



# Engage, Extend and Excite through Assessment

<http://www.flickr.com/photos/heydeech/1197947341>

John Weeks, Karen Yager  
& Andrew Weeding

ASK  
Knox Grammar School







# Knox Grammar School



- *“excellence comes when each boy achieves his best in both the curricular and co-curricular environments... this goal can best be realised within a supportive and stimulating educational environment”*
- **Aims:**
  - Providing an exciting, challenging and enriching curriculum through which boys pursue critical thinking and problem solving in a variety of contexts.
  - Maintaining high expectations of our boys
  - Creating a breadth of opportunity for individuals and groups
  - Preparing boys who engage with their peers, contribute to their community and take their place in the world.

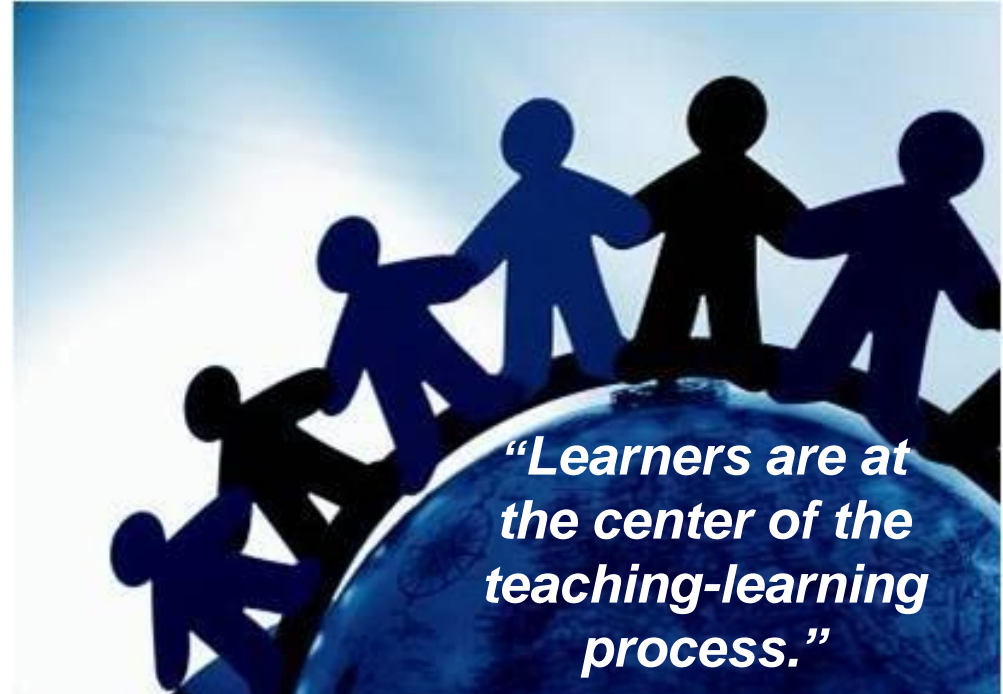


- *‘The quality of teaching and learning provision are by far the most salient influences on students’ cognitive, affective, and behavioral outcomes of schooling – regardless of their gender or backgrounds’ (Rowe, 2003).*
- *‘Quality assessment has the greatest potential to improve the learning outcomes of all pupils’ (Hattie, 2003; Dinham, 2009).*



# Global Skills

- Critical thinking
- Problem solving
- Innovation
- Collaboration
- Creativity
- Connectivism through technology





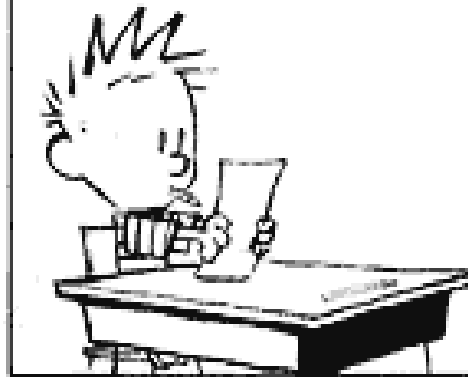
# Life-long learning

UNESCO report identified three characteristics of lifelong learners:

- learning to *do*:  
acquiring and applying skills, such as: problem solving and communication
- learning to *be*:  
promoting creativity and personal fulfillment
- learning to *know*:  
flexibility and critical thinking

Test:

1. When did the Pilgrims land at Plymouth Rock?

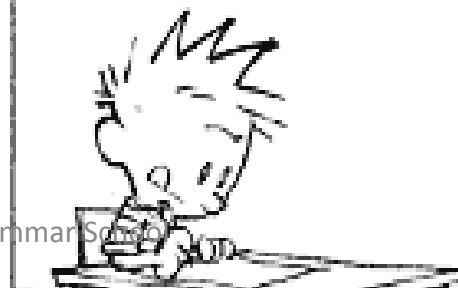


1620.



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AS YOU CAN SEE, I'VE MEMORIZED THIS UTTERLY USELESS FACT LONG ENOUGH TO PASS A TEST QUESTION. I NOW INTEND TO FORGET IT FOREVER. YOU'VE TAUGHT ME NOTHING EXCEPT HOW TO CYNICALLY MANIPULATE THE SYSTEM. CONGRATULATIONS.



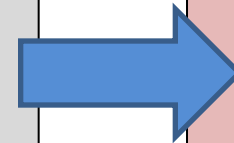
THEY SAY THE SATISFACTION OF TEACHING MAKES UP FOR THE LOUSY PAY.





