

Summer 2009

The DACUM Dynamic 5

by Robert E. Norton

The five versions of the DACUM (**D**eveloping a **C**urriculum) process are not widely known. Most persons who know about it think of it strictly as a type of job analysis process where a specific job is defined by a group of expert workers in terms of the duties and tasks performed by the successful workers. Many are also unaware that three categories of enablers are also identified: (1) general knowledge and skills; (2) worker behaviors; and (3) tools, equipment, supplies, and materials as well as (4) a list of future trends and concerns that are relevant to the job.

The Center on Education and Training for Employment has found DACUM to be very effective for five major purposes: (1) job analysis, (2) occupational analysis, (3) process analysis, (4) functional analysis, and (5) conceptual analysis. Each of these uses is explained with some examples.

Job Analysis. This is why the DACUM was initially developed. In the 1960s Job Corps Centers were being established in many states and the question of what should be taught had to be answered efficiently and effectively. Experts in a given job such as carpenter and mason were brought together and asked **what** they had to do to be successful in their specific jobs. Today this process, although greatly improved procedure wise and outcome wise, is still in considerable demand by companies who have many persons employed in the same job and want a solid basis for developing a curriculum and training program to prepare additional experts for the same job. We have also found a number of professional organizations and government agencies who want a similar job-specific analysis as a basis for curriculum development, training, human resource uses, management uses, career planning, employee testing and certification, using it.

Occupational Analysis. This use is by far the most common use of the DACUM process today and is the best approach for most community colleges and for many others who want an analysis of an occupational area rather of a single position. In a community or technical college situation, this is the most appropriate approach as no one knows what specific jobs will be available for their graduates. Hence, broad preparation in the occupational area of career interest is most logical and appropriate. An occupation analysis also usually reveals that there is a career ladder available in the occupational field where one can enter employment after acquiring the entry-level knowledge, skills, and worker behaviors required. After gaining some experience and/or additional education, there is usually the opportunity to advance one, two, or three grades up the career ladder.

Process Analysis. This type of DACUM analysis is not as common but has been requested from time to time by both companies and educational agencies when the sponsor wants an analysis of what has to be done to complete a given process involving workers with different job titles. For example, an electric power company wanted to know the tasks performed by a construction cost estimation team that had a manager, some technicians, an accountant, and other support staff. In another situation, a university associate dean wanted to know what his academic services unit was doing to meet the needs of undergraduate and graduate students. This academic team was composed of a director, some associates, some graduate assistants, and clerical support staff. In all cases, the process analysis involves a number of people who have different job titles. The analysis provides a graphic picture of all the tasks that must be performed to successfully carry out the specified process.

Functional Analysis. Although not as common as the other four types of DACUM analysis, it is most appropriate when persons are performing an important function such as assessment or resource development as part of their jobs. These individuals have many other responsibilities as well but need to know how to perform their assessment or other designated function well. Recently, we were asked to analyze the assessment function of college and university housing and dining services officers. These persons, as managers, have many other areas to deal with but see assessment as an important function that must be done well. Many of the officers need some education and/or training to enable them to perform this function well.

Conceptual Analysis. Probably the third most popular type of DACUM analysis, a conceptual analysis is conducted whenever there are no or very few expert workers available. Often a community college is looking at establishing a new occupational certificate or associate degree program, for example in the green technology area, and needs to determine what should be taught in the program. The use of local persons helps develop an awareness of and support for the new program that is extremely valuable to the college. Companies have also requested this type of analysis when they want to create a new position or to restructure existing positions.

The question asked of the panel in these situations is “What needs to be done?” or “What should be done?” as opposed to the usual question of “What do you do?” The panel is comprised of some early innovators or persons who have the best information about what the person in this role should do.

For more information about DACUM or any of its uses, contact Dr. Robert E. Norton at norton.1@osu.edu or 614/292-8481.

Task Analysis Provides the Details

When you want to identify the details of the steps required to perform a task, you will need to complete a task analysis. The task analysis provides the foundational information needed to develop instructional materials for the learner in competency-based training. It is also foundational to the development of competency assessments. The end result of a good task analysis is a training and/or testing program based on the specific realities of the job.

By most curriculum developers' definition, a task has two or more steps. Normally a task analysis is undertaken after the duties and tasks for a job or occupation have been identified and defined. The DACUM (**D**eveloping **a** **C**urriculum) process is a quick, easy, and cost-effective method for identifying job duties and tasks.

