

**UNISA CSET Research and Innovation Week**

# **Seven Habits of Highly Effective Graduate Students**

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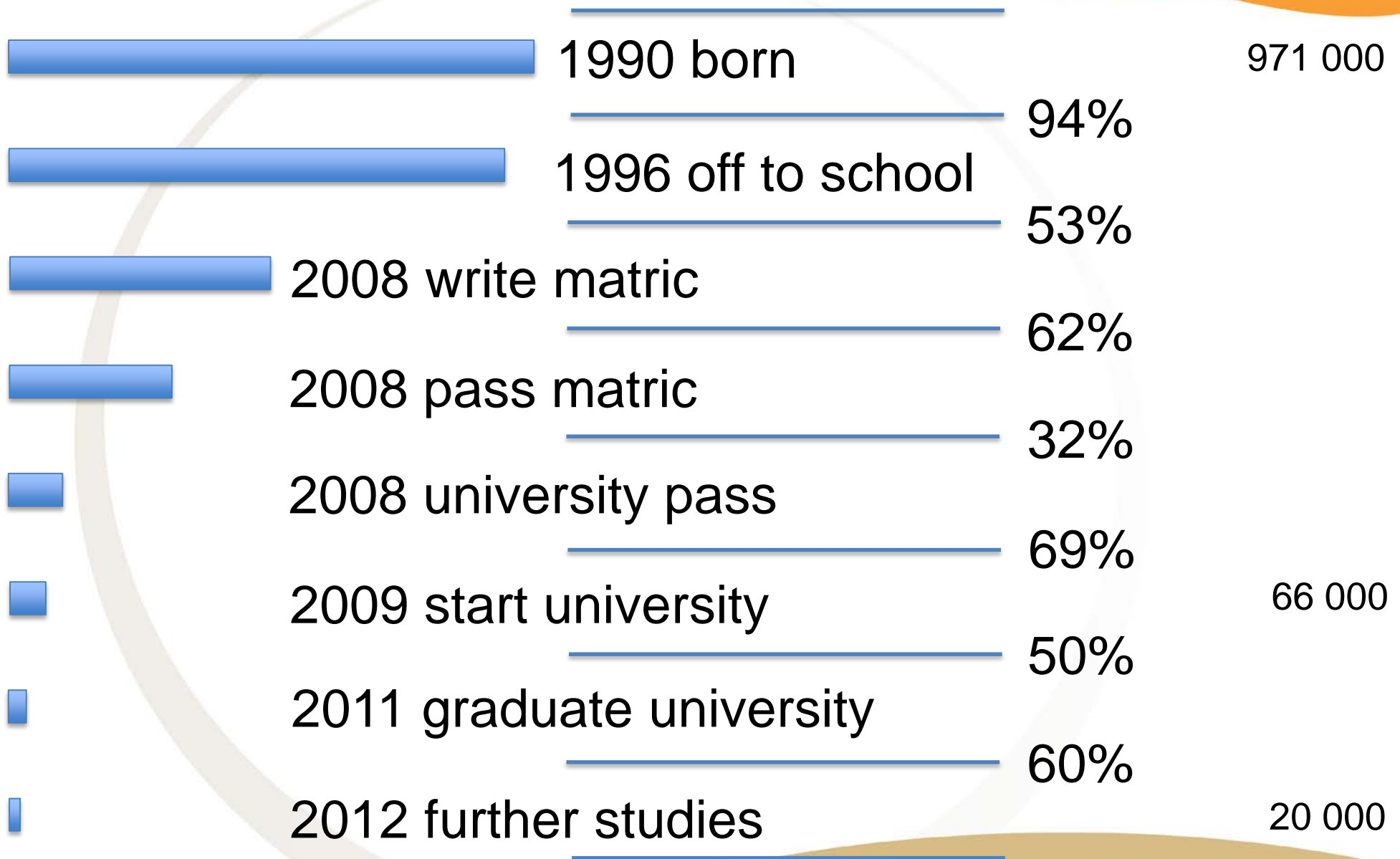
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## Habit 1

**Grab the Opportunity !**

# Privilege brings Responsibility

- Society invests heavily in universities
- Why?
  - To solve old problems ▶ TEACHING
  - To solve new problems ▶ RESEARCH
  - To produce leaders ▶ EDUCATION



Education is the kindling of a flame,  
not the filling of a vessel.

