**ATL SKILLS FOR A POST-COVID DIGITAL WORLD**

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**ATL SKILLS FOR A POST-COVID DIGITAL WORLD -**

**DAY 1**

**Positives of the pandemic:**

* 20% of students improved their academic performance
* All were great self-managed learners – with all the skills for success in the post-Covid digital world

**By 2030:**

* Automated cars, buses, taxis, trains, aircraft, food delivery, doctor’s visits, banking, law, most retail
* Artificial Intelligence involved in all aspects of life
* Most employees will be freelance – contracted into on-line collaborative teams working on specific projects
* Selection for employment in work teams will be based on skills and experience and driven by Social Media
* Social Media identity will be as important as real-life identity
* Highest paid skills will be research, analysis, finding the truth, predicting trends, adapting, creating and problem solving

“The world economy no longer rewards people just for what they know, the world economy rewards people for what they can do with what they know” - Andreas Schleicher, PISA, OECD

PISA 2025 will include the innovative domain of Learning in the Digital World which aims to measure students’ ability to engage in self-regulated learning while using digital tools.

**14 Category ATL Skills model – for PYP, MYP, CP & DP:**

**Communication**

1. Language Skills

2. Media Skills

**Social**

3. Group Skills

4. Social Skills

**Self-Management**

5. Metacognitive Skills

6. Organization Skills

7. Study Skills

8. Character Skills

**Research**

9. Research Skills

10. Decision Making Skills

**Thinking**

11. Critical Thinking Skills

12. Computational Thinking Skills

13. Idea Generation Skills

14. Adaptive Thinking Skills

**Purpose of any ATL skills programme:**

* **To develop self-managed learners:** 
  + by teaching all students a full curriculum of ATL skills
  + by having students use their ATL skills to improve their academic performance in all their school subjects
  + by giving students increasing practice in the management of their own learning from Gd 1-12
* **To help students realise that they do have control over their own success at school and beyond**

Any ATL skills programme is all about focusing students on factors to improve their success that are in their control.

**Three key phases of ATL skill proficiency development:**

1. Competence - student copies skill and learns ‘how best’ to use the skill with simple content
2. Practice - Student then practices using the skill with subject content of increasing complexity and works towards being able to use the skill whenever needed
3. Mastery - Student can use the skill independently of the teacher and the classroom

**Task 2: Mapping learning challenges**

* Get into 12 (or 13) grade level groups
* Each group - discuss what are the most important learning challenges for students in your year – consider both transition and assessment challenges
* Put all the learning challenges into a priority order
* Decide on your top three
* Write your Grade level on one A1 page
* Write your top three learning challenges on your page and pin it on the wall – in sequence

**Task 3: Mapping ATL skills to meet learning challenges**

* Get out of grade level groups, get into pairs with a friend, take a learning walk, read what is on each page.
* Pick any grade level, look at what is written and discuss what the specific ATL skills would be that would help a student to succeed in the particular learning challenge facing them in that year.
* Think about *when* a student would need to learn that particular ATL skill in order to be ready to use it when needed
* Write the ATL skill *strand* on a Post-it note and stick it on the appropriate grade page – when it needs to be learned.
* Repeat
* Be very precise about exactly what skills are needed – exactly ***what does a student need to know how to do*** to succeed in each learning challenge?

**Task 4: Mapping ATL skills to meet learning challenges**

* Get back into your 12 grade level groups, take your page off the wall
* Analyse all the Post-it notes on your page, eliminate duplication
* Decide on the ***Top Ten*** ATL skills for your grade
* Write them on the page, put the page back on the wall
* Look across grades for duplication, leave the earliest mention cross out the subsequent ones
* Now you have the beginnings of a plan, next step is to decide:
  + Who, when, where & how?

**Two steps to teaching ATL skills:**

1. **Explicit Teaching:**

* Designing whole lessons or parts of lessons to specifically teach ATL skill strands
* Developing ATL skill strand Competence using simple content

1. **Implicit Teaching:**
   * Having students ***Practice*** their ATL skills in inquiry-based subject lessons
   * Developing and improving ATL skill competence up to***Mastery***level by using them with subject content in subject lessons

**Where will the time come from?**

* Developing student ***Competence*** in the ATL skills they need takes teaching time – where will this come from?
  + Self-teaching online ATL modules
  + Self-teaching ATL textbooks
  + Within existing classroom time
  + Outside existing classroom time
  + Set up a volunteer student study club
    - CAS project?

**Part 1 – Explicit teaching of ATL skills:**

* What if – every student from Gd5/6 had a one-hour/week ‘Learning Skills’ lesson in their timetable?
  + The Learning Skills program could be aligned with student development so all students develop Competence in all the cognitive, metacognitive, social and emotional (ATL ) skills they need when they need them
  + The purpose of the Learning Skills lessons would be for students to learn ‘how best’ to use each ATL skill
  + Each student learns the ATL skills they need at the time, to cope with the learning, social and emotional challenges they face

**Part 2 – Implicit teaching of ATL skills:**

* Then students could practice and improve their ATL skills in normal subject lessons.
* Teachers can feel confident that students will already have some competence in all the ATL skills they need to cope with the learning challenges in the classroom
* Teachers will feel encouraged to use more inquiry-based teaching, problem-based teaching, experiential learning, independent and remote learning
* Students will be more successful in learning all their normal subjects using these methods
* Students will master all the ATL skills they need for their future education, job, career and business success

