Learning to learn

- Aim
  - To be able to design activities where people can become better learners of IT
  - Input for Assignment 3
- Core literature:
  - Textbook chapter 6, 7.2, 7.4, 8.1
- Additional literature
  - Grigoreanu et.al.(2012). End-user debugging strategies: A sensemaking perspective
  - Novick, Elizalde & Bean (2007) Toward a more accurate view of when and how people seek help with computer applications.

Write down 1-3 ways in which you solve IT use problems.

1

Because

New installations of software
New versions of software
New vendors
New software types
New hardware

The ability to learn more neccessary for IT competence

Understanding
- IT concepts
- Information
- Activity fit

Skills and understanding
- Exploration
- Problem solving

2

Levels of IT user competence

Knowing how to learn

meta = about
cognition = thinking

- Metacognition
- Exploring
- Problem solving competence
- Higher order cognitive skills

Understanding

- Explaining to others

Skills

- Doing

3

Characteristics of ”capable computer users”

- confident in their own skills and abilities
- patient and persistent, determined and calm
- risk taker, courage to experiment, try new things, not afraid to make mistakes
- methodical / logical thinker
- enthusiastic and motivated, enjoy using computers, positive attitude, personal interest
- technical knowledge
- love of learning
- constant use, deep immersion
- problem-solving abilities, deduction
  - Phelps at al (2001) The role of metacognitive and reflective learning processes in developing capable computer users

4

Learning oriented people

- My brother is truly amazing. For myself, if something doesn't work I might try it again once but the majority of the time I will just 'give up'. My brother sees these 'failures' as challenges to be met and conquered. He delights in the fact that he never has to stop learning because there will always be a new challenge to conquer. He loves the fact the information technology is such a dynamic field that it is always changing, improving and making new breakthroughs.

Performance oriented people

- If something goes wrong when I am using the computer I freak out and panic, but when I see these people use the computer they seem to be able to work it out on their own. It is obvious to me that I learn differently to them when it comes to information technology.

Phelps at al (2001) The role of metacognitive and reflective learning processes in developing capable computer users

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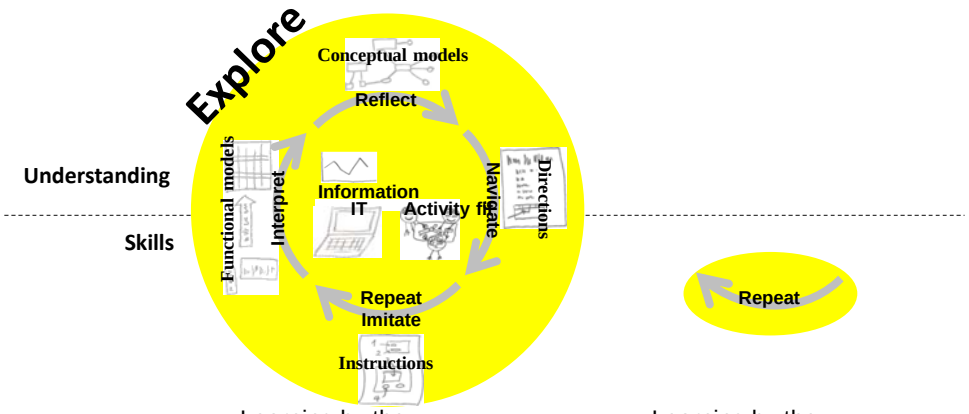

Learning by the learning oriented users

Learning by the performance oriented users

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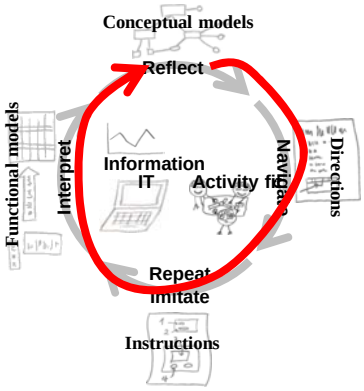
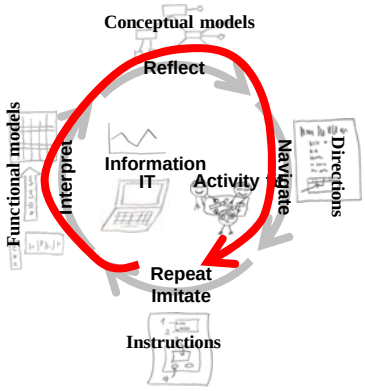
Two types of problem solving

Experimentation



- Triggered from understanding
- It can do this, can it do that?

