

INDEX

A

ADL (Advanced Distributed Learning) initiative, 96–97*fig*
Adult learning theory, 31–32*t*
Affective domain: described, 44; levels in the, 45*t*; objectives for soft/technical skills in, 51
Alley, G., 46
Animators, 178
Application developer, 114
Art directors: preproduction tasks of, 173; production role of, 177
Assignment directions, 133
AST Computer (CBT program), 124*fig*
ASTD (American Society for Training and Development), 79
Asynchronous web delivery: content of, 206–207; described, 168; Symposium learning solutions using, 202
Attain, 170, 211
Audience analysis: four activities for conducting, 19–20; function of, 18; tips from our experience with, 20
Audience analysis activities: analyze audience demographics/requirements, 19; analyze language skills of audience, 20; determine attitudes toward content, 19; document results, 20
Audio Log, 176
Audio producer (or technician), 110

Audio specialists, 173–174
Audio standards, 126
Auditory learning, 117
Author (publisher, material developer), 110
Authoring packages, 170, 211–212
Authors: CC plan responsibilities of, 154, 156, 157; preproduction tasks of, 171, 173; production tasks of, 175
Authorware, 170

B

Barron, T., 218
Benson, A., 100, 167
Borg, W., 227
Brainstorming, 143
Briggs, L., 6, 42
Byres, P., 227

C

Camera operators, 177
Campbell, D. T., 227
CBA (cost-benefit analysis), 77, 78, 80
CBT programs: AST Computer, 124*fig*; comparing Web design development to, 193–194, 211; development methodology using, 172*t*; multimedia development use of, 164; Ophthalmology, 125*fig*; Steam Turbulence Seal System,

- 123*fig*; Stratus, 121–123, 122*fig*; writing records to training records database from, 178
- CC (configuration control): establish CC (configuration control) plan, 153–155; function of, 153; sample CC (configuration control) plan, 154–157; tips from our experience with, 157
- CC (configuration control) plan: establishing, 153–154; step one: author’s responsibilities, 154; step two: CCG’s responsibilities, 155; step three; reviewers’ responsibilities, 155; step four: last reviewer’s responsibilities, 155; step five: CCG’s responsibility, 155; step six: author’s responsibilities, 156; step seven: CCG’s responsibilities, 156; step eight: reviewers’ responsibilities, 156; step nine: CCG’s responsibilities, 156; step ten: author’s responsibilities, 157
- CDS (course design specifications), 94–96*t*, 161–162
- Centra Software, Inc., 193. *See also* Symposium (Centra program)
- Check disk, 176
- Clip Art Example, 173*fig*
- CMI (computer-managed instruction) program, 164
- Cognitive domain: described, 44; objectives for soft skills in, 51; objectives for technical skills in, 50; seven levels in the, 45*t*
- Computer-based course development activities: create and assemble media elements, 186–187; creating storyboards, 182, 183–184, 183*fig*, 185*fig*, 186; deliver and implement the course, 188; perform online reviews, 187–188
- Computer-based courses: activities for developing, 182–188; creating templates for use in, 181–182; tips from our experience on, 188–189
- Concept mapping: constructivist approach and use of, 148; detailed lesson flowchart, 151*fig*; elements of, 147–148; events of instruction, 145*t*–147*t*; example of, 149*fig*; high-level course flowchart, 150*fig*; process of, 149–150
- Confidentiality issue, 10
- Constructivism design approach: compared to objectivism, 125–126; concept mapping and, 148; described, 100; flowchart of storyboard using, 185*fig*; questioning structure used in, 125
- Content structure: activities used to create, 144–152; examples of learning principles applied to, 137–141; function of, 129; learning/instructional delivery strategies for, 141–144; process of, 144; theory/learning principles related to, 129–137; tips from our experience on, 152
- Content structure activities: breaking content into units, 144–145; mapping the information, 145–151*fig*; select SCROM-compliant vendors for solutions, 151–152
- Content validity, 245
- Correlations, 254–255
- Coscarelli, W., 227, 260
- Cost analysis: activities used in, 77–79; function of, 77; tips from our experience with, 79–80
- Cost analysis activities: CBA (cost-benefit analysis), 77, 78, 80; ROI (return on investment), 77, 78–79
- Costume designers, 177
- CR (criterion-references) measurements, 253, 260
- Creative director, 110–111
- Critical incident analysis: activities used during, 36–38; function of, 36; tips from our experience with, 38
- Critical incident analysis activities: determine critical tasks, 37; determine important but nonessential tasks, 37; determine the tasks you will deselect, 38; document the results, 38
- CRT (criterion-referenced test), 260, 262
- ## D
- Data collection/analysis: activities during procedure of, 266–267; confidentiality during, 10;

