Released Items from the Programme for the International Assessment of Adult Competencies (PIAAC)

July 2011

Reading Components

Overview of the Reading Components Conceptual Framework

The reading components assessment framework builds upon the basic principle that comprehension—that is, the ‘meaning construction’ processes of reading — is built upon a foundation of knowledge of how one’s language is represented in one’s writing system—that is, component print skills. This basic principle of learning to read has now been widely researched and accepted internationally (Curtis, 1980; Oakhill, Cain, & Bryant, 2003; Perfetti, 1985, 2003; Sabatini, 2003; Strucker, Yamamoto, & Kirsch, 2004). Evidence of an individual’s level of print skill can be captured in tasks that examine a reader’s ability and efficiency in processing the elements of the written language – letters/characters, words, sentences, and larger, continuous text segments.

Another key principle guiding the framework is that as one becomes proficient in reading, component skills will become more efficient and integrated. As learners, we spend extra time, effort, and energy to solve problems that are novel. On familiar tasks, we can often respond accurately, quickly, with seemingly little conscious effort. When the tasks are easy, we can spend more effort solving and learning from more complex problems and tasks. This is a basic tenet of automaticity (LaBerge & Samuels, 1974) and verbal efficiency theory (Perfetti, 1985, 1992, 2003). Component efficiency is typically indexed by assessing speed or rate of processing, as well as accuracy. Speed or rate can be approximated by recording the time it takes to complete certain tasks or by setting a time limit and observing how many items are completed in the time frame allotted.

Item Design

Word Meaning (Print Vocabulary)

In the reading component skills framework, we seek to determine whether individuals can identify in print, words in the everyday listening lexicon of average adult speakers of the language—that is, the emphasis is on the everyday words of the language. This would be the language used in the neighborhood or market. It would be the language of popular media such as newspaper, radio, and television. This is the most cross-country, comparable vocabulary.

The Word Meaning (Print Vocabulary) measure presents an image and four word choices. The respondent must select the correct word choice that matches the picture. Target words are concrete, image-able nouns of common objects. Distractors were designed to tap similar semantic and/or orthographic features of the target word.
Sentence Processing

A variety of psychological studies of reading show that the sentence is a natural breakpoint in the reading of continuous text (e.g., Kintsch, 1998). A skilled reader will generally pause at the end of each sentence. A variety of operations are typically performed including encoding the propositions of the sentence, making anaphoric inferences, relating meaning units to background knowledge and to previous memory of the passage as it unfolds, and deciding which meaning elements to hold in working memory.

The Sentence Processing measure presents sentences of increasing difficulty (as indexed by length) and asks the respondent to make a sensibility judgment about the sentence with respect to general knowledge about the world or about the internal logic of the sentence.

Passage Comprehension

In recent research, a silent reading assessment task design has gained empirical support as an indicator of basic reading fluency and comprehension. The design uses a forced-choice cloze paradigm—that is, a choice is given between a word that correctly completes a sentence in a passage and an option that is incorrect. The incorrect item is meant to be obviously wrong to a reader with some basic comprehension skills. The integration of decoding, word recognition, vocabulary, and sentence processing is required to construct the basic meaning of a short passage. Fluent, efficient performance on such a basic, integrated reading task is a building block for handling longer, more complex literacy texts and tasks.

The Passage Comprehension measure presents three passages each with embedded cloze items. Passages were constructed based on the kinds of text types that adults typically encounter: narrative, persuasive, and expository.

For the complete Reading Components framework see:

“PIAAC Reading Components: A Conceptual Framework”
http://www.oecd.org/document/28/0,3343,en_2649_201185_44429596_1_1_1_1,00.html
Reading Components: Sample Word Meaning (Print Vocabulary) Items

For Word Meaning items, respondents are asked to circle the word that matches the picture.

Sample 1:

| ear   | egg | lip | jar |

Sample 2:

| shoulder | cloud | flower | flag |
Sample 3:

sports    frog    father    spider

Sample 4:

fountain  stage  bridge  bottle
Reading Components: Sample Sentence Processing Items

For Sentence Processing items, respondents are asked to make a sensibility judgment about a sentence with respect to the real world or the internal logic of the sentence. The respondent reads the sentence and circles YES if the sentence makes sense or NO if the sentence does not make sense.

