Needs Assessment Techniques for Developing an Effective Training Program

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Abstract: *The purpose of this paper is to propose Needs Assessment (NA) techniques for companies and organizations to carefully consider before conducting training programs. The paper is based on a combination of a literature review, Master and Doctoral Degree course work/research, and teaching experience of the author. These three approaches were applied to strengthen the NA techniques in the development of an effective training program. These techniques have been evaluated through comparison and contrast analysis, and synthesis of both older and more recent literature related to NA. NA techniques are essential for effective training and include eleven steps as follows: 1) NA name and topic, 2) problem statement, 3) data collection samples 4) data collection methods, 5) questions to ask, 6) description of needs analysis, 7) collected data summary, 8) interpretation of data, 9) statement of revised instructional problem to be solved by the lesson, 10) learner characteristics, and (11) setting characteristics.*
The value of this contribution lies in the development of unique NA techniques for developing an effective training program. Users can incorporate or modify all eleven steps to match with their companies and organizations unique environments.

Keywords: Needs assessment, Needs assessment techniques, Needs analysis, Training program, Effective training, Instructional design

Introduction

Proper needs assessment allows for effective training and should be conducted prior to training. Nadler (1984) defines training as learning to improve performance of a current job. Later, Blanchard, and Thacker (2007) define training as a systematic process for gaining the necessary knowledge, skills, and attitudes (KSA) to perform present and future jobs effectively. Blanchard and Thacker (2004) offer the following four steps of training processes: (1) Identification of performance improvement opportunities and analysis of what cause the opportunity to exist, (2) identification of alternative solutions to the opportunity and selection of the most beneficial solution, (3) design and implementation of the solution, and (4) evaluation of result (p. 4).

DeSimone and Werner (2012) presented two classifications of training: on-the-job and classroom training and also recommended training methods and media that consider the following issues: (1) the objectives of the program, (2) time and money available, (3) availability of other resources, and (4) trainee characteristics and preferences (pp. 157–158).

At the conclusion of training, a trainee should have acquired new knowledge and be able to apply it to his or her job (Zemke, 1990). The Training Within Industry (TWI) project was employed throughout the United States during World War II (WWII), and can be considered as a root of both contemporary systematic and systematic employee training (Dooley, 1945; Ruona, 2001 as cited in Allen & Swanson, 2006).

After WWII the ADDIE training model was developed and introduced. ADDIE is an acronym for Analysis, Design, Development, Implementation, and Evaluation phases of a systematic instructional design model used by US military trainers to improve job performance. The ADDIE model is "well suited for the mass training of a homogeneous group of young male recruits to perform in a well-defined and structured work system" (Allen & Swanson, 2006, p. 427). Nowadays, the ADDIE model is well known in research and development (R&D) and training frameworks so that many large firms such as Accenture, MethodE, 3M, and General Motors have adopted and modified the ADDIE model to train their employees (Allen & Swanson, 2006).

Allen and Swanson (2006) state that:

…professional loyalty to ADDIE as originally conceived as an instructional design system has lingered beyond its utility. Reconceptualizing ADDIE as a core human resource development (HRD) and performance improvement process has been taking place over the past 30 years (p. 428).

Nonetheless, the ADDIE model has evolved over time and is still relevant. In this paper, the author discusses only the analysis phase of the ADDIE model because the analysis phase is considered a quality assurance process. Without the analysis phase the training program will unlikely meet the goals of an organization because the other steps of ADDIE model are logically dependent on the analysis step. Proper use of the ADDIE process requires accurate and thorough analysis. The Needs Assessment (NA) is generated from the analysis phase and comprises eleven steps in the design of valid training to accurately match training and learning needs that meet the needs of an organization.

Needs assessment

Even though NA is very important for training, many organizations fail to perform it properly and therefore negatively impact the whole training process. Only 17% of the designers who conducted complete analysis considered the implications of the ADDIE model (Visscher-Voerman & Gustafson 2004). Needs in the training context typically refers to a discrepancy or gap between what an organization expects to have happen and what actually occurs. NA allows the designers to understand more about the needs or wants of the clients. Therefore, NA allows the designers to plan and implement training efficiently and effectively (Blanchard & Thacker, 2004; 2007; Brown, 2002; Hung & Altschuld, 2013; Silberman & Auerbach, 1998). The outputs of NA inform the creation of learning objectives (Cook, 2005); it should be the first step of "any organizational or human resource development intervention" (Leigh et al., 2000, p. 87). Conducting proper NA will assist effective training in an organization (Dachner et al., 2013; Horng & Lin, 2013).

