Chapter 3
Assessment of Training Needs to Determine Curricular Content

Chapter 3 Outline

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Introduction

Before proceeding with the process of Needs Assessment, some definitions may help to standardize the discussion. "A training need is a need for human performance improvement that can best be met by training of some kind."[1] Similarly, needs assessment is the "process of examining training needs to determine how best they actually might be met."[2] Some authors insert the identification of training needs as an intermediate step and it may be defined as "the process required to detect and specify training needs at individual or organizational levels." A critical element of the needs assessment is the identification of "the differences between the ideal and the actual characteristics of the targeted learner group."[3] The literature suggests that tasks as well as process must be determined, then gaps explored to identify the needed elements in a training curriculum. The process of identifying and assessing training needs is often intuitive and non-systematic. What is proposed here is a systematic process which would apply to any type of training.

Needs Assessment Methods

A general process which is consistent with curricular Needs Assessment and loosely modeled after Peterson's process[4] includes the following steps:

- Become aware of problems which can be addressed through training
- Develop performance objectives or goals of the training initiative
- Identify training needs or the components of training
- Analyze training needs or determining who needs what
- Develop training objectives or things participants should be able to do upon completion of the training
- Develop the curriculum to accomplish the performance objectives and the training objectives

Clearly there are several points in this process which require information. The first, alertness to problems, is typically general and non-specific. Each of the other steps of the process require information or data in order to proceed appropriately.

Relevant literature suggests several approaches to gathering the information needed to make decisions at

each of the steps in the process. Below are options adapted from Kern et al.[5] and Finch & Crunkilton[6] which are used in assessing needs and developing curriculum for professional training:

Method of Assessment	Advantages	Disadvantages
Informal Discussions	Convenient Inexpensive	Lacks rigor Contains biases
Formal Interviews	Standardized Qualitative information	Reliable Not representative Expensive Contains biases
Focus Groups	Efficient Qualitative information	Requires skill Not representative
Questionnaires and Task Analyses	Standard Methodological rigor Quantitative	Skill Not qualitative Time consuming
Direct Observation	Assesses existing skills Informal Assesses existing ability	Time consuming Contains biases Does not assess performance
Proficiency Tests	Efficient Effective Assesses existing Ability Assesses knowledge	Time consuming Does not necessarily assess real-life performance Requires high level of skill to develop
Audits or Organizational Outcome Measures	Unobtrusive Assesses performance Methodological Rigor	Requires performance standards Requires resources Produces incomplete data
Strategic Planning Process	Produces Prioritization Involvement by key persons Qualitative Involves key people Establishes goal/objective	Requires skilled facilitators Time consuming Not quantitative

Before commenting on a process for assessing training needs, these options will be briefly described:

Informal Discussions

Although it is convenient, inexpensive and quick to perform a Needs Assessment based on informal

discussions, this process, if used alone, is fraught with errors. The lack of structure in the discussions is a major flaw but even more dangerous is the reliance upon a non-methodologically structured sample of a professional population. Bias is inserted when the groups or individuals have been selected by convenience or, worse still, based on vested interests in the training. Objectivity is necessary to insure valid results from such discussions. The selection of those with whom the discussions are held should be done carefully so that the results are likely to be reliable (same results likely from other respondents) as well as valid.

Formal Interviews

While better than informal discussions, formal interviews still may lack representativeness and generalizability. They add the component of reliability due to the structure of the interviews. They also allow qualitative elements and depth of information. This method is better suited for small populations where the entire or a substantial portion of the population can be interviewed. The structure allows comparisons and the determination of priorities and weights.

Focus Groups or Groups of Experts

On of the traditional methods of assessing needs, training or others, is the use of focus groups. These groups, if selected properly, can serve as proxies for the entire field or occupation. If not selected properly, they represent a flawed approach to getting answers. The expert groups, sometimes called the Delphi method,[7] has as much applicability to the development of needs as to the development of content, as is discussed in the next section. The process can be formal and include questionnaires and several iterations to achieve consensus, or it can be informal and use a nominal group method of facilitated discussion. If the focus groups consist of subject matter experts who (1) are knowledgeable of the specific tasks and activities to be performed, and (2) are recognized experts whose professionalism, currency, and objectivity are well known, the results of the focus groups should be both reliable and valid. The validity of a needs assessment using this approach can be verified through the use of other focus groups convened to validate the first or other assessments. This process could become rather convoluted and counterproductive but could provide the curriculum developers with confidence that the tasks and activities included in the needs assessment are appropriate and comprehensive. While qualitative insight and information is a distinct advantage in this method, objectivity and bias are disadvantages to be guarded against.