Socrates (470 – 399 BC)

Democracy is not a spectator sport!

Michael J Boskin (1945 - )

Live your life as an **EXCLAMATION**  
rather than an explanation.

Isaac Newton (1643 – 1727)

## Habit 2

**Work as a Team !**

# The Wall of Knowledge

- The wall of knowledge was built by humanity's finest minds, across cultures and continents, over many centuries.
- Recognise the bricks below
- Recognise the contributions around you – everybody in the building helps to contribute
- Add your own brick, small but solid for those that follow

Do not talk a little on many subjects,  
but much on a few.

Pythagoras (570 – 495 BC)

To explain all nature is too difficult a task for any one man or even for any one age. Tis much better to do a little with certainty and leave the rest for others that come after than to explain all things by conjecture without making sure of anything.

Isaac Newton (1643 – 1727)



## Habit 3

**Work on your Own !**

# Graduate study is a solo performance

- Working in groups is a valuable *teaching* tool:
  - For explaining to others
  - Different prisms of understanding
- At graduate level, groups only are useful for:
  - Testing your ideas on others
  - Sharing your results
  - Learning from what others are doing
  - Being challenged

Baby, it's cold outside.

Frank Loesser (1944)

Tell me and I forget. Show me and I remember.  
Involve me and I learn.

Benjamin Franklin (1706 – 1790)

I am the master of my fate  
and the captain of my destiny.

Nelson Mandela, paraphrased from William Ernest Henley (1849-1903)



Habit 4

**Ask Questions !**

# Use questions to your advantage

- To read the literature with healthy scepticism

Read not to contradict and confute, nor to believe and take for granted... but to weigh and consider.

Johannes Kepler (1571 – 1630)

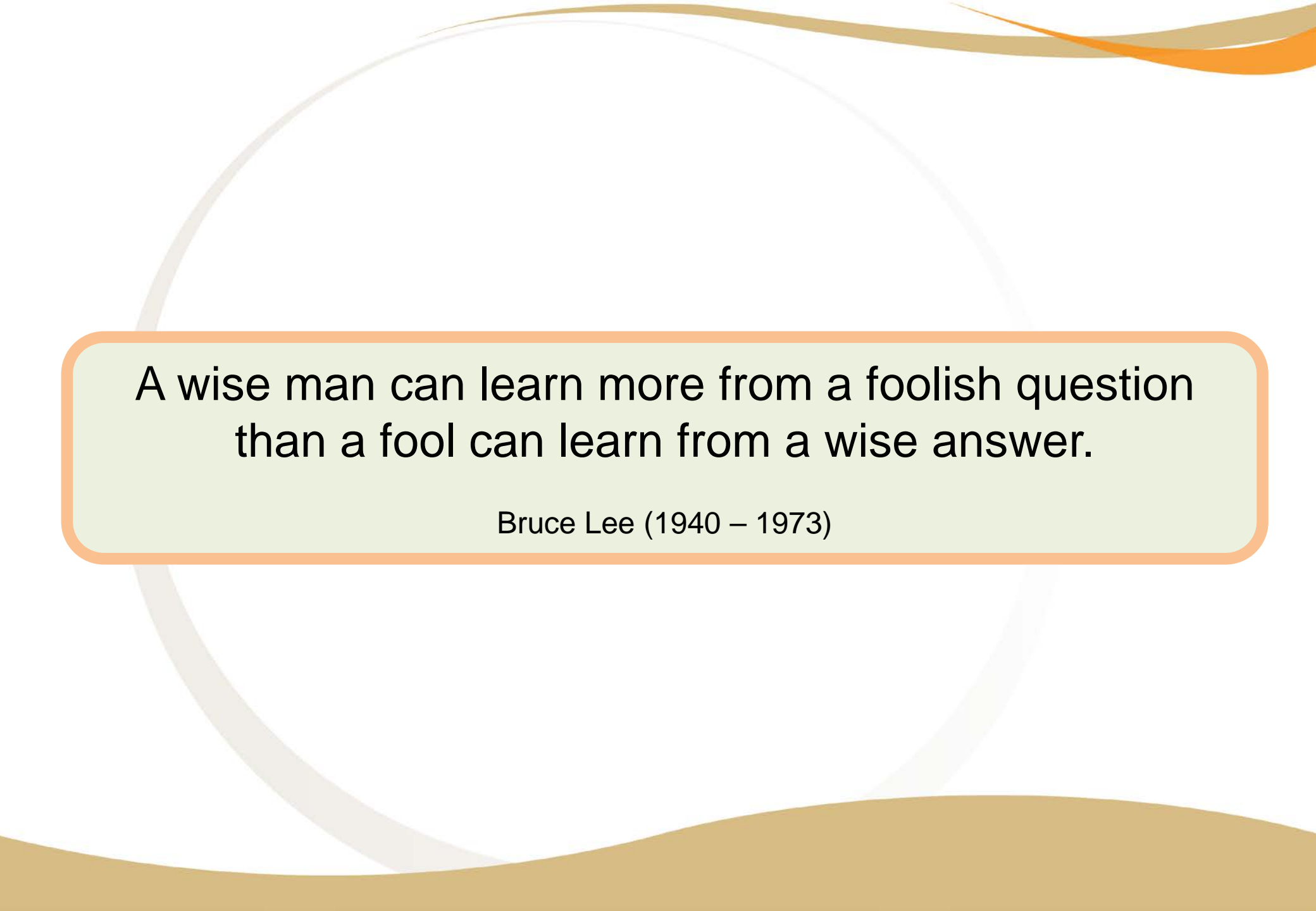
- To frame and direct your research
- To challenge your own results and conclusions

