

# The National ICT Literacy Assessment Initiative: A Unique Partnership

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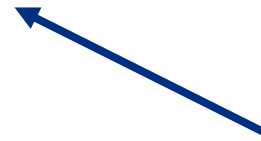
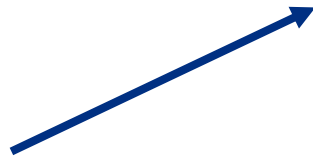
# Why Measure ICT Literacy?

- ICT is changing the very nature and value of knowledge and information
- ICT impacts the way we live, learn, and work
- ICT literacy is not simply a mastery of technical skills, but is the application of technical skills in an information society.
- There is a lack of information about the ICT literacy of students, and debate about how best to address this issue in academic curriculum

# ICT Literacy: a bridge between

## Information and Communication Literacy

- Can I find information on the web?
- Can I create a persuasive presentation?



### Technical Literacy

Database	Word Processing	Presentation
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- Can I bold a word?
- Can I open a database?

### Information Literacy

Access	Evaluate	Use
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- Can you find information?
- Can you evaluate authority?

# Foundational Documents

- International ICT Literacy Panel, *Digital Transformation: A Framework for ICT Literacy* (2002).
- Association of College and Research Libraries (ACRL), *Information Literacy Competency Standards for Higher Education* (2000).

# Higher Education Partners (25% of 15m college students)

## Original Consortium

- California Community Colleges
- California State University
- UCLA
- University of Louisville
- University of North Alabama
- University of Texas
- University of Washington

## Expanded Consortium

- Arkansas State University
- Bowling Green State University
- Miami Dade College
- Oklahoma State University/Defense Ammunition Center
- Portland State University
- Purdue University
- University of Memphis

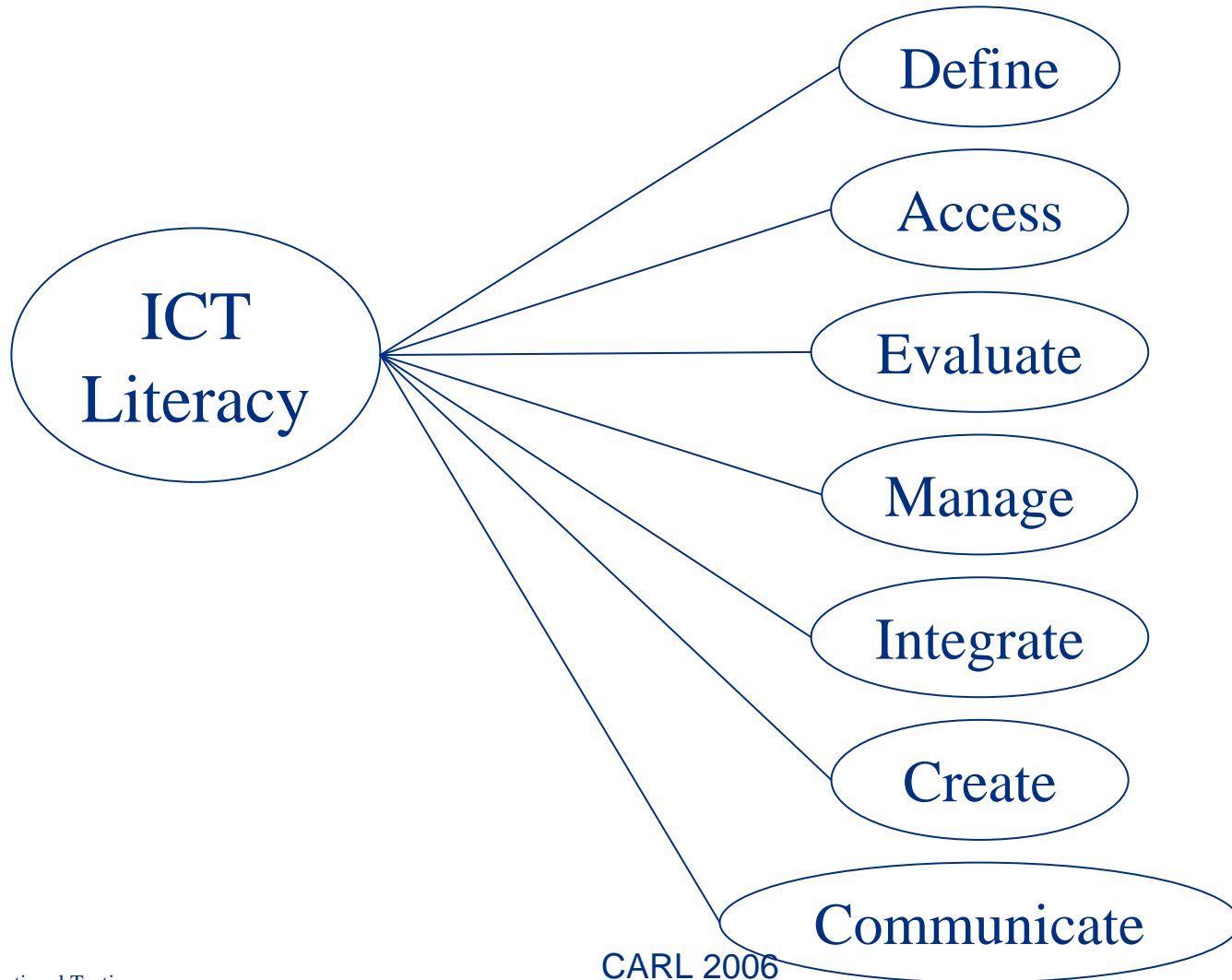
# Assessment Development Process and Timeline