**Task 5: Mapping the development of skill Competence**

* Stay in your 12 grade level groups, work in pairs, pick one ATL skill from your Grade level page to work on together
* Do your research, find out how other people practice, coach or “teach” your particular ATL skill strand
* Design one generic exercise any teacher could use to introduce the skill to the students for the first time using any content to develop ***Competence***
* Then design one exercise you could use to have students ***Practice*** this skill in one of your subject classes
* Write the skill and both exercises into your subject spreadsheet

**Eg. Competence exercise for Gd11 – How to conduct ‘Advanced Searching’ online?**

* Work with a partner
* Find two Advanced Searching tutorials from reputable search engines and watch one each – make sure they are tutorials relating to different search engines
* As you watch pause the feed after each key point and write the key point in the table below
* When you have finished compare notes and write your partners key points in your table too

Search Engine …………………………………………..

Tutorial URL ……………………………………………..

Key points ………………………………………………...

* Make sure you use some of these search reduction techniques in every search from now on

**To develop self-managed learners:**

* Teachers must learn how to limit ‘teaching’ and allow self-managed learning to take place
* Only by being allowed to practice the skills of self-managed learning will students become effective self-managed learners

**ATL AI Skills:**

* Finding credible, well referenced AI – Perplexity.ai
* Asking good research questions – drilling down, questions within questions
* Fact checking – verifying the truth
* Paraphrasing
* Constructing evidence-based arguments
* Using AI writing to advantage
* Re-writing, finding your own flow/style

**Social media skills:**

In communicating feelings and attitudes we take:

* 7% from the words
* 38% from the tone of voice
* 55% from the face and body - Albert Mehrabian (1967)

**By the time they are 13 all students need to learn how to:**

* Identify their own virtues and values, who they are as a person off-line and who they want to be
* Identify the difference between reputation and character, their real vs online persona
* Create an online identity focused on strengths, goals and exemplifying their virtues
* Find positive, inspirational people to follow
* Make ethical choices about “likes”
* Set up and maintain strong relationships that exist both on and off line
* Have regular, deliberate, digital holidays

**Task 6 – Your analogue self:**

A screenshot of a computer

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**Task 7: Influences and influencers**

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**Metacognitive skills – reflection, thinking about thinking, learning about learning**

* **Metacognitive Knowledge** – students noticing and learning how they are learning - the thinking and learning strategies, techniques and skills they use to achieve successful learning
* **Metacognitive Performance** – students using that knowledge to improve their learning performance, change ineffective strategies, try new techniques, learn new skills
  + The key to metacognition is ***noticing your own thinking***

**Task 8: Developing Metacognitive Knowledge using Think-Alouds:**

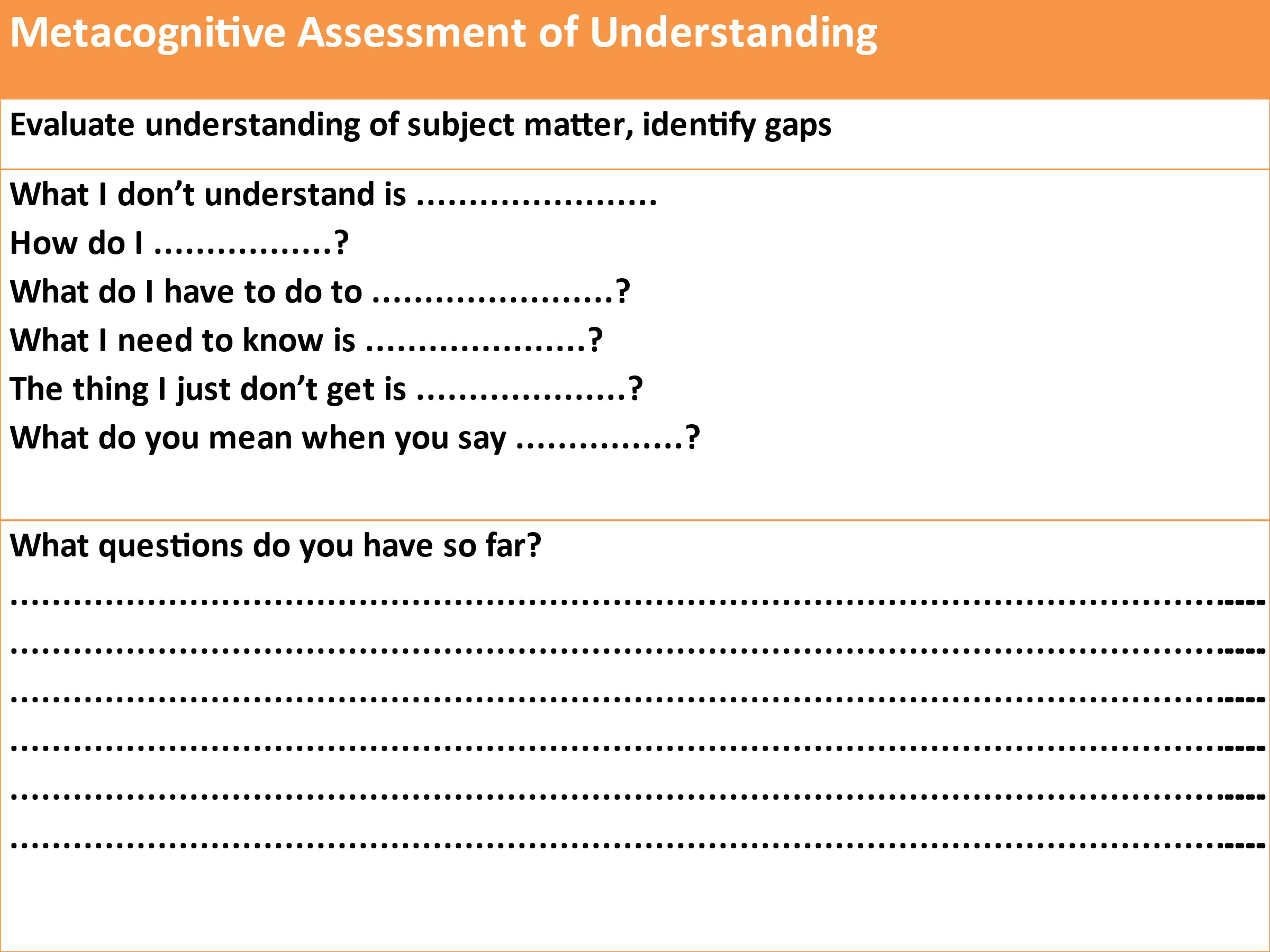
* The **‘Student’** – is working on the puzzle and is allowing all their internal dialogue to be audible, they are saying out loud every word and every thought that is coming into their mind
* **The ‘Teacher’** - is not working on the puzzle, just listening carefully to the ‘student’ and encouraging them to keep continuously talking - by saying things like “keep talking, keep talking…” and ***by asking questions***:
  + questions which ask the student what they are thinking, what are the difficulties they are having with the puzzle and how they are going to overcome them
  + questions which focus on the thinking process ***NOT*** on the solution to the puzzle
  + ***THE ‘TEACHER’ MUST NOT HELP THE ‘STUDENT’ FIND THE ANSWER***