Questionnaires or Task Analyses

"Few content determination strategies have seen such widespread use as task analysis."[8] It is probably the most accepted method of needs assessment in vocational education and professional training. The process of job task analysis requires a thorough and systematic review of relevant literature in the occupational area to determine if other analyses of the occupation or activities have been conducted which may be of use. If so, these analyses may help to begin the development of or listing actual or potential tasks within the targeted activity. So widely accepted is the task analysis process that most occupations have had some variation of the process and the listing of tasks incumbent in the job or activity. If such analyses are not available, observations may be necessary to compile the lists of tasks.

McGaghie et al.[9] comment on the processes which can be used to develop such an inventory within the medical profession. They agree that the inventory is the most logical method of beginning the development of a training curriculum. They say, "While incomplete as a curriculum determinant, precise information on these matters will facilitate the task of curriculum designers and make the product of their efforts more realistic…." In addition to the task analysis, they suggest two methods or a combination of methods which may be used to formulate the inventory: a personal account of activities, and observation by peers or others. While self-reports are the most direct method of collecting information about the step-by-step tasks which contribute to the accomplishment of an activity, a narrative by a practitioner may not include all of the relevant steps. Some tasks may be taken for granted or simply assumed and not listed. The self-reported activities may lack specificity but that specificity may be teased out by a skilled interviewer later.

The other method they describe for compiling an inventory is observation by others of activities and tasks. The use of trained observers would contribute reliability to the process and specificity, which might be missing from a self-reported diary of activities, would be observed and recorded. Additionally, the observation of tasks may group the tasks in any way which would be helpful to the curriculum development process. An example of the complex coding of activities is seen in Brody and Stokes' [10] assessment of physician's activities by function, by category of collaboration, by time, and by location.

Once the inventory is established by any process (literature, previous task analyses, self-reported tasks, observation), duplicate items are deleted and additional items are added. The lists are collapsed into a comprehensive but non-duplicative "inventory" of tasks. Typically, the inventory is then administered, in questionnaire form, to a sample of workers or practitioners who are responsible for the targeted activities. While it is certainly not necessary to survey the population of practitioners, large samples reduce errors in the results. Whether large or small, the sample should be representative of the occupation or occupations associated with the activity. If the sample is biased by representation or exclusion, the results may be less valid. The practitioners are instructed to mark the tasks that are routinely, frequently or seldom required in the activity. They may also be asked to rate the criticality, complexity, or seriousness of the task or another group of managers, administrators, or policy officials may be asked to prioritize the tasks after the inventory is validated and some tasks seldom or never performed are eliminated. The remaining tasks represent those needed for the activity or occupation and, therefore, the subject of training for the completion of the activity.

Care should be taken to include items which may seldom be required but may be of critical importance. An example is firearms training for police. The discharging of a firearm in the line of duty is one of the rarest of activities in police work but it is of sufficient importance that it receives significant attention in all training programs within that occupation.

The task analysis provides reliability and validity if properly conducted. It represents both comprehensiveness and consensus. Lacking in the questionnaire or task analysis method is qualitative information on the difficulty, criticality, or complexity of a particular task in the inventory. Curricula based on the task analysis method, particularly if the task analysis is used in concert with other methods, is likely to be most appropriate to the activities under consideration.

Direct Observation or Critical Incident Technique

Although it was mentioned above as a means of developing a comprehensive list of tasks for the task analysis, direct observation is a method for cataloguing the steps, tasks, and content, both technical (which is clearly the focus of task analyses) concerns and affective concerns such as attitudes or values. A "critical incident" is one "when the observer sees their purpose and consequence as being clear."[11] The examples of activities or critical incidents to which this method may be applied are "incidents" such as workers dismissed during a previous period of time, or success in a particular activity at a particular place. A "critical incident form" is typically the method of standardizing and formatting the information. This form may include categories such as "What led up to the incident?" and "What were the precise steps taken following notification?"

This method is consistent with an "after action report" or "lessons learned" approach to debriefing personnel on actions, activities, steps, successes, failures, and suggestions for future actions or activities, when the purpose is to identify needs for training activities. This is a valuable tool in developing and in refining training curricula. It can, of course, be used in concert with other methods in assessing needs and in revising task lists.

