Why Digital Problem Solving Matters: A Closer Look at How Education and Skills Online Can be Used to Inform Educational Outreach Efforts

Jill Castek  
*University of Arizona, jcastek@email.arizona.edu*

Cindy Gibbon  
*Multnomah County Library, cindyg@multcolib.org*
Why Digital Problem Solving Matters: A Closer Look at how *Education and Skills Online* can be used to Inform Educational Outreach Efforts

Jill Castek, Cindy Gibbon, & Stephen Reder
Portland State University & Multnomah County Library
Oregon, USA
Other members of our project team include

- Portland State University, Portland, OR USA
  - Andrew Pizzolato
- Multnomah County Library, Portland, OR USA
  - Amy Honisett
  - Patricia Moran
  - Matthew Timberlake
  - Vailey Oehlke
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ProLiteracy Conference 2015 Charlotte, SC
What is the Program for the International Assessment of Adult Competencies (PIAAC)?

- Designed to measure skills of the adult working-age population nationally and internationally

- examine conditions and factors impact skills growth, maintenance, or loss over a working-age life cycle

- provide international comparison to better understand U.S. global competitiveness

- benchmark how well education and training systems are meeting emerging skill demands
This is session 3 in a PIAAC strand

- **But we’re not** reporting an analysis of PIAAC data
  - Innovative partnership program

- Use of PIAAC’s Education and Skills Online
  - A valid and reliable assessment tool

- Think about **Problem Solving in Technology Rich Environments (PSTRE)** in relationship to libraries
  - *Advancing Digital Equity in Public Libraries: Assessing Library Patrons’ Problem Solving in Technology Rich Environments*
Welcome & Introduction

Literacy, Language, and Technology Research Group

- commitment to building literacy and language pathways to economic and social justice
- projects centered on the acquisition of literacy, digital literacy, health literacy, and additional languages among adults
- Work with local and national partners: American Institutes for Research, University of California San Francisco, Center for Vulnerable Populations, WIC of Oregon, Minnesota Literacy Council, Digital Inclusion Network or Oregon, Literacy for Every Adult (LEAP)

Housed within An Applied Linguistics Department

- multidisciplinary group of faculty, students, community groups and others

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Welcome & Introduction

Multnomah County Library

Empowering our community to learn and create

Free Access for All
A Trusted Guide For Learning
Leading Advocate for Reading

Reflect and Serve a Diverse Community
Reimagine Library Service and Spaces

Strategic Priorities

Champion Reading
Build Digital Literacy by providing access, training and technology to everyone
Welcome & Introduction

- What are your roles in adult education?
  - Teacher?
  - Program administrator?
  - Policy maker?
  - Researcher or evaluator?

- What settings/systems do you work in?
  - K-12?
  - Community college?
  - CBO?
  - Government?
  - University?

ProLiteracy Conference 2015 Charlotte, SC
How did we come to collaborate?

Shared Commitment to Promoting Digital Equity for all

Literacy, Language, and Technology Research Group
  • Broadband Technology Opportunities Program (BTOP)
  • Digital Literacy Acquisition Research Project

Multnomah County Library
  • history of supporting life long learning
  • Major hub for technology access and training
  • over one million Wifi sessions last year

ProLiteracy Conference 2015 Charlotte, SC
Our Collaboration Has Given Rise to

- Digital Inclusion Network (Portland, OR)
  - a collection of city, community, and county wide groups
  - committed to developing a digital equity plan
  - designed to provide affordable and accessible computer/Internet access and training to all

- Talking about common interests sparked this consortium
  - drawing local connections around issues of access and equity
ADULTS, COMPUTERS AND PROBLEM SOLVING
WHAT'S THE PROBLEM?
Results from the Survey of Adult Skills

Labour force participation rates among adults who reported having no experience in using digital devices are 15 percentage points lower, and their wages are 6% lower, compared to adults who had basic problem-solving skills using digital devices.

pp = percentage point

From PIAAC Gateway http://piaacgateway.com/infographics/
piaacgateway.com
Why are PIAAC data relevant for Libraries?

Libraries are institutions that re-imagine library services and spaces to...

