Assessing Computer Literacy using Simulated and Real World Tasks

John Ainley and Julian Fraillon

Background

- Definition of ICT literacy:

  "the ability of individuals to use ICT appropriately to access, manage, integrate and evaluate information, develop new understandings, and communicate with others in order to participate effectively in society"

- Three strands

  A. Working with information (search and retrieval)
  B. Creating and sharing information (adapting, manipulating, authoring)
  C. Using ICT responsibly (understanding impact and consequences)

Computer-based assessment

- Mini-labs of computers
  - Six computers per lab (5 student, networked with 1 administrator)
  - Identically configured and loaded with all software
  - Loaded with student registration information
- Purpose-developed software
  - Simulation items (Skillcheck)
  - Native applications with products saved
  - Contained in a wrapper with seamless transition (SoNET)
  - ACER software for on-line marking and standard setting
- Administration
  - Trained administrators to each school
  - Results sent to ACER by CD (also saved on hard disk)
- Development
  - Small-scale pilots – in late 2004 and early 2005
  - Field trial (617 students / 66 schools) 4 weeks in early 2005

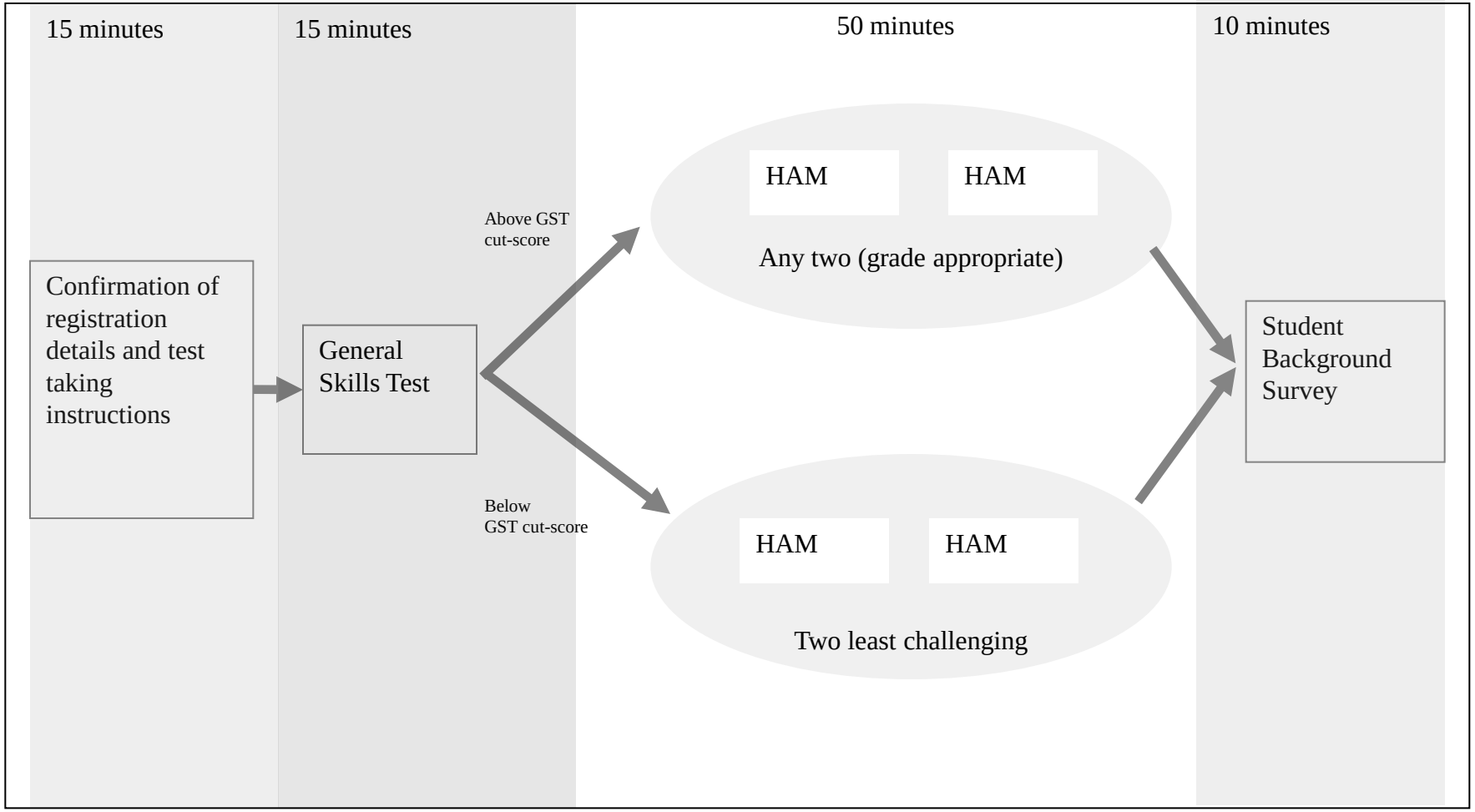
Assessment Items/Tasks

- MCQ – auto scored
- Short constructed response – marker scored
- Software simulation (skills) – auto scored
- Live software applications
  - some skills and some larger tasks
  - tagged file saved and marker scored
- Items grouped in modules (25 min).
- Narrative theme to each module.