Sample Sentences:

<table>
<thead>
<tr>
<th>Sentence</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three girls ate the song.</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>The man drove the green car.</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>The lightest balloon floated in the bright sky.</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>A comfortable pillow is soft and rocky.</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>A person who is twenty years old is older than a person who is thirty years old.</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>
Reading Components: Sample Passage Comprehension Items

For Passage Comprehension items, respondents are asked to read a passage and circle the word that makes the sentence make sense.

Sample Passage:

To the editor: Yesterday, it was announced that the cost of riding the bus will increase. The price will go up by twenty percent starting next month. As someone who rides the bus every day, I am upset by this increase. I understand that the cost of gasoline has risen. I also understand that riders have to pay a fair price for bus service. I am willing to pay a little more because I rely on the bus to get to work. But an increase of twenty percent is too much.

This increase is especially difficult to accept when you see the city's plans to build a new sports stadium. The government will spend millions on this project even though we already have a stadium. If we delay the stadium, some of that money can be used to offset the increase in bus fares. Then, in a few years, we can decide if we really do need a new sports arena. Please let the city council know you care about this issue by attending the next public meeting.
Literacy

Definition of Literacy for PIAAC

For PIAAC, literacy was defined as follows:

Literacy is understanding, evaluating, using and engaging with written texts to participate in society, to achieve one’s goals, and to develop one’s knowledge and potential.

Some key terms within this definition are explained below.

Understanding

A basic task for the reader is constructing meaning, both large and small, literal and implicit, from text. This can be as basic as understanding the meaning of the words, to as complex as comprehending the underlying theme of a lengthy argument or narrative. Certainly, evaluating or using a text implies some level of understanding and so provides an indirect measure of it, but it is the intent of the PIAAC assessment to have some more direct measure of it. The components framework provides the construct to support basic understanding, but the literacy assessment, itself, should also include tasks that explicitly tap more complex understanding, such as the relation(s) between different parts of the text, the gist of the text as a whole, and insight into the author’s intent. Readers also have to understand the social function of each text and the way this influences structure and content.

Evaluating

Readers continually make judgements about a text they are approaching. They need to assess whether the text is appropriate for the task at hand, determining whether it will provide the information they need. They have to make judgements about the truthfulness and reliability of the content. They need to account for any biases they find in the text. And, for some texts, they must make judgements about the quality of the text, both as a craft object and as a tool for acquiring information.

Such judgements are especially important for electronic texts. While published print information carries a sense of legitimacy, especially where the reader can assume there has been some review and edit process, sources for online information are more varied, ranging from authoritative sources to postings with unknown or uncertain authenticity. All information must be evaluated in terms of accuracy, reliability and timeliness, but this is particularly important with online material.
Using

Much adult reading is directed toward applying the information and ideas in a text to an immediate task or to reinforce or change beliefs. Nearly all the tasks in previous international assessments have been of this kind. In some cases, using a text in this way requires just minimal understanding, getting the meaning of the words with some elementary recognition of structure (many menus, for example). In others, it requires using both syntactic and more complex structural understanding to extract the information. In all cases though, the reader approaches the text with a specific task in mind.

Engaging with

Many adults appear to read text only when some task requires them to do so. Others (sometimes) also read for the pleasure it brings them. That is, adults differ in how engaged they are with text and how much a role reading plays in their lives. Studies have found that engagement with (attitude toward and practice of) reading is an important correlate with the direct cognitive measures. As such it is necessary to understand these differences to get a full picture of adult literacy.

Written text

Previous literacy assessments have focused primarily on informative texts of both continuous and non-continuous form. It is the intention of the new construct to expand the range of texts to include a greater variety of text types, such as narrative and interactive texts, and a greater variety of media. Until recently, most adult reading was of material printed on paper. Now, adults need to access and use text that is displayed on a screen of some kind, whether of a computer, a PDA, an ATM, or a Blackberry or iPhone. The PIAAC definition encompasses all these.

It is worth noting that including electronic text opens the assessment to new types of text and content. While one can find examples of similar texts in paper, they are much less common in that form. Some of these novel form/content combinations include interactive texts, such as exchanges in comments sections of blogs or in e-mail response threads, multiple texts, whether displayed at the same time on a screen or linked through hypertext, and expandable texts, where a summary can be linked to more detailed information if the user chooses.