- Support interest-driven lifelong learning
- Provide hubs for Internet access and digital literacy training
- Deliver services using technology

Are a constant presence in the community
Purpose of this Project

- Extend national work on digital literacy acquisition to inform local efforts
- Bring libraries into the PIAAC conversation
- Maximize resources and meet community needs around lifelong learning and access

Education and Skills Online: Problem Solving in Technology-rich environments
Digital Equity in Libraries

Understanding Library Patrons’ Ability to Problem Solve Digitally

- Collaborating with Staff to survey patrons
- Assessing Library Staff PSTRE
- Assessing Patrons PSTRE
- Examining Digital Problem Solving Skills within common library tasks
- Conducting a cross-walk of common library tasks in relationship to PSTRE scores
- Designing Library Programming to Meet Needs
Project Aims

• Better understand how we can guide and instruct in libraries so that people can accomplish these tasks and achieve the goals

• With the results we’re asking ourselves

  • Are we...
    • offering instruction on the right topics?
    • Helping learner at the most useful point of need?
    • Targeting services to the right patrons?
    • Who are we missing?
    • Are we offering useful outreach programs within the communities of most need?
    • Are the library’s interfaces accessible to the community?
Achieving these Goals Involves

- The **Problem Solving in Technology Rich Environments (PSTRE) section** of the Education and Skills Online test.
What does PSTRE measure?

- Cognitive skills: planning, reading, thinking, searching, skimming, scanning, information literacy, critical evaluation of information, and communication of ideas

What doesn’t it measure?

- Affective domain: personal relevance, resilience, stick-with-itis-ness, focus in terms of carrying the task through multiple materials/multiple screen navigation
- Basic digital literacy skills

What do results tell us?

- Three levels of proficiency
Problem Solving: Below Level 1 Description

Below Level 1:

• complete tasks in which the goal is explicitly stated and for which the necessary operations are performed in a single and familiar environment.

• solve problems whose solutions involve a relatively small number of steps across a large number of actions.

From p. 90 of OECD Skills Outlook 2013: First Results from the Survey of Adult Skills
Level 1 Task:
• involves sorting e-mails into pre-existing folders. An e-mail interface is presented with five e-mails in an Inbox. These e-mails are responses to a party invitation to keep track of who can and cannot attend a party.

• The item requires the test-taker to “Categorize a small number of messages in an e-mail application in existing folders according to a single criterion.”

From p. 90 of OECD Skills Outlook 2013: First Results from the Survey of Adult Skills
Level 2:
• complete problems that have explicit criteria for success, a small number of applications, and several steps and operators.

• monitor progress towards a solution and handle unexpected outcomes or impasses.
Problem Solving Sample Item: Level 2

• several steps and operators required to return a purchased item

• monitor progress towards a solution and handle unexpected outcomes or impasses.

From Education and Skills Online Sample Items
Problem Solving: Level 3 Description

Level 3:

• complete tasks involving multiple applications, a large number of steps, impasses, and the discovery and use of ad hoc commands in a novel environment.

• establish a plan to arrive at a solution and monitor its implementation as they deal with unexpected outcomes and impasses.

From p. 89 of OECD Skills Outlook 2013: First Results from the Survey of Adult Skills
Problem Solving Sample Item: Level 3

• managing requests to reserve a meeting room on a particular date using a reservation system

• The task involves multiple applications, a large number of steps, a built-in impasse, and the discovery and use of ad hoc commands in a novel environment.

• The test-taker has to establish a plan and monitor its implementation in order to minimize the number of conflicts.

• In addition, the test-taker has to transfer information from one application (e-mail) to another (the room-reservation tool)
Three Levels of Proficiency

Level 1: Sort emails into pre-existing folder using given criterion

Level 2: Respond to a request by locating information in a spreadsheet and e-mailing the requestor

Level 3: Manage requests to reserve meeting room using a reservation system. Discover schedule conflict, e-mail to decline the request
Aligning PSTRE Scores to Our Goals

- Examining the Skills Required to Complete Common Library Tasks such as
  - Job searching
  - Homework help
  - Getting material to watch/read
  - Family history
  - Volunteering in the library or in the community

- Finding a Class/program and participate in it
  - Finding medical information
  - Finding social services
  - Recreational Internet use
  - Taxes
Cross-walking PSTRE skills, Questions, and Results reported in 3 levels of proficiency.

