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DEMAND SIDE SKILL ASSESSMENT

PROJECT METHODOLOGY

**Submitted to:
State Employment and Training Commission**

**Submitted by:
The Heldrich Center for Workforce Development**

11.15.02

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SECTION 1. PROJECT PURPOSE/DEFINITIONS/OVERVIEW

A. Project Purpose

To better understand the current and short-term future skill, competency and educational requirements demanded by select industries in New Jersey, leading to the development of a skill-centered workforce development system.

B. Audience and Specific Goals

There are four audiences for the Skill Demand Project and dissemination materials will be developed to meet the needs of all audiences.

Workforce Development System:

- To provide information to the State, the WIBs and the workforce development system for use in resource allocation and policy making
- To foster dialogue between workforce development system and employers regarding skill demands
- To provide frontline staff with information and resources to assist job seekers

Educational Institutions:

- To provide educational institutions with skill demand information that could form the foundation for curriculum development

Workers and Job Seekers:

- To provide job seekers with information and resources to allow them to make informed career and educational choices

Employers:

- To foster dialogue between workforce development system and employers regarding skill demands

C. Key Definitions

Skills and knowledge contribute to competence. Competence generates effective, even superior performance, based on combining skills with personal traits and motivation, directed toward a clear set of expectations and goals.

Skills and knowledge can be taught and enhanced through use. Technically, skills and knowledge are the only components of competence that can be acquired. The other components are innate characteristics applied in a particular context.

For each context, work activity, or position, there is a set of expected behaviors or models for performance. These can be implicit or explicit. When they are explicit, they are called competency models, made up of a series of competencies, founded on a group of skills and knowledge. Competency models or competency-based approaches are typically used for:

- Recruiting and selection
- Retention/promotion
- Performance management
- Succession planning
- Development and career planning

Based on the descriptions above, the primary focus of the Demand Side Skill Assessment is skills and knowledge required by key and emerging industries, rather than competencies and abilities. This is true because skills and knowledge can be *taught* by academic institutions and acquired by current and future workers. *Applying* that know-how is traditionally the provenance of employers, where individuals demonstrate competence, hone their skills, and acquire new ones. It may also be possible to link some existing competency models to some of the occupational areas selected for the study. These models can be gotten from employers or created with employer participation.

BUILDING COMPETENCY

| | TYPE | EXAMPLE |
|----------------------|--------------------------------|--|
| Competency | Occupational Competency | <ul style="list-style-type: none"> •Operates press within quality specs •Provides excellent care in ICU |
| | SCANS Work Competency | <ul style="list-style-type: none"> •Works effectively on teams •Serves customers satisfactorily •Leads/supervises others well |
| Skills and Knowledge | Professional/Technical | <ul style="list-style-type: none"> •Trouble-shooting, Designing Protocols, Bookkeeping |
| | Foundational/Basic | <ul style="list-style-type: none"> •Basic Skills, Computer Literacy, Interpersonal and Thinking Skills |
| Personal Qualities | Motives, Traits, Self-concepts | <ul style="list-style-type: none"> •Individual responsibility, self-esteem, integrity, ambition |

Key aspects of the demand side research are to reliably determine which areas within industries to focus on, and to identify key skills and knowledge sets associated with them. These findings must be communicated in a way which results in better prepared workers and a specific process for ongoing dialogue regarding future skill and competency needs.

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[See Appendix A for Key Definitions]

D. Project Overview

The Demand-Side Skill Assessment Project will be conducted in two major phases.

Phase I: 8.15.02-1.31.03

Phase I consists of planning and data gathering at the state and national level. It is the phase in which background data is assembled to support the choice of sectors and occupations for the eventual skill assessment and recommendations. In Phase I Emerging Industries are targeted and defined.

The Knowledge Inventories which cover each existing industry segment are drafted and shared with the WIBs. WIB roles are outlined and sectors defined at the Regional level.