# The Evidence

- Coyle and Colvin (1999): The brain is phenomenally plastic, and that we construct ourselves through behaviour – *'It's not who you are, it's what you do and where you do it.'*
- Hattie (2003) & Dinham (2008): The significance of quality assessment married with timely and meaningful feedback for teaching and learning.
- Wiggins (2006): Correlation between authentic assessment and improved learning outcomes.



- ❖ Create an environment for creativity, higher-order thinking, problem – solving and risk-taking
- ❖ Integrate summative and formative assessment
- ❖ Provide quality feedback



# ICT & Learning

*“Teach both Legacy and Future. If we’re smart, we’ll give our kids their heads to use all their technology and passion to learn, as we steer them in positive directions and truly enjoy the ride” Marc Prensky, 2008.*





# Assessment Literacy

Fullan (2006) defines assessment literacy as:

- The ability to use the data to make effective changes in teaching and in schools
- Skills in devising assessment tasks: knowledge of criteria and appropriate standards
- Skills in the analysis and use of assessment information
- Expertise in giving appropriate, targeted feedback.





# Pre-Assessment

## What do they already know?

- The importance of building on prior knowledge
- Unless new knowledge becomes integrated with the learner's prior knowledge and understanding, this new knowledge remains isolated, cannot be used effectively in new tasks, and does not transfer readily to new situations.

**Knowledge:**  
The search for truth and knowledge is one of the finest attributes of a man, though often it is most kindly valued by those who neither feel it the best.

**Authority:**  
To punish me for my concepts of authority, fate has made me an authority myself.

**Truth:**  
It is difficult to say what truth is, but sometimes it is easy to recognize a falsehood.

**Cooperation:**  
A human being is a daydreamer; that my inner and outer lives are based on the labors of other people, living and dead, and that I must exert myself in order to give in the same measure as I have received and am still receiving.

**Wisdom:**  
Wisdom is not a product of schooling, but of the lifelong attempt to acquire it.

**Guidance:**  
There is only one road to human perfection, through the school of hard knocks.

**Happiness:**  
A happy man is one satisfied with the present to the full, too much so for the future.

**Fame:**  
With fame I become more and more stupid, which of course is a very common phenomenon.

**Life:**  
Life is so good, that, for me, it is the supreme value to which all other values are subordinate.

**Ageing:**  
I have reached an age when, if I were to die, it would be a relief to me, but I don't think so.

**Prayer:**  
The only way to escape the physical struggle of progress is to pray for it.

**Problems:**  
Fear of mistakes has always been the basis of most human progress.

**Relativity:**  
As I am sitting with a pen in my hand, I feel a great responsibility, but a little bit of it is a little bit of a burden.

**Goals:**  
I do not know what I should do, but I know that I should do it, and I should do it as well as I can.

**History:**  
The only freedom against duty and propriety and all other things is freedom. This is a slow and painful process.

**Stability:**  
I find it a little odd that I am a little bit of a man, but I am a little bit of a man.

**Values:**  
I do not know what I should do, but I know that I should do it, and I should do it as well as I can.

**Imagination:**  
When I think of myself and of the world, I feel a great responsibility, but a little bit of it is a little bit of a burden.



## Summative Assessment

- **Assessment *of* learning** is assessment for accountability purposes, to determine a pupil's level of performance on a specific task or at the conclusion of a unit of teaching and learning. It can be a powerful diagnostic tool to inform and improve language learning with precision.





# Formative Assessment

- **Assessment *for* learning**, acknowledges that assessment should occur as a regular part of teaching and learning and that the information gained from assessment activities can be used to shape the teaching and learning process.





# Assessment *for* Learning

TRADITIONAL/SUMMATIVE	AUTHENTIC/FORMATIVE
CONTRIVED	REAL-LIFE
RECALL/RECOGNITION	CONSTRUCTION/APPLICATION
TEACHER DIRECTED	STUDENT DIRECTED
COVERAGE	UN-COVERAGE
SELECTING A RESPONSE	PRODUCING/PERFORMING/ PRESENTING
PASSIVE LEARNING	ACTIVE LEARNING/SELF- ASSESSMENT/METACOGNITION
STRUCTURED	OPEN-ENDED



# Metacognition

- **Assessment *as* learning** is about reflecting on evidence of learning. Students and teachers set learning goals, share learning intentions and success criteria, and evaluate their learning through dialogue and self and peer assessment.





# Assessment *as* Learning

- Students gain a deeper understanding of their skills, knowledge, level of understanding and the expected standards.
- Students develop ownership of the learning process.
- They learn to plan for how to improve their skills and understanding.

WHAT MATTERS MOST  
IS HOW YOU SEE YOURSELF.





# Culture of learning

- What do I want my students to learn?
- Why does it matter?
- What do they already know?
- How will they demonstrate learning?
- How will they get there?
- How well do I expect them to do it?



