IT, work environment and health

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http://www.it.uu.se/research/hci
IT and the work environment
Stress at work

I said search!!
Successful introduction of IT...

- Requires that users are not harmed, not exposed to health risks...
- We must create good, healthy and sustainable work, where people can be efficient and where they like to stay....
Physical problems - pain

Have problems, pain daily when working with computers

> 50% of the day

- Ryggens nedre del
- Händer/handleder
- Armbåge/armbågar
- Nacke/skuldror/axlar

Kvinnor vs Män
Physical problems

- E.g. pain in arm, shoulder, back, stomach, head, sleeping disorders ….
- …is not only caused by physical load, but also by psychosocial or cognitive load and by stress!
- E.g. a user interface that “overloads” our short term memory can cause physical pain and damage.
Work environment

- **Physical** - ergonomics
- **Psychosocial** – relations, support etc
- **Cognitive**
  - You are not “allowed” to work efficiently
  - Something prevents us from using our competencies and skills in an efficient way.
  - Are extremely important to understand in computer supported work.
Cognitive work environment problems

- Give some examples....
- Why do they occur?
- How can they be prevented?
Ergonomics

- Much is known....
Ergonomics
The law?

- **Swedish work environment law:** all work must be characterized by:
  - variation,
  - social contact and cooperation,
  - consistency between work tasks,
  - possibilities for personal and professional development,
  - self control,
  - professional responsibility.
Laws and regulations

- Arbetsmiljöverkets (AV) föreskrift ASF 1998:5, "Arbete vid bildskärm" (work at computer screens):

- Rules and advice concerning physical and psychosocial factors when working with computers, including software and IT-systems.

- 7§: "Arbete vid bildskärm som är starkt styrt eller bundet i fysiskt eller psykiskt avseende eller är ensidigt upprepat får normalt inte förekomma." (Work that is strongly controlled, in a physical or psychic (mental) way, or is monotonously repeated, must not normally occur.)
10§ systems and programs must:

- Be properly designed in relation to users and user tasks.
- Be easy to use, adaptable to users’ knowledge and skills,
- Give feedback about performed work,
- Show information in format and pace adapted to the users’ needs.
- Special considerations should be taken to ergonomic principles regarding the ability to perceive, understand and process information.
- Monitoring of the employees’ work via the system must not be done without the subject’s knowledge.
Look at some computer systems......

- Do they meet requirements in relation to laws and regulations?
In many work situations, the demands are high...

...experience heavy loads and react with stress!

We are in many respects still a cave man..
A good and sustainable work

- Karasek & Theorell:

![Diagram showing the relationship between demands, control, support, and a good work environment. The diagram illustrates that high control and high support lead to a good work environment.](http://www.it.uu.se/research/hci/)
A bad, unhealthy work
How do we feel at work?

- (Increased) Use of computers often leads to (experienced) increased demands.
- This must be combined with increased self control and social support.
- Today we often see the opposite! Experienced self control and social support is decreased.
- This will result in work environment problems.
Health aspects

- “Chefen kan göra dig sjuk”
- Nyberg, Anna: *The Impact of Managerial Leadership on Stress and Health Among Employees*


(This is about the effects of bad leadership. Can the results be relevant for bad computer systems?)
Demands, control and support?

- Give examples of demand aspects.
- Give examples of self control aspects.
- Give examples of social support aspects.
Stress

- The unbalance between demands and possibilities (resources) to live up to these demands.
- Long term stress is extremely harmful. The result can be irreversible damage.
- Stress requires recovery periods.
- Stress amplifies other (e.g. physical) problems.
The largest work environment problem

- ...is to feel that you are not doing a good work.
- Nothing must prevent us from doing so!
To measure things

- Can we e.g. measure demand, control, support?
- Yes, one example.
Hur länge arbetar du i genomsnitt med datorstöd?

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>After</th>
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<tbody>
<tr>
<td>Mindre än 1 tim/dag</td>
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<tr>
<td>1 - 2 tim/dag</td>
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<td>2 - 4 tim/dag</td>
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<td>4 - 6 tim/dag</td>
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Anser Du att systemet gör att Du kan arbeta effektivare?

Future

Now

- Mycket effektivare
- Något effektivare
- Varken eller
- Något mindre effektivt
- Mycket mindre effektivt
Changes in positive factors

Vad anser Du att införandet av det nya systemet inneburit beträffande

- Ansvar som innebär utveckling
- Möjligheter att påverka egna arbetsförhållandena
- Omväxling i arbetet
- Möjlighet att i arbetsgruppen påverka planering
- Egen kontroll av arbetsprestationen

Minskat: Ingen förändring: Ökat:

http://www.it.uu.se/research/hci/
Changes in negative factors

Vad anser Du att införandet av det nya systemet inneburit beträffande

Andras kontroll av arbetsprestationen
Krav på uppmärksamhet och koncentration
Ansvar som innebär påfrestning

![Bar chart showing changes in negative factors](http://www.it.uu.se/research/hci/)
Changes in self control

Hur uppfattar du datorns roll?

Före
- Alltid som styrende: 30%
- Oftast som styrende: 50%
- Ibland som styrende: 15%
- Sällan som styrende: 5%

Efter
- Alltid som styrende: 30%
- Oftast som styrende: 50%
- Ibland som styrende: 15%
- Sällan som styrende: 5%

Alltid som styrende  Oftast som styrende  Ibland som styrende  Sällan som styrende
The example

- The introduction of the new system resulted in severe work environment problems.
References, sources

- See the separate document listing several different sources of information!
Assignment (No 2)

Work environment and IT-supported work

- Select and define the assignment subject (see suggestions below)
- Perform the assignment work.
- Write a report
- Present your work orally (Thursday, Nov 25)
Assignment examples

- Study a workplace and analyse the work environment (e.g. somebody working with administration at the IT-department...). Observations, interviews, different work environment aspects....

- Read a PhD thesis on the subject and write a short summary and analysis.

- Study a work environment report in detail and analyse it.
Assignment examples cont.

- Search for work environment statistics from different sources and write a report about the present situation (in Sweden or another country. Or compare basic data from different countries).
- Compare the Swedish work environment law with similar laws from other countries. How are they applied in practice?
- Write a (theoretical, or apply it to your assignment 1??) report on the possibilities to base a work environment analysis on the result from a vision seminar process. (Preliminary methods exist – ask Bengt).
Assignment report

- Write a proper scientific report (even if it is short)
- Background, problem, theory, method, activities, results, evaluation, discussion, references...
- The report can be handed in as paper or electronically
- Collect all your assignment reports in a folder!