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## IT literacy

### Aim

- Ability to construct tests of IT literacy
- Ability to analyse descriptions of IT literacy

### Core literature

- Textbook Chapter 10.1

### Auxiliary literature

- Committee on IT Literacy (1999) Being Fluent with Information Technology
- C. Lankshear & M. Knobel (2006) Digital Literacy and Digital Literacies. *Digital kompetanse (Nordic Journal of Digital Literacy)* 1(1), 12-24

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## Assessing competence

- All staff in an organisation.
- Course participants
  - Teaching start at the appropriate level.
- Screen the possible course participants.
- Employers test the IT competence of job applicants.
- Applicants document their competence
  - Completing a certified test.
- A trainer evaluates a course.
- A school administers an exam in their IT class.

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## Subject matter areas

- IT
  - What is a spreadsheet program?
- Information
  - What is debit and credit?
- Tasks
  - What is the purpose of double-entry bookkeeping?

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## Testing organisations

- Educational Testing Service
- Certiport
- ECDL Foundation
  - European Computer Driving Licence



Complete one module of the ECDL test.

- Which of the three subject matter areas did it cover?
- Which level of competence did the questions aim at?
- Which elements of competence for further learning did the questions address?

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## Separation of IT competence into softwares

- Obstacles for questions relating several applications
  - What is the similarity between master slides in presentation programs and styles in text processors?
    - a. They guide the printer.
    - b. They provide information for the table of contents.
    - c. They enable coherent formatting of the file.
    - d. They enable import of slides into word processors.

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## Testing differences between concepts

- What is the difference between tables and column layout in a text processor?
  - a. Tables are imported from a spreadsheet, while column layout is generated within the text processor.
  - b. Tables are only found in spreadsheets.
  - c. Column layout is the vertical sequence of cells in a table.
  - d. Tables are composed of separate cells of text, while column layout means that the text is displayed in sequential, vertical stripes.

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## Assessing competence for experimentation

- Find out what goes right and wrong when copying from a pdf document and pasting into a text processor.
- You have attached a file to an e-mail to Bob, and then you make some changes in the file. You wonder whether Bob will get the changed file. Which of the alternatives below will give you the answer?
  - a. Ask Bob about the name of the file he received.
  - b. Check which file that disappeared from your disk.
  - c. Remove Bob from the list of receivers and enter yourself instead.
  - d. After sending, check the mailbox containing sent messages.
  - e. Send the file to yourself from another e-mail account.
  - f. Remove the attachment and then re-attach the file before sending.

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## Assessing competence for troubleshooting

- You experience that the computer did not do what you intended. You repeat it, and this time it worked out. What can the reason be?
  - a. The computer regained momentum.
  - b. There was a virus the first time.
  - c. You made a typing mistake the first time.
  - d. The quantum mechanical circuit at the mother board kicked in.
  - e. The hard disk crashed.



Consider the module of the ECDL test.  
Write a question for this module which addresses one of the competencies for further learning:  
experimentation  
troubleshooting

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## Computer literacy

### Computer system

- Computer literacy is the knowledge and ability to use computers and technology efficiently
  - [Wikipedia article](#)
- Dutch found to be most computer literate in world
  - Survey of habits in 17 nations
  - 82 percent of Dutch residents said they used a computer at least occasionally at home or at work
  - 72 percent used the Internet
    - International Herald Tribune

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## Fluency with IT – FITness

Committee on IT Literacy (1999)

- Intellectual capabilities
  - Ability to apply IT in complex and sustained situations
  - To understand the consequences
- Fundamental IT concepts
  - Concepts fundamental to IT and computing
  - The "book learning" of IT
- Contemporary IT skills
  - Ability to use particular and contemporary IT to accomplish information processing tasks
  - Knowing how to use a computer

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## The Components of Fluency with Information Technology

Intellectual Capabilities	Information Technology Concepts	Information Technology Skills
1. Engage in sustained reasoning.	1. Computers	1. Setting up a personal computer
2. Manage complexity.	2. Information systems	2. Using basic operating system features
3. Test a solution.	3. Networks	3. Using a word processor to create a text document
4. Manage problems in faulty solutions.	4. Digital representation of information	4. Using a graphics and/or artwork package to create illustrations, slides, or other image-based expressions of ideas
5. Organize and navigate information structures and evaluate information.	5. Information organization	5. Connecting a computer to a network
6. Collaborate.	6. Modeling and abstraction	6. Using the Internet to find information and resources
7. Communicate to other audiences.	7. Algorithmic thinking and programming	7. Using a computer to communicate with others
8. Expect the unexpected.	8. Universality	8. Using a spreadsheet to model simple processes or financial tables
9. Anticipate changing technologies.	9. Limitations of information technology	9. Using a database system to set up and access useful information
10. Think about information technology abstractly.	10. Societal impact of information and information technology	10. Using instructional materials to learn how to use new applications or features