- extant, 73–76; issue analysis, 39; multimedia evaluation, 265–268; needs assessment, 8*t*–10*t*; process of, 265; RAM (rapid analysis method), 82–83; tips from our experience with, 267
- Data collection/analysis activities: collect and compile the data, 267; develop and evaluation plan, 266–267; document your findings, 267; interpret the data, 267; set up database, 266
- Deductive learning strategies, 141
- Demonstrations/examples, 131
- Deschler, D., 46
- Design-time prototyping, 162
- Detailed lesson flowchart, 151*fig*
- Dewey, J., 100
- Difficulty index, 250, 255
- Director, 176, 177
- Distance learning, 214. *See also* IDB (Interactive distance broadcast)
- Distractor analysis, 256
- DoD (Department of Defense), 96, 97, 98
- Domains of learning: affective, 44, 45*t*; cognitive, 44, 45*t*; listed, 44*t*; metacognitive, 46–47*t*; motor and psychomotor, 46, 47*t*; objectives for soft skills and, 51; objectives for technical skills and, 50–51; separating terminal and performance objectives in, 52–53; writing objectives within, 47. *See also* Learning
- Dreamweaver, 211–212
- ## E
- E-learning: impact on assessment/analysis process, 4–5; impact on evaluation by, 225–226; impact on ID (instructional design) by, 100–102; impact on multimedia development/implementation, 167–169. *See also* Learning
- E-learning strategy, 232, 233*fig*
- Editor, 111
- Editorial review, 178
- EPSS (electronic performance support system), 89, 139
- Ernst & Young, 164, 170
- ERP (Enterprise Resource Planning) system, 137–138
- Evaluation. *See* Multimedia evaluation
- Evaluation Matrix, 228*t*
- Evaluation specialist, 111
- Events of instruction, 145*t*–147*t*
- Examples/demonstrations, 131
- Extant data analysis: activities used in, 73–76; function of, 73; process of, 73; tips from our experience with, 76
- Extant data analysis activities: collect information/existing course materials, 74; compare information, 74; document your decision, 76; evaluate the off-the-shelf solutions, 75; identify likely sources of information, 74; make a buy-or-build decision, 75; tips from our experience with, 76
- ## F
- Face validity, 245
- Feedback: followed with appropriate technique, 135; instructional, 135; objectivism design approach use of structured, 126
- Forman, D., 136
- Formative evaluation, 224
- Frequency counts, 256
- Front-end analysis: audience analysis, 18–21; cost analysis, 77–80; critical incident analysis, 36–38; extant data analysis, 73–76; illustration of, 3; impact of e-learning on, 4–5; issue analysis, 39–41; media analysis, 55–72; objective analysis, 42–54; situational analysis, 28–30; task analysis, 31–35; technology analysis, 22–27; tips from our experience with, 16–17; types of, 15*t*
- Functional review, 178–179
- ## G
- Gagné, R., 42
- Gall, M., 227

Game strategy, 143
Graphic artists: production role of, 178; production tasks of, 175; roles and responsibilities of, 111
Graphic designer, 111
Graphics Rework Request, 178
Grips, 177
Guided learning/open exploration strategy, 142–143

H

Harrow, A., 46
High-level course flowchart, 150*fig*
Horton, W., 232
HTML (hypertext markup language): authoring tools for integrating components of, 211–212; determining online reference materials in, 24; for web-based design, 193, 207