**Task 9: Developing metacognitive knowledge through reflection on process**

* In those exercises, when you got ‘stuck’ -
  + describe to your partner what you said to yourself
  + describe what you imagined
  + describe what you did to move past a ‘stuck’ moment
* That is your problem-solving process for visual puzzles
* Teach it to your students

**Using assessment of understanding to develop metacognitive skills:**

* At the end of any unit of work
  + Have they achieved the content and process goals?
  + What is their evidence?
    - *Is this really what you as a teacher need to know?*
  + What don’t they understand yet?
  + What questions do they have?
* This turns assessment into metacognitive training – recognising gaps in knowledge and understanding.
* Teaching students how to notice what they don’t yet know is far more useful than having them prove what they do know



**Assessing ATL skills:**

* When your ATL programme is working well you will see:
* improvements in the efficiency and effectiveness of your students learning in all their normal subjects
* improvements in their performance in formative and summative assessments and all high-stakes exams, and
* improvements in in their ability to manage their own learning

**Using ATL skills self-assessment to develop metacognition:**

* Learning how to accurately self-assess your own work is a ATL skill in itself
  + get students to self-assess their own ATL skill development
    - for this you first need Mastery statements for all ATL skills
    - then you need one development rubric to cover all ATL skills

**Task 10: ATL skill Mastery**

* Someone add a Mastery column to each spreadsheet
* ‘Mastery’ is the highest standard of independent use of that skill that you would expect to see at school – by the end of Grade 12, with no teacher support:
* “By the time our students finish at this school they will be able to ………………………...”
* Take your particular ATL skill from the previous mapping exercise and create a mastery statement for that skill
* Add your mastery statement to the spreadsheet

**Rubric for all ATL skill development and assessment:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Competence | | | **Practice** | | | | **Mastery** |
| Watching | **Copying** | **Starting** | | **Practising** | **Getting better** | **Got it!** | **Teaching** |
| I know what the use of the skill looks like when others are using it | I can copy someone else using the skill | I am starting to use the skill by myself | | I am using the skill by myself in familiar situations | I am getting better at using the skill in unfamiliar situations | I am able to use the learning skill whenever I need to | I use the skill without needing to think it through first |
| I can break the skill down into steps | I use the skill one step at a time | I am still conscious of using the skill one step at a time | | I am starting to put all the steps of the skill together | I can usually use the skill without referring to the way that I have done it in the past. | I can confidently use the skill without referring to the way that I have done it before | I am capable of teaching other students how to use the skill |
| When I try to use the skill myself I make lots of mistakes and ask lots of questions | I still make mistakes and ask for help but I am getting better at correcting my own mistakes | I can correct my mistakes with some help | | I can correct my own mistakes | Any mistakes I make I can quickly correct | I can usually correct any mistakes automatically | I correct any mistakes I make automatically |
| I need lots of help to use the skill | I can use the skill in familiar situations with some help | I still need help to use the skill sometimes | | I don’t need help to use the skill in familiar situations anymore | I still need help to use the skill in unfamiliar situations sometimes | I hardly ever need help to use the skill anymore | I can use the skill in unfamiliar situations without any help from anyone else |

