SLD

Student Learning Development

Effective Study Skills

School vs College

School

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)

School

Dependent on teacher

Homework

College

Up to you to make college:

-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?

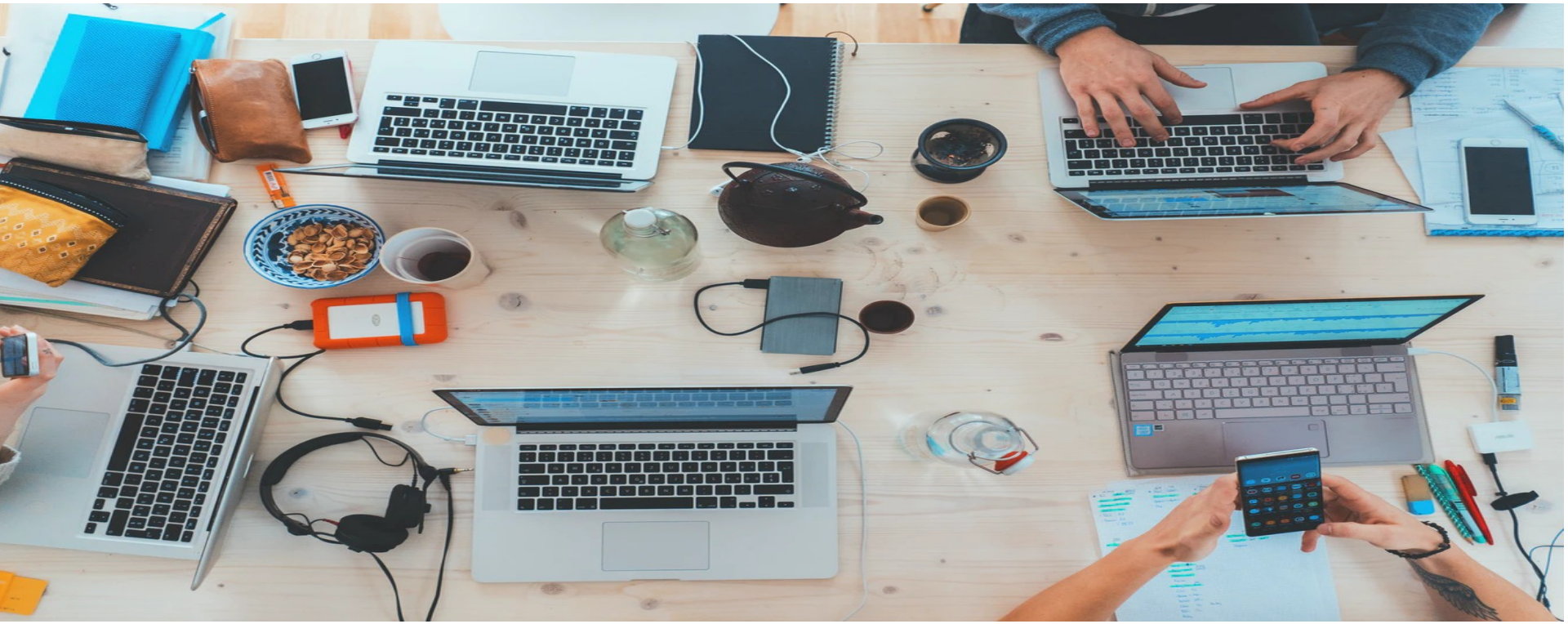
Have a framework

- 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

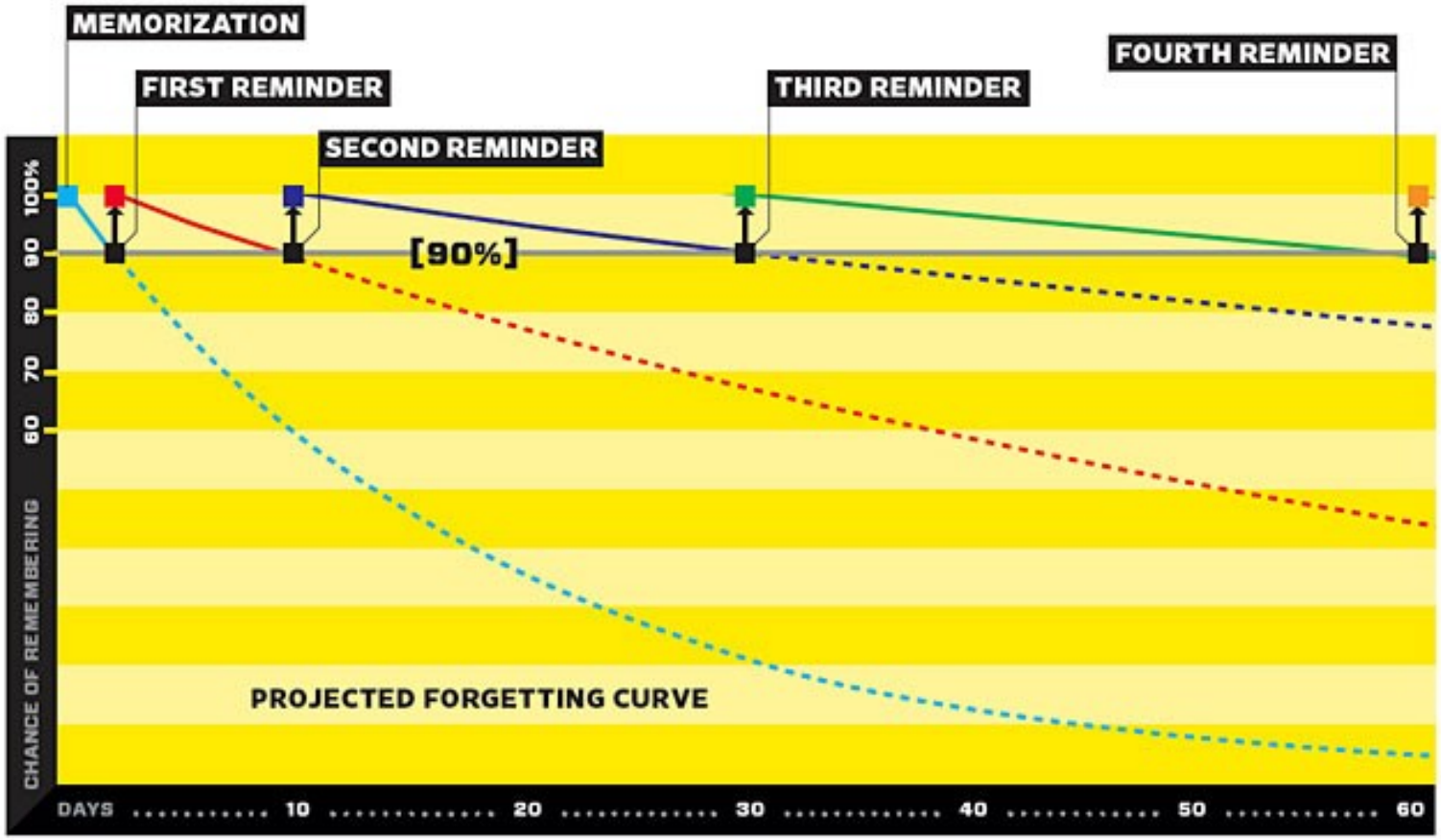
Good Reading is like Interrogation