Tests of Proficiency

Needs assessments for activities where little information exists but where individual aptitudes and determinations of success or failure are measurable may lend themselves to tests of proficiency. These tests can address cognitive or psychomotor abilities and may be called "exercises," "readiness determination," "ability assessments." They are not necessarily "paper-and-pencil" tests but are objective means for determining the abilities and competencies of those reasonably expected to accomplish a task or activity. By measuring the success or failure, it is easy to determine the need for training or further training in specific elements of the task. Anxiety, extraneous factors, and the representativeness of those being tested are elements which can produce spurious results. Additionally, it is necessary to have some measurable indication of success or competency in order to determine needs based on failure to meet that standard.

Audits or Organizational Outcome Measures

This method is similar to tests of performance but applies to group or organizational outcome measures rather than individual performance. As with performance tests, there is the need for some level of success or competence in order to determine needs based on failure to meet that standard. Audits may be unobtrusive and, if properly constructed, will assess real-life performance.[12] The process should be a formal one, whether for audits or observation of organizational performance. Methodological rigor can be attained through training to insure inter- and intra-rater reliability. This process can be expensive and time-consuming but, if conducted properly and if the standards being judged are appropriate, it can be a valuable method of determining needs as well as developing curriculum.

Strategic Planning

Perhaps the most versatile method of determining needs, and also of determining goals and objectives, is the strategic planning process. If done appropriately and with skilled facilitators, the process can address strengths, weaknesses, opportunities, and threats, all within the organizational or political environment, and may contribute qualitative elements which can prioritize issues, tasks, activities and roles. Alone, strategic planning may not produce the specific elements needed to articulate a curriculum but used in concert with other methods, may be critical to establishing priorities, goals and objectives which can serve as performance measures and competency measures, elements often viewed as necessary to assess curricular needs.

Process for Assessing Needs: Synthesis of Strategies

As is no doubt clear, there is an advantage to using more than one of the methods described above. Some of the methods, such as the task analysis, provide objective, quantifiable information on the specific tasks needed to accomplish an activity. Other methods such as strategic planning and performance audits suggest the appropriateness and value of activities as well as goals, objectives and standards. In a developing discipline or activity, where standards of performance and competency may not exist and where activities involve heterogeneous organizations or components which, having existed separately may not have sufficient history to suggest collegial tasks and activities, it is not only advantageous but necessary to employ a combination of methods to assess the needs for a training curriculum.

Arguably, all of the methods for assessing needs could and should be employed if there is to be a comprehensive, reliable and valid needs assessment. Realistically, however, choices must be made. It is important to stress that objectivity and the reduction of bias should be key elements of the process. Additionally, a mix of quantitative and qualitative information is valuable. During the early assessments, it is often necessary to rely on less formal methods, using decision-making to reduce the disadvantages. For subsequent assessments and where there is sufficient time, care should be taken to employ the more complex but stronger methods, to include strategic planning, so that goals and objectives can inform and direct the process.

The complexity of the Needs Assessment is dependent on the complexity and scope of the training. A Needs Assessment for an introductory or familiarization training program, even though it might address a national audience, does not have the same intense Needs Assessment for content as one which would address technical or serious issues which would be delivered to groups whose actions are more critical.

Gap Assessment

Following the needs assessment, by whatever method or process is used for determining the tasks which are components of an activity or job, it is necessary to determine which ones are already present in the workforce and require no additional training. It may also be necessary to determine the degree to which some of the tasks are subjects of other training, either preservice or in-service, which the practitioner is likely to have received through other programs or processes. The purpose of the Gap Assessment is to

reduce repetition and redundancy in specific training components. In this regard, it is important to frame tasks and activities using terms which describe the behavior or the skill needed and not rely on esoteric jargon or terminology which may mask the behavior and result in duplicative training. If some practitioners are trained in "hazardous materials removal" and the activity is called "toxin cleanup and transportation" on the task inventory, the actual task and behavior required could be duplicative of existing training yet not readily apparent. Duplicity is not, in and of itself, bad if it is intentional. If duplicity is inadvertent, it reduces the credibility of the process and the program, as well as wasting resources.

Issues relevant to Gap Assessment

- Previous training and experiences
- Existing training
- Existing proficiencies
- Current performance
- Deficiencies
- Preferences regarding strategies
- Characteristics of learners
- Resources available to learners and instructors

These issues and elements help to focus consideration and assessment. Each represents a different aspect of the environment, organizations, or clientele. The systematic addressing of each issue and element insures that there will be little or no inadvertent duplication and helps to frame the curriculum.