**Student self-assessment of ATL skill development:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Student Self-Assessment of ATL Skill Proficiency** | | | | | | | |
| **ATL Skill** | **Competence** | | **Practice** | | | | **Mastery** |
|  | **Watching** | **Copying** | **Starting** | **Practising** | **Getting better** | **Got it!** | **Teaching** |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

**Developing self-assessment as an ATL skill in itself:**

* Use self-assessment to teach students how to accurately judge the quality of their own output - the most important ATL skill for all future education and careers
* When assessing students’ subject work try:
  + asking them to include a self-assessment on what they did well and what they could improve on
  + give them feedback on both their subject work and the quality of their self-assessment

**Three valid forms of ATL skills assessment:**

* Student self-assessment of ATL skills proficiency completed pre~ and regularly post~ training
* Teacher reporting on ATL skills in reports – qualitative not quantitative
* Designing subject-based assessments so that generating the answers needed requires the use of specific ATL skills at the appropriate level of proficiency

**DAY 2**

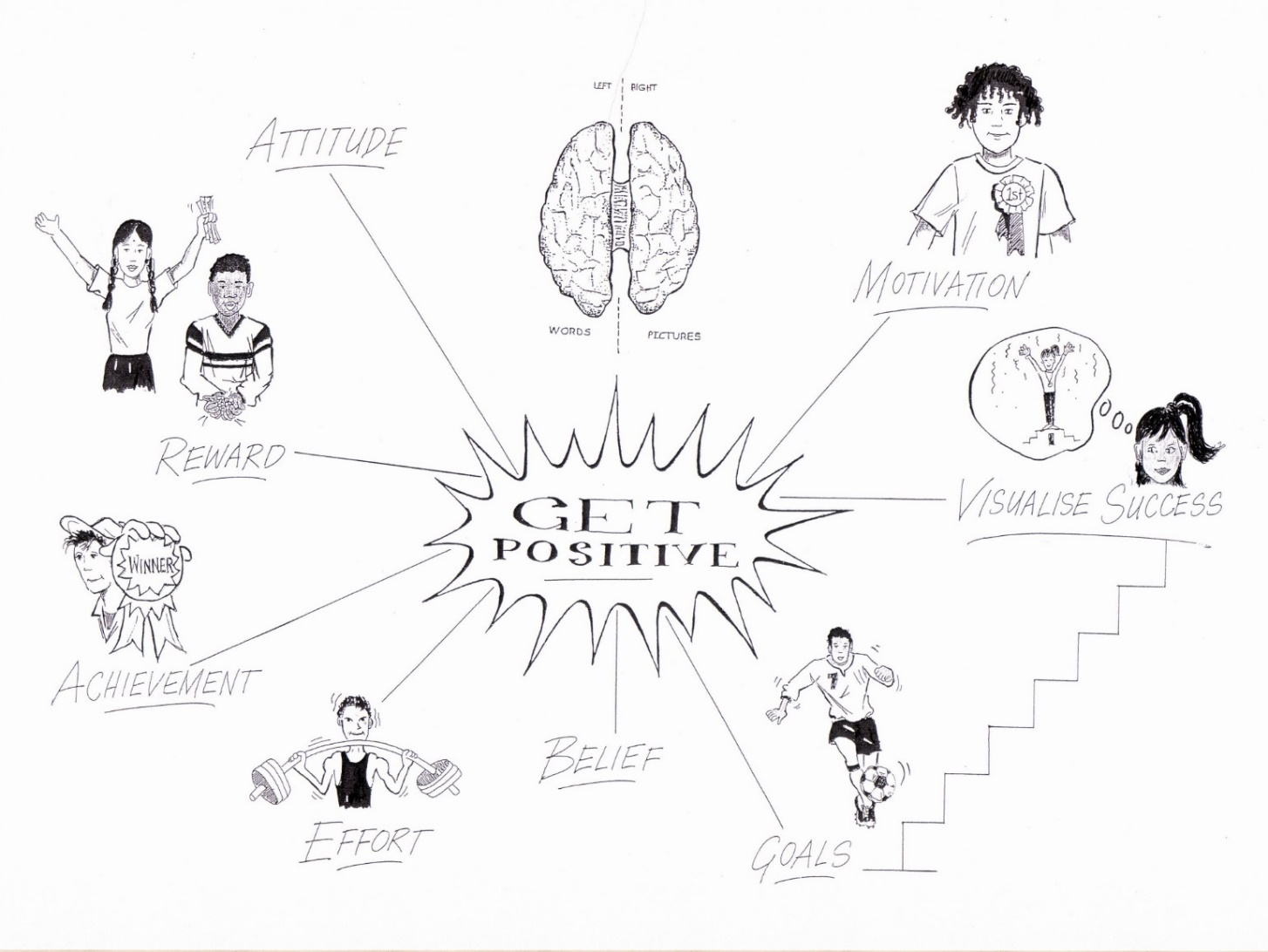
**Affective ATL skills – developing character and promoting mental health:**

**Students first need to understand that learning starts with belief**

**Efficacy + Agency + Action**

**1) Efficacy 🡪 they must first believe that they can achieve success through their own actions**

* Role models - stories of resilience, perseverance, innovation, effort and most importantly - learning
  + Alumni – display your school’s success stories, detail their skills
  + Visiting speakers – to talk to your students about what it takes to be successful
  + Own stories – tell your students your own stories of learning success
* Self-esteem – valuing children for their character more than their behaviour
  + Connect positive comments to ‘being’ – “you are a conscientious, hard working person”
  + Connect negative comments to ‘doing’ – “you need to organize yourself better”
* Watch your language
  + Eliminate the don’ts
  + Focus on the do’s