Assessment modules

- General skills test
  - Simulated skills and MCQ
- Six hybrid assessment modules (HAM)
  - Seamless combinations of item/task types
    - Simulation skills and research tasks
    - MCQ & short constructed response tasks
    - Large live software application task
- Common and specific to year levels
  - One Y6 only HAM
  - One Y10 only HAM
  - Four Y6 and 10 HAMs

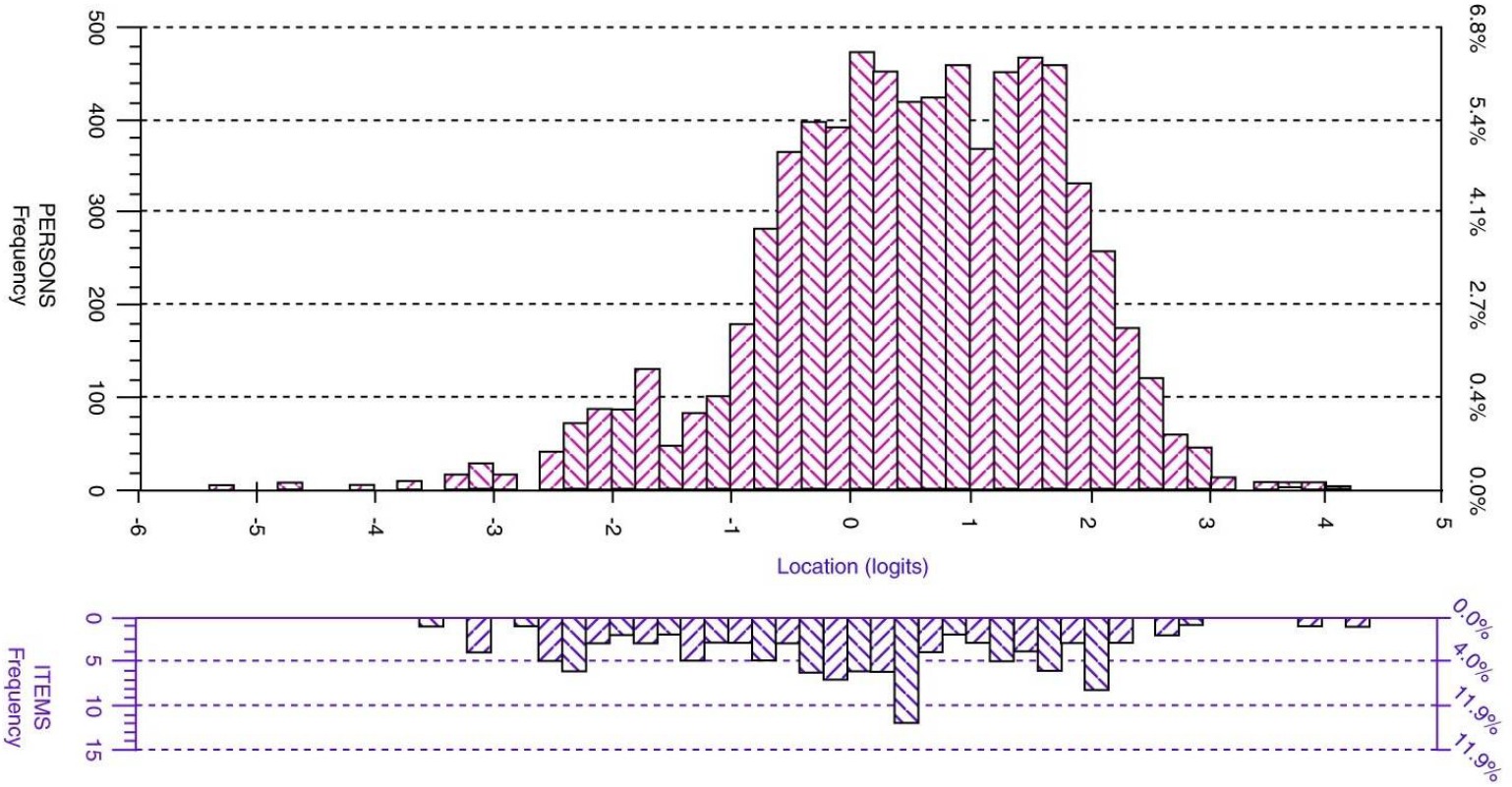
Assessment process



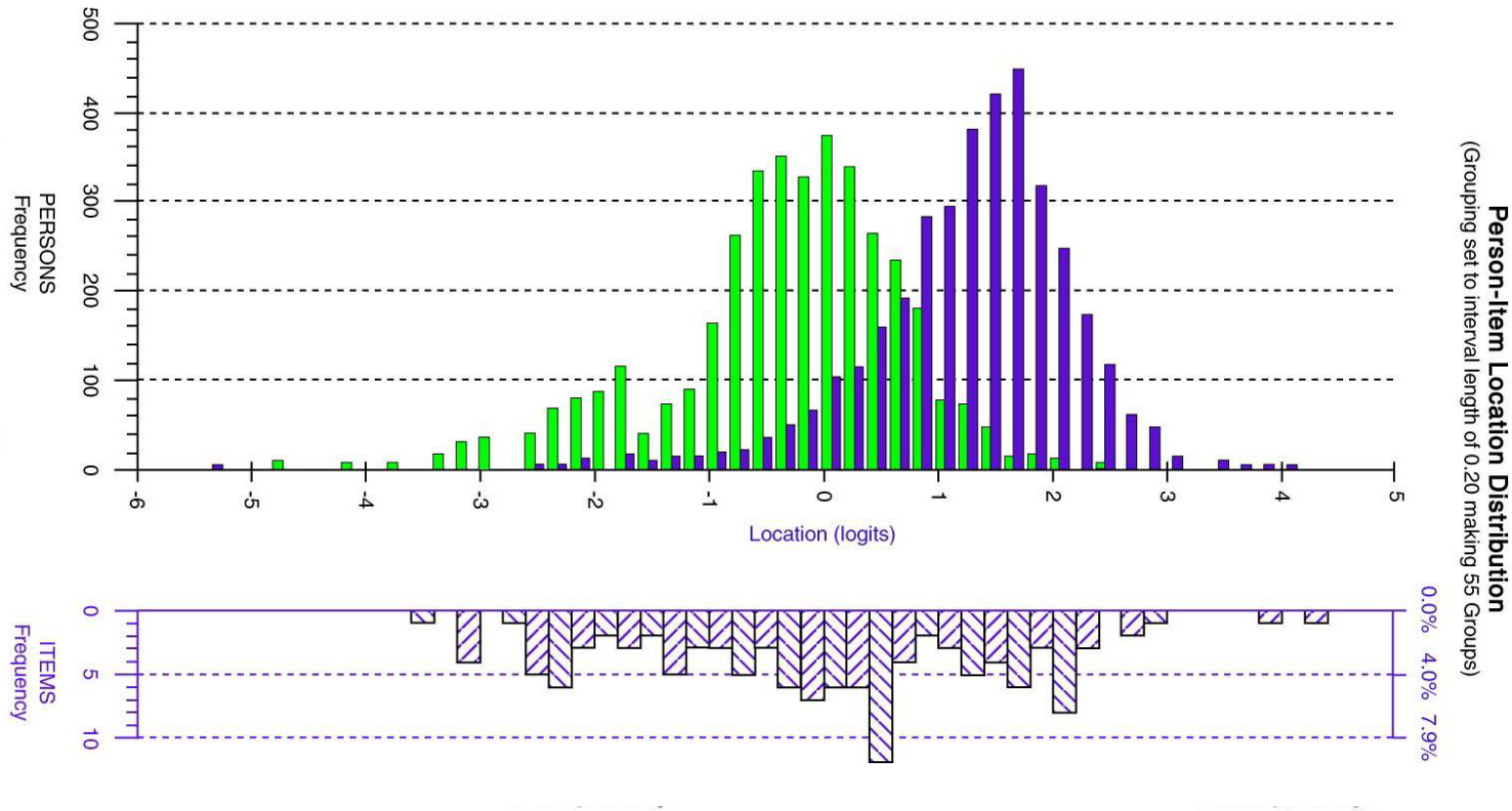
Sampling and Scaling

- Two-stage PPS cluster sample
  - 7,400 students
  - 520 schools
- 10 weeks in late 2005
- Rasch (item response theory)
  - 227 items
  - seven modules (different difficulty)
- Items/persons on a common scale
- Person separation index (reliability) = 0.93

Person-item location map



Person-item location by Year



Level	No.	Mean	SD
year 6	(3746)	-0.295	1.05
Year 10	(3647)	1.294	0.91

Reporting ICT literacy

- Reporting scale
  - Year 6 mean = 400,
  - Year 6 standard deviation = 100
- Proficiency levels
  - Six proficiency levels of equal width (in difficulty)
  - Width is 125 scale points
  - Descriptors of each level based on items
  - Percentage of students in each level

Sample descriptions

- **Level 1:**

  Students working at level 1 perform basic tasks using computers and software. They implement the most commonly used file management and software commands when instructed. They recognise the most commonly used ICT terminology and functions.

