

An Overview of the Higher Education ICT Literacy Assessment

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Abstract

Few would argue about the growing importance of information and communication technology (ICT) skills as a relatively new and distinct skill that affects educational attainment, workforce readiness, and lifelong learning. There is less agreement, however, as to what these skills and knowledge are and how best to measure them. This paper outlines the design of the Higher Education ICT literacy assessment, an Internet-delivered assessment that measures a student's abilities to use technology to research, organize and communicate information. This simulations-based and automatically scored assessment was built to assess ICT literacy skills in a unique way: instead of concentrating on purely technical skills, this assessment focuses on the *cognitive* problem solving and critical thinking skills associated with using technology.

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An Overview of the Higher Education ICT Literacy Assessment

We must rise above the obsession with the quantity of information and the speed of transmission, and focus on the fact that the key issue for us is our ability to organize information once it has been amassed, to assimilate it, to find meaning in it and assure its survival.

*Vartan Gregorian
White House Conference on School Libraries
June 4, 2002*

Preparing young adults to meet the challenges of the future is a vital part of any educational system. For many (if not most) of these young adults that future will include the use of Information and Communications Technology (ICT) in everyday problem solving. Such technologies include those familiar to us today and those not yet envisioned,. No longer relegated to specialized workplace settings or jobs, ICT competencies are now projected by the U.S. Department of Labor to be required in eight out of the ten fastest growing occupations (Ellis, 2001). Even beyond the workplace, the ways in which we access and manage information and communicate with one another in schools, at home, and in the community have become increasingly technology dependent.

Recognizing the growing importance of information and communication technologies in all aspects of people's lives, ETS convened an international panel in January of 2001. Covering a 15-month period, the deliberations of this international panel resulted in a set of recommendations and assumptions about the transformative nature of ICT competencies. In addition to taking initial steps in laying out a definition and framework for ICT literacy, the international panel noted in their recommendations that ETS and others should begin to work with governments and agencies to develop measures of ICT literacy. The rationale for such measures, according to the panel, was grounded in a number of key issues of concern to policy makers and practitioners in the education community.

- *ICT is changing the very nature and relevance of knowledge and information.* The growth of information and digital communication technologies, including capabilities for networking and shared environments, is changing the nature of social interactions and collaborative endeavors. Digital technology, in all its forms, allows information to be continuously available and adapted for different uses. Computers, handheld personal digital assistants (PDAs), on-line resources, networks and mobile telephone systems allow us to extend the reach of our cognitive capabilities and communication. Participating in this digital world is fast becoming a necessary condition for successful participation in society.
- *ICT literacy, in its highest form, has the potential to change the way we live, learn and work.* The development of higher levels of ICT literacy has the potential to transform the lives of individuals. Just as researchers have shown that education and literacy lead to changes in how individuals learn and think, future research might show similar advantages resulting from the development and application of ICT literacy skills. For example, researchers studying reading and writing have noted that different cultures and groups may engage in different kinds of literacy practices (Heath, 1980; Scribner & Cole, 1981; Szwed, 1981). The cognitive behaviors connected with these various practices have been associated with the acquisition of different types of knowledge and skills. The transformative nature of information and communication technologies might similarly influence and change not only the kinds of activities we perform at school, at home and in our communities but also how we engage in those activities. As with reading and writing, ICT has the potential to change how we think and learn, advantaging not just the individuals who acquire these skills and knowledge but societies as a whole.
- *ICT literacy cannot be defined primarily as the mastery of technical skills.* The concept of ICT literacy should be broadened to include critical cognitive skills such as reading, numeracy, critical thinking and problem solving and the integration of those skills with technical skills and knowledge. Because of the importance of these underlying cognitive skills, current levels of literacy, critical thinking and problem solving might present a barrier to the attainment of ICT literacy. There are strikingly low levels of general literacy around the world. Even within many OECD countries, there are many young people who fail to develop adequate levels of literacy (OECD, 2001a). Without such skills, it seems doubtful that comprehensive ICT literacy can be attained.
- *There is a lack of information about the current levels of ICT literacy both within and among countries.* Meaningful data from large-scale global assessments and from diagnostic tests designed to inform governments, schools, and private sector organizations and consortiums will be crucial in understanding the breadth and gaps in ICT literacy across the world. These data should be important in analyzing

the outcomes and effectiveness of current policies and educational programs, as well as in identifying potentially new and more effective strategies.