**2) Agency 🡪 they must learn all the ATL skills they need for education and career success**

* Identify your students’ major learning challenges in each year
* Identify the ATL skills that would help students to succeed in each learning challenge
* Explicitly teach your students the ATL skills they need before they need to use them
* Once they have achieved ***Competence***, make sure they practice and develop their ATL skills in subject lessons

**3) Action 🡪 they must be prepared to take action, make mistakes and fail well**

|  |  |  |  |
| --- | --- | --- | --- |
| **Task 1: Success and Failure:** | **What happened?** | **What do you think was the cause of your success or failure?** | **What did you do next?** |
| **A time when you set a goal and achieved it was …** |  |  |  |
| **A time when you set a goal and didn’t achieve it was…** |  |  |  |

"All the **top academic students** had learned how to ***fail well***

whereas all the **lowest academic students** were ***failing badly***"

|  |  |
| --- | --- |
| **Reactions to failure** | |
| ***Failing Well*** | ***Failing Badly*** |
| * Acknowledge your failure, * take responsibility for all the factors that were in your control * work out what you could have done better * make changes, and * do it again, and again if necessary * but do it differently, every time | * Blame the school or the ‘system’ * Blame other people * Pretend there is no failure * Add ‘drama’ to failure to avoid dealing with it * Avoid any activity that could possibly lead to failure |

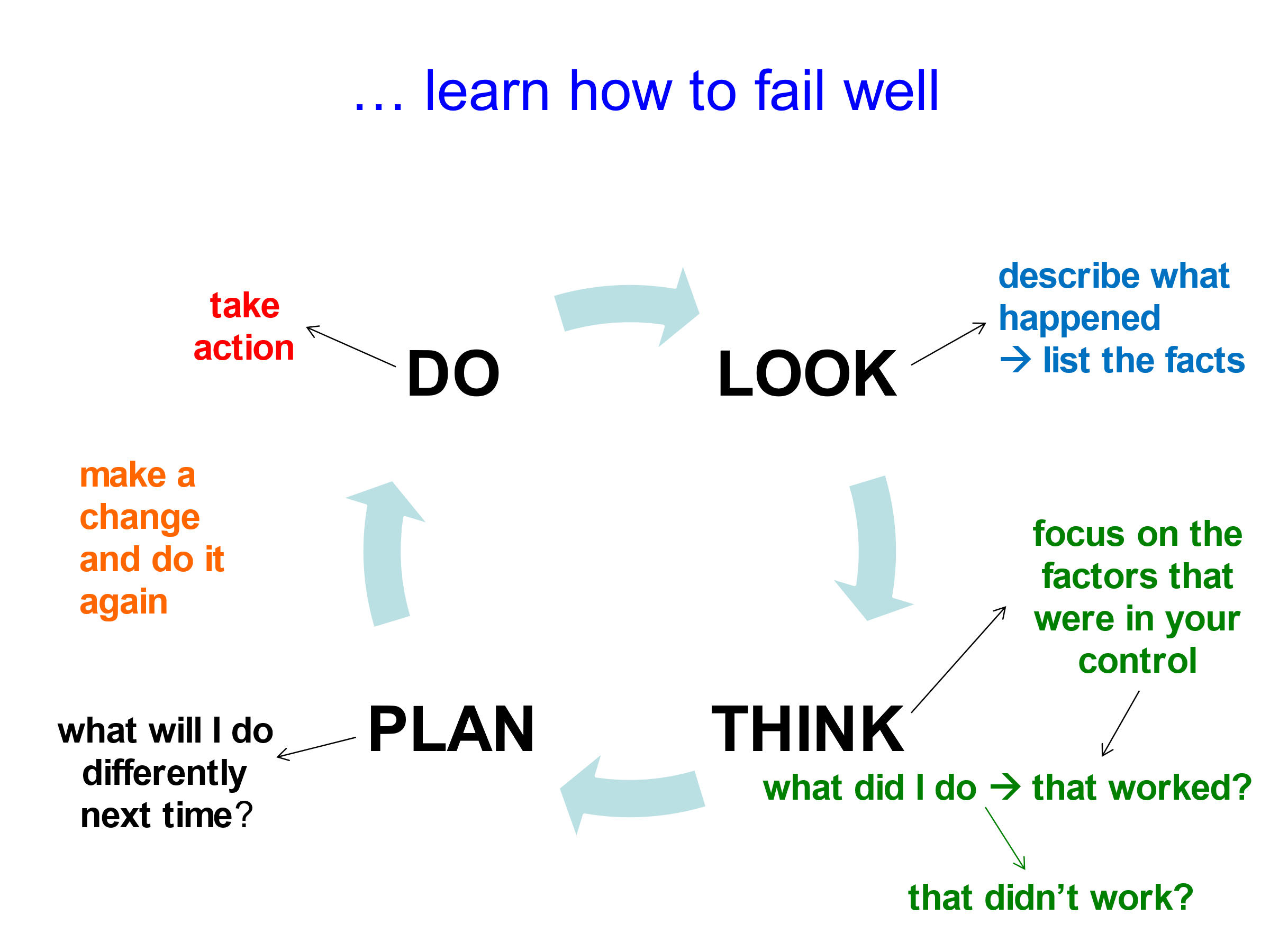
**Full article available at** [www.taolearn.com/wp-content/uploads/articles/article88.pdf](http://www.taolearn.com/wp-content/uploads/articles/article88.pdf)

