PBET GLOSSARY

Analyze step — the second step in the performance improvement process. There are several possible procedures that can be used during this step, but these are the ones that PBET considers to be essential: job analysis, (business) goal analyses, task analyses, target performer (audience) analysis, writing performance objectives, and creation of a learning hierarchy. Discussion: Some would combine step 1 and 2 of the performance improvement process into a single step called, "Analyze." See, performance improvement process. The expression "front-end analysis" emphasizes the idea that steps 1 and 2 of the performance improvement process must be done before "Design" and "Development."

business goal analysis — a procedure used during the Analyze step of the performance improvement process to (a) identify, where possible, one or more new tasks or steps to be performed from vaguely worded business goals, and/or (b) modify the conditions and standards of existing performance objectives to accommodate the meaningful components, where applicable, of business goals.

competence — a level of performance determined by a performer's accomplishment of a task to the degree stated in the standards of the performance objective, particularly the qualitative measures. Discussion: Competence (competency) refers to when a performer does a task "right," meaning it was done the way it was supposed to be done and when the task was completed, it was done "correctly," (i.e., according to the standard). "Mastery of a performance objective" when the performance objective has no speed requirement, means the same thing as competence. Some use mastery to mean fluency; fluency refers to when a task can be done competently, as well as quickly and almost instinctively; consequently, fluency inevitably contains a speed component. Attaining fluency requires continued and/or frequent practice of the task after the attainment of competence.

conditions (of an objective) — describes (a) where the performer performs the task and (b) what the performer is allowed to use ("given" to use) in order to perform the task. Conditions can include (or exclude), among other things: equipment, equipment readings and displays, documentation, tools, replacement parts, recipes, job aids, personal protective clothing, and more.

content (of a lesson) — what a performer needs to know or understand in order to practice a task successfully. Often this part of the lesson is labeled theory, information, data, description, concepts, or background. Discussion: A procedure (i.e., the step by step sequence of how to perform a particular task) is not an example of content. It is not something one needs to know; it is rather something that is done. However, for many tasks, especially tasks that are more process than procedure, learning certain content is prerequisite to performance.

delivery methods (delivery system) — the way in which the parts of a lesson are transferred and presented to a learner. Discussion: In general, there are two types of delivery systems: typical and alternate. The "Typical" method is instructor led training (ILT) in which the trainer is physically present and, during the demonstration, practice, and test, the actual machine (equipment) is physically present. "Alternate" delivery methods are everything else. When both types of delivery are used in the same lesson or course, it is called blended learning. Alternate delivery methods include e-learning, distance learning, and, when used while the instructor is not physically present, materials like programmed booklets, flashcards, and written assignments.

The virtual classroom is an alternate delivery method because the instructor is not physically present.

demonstration — an essential part of every lesson in which the learner observes the task required by the lesson's objective. Also called, modeling. Discussion: Typically the instructor performs the demonstration; but there are many alternate methods, such as a video demonstration. A demonstration includes showing and explaining the steps of either (1) the same exact task (e.g., Adjust the elevator height), or (2) one sample among many for that task (e.g., Find the open interlock).

Design step — the third step in the performance improvement process, as applied to a training solution: This step focuses on creating a lesson design plan for each performance objective established during the "Analyze" step. Discussion: Every lesson plan has common elements such as an introduction, a demonstration of the task, an opportunity for each learner to practice the task while receiving feedback, and a performance test. Some lessons also include content, but not all. See, content. The design of each lesson includes selection of appropriate delivery methods for each lesson element. See, delivery methods.

Develop step — The fourth step in the performance improvement process, as applied to a training solution: This step focuses on creating all the instructional aids, practice aids, test materials, and delivery system materials listed and described in the "Design" step.

distance learning — The desired outcome of training courses delivered to remote locations via delivery methods such as (a) physically mailing materials like written correspondence, audio- and videotape, and CD-ROM, or (b) using online learning including the virtual classroom, audio- and videoconferencing, interactive TV, and FAX. Training from a distance does not preclude the use of the traditional classroom. The definition of distance learning is broader than and entails the definition of e-learning.

embedded solution — a type of performance solution (intervention); a job aid that is integrated into the equipment (e.g., labels, ergonomic designs, color-coding, mistake-proofing, expert systems, on-line help systems).

entry lesson — the first lesson (i.e., representing the first task with its complete performance objective) in a course; the entry lesson is typically shown at the bottom of a learning hierarchy.

e-learning (electronic learning) — a category of delivery methods that covers a wide set of applications and processes, such as Web-based learning, computer-based learning, virtual classrooms, and digital collaboration. It includes delivery via internet, intranet/extranet (LAN/WAN), CD-ROM, and more. Some would extend the definition to include audio- and videotape, satellite broadcast, interactive TV, and more.

equipment documentation — recorded information in any form (e.g., text, video, audio) or media (e.g., electronic, paper) intended to assist the user with equipment tasks (e.g., installation, operation, preventive maintenance, corrective maintenance, application).