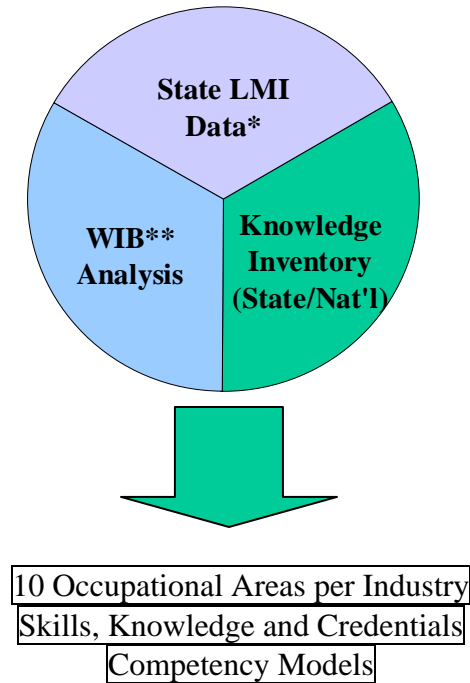
The Heldrich Center will integrate LMI information from NJDOL to develop a cogent list of occupational areas by industry, commensurate with the sectors outlined by the WIBs. O*Net compatible language and terminology will be used throughout the Project.

The Heldrich staff will work to iron out any contradictions or inconsistencies in language, terms or categorization, as the findings are collated across regions and industries. Even though the overall study is based on a regional approach, the staff will take into account occupational demand by industry across the state, and the trends identified in the Knowledge inventories.

Selection of sectors within each industry, and occupations within each sector, will be informed by the use of Standard Industry Codes (SIC) and Standard Occupational Codes (SOC).

All of this is done to produce a coherent set of emerging and existing occupational areas before heading in to Phase II in Mid-January to February 2003. The process calls for a flexible approach with the WIBs since their priorities and timeframes are responsive not only to the Demand Study but also to local initiatives and constituencies.

Demand-side Skill Assessment Project



* Occupational Criteria

** Sector Criteria

Phase II: 2.01.03-10.15.03

Phase II revolves around the local Sectoral Advisory Committees and their recruits for interviews and focus groups. Using a defined set of protocols data will be gathered in the field during the spring of 2003. This data will provide the extensive information necessary to catalogue the skills, competencies and credentials which match the demand areas.

Also during this phase, there will be dialogue and analysis, which supports the dissemination strategy, development of materials, trends and recommendations. The Project Team will finalize the Industry Reports, and insure that crossovers between occupational areas, as well as platform and emerging skills are captured.

SECTION 2: DATA COLLECTION

A. Knowledge Inventories

Purpose

The purpose of the Knowledge Inventories is to describe the selected industries, and provide background information which provides context for the Demand-Side occupational analysis. In particular, we will focus on identifying NJ-based studies and information in each industry. The knowledge inventories are comprised of the following sections:

Industry Research Knowledge Inventory Guide

I. Introduction

- A. Brief definition of Industry
- B. Overview of studies conducted in Industry

II. Industry Overview

A. National Sources

Census data; www.census.gov

Industry: <http://www.bls.gov/oco/cg/home.htm>

Occupational outlook: <http://www.bls.gov/oco/home.htm>

Industry Outlook and Employment Project through 2010:

<http://www.bls.gov/opub/mlr/2001/11/art3exc.htm>

Occupational Outlook Quarterly: <http://www.bls.gov/opub/ooq/ooqhome.htm>

B. New Jersey Sources

Census 2000 data:

http://factfinder.census.gov/servlet/QTTTable?ds_name=DEC_2000_SF3_U&geo_id=04000US34

&qtr_name=DEC_2000_SF3_U_DP3

Industry and Occupational Projections:

<http://www.wnjp.in.net/OneStopCareerCenter/LaborMarketInformation/lmi04/index.html>

Regional LMI Overviews

<http://www.wnjp.in.net/OneStopCareerCenter/LaborMarketInformation/lmi12/index.html>