Participate in society

While earlier definitions referred to the role of literacy in “functioning” in society, the PIAAC use of “participating” is meant to focus on a more active role for the individual. Adults use text as a way to engage with their social surroundings, to learn about and to
actively contribute to life in their community, close to home and more broadly. And for many adults, literacy is essential to their participation in the labour force. In this, we recognize the social aspect of literacy, seeing it as part of the interactions between and among individuals.

Achieve one’s goals

Adults have a range of needs they must address, from basic survival to personal satisfaction and to professional and career development. Literacy is increasingly complicit in meeting those needs, whether simply finding one’s way through shopping, or negotiating complex bureaucracies, whose rules are commonly available only in written texts. It is also important in meeting adult needs for sociability, for entertainment and leisure and for work.

Develop one’s potential

Surveys suggest that many adults engage in some kind of learning throughout their life, much of it self-directed and informal. Much of this learning requires some use of text and as individuals want to improve their life, whether at work or outside, they need to understand, use, and engage with printed and electronic materials.

For the complete PIAAC Literacy framework, see:

“PIAAC Literacy: A Conceptual Framework”
http://www.oecd.org/document/28/0,3343,en_2649_201185_44429596_1_1_1_1,00.html
PIAAC Sample Items - Literacy

Literacy – Sample Item 1

This first literacy sample focuses on the following aspects of the literacy construct:

<table>
<thead>
<tr>
<th>Cognitive Process</th>
<th>Access and identify</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context</td>
<td>Personal</td>
</tr>
<tr>
<td>Medium</td>
<td>Print</td>
</tr>
</tbody>
</table>

For PIAAC, item difficulty is reported along a five-level scale with Level 1 being the easiest items and Level 5 being the hardest. This sample is a Level 3 item. Respondents are asked to answer the question shown in the left pane by highlighting information in the list of rules for a preschool.

Look at the list of preschool rules. Highlight information in the list to answer the question below.

What is the latest time that children should arrive at preschool?

---

Preschool Rules

Welcome to our Preschool! We are looking forward to a great year of fun, learning and getting to know each other. Please take a moment to review our preschool rules.

- Please have your child here by 9:00 am.
- Bring a small blanket or pillow and/or a small soft toy for naptime.
- Dress your child comfortably and bring a change of clothing.
- Please no jewelry or candy. If your child has a birthday please talk to your child's teacher about a special snack for the children.
- Please ensure your child is fully dressed, no pajamas.
- Please sign in with your full signature. This is a licensing regulation. Thank you.
- Breakfast will be served until 7:30 am.
- Medications have to be in original, labeled containers and must be signed into the medication sheet located in each classroom.
- If you have any questions, please talk to your classroom teacher or to Ms. Marlene or Ms. Tree.
Literacy – Sample Item 2

Sample 2 focuses on these aspects of the literacy construct:

<table>
<thead>
<tr>
<th>Cognitive Process</th>
<th>Access and identify</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context</td>
<td>Personal</td>
</tr>
<tr>
<td>Medium</td>
<td>Print</td>
</tr>
</tbody>
</table>

For PIAAC, item difficulty is reported along a five-level scale with Level 1 being the easiest items and Level 5 being the hardest. This sample is a Level 2 item. In this sample item, respondents are asked to click on the chart with information about exercise equipment to mark their response. Each of the cells and all of the images are “clickable” and multiple responses can be selected.
Most of the literacy items have more than one question associated with each stimulus. A second item in the Exercise Equipment set, shown below in Figure 3, focuses on the following aspects of the literacy construct:

<table>
<thead>
<tr>
<th>Cognitive Process</th>
<th>Integrate and interpret</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context</td>
<td>Personal</td>
</tr>
<tr>
<td>Medium</td>
<td>Print</td>
</tr>
</tbody>
</table>

For PIAAC, item difficulty is reported along a five-level scale with Level 1 being the easiest items and Level 5 being the hardest. This sample is a Level 2 item.
Numeracy

Definition of Numeracy

For PIAAC, numeracy was defined as follows:

**Numeracy** is the ability to access, use, interpret, and communicate mathematical information and ideas, in order to engage in and manage the mathematical demands of a range of situations in adult life

This definition captures essential elements in numerous conceptualisations of numeracy in the extant literature; it is compatible with the definition used for ALL1 and appears to provide a solid basis from which to develop an assessment scale for PIAAC with its emphasis on competencies in the information age. The inclusion of "engage" in the definition signals that not only cognitive skills but also dispositional elements, i.e., beliefs and attitudes, are necessary for effective and active coping with numeracy situations. It is also important to note that while the definition of numeracy for PIAAC has been developed in the context of an assessment programme, it has been crafted so as to contribute to public dialogue regarding the goal of educational and social interventions focused on developing adult competencies in general, and adult numeracy and related mathematical and statistical skills and dispositions in particular.