- **Level 3:**

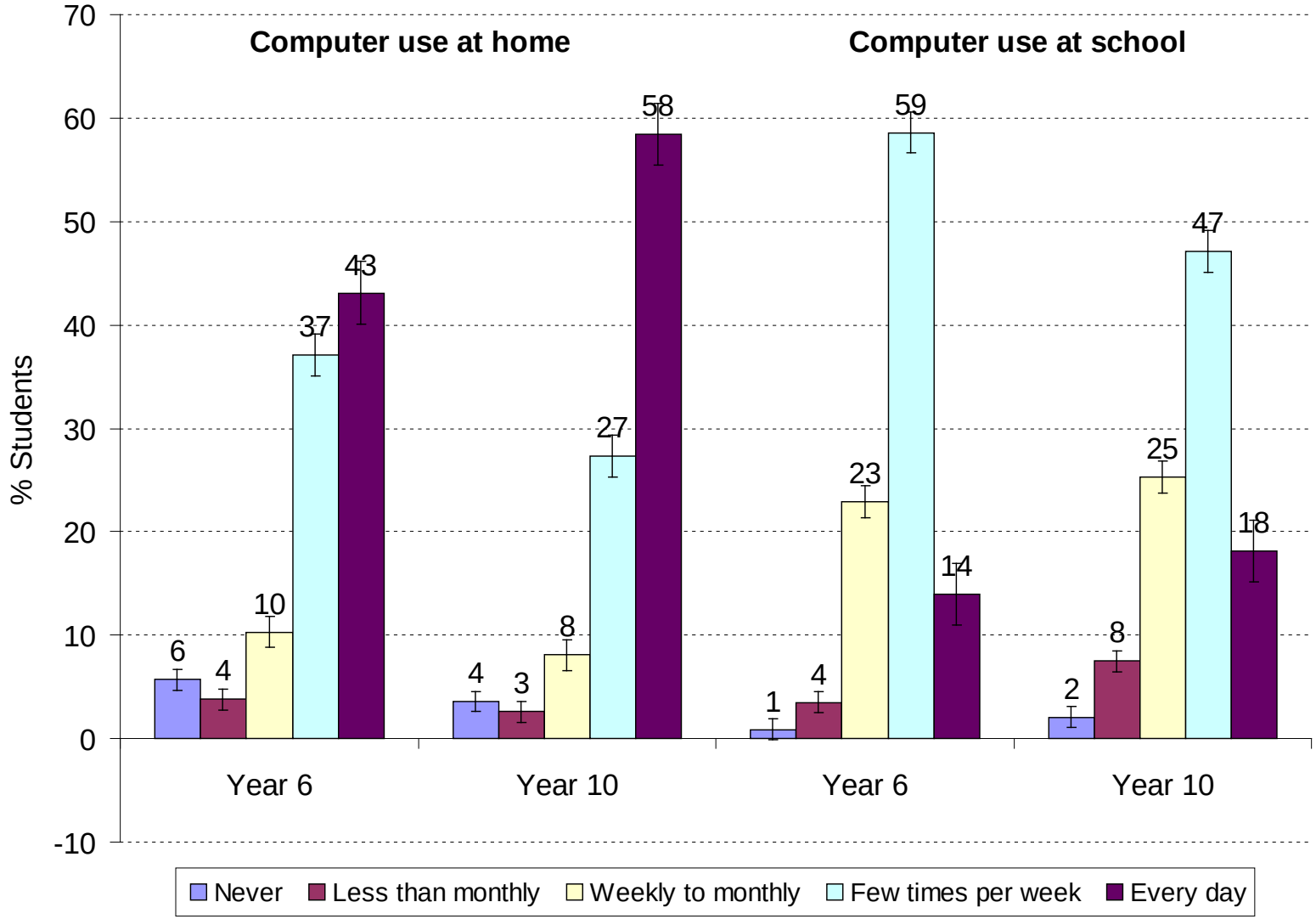
  Students working at level 3 generate simple general search questions and select the best information source to meet a specific purpose. They retrieve information from given electronic sources to answer specific, concrete questions. They assemble information in a provided simple linear order to create information products. They use conventionally recognised software commands to edit and reformat information products. They recognise common examples in which ICT misuse may occur and suggest ways of avoiding them.

