response Count
0 - 3 months	44.6%	33
4 - 5 months	23.0%	17
7 - 9 months	21.6%	16
10 - 12 months	10.8%	8

Question 13: The purpose of OER's "Orientation to NIH Extramural Activities" Training (FEA and Core Curriculum) is to provide you with a foundation of knowledge about NIH research policies and procedures. This foundation prepares you to learn the specific procedures followed by your IC.
How effective would you rate OER's "Orientation to NIH Extramural Activities" Training?

93% of respondents rated it as “Very Effective” or “Somewhat Effective”.



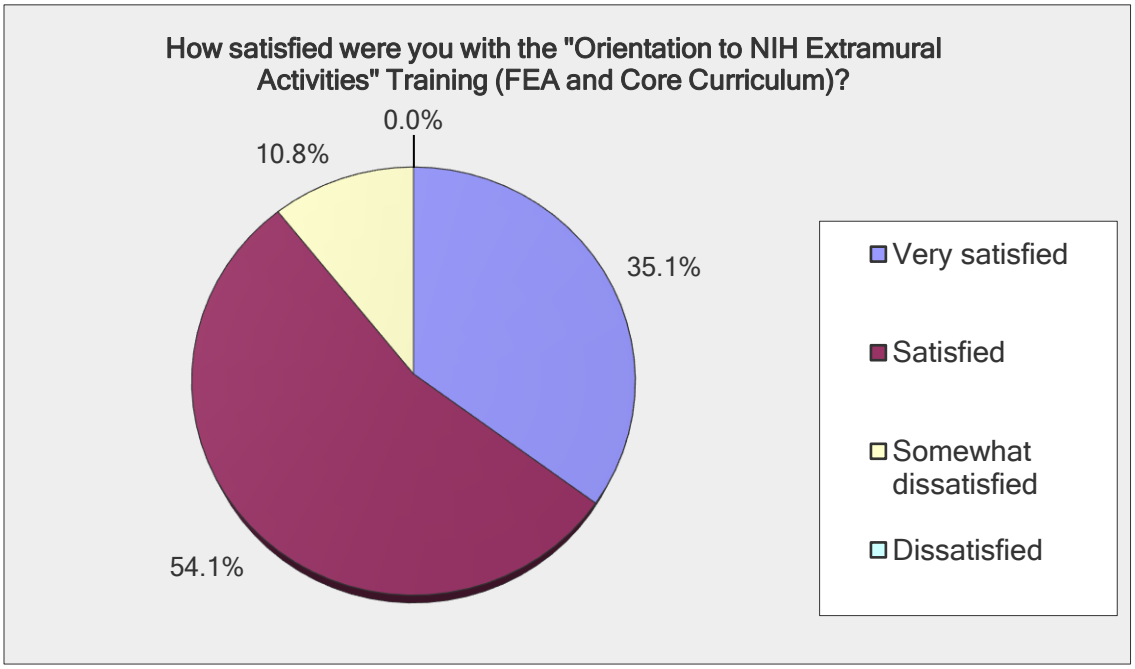
Note: 57% of respondents who took Orientation Training within the past year rated it as “Very Effective”, while 43% rated it as “Somewhat Effective”. Of respondents who took Orientation Training 1-2 years ago, 33% rated it as “Very Effective”, while 66% rated it as “Somewhat Effective”.

Sample comments:

- Some components were useful and others were not. Also, by the time I took the training I had already been working as an SRO for 9 months, so I already knew a lot of the information.
- The timing of this training was before I had a grant portfolio. It would have helped to take it after my portfolio had been populated.
- I began the Core courses after having been at NIH for about 6 months, and I found that a lot of material presented during the Core courses would have been very helpful if I would have learned the material upon entry to NIH. I watched some of the previous year's videocasts, but there are limitations to videocasts.
- One problem is that the orientation must be fairly general as an introduction of NIH, but it cannot give specific information about a particular IC or each individual's particular job.
- Would have been more useful if it was closer to my start date

Question14: How satisfied were you with the "Orientation to NIH Extramural Activities" Training (FEA and Core Curriculum)?

89% of respondents were either “Very Satisfied” or “Satisfied”, while 10% were “Somewhat Dissatisfied”.



Sample Comments:

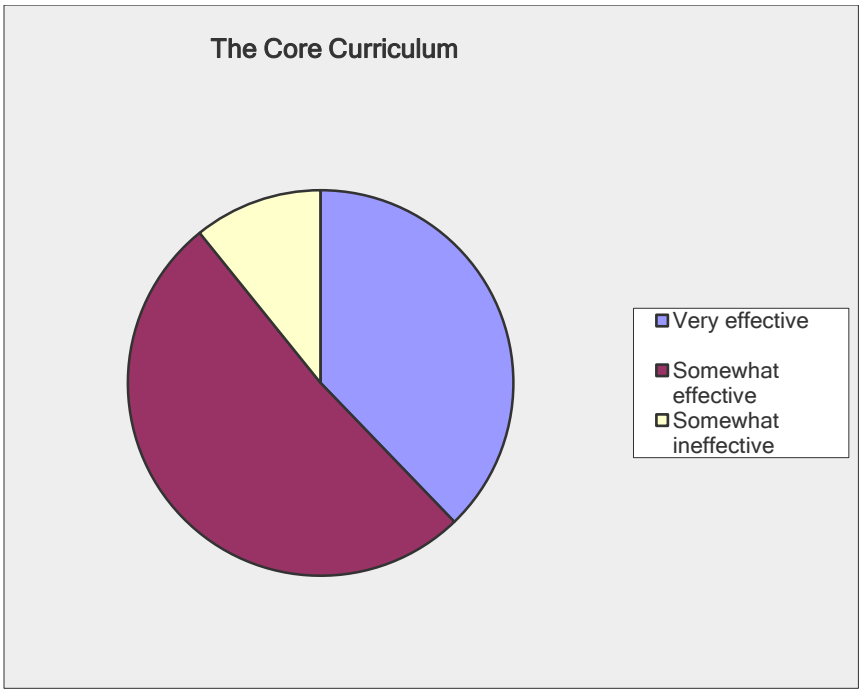
- I was satisfied with the training but Core Curriculum would have been more effective if I had the opportunity to attend it right after being hired, rather than having to wait 5 months before starting the classes. Also, it would have been helpful if the classes were all in one week because then the last core curriculum was about 7 months after I started, which just means the delivery of information was delayed even further.
- Very long and somewhat repetitive, but essential.
- A majority of the speakers didn't give much useful information, but rather just told "war stories".

Question 15: The Core Curriculum is a series of live learning sessions that include:

- Lecture
- Group activities
- Case studies
- Group discussions
- Panel discussions

How effective was this training approach in helping you learn about Extramural Research policies and procedures?

When rating the effectiveness of the approach used in the Core Curriculum, 89% of respondents rated it as “Very Effective” or “Somewhat Effective”, while 11% rated it “Somewhat Ineffective”.



Note: 62% of respondents who took Orientation Training within the past year rated it as “Very Effective”, while 38% rated it as “Somewhat Effective”. Of respondents who took Orientation Training 1-2 years ago, only 33% rated it as “Very Effective”, while 66% rated it as “Somewhat Effective”.

Sample Comments:

- I thought that the case studies were an effective way to interact with more people at the class. For most sessions, these were very effective. Maybe there were a few too many though.
- The group discussions/case studies were most helpful when there was a strong facilitator and experienced staff in conversation. I was unclear how others had so much experience given they just joined NIH but it improved my experience. The lectures were very dry. The panel discussions generally all said "it depends" and went off on tangents.
- It is time to revisit the training approach.
- I remember that some of the group activities were not too well organized (also for time constraints)

- What i needed to know could have been compressed into 1-2 hours of the total training time. Topics such as selecting study section members should not be required for program directors. Overall, better tailoring for groups would make better use of everyone's time.
- I believe the questions that follow the case studies should not include the answers so that students will be more likely to consider the questions carefully.

Question 16: The "Orientation to NIH Extramural Activities" Training uses a variety of training approaches. Please rank these from most effective (1) to least effective (6).

Note: The order of the list will change to reflect your ranking selections.