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

(2)

Reading List:

Judd, C., Smith, E. and Kidder, L. 1991
Research Methods in Social Relations. 6th ed. London.
300.Jud (1 copy)

Moser, C. A. and Kalton, G. 1971
Survey Methods in Social Investigation. London.
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
Deciphering Sociological Research. London.
301.072 Ros (4 copies)

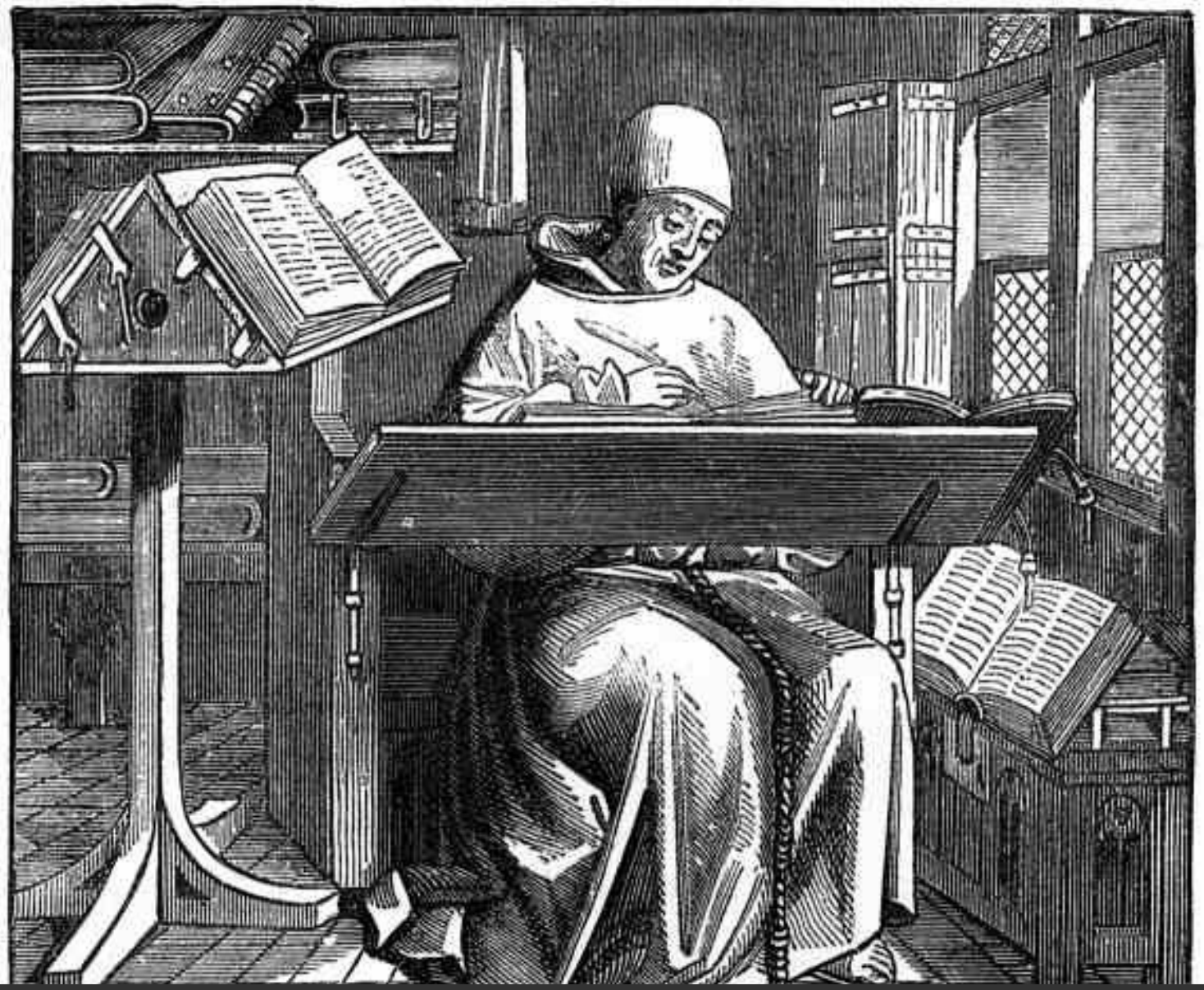
Kurtz, N. R. 1983
Introduction to social statistics. London etc.
300.72 Kur (4 copies)

