



Conducting a Job Skills Analysis in Less Time Than a Traditional DACUM Using Compression Planning®

A WHITE PAPER BY
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1.0 Background

Columbus State Community College was awarded a grant from the National Science Foundation Advanced Technological Education program entitled “Building a Pathway for Industrial Engineering Operations Technicians.” A first deliverable for the grant was a job skills analysis for the engineering technicians that work in the logistics industry.

These logistics engineering technicians design, install, and maintain the automated systems in warehouses and other logistics facilities—such as conveyors, robots, automated pickers, RFID systems, and barcode readers. With the information from a job skills analysis, Columbus State faculty members will develop the academic program of study and the curriculum for an Associate of Applied Science degree in Logistics Engineering Technology.

DACUM, the gold standard for a job skills analysis, was developed at Center on Education and Training for Employment at The Ohio State University in 1976.

“DACUM, which stands for Developing A CURriculum, is a quick, low cost method of analyzing jobs and occupations that has been used worldwide for more than 40 years. A job analysis determines the duties and tasks performed for a given job. During a job analysis subject matter experts working in the given job work with a facilitator to list all of the major duties of the job and the tasks that make up each duty.

When a job analysis is complete, the information can be used to write job descriptions, determine the skill and compensation levels for the position, and create training materials. The DACUM process is a tool to perform accurate job analysis”
(DACUM International Training Center, 2016).

Robert E. Norton (1997) codified the DACUM process, which is based on three logical premises:

1. Expert workers can accurately describe and define their job/occupation more accurately than anyone else.
2. An effective way to define a job/occupation is to precisely describe the tasks that expert worker perform.
3. All tasks, in order to be performed correctly demand the use of certain knowledge, skills, tools, and positive worker behaviors.

Typically, the DACUM process involves a panel of 5-12 industry experts in a two-day workshop. This time commitment often is laborious and time-consuming and results in lost job productivity. Local industry members want to assist in creating educational programs that produce the graduates they need, yet have hesitated to participate in a full two-day DACUM event.

¹ Building a Pathway for Industrial Engineering Operations Technicians (Award ID: DUE-1400452, Amount: \$721,836, Duration: 9/1/14 to 8/31/17).

Sinclair Community College (Dayton, OH) experimented with using Compression Planning® to conduct a time-compressed job skills analysis for a U.S. Department of Labor grant that focused on educating IT programmers. Positive results convinced the Columbus State Principal Investigator and his team to adopt and adapt the Compression Planning model for the logistics engineering technology job skills analysis.

“Compression Planning was developed by Jerry McNellis, a small business owner and visionary, who combined ideas from Leonardo DaVinci, Walt Disney, and Mike Vance from Disney University. McNellis created a seven-step process that engages the planning team, avoids the distractions and meandering of traditional meetings, and drives the team to create an action plan. Used by industry, government, and community colleges across the country, Compression Planning is a visual planning process that captures ideas on cards, posts them on storyboards, and uses techniques to move cards to visualize a project plan. Compression Planning enables teams to rapidly organize the ideas into a plan that can be prototyped, budgeted, or assigned to someone”
(Ainley and Herbkerman, 2015).

2.0 Compression Planning Process

The Columbus State Grants Office (whose staff members are trained Compression Planning facilitators) and the NSF logistics engineering technology principal investigators adopted and adapted the Sinclair job skills analysis template. The Compression Planning process was conducted in three phases:

Design Phase

The Compression Planning facilitator met with the client—in this case the NSF logistics engineering technology grant staff—to identify the following:

- **Background:** the top ten things everyone needs to know to participate in a Compression Planning session.
- **Overall Purpose:** the ultimate reason for addressing a particular issue, project, or opportunity; or the end product at the completion of the project
- **Purpose of This Session:** specifically, the three-to-five decisions that must be made by the end of the session
- **Non-purpose of This Session:** discussion items that are off limits and will derail the planning session.
- **Header Questions:** questions to strategically guide the planning and bring out the best thinking of the planning group in a short period of time.

² Adapting and Adopting Competency-based IT Instruction to Accelerate Learning for TAA-eligible, Veterans, and Other Adult Learners, funded by the U.S. Department of Labor Trade Adjustment Assistance Community College Career Training program.