Criterion for Competency and Performance

The segue from Needs Assessment to Curriculum Development is the determination of criteria for competency or performance. More will be said about Competency-based and Performance-based Instruction in the following section but the Needs Assessment process provides an excellent opportunity to get more information than simply the tasks which need to be the subject of the training.

Peterson[13] mentions the step of "Develop training objectives or things participants can do upon completion" between the Needs Assessment and the development of the curriculum. He states "The training objectives should fall into place naturally and easily from your training needs analysis work."[14]

Two types of objectives are identified in the curriculum development literature: *terminal objectives* and *enabling objectives*. "The terminal objective represents performance in the worker role or a close approximation of that role. It focuses on the way a student should perform when in the intended work situation."[15] The terminal objective is similar to a competency or performance objective and specifies the ultimate standard for an activity. "The enabling objective focuses on what the student must learn to attain the terminal objective. The enabling objective serves to guide students from where they are at the beginning of instruction to where they should be at the end of the instruction."[16] There is almost always a series of enabling objectives which serve to guide the learner, step by step, and affirm that they are progressing in the correct direction and in the correct order. Typically the enabling objectives move from the most simple levels to the most complex levels within the instruction necessary to accomplish the terminal objective. For this purpose, it is important to consider a taxonomy or classification of educational objectives. This classification is the starting point for the next section on "Curriculum Development."

Summary

There are informal methods of assessing needs for training initiatives and there are more formalized, standardized processes. Each method has advantages and disadvantages. What has been presented here has been the suggestion that the less rigorous approaches have a place in the initial conception of the training initiatives but, as the initiative matures and develops, the needs assessment should become more formalized, rigorous, and methodologically defensible. Methods such as the Delphi Technique and Task Analysis provide proven approaches to assessing the specific needs of a curriculum. Ultimately, tests of proficiency may prove to be a useful tool in needs assessment and, as described in the next section, curriculum development, revision, and evaluation.

Determining the goals and objectives of a training program is essential to success. Once objectives are set, it is easier to define needs and to identify gaps. Competency and performance are certainly dependant upon the objectives of the training program. Strategic planning can be a viable method for assessing needs, defining goals and objectives and revising the initiative. Additionally, the synthesis of approaches takes into consideration the advantages of the quicker, informal approaches and the rigorous formal approaches. We suggest a holistic approach to the assessment of training needs.

Notes to Chapter 3

1. Peterson, Robyn. (1998). Training Needs Assessment: Meeting the Training Needs for Quality Performance, 2nd Ed. London: Kogan Page, p. 8 - 9.

2. Ibid.

3. Kern, David E., Patricia A. Thomas, Donna M. Howard, and Eric B. Bass. (1998). Curriculum Development for Medical Education: A Six-step Approach. Baltimore: Johns Hopkins, p. 20.

4. Peterson, op. Cit., p. 11

5. Kern, David E., Patricia A. Thomas, Donna M. Howard, and Eric B. Bass. (1998). Curriculum Development for Medical Education: A Six-step Approach. Baltimore: Johns Hopkins.

6. Finch, Curtis R. and John R. Crunkilton. (1999). Curriculum Development in vocational and Technical Education: Planning, Content, and Implementation. Boston: Allyn Bacon.

7. Finch, Curtis R. and John R. Crunkilton. (1999). Curriculum Development in vocational and Technical Education: Planning, Content, and Implementation. Boston: Allyn Bacon, p. 147.

8. Ibid.

9. McGaghie, William C., George E. Miller, Abdul W. Sajid, and Thomas V. Telder. (1978). Competency-based Curriculum Development in Medical Education. Geneva: World Health Organization, p. 24.

10. Brody, B. L. and J. Stokes. (1970). "Use of Professional Time by Interests and General Practitioners in Group and Solo Practice." Annals of Internal Medicine, Vol. 73. pp 741-749.

11. Finch, Curtis R. and John R. Crunkilton. (1999). Curriculum Development in vocational and Technical Education: Planning, Content, and Implementation. Boston: Allyn Bacon, p. 156.

12. Kern, David E., Patricia A. Thomas, Donna M. Howard, and Eric B. Bass. (1998). Curriculum Development for Medical Education: A Six-step Approach. Baltimore: Johns Hopkins.

13. Peterson, Robyn. (1998). Training Needs Assessment: Meeting the Training Needs for Quality Performance, 2nd Ed. London: Kogan Page, p. 93.

14. Ibid.

15. Finch, Curtis R. and John R. Crunkilton. (1999). Curriculum Development in vocational and Technical Education: Planning, Content, and Implementation. Boston: Allyn Bacon, p. 192.

16.Ibid.