**Deep learning: Identification of concept, skills, knowledge and understanding to be assessed**



**Essential learning goal & key learning ideas**



**Precision: Data & pre-assessment**



**Targeted assessment**

Formative  Summative



**Peer/Self assessment**



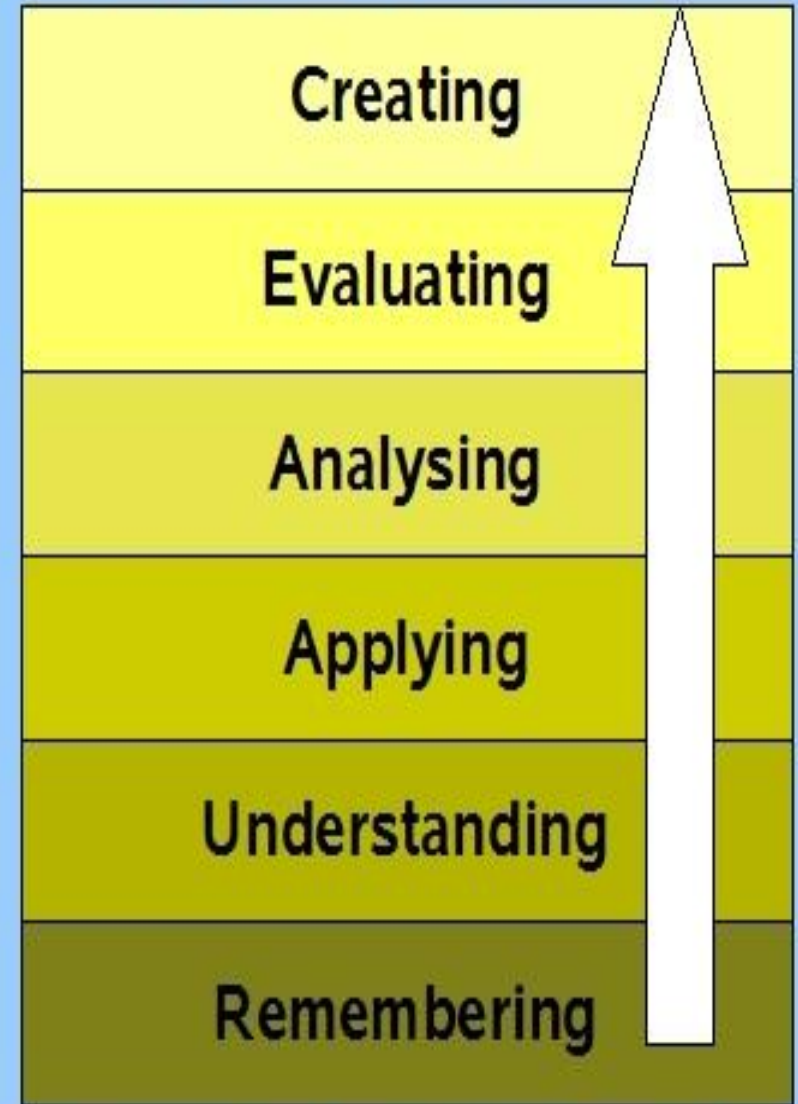
**Timely and precise feedback**



# The Verbs

- Blooms revised taxonomy of knowledge (Anderson & Krathwohl, 2001)
- Build the demands and higher-order expectations of the task by changing the verbs.
- Apply, explain, evaluate, create, synthesise...

## Higher Order Thinking Skills

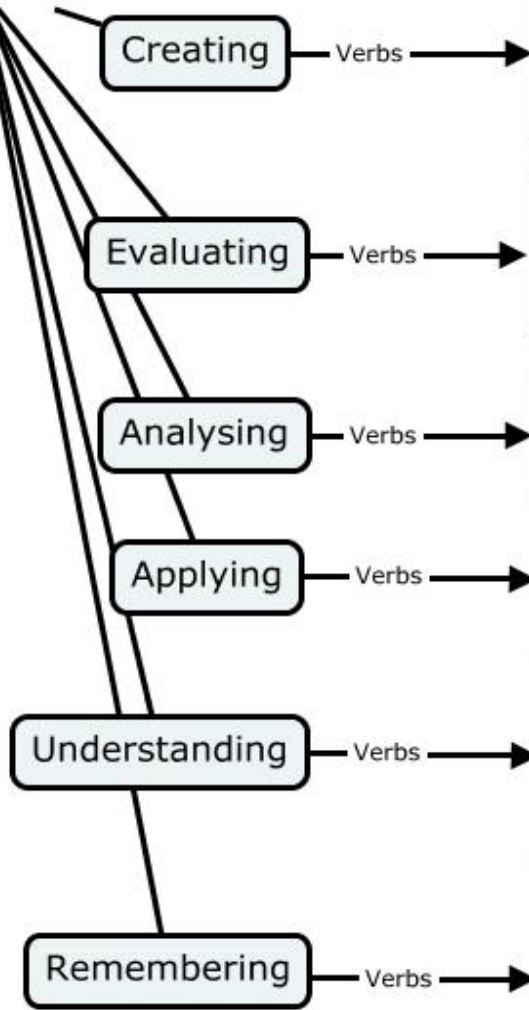


## Lower Order Thinking Skills



# Bloom's Digital Taxonomy

Key Terms



Creating

Verbs

**Designing, constructing, planning, producing, inventing, devising, making,** programming, filming, animating, blogging video blogging, mixing, re-mixing, wiki-ing, publishing, videocasting, podcasting, directing, broadcasting

Evaluating

Verbs

**Checking, hypothesising, critiquing, Experimenting, judging, testing, Detecting, Monitoring,** blog commenting, reviewing, posting, moderating, collaborating, networking, refactoring, testing.

Analysing

Verbs

**Comparing, organising, deconstructing Attributing, outlining, finding, structuring, integrating,** mashing, linking, validating, reverse engineering, cracking, media clipping

Applying

Verbs

**Implementing, carrying out, using, executing,** running, loading, playing operating, hacking, uploading, sharing, editing

Understanding

Verbs

**Interpreting, Summarising, inferring, paraphrasing, classifying, comparing, explaining, exemplifying,** advanced searches, Boolean searches, blog journaling, twittering, categorising, tagging, commenting, annotating subscribing.