A task analysis is completed on the tasks that have been objectively identified as being the most significant (or important) to the overall job or occupation. There is little to be gained by spending resources on analyzing tasks that have little significance to the job. A task verification or similar objective-based method is helpful in determining which tasks should be analyzed.

At CETE, a task analysis is completed by team of at least two subject-matter experts (SMEs) working with a trained analyst who can obtain the essential information from the SMEs and record it on a task analysis (spreadsheet) form. By connecting the computer to an LCD projector, the team can view the information on a screen or wall as it is provided. Once a team analyzes a task or two, they become more proficient and can complete approximately one task analysis per hour.

There is a wide variety of types of information that you can collect about each task on the task analysis form. Typically, the most common include:

- Steps needed to perform the task
- Performance standards that describe acceptable performance
- Tools, equipment, materials, and supplies needed for each step
- Required knowledge and skills to perform each step
- Worker behaviors required
- Safety concerns that must be observed
- Decisions/cues and errors associated with each step

The steps of a task are the observable and measurable actions required to complete it. When describing the steps of a task, be sure to:

- List the steps in the sequence in which you normally perform them

- Begin each statement with a present tense action verb that describes the activity
- State each step at an appropriate level of specificity

Performance standards are specific criteria that define successful task performance. The criteria should be both observable and measurable and stated in past tense. State criteria in precise terms.

Examples: Rather than “according to the manager’s expectations” as the performance standard for developing a project proposal, you might record three separate criteria such as “developed a realistic cost estimate,” “developed a timeline that meets the specified completion date,” and “developed all required components of the proposal.”

Tools, equipment, materials, and supplies are tangible items required to perform the task successfully. These items include software, templates, reports, references, charts/graphs, hand tools, etc. Identifying these items tells the learner exactly what he or she has to be able to use proficiently in performing each step of the task. Include only the items unique to that specific step. Otherwise you can become bogged down with an overwhelming list in this column. Refrain from stating the obvious such as phone, computer, etc.

Required knowledge and skills are what the learner needs to know to perform each step of the task. Include knowledge addressing theory and concepts underlying the technical area as well as skills needed such as interpersonal, written communication, and problem-solving skills.

By listing the required knowledge and skills in the task analysis, you can clarify the relationship between knowledge/skills and application. It also helps to define for the learner exactly what he or she must know or be able to do to correctly perform each step.

Worker behaviors list the observable traits or behaviors the learner must demonstrate when performing that step. Many argue that demonstrating the correct behaviors is the most important aspect of learner performance. Examples of behaviors critical to the performance of many steps include accurate, detail oriented, customer oriented, and prompt.

Safety concerns underlie the performance of many steps. It is important to identify safety concerns to protect the safety of both the trainer and the learner. Safety concerns might relate to OSHA (Occupational Safety and Health Administration) standards, company policy, or just common sense. The use of personal protective equipment such as safety glasses, ear plugs, and hard hat are common examples one would list for performing certain steps in a plant-related task.

A *decision* occurs whenever the employee has to make a choice or decide on a specific course of action. Making the correct decision can be very important in terms of successful task completion. A task analysis should list any decision necessary to perform each step of the task.

Related to these decisions are the cues signaling the need for the employee to make a decision or cues providing the employee with information for making the correct decision. Another item included in the decision-making category is a listing of errors or problems that are likely to result if the employee makes an incorrect decision. In other words, an error is the consequence of inadequate performance.

To help identify decisions/cues/errors, ask the SMEs the following questions:

- Do you have to make any decisions while performing each individual step?
- What guides those decisions (what are the cues or indicators)?
- What will happen if you make the wrong decision?
- Which errors are possible in performing the task?

Lastly, include resource information such as websites, reference manuals, and books from which the developer can obtain additional information when preparing the learning materials. It may also be helpful to list this information in the learning materials for the benefit of the learner.

An example of a completed task analysis can be found on our website at www.dacumohiostate.com. Look on the right side under SCID (Systematic Curriculum and Instructional Development) for the link to download and open a task analysis on “mow the lawn” or “bathe the baby.” Individuals wishing to attend training on how to complete a task analysis can register for one of our SCID workshops under “SCID Registration Form and Brochure.”