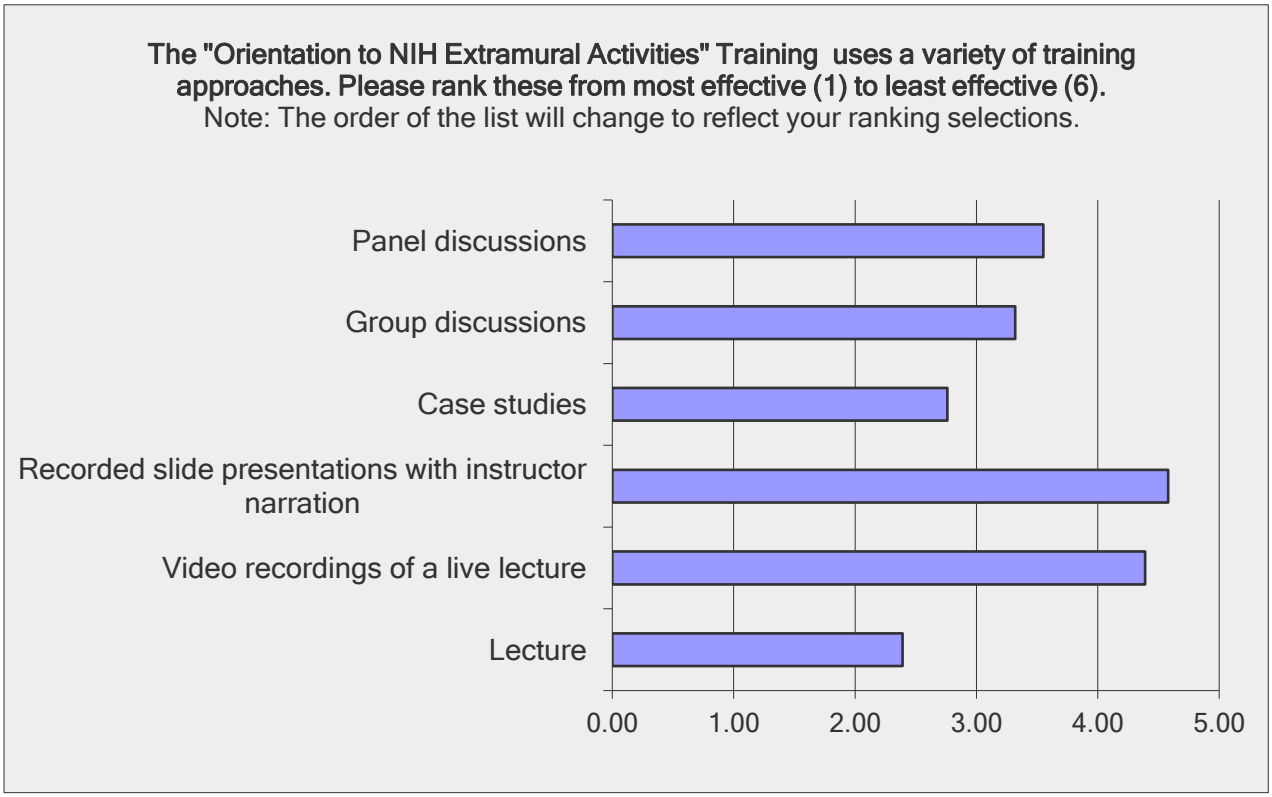
- Lecture
- Group activities
- Case studies
- Group discussions
- Panel discussions

Participants ranked training approach effectiveness. The most effective approaches (ranked as either 1 or 2) were:

- Lecture
- Case Studies
- Group Discussions

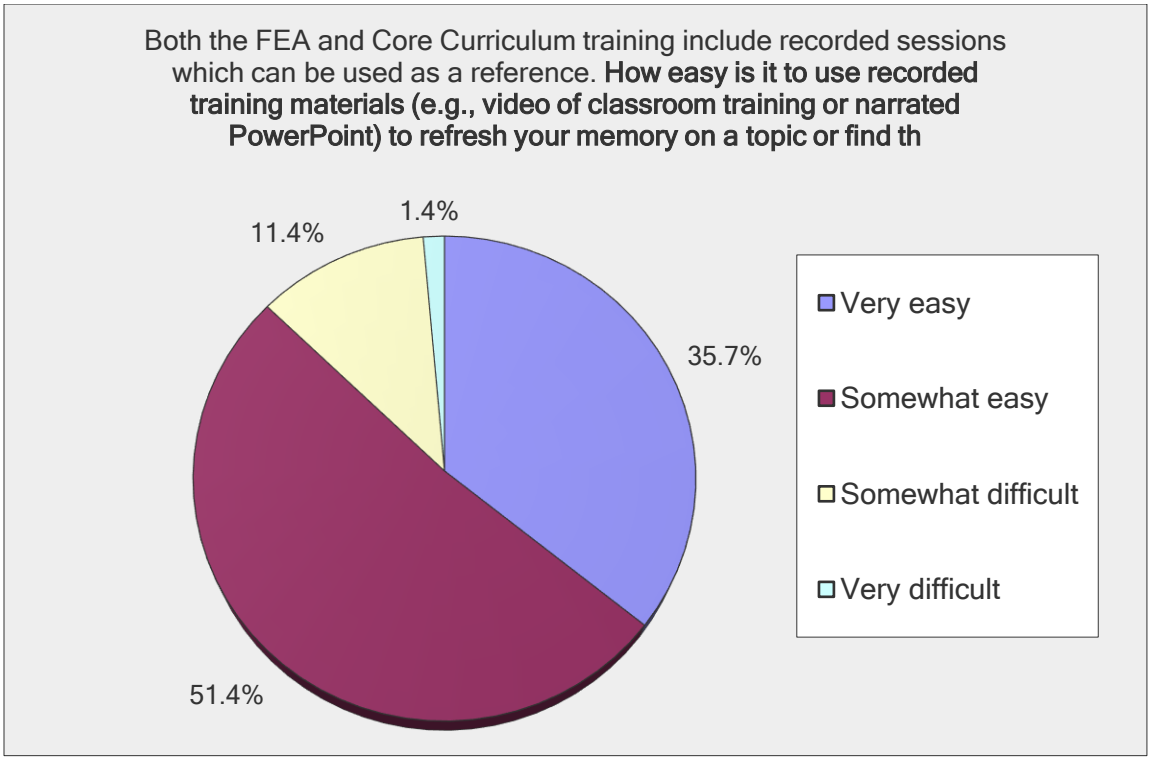
The least effective approaches (ranked as either 5 or 6) were:

- Recorded slide presentations with instructor narration
- Video recordings of live lecture



Question 17: Both the FEA and Core Curriculum training include recorded sessions which can be used as a reference.
How easy is it to use recorded training materials (e.g., video of classroom training or narrated PowerPoint) to refresh your memory on a topic or find the answer to a specific question?

Recorded sessions were ranked as Very Easy or Somewhat Easy to use for this purpose by 87% of respondents, while 12% found it Somewhat Difficult or Very Difficult.