- **2001 - Convened International Panel**
- **2003 - Convened Higher Education ICT Literacy consortium**
- **2003-2004 – Developed the ETS ICT Literacy Assessment**
  - Identified Test Purpose
  - Designed Proficiency Model
  - Created Evidence Models
  - Developed Task Models
  - Defined Scoring Rubrics

# ICT Literacy Definitions

- **Define:** Formulate a research statement to facilitate the search for information
- **Access:** Find and retrieve information from a variety of sources
- **Evaluate:** Judge the appropriateness and adequacy of information for a specific purpose
- **Manage:** Organize information for later retrieval
- **Integrate:** Summarize or otherwise synthesize information from a variety of sources
- **Create:** Generate or adapt online information to express and support a position
- **Communicate:** Adapt information for an audience or delivery via a different medium (e.g. email, slide presentation, word processed document, spread sheet)

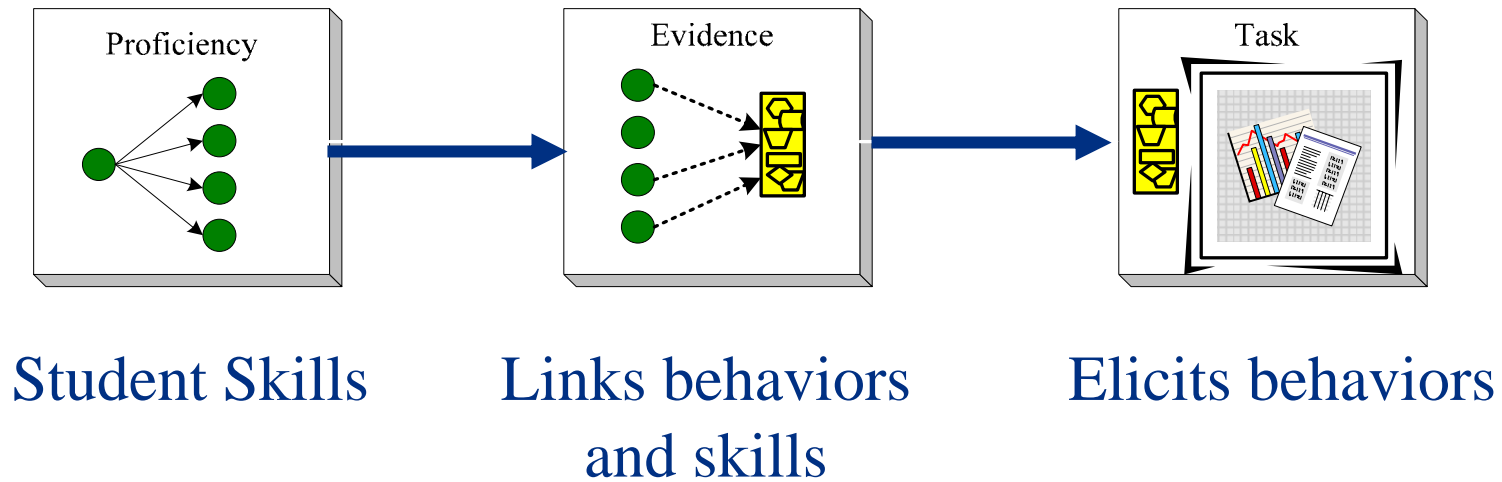
# The Proficiency Model



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# Designing an Assessment for ICT Literacy

- Committee Process
- Evidence Centered Design (ECD)
  - A development methodology that emphasizes the evidence of students' skills



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# Field Trials, Pilots and Administrations

- **Fall 2004** - Conducted Field Trials at about 40 institutions with 1000 students
- **January 2005** - Delivered Institution-Level Test at about 30 institutions with 5000 students
- **Spring 2005** – Pilot of Individual version at around 25 institutions with 400 students
- **Fall 2005** – Pilot of Advanced Level at 25 institutions with 700 students
- **Winter 2006** – Pilot of Core Level at 30 institutions with 700 students
- **Winter 2006** – Advanced Level administration
- **Spring 2006** – Core Level administration
- **August 2006** – Advanced and Core Level continuous testing

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# ICT Literacy Assessment: Basic Design Features