Remembering

Verbs

**Recognising, Listing, Describing, Identifying, Retrieving, Naming, Locating, Finding,** bullet pointing, highlighting bookmarking, social networking, social bookmarking, favouriting/local bookmarking, searching, googling.

## HOTS Higher Order Thinking Skills

### COMMUNICATION SPECTRUM

- Collaborating
- Moderating
- Negotiating
- Debating
- Commenting
- Net meeting
- Skyping
- video conferencing
- Reviewing
- Questioning
- Replying
- Posting & Blogging
- Networking
- Contributing
- Chatting
- e-mailing
- Twittering/Microblogging
- Instant messaging
- Texting

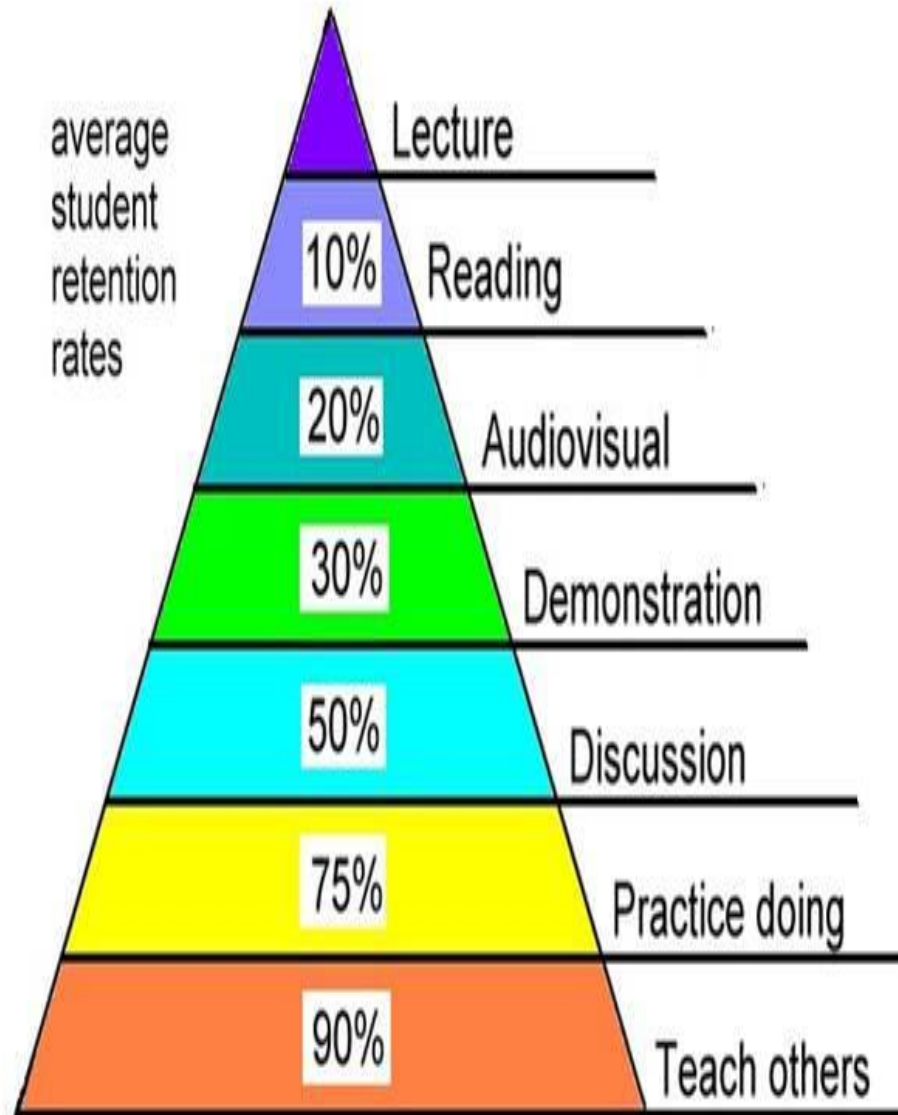
## LOTS Lower Order Thinking Skills



# Higher-order Tasks

- Problem solving
- Creativity
- Critical thinking
- Investigation
- Collaborating and sharing
- Teaching others
- Evaluating and reflecting

## Learning Pyramid



Source: National Training Laboratories, Bethel, Maine



# Risk Taking

- Personalisation and differentiation
- Moving towards student directed and open ended
- Students to design own task
- A wide range of choices – even a free choice negotiated with the teacher





# Approaches to Assessment

The background image shows a classroom setting. On the left, a teacher with a long white beard and a black cap, wearing a maroon robe, stands behind a wooden podium. On the right, a young boy in a grey and white school uniform stands holding a microphone and a piece of paper, appearing to be giving a presentation. A large blue screen is visible in the background.