However, since numeracy is a broad, multifaceted construct referring to a complex competency, the definition of numeracy given above should not be considered by itself, but should be coupled with a more detailed definition of numerate behavior and with further specification of the facets of numerate behavior. This pairing is essential in order to enable operationalisation of the construct of numeracy in an actual assessment, thereby contributing to the assessment’s validity and interpretability, and in order to further broaden the understanding of key terms appearing in the definition itself. Consequently, a definition of numerate behavior similar in general terms to the one used for the ALL survey, but shorter, has been adopted for PIAAC:

**Numerate Behavior** involves managing a situation or solving a problem in a real context, by responding to mathematical content/information/ideas represented in multiple ways.

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1 ALL is the Adult Literacy and Life Skills Survey, an international assessment of adult skills conducted in 2003 and 2008.
Table 1: Numerate behavior – key facets and their components

<table>
<thead>
<tr>
<th>Numerate behavior involves managing a situation or solving a problem…</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. in a real context:</td>
</tr>
<tr>
<td>- everyday life</td>
</tr>
<tr>
<td>- work</td>
</tr>
<tr>
<td>- societal</td>
</tr>
<tr>
<td>- further learning</td>
</tr>
<tr>
<td>2. by responding:</td>
</tr>
<tr>
<td>- identify, locate or access</td>
</tr>
<tr>
<td>- interpret</td>
</tr>
<tr>
<td>- evaluate / analyze</td>
</tr>
<tr>
<td>- communicate</td>
</tr>
<tr>
<td>3. to mathematical content/ information/ ideas:</td>
</tr>
<tr>
<td>- quantity &amp; number</td>
</tr>
<tr>
<td>- dimension &amp; shape</td>
</tr>
<tr>
<td>- pattern, relationships, change</td>
</tr>
<tr>
<td>- data &amp; chance</td>
</tr>
<tr>
<td>4. represented in multiple ways :</td>
</tr>
<tr>
<td>- objects &amp; pictures</td>
</tr>
<tr>
<td>- numbers &amp; mathematical symbols</td>
</tr>
<tr>
<td>- formulae</td>
</tr>
<tr>
<td>- diagrams &amp; maps, graphs, tables</td>
</tr>
<tr>
<td>- texts</td>
</tr>
<tr>
<td>- technology-based displays</td>
</tr>
</tbody>
</table>

Numerate behavior is founded on the activation of several enabling factors and processes:
- mathematical knowledge and conceptual understanding
- adaptive reasoning and mathematical problem-solving skills
- literacy skills
- beliefs & attitudes
- numeracy-related practices and experience
- context/world knowledge

The definition of numerate behavior pertains to four facets: Contexts, Responses, Mathematical content/information/ideas, Representations. Table 1 lists the components of the four facets, and these components are explained in more detail the next section. Table 1 is based on the original description of the facets of numerate behavior developed for the ALL survey, but some changes have been implemented, such as the addition of "access" and of "evaluate/analyze" as possible responses, the merging of the content categories of "change" and "pattern and relationship", or the reference to "technology-based displays" as another representation mode.
It should be noted that the bottom part of Table 1 also lists several enabling factors and processes, whose activation underlies numerate behavior. Most of these enabling factors and processes appeared in the ALL conceptual framework, but some changes were introduced, such as the positioning of "adaptive reasoning and mathematical problem-solving" as a separate enabling factor. Overall, the definition of numerate behavior presented earlier, together with the details in Table 1 and the further explanations within the complete numeracy framework (see below), provided a roadmap for the development of a numeracy scale for PIAAC.

For a more complete description of the numeracy framework, see:

“PIAAC Numeracy: A Conceptual Framework”
http://www.oecd.org/document/28/0,3343,en_2649_201185_44429596_1_1_1_1,00.html
Numeracy – Sample Item 1

This sample item focuses on the following aspects of the numeracy construct:

<table>
<thead>
<tr>
<th>Content</th>
<th>Data and chance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process</td>
<td>Interpret, evaluate</td>
</tr>
<tr>
<td>Context</td>
<td>Community and society</td>
</tr>
</tbody>
</table>

For PIAAC, item difficulty is reported along a five-level scale with Level 1 being the easiest items and Level 5 being the hardest. This sample is a Level 3 item. Respondents are asked to respond by clicking on one or more of the time periods provided in the left pane on the screen.