If information and communication technologies are changing the very nature of how we live, think, and learn, what are the consequences of lacking skills in this domain? The negative implications are potentially numerous, not just for individuals but for societies as a whole. Gary Becker, a Nobel Prize winner in economics recently noted “human capital is by far the most important form of capital in modern societies” (Becker, 2002). In the emerging global economy, individuals with these skills, and nations with more such individuals, will most likely prosper while those lacking them will struggle to compete.

As stated in a recent report titled *The Well-Being of Nations* (OECD, 2001b), human capital is made up of the knowledge, skills, and attitudes that facilitate the creation of personal, social and economic well-being. Recent data from national and international surveys show that, in addition to obtaining and succeeding in a job, reading literacy and numeracy skills are also associated with the likelihood that individuals will participate in lifelong learning, keep abreast of social and political events, and vote in state and national elections. These data also suggest that reading literacy is likely to be one of the major pathways linking education and health and may be a contributing factor to the disparities that have been observed in the quality of health care in developed countries. Thus, the non-economic returns of literacy and schooling in the form of enhanced personal well-being and greater social cohesion have been viewed by some as being as important as the economic and labor-market returns. According to some, ICT is becoming an essential literacy for the 21st Century (Partnership for 21st Century Skills, 2003).

Despite widespread consensus about the need for ICT literacy among young adults, there is little information available to tell us the dimensions of the need or what might be done to address it. As noted by the international panel, this can be attributed to the almost exclusive concentration of research on access to technology. In this country and abroad, countless studies have sought to measure (and thereby close) the “digital divide” between those who have access to computer hardware, software, and networks,

and those who do not. Access is obviously an important prerequisite for the development of skills, but increased exposure to technology does not automatically lead to increased ability to use it. Access is not the same as understanding.

What is urgently needed, then, is an assessment that will make it possible to determine whether (or to what extent) young adults have obtained the combination of technical and cognitive skills needed to be productive members of an information-rich, technology-based society.

This paper presents the design of an assessment of ICT proficiency. The assessment is an Internet-delivered, computer administered, simulation-based and automatically scored measure of ICT Literacy for higher education. The discussion presents the Evidence Centered Design (ECD) based architecture of the assessment as well as the scoring approach and challenges introduced by this complex assessment.

Evidence Centered Design

The design and development of the ICT Literacy assessment followed an Evidenced Centered Design (ECD) process. In this section, we briefly outline this approach to assessment design. Evidence Centered Design (ECD; Almond, Steinberg, & Mislevy, 2002; Mislevy, Steinberg, & Almond, 2003) is a methodology applied at Educational Testing Service that emphasizes an evidentiary chain of reasoning for assessment design. This chain of evidential reasoning from behaviors (as elicited by tasks) to inferences about test takers' skills results in a more complete representation of the design rationale for an assessment, better targeting of the assessment for its intended purpose, and a more substantial basis for a construct-representation validity argument supporting use of the assessment. Further discussion on ECD methodology may be found in Mislevy, Steinberg, & Almond (2003). The approach encourages test developers to design with intent and provides several advantages:

- *Clarity of purpose* – representation of assessment goals and the relevance of design decisions to those goals
- *Interrelated design* – modeling the interactions of design decisions and how changes in one aspect of design affect other design elements.