DeSimone and Werner (2012) see NA as identifying the following:
- An organization's goals and its effectiveness in reaching these goals
- Discrepancies or gap between employees' skills and the skills required for effective current job performance
- Discrepancies (gaps) between current skills and the skills needed to perform the job successfully in the future
- The conditions under which the HRD activity will occur (p. 109).

NA is a process to identify the organization's needs and it is the first step of the training process. NA should successfully identify an organization's goals and the benefits of meeting the goals, the gap between employees' skills and the necessary skills of their present and future jobs. This is why organizations need to conduct NA before training is implemented. Without conducting NA or conducting it inappropriately, NA of a training program may not meet organization goals (Cook, 2005; DeSimone & Werner, 2012, p. 109; Witkin & Altschuld, 1995).

According to Sleezer, Russ-Eft, and Gupta (2014), the goal of NA is:

To close learning or performance gaps…comparing the current condition to the desired condition, defining the problems or problem, understanding the behaviors and mechanisms that contribute to the current condition, determining if and how specific behaviors, developing solution strategies, and building support for action (p. 14). Sleezer, Russ-Eft, and Gupta (2014) add four more goals of NA as follows:

- Solving a current problem
- Avoiding a past or current problem
- Creating or taking advantage of a future opportunity
- Providing learning, development, or growth (p. 17).

Each training program costs time and money, if the training does not accurately meet an organization's needs, the training is of limited value and wastes resources. Thus, careful design of NA can help an organization save and better deploy both human and financial resources.

After NA is completed the designers should have identified specific training gaps and then develop a relevant and effective training program. In order to understand the training needs analysis, eleven sequential data collection steps are required.

Training needs assessment data collection and report template

The author created the following NA data collection and report template by applying some of his Master and Ph.D. course work (at Fort Hays State University and Northern Illinois University, USA) research, and teaching experience in eleven steps:

1. Name and topic

This step allows the designers to broadly consider the NA training topic. The goal of this step is to remind the designers to focus on the training goals. However, the initial topic can be adjusted during the NA process or after the NA is completed. The topic should indicate the main idea and details of the training program. Consideration should be given to making the training topic long enough to cover basic needs but also short enough to make it interesting. Potential trainees should be able to easily understand what the training topic will include and how and what they will gain from their training.

2. Problem statement (what is not happening that should happen?)

In this stage, the designers will address longer-term ongoing organization problems. The author recommends designers give careful and thoughtful consideration to the scope of the problem, systematically looking at it from all angles and viewpoints to find an appropriate solution. Outside-in refers to understanding the social, technological, economic, political, environmental, and demographic trends facing an organization and knowing specific

expectations of customers, investors, regulators, and communities, and then building internal Human Resource (HR) responses that align with these external requirements (Ulrich et al., 2012). Inside out requires the designers to consider internal business processes such as employee's job performance, product, and/or service of an organization and whether or not the customer is satisfied. The designers' goal is to find the most successful way to fill the gap or solve the problem (Kaplan & Norton, 1996; Kaplan & Norton, 2008).

3. Data collection samples (number, selection criteria, and rationale).

To find the real problem, the designers should collect data from all the stakeholders within an organization. The designers should define the reason or the criteria for either selecting, or not selecting potential data collection audiences. This is to make sure that the designers have at least considered relevant potential data collection samples. Samples for the NA may include: students, HR representatives, supervisors, managers, employees, and customers. The data collection sample depends on the needs or problems that the designers desire to identify and solve. Designers can then set the number, selection criteria, and rationale for data collection. To select students as a target audience to find out what they know/do not know, how much they know/do not know, the reason why they do not know in order to find a problem solution. Managers would be an effective target audience to discover available resources such as, training budget and facilities.