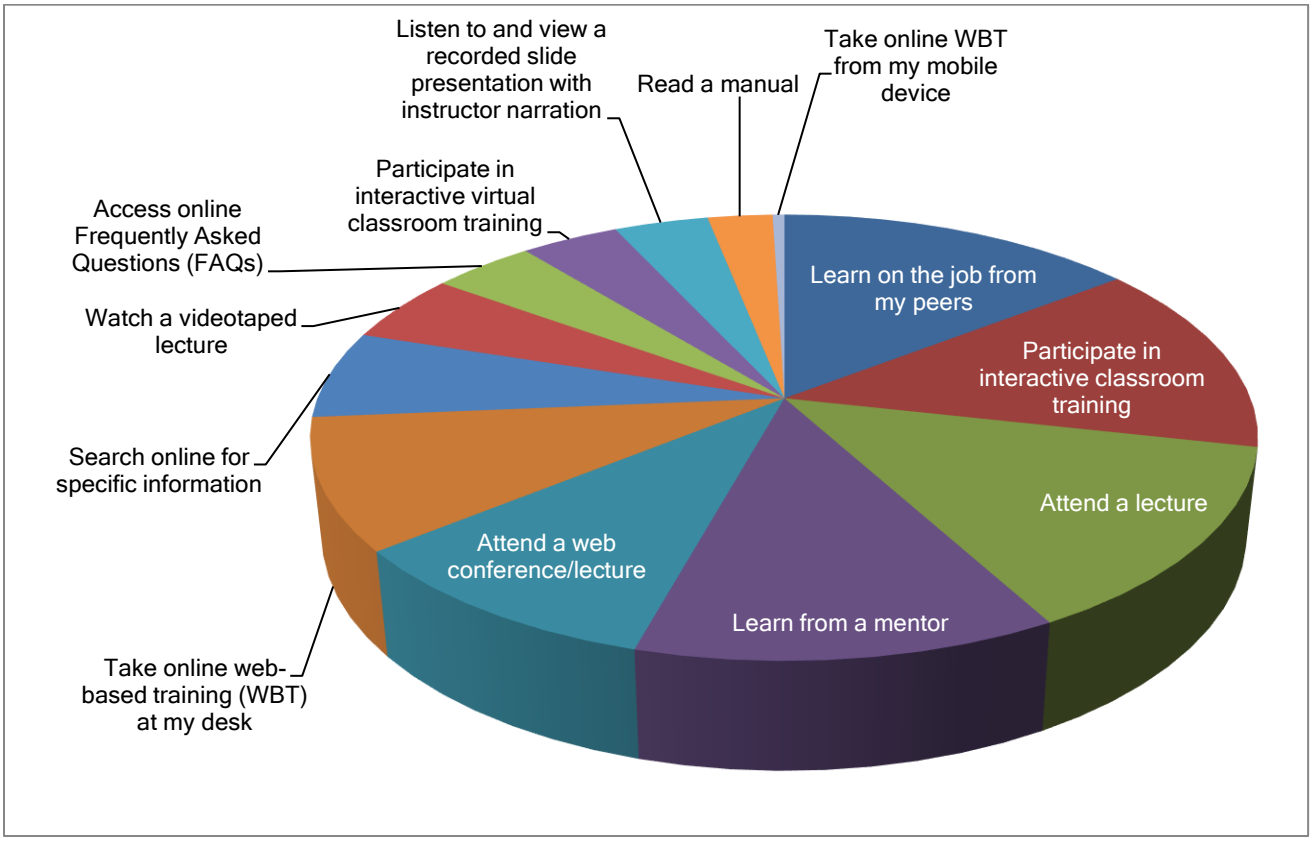


Sample comments:

- It may be more difficult to find an exact section of a lecture to answer a specific question, but the videos are easy to re-watch for a general refresher.
- I don't know where to find it.
- Have not tried it because not sure where are located; more likely to refer to written materials.

Question 18: Which are your preferred method(s) of learning? (Please select up to five.)

Learning Method	Percentage
Learn on the job from my peers	63.8%
Participate in interactive classroom training	61.2%
Attend a lecture	59.4%
Learn from a mentor	53.9%
Attend a web conference/lecture	43.2%
Take online web-based training (WBT) at my desk	41.7%
Search online for specific information	27.9%
Watch a videotaped lecture	21.9%
Access online Frequently Asked Questions (FAQs)	18.2%
Participate in interactive virtual classroom training	17.4%
Listen to and view a recorded slide presentation with instructor narration	16.7%
Read a manual	11.5%
Take online WBT from my mobile device	2.1%


Listen to and view a recorded slide presentation with instructor narration
Read a manual
Take online WBT from my mobile device
Participate in interactive virtual classroom training
Access online Frequently Asked Questions (FAQs)
Watch a videotaped lecture
Search online for specific information
Take online web-based training (WBT) at my desk
Learn on the job from my peers
Participate in interactive classroom training
Attend a lecture
Learn from a mentor
Attend a web conference/lecture

Question 19: Additional Comments

The following is a complete list of additional comments provided by respondents.

- Thought it was very good... for an overview
- Need to add more examples from all aspects of Extramural Activities to the training. For example, education and training. When I took the OER Orientation there was not one example shared on education and training only on research.
- When I took this training, instructors mostly read Powerpoint slides to us in a large auditorium, so wasn't any more effective than what I could do on my own. One session on funding mechanisms was more informative. I understand the training is improved this year, but requires additional time for extensive preparation.
- Would help to have this training offered twice per year instead of only once. When I started, I had just missed the training so had to wait 9 months for it to come round again.
- I think that you should add a component of your training that deals with OMB clearance since it can be such a lengthy and time-consuming process - take 6 to 8 months for approval.
- Most online procedures, e.g., registration, completion certification, etc., were very difficult to accomplish - poorly designed interfaces throughout.
- I thought it was a great class. Very thorough. I did not like the off-campus classes though. Parking was costly and it took so long to get out of the parking lot. Overall, I thought the class was great and gave a nice overall summary and specific details into every aspect of the NHLBI's workings.
- It was helpful to be able to access the materials even if you weren't attending the course.
- I found it very informative when I was just starting out at NIH.
- This training helps new NIH Extramural Scientist Administrators learn fast and serve the biomedical and behavioral research community well.
- In order to enhance the effectiveness in extramural community, credit from participating the training should link closely with your PMAP. You should participate certain numbers of training courses to get satisfactory performance evaluation. Otherwise, all training will fall apart.
- Grants Associate Program was one of the highly competitive, respected and effective program for training proactive leaders in Health Sciences Administration. It was terminated under Gore's down sizing initiative. NIH should consider implementing program similar to GA Program.
- I think that the optimal format is in-classroom discussion/lecture with ample time for audience questions/discussions. I think that during one of the sessions we had break-out groups, which were also very helpful.
- My overriding concern behind my selections is time flexibility and somewhat less so interactivity.
- The information in the current round of Core Curriculum was very detailed and useful for program staff.
- A vital part of our NIH training
- A Refresher course would be nice!
- Difficult for those of us located in NIEHS in North Carolina
- Never actually took it, I have been here too long!
- The smaller the group, the more interactions there are.
- I have been at NICHD 24 years and have never taken any orientation.

- When I started as a Program Director, there was no Extramural Science Administrator Training program.
- I was a course instructor till this year. The majority of student indicated they got the most from going over case studies with experienced POs, suggesting what they would do, and then getting critiques and suggestions from the pro's.
- This is an invaluable resource. If I had a new SRO I would insist that they attend the series.
- I am a supervisor. I would like better information on program availability. We seldom hire but when we do, extramural training or the program name has changed. As an infrequent user, it is hard to track.
- The real challenge comes after the orientation, when you're trying to stay on top of changes. Need to find answers to specific questions efficiently as they arise--can do this about 1/2 the time on OER website. Can't afford to watch a 4-hour video to find the answer to one question.
- The orientation needs to take into account that some practices vary across ICs.
- Recent Webinar training has been very useful but it would be nice to have access to the webinars after they are over. Sometimes I cannot make the dates scheduled and would like to see the webinars after they happen.
- Cohort follow-up activities could be useful in the sense that a formal mechanism would exist for keeping in touch with individuals from the ESA Seminar Series.
- Program staff are so extremely busy that it is a huge problem to require one day or even a part day a week for the training. Providing the training in smaller chunks with flexible timing would be much more useful.
- use of videotaped lecture would be more useful if there was consistent incorporation of the slides. recorded slide presentation would also be more useful if it was easy to navigate right to the question that one might have (perhaps with an outline presented to the side).
- Reviewed the more recent/newly enhance OER orientation curriculum, and would like to indicate that I think it will be very beneficial for new employees learning about what services NIH provides and how it operates.
- We have a lot of students/trainees, post-docs who may end up being grantees one day. It would be nice to have some type of training for them so they can benefit from and better understand the grants process and role of extramural people at NIH.
- This is just a general comment that training resources are often hard to find and track. A more integrated, user-friendly resource for accessing training requirements, finding opportunities, and tracking them would be very helpful.
- I recently took the ESA seminar series myself and I thought it was okay, but had some flaws related to technical problems (webcasting only mediocre) and inherent challenges in having consistent interaction between attendees given our crazy schedules.
- Even well experienced Program officials could use some refresher training.
- For question 6. I answered 3: years b/c there was no option to answer I never have taken the OER Orientation to NIH Extramural Activities.. in fact, I've never heard of this before
- I think that it's nice to have personal interaction when you are just getting to know your way around.
- I have recommended the archived videos to new non-program hires (admin assts, summer students, visiting fellow, etc.) in order to familiarize them with what NIH does