# Student Directed

- Invite creativity and ownership
- Choice of presentation mode and form
- Target specific aspects to be assessed to address perceived issues with choice
- Teaching peers

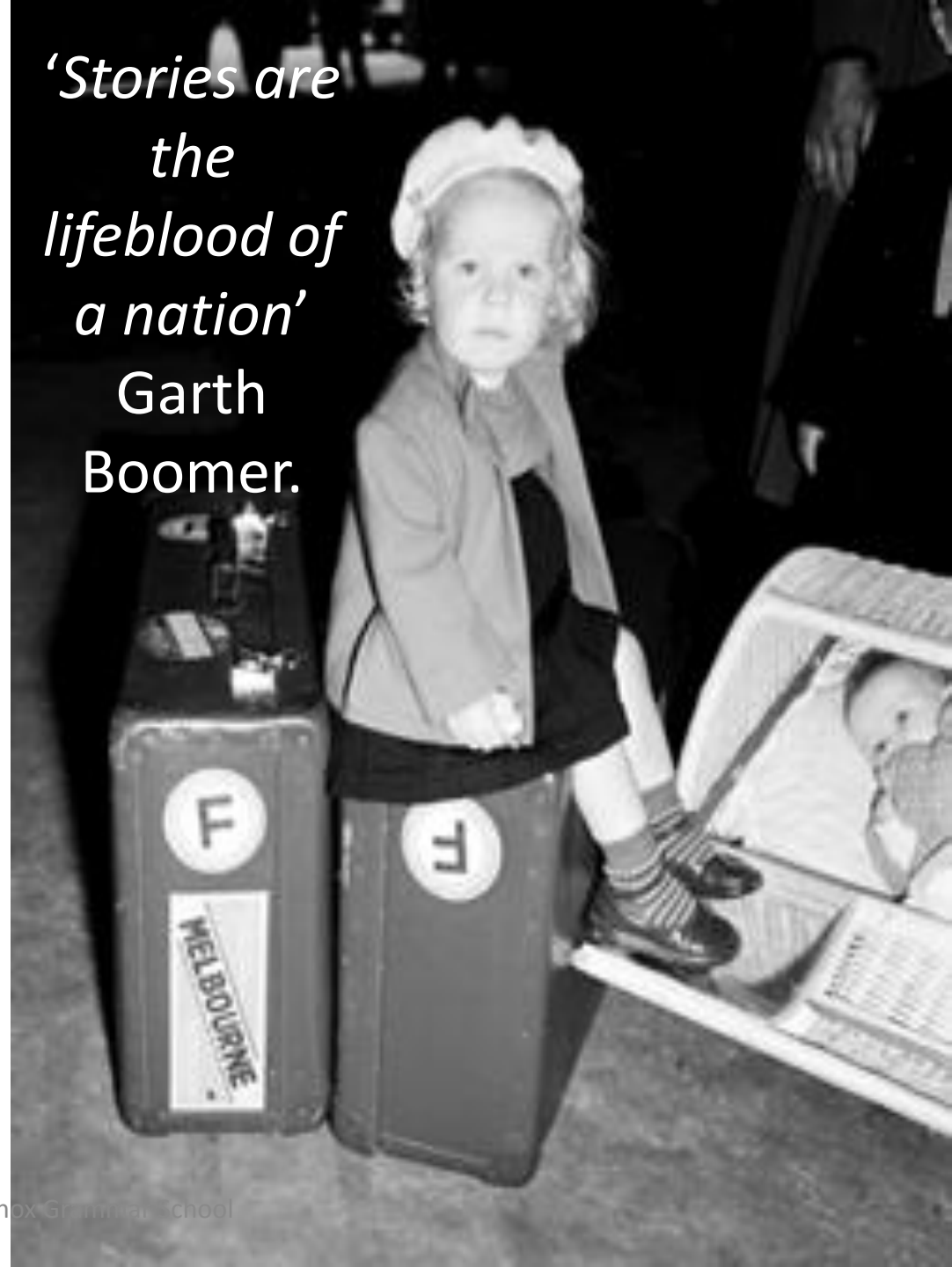





# Digi - Texts

- Digital timeline
- Narrative
- Life-story
- Local hero
- Multiple endings
- Alternative perspectives
- Soundscape
- Digital poem
- News report
- Travel tale: Google Earth

*'Stories are  
the  
lifeblood of  
a nation'*  
Garth  
Boomer.







The force of our tidal current exhumes all in its wake,  
and I batter down the final door to this humble habitat  
of a once-sparse existence.

I gasp for precious breath as the drowning sound of  
silence pulls me deeper into it's airless void.