Who questions much, shall learn much,  
and retain much.

Johannes Kepler (1571 – 1630)

If you would be a real seeker after truth, it is  
necessary that at least once in your life you doubt, as  
far as possible, all things.

Rene Descartes (1596 – 1650)



A wise man can learn more from a foolish question  
than a fool can learn from a wise answer.

Bruce Lee (1940 – 1973)

## Habit 5

**Synthesis, not just Analysis !**



# The making and shaping of new things

- Science works from the known to the unknown
- Undergraduate emphasis on analysis
- Synthesis has to postulate something that does not exist → design
- Synthesis also means to rise above the details of your literature review and your data
- Try to see larger patterns and underlying principles

# Classical examples

- Copernicus's heliocentric theory
- Newton's laws of mechanics
- Mendel's laws of inheritance
- Mendeleev's periodic table
- Rutherford's and Bohr's atomic theory
  
- All boil down to **SIMPLIFICATION**

Nothing is as practical as a good theory.

Kurt Lewin (father of Social Psychology) (1890 – 1947)

Nature is pleased with simplicity.  
And nature is no dummy.

Isaac Newton (1643 – 1727)

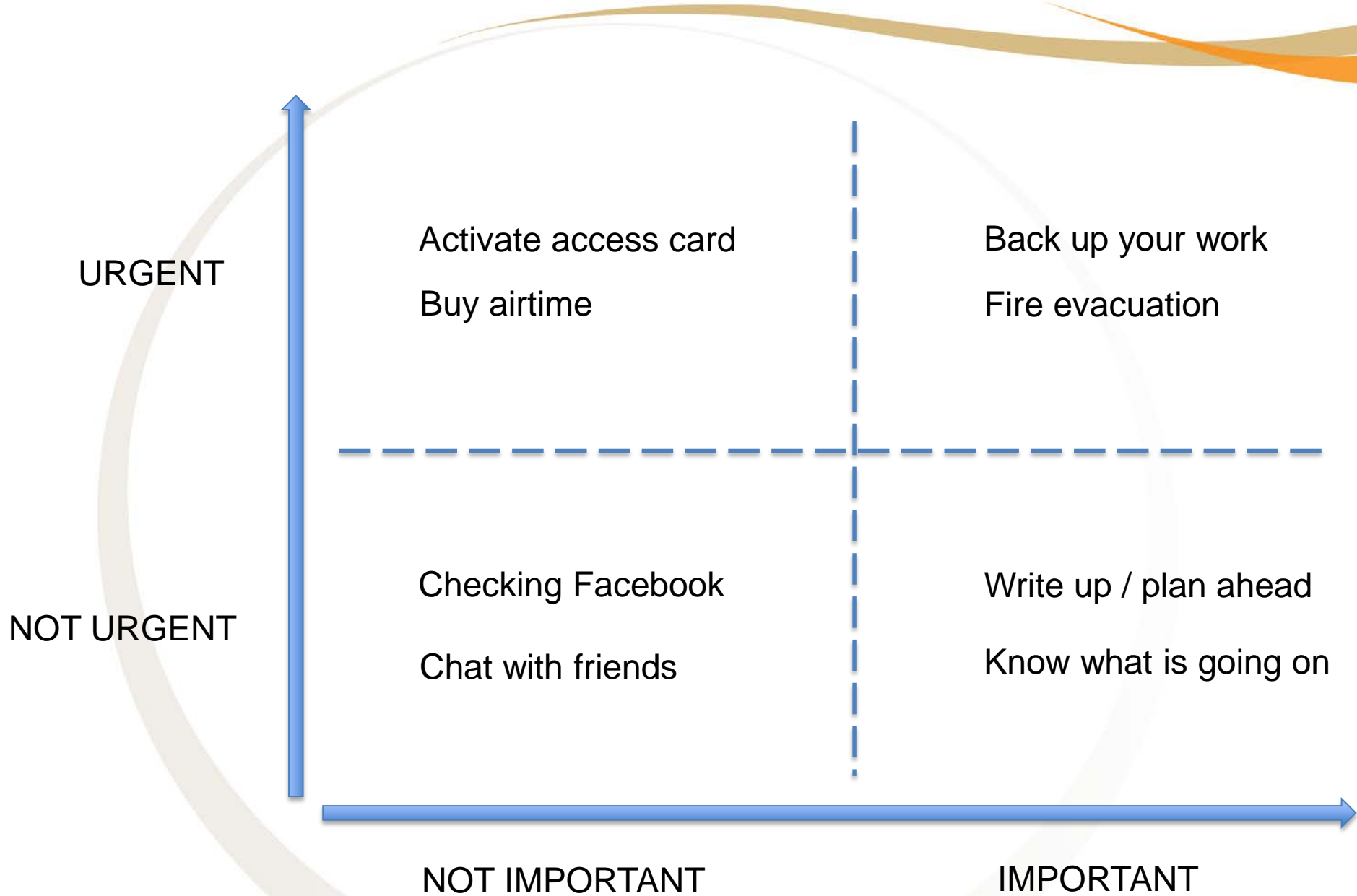


Habit 6

**Be Organised !**

# Some dimensions of discipline...

- Data management
- Literature management
- Time management



Friends are thieves of time.

Francis Bacon (1561 – 1626)

Begin doing what you want to do now. We are not living in eternity. We have only this moment, sparkling like a star in our hand – and melting like a snowflake.

Johannes Kepler (1571 – 1630)

Write down the thoughts of the moment. Those that come unsought for are commonly the most valuable.

Johannes Kepler (1571 – 1630)



Habit 7

Enjoy !



It is not knowledge, but the act of learning, not possession but the act of getting there, which grants the greatest enjoyment.

Carl Friedrich Gauss (1777 – 1855)

The easiest thing becomes difficult when you do it reluctantly.

Pythagoras (570 – 495 BC)

I do not know what I may appear to the world, but to myself I seem to have been only like a boy playing on the sea-shore, and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary, whilst the great ocean of truth lay all undiscovered before me.

Isaac Newton (1643 – 1727)

Live as if you were to die tomorrow. Learn as if you were to live forever.

Mahatma Gandhi (1869 – 1948)

## Again .....

1. Grab the opportunity
2. Work as a team
3. Work on your own
4. Ask questions
5. Synthesise, not just analyse
6. Be organised
7. Enjoy what you are doing

The very best of luck with your studies !

Define tomorrow.

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