Human-Computer Interaction

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Ground rules

- To keep disturbance to your fellow students to a minimum

  - Switch off your mobile phone during the lecture.
  - Arrive on time. If you are more than 15 minutes late, please wait until there is a break and copy the notes from a friend.
  - Keep talking, whispering and other background noise to a minimum.
  - Avoid engaging in entertaining activities with your laptop (watching a video during the class)

Ground rules

- To maximise learning
  - Avoid dual-task (writing e-mails and attending a class are incompatible activities).
  - Leave the mobile in your bag
  - Take notes during the lecture and revise them in the evening.
  - If there is something you don't understand, please interrupt me at any time to ask if I could clarify.
  - If you want to make a general remark, please wait until there is a natural break.
  - Participate!!!!

Notes taking
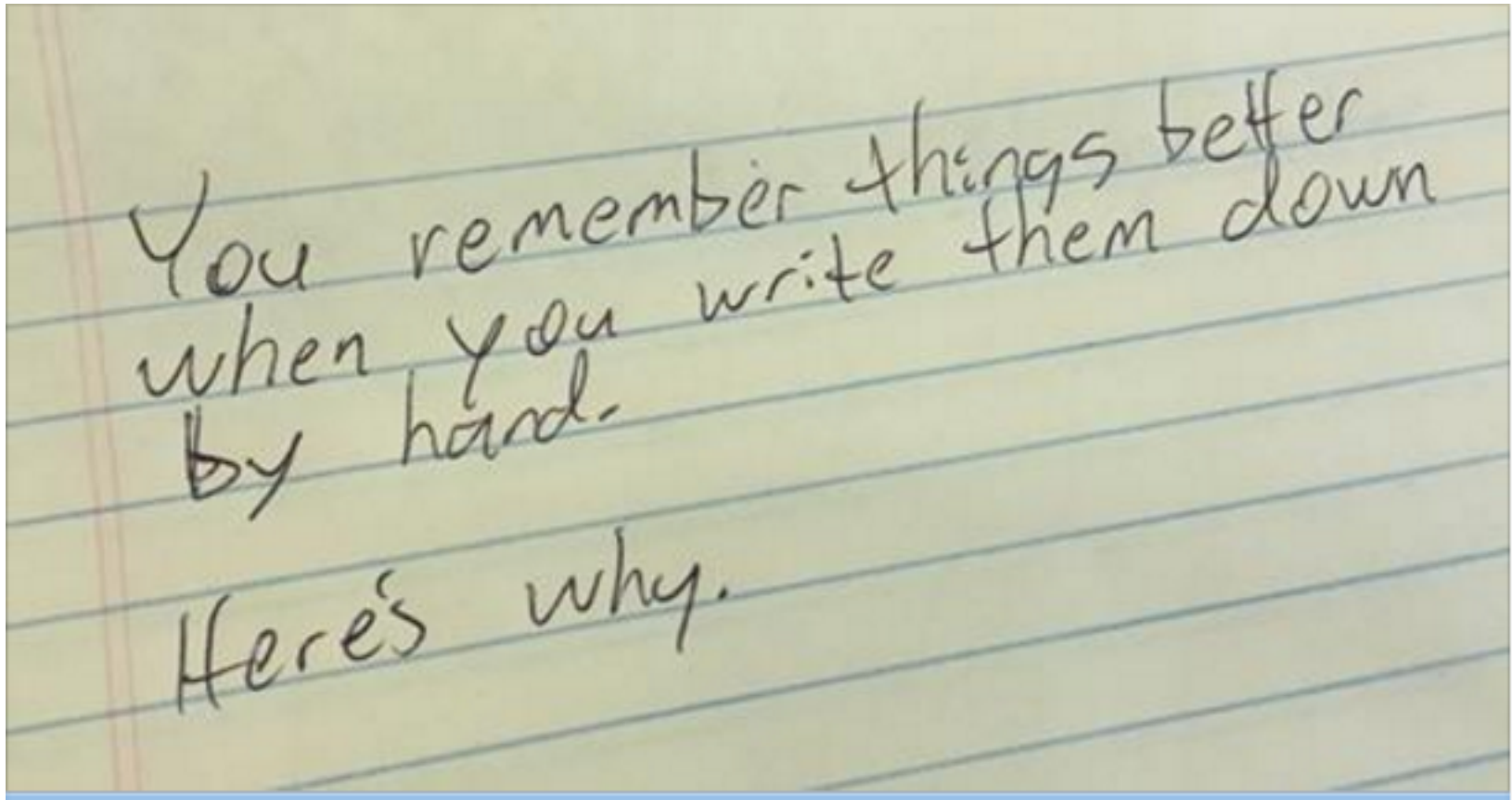
Why are notes useful?

- encoding hypothesis: when a person is taking notes, "the processing that occurs" will improve "learning and retention."

- external-storage hypothesis: people learn by being able to look back at their notes, or even the notes of other people.