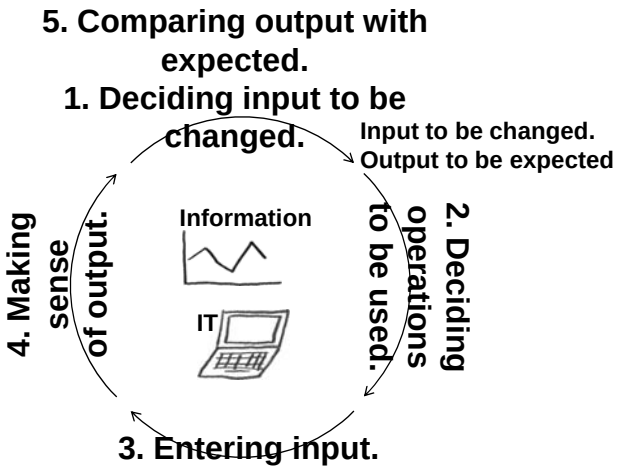
Trouble shooting



- Triggered from unexpected result
- How can i fix it?

7

Research cycle



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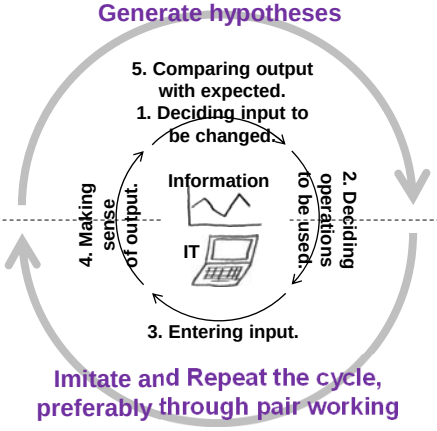
Learning research cycle competence

Reflect on the number of input changes to be made
Generate hypotheses

Understanding research cycle

Research cycle skills



Imitate and Repeat the cycle, preferably through pair working

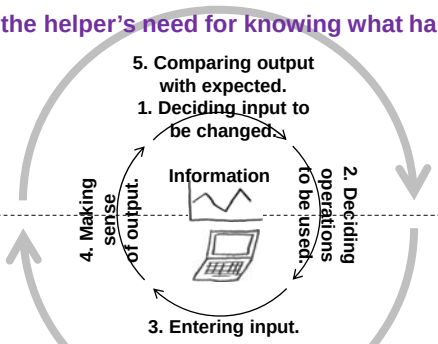
Possible topics for presentation in Assignment 3