Evaluate step — The seventh step in the performance improvement process, as applied to a training solution: This step determines whether the training works, by looking at two or more of these examples of evaluation criteria: (1) the reaction/opinion of the students, (2) the degree to which members of the target group are able to be "signed off" as competent, (3) the reaction of students

and their supervisors to the training several months after training, (4) the degree to which members of the target group perform as expected on the job several months after training, (5) any measurable benefits that accrue to the business as a result of the training.

feedback (during practice) — information provided to learners during and after their practice of a task, providing both supportive (positive) information about what has been done correctly as well as corrective feedback about what needs to be done differently. Feedback is essential in order for learners to develop competence and confidence regarding the task, whether it is provided verbally by an instructor or whether it is provided by alternate means.

flexible scheduling — arranging the daily schedule for instructor led training so as to minimize the number of people around a machine during practice activities (e.g., half the class begins the day at 8 am while the remaining students begin at 12 noon, half the class takes lunch from 11 am to 12 noon while the remaining students take lunch from 12 noon to 1 pm).

fluency —a level of performance determined by a performer's ability to meet the standards of a performance objective quickly and instinctively. Also called, automaticity. Discussion: When this level of performance is required it should be incorporated into the performance objective; this will impact the nature and duration of the practice sessions and performance test.

goal — an intended outcome not stated in measurable terms.

goal analysis — see, business goal analysis.

Identify step — the first step in the performance improvement process. During this step, procedures are used to identify four things: (1) the performance requirements, (2) any factors that prevent performers from performing as required, (3) the most cost-effective performance solution (intervention) that will enable performers to perform as expected, and (4) the evaluation criteria that will enable performance improvement stakeholders to determine the effectiveness of the performance solution. Discussion: Since training is one of the most costly interventions, this is the step where it is determined whether training should be designed as the solution. See, performance solution. The first two "Identify" procedures are sometimes called cause analysis, root cause analysis, or gap analysis. Another name for the entire "Identify" step is performance analysis. Some would combine step 1 and 2 of the performance improvement process into a single step called, "Analyze." See, performance improvement process.

Implement step — The sixth step in the performance improvement process, as applied to a training solution: This step is about taking whatever action is required to support the personnel that will deploy the training so that the training delivery is (a) effective and (b) standardized. "Effective" delivery requires that personnel are equipped with the appropriate skills (e.g., presentation skills, facilitation skills, questioning skills, feedback skills, PBET class management skills). "Standardized delivery requires that personnel be given written guidance for each lesson. Discussion: Written material for purposes of standardization may have been created during the "Design" step, since detailed lesson plans can, when done well, serve as delivery notes for instructors. Others will find it convenient to create student manuals and instructor support materials at the same time, i.e., during the "Development" step. Yet others will create their materials, ensure that they work (i.e., pilot and revise), and then create an Instructor Guide or alternate support materials for instructors and/or facilitators as part of this "Implement" step. Any such variation is an acceptable interpretation of the performance improvement process.

instructional aid — any object required for delivery of training but not needed by the performer on the job (e.g., whiteboard, sample faults for troubleshooting, demonstration video, slides). Also called a training aid. Discussion: Objects needed by the performer for reference, during training and on the job, are called job aids.

instructor — an individual with appropriate technical expertise and experience, authorized by the employer to deliver, or facilitate the delivery of, a course module or set of modules and capable of addressing student questions in a timely manner. See also, trainer.

instructor guide — provides written information to an instructor on how to teach a lesson or series of lessons. A book, in which all of the right-side pages are annotated reproductions of the student manual and the left-side pages are detailed lecture notes, questions to ask the students, and directions for class activities is one example of a formal instructor guide.