- *Evidentiary requirements* – explication of what constitutes relevant evidence of ability and how such evidence bears on assessment-based decision making.
- *Validity* – a documented chain of reasoning and rationale underlying design decisions and their relevance to the criterion of interest.
- *Innovation* – a guide for developing assessments targeting elusive domain constructs or using emerging technologies and new item types.

The foundations of ECD stem from validity theory (Messick, 1989), psychometrics (Mislevy, 1994), philosophy (Toulmin, 1958), and jurisprudence (Wigmore, 1937). The ECD approach adapts an evidence-oriented approach to evaluating the degree to which conclusions about people can be made on the basis of collected evidence. The ECD process centers around four key questions:

1. *Purpose*: Who is being measured and why are we measuring them? What types of decisions will we be making about people on the basis of this assessment? This lays the foundations and goals of the assessment's architecture.
2. *Proficiencies*: What proficiencies of people do we want to measure to make appropriate claims from the assessment? The resultant Proficiency Model defines the constructs of interest for the assessment and their interrelationships.
3. *Evidence*: How will we recognize and interpret observable evidence of these proficiencies so that we can make these claims? The resultant Evidence Models define how observations of behavior are considered as evidence of proficiency, which provides the groundwork for scoring.
4. *Tasks*: Given limitations on test design, how can we design situations that will elicit the observable evidence needed? The resultant Task Models describe how assessment tasks must be structured to ensure opportunities to observe behaviors that constitute evidence.

The connections among these four elements of an assessment's architecture, represented in Figure 1, comprise a chain of reasoning for an assessment that connects the design of assessment tasks to evidence of proficiencies targeted by the assessment.

ICT Literacy Assessment Design and Delivery

The design and development of the ICT Literacy assessment followed the ECD process outlined above and was conducted in concert with a committee of ICT and Information Literacy experts – research librarians and faculty representing colleges and universities from across the country. Two separate assessments were envisioned, based on two distinct purposes: (1) a large-scale assessment to estimate the proficiency of particular groups of students who are of interest to the institution (described below) and (2) an individual assessment that would provide students with a summary of their ICT Literacy skills. It was determined that the large-scale assessment would be developed and delivered before a version for individual student scores. This initial assessment would serve as a means for learning more about the nature of the ICT Literacy construct and the test design for addressing this construct before providing results that could impact individual students.

Between August 2003 and December 2003, ETS staff and ICT experts worked through the purpose, proficiencies, evidence, and draft tasks for an ICT Literacy assessment to serve the needs of higher education. Between January 2004 and June 2004, this assessment architecture served as the basis for constructing a pool of 48 simulation-based tasks and their associated automated scoring mechanisms. A more detailed chronology of the design of the assessment may be found in Katz et al. (2003).

After undergoing field trials between July 2004 and November 2004, the assessment went “live” in January 2005. Since then, the assessment has been delivered to more than 4000 students across the United States. The assessment is delivered over the Internet to students in a proctored computer lab at their college or university. Over a 2.5 hour period, test takers complete a background questionnaire, the assessment tasks, and an exit survey. The assessment is divided into two sections taking approximately one hour each. Test takers are given approximately 16 tasks across the two test sections.

In 2006, a version of the assessment will be released that is intended to provide individual score reports for academic advisement on enrollment decisions (such as an individual’s decision whether to take ICT courses). Once the assessment is suitable for

production of individual scores these individual assessments can be administered under a rigorous sampling plan and aggregated to summary scores to continue supporting large scale assessment.

The remainder of this paper describes the architecture of the large-scale version of the ICT Literacy assessment – the purpose, proficiency model, evidence model, and tasks. We also describe the basic approach to scoring this complex, simulation-based assessment.