Why are hand notes more useful?

- Typing people tend to try to take verbatim notes and write down as much of the lecture as they can

- Writing: people are more selective —you can't write as fast as you can type -- that extra processing benefit them
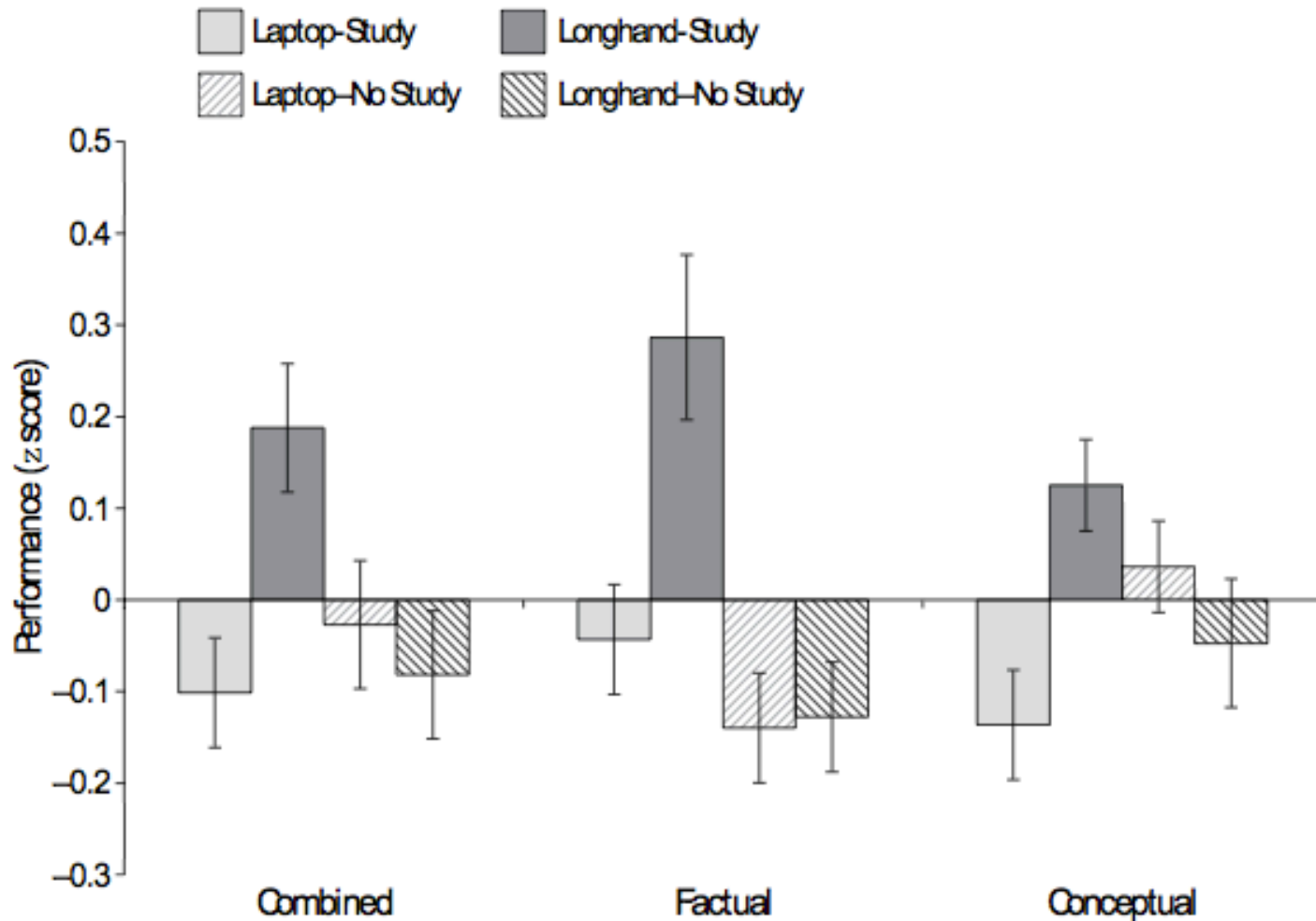
Fig. 5. Mean z-scored performance on factual-recall and conceptual-application questions as a function of note-taking condition and opportunity to study (Study 3). Combined results for both question types are given separately. Error bars indicate standard errors of the mean.