- **Level 5:**

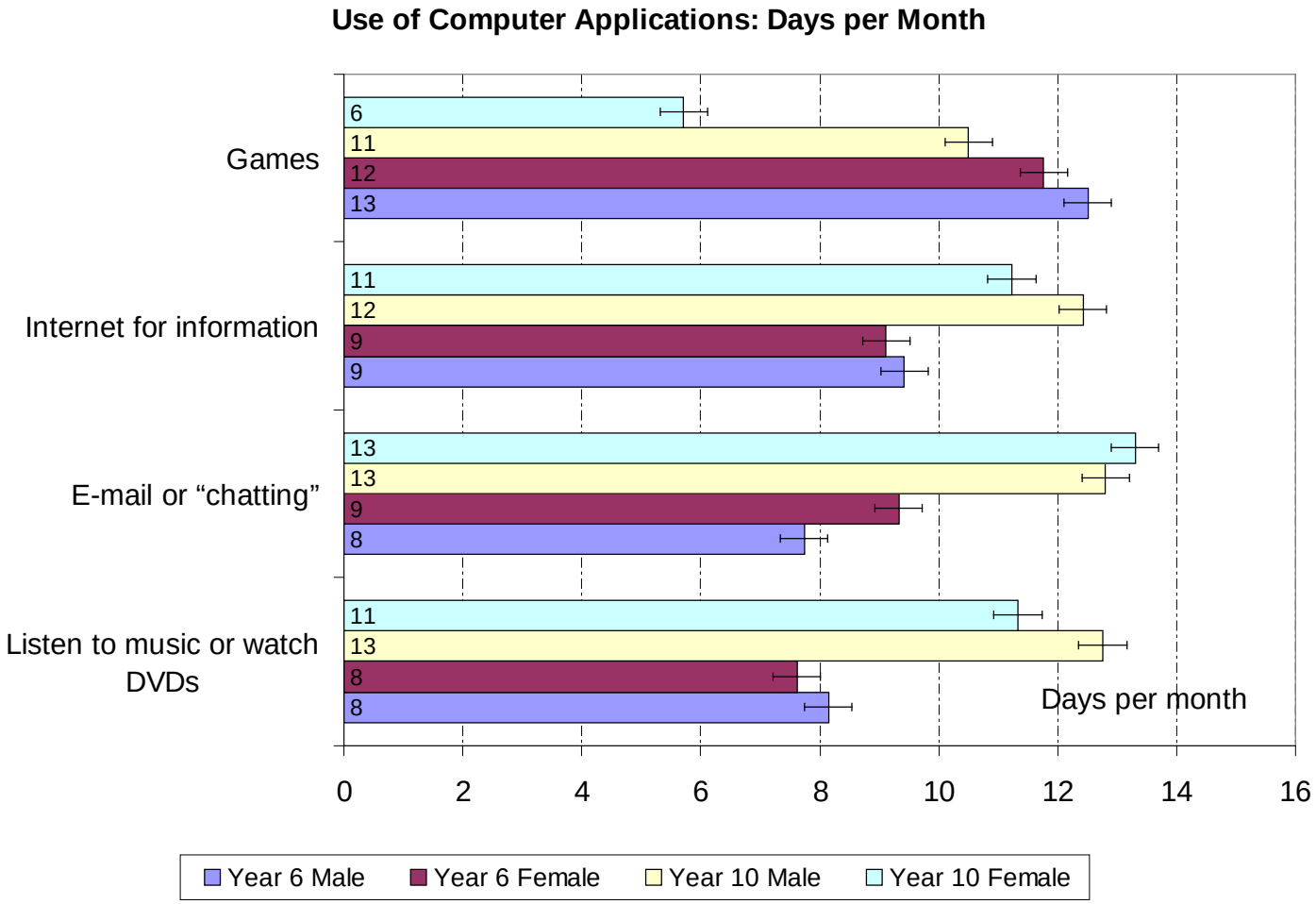
  Students working at level 5 evaluate the credibility of information from electronic sources and select the most relevant information to use for a specific communicative purpose. They create information products that show evidence of planning and technical competence. They use software features to reshape and present information graphically consistent with presentation conventions. They design information products that combine different elements and accurately represent their source data. They use available software features to enhance the appearance of their information products.