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.

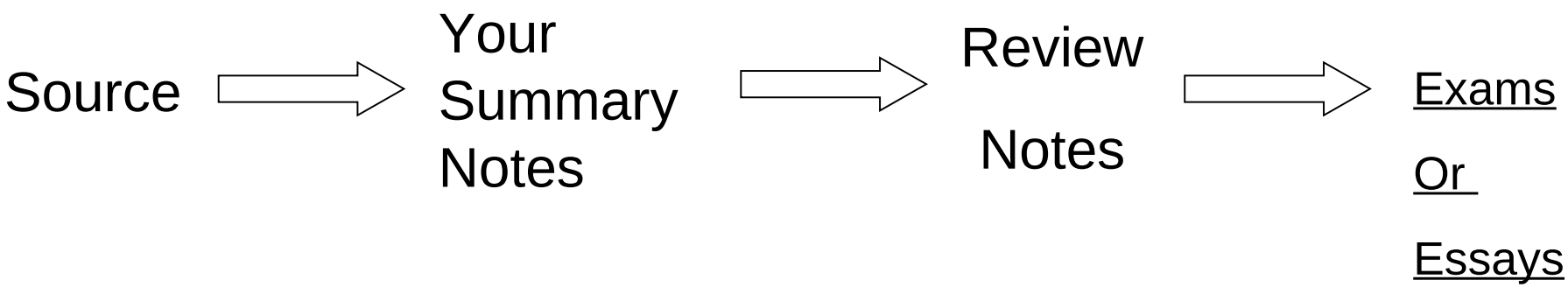
Taking Notes

Ok, I’m finding it hard to concentrate, I’ll make a good effort to make precise notes.



Perfect Copy

Notes



You want to be looking at questions

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?

Summary

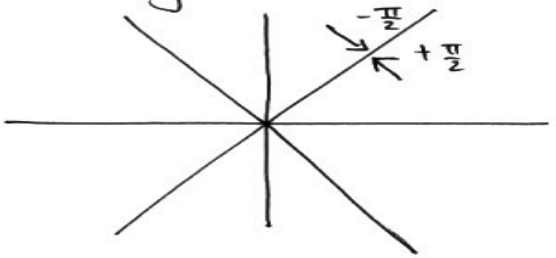
Be careful with $\tan^{-1}$

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 $\frac{2xy}{x^2-y^2} \longrightarrow \infty$, so $u \longrightarrow +\frac{\pi}{2}$.

If we approach from above, $u \longrightarrow -\frac{\pi}{2}$, 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 2θ provided $-\frac{\pi}{4} < \theta < \frac{\pi}{4}$. In this case, we can take $f(z) = -2i\log z$, where $\log z = \log|z| + i\arg(z)$, $-\pi < \arg(z) < \pi$ is the principal branch. Then $f(z) = -2i\log r + 2\theta$, so $\mathrm{Re}\, f(z) = u$. u is harmonic for $-\frac{\pi}{4} < \theta < \frac{\pi}{4}$.

If $\frac{\pi}{4} < \theta < \frac{3\pi}{4}$ then $u = 2\theta - \pi$, so consider $f(z) = -2i\log z - \pi$.

