Effective Study Skills

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Objectives of Workshop

• Learn active, deep processing strategies
• Explore the different purposes for study tasks
• Learn about active reading and note making strategies
• Practise using learning strategies
School vs College
You can’t cover everything

Plan in advance – have a strategy
I’m just going to the library for 4 hours…. (I’ll work out what I’ll study when I get there)

What’s the problem with this statement?
School | College
--- | ---
Dependent on teacher | Up to you to make college:
Homework | - interesting
          | - active
Active studying means

1. Working with the material to try to build understanding
2. Find a way process the information in a deep and meaningful way
How?

Have a framework

– Think about the purpose of the study task
– Consider the best way to approach it
– Reflect and review

PSR

– Purpose – why?
– Strategy – how?
– Review – check!
Active Learning

Hands-on Learning
Set up a Study Group
See your subject everywhere

Engage in Seminars
Get to Know Staff
Active Note-taking
Discussion (5 mins)

1. How do you study (reading/notes)?
2. How do you read?
3. How do you take notes?
Reading
Good Reading is like Interrogation
Get reading – actively!

Purpose

• Strategies to suit:
  – Scanning
  – SQ3R
  – Note making

• Review
Ebbinghaus Forgetting Curve

Schedule Time for Reviews
Get Thinking - Reading

1. Asking questions
2. What is the point of view of author?
3. Evaluate evidence
4. Forming opinions
Being Selective

- Ask lectures/tutors what is most relevant
- Be alert for hints and clues
- Ask fellow students
- Ask students in years ahead
- Share reading
- Preview or skim before in-depth reading
Reading List:

Judd, C., Smith, E. and Kidder, L. 1991
300.Jud (1 copy)

Moser, C. A. and Kalton, G. 1971
300.723 Mos (10 copies)

Oppenheim, A. N. 1966, 1973
Questionnaire Design and Attitude Measurement. London.
011.422 Opp (3 copies)

Hoinville, G. Jowell, R. and associates, 1978
Survey Research Practice. London.
300.723 Hoi (1 copy)

Rose, G. 1982
301.072 Ros (4 copies)

Kurtz, N. R. 1983
Introduction to social statistics. London etc.
300.72 Kur (4 copies)

Blalock, H. M. 1960
Social Statistics. London
301.072 Bla (2 copies)

ESRI Reports: Read at least one of these research reports based on a social survey.
Taking Notes
Ok, I’m finding it hard to concentrate, I’ll make a good effort to make precise notes.
Notes

Source → Your Summary Notes → Review Notes → Exams
Or Essays
Types of Notes

1. Prose or summary
2. Outline or skeleton
3. Mind or concept maps
4. Cornell or 2 Column

How do you take notes?
Be careful with $\tan^{-1}$

Because $\tan^{-1}$ returns values between $-\frac{\pi}{2}$ and $\frac{\pi}{2}$, the formula $\arg(x+iy) = \tan^{-1}(y/x)$ only works if $x > 0$. This can cause problems in e.g. Qs 2vi and 10 of Complex Methods Sheet 1.

2vi Where is $u = \tan^{-1}\left(\frac{2xy}{x^2-y^2}\right)$ harmonic and find an analytic function whose real part is $u$.

First we determine where it is definitely not harmonic.

Consider the lines $y = \pm x$.

As $(x,y)$ approaches the line $y = x$ from below $(x,y > 0)$ (see picture), we have

$$\frac{2xy}{x^2-y^2} \to \infty,$$

so $u \to +\frac{\pi}{2}$.

If we approach from above, $u \to -\frac{\pi}{2}$, so $u$ is discontinuous. Similarly in the other quadrants.

So we assume $x^2 \neq y^2$. If $x = r\cos \theta, y = r\sin \theta$ then $u = \tan^{-1}\tan 2\theta$, which equals $2\theta$ provided $-\frac{\pi}{4} < \theta < \frac{\pi}{4}$. In this case, we can
The Art of Reading Actively

A. Active = purposeful, critical, questioning.

B. Look for Main Ideas
   1. Survey (SQ3R) for general ones (Ch 5)
   2. Read paragraphs for more specific ones
      a) Each para usually has one main idea.
      b) Usually in topic sentence (1st or last?)

C. Look for Important Details
   1. e.g. proof, example, support for main idea
   2. Usually at least one per main idea
   3. Which do I consider important?

D. In hunt for main idea and important details:
   1. Watch for signposts
      a) Visual (layout, etc.)
      b) Verbal (cue words)
   2. Study diagrams, etc.
   3. Don't ignore difficulties

E. Evaluate the text
   1. Be sceptical (Expect the author to prove)
   2. Compare with my own experience
   3. What do I get from it?
   4. Discuss with other students

F. Make Notes:
   1. If I need them (for my purposes)
   2. At Recall stage (if SQ3R)
   3. Compare with other students

G. Concentrate:
   1. By seeking understanding (not memorisation)
   2. and see Chapter 4 hints.

H. Vary reading speed:
   1. according to purpose
   2. but not at expense of understanding
Concept Maps

Photosynthesis

- **CO₂** taken in via stomata
- **H₂O** split to give H atoms + oxygen
- **Sugars** from CO₂ + H atoms
  - Absorbs red & blue light
  - Traps energy in chloroplasts

Converted to starch
Motion repeats force is proportional to displacement and in the opposite direction (as \( F = ma \) this is also true for acceleration.

\[ a = -\omega^2 y \]

Also, \( F = -\omega^2 y \) when the force is not changing e.g. only force acting is gravity.

Vectors \( F \) and \( a \) for pendulums and springs.

Equations starting at the equilibrium position, \( y \) increasing.

- \[ y = A \sin \omega t \]
- \[ v = A \omega \cos \omega t \]
- \[ a = -A \omega^2 \sin \omega t \]

Starting at maximum displacement.

- \[ y = A \cos \omega t \]
- \[ v = A \omega \sin \omega t \]
- \[ a = -A \omega^2 \cos \omega t \]

Period = time for one oscillation (left to right and back again or up, down and back up).

Know what affects the period of each e.g. pendulum \( T \) not affected by mass.

Period for a pendulum:

\[ T = 2\pi \sqrt{\frac{L}{g}} \]

Period for a spring:

\[ T = 2\pi \sqrt{\frac{m}{k}} \]

Energy is added by applying a force. Gives large amplitude if it is in tune with natural frequency.

Energy is constant:

\[ E_k + E_p = \text{constant} \]

\[ E_k = \frac{1}{2} m v^2 \]

\[ E_p = \frac{1}{2} k y^2 \]

Gravitational potential energy for a pendulum:

\[ E_p = m g \Delta h \]

Total energy is constant:

\[ E_k + E_p = \text{constant} \]

\[ E_k = \frac{1}{2} m v^2 \]

\[ E_p = \frac{1}{2} k y^2 \]

Total energy = max kinetic energy = max potential energy.
The Cornell Note-taking System

Cue Column
Write Keywords here

Notetaking Column
Write brief notes here as you are reading a book OR during a lecture

Summary
Write a short summary of the page here
### Types of Matter

1. **Solids**
   - Have a definite shape
   - Have a definite volume

2. **Liquids**
   - Do not have a shape
   - Have a volume

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**Summary**

Write a short summary of the page here

Further information

- W: http://student-learning.tcd.ie
- P: 896-1407
- E: student.learning@tcd.ie
- Academic Skills for Successful Learning – Blackboard Module
- Drop-In Sessions – No appointment necessary
  - Tuesdays 1-3pm
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Any Questions?