- Enhance understanding of policies and best practices for Contract review process and evaluation reports -- while not every IC does contract review, it's still important to highlight training for contract review for SROs and supervisors who are responsible for contract review. 2. NIH is long overdue for an e-process, i.e., using eRA for contract review, for contract review: NIAID has already developed its IC-based e-system for contract review, and reviewers exposed to this system has asked about a similar process when serving at another IC. Orientation should include a discussion or update about e-processes for contract review.
- This training is a very good overview - view from 50 thousand feet, but since each IC has its own procedures, policies and methods of operation. In some ICs grants specialists are primarily responsible for things like pop tracking while at other ICs pop tracking is a program responsibility. This training is valuable though.
- The in-classroom core curriculum was very useful, as well as the ESA seminar series. Currently I am at ~85-90% telework, so web-based training (live or archived) is most accessible and useful to me.
- Honestly, I didn't find the Core training terribly valuable during the first few months of being hired as a Program Officer. It's not that the information isn't valuable but because realistically, most of what I learned was on the job through peers and supervisors and learning in a "class" setting didn't provide me with any context. Sometimes one needs to have at least a little bit of experience doing something before really following the more detailed instruction. Also, I found that many of the descriptions of "what a Program Officer does" can be incorrect depending on the Institute and just because one Institute handles an issue a certain way does not mean that another does. For example, I recall learning that a Program Officer can "refuse" to accept an appeal or take it to Council (five years ago) yet I had already accepted an appeal (within my first two months at NIAID!) on the basis that in our Division of NIAID, ALL PIs had the right to have their concerns reviewed by Council regardless of the PO's opinion of whether or not the concerns indicated a valid basis for appeal (which is now NIH-wide, I believe). This is just one of many details that I had to "unlearn" from the Core training because I would not have been following Institute policy.
- The mode of learning depends a lot on the information content and the quality of instructor/mentors. For some updates, slides, FAQs, or webinars may be sufficient - but if it represents a new system or philosophy I might prefer a face-to-face or hands-on session. But either way, the instruction should be grounded in NIH realities rather than attempted lessons from a superficial contractor.
- I took the course 15+ years ago when it was all day every Friday for 9 months. At that time I complained bitterly that the course was entirely too long and contained more irrelevant material than useful information that I could use in performing my job. My understanding is that the course has been considerably shortened since then, but I have not attended any sessions under the new format.
- Have been an instructor (recently) in the program. The interactive nature of the Core Curriculum makes this a MUCH IMPROVED way to teach an increasingly complex job to newbbies. Suggestion: have supervisors do a stint as POs every five years or so. My boss recently had to fill in for a vacated PO position and was shocked at how complex the job has become over the past ten years. Implications for training: we need several levels of "core training", so that a new PO gets the basics, but more experienced folks get updates and the opportunity to address more nuanced issues.

- The availability of multiple approaches ensures that staff have options suited to their learning style
- If the training does not have an interactive component, it is difficult to stay engaged mentally.
- When you are at NIEHS, taking courses like this in person is extremely disruptive. In this era of videoconferencing and webinars, we should be able to do better.
- Many of the tasks are best learned at the time one is actually doing them. Mentoring by competent individuals is far preferable to "asking around." Other staff often give misinformation, perpetuating misunderstanding and mistakes.
- ERO Training is very important and anything that can be done to improve it throughout the years will be an effective way to improve performance and participation
- I took the training 20 years ago. I don't know how it compares to what is offered today, but I doubt it is comparable. However, the basic knowledge I obtained was valuable and the mentoring experience was an additional benefit. When I took on program officer responsibilities, advice from coworkers was invaluable.
- Needs info on how to serve on NIH wide committees and the value of this service.
- Participating in the classroom lecture for a new employee is also a social opportunity. Instead of have different peers each time at the table, the group should be fixed and arranged by similar role of the employee (reviewer, program, grant management, et al.). The relationship built at this time could be helpful in the future. While the senior advisor assigned for each table can be rotated as it is for now, because we need advice on different topics.
- New HSAs should be tested on the material. Without testing, there is no measure of effectiveness of the training.
- Some of the experts are relatively clueless, most are extremely good.
- Note that there is no option for more than 12 months in question 9. I didn't realize I needed to take the FEA and Core curriculum until I had been an FTE for more than 2 years. By that time I had figured most of the things out presented in the training.
- I think that attending the training would be most helpful for program directors who have been at NIH about 6 months. That would give you some context for the concepts, but still provide helpful information.
- Face to Face Meeting as the Core Curriculum is currently. Provides feedback from senior policy experts, peer interactions.
- Program timing does not allow for quick on boarding and orientation when staff first hired, should be integrated into IC on boarding process. Mid-career training should be considered as well as orientation to key changes every few years
- I find the perspective of the grants manager quite lacking. It is so program and review centric that the aspect of the 3 of us working together is missed.

Appendix C: Sample OEP Course Evaluation Forms

CORE 1 – Funding Mechanisms

Natcher Conference Center, Rooms E1-E3

Tuesday, January 30, 2007

Evaluation Form

Course Assessment Sheet:

1. What did you like best about this training Session?

2. What did you like least about this training session?

3. What do you suggest to improve the training session?

Name:

Phone:

CHOOSE ONE ANSWER FOR EACH QUESTION UNLESS OTHERWISE NOTED

1. How were your learning expectations fulfilled?

_____Beyond expectations

_____As expected

_____Less than expected

_____No expectations

2. For you, for Core One, please rate these modes of information delivery.

2a. Required readings were:

_____Essential

_____Helpful

_____Not helpful

_____I didn't read them

2b. Short presentations were:

_____Essential

_____Helpful

_____Not helpful

2c. Q&A sessions were:

_____Essential

_____Helpful

_____Not helpful

2d. Case Studies were:

_____Essential

_____Helpful

_____Not helpful

2e. Web links and additional resources were:

_____Essential

_____Helpful

_____Not helpful

_____I did not open any of them.

2g. Slide sets on the web were:

_____Essential

_____Helpful

_____Not helpful

_____I did not look at them

3. A new health scientist administrator joins your group. Will you recommend he or she attend the core curriculum?

_____Yes, heartily

_____Only if asked

_____Only with reservations

_____No, never

4. How would you have preferred todays information be provided? (choose one)

A. Lectures delivered by one or more of today's speakers

1. In person, in class.
2. By NIH VideoCast live
3. By NIH VideoCast archived (for later viewing)

B. Required readings, slide reviews, Q&A, and case study discussions

1. In person, in class
2. By go-to-meeting, live (real-time) and discussion with small group of co-workers.

5. After today, where will you go for follow-up information about creating an initiative? (CHOOSE ALL THAT APPLY)

_____OER Intranet Public Policy Section

_____OER Intranet Grant Programs Section

_____Core Curriculum Part One

_____Program Officials Handbook or SRO wiki

_____Google for information

_____Your supervisor

_____A co-worker in a nearby office

6. Having responsibility for reading the text before coming to class was:

_____An effective way to impart the knowledge

_____A good idea, but few did the readings

_____A good idea and almost everyone did the reading

_____Just doesn't work for busy people

_____A bad idea that will never work

7. How much of the required reading did you manage to read?

_____None

_____¼

_____½

_____¾

_____All of it

8. What did you like most about Core Curriculum Part One

{comment box}

9. What did you like least about Core Curriculum Part One

{comment box}

10. Please tell us how we might improve Core Curriculum Part One

{comment box}

ESA Training Seminar

ESA TRAINING SEMINAR

GWAS

(Genome-Wide Association Studies)

IMPLEMENTATION

January 14, 2008
9:00 am – 12:00 pm
NIH, Building 45, E1-E2

EVALUATION FORM

This evaluation form is designed to give participants of the GWAS seminar an opportunity to share anonymously their experience of this event and feedback regarding the faculty. Please take some time to fill this form out and turn in at the registration table or designated locations. Your contribution of feedback will be useful in efforts to continually improve training at the NIH.

Using the scale provided, please rate the following questions:

1 = not at all 2 = barely 3 = satisfactory 4 = good 5 = excellent

GENERAL

A. Objectives of this training seminar clearly provided to participants –
1 2 3 4 5

B. Objectives of this training seminar were met –
1 2 3 4 5

C. Quality of instruction overall -
1 2 3 4 5

FACULTY *(note: any comments provided will be forwarded to faculty members)*

D. ➢ Contribution by Laura Rodriguez Ph.D. - 1 2 3 4 5
➢ Comments:

E. ➢ Contribution by Michael B. Small, Ph.D. 1 2 3 4 5
➢ Comments:

F. ➢ Contribution by Emily Harris, Ph.D., MPH 1 2 3 4 5
➢ Comments:

G. ➢ Contribution by, Michael B. Small, Ph.D. - 1 2 3 4 5
➢ Comments:

Continued on back ➔

ESA TRAINING SEMINAR
GWAS (*Genome-Wide Association Studies*) IMPLEMENTATION
January 14, 2008
Evaluation Form - Page Two

H. What will you do differently as a result in attending this training seminar?

I. What did you like about this training seminar?

J. What *DIDN'T* you like about this training seminar?

K. Suggestions that might have improved this training seminar?

L. Additional comments:

Thank you for taking the time to complete this evaluation form. Please leave it at the registration table or other designated location. Fax forms to (301) 480-0146 or (301) 480-3530, Attn: STEP Office

OPPTIONAL:

NAME :

I/C :

EMAIL:

May we contact you? ☐ YES ☐ NO

NIH Extramural Staff Training Seminar

Training on Sex (Gender), Race and Ethnicity Inclusion in Clinical Research Studies

Natcher Auditorium

September 14, 2007

Please complete the evaluation form, circling the number that represents your answer.