instructor led training (ILT) — any training delivery method in which a human instructor is present at the same time as the student (even if not the same location) to present information or direct the learning activities (e.g., classroom lectures, discussion groups, instructor demonstrations at the equipment, instructor feedback during practice activity, virtual classroom).

job — the collection of tasks to be performed by an individual, in support of a process. The job (or performer of the job) is usually identified with a particular function (e.g., equipment operator, process engineer).

job aid — a type of performance solution (intervention); any object used by the performer on the job that provides information and makes the performance of the task easier or more accurate. Also called, performance aids or guides. Discussion: Some job aids are reference materials such as flow charts, block diagrams, procedures, schematics, and the manuals in which they often are found. Some job aids are embedded such as labels or online diagnostics. Some job aids are self-explanatory and are therefore stand-alone performance solutions; whereas some job aids benefit from an introduction during training (e.g., block diagrams might be explained in lectures and flow charts might be used for reference during practice).

job analysis — a procedure used during the Analyze step of the performance improvement process to identify the tasks performed by a competent job incumbent.

learning hierarchy — a diagram showing enabling relationships between two or more tasks and that communicates the recommended sequence for learning the tasks. See, objectives: enabling objectives. Also called, *skill hierarchy*. Discussion: Each task on the diagram represents one performance objective and one lesson. Typically, the entry-level lessons are shown at the bottom of the diagram, symbolizing their foundation for the rest of the course. The learning hierarchy will also clarify the options that are available in the sequence by placing them on the horizontal plane.

lesson — a planned sequence of activities which, when completed, enables a person to perform one task according to the specifications of the corresponding performance objective. Also called, a *module*. Discussion: These activities typically include: (1) lesson introduction intended to focus the learner on what is to be learned, (2) relevant content if any, (3) a demonstration of the task, (4) an opportunity to practice the task while receiving feedback, and (5) a performance test. In PBET, it is understood that learners have the opportunity to repeat the practice and/or the test until mastery of the objective is achieved.

level (as in task levels or skill levels) — a designation for grouping a series of tasks into categories (1) that parallel the requirements for jobs like equipment operator, maintenance technician, field service engineer; or (2) that represent increasing levels of entry skill such as operator level, preventive maintenance level, corrective maintenance level, etc. Discussion: Some companies have their own grid that relegates types of tasks to specified levels like 1, 2, and 3.

mastery — (1) a level of performance determined by a performer's having met the standards of a performance objective when the performance objective has no speed requirement (i.e., competency); (2) a level of performance determined by a performer's ability to meet the standards of a performance objective quickly and instinctively (i.e., fluency, automaticity)

objective — a statement describing an intended outcome. Discussion: The preferred PBET term is performance objective. Less acceptable to PBET is the term training objective or learning objective (it implies that the statement is useful only in or during training and that the statement describes an intention only for training. See, performance objective.

- *complete objective* — a performance objective that contains conditions and standards in addition to the performance (task). Discussion: an objective without conditions or standards (i.e., just the task), is sometimes called a short-form objective.

- *enabling objective* — a performance objective that (1) is necessary to master in order to learn how to do the succeeding task(s), or (2) makes it easier to learn how to do the succeeding task(s). Also called, sub-objectives, sub-tasks.

- *performance objective* — a statement that describes the intended performance of a worker for a single task or group of tasks. A performance objective must be a complete objective. Discussion: When derived properly, the performance objective is an accurate reflection of a job place requirement on the equipment. When written properly, a performance objective serves to (1) guide the course developer to create a lesson that includes only content and practice activities that are relevant to the intended outcome, (2) guide the instructor in assisting the learner(s) toward a clearly stated competency, (3) inform the learner at the start of the lesson about the expectation for his performance at the end of the lesson, and (4) enables supervisors to track competencies of their staff.

- *prerequisite objective* — an enabling performance objective that describes a task that is required for course admission (i.e., the task is not taught in that course). Discussion: Some use the term synonymously with enabling objective; in that case, the term applies to all objectives except terminal objectives.