If $\frac{3\pi}{4} < \theta < \frac{5\pi}{4}$ then since $u(x,y) = u(-x,-y)$, we can consider $f(z) = -2i\log(-z) = -2i\log r + \underbrace{2(\theta-\pi)}_{=u}$

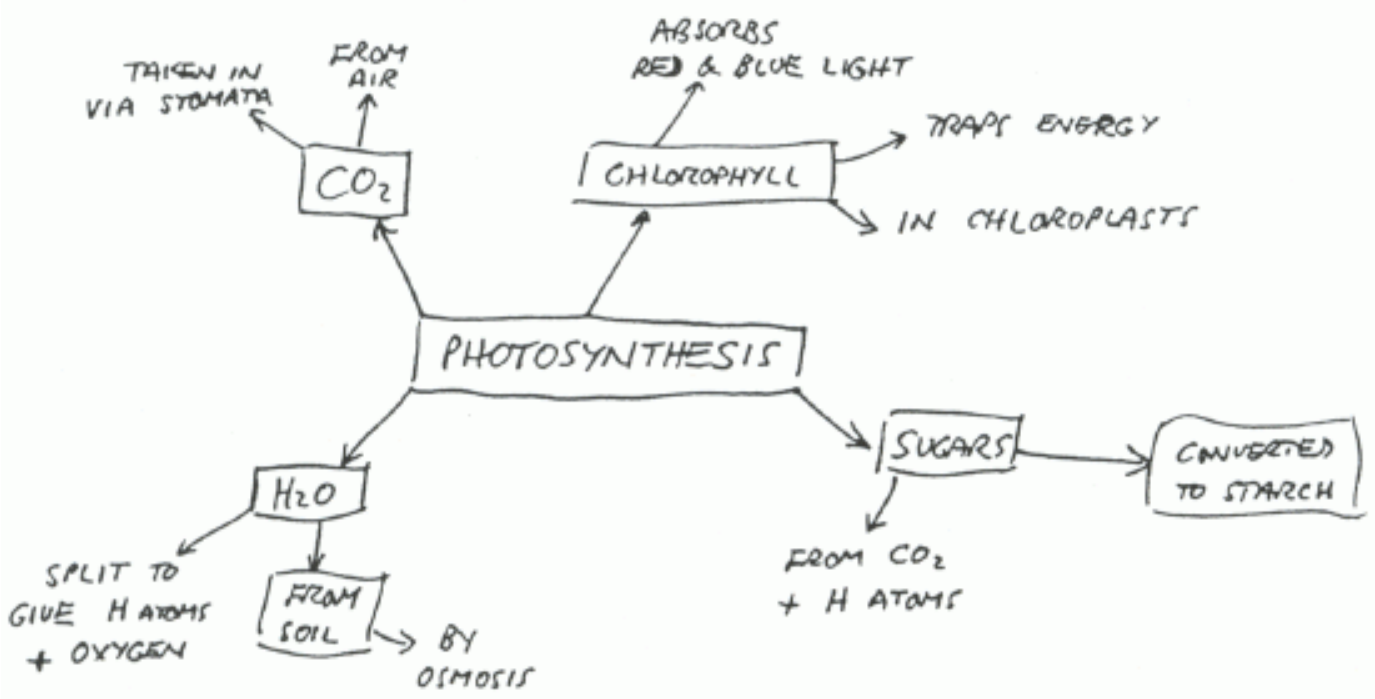
The case $\frac{5\pi}{4} < \theta < \frac{7\pi}{4}$ can be treated similarly.