- Interactive tasks using simulated software – NOT Multiple Choice
- Real-life scenarios
- “Get back on track” mechanisms if test-taker gets really lost.
- Multiple scorable elements per task
- Online score reporting
- Reliable and valid

# Assessment Content

- Content Areas
  - Humanities
  - Social Sciences
  - Natural Sciences
  - Practical Affairs
  - Popular Culture
- Contexts
  - Academic
  - Business
  - Personal
- Technology Tools
  - Word Processor
  - Presentation Software
  - Email
  - Database Search Engine
  - Web Browser/Search Engine
  - Spreadsheet or Table
  - Graphing Software
  - File Manager
  - Electronic Bulletin Board
  - Instant Messenger

# Sample questions

# Defining a Research Topic

- **Define:** Formulate a research statement to facilitate the search for information
- Students have trouble recognizing, let alone generating, a research statement

# Evaluating search results

- **Evaluate:** Judge the appropriateness and adequacy of information for a specific purpose
- Students have trouble recognizing authoritative sources

# Results from Institution-level assessment

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# ICT Literacy in 2005: Institution-level assessment

- Approx. 5000 students from 32 campuses
- Community colleges and 4-year institutions
- Reports given to each institution that summarized performance of students

# Student Feedback

- Never taken test like this before
- Challenging; took it seriously
- Interface was easy to use
- Required thinking skills beyond technical
- Enjoyed real-world storylines
- Tasks reflect activities at school, work, or home

# What we learned from the 2005 administration

- Less testing time needed
- Need for testing in multiple sessions
- Students at community colleges found the assessment difficult
- Student ICT literacy skills need improvement

# The Evaluate proficiency: high versus low

## **Low**

Sometimes selects the most appropriate resources in terms of authority, point of view and timeliness when these criteria are explicitly part of an information need.

