



National Partnership for Careers in LPSCS Conference

**Rubrics to Assess Basic
IT User Skills In
LPSCS Career Training**

**Thursday, March 8, 2007
Charlotte, North Carolina**



Today's Presenters

Joyce Malyn-Smith

Linda Scott

**IT Across Careers Project (NSF-ATE)
Education Development Center, Inc.**

Carol Mathews

**ISLET Project (NSF-ATE)
Century College**



Today's Session Will Cover...

- Basic IT Skills for LPSCS
- What do we mean by “proficiency”?
- Intro to *Rubrics to Assess Basic IT User Skills*
- Using ITAC rubrics as an integrated teaching tool
- Rubrics as a structure for learning & assessment in LPSCS Career Training

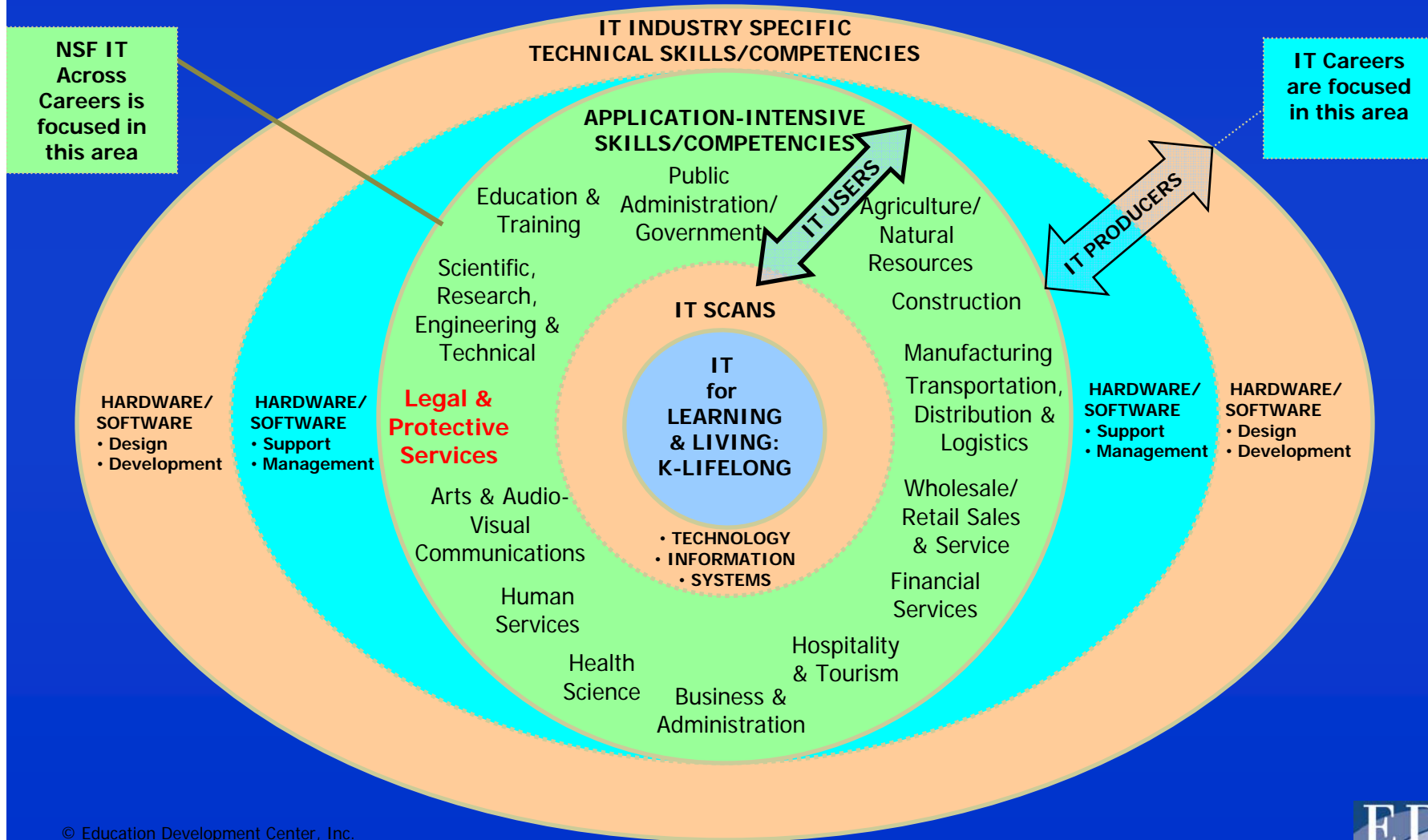
Audience Brainstorm Question #1

How do you currently use rubrics?

Audience Brainstorm Question #2

What additional ways would you like to use rubrics?