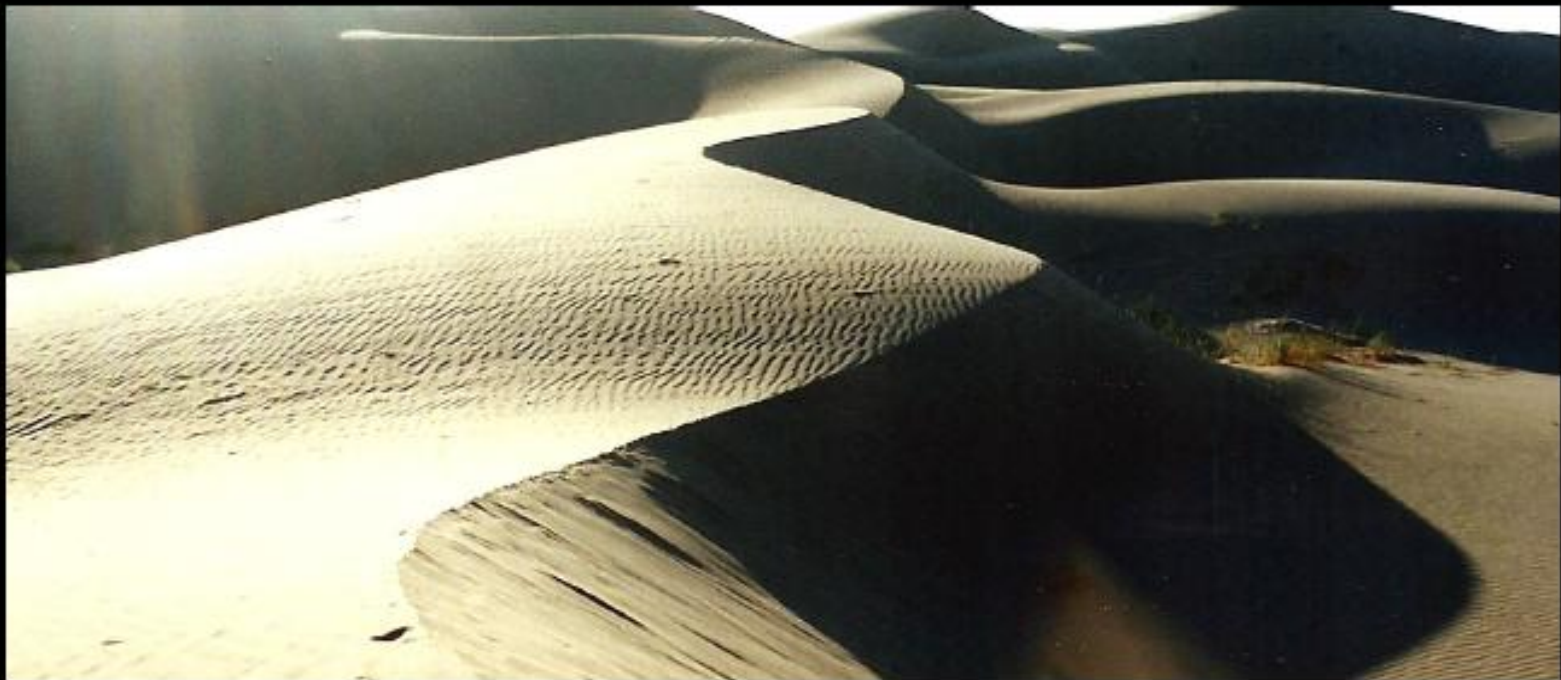
My eyelids blink, a camera's shutter, intent on  
capturing various angles of the scene, reporting details  
to a brain too young and unprepared to absorb the  
horrific content of the news.

Stark reality slowly seeps into the crevices of my  
mind...

Awash in blood and gore before me, the disfigured  
remains of a young family.

Reduced to mere detritus spewed out in the wake of  
our flawed and futile mission.





I surface to find I am cast adrift. With newborn ears, I hear the cold and callous chatter of voices indifferent and unmoved by the carnage.

Dazed, I drift away from their mocking brutality, leaving them to scavenge through the meager belongings of a family devoured by man's cruel nature.

I'm just a boy.

A warm zephyr gently embraces me, whispering promises to carry me home, to carry me back into the safe arms of my childhood innocence.

I willingly accept the offer, and float away into night.



**The unknown; a place of  
Uncertainty and  
ignorance,  
Sleeps, silently in wait.**

**As it changes into  
What is known, it is free  
from it's  
State of comatose.**









# Oral Tasks

- Podcasts: <http://www.how-to-podcast-tutorial.com/17-audacity-tutorial.htm>
- Oral tales
- Interviews
- Speeches
- Advertisements
- Performance poetry
- Raps
- News/Weather presentations





# Learning Objects

- Quizzes in ***Captivate or Presenter***
- Cartoons in <http://goanimate.com/>
- Summaries, research in ***OneNote***
- Graphic Organisers in ***Freemind***
- Webquests: <http://www.schools.ash.org.au/paa2/>
- Prezi: <http://prezi.com/>





# Integrated Assessment

- Assessing outcomes across subjects
- Open-ended
- Project-based learning
- Connected to real world situation
- Shared with an audience



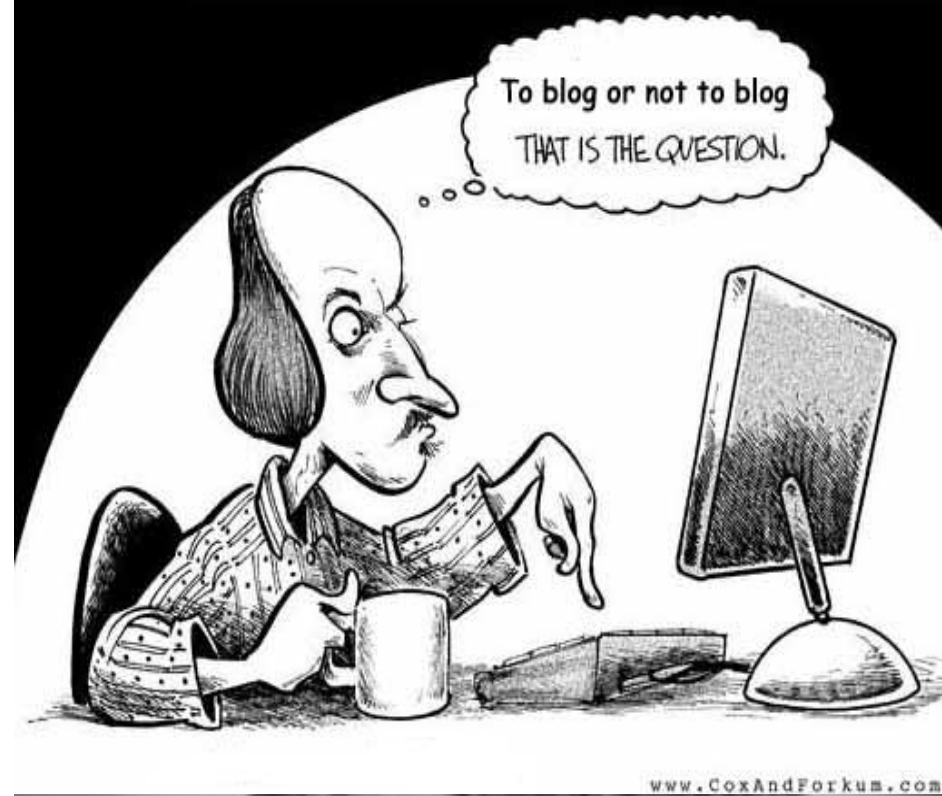






# Collaborating

- Blogs or Wikis:  
<http://connectivity2011.wikispaces.com/>
- Google docs
- Voicethread:  
<http://voicethread.com/>
- Edmodo
- OneNote
- Values Exchange