4. Data collection methods to use (and rationale).

Some data collection methods for NA include: observation, questionnaire, and interview. Observation of the target audiences can allow a realistic estimate of their computer skills in general and the specific proficiencies with software such as PowerPoint, Adobe Flash, and Adobe Dreamweaver programs. Questionnaires can be used to obtain specific information from the target audiences about their needs or wants. A questionnaire can provide a checklist of things the target audience know/do not know, in a time efficient manner. The questionnaire checklist can be used later in the design solution – a training program. Interviews can provide the rich data, but are more time consuming. The judgment and experience of the training program designer can guide them to select appropriate data collection methodology and instruments.

5. Questions to ask (survey instrument, interview questions and/or observation checklist).

When selecting data collection instruments designers can use the following steps which are based on Rossett and Arwady's (1987) book *Training Needs Assessment and* expanded by Seels and Glasgow (1998). Further explanation and expansion on these NA steps is provided for better understanding as follows:

Needs assessment questions

Purpose is to determine

- What learners are able to do now?

In this stage, the designers have to identify learners' current knowledge and skills. The designers have to set questions for data collection from learners prior to providing relevant training for their current or future jobs.

- What learners should be able to do if they are competent?

This part should identify what training the learners require to make them competent in the performance of their current or future jobs. That is the trainers have to identify what trainees really need to learn (the core competency).

• The gap between current and desired level

According to Sleezer, Russ-Eft, and Gupta (2014), the gap "between the current condition and a desired condition is called a need" (p. 17). To meet the training needs of an organization, in this stage the designers have to discover and identify the gap between current and desire training levels of an organization.

A. Gathering data from multiple sources (Triangulation)

The data collection sources may include learners, subject matter experts, managers, employees, and customers. The purpose of triangulation is to increase the usefulness and validity of information collected by collecting data from multiple sources and methods of data collection. Moreover, using a 360-degree interview or interviewing all the stakeholders rather than for example only managers can increase understanding of what the organization really needs. In doing so, the designers can gather data from several sources such as learners, subject matter experts, managers, customers, and employees to give a clearer picture and more in depth understanding of the "real" needs of the organization.

B. Gathering data using multiple methods (Seels & Glasgow, 1998, p. 199)

Gathering data using multiple methods such as questionnaires, interviews, document analysis, observation, or focus group interviews are very important to gain rich data. In these cases the designers may consider using more than one type of data collection method in order to achieve trustworthiness and increase validity in their recommendations for solving real problems that exist in an organization.

C. In the case of gathering data by asking questions

Designers should use all or an appropriate selection of Rossett and Arwady's five question types to formulate questionnaire items or interview questions (Seels & Glasgow, pp. 200 –202; Rossett & Arwady, 1987, pp. 79–87). Below are Rossett and Arwady's five question types with example questions.

Type 1: Problem finding: Open-ended, general questions to find out what the problem is or what they know as follows:

• What problems do learners have when using the Adobe Dreamweaver program?
• What do they know about using the Adobe Dreamweaver program?
• What should they know about using the Adobe Dreamweaver program?

Type 2: Problem-selecting: Closed-ended (a list of items to choose from) specific, detailed questions to find out what the problem is or where the attention should be focused in the training program; for example:

• Which of the following is important for learners to be able to do in creating a Website by using the Adobe Dreamweaver program:
  Manage your sites, b) Create the folder, c) Design and layout d) Draw layout table, e) Draw layout cell, and f) Demonstrate HTML and CSS skills
• Which of the following do learners already know about Adobe Dreamweaver program?
  a) Know all the functions of Adobe Dreamweaver, b) Know how to design and layout a webpage, c) Know how to draw a layout table and draw a layout cell, d) Know how to insert and use tables, and e) Know how to create hyperlinks.

Type 3: Skill proving: Optional question to see if they really know what they say they know (in type 2 questions), as follows:

- Explain how to design and layout a Webpage
- Explain how to draw a layout table and draw a layout cell
- Explain how to create hyperlinks

Type 4: Attitude (to be included in the questionnaire): Open or closed ended questions to discover how learners feel about the problem or the content to be learned, such as:

- How do you feel about learning how to create Webpages using the Adobe Dreamweaver program?
- How do you feel about creating your own Webpage?
- Please indicate by choosing one of the scaled items that best describes your feelings.
- a. It will make me feel very competent
- b. It will make me feel somewhat competent
- c. It will not make any difference to me
- d. It will make me feel hardly competent
- e. It will make me feel not at all competent

Type 5: Cause finding: Open or closed ended questions to find out why the problem still exists (not what it is, but why it is there), as follows:

- Why do most teachers have trouble when creating a Webpage?
- a. School just got software
- b. Not enough practice
- c. Software too difficult to use.