- *terminal objective* — a major final outcome of a course (or a learning hierarchy), usually representing the culmination of the preceding objectives (e.g., Operate the machine, Troubleshoot any machine fault)

participant guides, manuals — see, student manuals

PBET steps — see, performance improvement process

performance (of an objective) — the same as the task (e.g., Replace the electrode, Diagnose power distribution faults, Interpret wafer map, Debug the program). It is usually the shortest part of the complete performance objective.

performance analysis — see, Identify step

performance checklist — a means of tracking an individual learner's progress at gaining competency in a list of tasks. Also called, a sign-off sheet. Discussion: The checklist can be a simple paper document or an electronic tool, sometimes called a learning management system (LMS). Every PBET course should have a performance checklist of each task included in the course. Some businesses have, for each job category, a performance checklist of all the known tasks required of that job; employees' overall learning progress can then be tracked.

performance gap — the difference between a performer's expected (desired, required) behavior and the performer's actual behavior. Discussion: There can be many possible causes of a performance gap, including: missing or inappropriate incentives or consequences; physical inabilities; missing, confusing, or overly complex information or directions; lack of skill; lack of recent practice/experience; obstacles (wrong tools, lack of time, interruptions); poor attitude or negative beliefs; and lack of authority.

performance improvement process — an analytical business tool designed to align the performance of individuals and organizations to business goals and requirements. It looks at existing (or anticipated, in the case of new products) performance gaps and seeks to apply the most cost-effective performance improvement solutions to bring about individual or organizational performance improvement. The performance improvement process steps are: (1) Identify performance expectations, together with any shortcomings, and correspondingly appropriate performance interventions. (2) Analyze the expectations further to obtain the necessary data and establish specific measurement criteria (performance objectives). (3) Design the specifics of the intervention; in the case of a training intervention, design a lesson plan for each performance objective. (4) Develop the materials identified in the design plan by creating, purchasing or gathering them. (5) Pilot the intervention, gather data, and modify the intervention as necessary. (6) Implement (deploy) the intervention, including tools to ensure its success; in the case of a training intervention, this would include instructor support materials like an Instructor Guide. (7) Evaluate the intervention to determine whether it should be repeated, discontinued, or modified. The expression "front-end analysis" emphasizes the idea that steps 1 and 2 of the performance improvement process must be done before "Design" and "Development."

performance improvement solution, intervention — an action taken to improve individual or organizational performance by implementing systems, processes, events, or products (or a combination thereof) such as the following: reorganization; enhanced ergonomics; new or improved job aids, knowledge management systems; new or improved feedback, incentive, or reward systems; improving communication systems and methods; training products; coaching or mentoring programs; and more.

performance-based equipment training (PBET) — is an approach to equipment training that is based on front-end analysis, that ensures that participants are able to master the skills for their job as described by properly stated performance objectives. PBET works when the PBET steps are followed to develop and deliver the training and the PBET characteristics are present in the training.

performance-based equipment training characteristics — Briefly stated: (1) Prerequisites are identified and are used to qualify for entry into a course or lesson. (2) Each part of each lesson is based on properly derived performance objectives. (3) A demonstration of the task is included in each

lesson. (4) Every trainee has the opportunity to practice every task while receiving feedback. (5) Each lesson includes a performance-based test. (6) Every trainee has a reasonable opportunity to repeat the practice and/or the test of each lesson until the trainee has mastered the requirements of that performance objective.

performance-based equipment training steps — see, performance improvement process.

performance-based test — a test in which the learner is asked to do what is required by the task under the same conditions as stated in the performance objective and to the same standards as stated in the performance objective.

performer — the individual who is performing tasks as part of a job, which is part of a function in support of a process, which is part of, or a contributor to, the value chain that delivers value to the customer and earnings to shareholders.

Pilot step — The fifth step in the performance improvement process, as applied to a training solution: This is where the design plan (i.e., the combination of all lesson plans), together with the created materials, are tested (i.e., tried out) for effectiveness. The purpose is to determine where improvements should be made, and to make them, before deploying the training. Discussion: Some prefer to conduct one or more preliminary pilots with draft materials, before they are fully developed (this is especially true when the design plan includes expensive e-learning delivery systems). This makes perfect sense and does not violate the performance improvement process.

practice — repeated exercise in or performance of a task or skill so as to acquire or maintain competency in it.

prerequisite — competence required by a student in order to learn designated new information or gain competence in designated new tasks.

reaction form, survey — a document with a series of questions that are used to obtain opinions from course participants about their participation in a current or recently completed course with the purpose of discovering aspects of the training that can be improved.

reliability — the probability that the equipment will perform its intended function, within stated conditions, for a specified period of time.