*Example: Selects just one of two necessary websites when required to find home pages with differing viewpoints from a certain time period.*

# The Evaluate proficiency: high versus low

## **High**

Selects the most appropriate resources in terms of authority, point of view and timeliness whether or not these criteria are explicitly stated

*Example: Browses a set of websites that review a play and, without specific prompting, selects as “best” a timely review that is written by an unbiased authority*

# Current Activities and Plans

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# ICT Literacy Assessment in 2006

- **Advanced Level**

- Students transitioning to upper-level coursework
- College sophomores through graduating seniors

- **Core Level**

- Students transitioning to community colleges or 4-year institutions
- High school junior through students in second year of postsecondary study

- *Measure the same skills*
- *75 minutes of testing time (divided into two sections)*

# ICT Literacy Assessment in 2006

- **Advanced Level**

- Beta tests – October/November 2005
- Test Administration – January-May 2006
- Score Reports – June 30, 2006

- **Core Level**

- Usability Studies – October 2005
- Content Validation Panel – November 2005
- Beta tests – February 2006
- Test Administration – April 2006
- Score Reports – June 30, 2006

***Continuous Testing Begins Fall 2006***

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# Sample Score Report



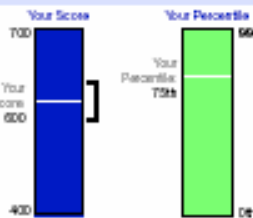
## Version: Advanced Level

This report provides your score on the assessment and feedback on your performance on specific tasks.

You can find more information about the assessment and the tasks on our Web site: <http://www.ets.org/ict-literacy>.

**Name:** Tanisha Beck  
**Date of Birth:** May 15, 1995  
**Test Location:** 1234 Rayford College  
**ETS ID #:** 0000-0000  
**Date of Test:** March 10, 2005

**Your Score: 600 Percentile: 75**



Scores can range from 180 to 780. The midpoint of this scale (500) represents the average performance of all users 2005 test takers.

The bracket represents the range of scores you might expect to receive if you take this test again.

The percentile shows how you did compared with all of the people who took the test during winter 2005. For example, if you received a score in the 80th percentile, you did better than 80% of all test takers.

## Performance Feedback

The ICT Literacy Assessment measures several different skill areas of information and communication technology literacy. The feedback below describes your performance on the tasks you completed by these skill areas. This feedback is for your informational use and is not predictive of future performance.

### Define: Formulate a research statement to facilitate the search for information.

What was I asked to do?	How did I do?
Clarify a class assignment	<ul style="list-style-type: none"> <li>You selected the best initial question to help focus the topic.</li> <li>You chose a follow-up question that was reasonable but not best.</li> <li>You selected the best additional information to clarify the topic.</li> </ul>
Choose a research topic according to specific criteria	<ul style="list-style-type: none"> <li>You chose a research topic that did not fulfill one of the criteria given.</li> <li>You correctly reported the criteria fulfilled by the topic you selected.</li> </ul>

### Access: Find and retrieve information from a variety of sources.

What was I asked to do?	How did I do?
Search a store's database in response to a customer's inquiry	<ul style="list-style-type: none"> <li>You chose the correct store database on your first search.</li> <li>You selected the most appropriate category for searching.</li> <li>You chose the best search term for the database you selected.</li> <li>You selected one inappropriate item for the customer in addition to appropriate ones.</li> </ul>
Install a video player in order to download a video file	<ul style="list-style-type: none"> <li>You installed the video player successfully and played the video file.</li> <li>You installed the video file efficiently.</li> <li>You failed to save the video file to the proper folder on your hard disk.</li> </ul>
Locate a Web page and two database abstracts for a research project	<ul style="list-style-type: none"> <li>You used search terms that were reasonable but not precise in your Web searches.</li> <li>You used search terms that were precise and useful in your database searches.</li> <li>You used some but not all the proper search delimiters in your database searches.</li> <li>You selected database abstracts that were useful but not solely useful and relevant.</li> </ul>

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### Evaluate: Judge the usefulness and efficiency of information for a specific purpose.