Architecture of the Large-Scale ICT Literacy Assessment

Purpose

The current ICT Literacy assessment is a large-scale assessment designed to describe the ICT Literacy skills of a student population or, with appropriate sampling methods, subgroups of a population (e.g., transfer students, students of a particular race/ethnicity, physical science majors). The assessment was designed to support institutional-level decisions: Rather than each student receiving an individual score report, the ICT large-scale assessment produces a score report for an entire testing sample or for subgroups if sampling supports such comparisons. Intended uses for the assessment include:

- **Curriculum planning.** The assessment provides a description of the ICT Literacy skills of a student population. This description can suggest skills that need additional emphasis in ICT-related courses.
- **Curriculum evaluation.** Appropriately comparing overall student performance before and after delivery of curriculum can contribute to evaluation of the effectiveness of the curriculum.
- **Accountability data.** Assessment results appropriately comparing entry-level students to more senior students can provide information on the success of ICT education programs at an institution. The assessment can also contribute to investigations of improvement in students' ICT literacy over time.

At the same time, inappropriate uses of assessment results include:

- **Individual decision-making.** The assessment does not provide scores for individuals, so it is inappropriate to use the assessment results to make decisions about individuals.

- **Technical certification.** The assessment focuses on problem-solving and critical thinking skills in the context of technology. However, this is not a technical certification assessment, and no inferences should be made about test takers' ability to use specific software products.

Proficiencies

The ICT Literacy assessment is based on this definition of ICT Literacy:

ICT Literacy is the ability to appropriately use digital technology, communication tools, and /or networks to solve information problems in order to function in an information society. This includes having the ability to use technology as a tool to research, organize, and communicate information and having a fundamental understanding of the ethical / legal issues surrounding accessing and using information.

In developing this definition, the committee built upon prior work of the International ICT Literacy Panel that convened in 2001, which produced a summary document on the construct of fundamental ICT Literacy (Educational Testing Service, 2002). This definition emphasizes that ICT literacy is predominantly a cognitive activity, with a fundamental technical capability required in order to interact with technological tools to execute cognitive strategies in information retrieval, use, and dissemination. The construct, as applied for higher education in the United States, also requires a fundamental English language literacy to understand, apply, and disseminate information in the language of instruction.

The proficiencies that comprise ICT Literacy are further defined via a model presented in Figure 2. This model is an illustration of the construct of ICT Literacy as composed of multiple subcomponents. Further, that the ICT Literacy assessment emphasizes cognitive problem solving and recognizes the relevance of technical proficiency and ethical issues in technology use.

As specified in Figure 2, each of the seven ICT proficiencies includes cognitive, technical, and social/ethical issues in the definition. Of these, the emphasis is on cognitive information problem solving. Technical and ethical components play a minor role in the definition of proficiency. That is, the scoring algorithms are predominantly written to target the cognitive decision-making of students and while a certain degree of technical ability is required to navigate the tasks, the scoring algorithms do not target

technical proficiency as part of the assessment scoring. The seven proficiencies are further defined as:

- **Define:** The ability to use ICT tools to identify and appropriately represent information need.
- **Access:** The ability to collect and/or retrieve information in digital environments. This includes the ability to identify likely digital information sources and to get the information from these sources.
- **Manage:** The ability to apply an existing organizational or classification scheme for digital information. This ability focuses on reorganizing existing digital information from a single source using pre-existing organizational formats. This includes the ability to identify preexisting organization schemes, select appropriate scheme(s) for the current usage, and to apply the scheme(s).
- **Integrate:** The ability to interpret and represent digital information. This includes the ability to use ICT tools to synthesize, summarize, compare, and contrast information from multiple digital sources.
- **Evaluate:** The ability to determine the degree to which digital information satisfies the needs of the task in ICT environments. This includes the ability to judge the relevance, authority, point-of-view/bias, currency, coverage, or accuracy of digital information and resources.
- **Create:** The ability to generate information by adapting, applying, designing, or inventing information in ICT environments.
- **Communicate:** The ability to communicate information properly in context in ICT environments. This includes the ability to adapt electronic information for a particular audience and to communicate knowledge in the appropriate venue.