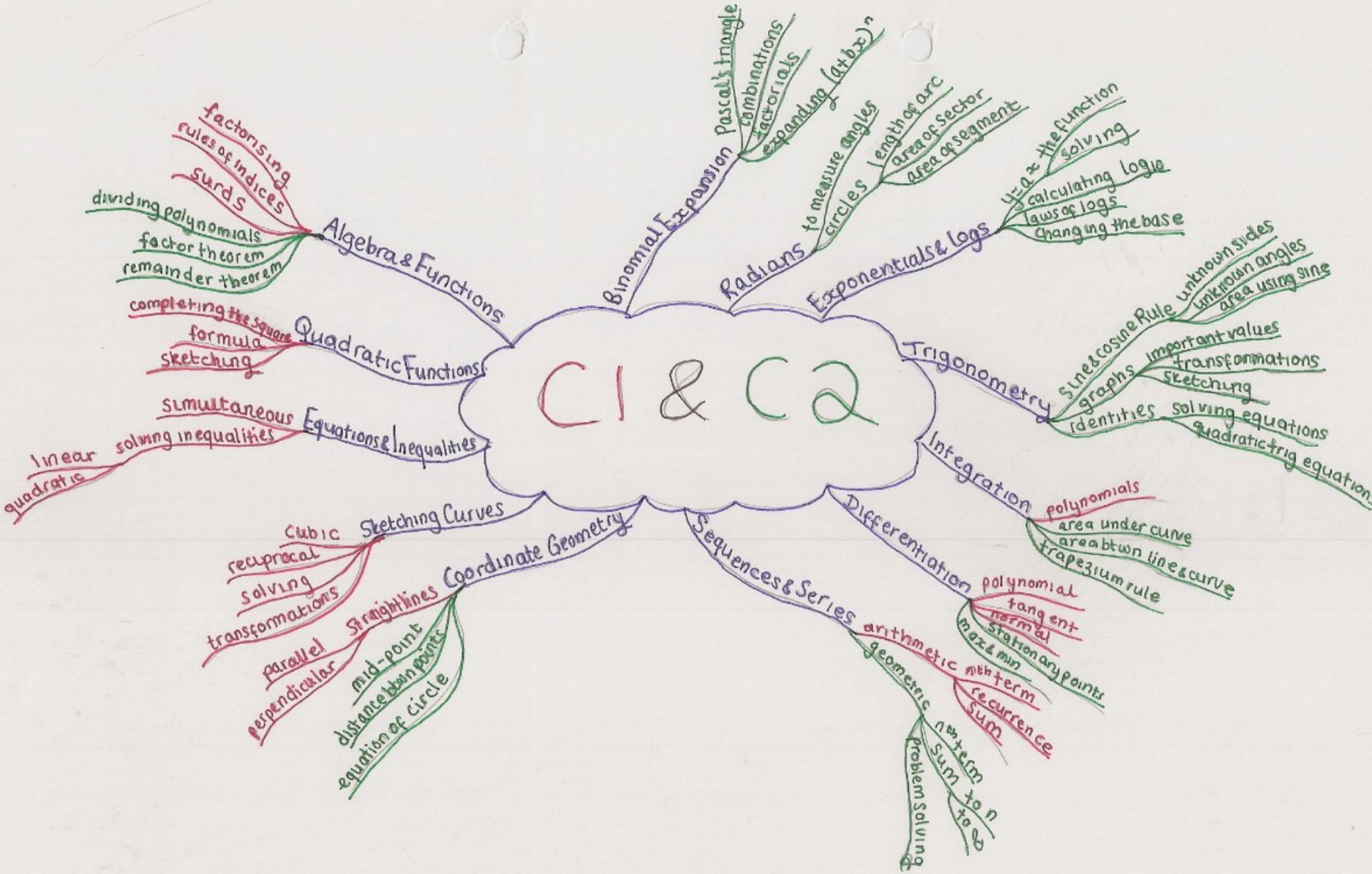
Outline

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 (clue 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 (of 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




C1 & C2
Algebra & Functions
factorising
rules of indices
surds
dividing polynomials
factor theorem
remainder theorem
Quadratic Functions
completing the square
formula
sketching
Equations & Inequalities
simultaneous
solving inequalities
linear
quadratic
Sketching Curves
cubic
reciprocal
solving
transformations
Coordinate Geometry
straight lines
parallel
perpendicular
mid-point
distance between points
equation of circle
Binomial Expansion
Pascal's triangle
combinations
factorials
expanding (a+bx)^n
Radians
to measure angles
circles
length of arc
area of sector
area of segment
Exponentials & Logs
y=a^x the function
solving
calculating logs
laws of logs
changing the base
Trigonometry
sine & cosine Rule
unknown sides
unknown angles
area using sine
graphs
important values
transformations
sketching
identities
solving equations
quadratic trig equations
Integration
polynomials
area under curve
area btwn line & curve
trapezium rule
Differentiation
polynomial
tangent
normal
stationary points
max & min
Sequences & Series
arithmetic
nth term
recurrence
sum
geometric
nth term
sum to n
sum to ∞
problem solving

Mind Maps

SHM

Definitions

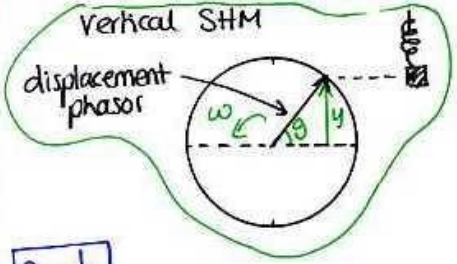
Motion repeats

Force is proportional to displacement, and in the opposite direction (as $F=ma$ this is also true for acceleration)

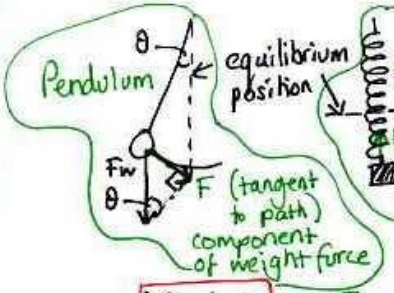
$a = -\omega^2 y$ and as $F=ma$ also $F = -\omega^2 y \times m$

NOT SHM if the force is not changing
eg only force acting is gravity

Vertical SHM



Pendulum



Spring

Vectors

For F, v, a, y for pendulums and springs

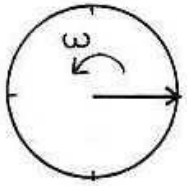
F and a opposite direction to y

Reference Circle

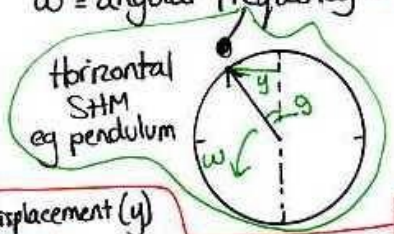
$f = \frac{1}{T}$

$\omega = 2\pi f$

$\omega = \frac{\Delta\theta}{\Delta t}$



ω = angular frequency



Equations

These can be proved by using the reference circle.