Level 1: Sort emails into pre-existing folder using given criterion.

Level 2: Respond to a request by locating information in a spreadsheet and e-mailing the requestor.

Level 3: Manage requests to reserve meeting room using a reservation system. Discover schedule conflict, e-mail to decline the request.

With the digital skills needed to perform common library tasks (e.g. job searching):

- Developing a contact list
- Keeping Track of Applications
- Evaluate a job posting
- Search online databases
- Produce a resume
- Respond to job ads by navigating through online systems
Cognitive Skills

- Planning & Self-organizing
- Setting Goals and Monitoring Progress
- Using Information
- Acquiring and Evaluating Information

Tech Proficiency

- Sorting e-mails into pre-existing folders
- Remain focused through several steps and operators
- Monitor progress towards a solution and handle unexpected outcomes or impasses
- Extract information using a sort function
- Making use of the available tools
Tasks Involved Job Search

- Planning & Self-organizing
  - Develop a keyword list
  - Keeping track of applications
  - Develop A Contact List

- Setting Goals and Monitoring Progress
  - Searching Online
  - Signing Up for a Class (increase skills)

- Using Information
  - Produce a resume
  - Apply for a job

- Acquiring and Evaluating Information
  - Evaluate job posting
  - Is the post legitimate?
  - Does it match my skill set?

Proficiency Level PSTRE

- Below Level 1
- Level 1
- Level 2
- Level 3
Education and Skills Online Core Test Components

- Literacy
- Numeracy
- Problem Solving in Technology Rich Environments

Core Test of Education and Skills Online

Made Up of All Constructed Response Items

Background Questionnaire

Costs about $12.00 US Per Test
Carefully Thinking About Data Collection

- What data will help us meet our goals?

- How can we be most considerate of our patrons’ time?

- What process will give us the most reliable view of patrons’ skills?

- What is most doable with the time and resources we have?

  - What do the assessment developers recommend?
  - What is flexible, what is required to administer?
Using Education and Skills Online to Meet Our Needs

- Literacy
- Numeracy
- Problem Solving in Technology Rich Environments

Background Questionnaire

Costs about $12.00 US Per Test

Core Test of Education and Skills Online

Made Up of All Constructed Response Items
Using Education and Skills Online to Meet Our Needs

Do skills assessed fit with what we know library patrons need to be able to do?

PSTRE Framework Developers

Do skills assessed fit with library patron’s experiences?
Using Education and Skills Online to Meet Our Needs

• We’re adapting use of the PSTRE tool in a *principled way* (and YOU can too!)
  • Accept the limitations
  • Have a sound rationale for choices

• Why?
  • Public libraries need more data that can inform in meaningful ways
  • Aligning results to success of patrons informs both research and practice

• Pioneering Effort
  • We’re the first to try this, and we’ll keep you informed
Using ESO data to Meet YOUR Needs

- Given what we shared...
  - How might ESO or PSTRE assessment tools meet your programming needs?
  - How might you seek to adapt (or customize) the ESO tool?
  - Why would you need to make adaptations?
  - What are the limitations?
Next Steps

- Collect Data
- Analyze Results
- Complete Crosswalk
- Plan for programming
Learn More About our Project

Advancing Digital Equity in Public Libraries

Funded by the Institute of Museum and Library Services (IMLS), Portland State University (PSU) and Multnomah County Library (MCL) will collaborate on a two-year research project to improve library practices, programs, and services for adult patrons—especially economically vulnerable and socially isolated adults, seniors, English learners, and others lacking basic digital literacy skills. This project provides the opportunity to administer the "Problem Solving in Technology Rich Environments" (PS–TRE) survey developed by the Program for the International Assessment of Adult Competencies (PIAAC) of the Organization for Economic Cooperation and Development (OECD).

www.pdx.edu/linguistics/pstre
Questions & Connections

- Jill Castek – jcastek@pdx.edu
- Cindy Gibbon - cindyg@multcolib.org
- Stephen Reder – reders@pdx.edu
- Amy Honisett - amyh@multco.us
- Andrew Pizzolato - apizzola@pdx.edu