Evidence & Tasks

The centerpiece of the ICT Literacy assessment's architecture is the specification of evidence: descriptions of observable behaviors that provide information on the level of (unobservable) skills. This evidence model both drives the construction of tasks (because tasks must elicit the evidentiary behaviors) and the scoring of the tasks, as is described in the next section.

The evidence models are developed through four steps:

- 1) Consider perfect opportunities for naturalistic observations, assuming no constraints and error-free observation

- 2) Identify sources of evidence in these situations and their value in understanding ability
- 3) List characteristics of these observations and the circumstances under which they are observed that are critical for discriminating among levels of ability
- 4) Document the characteristics of these observations that most clearly distinguish among these levels of ability

The result of this evidence modeling process is a formal structure that represents valued evidence for each proficiency. This structure can be used to inform the development of tasks that elicit the necessary evidence.

Unlike traditional assessments—which often use discrete, artificial tasks to evaluate performance—the ICT Literacy assessment evaluates ICT proficiency using a variety of simple and more complex realistic tasks. The simpler tasks contribute to the overall reliability of the assessment whereas the more complex tasks focus on the richer aspects of performance identified as critical for someone to be considered ICT literate. Simpler tasks target a single proficiency whereas more complex tasks target 2-4 proficiencies.

An example of a task designed to target particular proficiencies is a search task in which students are asked to locate resources (e.g., articles, web pages) relevant to a research issue (Figure 3). This task was designed to assess both Access and Evaluate proficiencies. As outlined earlier, the Access proficiency is defined as the ability to collect and/or retrieve information in a digital environment. This proficiency is targeted by requiring the student to access information from the database using the search engine provided (the results are tracked and strategies scored based on how a student searches for information, such as key words, sequential refined searches, etc.). The Evaluate proficiency is the ability to identify the degree to which digital information meets the needs of the task. This proficiency is targeted by requiring the student to select resources to use as references that meet a specific information need (student choices are tracked and scored based on tagged characteristics of the sources they choose, including authority, currency, relevance, etc.). In combination, these tasks evaluate the student ability to

locate and identify “wheat from chaff” with respect to an information need in a searchable database.

Figure 4 provides a sample evidence model illustrating how this example provides evidence that informs our beliefs about student proficiency in Access and Evaluate. Such a model, in combination with interpretation rules, indicates the characteristics that must be observed in a performance and how these characteristics are valued as evidence of targeted abilities. Table 1 represents the mechanics of scoring to produce the values for “Quality of syntax” and “Quality of selected resources,” which are two of the five performance variables (quality of search terms; quality of search results; quality of syntax; use of delimiting terms; and quality of selected resources) in the evidence model shown in Figure 4. In the next section, we describe how empirical values are assigned to these models for scoring.

Summary

By following the ECD process, the ICT Literacy assessment architecture represents a chain of reasoning from the construct definition and purpose of assessment to the evidence required for supporting assessment use and the elements of task design required for providing the evidence. Scoring the assessment is conducted by taking this existing design logic and reversing the flow from the specific elements of task performance back to the estimation of proficiency, as described in the following section.

Scoring the Simulation-Based ICT Literacy Assessment

The scoring of such a complex assessment is not an afterthought, but is part of the overall assessment design process. For this assessment, the catalog of evidence includes both the outcomes of solving information problems as well as the processes students use to derive those outcomes. The specification of evidence, as outlined earlier, frames the statistical method(s) selected to complete the linkage from raw work product to the estimation of ability. In this way, task production is consistent with the expectations of the scoring method(s).

For this assessment, the objective for scoring is straightforward: how can we best statistically model the value of evidence from observable elements of performance to update our belief about student ability? There are a number of challenges implicit in this objective that must be addressed by the scoring mechanism. These include:

- Multidimensional proficiency model – assessing many proficiencies in a single task
- Multiple scorable elements per task – extracting multiple aspects of a single task performance for scoring
- Conditional dependence – scorable elements of tasks are not completely independent as a result of appearing in a common context. This situation is similar to having sets of multiple-choice reading comprehension items that refer to a common reading passage, but with a potentially increased degree of induced dependence.