Making Sense of IT for Learning, Living, & Working





Connection to LPSCS & Other Clusters

ITAC Project Objective...

Develop and validate a common language and approach to teaching IT applications across 16 Career Program Areas:

Agriculture

Architecture/Construction

Arts/AV Technology/Communications

Business/Management/Administration

Education/Training

Finance

Government/Public Administration

Health Science

Hospitality/Tourism

Human Services

Information Technology

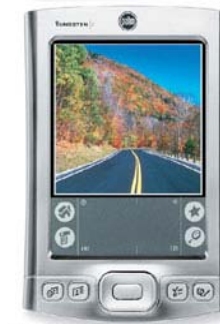
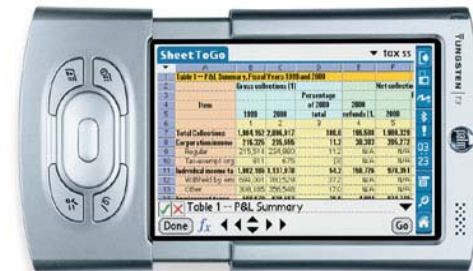
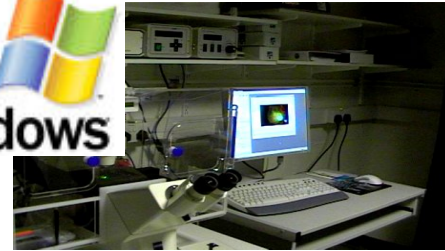
**Law/Public Safety/
Corrections/Security**

Manufacturing

Marketing/Sales/Service

STEM

Transportation/Distribution/
Logistics (TDL)



Mobilemag.com



IT Core Applications Used Across ALL Career/Program Areas

1. Personal Information Management (PIM) Productivity
2. Electronic Mail
3. Internet
4. Writing/Publishing
5. Presentation
6. Spreadsheet
7. Database
8. Collaborative/Groupware
9. Computer Operations
10. Computer-Based Equipment
11. Global Positioning/Geographic Information Systems (GIS/GPS)

****Web Development****
****Multi-Media****

Coming
soon!



Assessing Authentic Workplace Skills

1. Identify skills to be assessed
2. Establish 2-3 most important things learner needs to be able to do for each skill
3. Identify a continuum or progression of skills
4. Define what **proficiency** is for the skill
5. Align with validated skill sets
6. Use technical language of the industry

ITAC Presentation Applications Rubric

Performance Elements	Level 1 Novice Measurement Criteria	Level 2 Approaching Proficiency Measurement Criteria	Level 3 Proficiency Measurement Criteria	Level 4 Above Proficiency Measurement Criteria
<p>PE 1: Prepare presentations for training, sales and information sharing.</p>	<ul style="list-style-type: none"> • Create a new presentation using default slide layout and design. • Edit text elements in an existing presentation. • Does not use animations. 	<ul style="list-style-type: none"> • Create a new presentation using text layouts. • Select a slide design for the presentation. • Add text elements to an existing presentation. • Add content (e.g., table, chart, graph, clip art, picture) using automated content wizard. • Edit existing slide transitions. 	<ul style="list-style-type: none"> • Create a new presentation using both text and content layouts. • Change color scheme for a slide design. • Create and edit external graphic elements (e.g., a scanned photo or drawing into a slide). • Create new animations and action buttons. • Create new slide transitions. 	<ul style="list-style-type: none"> • Create a new presentation template. • Modify slide masters (e.g., fonts, graphic elements, colors, layout) for a presentation. • Add audio (e.g., voice or music) to a slide.
<p>PE 2: Deliver presentations with supporting materials.</p>	<ul style="list-style-type: none"> • Use slide format exclusively. • Print an entire presentation in slide format. • Run a slide show manually (e.g., using the mouse). 	<ul style="list-style-type: none"> • Create and distribute presentation outline. • Print either key slides or an entire presentation in slide or outline format. • Start an automated slide show. 	<ul style="list-style-type: none"> • Create and distribute presentation handouts or speaker notes. • Print either key slides or an entire presentation in handout or notes format. • Create an automated slide show. 	<ul style="list-style-type: none"> • Distribute presentation materials using the WWW (e.g., create a web page) or in a PDF.