Learning precise observation

Reflect on the helper's need for knowing what happened

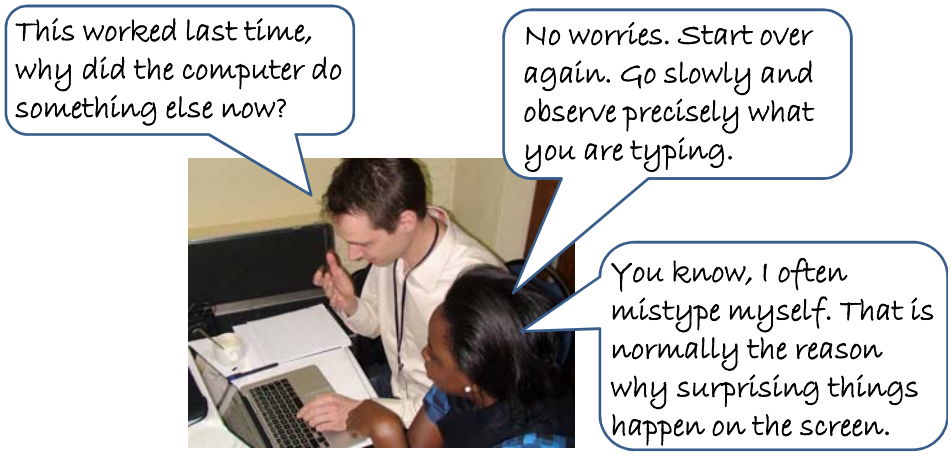
Understanding precise observation

Precise observation skills



Repeat observing buttons pressed.
Repeat taking notes.
Repeat making screen shots.

Guiding precise observation



Trainer refering to own mistakes

→ Learner understands that he is not stupid

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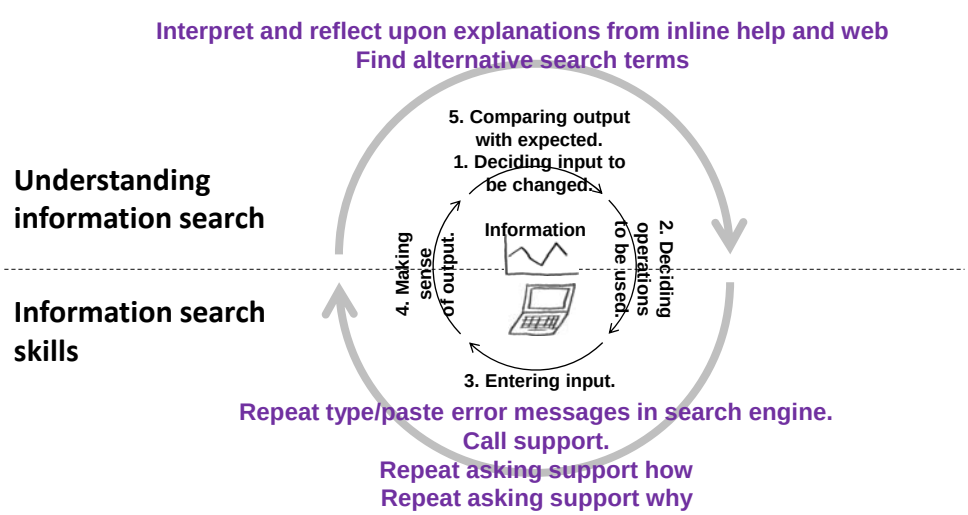
Learning information search and help seeking



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Efficiency

- **Inefficient**
  - Trial-and-error
  - Consulting documentation
- **More efficient**
  - Switching between trial-and-error and documentation