I

Icons, 164, 166*fig*
ID (instructional design): CDS (course design specification) elements of, 94–96*t*; e-learning's impact on, 100–102; front-end analysis as “hidden phase” of, 16–17; illustration of design phase of, 93; interaction between LMS and LCMS, 100*fig*; LMS (learning management systems) capabilities and, 96, 99*fig*–100, 103; phases and time ratio of, 17*fig*; RCO (reusable content objects) and, 97, 98*fig*; SCORM (Searchable Content Objects Reference Model) and, 96–99; tips from our experience on, 102–103
ID (instructional designer): activities used in developing, 216–218; preproduction tasks of, 171; process of, 215; tips from our experience on, 218–220
ID (instructional designer) activities: broadcast the session, 217–218; develop script and materials, 216–217; rehearse the presentation, 217; shoot and edit video, 217

IDB (interactive distance broadcast): described, 214–215; development methodology used for, 172*t*; response keypad for system of, 214, 215*fig*. *See also* Distance learning
Implementation representative, 111–112
Inductive learning strategies, 141
Instructional designer, 112, 177
Instrument development: activities used in, 253–258, 260; appropriate statistical measures used in, 261*t*; overview of, 25–253; process of, 253; question types used in, 259*t*; tips from our experience with, 260, 262–264. *See also* Validity measurements
Instrument development activities: calculating length of each instrument, 257–258; calculating weight of each item, 258; deciding when instrument should be administered, 258; developing measurement instruments, 257; document decision in the evaluation plan, 260; using qualitative measures, 255–257; using quantitative measures, 254–255; select types of measurements, 253–254
Intellinex, 170
Intellinex Development Screen, 166*fig*
Intellinex Icons, 164, 166*fig*
Intellinex Template, 165*fig*
Inter-rater agreement, 245–246
Interactive designer, 112
Interactive distance learning. *See* IDB (interactive distance broadcast)
“Interactive Distance Learning: Special Report” (*Technical Training* issue), 218
Internet delivery: differentiating between www, intranets and, 191; reasons for adoption of, 191–193; training on demand requirements and, 190. *See also* WWW (World Wide Web) delivery
Intranet delivery: defining, 191; differentiating between www, Internet and, 191; reasons for adoption of, 191–193
Introductions, 130

Issue analysis: activities used during, 39–40; diagram of, 41*fig*; function of, 39; process of, 39; tips from our experience with, 40–41
Issue analysis activities: collection of data, 39; placing data into appropriate category, 40
Issue Analysis Model, 41*fig*
Item analysis, 255

K

Kinesthetic learning, 118
Kirkpatrick, D., 224, 227
Knowledge-based assessments, 263–264
Knowles, M., 31
Krathwohl, E., 44
KSA (knowledge, skills, and attitudes): relationships among tasks and, 32*fig*; task analysis of, 31

L

Learning: adult learning theory on, 31–32*t*; distance, 214; eight-step metacognitive strategy for, 46–47; four media approaches to, 117–118. *See also* Domains of learning; E-learning; Learning strategies
Learning environments: creating computer-based, 181–189; developing interactive distance broadcast, 214–220; developing Internet, Intranets, Web-based, 190–213
Learning principles: 1: use review in learning, 129–130; 2: include introductions/specified objectives, 130; 3: use of effective verbal content, 130–131; 4: use of examples/demonstrations, 131; 5: build in student success, 131; 6: tailor course to audience, 131–132; 7: keep pace brisk, with variations, 132; 8: include smooth transitions, 133; 9: use clear assignments/directions, 133; 10: maintain proper standards, 134; 11: monitor, circulate, and check work, 134; 12: ask one question at a time, 134–135; 13: work in feedback, 135; 14: follow feedback with appropri-

ate techniques, 135; 15: material should motivate, 135–136; 16: connect material to real world, 136–137; examples of application of, 137–141; four categories of all, 137

Learning strategies: brainstorming, 143; components of, 232–233*fig*; deductive and inductive, 141; defining, 232; games, 143; guided learning, open exploration, 142–143; lecture and demonstration, 142; lecture and discussion, 142; lecture or linear presentation, 142; lecture, recitation, interaction, 142; performance support, 144; role playing, 144; simulation, 144. *See also* Learning

Lecture or linear presentation, 142

Lecture, recitation, interaction strategy, 142

Lecture/demonstration strategy, 142

Lee, W., 6, 32, 100, 167, 246

Lighting designers, 177

LMS (learning management systems): ID and capabilities of, 99*fig*–100; as ID consideration, 96; interaction between LCMS and, 100*fig*; as oversold concept, 103