ITAC Spreadsheet Rubric

Performance Elements	Level 1 Novice Measurement Criteria	Level 2 Approaching Proficiency Measurement Criteria	Level 3 Proficiency Measurement Criteria	Level 4 Above Proficiency Measurement Criteria
PE1: Create spreadsheet.	<ul style="list-style-type: none"> • Input numeric or text data to an existing spreadsheet or template. • Edit existing spreadsheet(s) using basic edit functions (cut, copy, paste, find-and-replace). • Adjust rows and columns to accommodate data. • Apply formatting options for clear display of data (e.g., cell alignment, wrap text, bold, borders and shading...). • Print worksheet so that output is readable. 	<ul style="list-style-type: none"> • Create new spreadsheet based on given tables of data. • Apply cell type formatting (e.g., date, dollar, text, decimal...) appropriate to data type. • Add document identification (e.g., page numbers, dates, and titles) in headers and footers. • Print only relevant data so that it is readable (e.g., use set print area to fit into one or multiple pages). 	<ul style="list-style-type: none"> • Create new spreadsheet based on a set of data where you must identify the appropriate structure (e.g., rows and columns) for data display and analysis. • Create new worksheets within the same file for related analyses. • Save spreadsheets in multiple formats (e.g., CSV, text-delimited, SYLK...) to share data with other applications or colleagues. • Edit existing spreadsheet(s) using program functions (series auto-fill, repeat, clear). • Hide columns and rows. • Print requested data so that it is legible, accurately labeled, and aligned well in the page. 	<ul style="list-style-type: none"> • Create new spreadsheet by importing data from data files or other spreadsheet programs. • Apply protection to worksheet data elements and/or workbook using protection tools. • Define a range name for a cell, a range of cells, formula, and/or a constant value. <ul style="list-style-type: none"> ▪ Record a new macro for a repeated action.
PE2: Perform calculations and analysis on data.	<ul style="list-style-type: none"> • Do not create graphs or charts. • Build a simple calculation using two cells or values and one operand (+, -, *, /). • Create a simple database by making a list on a worksheet. 	<ul style="list-style-type: none"> • Use chart wizard to create a chart or graph from an adjacent selection with appropriate chart type. • Build calculations using the formula wizard. • Use sort functions to organize data by columns in a list. 	<ul style="list-style-type: none"> • Write simple formulas. • Use chart wizard to create a chart or graph from adjacent selections with appropriate chart type and labels. • Use filter and comparison criteria to find specific values in rows in a list. • Link data between two or more worksheets in a single file. 	<ul style="list-style-type: none"> • Create a chart or graph independently from adjacent or non-adjacent selections (different worksheets or files) with appropriate chart type and labels. • Build calculations independently using the correct function and data references. • Create a simple pivot table based on a list created in a spreadsheet program or database. • Link data between two or more files.

ITAC Internet Rubric

Performance Elements	Level 1 Novice	Level 2 Approaching Proficiency	Level 3 Proficiency	Level 4 Above Proficiency
	Measurement Criteria	Measurement Criteria	Measurement Criteria	Measurement Criteria
PE1: Access and navigate the Internet (e.g., use a web browser).	<ul style="list-style-type: none"> • Access a given web site using an Internet browser. • Navigate within a web site using basic browser software functions (e.g., back, forward). 	<ul style="list-style-type: none"> • Use additional browser functions (e.g., refresh, history, bookmarks). • Complete and submit web forms. • Organize bookmarks for frequently used or important web sites. 	<ul style="list-style-type: none"> • Navigate between and within web sites. • Access and use multiple browser windows. • Differentiate between secure and non-secure web sites. • Download a file from a web site to the desired location. 	<ul style="list-style-type: none"> • Troubleshoot problems with a given URL (e.g., a specific file has moved in the domain). • Use FTP to upload and download files to a remote computer. • Configure Internet browser (e.g., clear history and cache, set security levels...).
PE2: Search for information and resources.	<ul style="list-style-type: none"> • Use directory services (e.g., Yahoo, MSN, Netscape, or Google directory). • Use search function in portals (such as excite.com, netscape.com). 	<ul style="list-style-type: none"> • Use one search engine. • Conduct simple keyword search. • Access search results (identified web sites). • Use a search function within a web site. 	<ul style="list-style-type: none"> • Select search engine(s) appropriate for desired information. • Identify and articulate an information search. • Use phrase search and simple Boolean logic (AND, OR, NOT, NEAR). • Refine search by modifying search terms. 	<ul style="list-style-type: none"> • Refine search terms by using selection criteria (e.g., languages, file format, domain).
PE3: Evaluate Internet resources. (Evaluation of Internet resources is a critical skill that requires the ability to distinguish between relevant and irrelevant information relative to the purpose and subject of the search.)	<ul style="list-style-type: none"> • Rely on search engine/ directory service to identify and appropriately prioritize information related to your search. • Rely on limited search attempts. • Accepts information provided as published. 	<ul style="list-style-type: none"> • Use knowledge of topic to assess relevance of Internet information. • Verify accuracy of information (e.g., up-to-date, credentials of the author, the host site, ability to get more information, caliber of writing...). • Identify what results support search criteria. 	<ul style="list-style-type: none"> • Prioritize Internet resources against search criteria. • Look for corroboration and independent validation of information (e.g., Do different sites reference each other? Is the information consistent?). • Take action to clarify ambiguous or incomplete information. 	<ul style="list-style-type: none"> • Take action to access highly dependable sites. • Gather a collection of highly reliable portal sites, libraries, and search engines as a starting point for research. • Aware of industry-validated sites (e.g., refereed journals, ERIC archives, commercial information services). • Develop personal search protocols and procedures for conducting Internet research following recognized information evaluation criteria (accuracy, validity, currency of information...).