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

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

Maximums

from equations max when $\cos\omega t$ or $\sin\omega t = 1$

$y = A$

$v = A\omega$

$a = A\omega^2$

Period

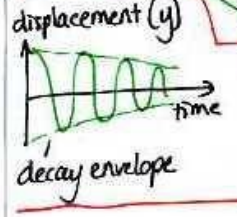
= time for one oscillation (left to right and back again OR up, down and back up)

$T = 2\pi\sqrt{\frac{L}{g}}$ pendulum

$T = 2\pi\sqrt{\frac{m}{k}}$ spring

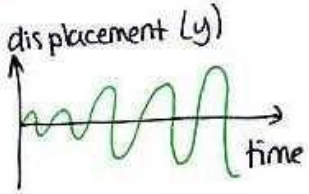
Know what affects the period of each eg. pendulum T not affected by mass

Damping

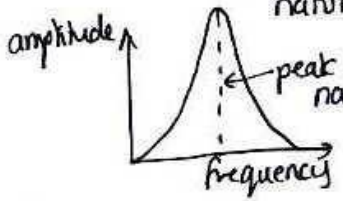


Due to energy being converted to heat, because of friction & air resistance.

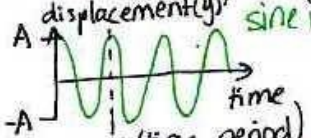
Resonance



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



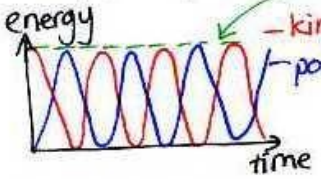
Graphs



gradient of y v.t graph gives velocity

sine wave

$E_p = \frac{1}{2}ky^2$ $E_{K(LIN)} = \frac{1}{2}mv^2$ $\Delta E_p = mg\Delta h$

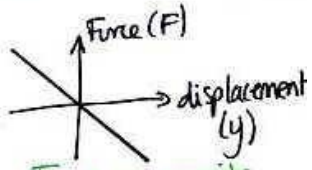


Total energy is constant $E_T = E_K + E_P$

gravitational potential for a pendulum

elastic potential for a spring

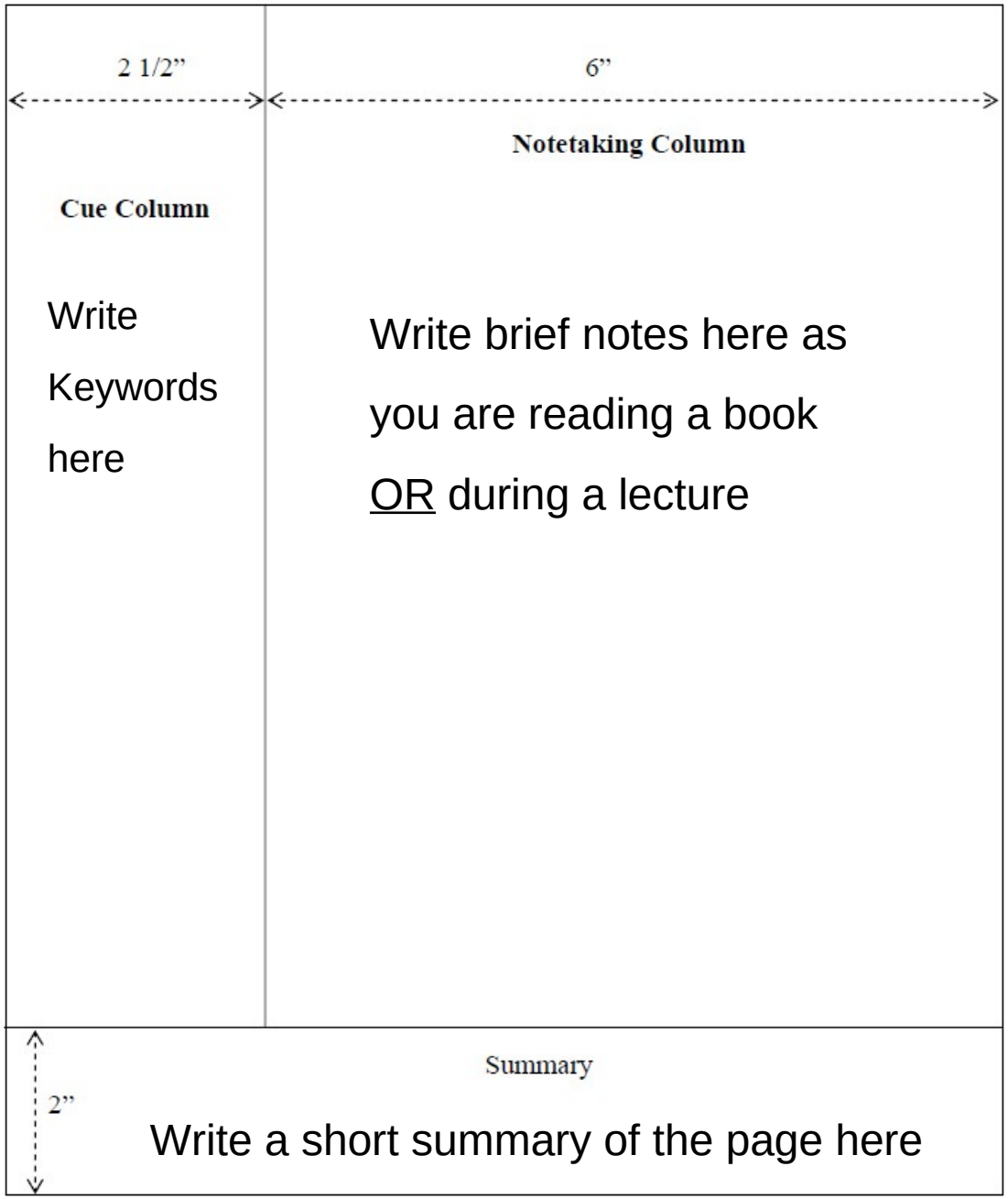
Total energy = max kinetic energy = max potential energy