Human-computer interaction

"a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them"
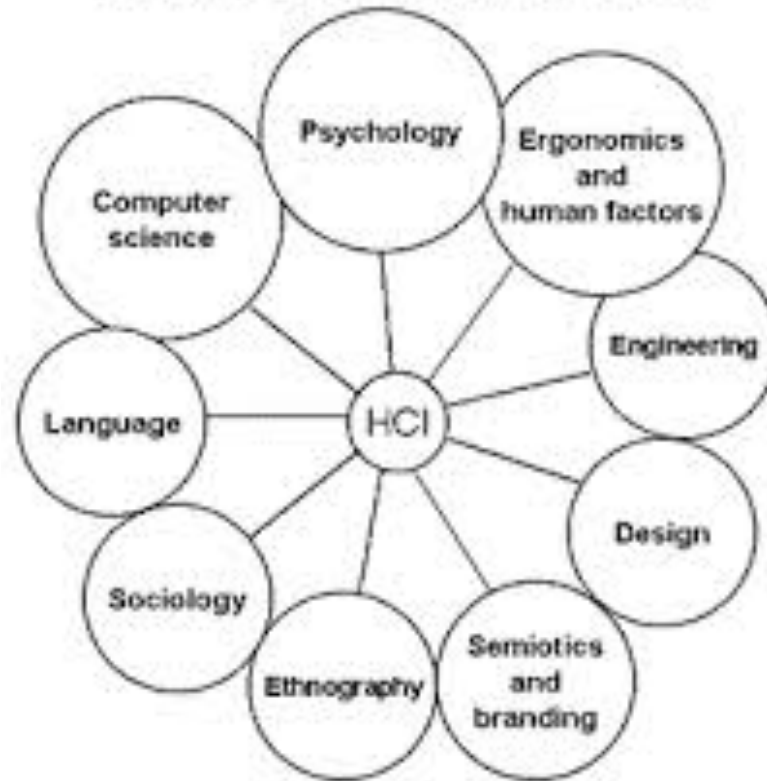
(ACM SIGCHI, 1996, p.5)

Goals of HCI

- "To develop or improve the safety, utility, effectiveness, efficiency, and usability of systems that include computers"

  – Interacting with computers 1989, p. 3

Disciplines contributing to HCI

The Field of HCI
(Human Computer Interaction)

What knowledge are required?

- "*Psychology and cognitive science to give her knowledge of the user's perceptual, cognitive and problem-solving skills; ergonomics for the user's physical capabilities; sociology to help her understand the wider context of the interaction; computer science and engineering to be able to build the necessary technology; business to be able to market it; graphic design to produce an effective interface presentation; technical writing to produce the manuals, ...*" [10]

Dix, A., Finlay, J., Abowd, G. Beale, R. (2004). *Human–Computer Interaction* (3rd edition). Prentice Hall.

What is a user interface?

?

Evolution

- **50s** - Interface at the hardware level for engineers - switch panels
- **60-70s** - interface at the programming level - COBOL, FORTRAN
- **70-90s** - Interface at the terminal level - command languages
- **80s** - Interface at the interaction dialogue level - GUIs, multimedia (http://www.cs.cmu.edu/~amulet/papers/uihistory.tr.html)
- **90s** - Interface at the work setting - networked systems, groupware
- **00s** - Interface becomes pervasive
  - RF tags, Bluetooth, mobile devices, consumer electronics, interactive screens, embedded technology
- 10s - Interface disappears
  - Focus on tasks, experiences, emotions, social connections, beauty

Interaction Design

- "the design of spaces for human communication and interaction"
  - Winograd (1997)
- designing interactive products to support people in their everyday and working life

- Creating (user) experiences which fit, extend, and enhance the way people work, communicate and interact

- Increasingly, more application areas, more technologies and more issues to consider when designing 'interfaces'

Paradigm change

- ## Technology-driven design
  - Technology influences the design of the interface which give the user the functionality and interaction mechanisms of the system

- ## User-centered design
  - User requirements define the functionality of the interface which runs the design of the technology

Module aims

- Present the techniques and issues involved in HCI to promote usable and engaging interaction design

- Give examples on how to
  - Understand and document users needs and goals
  - translate user needs/goals into design
  - evaluate the quality of design alternatives

Reading List

- CORE READING:

  Sharp, H., Rogers, Y., & Preece, J. (2014). <u>Interaction Design: beyond human-computer interaction</u>. New York: John Wiley & Sons, Inc. 3rd

- Gamberini, L. Chittaro, L. and Paternò, F. Human-Computer Interaction, Pearson, 2012.

    - NOTE THE HANDOUTS AND LECTURE NOTES DO NOT REPLACE THE CORE READING

On-line resources

- http://www.sigchi.org/
  - ACM special interest group

- http://www.id-book.com/
  - companion website for Preece et al.'s book

- http://www.baddesigns.com/
  - illustrated examples of things that are hard to use because they do not follow human factors principles

- http://Interaction-design.org
  - Open source knowledge repository

Assessment

- Written Examination – multiple choices and open questions

- Coursework 70%
  - A practical exercise of UCD during the teaching Semester
  - Group project with individual activities and written report
  - Presentation of the project during Semester time
  - Fixed delivery dates

Groups

- 4 people each
- Subscription will be opened on the course web-site 19/09 and closed on 24/09
- Active, constant participation required

Wrapping up

- HCI definition

- Interaction design

- Module presentation
  - Write your reflections (10 minutes)