## Intellectual capabilities

2. Manage complexity.
  - A person needs to be able to plan a project, design a solution, integrate the components, respond to unexpected interactions, and diagnose what is needed from each task.
  - Some of the steps of the project may involve some type of computer programming.
5. Organize and navigate information structures and evaluate information
  - Most sustained activities involve the location, evaluation, use, and organization of information.
  - Often searching for and locating information involve other aspects of FITness, including evaluating the validity of information and resolving conflicting accounts of situations.
10. Think about information technology abstractly
 

A person who effectively determines how to apply information technology ... will reflect on her use of information technology, identifying characteristics and commonalities that cut across technological experiences.

She will transfer the principles of technological solutions from one setting to another.



What kinds of competence?

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## Information Technology Concepts

### 3. Networks

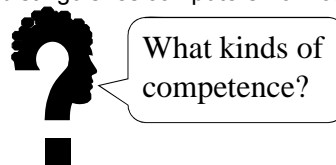
- Key attributes and aspects of information networks, including their physical structure (messages, packets, switching, routing, addressing, congestion, local area networks (LANs), wide area networks (WANs), bandwidth, latency, point-to-point communication, multicast, broadcast, Ethernet, mobility), and logical structure (client/server, interfaces, layered protocols, standards, network services).

### 5. Information organization

- The general concepts of information organization, including forms, structure, classification and indexing, searching and retrieving, assessing information quality, authoring and presentation, and citation.

### 8. Universality

- Universality distinguishes computers from other types of machines



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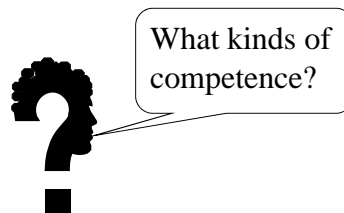
## Information Technology Skills

### 2. Using basic operating system features

- the ability to install new software, delete unwanted software, and invoke applications.

### 3. Using a word processor to create a text document

- minimal skills in this area include the ability to select fonts, paginate, organize, and edit documents.
- Integration of image and other data is becoming essential.
- In the near future, requirements in this area will likely include the creation of Web pages using specialized authoring tools.



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## Minimally invasive education

Mitra et al (2005)

- We put a computer with a fast Internet connection into a wall and let slum children have access to it with no explanation whatsoever
  - You get base level computer literacy almost instantly.
  - By computer literacy, I mean what we adults define as computer literacy:
  - The ability to use the mouse, to point, to drag, to drop, to copy, and to browse the Internet.
    - Sugata Mitra






What kinds of competence?

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## The Icon test

- It is assumed that the number of correct descriptions of icons is correlated to the IT literacy level of the person taking the test.
  - Here are some pictures that resemble the pictures on the computer. Look at each picture carefully and describe in few words its function.

	One child saw this icon and wrote "scissors". He is given a score of 0. Later, the same child when tested again wrote, " <i>We can cut pictures with this and move them here and there</i> ". He is given a score of 1.
	One child described this icon as " <i>Computer – we get information and songs through this</i> ". He is given a score of 1
	One child described this icon as " <i>If we cannot see anything then we should "click" on this "button", to move the page</i> ". He is given a score of 1.

- Sugata Mitra

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## Digital literacy

Lankshear & Knobel (2006)

- IT skills
- Understandi.  
Skills  
Information
- a) Typical conceptions
    - «the ability to understand and use information in multiple formats from a wide variety of sources when it is presented via computers» and, particularly, through the medium of the Internet
  - b) Standardized operationalizations
    - tasks, performances, demonstrations of skills
    - click on all the «output devices» from a list containing items like joystick, monitor, speakers, keyboard, etc.
    - the ability to use technology as a tool to research, organize, evaluate, and communicate information
    - Create: The ability to generate information by adapting, applying, designing or inventing information in ICT environments.
    - Communicate: The ability to communicate information properly in its context of use for ICT environments. This includes the ability to gear electronic information for a particular audience and to communicate knowledge in the appropriate venue.
      - [Educational Testing Service](#)

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## Critique

- Task
- More than information
    - Communication
  - Information implies true/false
    - Communication has more to do with establishing connections than conveying facts
  - Each practice has its own literacy
    - A blog
    - A newsgroup
  - Ability to express oneself properly in the community
  - Ability to become and stay as a member of the community
  - Each community its own literacy

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