What was I asked to do?	How did I do?
Judge the probable usefulness of information returned from a Web search	<ul style="list-style-type: none"> <li>You judged the sites correctly with regard to timeliness.</li> <li>You judged one site incorrectly with regard to bias.</li> <li>You judged the sites correctly with regard to authority.</li> <li>You chose the best site for your research need.</li> </ul>
Evaluate flyers with respect to the fulfillment of particular criteria	<ul style="list-style-type: none"> <li>You ranked the flyers reasonably but not optimally.</li> <li>You chose a flyer that was reasonable but not the best.</li> <li>You filled out the justification form explaining your choice of flyer accurately.</li> </ul>
Judge the usefulness of Web pages and article abstracts	<ul style="list-style-type: none"> <li>You ranked some relevant Web pages.</li> <li>You failed to open the best Web page the first time it was presented in your search results.</li> <li>You bookmarked the best Web page for the assignment.</li> <li>You selected the two best abstracts from the article database.</li> </ul>

### Manage: Organize information for later retrieval.

What was I asked to do?	How did I do?
Organize file into folders on a hard disk	<ul style="list-style-type: none"> <li>You received scores but not all files into the proper folders.</li> <li>You deleted the unnecessary folders appropriately.</li> </ul>
Place incoming e-mails into correct folders	<ul style="list-style-type: none"> <li>You received the mail into the proper folders.</li> <li>You used the software features to complete the work efficiently.</li> </ul>

### Integrate: Summarize or otherwise synthesize information from a variety of sources.

What was I asked to do?	How did I do?
Combine several electronic suggestions in order to plan a scientific experiment	<ul style="list-style-type: none"> <li>You identified the distinct elements of the experiment plan correctly.</li> <li>You organized the experiment reasonably but not optimally.</li> <li>You identified the correct conclusion for the experiment plan.</li> <li>You did not correctly observe ethical or legal considerations.</li> </ul>
Compare several reviews in order to choose the best product	<ul style="list-style-type: none"> <li>You created table rows and columns that summarized your needs effectively.</li> <li>You filled in the table accurately.</li> <li>You ranked the products correctly.</li> </ul>

### Create: Generate or adapt online information to express and/or support a point.

What was I asked to do?	How did I do?
Choose material to create a Web page	<ul style="list-style-type: none"> <li>You selected the necessary and desirable content for the Web page.</li> <li>You organized the Web page content logically and effectively.</li> <li>You did not adequately observe ethical or legal considerations.</li> </ul>
Create a data display based on information given	<ul style="list-style-type: none"> <li>You selected the necessary content for the data display.</li> <li>You organized the display of data logically and effectively.</li> <li>You drew reasonable but incorrect conclusions based on the data display.</li> </ul>

### Communicate: Adapt information for an audience or for delivery via a different medium (e.g., e-mail, slide presentation, word processed document, spreadsheet).

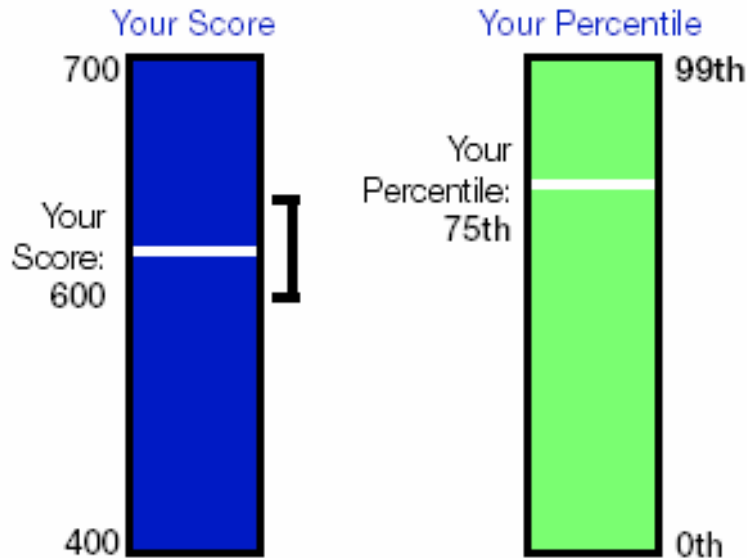
What was I asked to do?	How did I do?
Make a slide arguing a position based on information presented in an e-mail	<ul style="list-style-type: none"> <li>You included most of the key points necessary for effective communication.</li> <li>You included some points irrelevant to your audience's need.</li> <li>You chose the most effective file for the presentation slide.</li> </ul>
Select the best way to advertise an event to the users of an electronic bulletin board	<ul style="list-style-type: none"> <li>You selected an advertisement that was reasonable but not the best.</li> <li>You correctly analyzed the key details of all the advertisements.</li> <li>You made one mistake in analyzing the bulletin board policy.</li> <li>You chose the appropriate advertising content for your audience.</li> <li>You chose an advertisement with language and format best suited to your audience.</li> </ul>