5 Ways to Use ITAC Rubrics

1. Check for assessment gap between curriculum and proficiency level of rubrics
2. Benchmark IT skills requirements against proficiency level of the rubric
3. Observe students using IT applications
4. Student self-evaluation: Circle what things they can do
5. Framework to review student output



Benefits of ITAC RUBRICS

- Skills based assessment tool
- Compatible with any part of the curriculum
- Not tied to any grade level or specific type of environment
- Generic language
- Vendor neutral



Rubrics to Benchmark LPSCS Knowledge & Skills

Purpose

- ❑ **Establish baseline learning of program fundamentals**
- ❑ **Give students clear understanding of program learning progression**



Using rubrics in LPSCS programs of study:

1. For students, instructors, and curriculum developers: To clearly outline what next level learning should be and/or where it should begin.
2. For employers hiring our graduates: To provide a consistent understanding of depth & breadth of the students' mastery of the subject.
3. For students: To articulate in interviews and via resumes and portfolios the breadth of their skills and mastery of the subject to employers.
4. For program graduates seeking additional credits toward promotion: To offer more advanced training in a subject via a credit-based course.
5. For instructors and curriculum planners/developers: To clearly mark where next level of training should begin for post-graduate credit based courses (especially those courses taken for credit toward promotion).
6. For similar courses, to show how course extends the learning by broadening the knowledge base of the previous course.



Broadening the Knowledge Base

Interview & Interrogation Class

Learning objective: Fundamentals of different interrogation methods.

Example interrogation method: **INTIMIDATION**

How could we broaden this knowledge base?

Incorporating cross-disciplinary training from a related field:

Psychology > Forensic Psychology

How do rubrics fit into the picture?

- ❖ Articulate the learning progression
- ❖ Bridge the knowledge & skills by defining where next level of learning should begin



BIG QUESTION: Where to start?

- Offer training as credit-based certificates

- Sell law enforcement on benefits of:
 - Cross-disciplinary training
 - Credit-based certificate training
 - Developing problem-solving skills is necessary in an environment of changing technologies



Importance of ITAC Rubrics for LPSCS Training and Programs

- ✓ Clear & public expectations & standards:
 - No tricking the students
 - Students know in advance on what they will be assessed
- ✓ Not reliant on any one piece of software
- ✓ Anyone can succeed

RECAP: Different ways to use ITAC Rubrics in LPSCS Programs of Study

- a. For curriculum development
- b. In class, to assess or benchmark student performance
- c. In class, to set learning achievement goals for students
- d. For technical curriculum, as a guidepost to see if there are gaps in course content
- e. For pre-/post-class assessment of students' technical fluency
- f. With advisory committees, to evaluate if appropriate computer competencies are being addressed in our program of study
- g. With advisory committees, to determine what technical skills graduates of our program need for the workplace
- h. With students, to provide them with the technical vocabulary to reference their skills competency for resumes and interviews
- i. Organizationally, to standardize a baseline technical competency for all students
- j. Organizationally, to compare students' technical literacy skills across majors/programs
- k. For students, to help them determine strengths/weakness of their own skill development



College Partners

- Bunker Hill Community College
- Cecil Community College
- **Central Piedmont Community College**
- Fox Valley Technical College
- Holyoke Community College
- Hudson Valley Community College
- **Husson College**
- Kirkwood Community College
- Lansing Community College
- Lorain County Community College
- Morgan Community College
- **Northampton Community College**
- Northern Essex Community College
- Pennsylvania College of Technology
- **Rochester Institute of Technology**
- Scottsdale Community College
- **Skagit Valley College**
- Springfield Technical Community College



CONTACT INFORMATION

Joyce Malyn-Smith/Linda Scott
IT Across Careers Project (NSF-ATE)
Education Development Center, Inc.
617.618.2170

Email: itac@edc.org

<http://www2.edc.org/itacrosscareers>

Carol Mathews
Program Director Law Enforcement & Criminal Justice
ISLET Project (NSF-ATE)
Century College

carol.mathews@century.edu

<http://www.isletinitiative.org>

651.779.3455