*self-paced learn*ing — Any delivery system in which the learner determines the pace and timing of a lesson's delivery.

sign-off sheet — see, performance checklist.

simulation — any representation or imitation of reality used as an instructional strategy to teach problem solving, procedures, or operations by immersing the learner in situations resembling reality. The learner's actions can be analyzed, feedback about specific errors provided, and performance can be scored. Discussion: Simulations provide safe environments for users to practice real-world skills. They can be especially important in situations where real errors would be too dangerous or too expensive.

skill check — a kinder and gentler term for performance test. See, performance-based test.

skill hierarchy – see, learning hierarchy

standards (of an objective) — describes the basis for determining whether a task has been performed competently or, if necessary, fluently. Also called, criteria, measures. Discussion: Standards include one or more of the following: (a) Statements about how the task should be done while it is performed, but only if analysis has been applied to determine that the associated procedure or process is the best known method. (b) Statements about what the equipment or product will look like when the task is completed properly, including, as necessary, statements about what should not result. (c) Statements about the maximum time for completing the task, but only if there is a clear and mandated requirement for this from the analysis. Time requirements may be necessary where non-referenced (i.e., expert) behavior is desired; however, time requirements have a dramatic increase on the time required for practice during training.

structure of training – see, training structure

student manuals — an organized collection of documents used during training. Also called, participant guides, training manuals. Discussion: Student manuals do not include equipment procedures; these are usually in the equipment documentation. Student manuals typically include any or all of the following: a copy of each performance objective; a copy of most or all slides, posters, and the like used during instructor presentations; summaries of instructor notes, videos, and other e-learning activities; paper-based practice materials if any; paper-based test materials if any.

target performer analysis — a procedure used during the Analyze step of the performance improvement process in which, among other factors, the existing skills, task competencies, interests, motivation, culture, language, and job requirements of the expected learners is examined for their impact on the included tasks for learning, the learning hierarchy, and course design considerations. Also called, target audience analysis.

task — a piece of work to be done (i.e., a human activity) with a definite beginning and end, that typically consists of steps of a procedure (e.g., Replace the pump, Clean the lens) or steps of a process (e.g., Diagnose the fault, Debug the program).

task analysis — procedures used during the Analyze step of the performance improvement process to determine the essential activities required of a performer to perform a task. Discussion: A thorough analysis will result in a time-oriented description of personnel-equipment interactions in accomplishing the task; it will detail the sequential and simultaneous manual and intellectual activities of personnel, in addition to the sequential operation of the equipment. In the end, the analysis identifies the conditions that require a performer to initiate a task, the sequencing of the elements of the task, and the criteria for task completion, i.e., a procedure for the task.

test — a method for evaluating what a trainee has learned. Discussion: There are many types of tests (e.g., hands-on performance, role-play, verbal questioning, written with multiple-choice test items), but the approach in administering and evaluating the test is of two categories: (a) performance-based (or criterion-referenced) where evaluation of the test result is against the standard of the performance objective, and (b) norm-based (or group-referenced) where evaluation of the test is against the performance scores of the other trainees. PBET is concerned only with performance-based tests.

trainer — an individual who manages and facilitates the progress of one or more individuals during a training activity by providing needed information, demonstrating proper use of job aids and the best known method of the task, coaching them during practice, and evaluating their competence or fluency by administering a performance test. Discussion: A trainer's primary concern is

helping each student, through coaching, to perform competently or fluently in specified tasks. By contrast, a teacher's primary concern is educating students, through presenting and questioning, to attain understanding in a field of knowledge. In reality, while true, these characterizations overlap.

training — an activity in which a performer is guided by an instructor, facilitator, or prepared materials to become competent or fluent in a task as described by a complete performance objective. In addition, the activity is taking place in advance of the requirement to actually perform the task. Supporting or learning activities that take place *while* the task is performed on the job (with the help solely of a job aid, for example), may result in learning but is not training. Training is one way to learn.

training structure — the way in which the conditions of a lesson or course are organized to maximize certain training goals, for example, PBET characteristics. These conditions include, among others: the number of days, hours, instructors, classrooms and lab rooms that will be made available; the actual scheduling of available hours and days; the number and functionality of machines and related tools that will be made available; the degree of blended learning used to help maximize hands-on practice; the appropriate assignment of students into smaller groups or individual activities; the learning hierarchy.

video package, kit — any training video, whether to deliver content or a demonstration, together with written instructions for its use, and, in some cases, student worksheets.

virtual classroom — an online learning space where students and instructors interact live with the help of specialized software typically including audio, interactive elements, and an electronic white board.