The previously described elements of the assessment’s architecture – proficiencies, evidence, and tasks – establish the characteristics of the scoring model by providing conceptual relationships between observations and proficiency estimates. The proficiency model establishes the targets of the assessment and, therefore, the latent variables that the statistical model must be able to accommodate: there are seven proficiencies for which tasks provide evidence. Each task elicits performance (observable elements of behavior) that has been judged to constitute evidence. Note that by design there are multiple instances where a single task informs several proficiencies. The evidence models link the proficiencies and tasks, specifying how observable behaviors are weighted and combined with other observations to inform estimates of ability. It is the role of the statistical model to apply numeric values that implement these evidential relationships as a scoring model linking observations and estimates of ability. The scoring models achieve this goal via two component processes:

- *evidence identification* – the process of determining what elements of the task performance constitute evidence and summarizing their values
- *evidence accumulation* – the process of aggregating evidence to update estimates of ability in the proficiency model

Evidence Identification

The evidence identification process for this assessment is a rule-based approach that parses the work products that are produced by the students into observable elements of performance that can be automatically scored. Essentially, this set of logical rules determines which aspects of student performance are relevant to scoring and which are not—the rules define *evidence* as distinct from *data*. The rules specify how we characterize elements of performance in meaningful ways. An abbreviated example of such a rule summary is provided in Table 1.

Creating evidence identification rules consists of the following activities:

- Specifying an initial set of rules
- Assuring that necessary performance data (the work products) are recorded by the task interface
- Parsing the work product and then producing observable variables
- Empirical modification of the evidence identification rules

The recording is a technical requirement in that the interface must be capable of tracking relevant actions that students take and recording them in a log file. Obviously, if a technical limitation precludes the tracking of some behavior of importance in the interface, that behavior cannot be used in subsequent scoring.

Once some information is recorded in the log file, it must be parsed to extract relevant information from the raw data collected during administration. For example, if the number of steps taken to perform an action were important as a measure of efficiency for some task performance, the log file would record those key actions taken. Subsequent parsing would require that the relevant actions from the sequence of steps taken be identified in the log file and counted. This extraction and computation represents the initial parsing of the log file for relevant evidence used in scoring.

Production of observable variables requires using this parsed information to derive summary variables (observables) used in scoring. For example, once the *number of steps* for some action is parsed, it may be characterized in an observable as “fast” or “slow” based upon some cutpoint in the distribution of number-of-steps. Alternatively, it

might be algorithmically combined with the number of steps undertaken to solve the overall task to produce an observable representing “efficiency of performance” in problem solving. This process of summarizing the parsed data in observable variables is analogous to the stage of multiple-choice scoring in which a parsed response (A, B, C or D) is converted into a dichotomous observable taking on the value of “correct” or “incorrect” by an algorithm comparing the response to a key. Also, just as in multiple-choice testing, the conversion of a parsed response to an observable often involves loss of information. In the case of multiple choice, this loss of information is in using only “correct” or “incorrect” in scoring rather than the option selected (in some multiple choice tests the option selected is retained in scoring to infer the kinds of mistakes and misconceptions of the examinee). In this assessment the loss of information occurs in summarizing one or combinations of variables as a single polytomous variable.

The initial specification of the evaluation rules was based on the logical expectations and requirements of the assessment design: the opinion of subject matter experts, assessment designers and developers, and pilot test data. As a result, the particular cutpoints and algorithms for observables (e.g., the cutpoint on *number of steps* to be classified as “few” or “many” or the particular rules that combine variables into a polytomous “efficiency of performance” variable) may not be optimal for the purposes of the assessment or may make assumptions that, in light of empirical data, are found to be false. Therefore, these rules must always be treated as tentative until they can be subjected to empirical evaluation and modification on the basis of large-scale field trials. Once such larger samples of performance are available the assumptions and decisions of the design team (subject matter experts and assessment designers) must be revisited. Part of this process includes conducting corollaries of classical item analyses (e.g. percent correct, option analysis, correlations between scoring element and total performance, etc.) on the observables. On the basis of these results and comparisons to viable alternative cutpoints and combinations of variables, the evidence identification rules that produce observables are modified to better serve the purpose of assessment and the now known performance characteristics of the population of interest. Such modification is not limited to recombination of existing variables but includes the creation of new