Demand Occupations

http://www.wnjp.in.state.nj.us/coei/labor_demand/labor_demand.htm

III. National Skills-based Studies

A. General workplace Knowledge

SCANS Reports 1999, 2000 (general Workplace Skills

http://wdr.doleta.gov/opr/FULLTEXT/1999_35.pdf

<http://wdr.doleta.gov/opr/fulltext/00-wes.pdf>

An Introduction to the use of Skill Standards and Certifications in WIA Programs

<http://www.nssb.org/>

*Appendix A: Nationally Recognized Industry-based Skill Standards

*Appendix B: Nationally Recognized Industry-based Occupational Certifications

*Appendix C: State Resources

- *Appendix D: Related Websites
- *Appendix E: Related Documents
- *Appendix F: Key Contacts

B. Specific Industry Skills

National Occupational Skills Standards Projects
http://wdr.doleta.gov/opr/fulltext/96-skill_standards.pdf
NGA – Strategies to promote skill dev. Among low-skill workers
<http://www.nga.org/cda/files/07281998CAREER.pdf>

IV. State-based Studies

Examples: CT(multi-industry – identifies hot industries and jobs +skills needed):

<http://www.ctdol.state.ct.us/lmi/choicestoday.pdf>

KY: Manufacturing Ind. Skills standards

Meeting Employer Demand, Emerging state practices:

<http://www.nga.org/cda/files/980219WORKFORCEDEV.pdf>

(Each Knowledge Inventory also includes a review of current major articles and studies, as well as a list of sources for further research.)

B. Emerging Industries

Investigation of skill requirements of emerging industries

Meeting of economic forecasters and industry specialists

In early December 2002, the Heldrich Center and the New Jersey Commission on Science and Technology will convene a meeting of ten to twelve economic forecasters and industry specialists to identify current and emerging trends influencing demand for skilled workers nationally and in New Jersey over the next 3-5 years. The Commission on Science and Technology will develop a list of individuals with knowledge of emerging skill and industry trends. Individuals may include industry specialist and forecasters from major financial houses and members of large industry councils. A letter of invitation has been sent to these individuals on behalf of the Commission. The Heldrich Center will be responsible for the logistics of the meeting.

Questions to be considered during this meeting may include:

- What trends (e.g. nanotechnology) will be important to NJ's industries as a whole?
- What industries will be important to NJ's economy in the next ten years?
- Where are gaps in the preparation of the current workforce for these employer needs?
- What new types of work will be created within corporations because of these new trends?

Knowledge Inventory

Following this meeting, the Heldrich Center will conduct a knowledge inventory on the current and emerging trends. The Commission on Science and Technology will provide the Heldrich Center with a suggested list of citations for this inventory. The Heldrich Center will use this research in writing the final report to be submitted to the SETC.

Focus Groups

In early 2003, the Heldrich Center and the Commission on Science and Technology will convene two focus groups to further explore current and emerging trends and to identify the skills that these trends may require. The Commission will identify key individuals from the emerging industries discussed during the December forecast meeting. A letter of invitation will be sent to these individuals on behalf of the Commission. The Heldrich Center will be responsible for the logistics of the focus groups and for developing the focus group protocol. Questions to be considered during these sessions may include:

- What fields within these industries will be most important?
- What skills are necessary for these industries/fields?
- What kind of preparation is necessary for these fields (e.g. bachelors' degrees, post-college education, vocational technical education, etc.)?

[See Appendix B for Emerging Industries Focus Group Protocols]

Final Report

The Heldrich Center will submit a report to the SETC based upon the discussions during the meeting and focus groups and the information gathered during the knowledge inventory.

C. Industry Focus Groups

The Heldrich Center, with assistance from the regions, will conduct focus groups with industry and sector representatives. Topics explored will include skill/competencies and education requirements and recruitment processes, and use of education and training institutions. Four focus groups will be held in each industry. Focus group participants will include industry representatives, members of the higher education community, and other education representatives. Topics explored will include current programs of study that prepare students for work in each sector, current partnerships with industry to increase the supply of students interested in each industry, and potential for future partnerships with industry to meet labor demand. The Heldrich Center will work with each WIB to determine the most effective mix of focus group participants. The industry advisory committees and the local WIBs will identify and recruit participants, as well as organize and convene each focus group. The Heldrich Center will attend each focus group and transcribe all proceedings. The Heldrich Center will conduct focus groups, but will offer WIBs the option of conducting those focus groups they prefer to oversee.