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# Sample Score Report

**Your Score: 600    Percentile: 75**



Scores can range from 400 to 700. The midpoint of the scale (550) represents the average performance of all winter 2006 test takers.

The bracket represents the range of scores you might expect to receive if you take this test again.

The percentile shows how you did compared with all the people who took the test during winter 2006. For example, if you received a score in the 60th percentile, you did better than 60% of all test takers.

# Individual Performance Feedback

## Performance Feedback

*The ICT Literacy Assessment measures seven different skill areas of information and communication technology literacy. The feedback below describes your performance on the tasks you saw, organized by these skill areas. This feedback is for your information only and is not predictive of future performance.*

**Define:** *Formulate a research statement to facilitate the search for information.*

<b>What was I asked to do?</b>	<b>How did I do?</b>
Clarify a class assignment	<ul style="list-style-type: none"><li>• You selected the best initial question to help focus the topic.</li><li>• You chose a follow-up question that was reasonable but not best.</li><li>• You selected the best additional information to clarify the topic.</li></ul>
Choose a research topic according to specific criteria	<ul style="list-style-type: none"><li>• You chose a research topic that did not fulfill one of the criteria given.</li><li>• You correctly reported the criteria fulfilled by the topic you selected.</li></ul>

# Administering the test

- Campus buy-in
- IRB
- Sampling plan
- Incentives
- Test set-up

# Setting up for the test

- Reserve proctored environment
- Assure computer readiness
- Establish testing sessions
  - Create up to 9 additional background questions

# 2005/2006 Validity Studies

- Comparison with self-report measures
- Alignment with expectations of employers
- Expert review of assessment design, tasks, and scoring
- Cognitive strategies on ICT literacy assessment and naturalistic tasks
- Educational outcomes of ICT literacy instruction
- Comparison with writing portfolios