observables not previously defined and extraction of new variables of interest from the assessment log files. Naturally, this implies iterative cycles of evidence identification on the field trial data to produce the new values of observables to ensure that they are more appropriate than former versions.

Evidence Accumulation

The evidence accumulation engine of scoring is responsible for drawing inferences about the students on the basis of identified evidence. This process takes the observable variables generated during evidence identification and specifies how they constitute evidence of abilities in the proficiency model. For the ICT large-scale assessment, we are currently exploring two parallel evidence accumulation methods: Item response theory (IRT) and Bayesian networks. IRT – because of its known capabilities – is being used for producing score reports for client institutions. At the same time, data are being analyzed through Bayesian networks for possible future use for this assessment. The capabilities of Bayesian networks¹ as a proficiency estimation method, in theory, provide advantages for the kinds of complex relationships between multiple latent proficiencies and multiple conditionally dependent observable variables that are common in simulation-based assessment. On the basis of this ongoing research, a decision will be made concerning the use of Bayesian networks for operational scoring.

Conclusion

This paper outlined the assessment design of the Higher Ed ICT literacy assessment, an Internet-delivered assessment that measures a student's abilities to use technology to research, organize, and communicate information. This assessment is unique in its focus on the *cognitive* aspects of ICT Literacy and its use of simulation-based tasks (instead of multiple choice) to elicit evidence of skills in this complex domain, and in its use of Evidence-Centered Design to drive the assessment's architecture and its scoring approach.

¹ For a general introduction to Bayesian networks the reader is referred to Jensen (1996) or, for a more technical description, to Pearl (1988).

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Table 1

Scoring Table Illustrating how Observable Data are Determined

Observable Data	Work Product	Level	Measure
Quality of syntax	Search terms	High	Uses AND in first web search
		Medium	Does not use AND in first web search, but uses AND in subsequent web search
		Low	Does not use AND
Quality of selected resources	Selected resources	High	All of the resources selected scored 5 points for authority, objectivity, coverage, timeliness, and relevance
		Medium	At least 80%, but less than 100% of the resources selected scored 5 points for authority, objectivity, coverage, timeliness, and relevance
		Low	Less than 80% of the resources selected scored 5 points for authority, objectivity, coverage, timeliness, and relevance

Figure Captions

Figure 1. Fundamental models of evidence centered design.

Figure 2. Higher education ICT proficiency model.

Figure 3. Search screen from a sample ICT assessment task.

Figure 4. Portion of an evidence model for Access and Evaluate abilities.