6. Description of needs analysis process (What you did):

In this stage of NA, the designers will describe the data collection methodologies and processes of Rossett and Arwady (1987) five question types, mentioned before. Designers have to prepare questions, contact participants, and make appointments for data collection. Data collection can be done in many ways including: survey, interview, and observation to assess learners' current knowledge prior to learning. After the questionnaire is completed they will be asked to demonstrate their proficiency with predetermined functions of the Adobe Dreamweaver CS6 program. This serves two purposes:

- The demonstration allows the designer to evaluate and understand the learners' knowledge (proficiency) in operating the program to identify areas requiring instruction or review prior to instruction.
- When learners are actually operating the program, the designer can observe what the learners may have otherwise thought they had forgotten – again providing a reality check.

7. Summary of data collected:

Below are examples of data summary of the five types of questions. Designers have to clearly provide evidence of the following aspects.

Type 1: Problem finding

Problem finding yielded the following results:

- All the learners may know about the Adobe Dreamweaver and if they are able to tell

that it similar to the Microsoft FrontPage or Joomla, which they may have used in the past.
- Two respondents may say they know how to draw a layout table and a layout cell and create hyperlinks.
- Ten respondents may say they do not know how to use the Adobe Dreamweaver program.

Type 2: Problem selecting

Help identify what exactly the respondents know or did not know such as:
- Some respondents may say they do not know all the functions of Adobe Dreamweaver
- Some participants may say they know how to manage sites
- Few participants may say they know or do not know how to create the folder.
- Some participants may say they do not know how to design and layout Webpage

Type 3: Skills providing

In this summary the participants have to prove that they really can do what they said in the Type 2 (Problem-selecting) part. The designers may check participants' knowledge and skills by asking them to:

1) manage sites, 2) create folder, 3) draw a layout table and draw a layout cell, 4) create hyperlinks, 5) insert special media, and 6) preview in the browser

Type 4: Attitude

Most participants may say that they are very motivated to learn about Adobe Dreamweaver. In the first period of class, some of them are still confused about what the Adobe Dreamweaver really can do.

Type 5: Cause of the problem

The reason for not being able to use the program may be one of the following:
- Never had a reason to learn it
- Did not get enough practice
- Used it long time ago – have forgotten it now.

8. Interpretation of data

Data interpretation involves analyzing, explaining, and discussing all the collected data, such as: do the learners know or not know how to use the Adobe Dreamweaver program? Why they do not know how to use it? Perhaps this is because they lack a training program or do not have the software program. For instance, what do learners want to know about using the Adobe Dreamweaver program? Such as:
- Creating a simple Website
- Using text styles and changing colors
- Inserting pictures and tables

9. Statement of revised instructional problem to be solved by the lesson

This stage explains how learners who participate in the training program can use the Adobe Dreamweaver program. Based on the results of the survey, interview, and observation, the designers may have to make a list as follows:
- What level of prerequisite knowledge do learners need for learning the Adobe Dreamweaver program?

- List of the features and tools of Adobe Dreamweaver that prove to be the most effective means to deal with the learners needs.
- What type of instruction would be most effective?
- What conditions are best for learning Adobe Dreamweaver?
- Prioritize which aspects of Adobe Dreamweaver would be the most beneficial to producing better images.
- Do you think learning the basics of Adobe Dreamweaver would improve your wWbsite?

10. Analyze learners

Analyze the learners to develop an outline to understand the learners' characteristics based on Heinich et al., (1999) *Instructional Media and Technologies for Learning* (pp. 32–36) and Smaldino, Lowther, and Russel (2012) Instructional Technology and Media for Learning (pp. 36–45). Heinich et al., (1999) and Smaldino, Lowther, Russel (2012) present the ASSURE model. ASSURE is an acronym for: *A* for *analyze learner*, *S* for *state objectives*, the second *S* for *select media and materials*, *U* for *utilize media and materials*, *R* for *require learner participation*, and *E* for *evaluate and revise*.