ABLE Staff Present at COABE

Staff from CETE’s ABLE Evaluation and Design Project attended the Commission on Adult Basic Education’s (COABE) annual conference in Louisville, Kentucky, in April. In partnership with staff members from Ohio’s Resource Center Network and the Ohio Board of Regents, CETE project staff presented *State of Transition: Ohio’s New Path for Adult Learners*.

Session participants were informed about the numerous transition activities related to ABLE taking place in Ohio.

- Participants were given the background on how Ohio ABLE progressed to the current point.
- Presenters discussed legislative action that formed the University System of Ohio and the Ohio Skills Bank.
- In addition, presenters discussed the Governor’s Strategic Plan as well as the initiation of the Stackables Skills Certificates.
- The session then focused on the development of the Ohio ABLE Transition Framework, informed by national models and promising practices in Ohio programs.
- Finally, presenters shared what is happening with the ABLE Transition Collaboratives and how programs are addressing issues such as curriculum, support services, and partnerships.

For more information on this presentation, please contact Adrienne Glandon (614/688-3720; glandon.8@osu.edu) or Traci Lepicki (614/292-7033; lepicki.1@osu.edu).

Announcing the 20th DACUM International Seminar

CETE is pleased to announce the 20th annual DACUM International Seminar to be held in Nashville, Tennessee, on November 16-17, 2009. In this advanced seminar, persons who have been trained and have been putting their DACUM and/or SCID skills to good use come together and share with and learn from each other. The seminar is also open to persons who are considering whether DACUM will work for them and want to hear firsthand from major users the many ways in which the processes have been applied. Presenters are expected from education, industry, and various organizations, both domestically and internationally. Reserve the dates now. More details will follow soon on our website at www.dacumohiostate.com and in the next issue of the *Centergram*.

Project KNOTT Staff Update

Janet Ray retired from Ohio State effective May 29 with more than 30 years of service. CETE and Project KNOTT staff will miss Jan's "can do" approach to and enthusiasm for her work.

After 10 years with Ohio State, **Maria Moore** has left Project KNOTT for a position in the Ohio Dominican University's Division of Business, Program in Human Resource Management. Our sincere thanks and best wishes go with Maria.

Greg Nagy is a new member of the KNOTT project team, although he is not new to CETE, having started in 2001 as the Technology Director for the National Dissemination Center for Career and Technical Education. When that project ended, he moved on to help create an online Individualized Education Plan (IEP) system for the state of Florida for the Center for Special Needs Populations. He currently works on many other projects including the STEM (Science, Technology, Engineering, Mathematics) Equity Pipeline project, which is a part of the National Alliance for Partnerships in Equity Education Foundation.

Also joining KNOTT is **Melissa Dudley**. Melissa, an experienced high school science teacher, will be working as e-coach for the Praxis II test, Principles of Learning and Teaching. Welcome, Melissa!

Debbie Weaver is joining Project KNOTT staff to take on some of the duties for which Janet Ray was responsible. She will divide her time between the KNOTT and DACUM/SCID projects. Debbie has been with CETE for 25 years.

Congratulations to **Dwan Robinson**, Project KNOTT, who was awarded a PhD from Ohio State at Winter Commencement, 2009. Her dissertation was titled *The Engagement of Low Income and Minority Parents in Schools since No Child Left Behind: Intersections of Policy, Parent Involvement and Social Capital*.

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Events

DACUM/SCID

DACUM (Developing a Curriculum) Institute, August 3-7, 2009, September 21-25, 2009, or November 2-6, 2009, 8am-5pm, hosted by CETE, Columbus, OH; \$1,395

SCID (Systematic Curriculum and Instructional Development), August 10-14, 2009, September 28-October 2, 2009, or December 14-18, 2009, 8am-5pm, hosted by CETE, Columbus, OH; \$1,195

For information, contact Robert Norton, norton.1@osu.edu; John Moser, moser.120@osu.edu; Debbie Weaver, weaver.22@osu.edu; www.dacumohiostate.com.

Test Development Workshop

October 14-16, 2009, March 8-10, 2010, 8:30am-4:30pm, hosted by CETE, Columbus, OH; \$1,100

Constructing valid, reliable assessments of job-specific knowledge and skills is critical to effective human resource practice. This workshop provides participants with practical knowledge and skills to understand the creation of valid, reliable, and legally defensible assessments. For information, contact Kathy Summerfield, summerfield.1@osu.edu or 614/688-4000, or Jim Austin, austin.38@osu.edu or 614/292-9897.

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