Scale: 1 = None or not at all 2 = Very little 3 = Moderately

4 = Considerably 5 = Completely N/A = Not applicable

1) How well do you rate the Training seminar overall? 1 2 3 4 5 N/A

2) How well did the session improve your understanding of the Inclusion Policy and how to implement it in your work? 1 2 3 4 5 N/A

3) Did the speakers provide information on this topic that was helpful to you?

Policy (Vivian Pinn) 1 2 3 4 5 N/A

Program role (Carlos Caban) 1 2 3 4 5 N/A

SRA Role (Anita Sostek) 1 2 3 4 5 N/A

Grants Mgmt Role (Marsha Mathis) 1 2 3 4 5 N/A

Contracts Mgmt Role (Rosemary Hamill) 1 2 3 4 5 N/A

DEAS Role (Leslie Littlejohn) 1 2 3 4 5 N/A

4) Were the number and expertise of the speakers appropriate to the topic?

1 2 3 4 5 N/A

5) Were the case studies helpful in understanding how to evaluate implementation of the inclusion policy?

Case Study 1 1 2 3 4 5 N/A

Case Study 2 1 2 3 4 5 N/A

6) Were the audiovisuals helpful? 1 2 3 4 5 N/A

7) Will the references and supporting materials provided be helpful in recalling the material presented?

1 2 3 4 5 N/A

8) How helpful is the certification test process? 1 2 3 4 5 N/A

Your role at NIH:

_____ Program _____ Review_____ Grants Management ___Contracts Management

_____ DEAS _____ Extramural Policy Office ___Other Scientific/Technical Support _____ Other (Please Describe _____

Name (optional): _____

Comments

1. What comments or suggestions do you have for the seminar organizers?

_____

_____

_____

2. Are there other related topics you would like to have covered in future training?

_____

_____

_____

3. Additional comments to enhance the utility or impact of Inclusion Policy training?

_____

_____

Using Existing Biospecimens in Research: Ethical and Regulatory Considerations

March 10, 2011, Lipsett Amphitheater

Please use the rating scale that is shown by circling the number that represents your answer.

Scale: 1 = Not at all 4 = Considerably
2 = Very little 5 = Completely
3 = Moderately N/A= Not applicable

1. How did the session meet your expectations?

1 2 3 4 5 N/A

2. To what extent did you find this session to be relevant to your job?

1 2 3 4 5 N/A

3. Was the overall quality of the speakers an asset to the session?

1 2 3 4 5 N/A

4. Was the length of the session appropriate?

Yes_____ Too long_____ Too short_____

5. Please list any issues or topics not addressed that you felt should have been:

6. Do you have additional comments to enhance the utility or impact of the training?

7. What topics should be addressed in future training related to human subjects' protections?

Overall, I would rate this training session as: Poor Fair Good Excellent

Your role at NIH: Program__ Review___ Grants Management___ Other_____

Appendix D: The Gen Y Workforce

The Three Paradoxes of Generation Y

Lynda GrattonContributor

http://www.forbes.com/sites/lyndagratton/2013/06/06/the-three-paradoxes-of-generation-y/

Over the last few weeks, I've noticed a considerable amount of attention focused on Generation Y from both the media and business world. The May 20 issue of Time Magazine led with a cover story labelling them the 'Me, Me, Me' generation: narcissistic, fame-obsessed, and self-interested; Meanwhile PwC reported findings from a comprehensive Next Gen study of its Gen Y employees – a cohort that will make up around 80% of its workforce within the next three years.

This recent focus on Gen Y reflects a building sense of nervousness around how this generation, the biggest since the Baby Boomers, will reshape work. It's a nervousness I've felt from the HR leaders in my executive programme at LBS who often despair that this generation just aren't accepting 'the way things are done around here,' and are instead challenging long-standing processes and practices.

But is this anxiety justified? Are Gen Y really so different from their predecessors? And, if they are, do organizations need to change to accommodate them?

Here are three paradoxes I've uncovered that can help us answer those questions.

Short-term focus, but equally committed – Gen Y are fast movers. We know they will change jobs, and perhaps even entire careers, many times in their long working lives. This is a stark contrast with the 'job for life' career pattern of their Baby Boomer parents, and the HR leaders at my executive programme. It also shows their desire for meaningful, stimulating work from day one, and their lack of interest in traditional career paths that promote slowly.

This focus on short-term success is sometimes used to depict Gen Y as less committed to work than their Gen X and Baby Boomer peers. Yet this stereotype is certainly not true of those surveyed in the Next Gen study. According to Dennis Finn, Global Human Capital Leader at PwC, 'this generation is as engaged, committed and prepared to work as hard as previous generations'. They don't mind working. They just think there are better ways to work.

Tech savvy, but value face-to-face - Gen Y is known for its intensive use of social media and virtual communication. In the USA, this generation send and receive around 88 texts a day according to research by Pew, and 70% check their phones every hour. With these statistics in hand it's easy to view this generation as happy to conduct their lives, both professional and private, exclusively through their phones, iPads and laptops. But PwC's research tells us that Gen Y's aptitude for electronic communication augments rather than replaces face-to-face interaction. Particularly when it comes to performance and career discussions where personal interactions are still the preferred method.

Require recognition, but not necessarily more trophies - Time Magazine rather negatively dubs Gen Y the 'trophy generation' who, as a result of receiving too many participation trophies as children, have a sense of entitlement far beyond that of their older peers. It's easy to see where this assumption comes from. Just look at games such as Call of Duty and World of Warcraft, which provide satisfying rewards for every action the player takes. So, it should come as no surprise that, according to a study cited by Time Magazine, 40% of Gen Y believes they should be promoted every two years, regardless of performance.

But again, this may be misinterpreting the issue. We know Gen Y place a real emphasis on continual learning, and the drive for regular promotion should not be confused with the desire for regular feedback, which many see as a vital part of their personal and career development. Though a visual indicator of progression, promotion does not always bring with it greater learning opportunities.

So, what do organisations do about these paradoxes and how can they truly understand what drives their Gen Ys? PwC's Next Gen report has a few recommendations, but one stands out to me as particularly important for this fast-moving, tech-savvy group: 'Invest time, resources and energy to listen and stay connected with your people'. If there's one thing we know for sure about this generation, it's that they like to have their voices heard, and to feel empowered. Whether in the virtual or real world, perhaps the key to understanding this generation and knowing how to engage them is to simply listen to them.

10 Ways to Work Easier With Gen Y Colleagues

By MIRIAM SALPETER

http://money.usnews.com/money/blogs/outside-voices-careers/2012/05/02/10-ways-to-work-easier-with-gen-y-colleagues-

May 2, 2012 RSS Feed Print

Miriam Salpeter

Is there a generational, workforce clash in the making? Recently, MTV conducted a "No Collar Workers" study of Generation Y, also known as Millennials (born between 1981-2000). And the study's results may make some older workers' hair stand on end. For example: 92 percent of those surveyed feel their company is lucky to have them. And 76 percent of Millennials think their boss could learn a lot from them. Based on these results, it might be easy for readers to interpret younger workers' attitudes as egotistical and self-important.

Is this a recipe for conflict in the workplace? It could be. A recent *Time* article reports there are approximately 80 million Millennials, between 44 and 50 million Generation Xers (those born between 1965 and 1980), and 76 million baby boomers (people born between 1946 and 1964). Also, "Approximately 10,000 millennials turn 21 every day in America, and by the year 2025, three out of every four workers globally will be Gen Y."

So, can we all get along at work? Charles Purdy, senior editor for Monster Worldwide has studied intergenerational conflicts and thinks it's possible to leverage Gen Y workers' attitudes for positive results. He suggests the following to careerists who are working with the youngest members of the workforce:

1. Create a transparent work environment. Purdy explains, "Information builds trust, community, and a shared feeling of purpose." Retaining these workers requires engaging them. "Gen Y feels engaged when they know why. When appropriate, make data available for all employees to see. When people know the score, they feel trusted."

Purdy quotes Brad Karsh, president of the workplace training company JB Training Solutions, when he says: "Millennials have been taught to ask 'Why?' So we will give them an assignment that maybe isn't the most glamorous assignment in the world. We'll say, 'Go pull numbers for the spreadsheet,' and they will say, 'Why?' Now older generations, when they hear that, they think, 'How dare you? I am your boss. Because I said so.' The reason Millennials are asking that is they legitimately want to know 'Why?'"