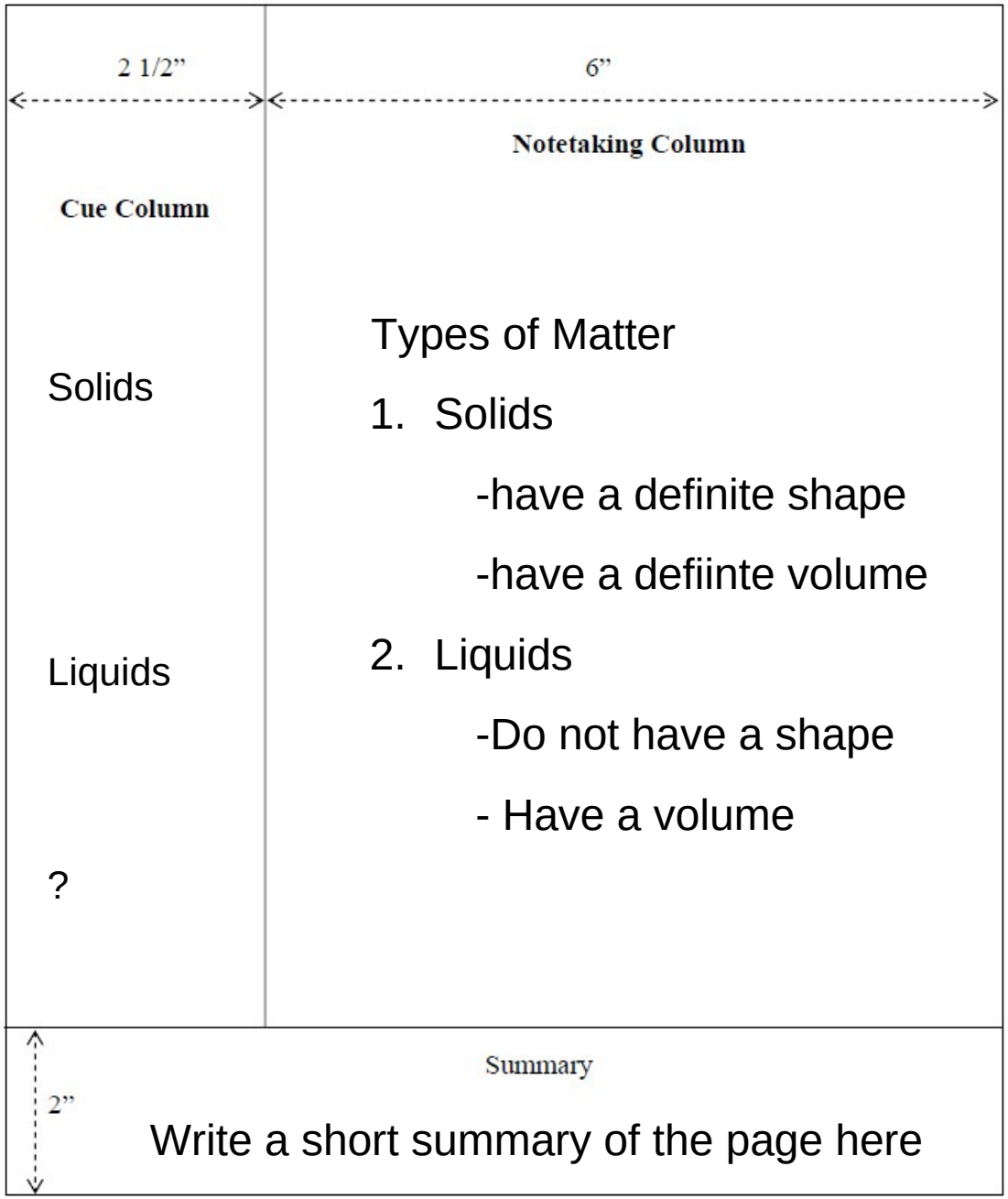
Force in opposite direction to displacement

?

The Cornell Note-taking System



The Cornell Note-taking System



Executive Summary

A

Short summary (paragraph)

How convincing did you find the author's argument?

B

What are the 4 honest signals?