Figure 1

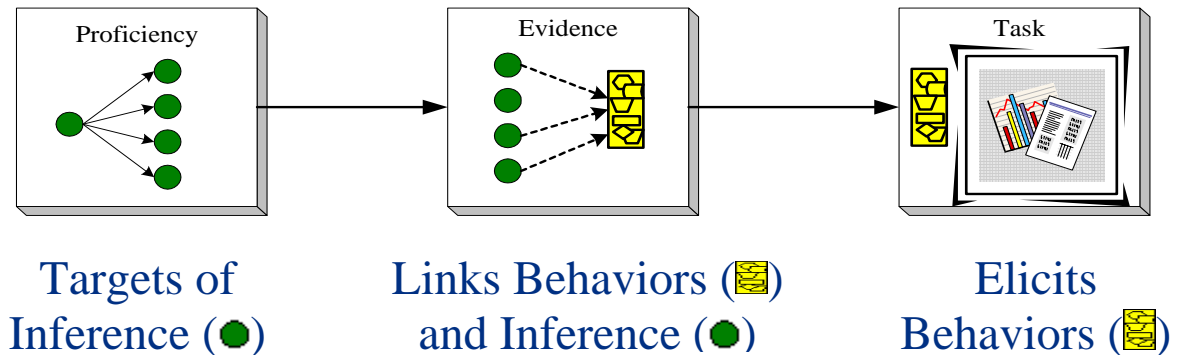


Figure 2

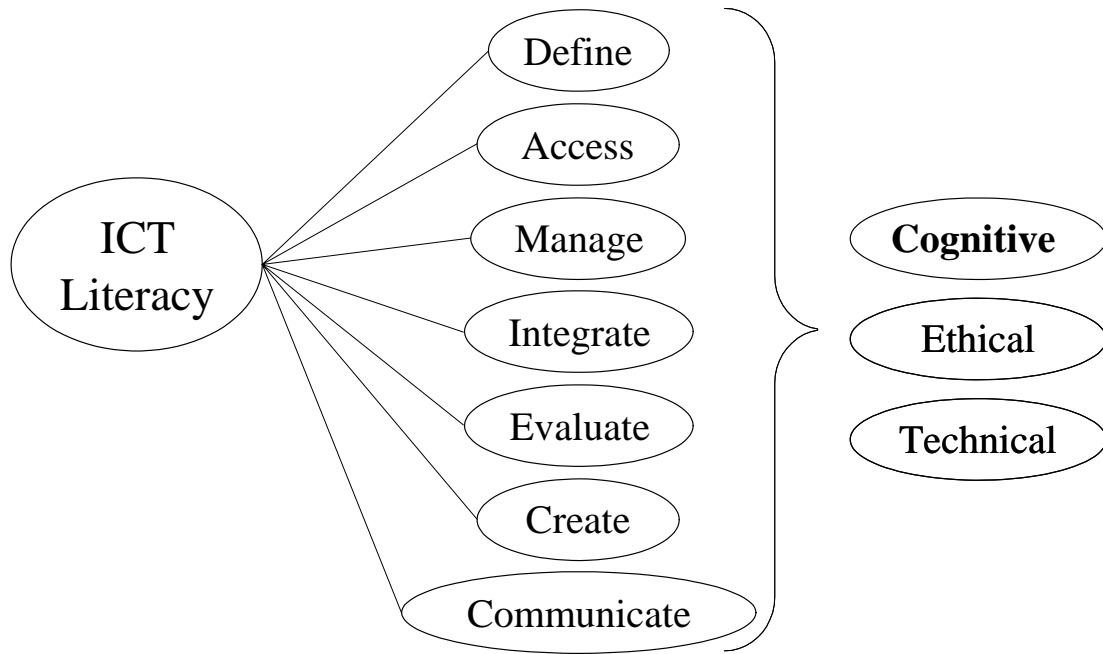


Figure 3

Time	Section	Question
0:37	1 of 3	1 of 48

Higher Education ICT

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Next

Scenario: You are the leader of a team of students at work on a communications class project: a 10- to 15-page paper on whether the news media should be restricted in what they can report regarding the personal lives and problems of famous people.


Your team will need to

- conduct online research to find your information sources
- select the most useful sources from your research:
 - a recent example that illustrates the issue
 - two editorials, one on each side of the issue, from recognized and respected newspapers
 - two good journal articles that explore the issue in depth
- create a slide presentation for a 5-minute oral description of your project for the class
- email the professor a brief progress update and your slide presentation for review

(Use the taskbar to access tools that you will need for this assignment.)

For your "recent example" you have chosen the movie star Penelope Bloom, who has received much media coverage after quitting the film *Leopold's Journey*, citing health reasons. She denies published reports that she is addicted to prescription drugs, and she has threatened legal action against any publication making that claim.

Browser



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Figure 4