Finish

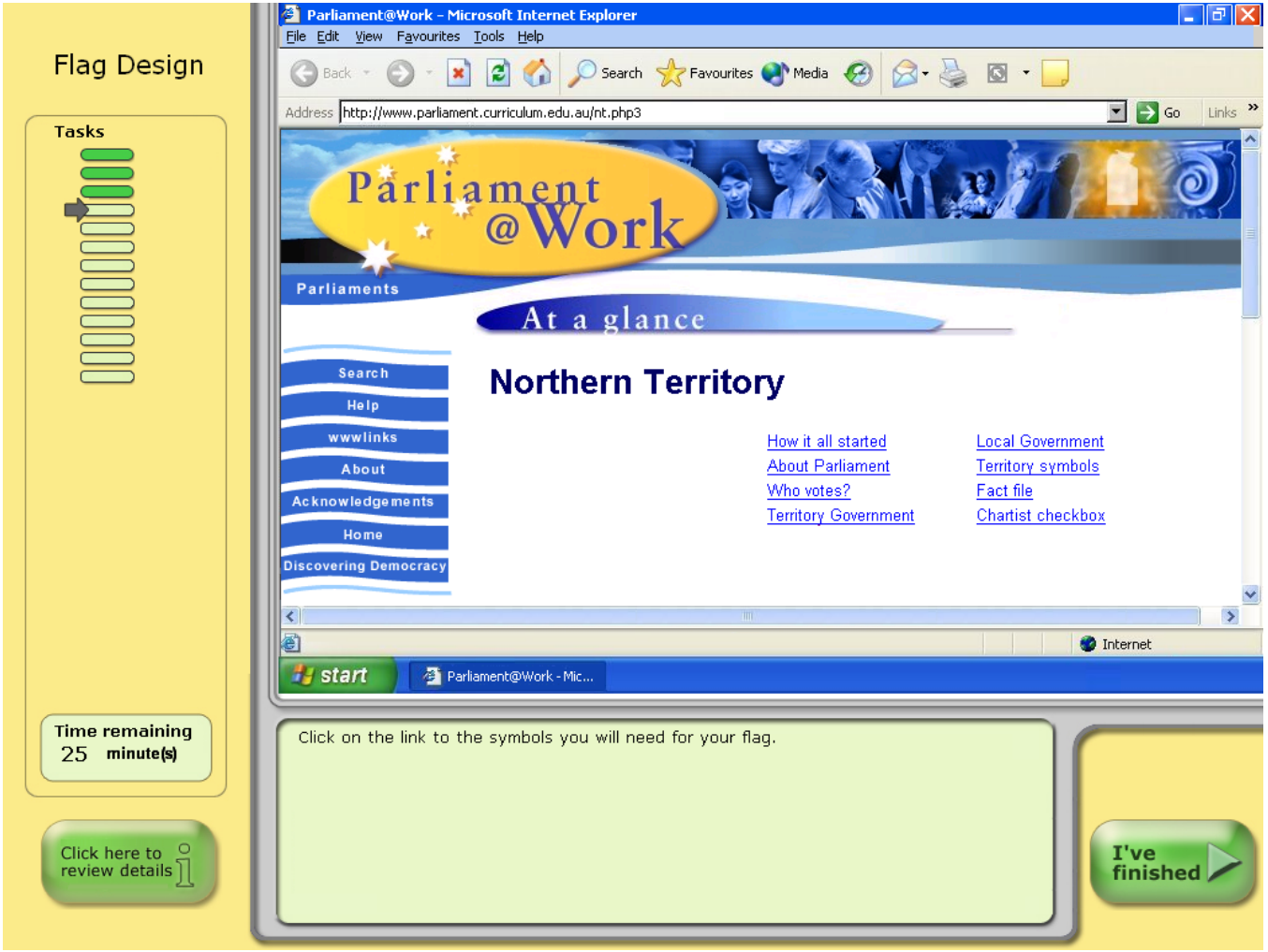
Computer use at home and school



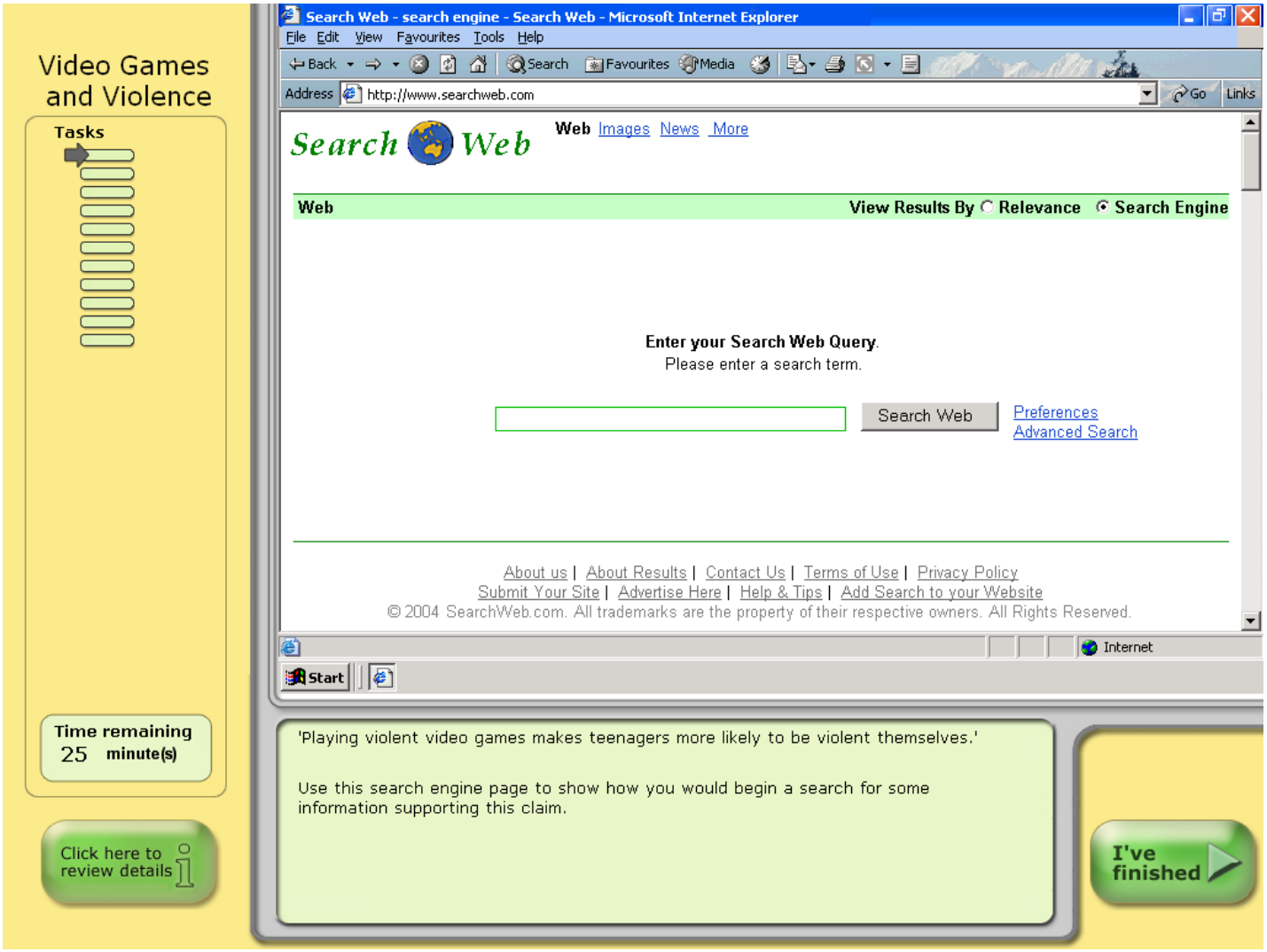
Selected applications



ICT Literacy Assessment



ICT Literacy Assessment



Conservation Project

Tasks

Time remaining 23 minutes

Click here to review test taking details

Back | Forward | Stop | Refresh | Home

Grevilleas

It is difficult to grow grevilleas from seeds. It is easy to grow plants from cuttings. The cuttings should be about 75–100 mm long, with the lower leaves removed.

Tips

- The flowers attract nectar-feeding birds (e.g. honeyeaters).
- Best time of year to take cuttings: December to March.