M

Macromedia, 211

Mager, R., 42

Mamone, R., 246

Martuza, V., 227

Materials developer, 110

Media analysis: activities used in, 57–68; cost factors associated with, 65*t*–67*t*; four levels of blended solution learning environment, 71*fig*; function of, 55; information learned from, 5; process of, 56–57; tips from our experience, 68–72; types of delivery, 55*t*–56*t*; validity/reliability of tools used in, 68

Media analysis activities: compare results and decide on media, 64; document the results, 68; match media advantages/limitations, 58, 59*t*–64*t*; match media to appropriate objectives, 68; place the resulting media in hierarchy, 58;

- rate each of the factors, 57; summarize findings, 57–58
- Media elements creation/assembly, 186–187
- Media specifications: activities used in process of defining, 118–128; design decisions on, 116–117; four approached to learning related to, 117–118; function of, 116; Screen Design Pattern, 120*fig*; theory related to, 117; tips from our experience using, 128
- Media specifications activities: decide on animation and special effects, 127; define interaction/feedback standards, 123–126; define the interface/functionality, 119–123; define the look/feel of the theme, 118–119; define the video/audio treatments, 126; indicate text design/standards, 127; prepare the graphic design standards, 127
- Metacognitive domain: described, 46; eight-step metacognitive strategy for learning to teach, 46–47; objectives for technical skills in, 51
- Microsoft Project, 107
- Microsoft Scheduler Plus, 107
- Motivation: instructional material which promotes, 135–136; learning principles and, 137
- Motor/psychomotor domains: described, 46; levels in the, 47*t*
- Multimedia development: of computer-based learning environments, 181–189; e-learning's impact on, 167–169; icons inserted during, 164, 166*fig*; illustrative diagram of, 161; of interactive distance broadcast environments, 214–220; of Internet, Intranets, Web-based learning environments, 190–213; production cycle of, 171, 172*t*, 173–180; strategies to increase efficiencies of, 165, 167; templates used during, 164–165*fig*; tips from our experience with, 169–170
- Multimedia development production cycle: post-production and quality reviews, 178–180; pre-production, 171, 173–175; production phase of, 175–178
- Multimedia evaluation: collecting and analyzing data for, 265–268; formative and summative, 224; illustrative diagram of, 223; impact of e-learning on, 225–226; instrument development for, 252–264; levels of, 224–225*t*, 227; measures of validity used in, 245–251; overview of, 224–225; plan for, 235–244; purpose of, 227–231; strategy of, 232–234; tips from our experience with, 226
- Multimedia evaluation plan: activities used to develop, 236–241; described, 232, 235; process of, 235, 242*fig*–243*fig*; tips from our experience on developing, 244
- Multimedia evaluation plan activities: complete executive summary, 241; complete pertinent components of plan, 236–241; complete problem statement section, 236; complete solution section, 236
- Multimedia evaluation purpose: determining purpose of solution activity for, 229–231; Evaluation Matrix on variables in, 228*t*; tips from our experience on, 231
- Multimedia evaluation strategy: activities used in, 233–234; overview of, 232–233*fig*; process of, 233
- Multimedia instruction: developing computer-based, 181–189; e-learning's impact on, 167–169; synchronous or asynchronous delivery of, 168
- Multimedia instruction learning principles: building student success into, 131; using clear assignments/directions in, 133; connecting material to real world, 136–137; using effective verbal content, 130–131; examples and demonstrations used in, 131; feedback used in, 135; importance of motivation in, 137; including introductions/specified objectives, 130; including smooth transitions, 133; keeping pace brisk with variations, 132; maintaining proper standards, 134; monitoring/work checked by instructors, 134; motivating mate-

rial used in, 135–136; use of questions in, 134–135; review of material applied to, 129–130; tailoring course to audience, 132

Multimedia instructional design. *See* ID (instructional design)

Multimedia needs assessment: illustrative diagram of, 3; impact of e-learning on, 4–5

N

Needs assessment: data-collection techniques used in, 8*t*–10*t*; defining, 6; five types of, 6*t*–7*t*; six activities in process of, 7–8, 10–12; tips from our experience on, 12–14