**On receiving test results worse that they expected (or hoped for) some students will**

**Fail badly** - blame the school, the teacher, the weather, their own character

**Fail well** - rewrite the answers to all the questions they got wrong

* + check back with you to make sure they have got the right answers now
  + ask you what they can do to improve



**Helping students learn how to fail well**

1. Before any assessment - get students to set their own goals for the outcome

2. After the assessment - have a conversation about the difference between failing well and failing badly

* Teach your students how to fail well
* Build in class time for the re-processing of every mistake

**Competition and the skills of high performance:**

1. Stay in the moment – “What is happening right here, right now?”

* Engage your students with subject-based activities that require deep concentration e.g. reading
* Support them in achieving a PB – in everything
* Encourage them to take on new challenges and use any failure as feedback

1. Avoid judgement

* Teach students how to accurately judge the quality of their own output - the most important ATL skill for all future education and careers
* When assessing students’ subject work try:
  + asking them to include a self-assessment on what they did well and what they could improve on
  + giving them feedback on both their subject work and the quality of their self-assessment

1. Control what you can control

|  |  |
| --- | --- |
| **Prof Carol Dweck on Attribution for Success and Failure** | |
| **Attributing to effort ….**  **“my hard work, persistence, determination…”**   * Is linking your success and failure to something over which you have control * Any test or assessment becomes a measure of progress, an opportunity to learn | **Attributing to ability ….**  **“my talent, intelligence, natural ability….”**   * Is linking your success and failure to something over which you have no control * assessment is then often seen as a critical judgment and an opportunity to fail |

|  |  |
| --- | --- |
| **Ways of Thinking** | |
| Verbal | Non-Verbal |
| * words * logic * ‘one step at a time’ thinking * self-talk * analysing * phonetic memory * detail first | * pictures * guesses * ‘all at once’ thinking * imagination * synthesising * visual memory * big picture first |
| Turning those ideas into reality | Generating ideas that don’t yet exist |
| **Good problem solving requires both ways of thinking** | |

**Task 4: Patterns in Maths:**

Use the number chart to find the pattern and then add some more numbers to the series:

1, 3, 5, 7, 11, 13 ……………………………………………………………………………………………………………

4, 22, 26, 34, 38 ……………………………………………………………………………………………………………

9, 33, 39, 51 …………………………………………………………………………………………………………………

5, 25, 55 ………………………………………………………………………………………………………………………

16, 20, 28, 32 ………………………………………………………………………………………………………………

12, 18, 30, 40 ………………………………………………………………………………………………………………

24, 36, 48, 60 ………………………………………………………………………………………………………………

What’s special about;

60? ………………………………………………………………………………………………………………………………

72? ………………………………………………………………………………………………………………………………

**VAK and ‘learning style’**

|  |  |  |
| --- | --- | --- |
| **learn by:** | **thinking in:** | **style:** |
| looking | pictures | Visual (**V**) |
| listening and talking | sounds | Auditory (**A**) |
| doing | feelings | Kinesthetic (**K**) |

**VAK Teaching Strategies:**

**Visual**: use video, film, photographs, use colour on the board, notes, highlighting key points in text, pictures, posters, diagrams and graphs, using mindmaps, using visualisation, using gestures, facial expressions, creating flowcharts of processes, video-based websites eg YouTube

**Auditory**: reading out loud, playing podcasts, playing quiet instrumental music, talking, describing, dictation, creating discussions or debates, using word games, puns, jokes, asking and answering questions, telling stories, myths, using metaphors, formal and impromptu speeches, inviting in guest speakers, Audio-based websites e.g. Khan Academy

**Kinesthetic**: having the experience, VR & AR, 3D modelling, allowing moving, stretch breaks, role playing, drama, creating question and answer games, field trips, workshop and laboratory sessions, having students teach each other, using real life examples, providing things to touch, pull apart and put together, allowing for physical comfort, thirst, hunger, visiting museums, exhibitions

**Teaching strategies for understanding and recall:**

* Multi-sensory learning is always the best for all students
* Multi-sensory teaching engages all ‘learning styles’
* Make sure in every lesson that all the key points are represented to the students as:
  + something to see ***and***
  + something to hear ***and***
  + something to do

**Memory works best:**

* By connection and association
* Through all senses
* In patterns
* Through staged review

