DETERMINING HOURS OF DESIGN AND DEVELOPMENT

Overview

A general rule of thumb can be used to determine the amount of time it takes to design, develop, implement, and evaluate training courses. The following is an example of the calculation of time needed for the design and development of seven different types of courses. Note: This does not include delivery times. Delivery time will be established based on the requirements of and amount of participation. Calculations are based on curriculum development guidelines from Weber State University, the American Society for Training and Development (ASTD), and the Department of Energy.

According to “Calculating Cost Savings From Sharing of Training Materials” developed for the U. S. Department of Energy, Office of Nuclear Safety Policy and Standards (http://www.eh.doe.gov/nsps/training/costsav.pdf), the development time per hour of instruction (classroom) is 35-45 hrs of development/hour of classroom time. For technical fundamentals, an average of 50 hrs of development time/hr of classroom instruction is used to account for the increased complexity of the materials and the expertise of the reviewers (e.g., engineering support staff personnel).

The following information was excerpted from “Calculating Cost Savings from Sharing of Training Materials”.

1. **Instructor Preparation** (Dugan Laird, in "Approaches to Training and Development," (1985) Based on U.S. Civil Service estimate):
   - Course is five days or less, then 3 hours of preparation for each hour of training.
   - Course is between five and ten days, then 2.5 hours of preparation for each hour of training.
   - Course is over 10 days, then 2 hours of preparation for each hour of training.

2. **One hour of classroom** (instructor led) training (30 hours):
   - Analysis – 4 hrs.
   - Design - 3 hrs.
   - Development - 16 hrs.
   - Evaluation and Revision - 7 hrs.

3. **Highly technical or poorly defined training** (45 hours):
   - Analysis - 10 hrs.
   - Design - 9 hrs.
   - Development - 18 hrs.
   - Evaluation and Revision - 8 hrs.

4. **Self-Contained Training for hand-off to other instructors** (50 to 100 hours):
   - Analysis - 12 to 24 hrs.
   - Design - 10 to 20 hrs.
   - Development - 19 to 38 hrs.
   - Evaluation and Revision - 9 to 18 hrs.

5. **Interactive Multimedia Instruction (IMI)**: 200 - 500 man-hours for each instructional hour of IMI. If your organization is inexperienced, expect your average developmental man-hours to be closer to 450-500 man-hours per instructional hour. The 1995 August/September issue of *CBT Solutions Magazine* reported that 221 hours was the average development time.
Based on information from several resources, SPP developed a list of various types of learning experiences with varying levels of complexity and the time required to develop an 8-hour session for each type. The following assumes that the trainer is an expert in the subject matter being delivered. If this is not the case, the design and development times could increase.

1. **Information-Only Courses** (e.g., presentations)
   For every hour of informational training, it is necessary to spend approximately eight hours of development for each hour of the class. Because it is information only, it does not require a complicated development process. A complexity factor of “1” should be used if the course is informational and the evaluation is a simple objective assessment (e.g., Multiple Choice).

   In this instance, an 8-hour information-only course with an objective assessment will require:
   \[8 \text{ hrs (course length)} \times 8 \text{ hrs (development time)} \times 1 \text{ (complexity factor)} = 64 \text{ hrs}\]
   So for a one-day, information-only class with objective assessments, it will take approximately 1.5 uninterrupted weeks to design and develop content and assessments. *This does not include delivery time.*

2. **Activity-Based Courses** (e.g., workbooks/worksheets, tabletop exercises)
   For every hour of activity-based training, it is necessary to spend approximately eight hours of development for each hour of the class. Because it is activity-based, it requires a more complicated development process. A complexity factor of “2” should be used if the course is activity-based and the evaluation is a simple objective assessment (e.g., Multiple Choice) or a written problem-based assessment.