The Heldrich Center, with guidance from the SETC and WIBs from across the state, will identify and recruit focus group participants for the Information Technology sector. The Heldrich Center will organize and convene four focus groups for this industry.

[See Appendix C for Industry Focus Group Protocols]

D. Structured Interviews

The Heldrich Center will conduct structured interviews with at least ten human resource professionals and/or key operations managers each from participating industries regarding current and future skill issues and requirements.

SECTION 3: DELIVERABLES

A. Knowledge Inventories

- Detailed industry information supporting skill and credential analysis
- Definitions of key occupational areas within selected industries
- Examination of the outlook, gaps, issues and resources which contribute to a meaningful demand side assessment and recommendations

B. Emerging Industries

- Identification of industry trends (including new technologies) that are likely to significantly affect the skill needs of employers and to summarize these new skill demands
- Identification of platform skills which allow current workers to migrate to newer opportunities

C. Dissemination Strategy

- Devise a strategy which maximizes the value of the demand side findings and which catalyzes systemic change in the way future demand side data is utilized
- Exploit traditional and electronic means (existing websites) to distribute the findings of the report. Have standalone reports on each sector.
- Devise strategy for disseminating information collected through this project to a variety of audiences including, but not limited to, the workforce development system, individuals in need of assistance in choosing an occupation or career, and educational institutions.

The materials will:

- Cover all actionable findings
- Reach all constituencies for the Demand Side project
- Make effective use of existing channels
- Be state-of-the-art and user-friendly

Sample materials may include:

- Industry booklets
- Industry flyers describing each occupation*
- Presence and/or links to relevant websites
- Access to common skill/knowledge language
- Final report

*Content of flyers may include:

- Occupational outlook
- Expected wages at various levels
- Job description
- Skills, knowledge and abilities required
- Educational requirements
- Career ladders/Advancement

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D. Final Report

- Executive Summary
- Future Outlook based on emerging industries
- Industry Reports/Skill Needs
- Process Change/Recommendations
- Dissemination Strategy/System Enhancements
- Dissemination Materials

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SECTION 4: TIMELINE AND RESPONSIBILITIES

A. Timeline

Administrative Project Start Date: August 1, 2002

Project End Date: October 14, 2003

Project Deliverables Start Date: October 15, 2002

Quarter 1: October 15, 2002-January 14, 2003

WIBs: Tasks

Months 1-3

Key Tasks

- WIBs form and convene Industry Advisory Committees (10.15-1.14)
- Review draft methodology (11.22-12.11)
- Meet with Heldrich Center (12.12)
- Working with Heldrich Center, select up to ten occupations within each industry (12.12-1.14)
- Begin to recruit participants for focus groups

Heldrich Center: Tasks and Deliverables

Month 1 (October 15-November 14)

Key Tasks

- SETC forms and convenes Technical Advisory Committee
- Heldrich Center completes draft methodology and sends to SETC for review
- Heldrich Center continues work on knowledge inventories for each industry

Deliverable – November 14, 2002

- Draft Methodology
 - Description of chosen industries and chosen emerging industries
 - Definition of industries
 - Focus group protocols
 - Structured interview protocols

Month 2 (November 15-December 14)

- Heldrich Center finalize gathers feedback from SETC and WIBs re: draft methodology
- Heldrich Center analyzes NJDOL LMI data
- Heldrich Center meets with WIBs to discuss methodology and occupation selection (12.12)
- Commission on Science and Technology convenes meetings on emerging skill needs (12.4)

Month 3 (December 15-January 14, 2003)

- Heldrich Center finalizes methodology
- Heldrich Center completes knowledge inventories for each industry
- Heldrich Center completes analysis of LMI data

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Deliverables – January 14, 2003

- Knowledge Inventory Reports
- Final Methodology
- Draft report identifying of emerging industries

Quarter 2 (January 15, 2003-April 14, 2003)