2. Turn away from a time clock evaluation calendar and take the focus off of hierarchical structures. Instead, create a motivating environment where performance is related to concrete goals and projects. Purdy notes, "Millennials don't go about their work in ways that are intended to get them to the next rung of the corporate ladder or win them favor with their bosses. They prefer to get involved in projects and initiatives that fascinate them, that they consider worthwhile, and that they see as useful to the world at large."

3. Recognize star performers publicly, and tie their great performance to the success of the organization. Publicly reward junior team members who are doing a great job. But Purdy warns, "Do not make the rookie mistake of creating false reasons for praise."

4. Teach them. Younger employees are very motivated by education. While their eagerness for success and opinions can be viewed negatively, Purdy suggests, "Consider that Millennials often act out of ignorance and not out of arrogance."

5. Ask frequent questions and wear authority lightly. Engage younger workers by asking for their ideas. For example, this generation tends to be very tech savvy. Tap into those skills.

6. Invite interaction with members at all levels of the organizations. Purdy says, "Younger employees are often shyer than their older counterparts, so invite interaction not just with yourself, but with others throughout the company … For this generation, life comes before work, and work is intertwined with life. Gen Y has an ingrained lack of confidence in organizational stability, so they are less loyal to employers." Keeping them connected to individuals and providing potential mentors will enhance relationships and work products.

7. Offer opportunities for Gen Y workers to start making decisions immediately. However, do so with some limitations. To prevent younger workers from being overwhelmed by responsibility, Purdy explains, "It's a good idea to assign projects broken into multiple steps or deliverables."

8. Give them some attention. Purdy says, "Millennials are highly social, with large, interconnected 'tribes' that they're loyal to. Tapping into their craving for interaction will help them feel engaged in the company's goals."

9. Emphasize long-term rewards, and set an example. Millennials as a group have a tendency to be philanthropic: They care about the world and want to work to make it a better place. Companies can leverage this to their advantage and create workplaces and cultures to appeal to their employees and customers.

10. Use social media as a way to sell your company as an awesome place to work. Instead of over-regulating online activities, Purdy suggests organizations use Millennials' energy for online activity to the company's advantage. He says, "Create corporate blogs that cover your company's activities and culture. Encourage employees to get involved in your social-media activities to promote the company's goals. Be sure to keep it genuine."

Appendix E: Updating the Kirkpatrick Model

Kirkpatrick's Four Level Evaluation Model

(http://www.nwlink.com/~donclark/hrd/isd/kirkpatrick.html)

Perhaps the best known evaluation methodology for judging learning processes is Donald Kirkpatrick's **Four Level Evaluation Model** that was first published in a series of articles in 1959 in the *Journal of American Society of Training Directors* (now known as T+D Magazine). The series was later compiled and published as an article, *Techniques for Evaluating Training Programs*, in a book Kirkpatrick edited, *Evaluating Training Programs* (1975). However it was not until his 1994 book was published, *Evaluating Training Programs*, that the four levels became popular. Nowadays, his four levels remain a cornerstone in the learning industry.

While most people refer to the four criteria for evaluating learning processes as "levels," Kirkpatrick never used that term, he normally called them "steps" (Craig, 1996). In addition, he did not call it a model, but used words such as "techniques for conducting the evaluation" (Craig, 1996, p294).

The four steps of evaluation consist of:

Step 1: **Reaction** - How well did the learners like the learning process?

Step 2: **Learning** - What did they learn? (the extent to which the learners gain knowledge and skills)

Step 3: **Behavior** - (What changes in job performance resulted from the learning process? (capability to perform the newly learned skills while on the job)

Step 4: **Results** - What are the tangible results of the learning process in terms of reduced cost, improved quality, increased production, efficiency, etc.?

Kirkpatrick's concept is quite important as it makes an excellent planning, evaluating, and troubling-shooting tool, especially if we we make some slight improvements as show below.

Not Just For Training

While some mistakenly assume the four levels are only for training processes, the model can be used for other learning processes. For example, the Human Resource Development (HRD) profession is concerned with not only helping to develop formal learning, such as training, but other forms, such as informal learning, development, and education (Nadler, 1984). Their handbook, edited by one of the founders of HRD, Leonard Nadler (1984), uses Kirkpatrick's four levels as one of their main evaluation models.

Kirkpatrick himself wrote, "These objectives [referring to his article] will be related to in-house classroom programs, one of the most common forms of training. Many of the principles and procedures applies to all kinds of training activities, such as performance review, participation in outside programs, programmed instruction, and the reading of selected books" (Craig, 1996, p294).

Improving the Four Levels

Because of its age and with all the new technology advances, Kirkpatrick's model is often criticized for being too old and simple. Yet, almost five decades after its introduction, there has not been a viable option to replace it. And I believe the reason why is that because Kirkpatrick basically nailed it, but he did get a few things wrong:

Motivation, Not Reaction

When a learner goes through a learning process, such as an e-learning course, informal learning episode, or using a job performance aid, the learner has to make a decision as to whether he or she will pay attention to it. If the goal or task is judged as important and doable, then the learner is normally motivated to engage in it (Markus, Ruvolo, 1990). However, if the task is presented as low-relevance or there is a low probability of success, then a negative effect is generated and motivation for task engagement is low. In addition, research on Reaction evaluations generally show that it is not a valid measurement for success (see the last section, Criticisms).

This differs from Kirkpatrick (1996) who wrote that reaction was how well the learners liked a particular learning process. However, the less relevance the learning package is to a learner, then the more effort that has to be put into the design and presentation of the learning package. That is, if it is not relevant to the learner, then the learning package has to hook the learner through slick design, humor, games, etc. This is not to say that design, humor, or games are unimportant; however, their use in a learning package should be to promote or aid the learning process rather than just make it fun. And if a learning package is built of sound purpose and design, then it should support the learners in bridging a performance gap. Hence, they should be motivated to learn—if not, something dreadfully went wrong during the planning and design processes! If you find yourself having to hook the learners through slick design, then you probably need to reevaluate the purpose of your learning processes.

Performance, Not Behavior

As Gilbert noted (1998), performance is a better objective than behavior because performance has two aspects: behavior being the means and its consequence being the end... and it is the end we are mostly concerned with.