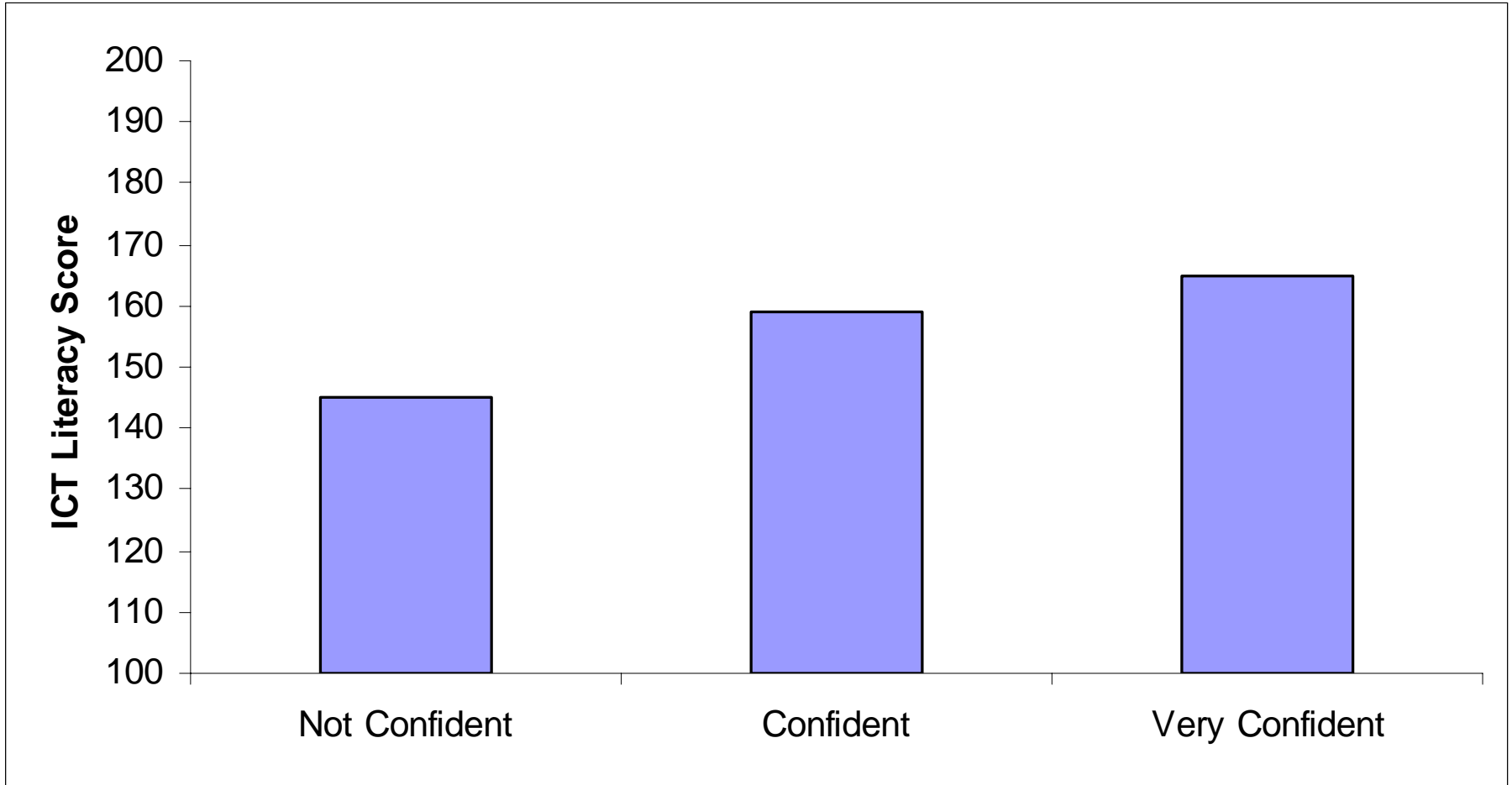
# 2005 Academic Experiences Questionnaire

- 4048 undergraduates from 30 institutions
- Asked about:
  - Self-assessment of ICT literacy skills
  - Self-sufficiency in problem solving and learning
  - Academic performance