Andrade, et al., 2009

Reviewing training material is **twice** as successful as searching for help

Novick et al 2009

→ **Same material in training and documentation**

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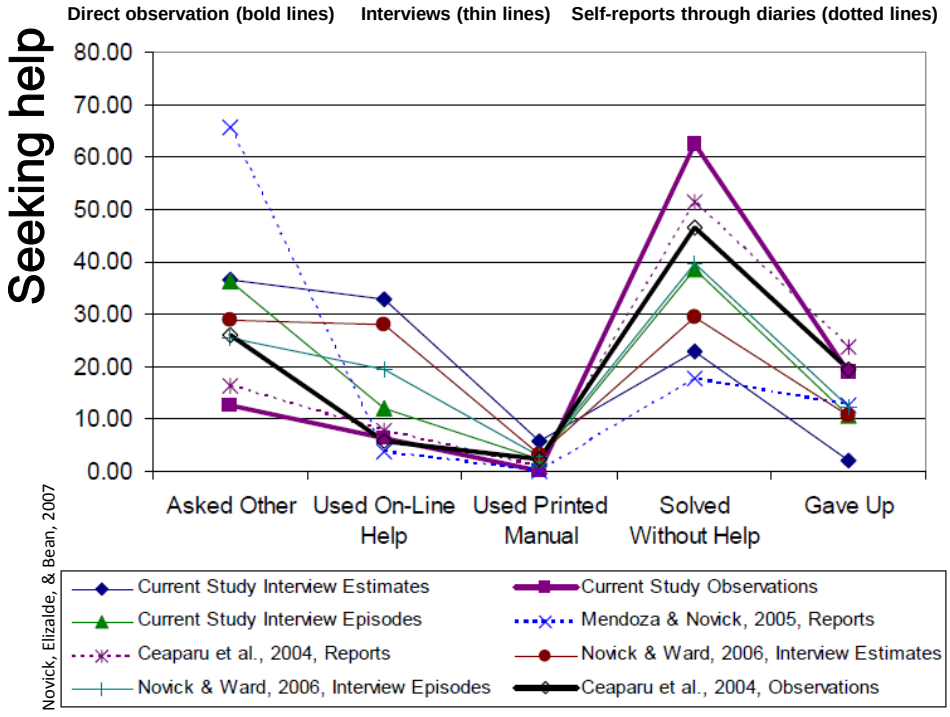
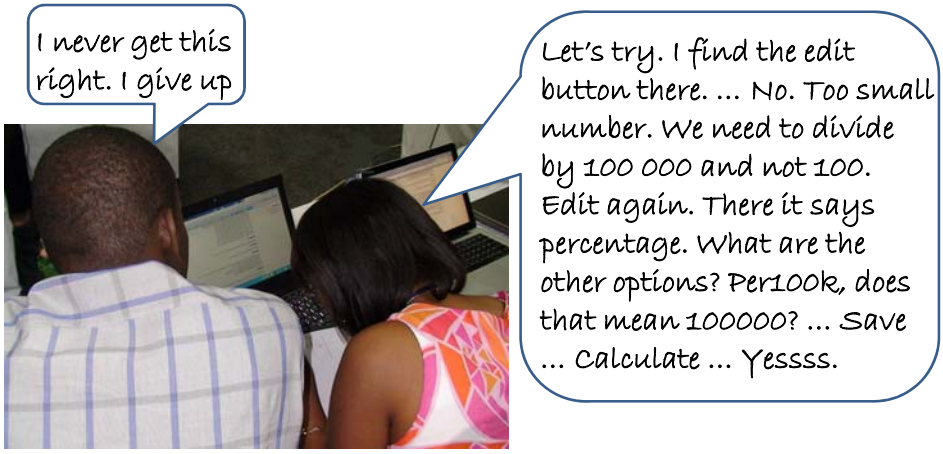


Self-efficacy

- Strength of one's belief in one's own ability to complete tasks and reach goals

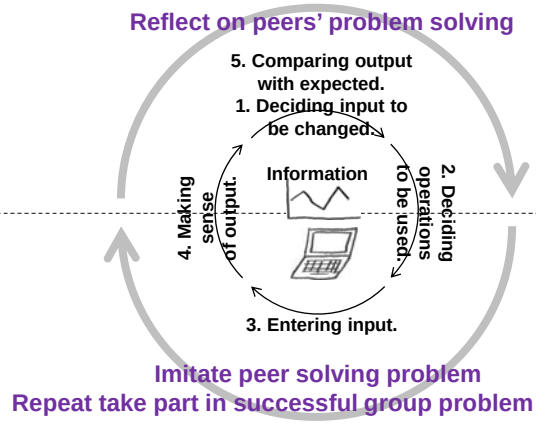


Watching a peer struggle and succeed is the best way of strengthening self efficacy