This paper uses the ASSURE model to analyze learners in the "Analyze Learners" step, the first part of ASSURE model. The author uses this model because it is useful and effective to analyze media and match content with learner characteristics. The learner characteristics are as follows:

- General characteristics such as age, grade level, job position, and culture.
- Specific entry competencies such as prerequisite skills, target skills, and attitude.

The designers have to really understand learners' general characteristics and specific entry competencies; therefore the designers have to analyze age, grade level, job position, and cultural or socioeconomic aspects of the learners. This is because the designers have to design the training content that correctly matches with learners' current and future jobs needs. This aspect of matching the needs of learners' is supported by the Andragogical Model (how adults learn) such as "adult learners need to know why they need to learn something" (Knowles, Holton, & Swanson, 2005, p. 64) before learning, adult learners come to class with various levels of life experience, and adult learners are usually willing to learn when they are able to perform (Knowles, Holton, & Swanson, 2005). If the goal of training course matches with the learners' characteristics such as job position it will motivate learners to better learn, retain and apply what they have learned. Besides understanding learners' needs, the designers have to understand learners' prerequisite target skills, and attitude. This is because designers' need to design training content to correctly match with the learners' skill levels, goals and desires. If the designers understand specific entry competencies, it will be help learners because the designer can more accurately match the training content to the level and learning goals of the trainees. Thus, it is logically necessary for the designers to analyze the general characteristics and specific entry competencies of the learner prior to the design of learning content and learning tasks or activities.

- Learning styles
  a. Anxiety
  b. Aptitude
  c. Visual or auditory preference

According to Smaldino, Lowther, Russel (2012) "Learning style refers to the following psychological traits that determine how an individual perceives, interacts with, and responds emotionally to learning environment…" (p. 40). Moreover, it is important to understand that individuals learn differently, not all learners think about or solve problems in the same way, some learners prefer learning independently while some prefer learning dependently (Witkin, 1973). The majority of child age learners' prefer dependent learning (teacher centered) while adult learners prefer independent learning (Gurley, 1984). Ford and Chen (2000) indicate that learners prefer receiving and organizing information while learning as one of their learning styles, because learning style is a key factor affecting learning (Kolb & Kolb, 2003). A useful learning style is to learn and process information from real experience (DiMuro & Terry, 2007). Several studies confirm that learning is possible if teaching strategies match the learning styles of learners so learning will be more effective and improve learners' performance (Dorça et al., 2013; Haider, Sinha, & Chaudhary, 2010; Kinshuk, Liu, & Graf et, 2009).

Learning style is another important issue to consider because if the designers take differences in learning style into account the trainees are likely to learn more effectively. Some learners may prefer to learn different content and from different media such as in an e-learning environment while some feel comfortable learning in the traditional classroom, while some prefer learning dependently or independently. Thus, the designers have to consider learning styles of learners before they conduct training or develop instruction content or activities.

11. Setting characteristics

Based on Dick, Carey, and Carey (2001) *Systematic Design of Instruction* including:
- Compatibility of site with instructional requirements
- Adaptability of site to simulate the workplace
- Adaptability of site for different delivery approaches including facilities, equipment, personnel, and supplies.
- Learning site constraints affecting instruction design and delivery such as hours of operation and geographical location.

The designers have to explain clearly what necessary equipment/conditions tools are required for instruction, such as a computer slide projector, printer, and number of students in each class, as well as the time required for each instruction/training step. Moreover, the training assistance that may be needed for large group training because the training may require the division of learners into smaller groups. One trainer may not be able to observe or direct all training activities simultaneously.

Data collection

The designers have to consider which data collection method best fits with the design constraints such as for those learners who have time, travel or transportation limitations. The important thing to consider is that different training topics should use the most appropriate data collection methods. For reliability the designer should use more than one data collection method (triangulation.). In this paper, the author suggests a few ways of doing data collection to triangulate to provide corroborative supportive checking data.