Needs assessment activities: define the job, 11; determine positive areas, 12; determine the present condition, 10–11; identify discrepancies, 11; listed, 7–8; rank the goals in order of importance, 11; set priorities for action, 12

Northwestern University, 169

NR (norm-referenced) measurements, 253, 260

O

Objective analysis: activities used during, 48–53; domains of learning and, 44*t*–47*t*; function of, 42; System Flowchart used during, 43*fig*; theory related to, 42–43; tips from our experience with, 53–54

Objective analysis activities: decide on domains, 49; decide on level, 49; separating lesson/performance objectives, 52–53; separating terminal/performance objectives, 52; write goal statement, 49; write performance objectives, 49–52

Objectives: five parts of an, 49*t*; importance of specified, 130; learned capability/capability verbs for developing performance, 50*t*; matching media to appropriate, 68; ordering, 48*t*; separating lesson from performance, 52–53; separating terminal from performance, 52; writing performance, 49–52; writing within domains of learning, 47

Objectivism design approach: compared to constructivists, 125–126; described, 100; examples of, 121–126; structured feedback used in, 126; structured questioning techniques used in, 124–125

Olfactory learning, 118

Online reviews, 187–188

Open exploration/guided learning strategy, 142–143

Ophthalmology (CBT program), 125*fig*

Owens, D., 100, 167

P

Parallel test validity, 256–257

PeopleSoft, 138

Performance analyst, 112

Performance support, 144

Phillips, J., 227, 257

Phillips, P., 257

Photographers, 178

Photography standards, 126

Point-biserial correlation, 250

Postproduction tasks, 178–180

Preparing Instructional Objectives (Mager), 42

Preproduction tasks, 171, 173–175

Principles of Instructional Design (Gagné, Briggs, and Wager), 42

Producer, 176–177

Production cycle. *See* Multimedia development production cycle

Project manager (leader), 113

Project schedule: described, 104–105; three activities used as part of, 105–107; tips from our experience with, 107–108

Project schedule activities: document general project information, 105; list project deliverables, 105–106; schedule project activities, 106–107

Project team activities: assign roles and responsibilities, 115; list project tasks, 115; list team roles, 109–115

Project teams: activities used by, 109–115; defining roles/responsibilities of, 109; process of defining roles/responsibilities for, 109; tips from our experience on, 115

PSS (performance support systems): acquisition issues of, 204; described, 203–204; development issues of, 205; implementation issues of, 205; maintenance issues of, 206; support issues of, 205–206

Psychomotor domain: described, 46; levels in the, 47*t*; objectives for technical skills in, 51

Publisher, 110

Q

QA (quality assurance) reviews, 16

Qualitative measures, 255–257

Quality reviewer (or evaluator), 113

Quality-control representative, 174–175

Quantitative measures, 254–255

R

RAM (rapid analysis method): benefits and advantages of using, 81; critical success factors for, 81–82; data gathering for, 82–83; five activities during, 85–86, 88; function of, 81; overview of, 83*t*–85*t*; Roles and Responsibilities Matrix for, 86, 87*fig*, 106; tips from our experience with, 89

RAM (rapid analysis method) activities: ask primary questions, 86, 88; listen and record responses, 88; observe actual performance, 88; prepare for the analysis, 86; report results, 88

RCO (reusable content objects), 97, 98*fig*

RDTs (rapid development tools), 162, 164

Reshoot Request, 176

Response Keypad for Distance Learning System, 214, 215*fig*

Reviews: built into course content, 129–130; multimedia development postproduction and quality, 178–180; as part of CC (configuration control) plan, 155, 156; as part of multimedia

development, 162; performing online, 187–188; QA (quality assurance), 16; by SMEs (subject-matter experts), 94, 155; standards, 178; of web development, 208

Roadman, K., 6, 246

ROI (return on investment), 77, 78–79

Role playing, 144

Roles and Responsibilities Matrix, 86, 87*fig*, 106

S

SAP, 138

Schrock, S., 260

SCORM (Searchable Content Objects Reference Model): content structure using, 151–152; importance in context of design, 103; overview of, 96–99

Screen Design Pattern, 120*fig*

Set designers, 177

Shackleford, B. A., 98

Shrock, S., 227

Simulation, 144

Situational analysis: activities used during, 28–29; function of, 28; tips from our experience with, 30