# Values Exchange

- Values and ethics is an essential, yet challenging area of the education of our students.
- Engages students to deliberate, reflect and develop informed opinions on ethical issues through understanding the complexity of decision making and to appreciate the role that values play in that process.
- How do you assess students in their understanding of values in education?
- How do you provide feedback to your students in Values Education?



Select a Case for Your Lesson:

Any Theme ▼

Any Year ▼

Search By Keyword...

Clear

Search

Download Lesson Plans  
and Teaching Tips

Values Exchange Links

Main Values Exchange

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Forum

Knox Grammar School

Cases

Surveys

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View More Cases →



## **Assess deep thinking and attitudes**

- Unit on reproduction and designer babies
- Students work through the theory on all aspects of reproduction
- Provides an ideal culmination to a unit of work to assess the students' ability to apply their knowledge.
- An interactive and stimulating use of ICT to enable the teacher to assess the way each student can transfer the concepts into a case involving ethics, values and attitudes.





# Case Detail Page

## STND-428 – DESIGNER BABIES? (2011)

**Closes April 7, 2012**

Throughout this unit you have investigated human reproduction, inheritance and related issues through reviewing scientific literature, working in groups and hearing presentations. You should now be in a position apply this knowledge and present an opinion on relevant social issues related to this area of study.

Biotechnology has advanced techniques in areas such as cloning, in vitro fertilisation (IVF), pre-implantation genetic diagnosis (PGD), and choosing the sex of a baby.

Babies can be designed for a number of reasons. Some 'fictitious' scenarios include (i) a couple who desperately want a girl, (ii) a couple who need to have a baby that has been genetically screened to provide an organ for a terminally ill son, (iii) a couple who already have a child with a genetic abnormality such as cystic fibrosis and want to ensure their next child is 'made' perfect, (iv) an infertile couple.

Is the design and making of babies using advances in biotechnology playing God? Are we playing with nature? Are these decisions best left to nature?

Read more at [www.actionbioscience.org](http://www.actionbioscience.org), [news.bbc.co.uk](http://news.bbc.co.uk), [www.abc.net.au](http://www.abc.net.au) and [www.bionetonline.org](http://www.bionetonline.org)

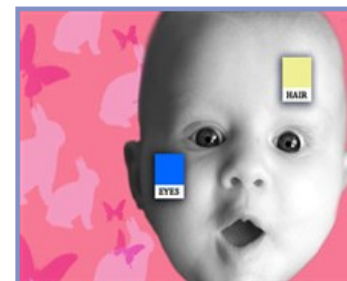
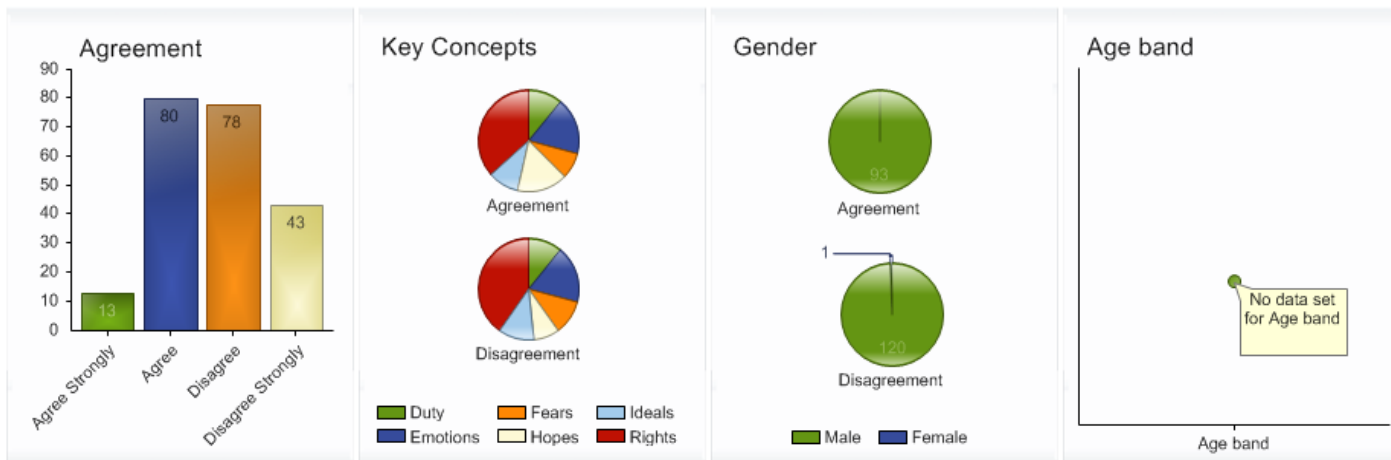
**It is proposed that people in society be allowed to design babies to suit their current situation, whatever it is**



[Click here to respond to the case in depth](#)





## Results

Respondents: 214






# Think Screen Basics Page




## DESIGNER BABIES? (2011)

It's proposed that people in society be allowed to design babies to suit their current situation, whatever it is



### The Basics

Submit 

### DESIGNER BABIES? (2011)

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Is the design and making of babies using advances in biotechnology playing God? Are we playing with nature? Are these decisions best left to nature?[less](#)

**It's proposed that:** people in society be allowed to design babies to suit their current situation, whatever it is

Do you agree with the proposal?