# Ratings of ICT Literacy Activities

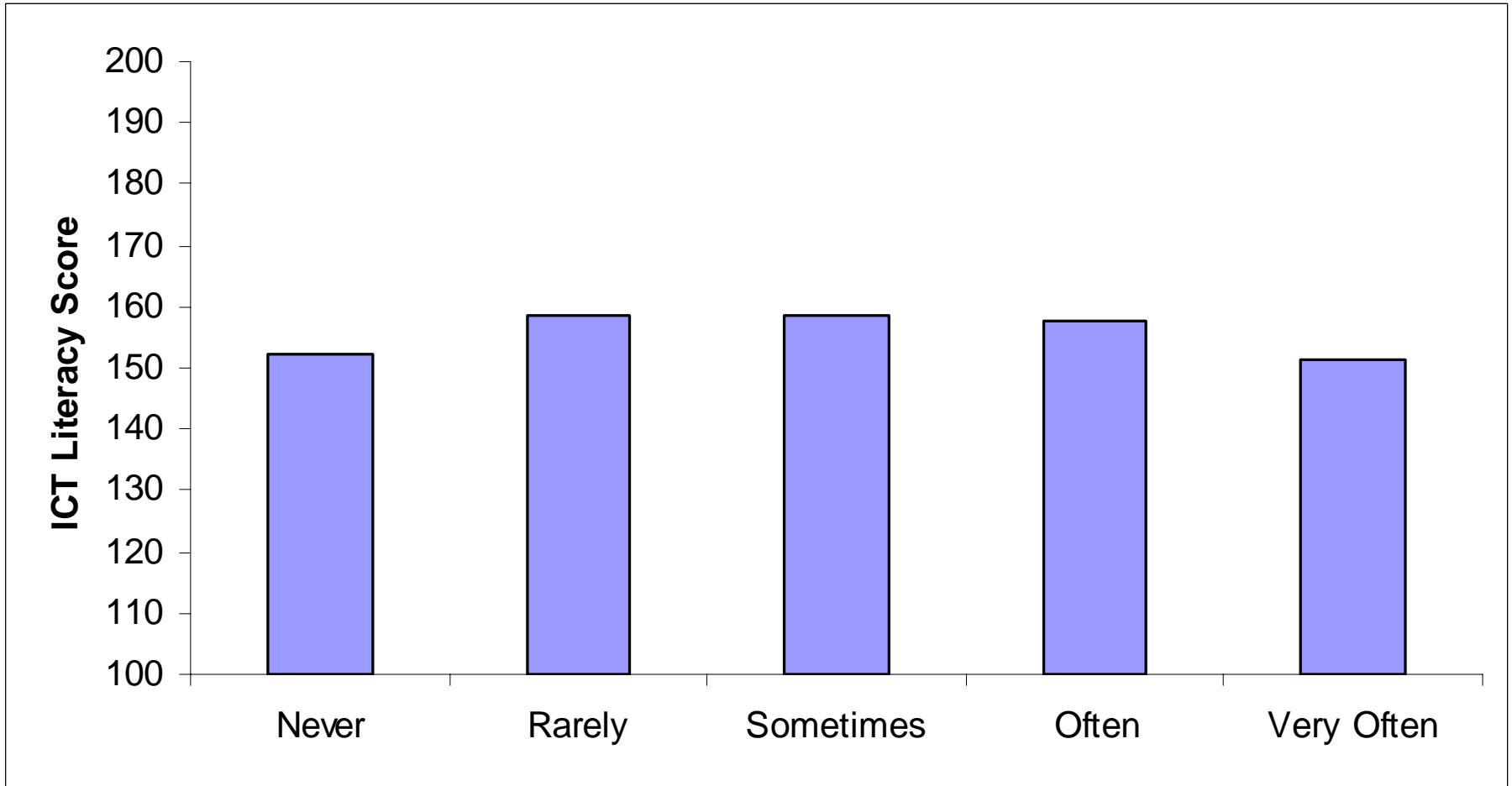
- 30 real-world ICT literacy activities together reflecting all proficiencies, e.g.,
  - **Refined a database search to yield better results**
  - **Produced a summary that synthesized information from different sources**
  - **Decided whether a database contains recent enough information for your needs**
- “About how often you have done the activity over the past two years?”
- “How confident are you in your ability to do this activity?”

# Confidence in ICT Literacy Activities



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# Frequency of ICT Literacy Activities



# Conclusions

- Assessment taps ICT literacy skills
  - Performance aligns with self-assessments
- Doing a lot of ICT literacy does not necessarily lead to good ICT literacy skills

# Other activities

- ETS
- UCLA
- CSU

# Uses for Higher Education

- Guidance for the student
- Guidance for instructional programs
- Accreditation and accountability
- Articulation
- Distance learning
- Self-paced tutorials

# Certification

- Pass/fail scores – how determine level?
- Recognized “certifying body” determines passing levels and claims for pass/fail
- ETS assures test covers content consistently
- If certifying body is nationally recognized, creates a de facto national standard

# Thank you

Gordon Smith, CSU

<http://calstate.edu/LS>

Stephanie Brasley, UCLA

Irvin Katz, ETS

<http://www.ets.org/ictliteracy>