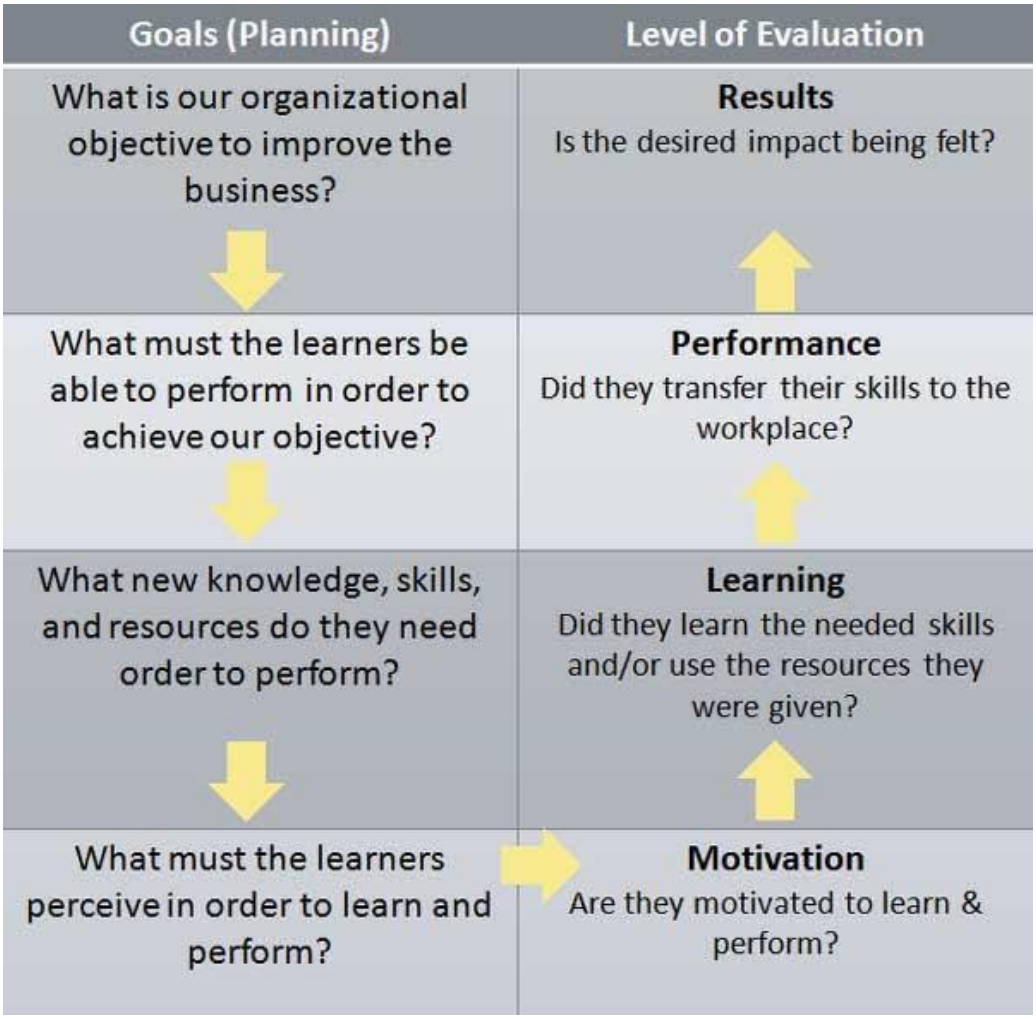
Flipping it into a Better Model

The model is upside down as it places the two most important items last—results, and behavior, which basically imprints the importance of order in most people's head. Thus by flipping it upside down and adding the above changes we get:

- **Result** - What impact (outcome or result) will improve our business?
- **Performance** - What do the employees have to perform in order to create the desired impact?
- **Learning** - What knowledge, skills, and resources do they need in order to perform? (courses or classrooms are the LAST answer, see Selecting the Instructional Setting)
- **Motivation** - What do they need to perceive in order to learn and perform? (Do they see a need for the desired performance?)

This makes it both a planning and evaluation tool which can be used as a troubling-shooting heuristic: (Chyung, 2008):

Revised Evaluation Model

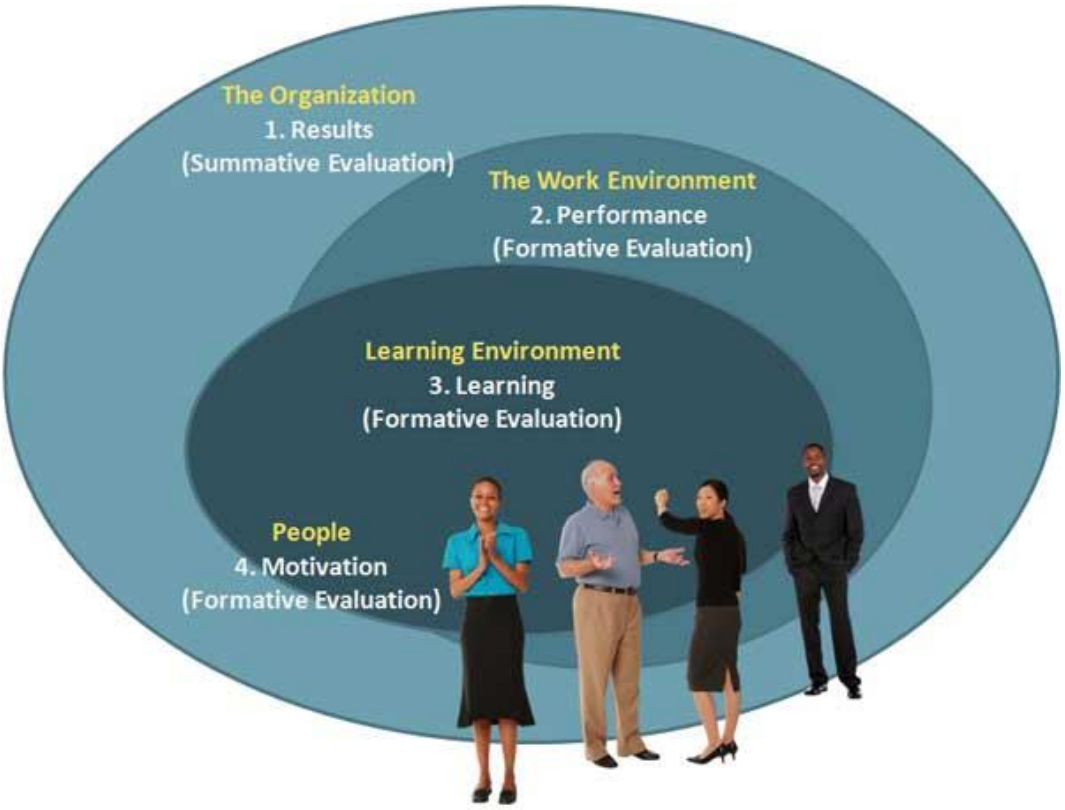


The revised model can now be used for planning (left column) and evaluation (right column). In addition, it aids the troubling-shooting process. For example, if you know the performers learned their skills but do not use them in the work environment, then the two more likely troublesome areas become apparent as they are normally in the cell itself (in this example, the Performance cell) or the cell to the left of it:

- There is a process in the work environment that constrains the performers from using their new skills, or
- the initial premise that the new skills would bring about change is wrong.

The diagram below shows how the evaluation processes fit together:

Learning and Work Environment



As the above diagram shows, the Results evaluation is of the most interest to the business leaders, while the other three evaluations (performance, learning, and motivation) are essential to the learning designers for planning and evaluating their learning processes; of course the Results evaluation is also important to them as it gives them a goal for improving the business. For more information see Formative and Summative Evaluations.

Level One - Results

Results or Impact measures the effectiveness of the initiative. Although it is normally more difficult and time-consuming to perform than the other three levels, it provides information that is of increasingly significant value as it proves the worth of a learning and performance process. However, using the Goals/Planning/Evaluation model should ease the process as you will now have a clear picture of what you are trying to achieve. That is, when you plan for something then you more readily understand how to evaluate it.

Motivation, Learning, and Performance are largely soft measurements; however, decision-makers who approve such learning processes prefer results (returns or impacts). Jack Phillips (1996), who probably knows Kirkpatrick's four levels better than anyone, writes that the value of information becomes greater as we go from motivation to results.

That does not mean the other three levels are useless, indeed, their benefits are being able to locate problems within the learning package:

- The motivation evaluation informs you how relevant the learning process is to the learners (it measures how well the learning analysis processes worked). You may have all the other levels correct, but if they do not see a purpose for learning and performing, then they probably won't do it.
- The Learning evaluation informs you to the degree of relevance that the learning process worked to transfer the new skills to the learners (it measures how well the design and development processes worked).
- The performance evaluation informs you of the degree that their skills actually transferred to their job (it measures how well the performance analysis process worked).
- The results evaluation informs you of the *return* the organization receives from supporting the learning process. Decision-makers normally prefer this *harder* result, although not necessarily in dollars and cents. For example, a study of financial and information technology executives found that they consider both hard and soft returns when it comes to customer-centric technologies, but give more weight to non-financial metrics (soft), such as customer satisfaction and loyalty (Hayes, 2003).

Note the difference in “information” and “returns.” Motivation, Learning, and Result measurements give you information for improving and evaluating the learning process, which mostly concerns the learning designers; while the Results measurement gives you the returns for investing in the learning process, which mostly concerns the business leaders.

This Results measurement of a learning process might be met with a more balanced approach or a balanced scorecard (Kaplan, Norton, 2001), which looks at the impact or return from four perspectives:

- Financial: A measurement, such as an ROI, that shows a monetary return, or the impact itself, such as how the output is affected. Financial can be either soft or hard results.
- Customer: Improving an area in which the organization differentiates itself from competitors to attract, retain, and deepen relationships with its targeted customers.
- Internal: Achieve excellence by improving such processes as supply-chain management, production process, or support process.
- Innovation and Learning: Ensuring the learning package supports a climate for organizational change, innovation, and the growth of individuals.

Level Two - Performance

This evaluation involves testing the learner's capabilities to perform learned skills while on the job. These evaluations can be performed formally (testing) or informally (observation). It determines if the

correct performance is now occurring by answering the question, “Do people use their newly acquired skills on the job?”

It is important to measure performance because the primary purpose of learning in the organization is to improve results by having its people learn new skills and knowledge and then actually applying them to the job. Since performance measurements must take place when they are doing their work, the measurement will typically involve someone closely involved with the learner, such as a supervisor or a trained observer or interviewer.

Level Two - Learning

This is the extent to which learners improve knowledge, increase skill, and change attitudes as a result of participating in a learning process. The learning evaluation normally requires some type of post-testing to ascertain what skills were learned during the process and what skills they already had.