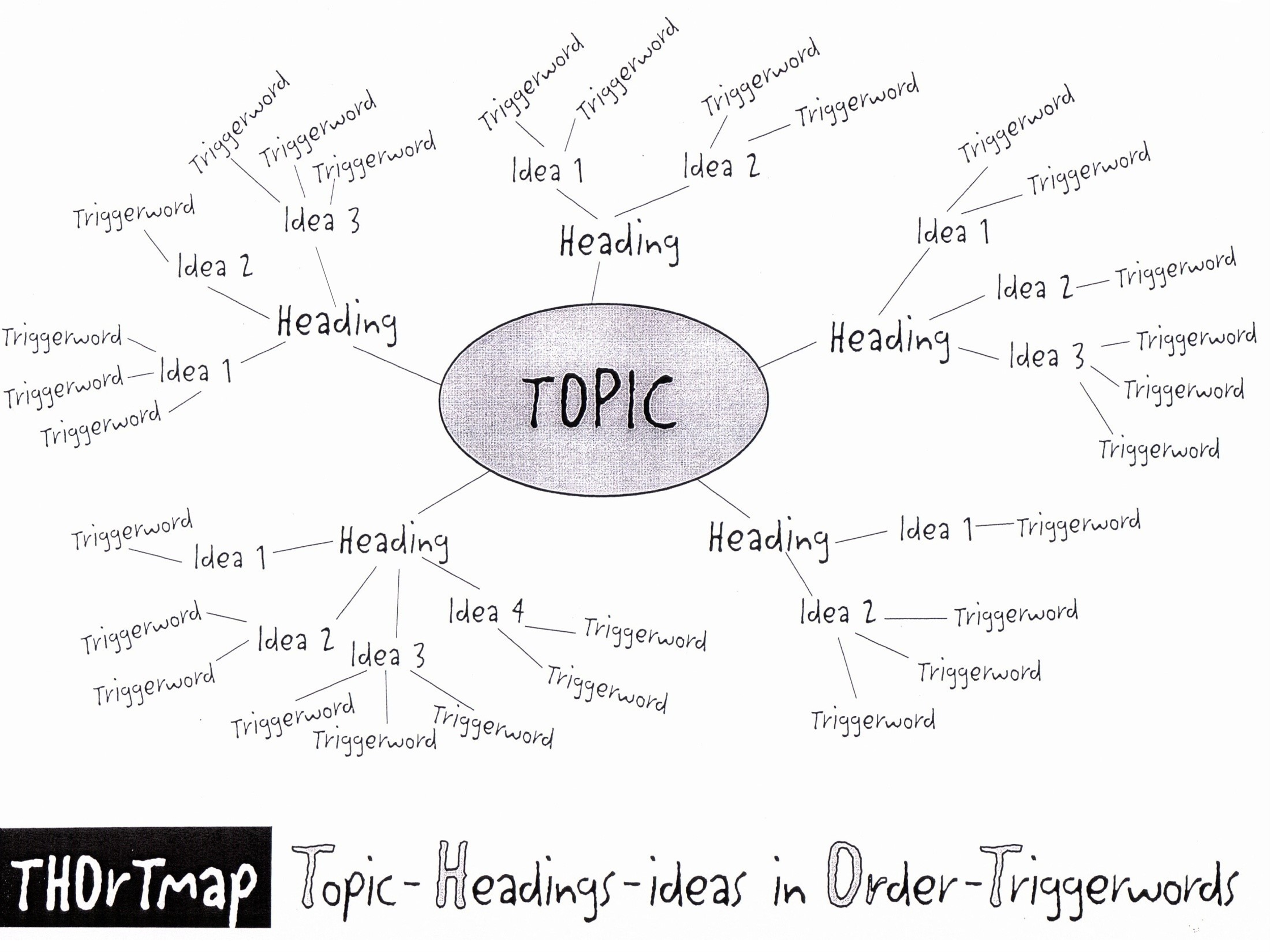
**Get your students memories up to 100%**

1. Start every lesson with a closed-book review of the previous lesson
2. Finish each lesson with a 5 minute memory review of the key points
3. Once a week students make a summary of that week’s key points
4. Once a month they put 4 weekly summaries together into a one-month summary
5. Look over all the one month summaries and chose the best one to laminate and put into a ‘book’ of monthly summaries.

By doing this you have reinforced memory of all the key points in your subject as well as created a content summary resource in your subject that students can look at anytime to help them remember work they have done previously

**Teach your students how to make memorable summaries:**

1. Find an international news story on any topic that you presently know nothing about.
2. Read it and make a summary of the key points using any method – 30 minutes
3. Work with a partner, reading from your summary only, explain the news story to your partner
4. Swap, listen to your partner
5. In 24 hours do it again and again in 7 days
6. Rate the effectiveness of your own note-making method



**Use the Ultimate Summarising, Memorising and Note-Making Technique**

**Step 1** - Decide how many pages to summarise tonight. Skim read every page – only 5 seconds per page, make sure you look at every word.

**Step 2** - Write the first main **TOPIC** in the middle of a clean page (landscape). Add to it all the **HEADINGS**, as branches – a maximum of 5 Headings per **THOrTmap**.

**Step 3** - Back to the first page of the notes. Actively read the material now, search for the **TRIGGERWORDS** - and highlight them. Only one or two Triggerwords per sentence.

( LOOK Step )

**Step 4** – Group the **TRIGGERWORDS** around key **IDEAs** and attach the Ideas to the Headings **in Order**.

( DO Step )

**Step 5** – When you have finished, add in colour and small pictures, diagrams, cartoons to maximise the sensory connections with the information.

**Step 6** - Pick up your completed **THOrTmap** and out loud, turn your **THOrTmap** back into sentences, Explain it to yourself, in your own words.

( LISTEN Step )

**Step 7** - For any parts you don't yet understand, go back to the book or the notes and pull out a few more words to add to your **THOrTmap**. Explain that part to yourself again.