WIBs: Tasks

Months 4-6

Key Tasks

- Coordinate and convene focus groups; option to moderate focus groups

Heldrich Center: Tasks and Deliverables

Month 4 (January 15-February 14)

Key Tasks

- Moderate Industry focus groups
- Moderate emerging trends focus groups

Deliverables – February 14, 2003

- Draft report on the skill demand requirements of emerging industries; send to SETC and NJCST for review

Month 5 (February 15-March 14)

Key Tasks

- Moderate industry focus groups
- Conduct structured interviews
- Revise emerging trends report

Deliverables – March 14, 2003

- Final report on the skills demand requirements of emerging industries

Month 6 (March 15-April 14)

Key Tasks

- Moderate remaining industry focus groups
- Conduct structured interviews

Quarter 3 (April 15, 2003-July 14, 2003)

WIBs: Tasks

Months 7-9

Key Tasks

- Coordinate and convene any remaining focus groups

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Heldrich Center: Tasks and Deliverables

Month 7 (April 15- May 14)

Key Tasks

- Moderate any remaining focus groups
- Conduct any remaining structured interviews
- Draft individual industry reports

Month 8 (May 15-June 14)

Key Tasks

- Draft individual industry reports

Month 9 (June 15-July 14)

Key Tasks

- Draft individual industry reports
- Develop dissemination strategy

Deliverables – July 14, 2003

- Draft individual industry reports; send to WIBs for review

Quarter 4 (July 15, 2003-October 14, 2003)

WIBs: Tasks

Months 10-12

Key Tasks

- Review draft industry reports
- Review draft dissemination strategies

Heldrich Center: Tasks and Deliverables

Month 10 (July 15-August 14)

Key Tasks:

- Revise draft individual industry reports based on WIB feedback
- Continue to develop dissemination strategies and materials

Deliverables – August 14, 2003

- Draft dissemination strategy, to SETC for review
- Draft individual industry reports to SETC for review

Month 11 (August 14-September 14)

Key Tasks

- Revise draft individual industry reports based on SETC feedback
- Revise draft report on dissemination strategies based on SETC feedback
- Draft final report

Deliverables – September 14, 2003

- Final report on individual industries
- Final report on dissemination strategies

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Month 12 (September 15-October 14)

Key Tasks

- Complete final report, send to SETC and WIBs for review
- Catalog existing LMI tools in New Jersey
- Attend SETC meetings with Technical Advisory Committee re: system enhancements
- Conducts review of innovative systems nationally and in other states
- Make reports available in electronic formats
- Develop and produce dissemination materials

Deliverables – October 14, 2003

- Final report
- Description of current web-based LMI tools in New Jersey and a description of innovative practices nationally and in other states

| RESPONSIBILITIES | WIB/RESEARCH PARTNER | HELDRICH | STATE | INDUSTRY ADVISORY COMMITTEES |
|---|-----------------------------|-----------------|--------------|-------------------------------------|
| Select industries | X (1) | | X(2) | |
| Define each industry by choosing sectors | X | | | |
| Identify, recruit & manage industry advisory committee | X | | | |
| Develop methodology (with the exception of criteria for identifying industries and sectors) | | X | | |
| Provide input on proposed methodology | X | | X | X |
| Conduct knowledge inventories for each industry | | X | | |
| Analyze labor market information (LMI) for each industrial sector to identify occupations for study | | X | X | |
| Identify 10 occupations within each industry, focused in selected sectors. This selection will be based on the knowledge inventories, LMI data, WIB input | X | X | X | |
| Organize and convene focus groups | X | | | |
| Co-moderate focus groups | X (optional) | X | | |
| Draft industry reports | | X | | |
| Review and feedback on industry reports | X | | X | X |
| Draft final report and dissemination materials/strategy | | X | | |
| Review and provide feedback on final report and dissemination materials/strategy | X | | X | X |

APPENDIX A

Key Definitions

Skill: Capability to accomplish a task or perform a function. Skills can be acquired or learned with practice.