Numeracy – Sample Item 2

This sample item focuses on the following aspects of the numeracy construct:

<table>
<thead>
<tr>
<th>Content</th>
<th>Dimension and shape</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process</td>
<td>Act upon, use (estimate)</td>
</tr>
<tr>
<td>Context</td>
<td>Every day or Work</td>
</tr>
</tbody>
</table>

For PIAAC, item difficulty is reported along a five-level scale with Level 1 being the easiest items and Level 5 being the hardest. This sample is a Level 3 item. Respondents are asked to type in a numerical response based on the graphic provided.

Correct Response: Any value between 77.7 and 78.3

Numeracy – Sample Item 3
This second item in the set focuses on the following aspects of the numeracy construct:

<table>
<thead>
<tr>
<th>Content</th>
<th>Dimension and shape</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process</td>
<td>Act upon, use (measure)</td>
</tr>
<tr>
<td>Context</td>
<td>Every day or Work</td>
</tr>
</tbody>
</table>

For PIAAC, item difficulty is reported along a five-level scale with Level 1 being the easiest items and Level 5 being the hardest. This sample is a Level 3 item. Again, respondents are asked to type in a numerical response based on the graphic provided.

**Correct Response:** Any value between -4 and -5
Numeracy – Sample Item 4

This sample item focuses on the following aspects of the numeracy construct:

<table>
<thead>
<tr>
<th>Content</th>
<th>Quantity and Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process</td>
<td>Act upon, use (compute)</td>
</tr>
<tr>
<td>Context</td>
<td>Community and society</td>
</tr>
</tbody>
</table>

For PIAAC, item difficulty is reported along a five-level scale with Level 1 being the easiest items and Level 5 being the hardest. This sample is a Level 5 item.

Correct Response: Any value between 23 and 24
**Problem Solving in Technology-Rich Environments**

*Definition of Problem Solving in Technology-Rich Environments*

In the context of the PIAAC survey, problem solving in technology-rich environments is defined as follows:

"Problem solving in technology-rich environments involves using digital technology, communication tools and networks to acquire and evaluate information, communicate with others and perform practical tasks. The first PIAAC problem solving survey will focus on the abilities to solve problems for personal, work and civic purposes by setting up appropriate goals and plans, accessing and making use of information through computers and computer networks."

The two sentences in the definition each serve a specific purpose. The first sentence is aimed at providing a broad basis for the first as well as subsequent surveys of PS-TRE. The second sentence acknowledges some constraints that limit the scope of the first survey. We provide below a series of more specific comments on the words and phrases used in this definition.

"using digital technology, communication tools and networks"

PIAAC focuses on problems that are specifically related to the use of ICT. The problem solving context means that routine or basic ICT skills will not be central to the framework. Instead, PS-TRE will focus on situations that involve the active construction of goals and strategies on the part of the user. We also acknowledge the increasing diversity and versatility of digital technologies, and we emphasise that a proper assessment of PS-TRE should not be limited to traditional desktop computing. Instead, we envision that mobile and integrated technologies may be involved in new types of problem solving that will need to be represented in future assessments.

"to acquire and evaluate information"

This phrase acknowledges that most uses of digital technologies involve the use of symbolic information, such as texts, graphics, links, and commands. Symbolic information is used as part of human computer interfaces (e.g., icons, commands) and it constitutes the primary content of most computer applications (e.g., word processor, spreadsheet, Internet Browser, and email
applications). The phrase also emphasises that computers and computers networks such as the Web mostly offer a multiplicity of information sources wherefrom (for the respective purposes) the relevant and reliable pieces have to be chosen.

"communicate with others"

An important role of digital technologies is to provide powerful and flexible means for people to communicate with each other. Examples include email, chats, short message systems, and IP audio-visual communication. Digital communication may take place in the context of purposeful, problem-like situations and therefore it is an integral part of the PIAAC PS-TRE construct.

"and perform practical tasks"

The ability to solve problems with digital technologies is tightly related to the achievement of personal, civic and work-related purposes, which, in turn, take the form of concrete, practical tasks. Examples include shopping, learning about laws and regulations, and organizing teamwork through online agendas and reservation systems. The problems assessed in PIAAC will use authentic, meaningful scenarios based on surveys of computer uses and input from participating countries.