Observation

According to Marshall and Rossman (2011), observation means to capture several activities "from hanging around in the setting, getting to know people, and learning the routines to using strict time sampling to record actions and interactions and using a checklist to tick off pre-established actions" (p. 139). Marshall and Rossman (2011) have added that observation occurs when the researcher acts as "participant (to varying degrees) and an observer (also to varying degrees)" (p. 140), which the researcher has to have permission prior to observe. According to Loseke (2013), observation deals with "observing people in order to gather data about how they behave. Only observation allows the researcher to empirically explore how people *actually* act rather than how they *say* they act…" (p. 88).

Observation can be done into two ways: direct observation and indirect observation (Rothwell & Kazanas, 1998). The designers can use checklists or note taking to record the outcomes of observation (Cennamo & Kalk, 2005). The designers observe how learners perform their tasks and they can use a checklist, rating sheet, or note taking to identify specific tasks. The advantage of observation is it allows the designers to collect data from real world situations. However, the designers must have developed sufficient observational skills and be aware that the learners' behavior may be affected by being observed. As well observation is a time consuming process. In the NA process observation is watching the trainee do or perform his or her job or task.

Interviews

An effective interview is about asking relevant questions, and also properly recording all interviews (Gall, Borg, & Gall 1996; Payne, 1999). Wiersma (1995) recommends the interviewers test or pilot the interview questions before asking them from the real interview participants. Morrison, Ross, and Kemp (2004, p. 301) state that an "interview allows learners to discuss their reactions toward instruction in more detail than can be done with a survey or questionnaire. The questions can be structured or unstructured." An interview is one of the best tools for designers because it helps them to gain more detailed information. Conducting interviews can be done through face-to-face interviews, phone interviews, and teleconferencing interviews. More importantly, the interviewers should explain the purposes of the study or give the questions to the interviewees in advance (Cennamo & Kalk, 2005). Marshall and Rossman (2011) point out that "interviews allow the researcher to understand the meanings that everyday activities hold for people" (p. 145), because interviews are an interaction of at least two persons (Olsen, 2012) between researcher and interviewee (Loseke 2013). Tracy (2013) indicates, "Qualitative interviews provide opportunities for mutual discovery, understanding, reflection, and explanation via a path that is organic, adaptive, and oftentimes energizing" (p. 132). This is because interviews can explore personality experiences and points of view in any situation. Moreover, interviews help the researchers to obtain information that they cannot find from documents because interviews allow the researchers to discuss with the interviewees by validating, defending, or expanding on a specific issue (Tracy, 2013). Furthermore, even though interviews gain rich data, especially when they use semi-structured interview, it is a time consuming processes to interviewing and analyze the data (Hamilton & Corbett-Whittier, 2013). "In-depth interviews are the only method to allow researchers to explore how people understand topics that are too complex to be reduced to the relatively simple and straightforward questions asked on surveys" (Loseke, 2013, p. 87).

The author recommends using face-to-face interviews because the interviewer can ask the interviewees to expand on their opinions and answers. Additionally the interviewers can observe the interviewees body language. Interviewers need to take notes during and after the interview since it is difficult to remember everything after the interview. An interview is one NA instrument that can be used with any potential data collection sample including supervisors, Subject Matter Experts (SME), employees, and customers. Interviews are useful for gathering real data and observations from those directly involved on a day-to-day basis to gain insight into how to solve problems. Often video recording of interviews can yield a lot of information about an interviewee's reactions to questions.

Focus group

With a focus group, the moderator has to prepare questions in advance and allow participants time to discuss and ask topic related questions that the moderator and participants are interested in. Additionally, the moderator has to build rapport with the participants during the focus group meeting/interview to get more detailed information sufficient to answer the research questions. The focus group interview method originated from marketing research but it has been extensively used in social science and applied research. The participants usually number from 4 to 12 participants. The participants are not necessarily familiar with one another, and are selected because "they share certain characteristics relevant to the study's questions. The interviewer creates a supportive environment, asking focused questions to encourage discussion and the expression of differing opinions and points of view" (Marshall & Rossman 2011, p. 149). The focus group always has a facilitator (Olsen, 2012). While Tracy (2013) states that a focus group is "… marked by guided group discussion, question and answer, interactive dialogue, and other activities" (p. 167). The following focus group steps are from (Stringer, 2004, p. 78) and can include the following:

1. Set group rules
   • Allow all participants a chance to give their opinions and discuss
   • Listen to all the participants
2. Provide clear guidance
   • Set focus questions
   • Set appropriateness of questions and time for response
3. Designate a facilitator for each group to
   • Allow all participants opportunities to discuss
   • Be sure to keep discussion focused on the topic
   • Always check to allow enough discussion time
4. Record each group discussion
   • Find someone to help in the recording processes
   • Record every word of the participants
   • Be sure to summarize the conversation
5. Feedback and clarification
   • Always provide feedback for each group
   • Allow each group to present their summary of discussion
   • Allow each participant to extend or clarify the highlights of the presentation
   • The moderator should ask questions in order to allow each group to clarify and

        extend their contribution
- Make sure that all information is recorded
6. Analyze combined information
   - Identify and analyze general features across groups
   - Identify different issues or viewpoints
   - Rank issues in order of priority
7. What next: A plan for action
   - Define what will happen next: What actions to be taken and who will be responsible? What resources will be used?
   - Designate someone to be responsible for these tasks
   - Find a time and place to review actions

According to Cennamo and Kalk (2005), "focus group meetings are semi structured conversations with members of the target audience…involve small groups who meet to provide feedback on specific products or to generate ideas for a product" (p. 30). In order to design an effective training program, the designers have to find audiences who are expert in a particular topic or issue. As suggested by Cennamo and Kalk (2005) and Stringer (2004), the designers have to plan the focus group topics and questions very well, provide time for audiences to follow-up about the topic discussion, and allow them to participate fairly so it will produce good and creative thinking data. Thus, the designees have to make sure that they prepare focus group questions well and such questions should be based on the models, theories, or the previous studies to solve real world problems. More importantly, the questions to be asked of the focus group have to be valid (asking questions that will answer what the researcher is looking for) and the processes of conducting the focus group have to be reliable. The author believes that using a focus group helps designers conduct NA because the designers gain data from the selected participants in a particular field as well as gain information about related topics for solving real world problems. Moreover, the interviewees or experts in the focus group can suggest some ideas or information for the designers to consider when designing instruction or training lessons or activities.

Questionnaire/Survey

According to Cennamo and Kalk (2005, p. 31), "If you have the opportunity to contact a large number of learners, or if they are distributed in many locations, consider developing a questionnaire or survey." Morrison, Ross, and Kemp (2004, pp. 299–300) state that questionnaires or surveys are appropriate tools for testing participants' attitudes which may consist of two types of question: (1) open-ended questions allow participants to write answers and (2) closed-ended questions which offer fixed answers so that participants will choose an answer that best matches with their opinions. According to Loseke (2013), "surveys contain written questions and fixed answers, many people can be asked the same questions, so results can be analyzed using statistics (pp. 86–87). Thus, using survey data gathering techniques can reach large group of population because "survey can measure the complex meanings, feelings, behaviors, and attitudes that are the defining characteristic of people and social life" (Loseke, p. 87).

Questionnaires are useful for data collection in a large population or where the population lives in many differences places. The designers can also send questions via regular mail or email. Therefore, in choosing which types of questions to ask, the designer

should consider the research objectives, population and sample, and time available. The designers can send out printed questionnaires to participants to investigate their attitude toward some issues. Designers should be aware that mailed questionnaires do not usually result in a high rate of completion and return, and are often unsuccessful.

Theory and practice of the needs assessment techniques

Both the existing literatures and the experiences of the author in the Western countries and Thailand, indicate that there are some corporations and public organizations that still do not provide appropriate training. Even though some of them perform the training, they still lack programs to provide effective training. That is, some of them do not try to provide good quality of training until they find that the products or services do not meet the standards needed for success. The author urges both corporations and the public organizations to provide an effective training for both new employees and current employees, and to ensure they understand their organization's philosophy, aspiration vision, mission, strategic issue, goal, strategic map, and corporate culture. The author wants to provide an effective hands-on and simple needs assessment techniques for developing an effective training program for those who are looking forward to developing their organization. The eleven need assessment steps are very effective techniques that should be done prior to the training take place. The eleven needs assessment steps are considered as a quality control technique for conducting an effective training program and some steps can be adjusted to be best fit with the nature of a certain organization. Several big corporations have implemented the needs assessment for training employees such as Accenture, MethodE, 3M, and General Motors.