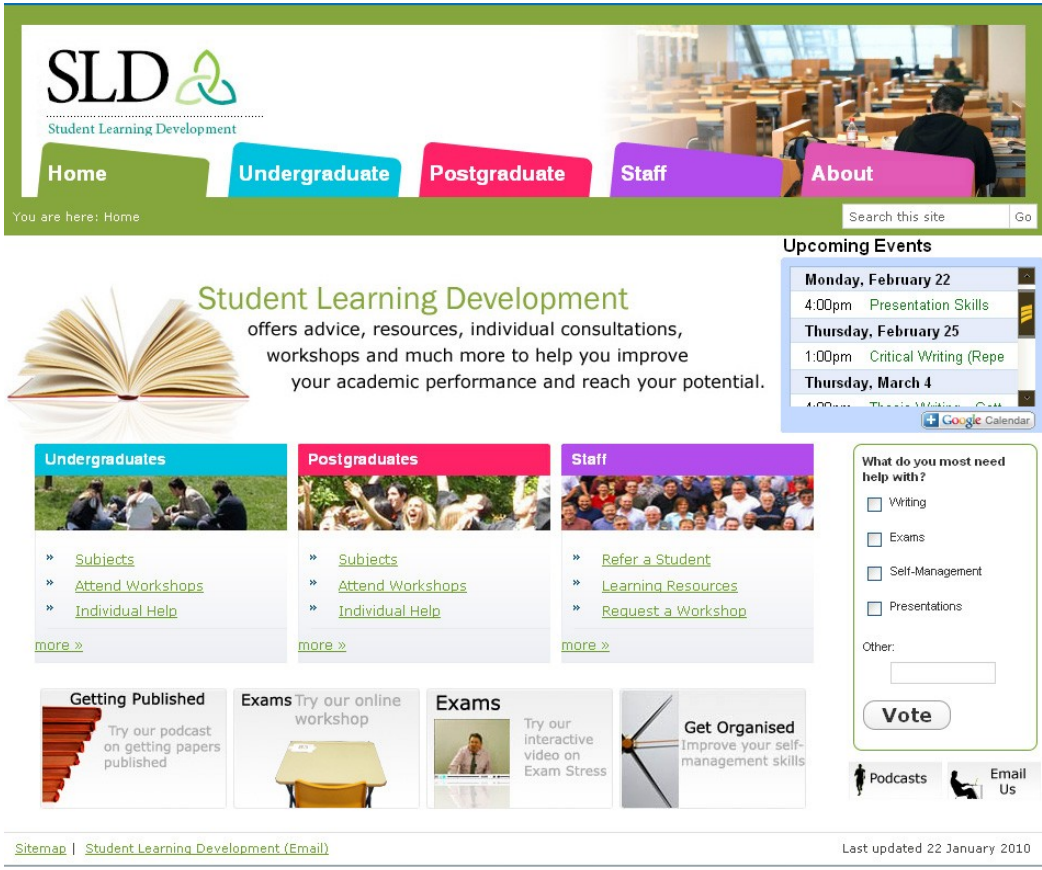
Briefly describe them.

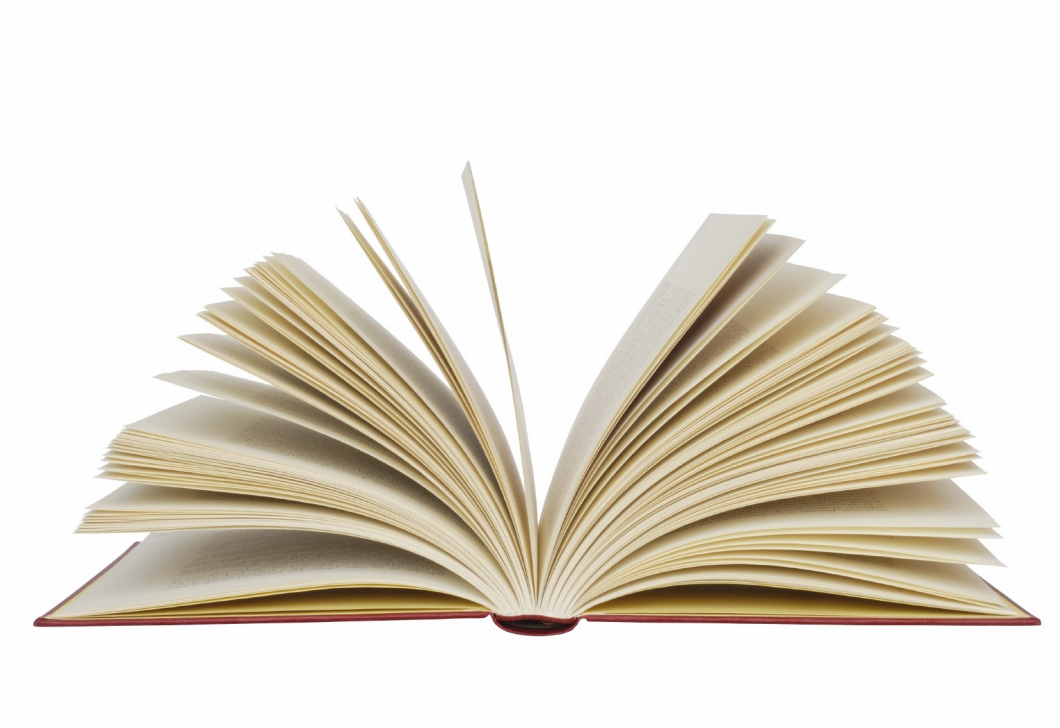
What is mood contagion?

Student Learning Development

Thank you for your time

Visit our website at:
http://student-learning.tcd.ie





Any Questions?