- Grevilleas vary in size, shape and flower colour, and make excellent garden plants.

IE | Excel | Word

Use information from the website and spreadsheet to help you write your report.

Your report will be assessed on how well you:

- use the information and communicate your ideas;
- present the report; and
- explain your choice of plants.

I've finished

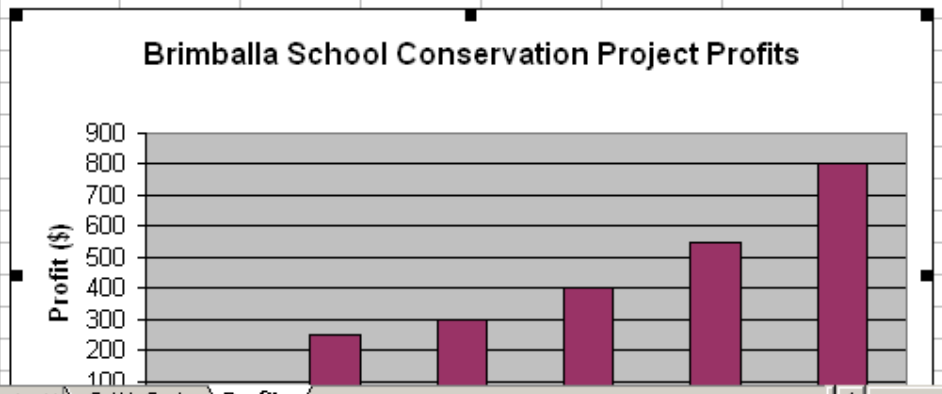
Conservation Project

Tasks

Time remaining
23 minutes

Click here to review test taking details

Year	Profit ($)
1999	20
2000	250
2001	300
2002	400
2003	550
2004	800



IE Excel Word

Use information from the website and spreadsheet to help you write your report.