"The first PIAAC problem solving survey"

This is the first attempt to assess PS-TRE on a large scale and as a single dimension. This creates many challenges as regards the definition of tasks and the practical collection of data. Furthermore, digital technologies keep evolving at a rapid pace, as do the personal, social, and work-related uses of those technologies. While setting the stage for further rounds of surveys, the present framework will take a perspective on PS-TRE that takes into consideration feasibility issues as well as possible evolutions of technology and technology uses.

"will focus on the abilities to solve problems for personal, work and civic purposes"

In order to reflect the pervasiveness of ICT in the society, PIAAC PS-TRE will assess problem solving ability based on scenarios that pertain to these three important contexts.

"by setting up appropriate goals and plans,"

An assessment of problem solving capacity should focus on situations where test takers cannot immediately reach their goal based on routine, mechanistic sets of actions. Instead, we focus on tasks that require test takers to actively construct a solution based on the resources available in the assessment environment.
"accessing and making use of information"

Again, this phrase emphasises a specific aspect of PS-TRE, namely that these are often information-rich problems that require individuals to access, interpret and integrate multiple sources of information.

"through computers and computer networks".

There is more to "technology-rich environments" than merely personal computers. A full assessment of PS in TRE would require a range of devices that mimic the diversity and versatility of digital technologies of today's world. However, for feasibility reasons, this first survey will be limited to problems requiring the use of computers and Internet-based services.

For a more complete description of the problem solving framework, see:

http://www.oecd.org/document/28/0,3343,en_2649_201185_44429596_1_1_1_1,00.html
Problem Solving in Technology Rich Environments – Sample Item 1

This is an example of an item created for the PIACC domain of Problem Solving in Technology Rich Environments. In this item, respondents must access and evaluate information in the context of a simulated job search. As shown in the item directions, located on the left side of the screen, respondents must find one or more sites that do not require users to register or pay a fee.

For PIAAC, item difficulty is reported along a five-level scale with Level 1 being the easiest items and Level 5 being the hardest. This sample is a Level 4 item.

Figure 1: Opening screen of job search task

As the screen clip above shows, this item is situated in a simulated web environment that includes tools and functionality similar to those found in real-life applications. Users are able to:

- Click on links on both the results page and associated web pages,
- Navigate using the Back and Forward arrows or Home icon,
- Bookmark web pages and view or change those bookmarks.
Problem Solving in Technology Rich Environments – Sample Item 1, continued

The response mode in this item is reflective of real-life actions within the environment - in this case, respondents are asked to bookmark their selection. In addition to scoring this item based on the selection of the two correct sites, the process data and path tracking that are possible in this computer-based item also contribute to the response data. For example, one of the websites, as shown in Figure 2, meets the specified criteria, but the relevant information about fees and registration is not on the opening page. If a respondent bookmarks this site as a correct answer without clicking on the “Learn More” link to view the relevant information (shown in Figure 3) we might interpret that response differently than we would if that page had been viewed. This breadth of information, combined with frameworks that specify behaviors of interest, allow us to learn more about what adults know and can do relative to the problem-solving construct as it is being measured in PIAAC.

Figure 2: Website where relevant information regarding fees and registration is not on opening screen
Problem Solving in Technology Rich Environments – Sample Item 1, continued

Figure 3: Second page of same website – relevant information is located in the directions for the form which indicate that users must sign up (register) and pay a fee.
Problem Solving in Technology Rich Environments – Sample Item 2

In this second item, respondents need to select a set of files to download onto a portable music player. As shown in Figure 4, the item requires respondents to select files meeting specified criteria in terms of genre (jazz and rock) and file size (maximum of 20 MB).

The software includes an automatic summing functionality (“Total Size Selected”) that facilitates the task by updating the total file size as files are selected or de-selected. Respondents must monitor progress as they select files, checking against the provided criteria to know when they have satisfied the constraints presented in the problem.

For PIAAC, item difficulty is reported along a five-level scale with Level 1 being the easiest items and Level 5 being the hardest. This sample is a Level 2 item.

It is also possible to sort the spreadsheet by file size and/or genre, a strategy that can increase task efficiency. The connection between the use of resources in a technology rich environment and resulting efficiencies for solving problems is one aspect of the domain that is emphasized in the framework and therefore included across items in the assessment.