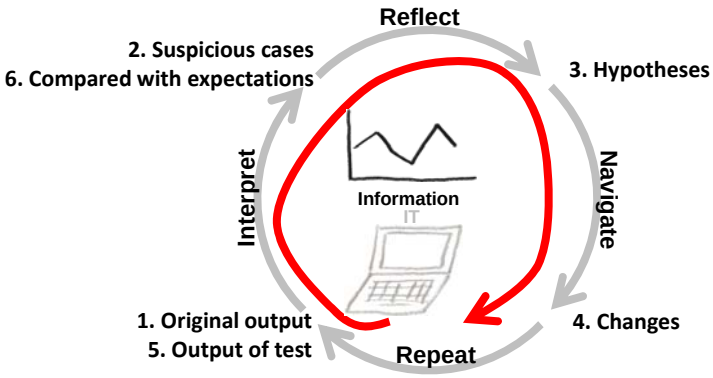
Improving self-efficacy

Understanding Self-efficacy

Self-efficacy



Debugging spreadsheets



See Grigoreanu et.al.(2012)

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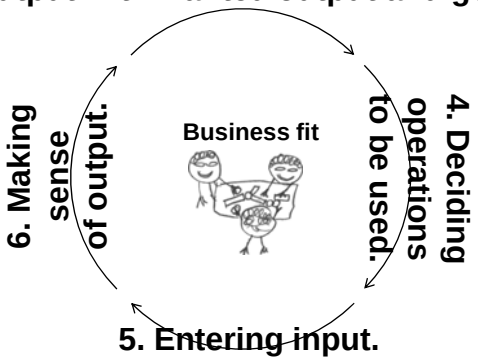
Work around

1. Observe that IT operation does not fit business goal
2. Determine wanted output
3. Compare wanted output with result of other IT operations

7. Compare output with wanted output and goal achievement



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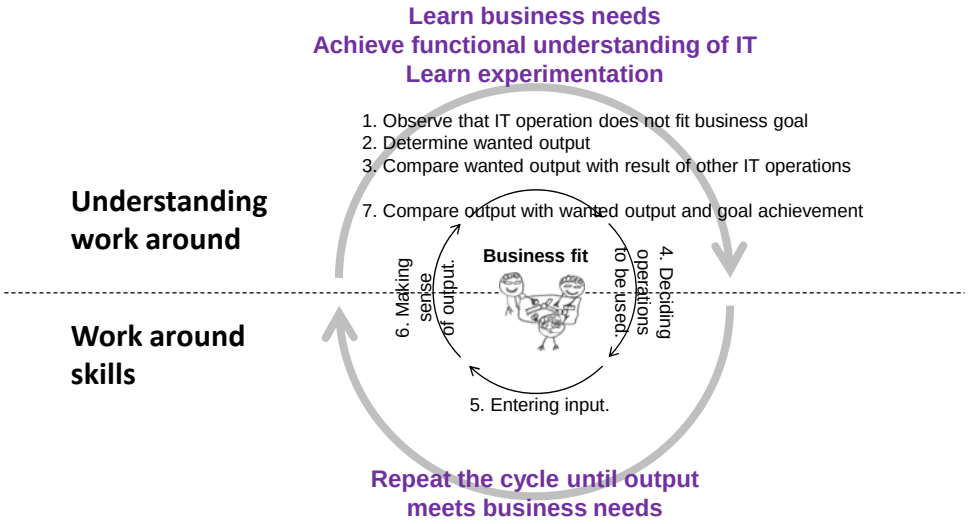
Learning work around



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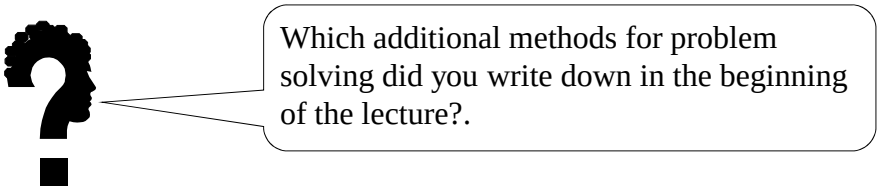
Misfits business–IT which require software people

- April 2
- Chapter 15. Mutual learning during fitting IT to business



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