research and innovation

gathering information

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STRUCTURE + DIVERGENCE = INNOVATION

it is wise to learn from your own mistakes

it is shrewd to learn from other people's mistakes

other people's work

• what they write
  books, articles, manuals, notes, doodles

• what they say
  interviews, discussion, news footage

• what they do
  observation

• what they make
  software, organisations, desks, notice boards

finding references

goinging started

• keyword searches
  - web, bibliographic databases, ACM/IEEE

• what's available
  - library, your bookshelf, other people

• key sources
  - main conferences, specialist portals, home pages of 'experts'

bibliographies

going backward in time

citations

going forward
citations

- library (book/CDROM)
- ACM digital library
- citeseer
  citeseer.nj.nec.com

broadening out

- place of publication
  - conference, journal
- authors' home pages
- back-and-forward citations

filtering references

be selective!
- keywords (unreliable)
- abstracts
- skim read
- citation count
- well-known expert?
  - relevance
  - authority

recording references

what
- details (title etc.)
- keywords (your own)
- mini abstract
- key points
  - don't just cut and paste from the web!
where
- card index
- word processor file
- standard database
- bibliographic db
- web pages

talking to people – who

- client
- user
- supervisor/tutor
- other staff
- friends and contacts

talking to people – what

you don't know what you're doing!

professional – does it
academic – knows about it
Artefacts
Embody
Experience

• what is good about it?
  why is it good?
• what is bad about it?
  why is it bad?
• why do it this way?

Artefacts
Embody
Theories

e.g., mouse ⇒ hand/eye control better than typing

deep understanding helps
  • combine ideas
    avoid the crocaphants
  • change context
    e.g., interfaces for the blind
  • improve and correct

Artefacts
Embody
Assumptions

solutions depend on context
  e.g., speed vs. space for algorithms