Knowledge: Organized sets of principles and facts which apply to a wide range of situations.

Competency: Ways of behaving against a set of criteria or standards. Competencies cause or predict behavior and performance. Competencies are made up of characteristics such as motives, traits, self-concept, skills and knowledge.

Tasks: Specific work activities that can be unique for each occupation

Work Activities: General types of job behaviors occurring across many jobs.

Work Context: Refers to physical and social factors that influence the nature of work.

APPENDIX B

Emerging Industries Focus Group Protocols

Focus Group I Protocol

Co-Moderators: The New Jersey Commission on Science and Technology
The Heldrich Center for Workforce Development

Participants: Economic and Technology Forecasters

Introduction: Explanation of Project; Purpose of Focus Groups

Topics for Economic Forecasters and Technology Forecasters

1. In your opinion, what industrial sectors are poised for the fastest growth in New Jersey over the next 3 to 5 years?
2. In which industries do you anticipate the emergence of new enterprises in science and technology in that will lead to job growth in New Jersey? Please describe.
3. What types of work will be called for in these emerging sectors?
4. How will the skill demands of these emerging sectors/occupations impact the preparation of the state's workforce?
5. What role do you see for government in identifying and fostering the growth of new sectors or occupational areas?

Focus Group II Protocol

Co-Moderators: The New Jersey Commission on Science and Technology
The Heldrich Center for Workforce Development

Participants: Industry Specialists

Introduction: Explanation of Project; Purpose of Focus Groups

Topics for Industry Specialists

1. Please identify current and/or emerging trends [in your industry] that are influencing demand for skilled workers in NJ. What factors, in your opinion, are driving these trends?
2. How are these trends impacting your industry?

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3. How is your industry responding to these impacts?
4. What skills and competencies will workers require to respond to these trends?
5. How optimistic are you that enough skilled workers will be available to meet the new skill demands?
6. If no, is your industry currently taking steps to address potential skill shortages?
7. Is your industry developing new technologies to meet your future skill needs?
8. What role do you see for the education community in preparing students for the workplace?
9. What role do you see for government in assisting you with meeting the workers and other needs of your industry?

APPENDIX C

Industry Focus Group Protocols

Industry Sectors: Focus Group Protocol

Co-Moderators: Workforce Investment Boards
The Heldrich Center for Workforce Development

Participants: Industry Representatives; Higher Education Representatives

Introduction: Explanation of Project; Purpose of Focus Groups

Topics for Educators and Sector Representatives of Each Industry

Skills/Knowledge/Abilities

1. What skill and competencies are currently in the greatest demand in the identified occupational areas in your industry within the current New Jersey labor market?
2. What skills do you predict will be in greatest demand in the next 3 years?
3. Is your industry currently experiencing a shortage of workers with the skills you just specified?
4. Do you anticipate a shortage of such workers in the next three years?

Education requirements

1. What levels and types of degrees are currently in the greatest demand by your industry within the current New Jersey labor market?
2. What types of degrees do you predict will be in greatest demand in the next three years?
3. In what skills, competencies, and degrees are there a significant gap between supply and demand currently in your industry?
4. In what skills, competencies, and degrees do you anticipate there being significant gaps between supply and demand in your industry in the next three years?
5. In your opinion, are institutes of higher education in New Jersey doing a good job of preparing students for the workplace? What about your industry in particular?

Use of education and training institutions

1. Do you offer training to your workers?
2. How do you provide this training? On-site, training institutes, colleges and universities?
3. How satisfied are you with your current training methods?
4. If you do not use colleges and universities or training institutions to train your workers, why not? If you do, how would you rate their effectiveness? How can they be improved?

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Recruitment Processes

1. In general, how do you recruit workers? Job ads, school campuses, job fairs, etc.?
2. How effective would you say your recruitment strategies are?
3. Do you have suggestions for more effective recruiting?

Partnerships with industry to increase the supply of students interested in each industry

1. Do you currently have industry/education partnerships to increase awareness of that industry among students? To train students or potential employees?
2. Do you currently participate in any other types of industry/education partnerships? Please describe.