**Step 8** – After a 10 minute break, look at your **THOrTmap** again andout loud, turn your **THOrTmap** back into sentences. Explain it to yourself, in your own words. If there are still parts you don’t remember or understand repeat Step 7.

( 10 Min Review )

**Step 9** – Within 24 hours look at your **THOrTmap** again and explain it to yourself again, in your own words. If necessary repeat Step 7.

( 1 Day Review )

**Step10** – Do another review the same as Step 9 after one week.

( 1 Week Review )

**Step 11** - Do another review the same as Step 10 after one month.

( 1 Month Review )

**Step 12** - Find an old exam question on the topic you have studied and do it without referring back to your notes. Check your answer with your notes

( Apply Step )

**Step 13** – Keep a record of which study techniques work best in which subjects - for you. Where, when, how, with whom, using what resources. This is your own personal *way of learning*. Do more of what helps, less of what doesn’t help.

( Reflect Step )

**Do you show your students how to learn?**

* As an academic role model do you demonstrate for students to copy:
  + a willingness to challenge yourself and constantly learn new things?
  + the habit of admitting to and learning from all your mistakes?
  + the connection between active learning and success?
    - what does that take?

**Practicing Courage:**

**My courage strategy is …**

Thank you for your participation.

Best wishes,

Lance King

Appendix 1:

**ATL SKILLS FULL FRAMEWORK – 14 CATEGORY MODEL**

**ATL CATEGORIES ATL SKILL STRANDS**

**Communication**

1. Language Skills

1.1 Give and Receive Feedback

1.2 Intercultural Understanding

1.3 Write for Different Purposes

1.4 Read Critically

1.5 Read for Variety

1.6 Ask Good Questions

1.7 Symbols

1.8 Paraphrasing

1.9 Choose Writing Organizers

1.10 Write Essays

1.11 Scientific Writing

1.12 Business Writing

2. Media Skills

2.1 Non-Verbal Communication

2.2 Create Presentations

2.3 Media Choices

2.4 Platform Choice

2.5 Media Impact

2.6 Media Formats

2.7 Multi-media communication

2.8 Media Impact and Ethics

**Social**

3. Group Skills

3.1 Empathy

3.2 Negotiation

3.3 Take Responsibility

3.4 Delegation

3.5 Fairness and Equity

3.6 Build Consensus

3.7 Resolve Conflict

3.8 Digital Collaboration

3.9 Teams

3.10 Leadership

3.11 Negotiation

3.12 People Management

4. Social Skills

4.1 Social Media

4.2 Social Action

4.3 Wants, Needs and Rights

4.4 Social Media Identity

4.5 Social Media Security

**Self-Management**

5. Metacognitive Skills

5.1 Reflect on Content

5.2 Reflect on Understanding

5.3 Reflect on Learning Strategies

5.4 Self-Assess Learning Skill Development

5.5 Improve Performance

5.6 Reflective Journaling

6. Organization Skills

6.1 Organize Equipment

6.2 Organize Files

6.3 Use Technology

6.4 Achieve Goals

6.5 Manage Deadlines

6.6 Time and Task Management

6.7 Exam Study Timetabling

6.8 Examination technique

7. Study Skills

7.1 Remember Well

7.2 Your Best Ways to Learn

7.3 Help Others Succeed

7.4 Make Summary Notes from Text

7.5 Make Summary Notes from Presentations

7.6 Speedreading

8. Character Skills

8.1 Concentration and Mindfulness

8.2 Evaluating Risk

8.3 Persistence and Perseverance

8.4 Impulsiveness and Anger

8.5 Pressure and Stress

8.6 Self-Motivation

8.7 Values and Virtues

8.8 Resilience

8.9 Failing Well

8.10 Courage

**Research**

9. Research Skills

9.1 Develop a Research Question

9.2 Build a Search Strategy

9.3 Search Effectively

9.4 Compare Information

9.5 Organize and Store Information

9.6 Primary and Secondary Sources

9.7 Sources and Tools

9.8 Link Research Tasks and Tools

9.9 Credibility of Sources

9.10 Ethical Research

9.11 IP rights, Academic Honesty and Referencing

9.12 Use Feedback to Evaluate Research

10. Decision Making Skills

10.1 Identify Different Points of View

10.2 Evaluate Sources for Bias

10.3 Draw Conclusions

10.4 Syllogisms and Logic

10.5 Develop Evidence-Based Arguments

10.6 Hard and Easy Choices

**Thinking**

11. Critical Thinking Skills

11.1 Observing

11.2 Ideas and Impacts

11.3 Brainstorming

11.4 Consider Multiple Perspectives

11.5 Implications and Inferences

11.6 Correlation and Causality

11.7 Recognise Assumptions

11.8 Analyse Data

11.9 Applications and Implications

11.10 Solve Problems - Think Globally, Act Locally

12. Computational Thinking Skills

12.1 Decomposition

12.2 Pattern Recognition

12.3 Abstraction

12.4 Algorithmic thinking

12.5 Solve Problems using Computational Thinking

13. Idea Generation Skills

13.1 Impossible Solutions

13.2 Connections and Ideas

13.3 Guesses

13.4 100 Uses

13.5 Metaphorical Thinking

14. Adaptive Thinking Skills

14.1 Visual Thinking

14.2 Flexible Thinking

14.3 Creation through Imitation

14.4 Improvements

14.5 Connections and Extensions

14.6 Form and Function