Situational analysis activities: analyze delivery environment, 29; analyze the job environment, 29; document the results, 29

SMEs (subject-matter experts): to establish validation levels, 250; preproduction tasks of, 174; production role of, 177; review of content by, 94, 155; roles and responsibilities of, 114; SME-as-designer approach and, 101; technical accuracy reviewed by, 179

Sound designers, 177

Specified objectives, 130

Sponsor, 113

Standards: audio, 126; defining interaction and feedback, 123–126; indicating text design and, 127; maintaining proper, 134; photography, 126; preparing graphic design, 127; review of, 178; video, 126

Stanley, J. C., 227
State of the Industry Report (ASTD), 226
 Statistical measures, 261*t*
 Steam Turbulence Seal System (CBT program), 123*fig*
 Storylands: flowchart of constructivist course, 185*fig*; interactive designs for content of, 183*fig*; steps in creating, 182, 184, 186
 Stratus (CBT program), 121–123, 122*fig*
 Students: building-in success for, 131; promoting motivation of, 135–136, 137; synchronous training of, 207; tailoring course to, 131–132
 Summative evaluation, 224
 Symposium (Centra program): asynchronous learning solutions, 202; class management features of, 200–201; integration and customization of, 201; real-time interactivity of, 198–199; rich content and multimedia support of, 199–200; security features of, 201–202; structured, live interaction of, 195–198. *See also* Centra Software, Inc.
 Symposium Participant Interface, 196*fig*
 Symposium Session Leader Main Screen, 197*fig*
 Synchronous training, 207
 Synchronous web delivery: described, 168; Symposium's (Centra) use of, 194–202
 System engineer (or programmer), 114, 178
 Systems designer, 114

T

Tactile learning, 118
 Task analysis: activities used during, 32–34; adult learning theory and, 31–32*t*; function of, 31
 Task analysis activities: define the position title, 33; document the results, 34; identify all job-related duties, 33; identify all tasks, 33–34; order the tasks, 34, 35*t*
 Task Analysis Diagram, 33*fig*
A Taxonomy of Educational Objectives (Krathwohl), 44

Technical Training (journal), 218
 Technology analysis: activities used during, 22–26; function of, 22; information learned from, 5–6; tips from our experience with, 26–27
 Technology analysis activities: analyze available communication technology, 23; analyze technology available for reference/performance support, 24; analyze technology available for testing/assessment, 24–25; analyze technology for delivery, 25; analyze technology for distribution, 25; analyze technology expertise, 25–26; document the results, 26
 Templates: created for multimedia instruction, 181; for integrating HTML components, 211–212; Intellinet, 165*fig*; used during multimedia development, 164–165*fig*
 Tests of significance, 255
 Theories: adult learning, 31–32*t*; related to content structure, 129–137; related to measures of validity, 245–246; related to media specifications, 117; related to objective analysis, 42–43; related to task analysis, 31–32*t*
 Toolbox, 170

V

Validity measurements: activities used in development of, 246; comparison of survey question types, 249*t*; described, 245; process of developing, 246; theory related to, 245–246; tips from our experience with, 249; types/establishment of, 247*t*–248*t*. *See also* Instrument development
 Vendor analysis, 5
 Verbal content, 130–131
 Video director, 174
 Video editor (or technician), 114
 Video producer, 114–115
 Video reshoots, 176
 Video scripts, 174
 Video standards, 126
 Video teleconferencing, 218

Videographers, 175
Visual learning, 117

W

Wager, W., 42

WBT (web-based training), 139

WWW (World Wide Web) delivery: Centra's synchronous, 194–202; comparing CBT to, 193–194, 211; designing for, 193–194; differentiating between Internet, intranets and, 191; PSS (performance support system) for, 203–206;

rapid adoption of, 191–193; testing security of, 202–203. *See also* Internet delivery

WWW (World Wide Web) development: activities for, 206–209; methodology used for, 172*t*; process of, 206; tips from our experience on, 209–213

WWW (World Wide Web) development activities: assemble components, 208; conduct reviews, 208; conduct the session, 209; determine type of product/platform, 206–208; rehearse the presentation, 208