Your report will be assessed on how well you:

- use the information and communicate your ideas;
- present the report; and
- explain your choice of plants.

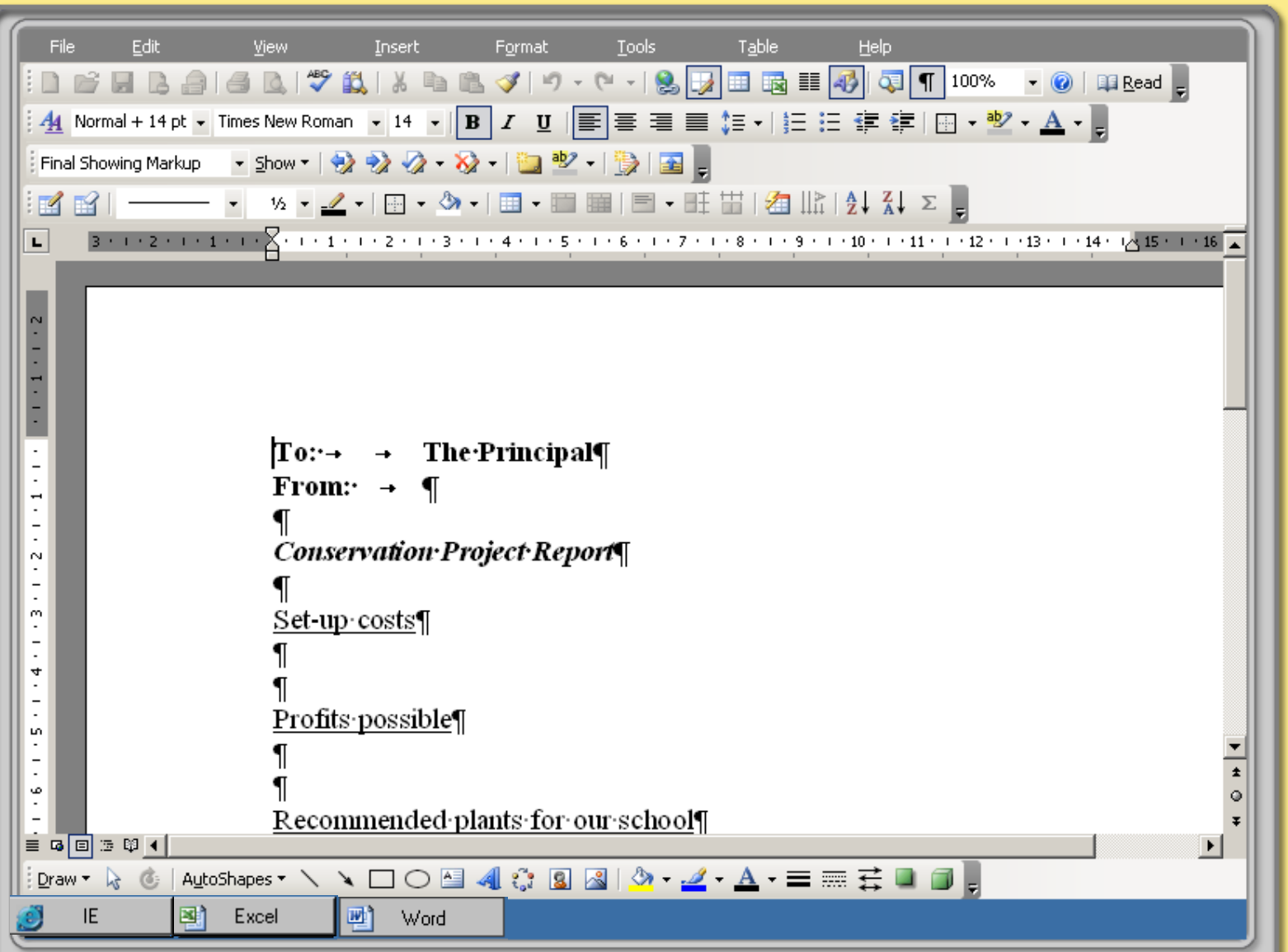
I've finished

Conservation Project

Tasks

Time remaining
23 minutes

Click here to review test taking details



Use information from the website and spreadsheet to help you write your report.

Your report will be assessed on how well you:

- use the information and communicate your ideas;
- present the report; and
- explain your choice of plants.

I've finished