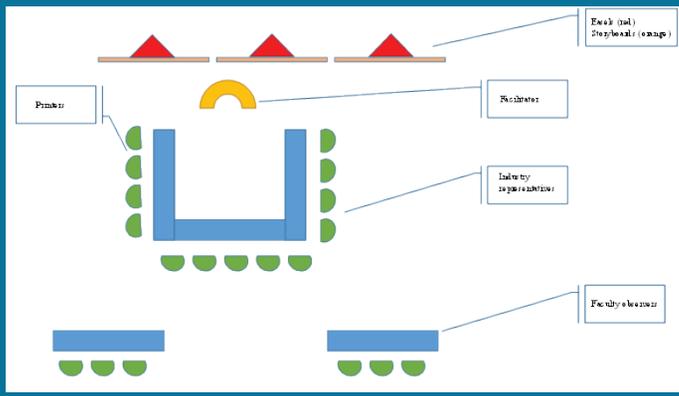
Facilitation Phase

The Compression Planning facilitator led a four-hour planning session with industry representatives who are subject matter experts in logistics engineering technology. Columbus State faculty members were present as observers.

The room configuration was important with tables set up in a “U” shape for the industry representatives. Two tables were placed behind the “U” for the faculty member observers.

The tables faced three storyboards that were positioned in the front of the room. Grants Office staff served as the neutral facilitators and as printers— recording the comments and interpreting the discussions of industry representatives on 4x6 inch cards.

The room configuration for the job skills analysis was important to focus on the industry representatives and allow Columbus State faculty members to observe.



The Columbus State job skills analysis for the logistics engineering technician was accomplished in four hours, saving the industry representatives 1.5 days each. Note the industry representatives at the “U” shaped tables, and the Columbus State faculty behind—observing the event. The facilitator is up front leading the session.



The designated printer captured all comments from the industry representatives and printed them on 4x6-inch cards. The cards with comments were pinned on the storyboards below each question. The cards were later moved into different categories based on the design of the planning session (for example rank order the top ideas, categorize the ideas, remove unimportant ideas, etc.).

The facilitator:

- Served as the neutral leader of the session.
- Guided the industry representative to respond to strategic questions identified in the design phase.
- Managed the team to accomplish all of the desired session outcomes identified in the design phase.
- Ensured equal participation among industry representatives.
- Led the industry representatives away from the non-purposes of the session.

The “notes” of the job skills analysis session—the comments recorded on the 4x6 index cards pinned on the storyboards—were taped together vertically to maintain the integrity of the ideas and order of the comments.

The actual agenda for the logistics engineering technician job skills analysis is on page 7.

Reporting Phase

The facilitator wrote a report based on the cards. The report became the job description for a logistics engineering technician.

The job description which resulted from the session is attached on page 11.

3.0 Expanded Use of Compression Planning for Jobs Skills Analysis

Word of the success with the logistics engineering technician job skills analysis spread across the Columbus State Community College by way of an internal college newsletter. The short article described the project and its outcomes. Based on this first success, the job skills analysis process has been repeated for three different occupations with three different panels of industry experts:

1. Cyber security technicians (to create a job description for a National Science Foundation grant).
2. Data analytics technicians (to create a job description for a future National Science Foundation grant).
3. Arboriculture technician (to create a job description for program expansion).

4.0 Lessons Learned

While a Job Skills Analysis with Compression Planning does not entirely replace a true DACUM, it yields the key elements of a job description—the same end goal of the DACUM analysis. Compression Planning takes only four hours rather than two days. This is a clear benefit—to achieve an estimated 75% of a DACUM analysis benefit with only 25% of the invested time. The Columbus State faculty, department chairs, and dean, along with the industry representatives that contributed, were happy with the results. Programs of study and curricula were developed based on the job skills analysis.

5.0 For More Information

- Columbus State Community College Grants Office
<http://www.cscce.edu/about/grants/staff.shtml>
- Columbus State Logistics Engineering Technology grant
(<http://www.cscce.edu/academics/departments/supply-chain-management/logistics-engineering-technology.shtml>)
- Columbus State Cybersecurity grant
(<http://www.cscce.edu/Cyber/>)
- Compression Planning
(<https://www.mcnellis.com/>)

6.0 References Cited

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- Norton, Robert E. DACUM Handbook. Second Edition. Leadership Training Series No. 67. Columbus Ohio: Center on Education and Training for Employment, The Ohio State University.
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- McNellis, Patrick. 2009. The Compression Planning Advantage: A Blueprint for Resolving Complex Issues. Self-published and available on Amazon.
- McNellis, Jerry. 2013. Grant Developer: Major Key to His Success in Winning \$162 Million in Grants is Compression Planning. Extracted on August 30, 2016 from <http://www.mcnellis.com/wp-content/uploads/2013/01/CP-Case-Study-Neil-Herbkersman.pdf>.

³Ohio Region Cybersecurity Technician Training Pipeline
(Award ID: 1501194, Amount: \$599,680, Duration: 9/1/15 to 8/31/18,

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