   In this instance, an 8-hour activity-based course with an objective assessment will require:
   \[8 \text{ hrs (course length)} \times 8 \text{ hrs (development time)} \times 2 \text{ (complexity factor)} = 128 \text{ hrs}\]
   So for a one-day, activity-based class with objective assessments, it will take approximately 3 uninterrupted weeks to design and develop content and assessments. *This does not include delivery time.*

3. **Scenario-Based Courses** (this might include the use of a simulator)
   For every hour of hands-on, performance-based training, it is necessary to spend approximately eight hours of development for each hour of the class. Because it is performance-based, it also requires additional time for developing performance-based assessments. A complexity factor of "3" should be used if the course and evaluation are hands-on. If a simulator is used, this will require additional time and coordination.

   In this instance, an 8-hour performance-base course with performance-based assessments will require:
   \[8 \text{ hrs (course length)} \times 8 \text{ hrs (development time)} \times 3 \text{ (complexity factor)} = 192 \text{ hrs}\]
   So for a one-day, hands-on class with performance-based assessments, it will take approximately 5 uninterrupted weeks to design and develop content and assessments. *This does not include delivery time.*
4. **Simulator-based** - an 8 hour performance-based, scenario-based course with performance-based assessments will require: For every hour of simulator-based training, it is necessary to spend approximately eight hours of development for each hour of the class. Because it is performance-based and involves the integration of simulator use, it requires additional time for developing performance-based assessments. A complexity factor of “4” should be used since the course and evaluation are hands-on and performance-based.

\[
8 \text{ hrs (course length)} \times 8 \text{ hrs (development time)} \times 4 \text{ (complexity factor)} = 256 \text{ hrs}
\]

So for a one-day, hands-on, simulator-based class with performance-based assessments, it will take approximately 6.5 uninterrupted weeks to design and develop content and assessments. *This does not include delivery time.*

5. **Vendor-Provided Courses**
   
   If any of these courses are offered by a vendor, it reduces the amount of time required of the training staff. A good rule of thumb for vendor-provided training is to use the following:

\[
8 \text{ hrs (course length)} \times 0.5 \text{ (complexity factor)} = 4 \text{ hrs}
\]

So for a one-day, vendor-provided class, it will take approximately ½ day of a training staff member. *This does not include delivery time.*

6. **Vendor-Partner Courses**
   
   If any of these courses are offered by a vendor and training staff are asked to partner with the vendor in the design and development process, it reduces the amount of time required of the training staff, but still requires more than a course that is solely vendor-provided. A good rule of thumb for training developed in partnership with a vendor is:

\[
8 \text{ hrs (course length)} \times 1.5 \text{ (complexity factor)} = 12 \text{ hrs}
\]

So for a one-day, vendor-partner class, it will take approximately 1.5 days of a training staff member. *This does not include delivery time.*

7. **Online Courses** (courses created using FLASH, CAPTIVATE, or other MACROMEDIA products that are animated and interactive)

   Due to the nature of these courses, the design and development calculations are different than those above.

   For a one-hour, online, interactive course, the following metrics apply:
   - 40 hours research and development of data for course
   - 40 hours script writing
   - 40 hours Flash animation development
   - 40 hours Captivate development and editing
   - 8 hours audio recording
   
   **168 Total Hours** or approximately 4 weeks of design and development time

   *So for a one-hour, online, interactive course, it will take approximately four weeks to design and develop content and assessments. This assumes that the developer will have experience using the available tools.*
Website Resources

“Calculating Cost Savings From Sharing of Training Materials”
http://www.eh.doe.gov/nsps/training/costsav.pdf

This is an excellent site titled “Estimating Training Development Time and Costs”. This site has an Excel spreadsheet with a rough cost estimator.
http://www.nwlink.com/~donclark/hrd/costs.html

Another excellent site titled “Knowledge, Performance, Training and Learning” contains
1. Instructional System Development Manual - A complete guide to analysis, design, development, implementation (delivery), & evaluation.
2. ISD Concept Map - A visual guide to the learning design process.
   http://www.nwlink.com/~donclark/hrd.html

This site has information regarding job tasks analysis that you might also find helpful: "Instructional System Design: Analysis Phase”.
http://www.nwlink.com/~donclark/hrd/sat2.html#traincost

Approaches to Training and Development by Dugan Laird is another reference that you might find helpful- link to Amazon: http://www.amazon.com/Approaches-Training-Development-Dugan-Laird/dp/0201044986