Most organizations understand that conducting effective training requires commitment of money and time, but the author still wants to motivate those to perform NA for effective training, because employees can improve their performance and competency in their current jobs (Blanchard & Thacker 2007; DeSimone & Werner, 2012; Nadler, 1984).

Before providing training, the trainers have to really understand the existing problems or the needs of the organization. Conducting NA can assist the trainers to understand the problems or the needs of the organization (Blanchard & Thacker, 2004; 2007; Brown, 2002; Hung & Altschuld, 2013; Silberman & Auerbach, 1998).

After researching, discussing, critiquing, and synthesizing some important issues related to the needs assessment techniques, the author would like to explain the theory and practice of the needs assessment techniques based on the Figure 1.

Figure 1: Theory and practice of the need assessment

Conducting proper ***needs assessment*** is useful for understanding real underlying problems and barriers to effective work. For example, recently there are many Thai people who still cannot communicate in English even though they have been studying English since basic education through the undergraduate or graduate levels (Wolther et al., 2014)… "It is already officially suggested that during the ASEAN Economic Community to be held in 2015, English will be more important than in previous years…(Wolther et al., 2014, p. 1254). In fact if people cannot speak English for communication, by using the eleven steps need assessment techniques to carefully analyze the situation before trying to solve the problem, an effective program can be developed to improve communication. For instance, the results of the needs assessment show that most employees are quite good in three basic English skills (reading, listening, and writing), but not good with speaking because they have no chance to practice speaking. The way they learn in class is not English for communication because English for communication usually start with listening, speaking, reading, and writing (Bowen, Madsen and Hilferty, 1985; Morley, 2001; Ung-wattanakul, 1994; 1998). Thus, the educational designer should develop some resources that assist learners to have chance to practice speaking. After completing this step, it needs to be tested or reviewed by both users and experts.

After understanding the problems, the designers have to understand learners by ***analyzing learners*** before they can provide the content and media for learning effectively and efficiently. Understanding the learners can be done by analyzing the learner characteristics, such as general characteristics, specific prior knowledge, physiological characteristics, and affective characteristics. This will help the designers decide which content and media are best suited in order to meet the need of training. For instance, if the learners are children, virtual images or motion pictures may be used in order to motivate young learners. After completed this step reviewing and testing should be done by both users and experts.

Analyzing content assists the designers to understand about the objective of the training course. Having content expert assists in some objectives may be needed in order to make the training more effective. The reason is that not every designer is expert in all subjects.

After the content has been decided, its needs to be tested and reviewed by the testers or the reviewers to ensure that the content of the training will benefit the learners. Importantly, the characteristics of the testers or the reviewers have to be very similar to the learners who will be expected to assimilate the content.

Analyzing media is necessary for training because nowadays there are several kinds of media that can be used to enhance the learning experience, but technically challenging media can also detract from the focus on learning. Identifying the characteristics of the learners and the content can signal what kind of media will be best fit with the training. For instance, training children to learn something, the trainers have to use more media than text or use more motion pictures than still pictures. The ability of the children to capture the content is lower than that of adults, whose need for comprehension can increase their learning motivation. After the media are selected, they should be tested with one-to-one, small group, and/or large group in order to make sure that the learners can benefit from the media presentation.

After analyzing the needs assessment, learner characteristics, content, and media each aspect needs to be tested or reviewed in order to make sure that the training will help meet the learning objectives. Every step should be evaluated and some steps may need to be revised as shown in Figure 1. After completing each step the revision has to be done by both tester and expert which is depend on the issue related.

Recommendation for the further application of NA

1. The designers should understand and perform NA in order to solve existing problems before creating the content of the training for performance improvement

2. The learners, content, and media need to be analyzed before providing an effective training for improving performance.

3. The testing must be done in every step of the needs assessment, including analysis of learner, analysis content, and analysis of media and revising should be based on the comments and recommendations of the experts and the testers.

In summary, the NA technique is a systematic process that assists designers in developing effective training programs. If you want to develop effective training try to use the eleven steps of needs assessment properly. Alternatively you may revise some of the eleven steps of the NA so that it more closely fits with the goals and environments of your organization. Effective NA allows your organization to outpace and lead other organizations today or in the future, because effectively conducting NA allows a better understanding of your human resources in order to provide effective, efficient instruction and training for your employees.

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