Measuring the learning that takes place is important in order to validate the learning objectives. Evaluating the learning that has taken place typically focuses on such questions as:

- What knowledge was acquired?
- What skills were developed or enhanced?
- What attitudes were changed?

Learner assessments are created to allow a judgment to be made about the learner's capability for performance. There are two parts to this process: the gathering of information or evidence (testing the learner) and the judging of the information (what does the data represent?). This assessment should not be confused with *evaluation*. Assessment is about the progress and achievements of the individual learners, while evaluation is about the learning program as a whole (Tovey, 1997, p88).

Level Four - Motivation

Assessment at this level measures how the learners perceive and react to the learning and performance process. This level is often measured with attitude questionnaires that are passed out after most training classes. Learners are often keenly aware of what they need to know to accomplish a task. If the learning process fails to satisfy their needs, a determination should be made as to whether it's the fault of the learning process design or that the learners do not perceive the true benefits of the process.

When a learning process is first presented, rather it be eLearning, mLearning, classroom training, a job performance aid, or through a social media tool, the learner has to make a decision as to whether he or she will pay attention to it. If the goal or task is judged as important and doable, then the learner is normally motivated to engage in it (Markus, Ruvolo, 1990). However, if the task is presented as low-relevance or there is a low probability of success, then a negative effect is generated and motivation for task engagement is low.

Criticisms

There are three problematic assumptions of the Kirkpatrick model: 1) the levels are not arranged in ascending order, 2) the levels are not causally linked, and 3) the levels are positively inter-correlated (Alliger and Janak, 1989).

The only part of Kirkpatrick's four levels that has failed to uphold to scrutiny over time is Reaction. For example, a Century 21 trainer with some of the lowest Level one scores was responsible for the highest performance outcomes post-training (level four), as measured by his graduates' productivity. This is not just an isolated incident—in study after study the evidence shows very little correlation between Reaction evaluations and how well people actually perform when they return to their job (Boehle, 2006).

Rather than measuring reaction, what we are now discovering is that we should be pre-framing the learners by having their managers discuss the importance of participating in a learning process (on-ramping) and then following-up on them to ensure they are using their new skills (Wick, et al. 2006), hence another reason for changing the term “reaction” to “motivation.”

Kirkpatrick's four levels treats evaluation as an end of the process activity. Whereas the objective should be to treat evaluation as an ongoing activity that should begin during the pre-learning phase.

Actually, this criticism is inaccurate. For example, *The ASTD Training & Development Handbook* (1996), edited by Robert Craig, includes a chapter by Kirkpatrick with the simple title of “Evaluation.” In the chapter, Kirkpatrick discusses control groups and before and after approaches (such as pre and post-tests). He goes on to discuss that level-four should also include a post-training appraisal three or more months after the learning process to ensure the learners put into practice what they have learned. Kirkpatrick further notes that he believes the evaluations should be included throughout the learning process by getting evaluations not only during each session or module, but also after each subject or topic.

The four Levels are only for training process, rather than other forms of learning.

As noted in the second section, Not Just For Training, Kirkpatrick wrote about being able to use the four levels in other types of learning processes and the Human Resource Development profession, who help to deliver both informal and formal learning use Kirkpatrick's four levels as one of their main evaluation models. Perhaps the real reason that informal learning advocates do not see the model being useful is because “it was not invented here.”

The four levels of evaluations mean very little to the other business units

One of the best training and development books out is *The Six Disciplines of Breakthrough Learning* by Wick, Pollock, Jefferson, Flanagan (2006). They offer perhaps the best criticism that I have seen—“Unfortunately, it is not a construct widely shared by business leaders, who are principally concerned with learning's business impact. Thus, when learning leaders write and speak in terms of levels of evaluation to their business colleagues, it reflects a learning-centric perspective that tends to confuse rather than clarify issues and contribute to the lack of understanding between business and learning functions.”

So it might turn out that the best criticism is not leveled at the four levels themselves, but rather the way we use them when speaking to other business leaders. We tell the business units that the level-one evaluation show the learners were happy and that the level-two show they all passed the test with flying colors, and so on up the line. Yet according to the surveys that I have seen, results or impact is rarely used, which the business leaders most highly value. The other levels of evaluation can be quite useful within the design process as they help us to discuss what type of evaluation we are speaking about and pinpoint troubled areas. However, outside of the learning and development department they often fall flat. For the most part, the business leaders' main concern is the **IMPACT**—did the resources we spent on the learning process contribute to the overall health and prosperity of the enterprise?

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Appendix F: ASTD Competency Model

ASTD Competency Model
Training and Development Redefined

Performance Improvement

Apply a systematic process for analyzing human performance gaps and for closing them.

Be able to:

- Identify the customer.
- Conduct performance analysis.
- Conduct cause analysis.
- Analyze systems.
- Gather data.
- Incorporate customer and stakeholder needs.
- Select solutions.
- Manage and implement projects.
- Build and sustain relationships.
- Evaluate results against organizational goals.
- Monitor change.

Instructional Design

Design and develop informal and formal learning solutions using a variety of methods.

Be able to:

- Conduct a needs assessment.
- Identify appropriate learning approach.
- Apply learning theory.
- Collaborate with others.
- Design a curriculum, program, or learning solution.
- Design instructional material.
- Analyze and select technologies.
- Integrate technology options.
- Develop instructional materials.
- Evaluate learning design.

Training Delivery

Deliver informal and formal learning solutions in a manner that is both engaging and effective.

Be able to:

- Manage the learning environment.
- Prepare for training delivery.
- Convey objectives.
- Align learning solutions with course objectives and learner needs.
- Establish credibility as an instructor.
- Create a positive learning climate.

- Deliver various learning methodologies.
- Facilitate learning.
- Encourage participation and build learner motivation.
- Deliver constructive feedback.
- Ensure learning outcomes.
- Evaluate solutions.

Learning Technologies

Apply a variety of learning technologies to address specific learning needs.

Be able to:

- Use technology effectively across the different areas of expertise.
- Identify when and how to use technology as a training and development solution.

Evaluating Learning Impact

Use learning metrics and analytics to measure the impact of learning solutions.

Be able to:

- Identify customer expectations.
- Select appropriate strategies, research design, and measures.
- Communicate and gain support for the evaluation plan.
- Manage data collections.
- Analyze and interpret data.
- Apply learning analytics.
- Make recommendations to aid decision-making.

Managing Learning Programs

Provide leadership to execute the organization's people strategy; implements training projects and activities.

Be able to:

- Establish a vision.
- Establish strategies.
- Implement action plans.
- Develop and monitor the budget.
- Manage staff.
- Model leadership in developing people.
- Manage others.
- Manage and implement projects.
- Manage external resources.
- Ensure compliance with legal, ethical, and regulatory requirements.

Integrated Talent Management

Build an organization's culture, capability, capacity, and engagement through people development strategies.

Be able to:

- Align talent management to organizational objectives.
- Use talent management systems.
- Equip managers to develop their people.
- Organize delivery of developmental resources.
- Promote high-performance workplaces.
- Coordinate workforce and succession planning.
- Facilitate the career development planning process.
- Facilitate career transitions.
- Support engagement and retention efforts.
- Implement individual and organizational assessments.
- Use talent management analytics to show results and impact.

Coaching

Apply a systematic process to improve others' ability to set goals, take action, and maximize strengths.

Be able to:

- Establish coaching agreement.
- Establish trust and intimacy with the client.
- Display coaching presence.
- Demonstrate active listening.
- Ask powerful questions.
- Use direct communication.
- Create awareness.
- Design learning opportunities.
- Develop goals and plans.
- Manage progress and accountability.
- Meet ethical guidelines and professional standards.

Knowledge Management

Capture, distribute, and archive intellectual capital to encourage knowledge-sharing and collaboration.

Be able to:

- Advocate knowledge management.
- Benchmark knowledge management best practices and lessons learned.
- Encourage collaboration.
- Facilitate social learning.

- Establish a knowledge culture.
- Support the development of a knowledge management infrastructure.
- Leverage technology.
- Manage information life cycle.
- Design and implement knowledge management solutions.
- Transform knowledge into learning.
- Evaluate knowledge management success.

Change Management

Apply a systematic process to shift individuals, teams, and organizations from current state to desired state.

Be able to:

- Establish sponsorship and ownership for change.
- Build involvement.
- Create a contract for change.
- Conduct diagnostic assessments.
- Provide feedback.
- Facilitate strategic planning for change.
- Support the change intervention.
- Encourage integration of change into organizational culture.
- Manage consequences.
- Evaluate change results