☐ I Agree    ☐ I Agree Strongly    ☒ I Disagree    ☐ I Disagree Strongly


---

Who matters most?

☐ You    ☐ No-One In Particular    ☐ Your School


☒ Everyone    ☐ A Group Of People Or Animals    ☐ One Individual Person

---

Go to Reactions 




# Think Screen Reactions Page




## DESIGNER BABIES? (2011)

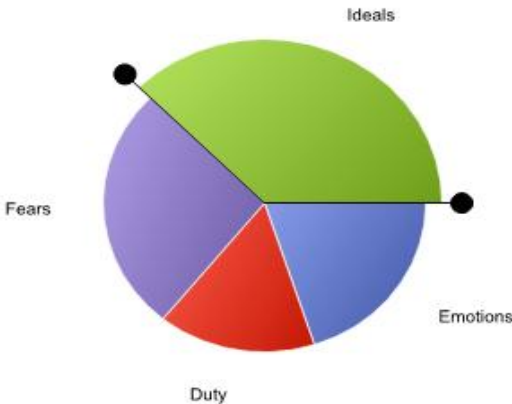
It's proposed that people in society be allowed to design babies to suit their current situation, whatever it is





### Reactions





**Add and Remove Ideas**

Ideals	Emotions	Hopes
Duty	Fears	Rights

#### 1. What ideal is most important in this case?

☐ Determination

☐ Forgiveness

☐ Patience

☐ Tolerance

☐ Justice

☐ Courage

☒ Balance

☐ Compassion

☐ Curiosity

☐ Respect

☐ Honesty

☐ Other ideal (write it)

#### 2. How confident are you that this ideal can be achieved in this case?

☐ Extremely

☐ A lot

☒ A bit

☐ Not at all


#### Ideals

I think that balance is extremely important. On the one hand you can say that it is wrong to change nature but on the other hand we do this all the time with our buildings, factories, medicines and all the other things we do to nature. I think the main thing is ....

[Go to Basics](#)[Go to Reasons](#)





# The Dashboard Home Page




**Values EXCHANGE**  
A VOICE FOR EVERYONE

[Home](#)
[Change Case](#)


[Print Report](#)




**Report**



**Filter**

Change report here



**Dashboard**  
STND-428 DESIGNER BABIES? (2011)  
Proposal: It is proposed that people in society be allowed to design babies to suit their current situation, whatever it is


Date: 17/06/2011  
Filters: Full Report - No filters specified

**Dashboard**

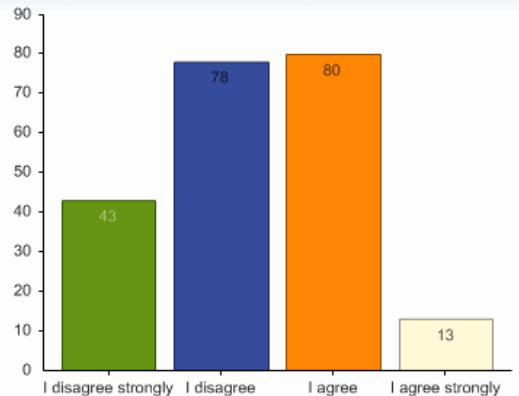
- [Dashboard](#)
- [Poll Results](#)
- [Who Matters Most](#)
- [Everyone's Views](#)
- [Reactions](#)
- [Reasons](#)
- [Forum](#)
- [A Contrasting View](#)
- [Alternatives](#)
- [Consensus](#)

**Filter**

- [Everyone](#)
- [People who Agreed](#)
- [People who Disagreed](#)
- [All Males](#)
- [All Females](#)
- [You](#)

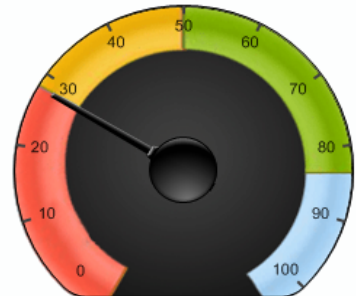
 [Advanced Filters...](#)

**Poll**  
Are we agreed?



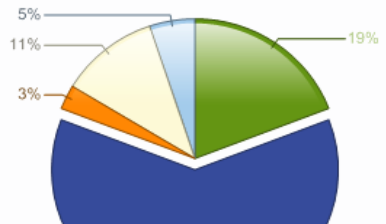
Response	Count
I disagree strongly	43
I disagree	78
I agree	80
I agree strongly	13

**Consensus**  
Are we on the same page?




28% Consensus

**Who matters the most**  
Are we focussed?



Category	Percentage
Dark Blue	5%
Light Blue	11%
Orange	3%
Dark Green	19%


**Reasons**  
Are we talking?



**David Seedhouse:** I think that balance is extremely important. On the one hand you can say that it is wrong to change nature but on the other hand we do this all the time with our buildings, factories, medicines and all the other things we do to nature. I think the main thing is ....



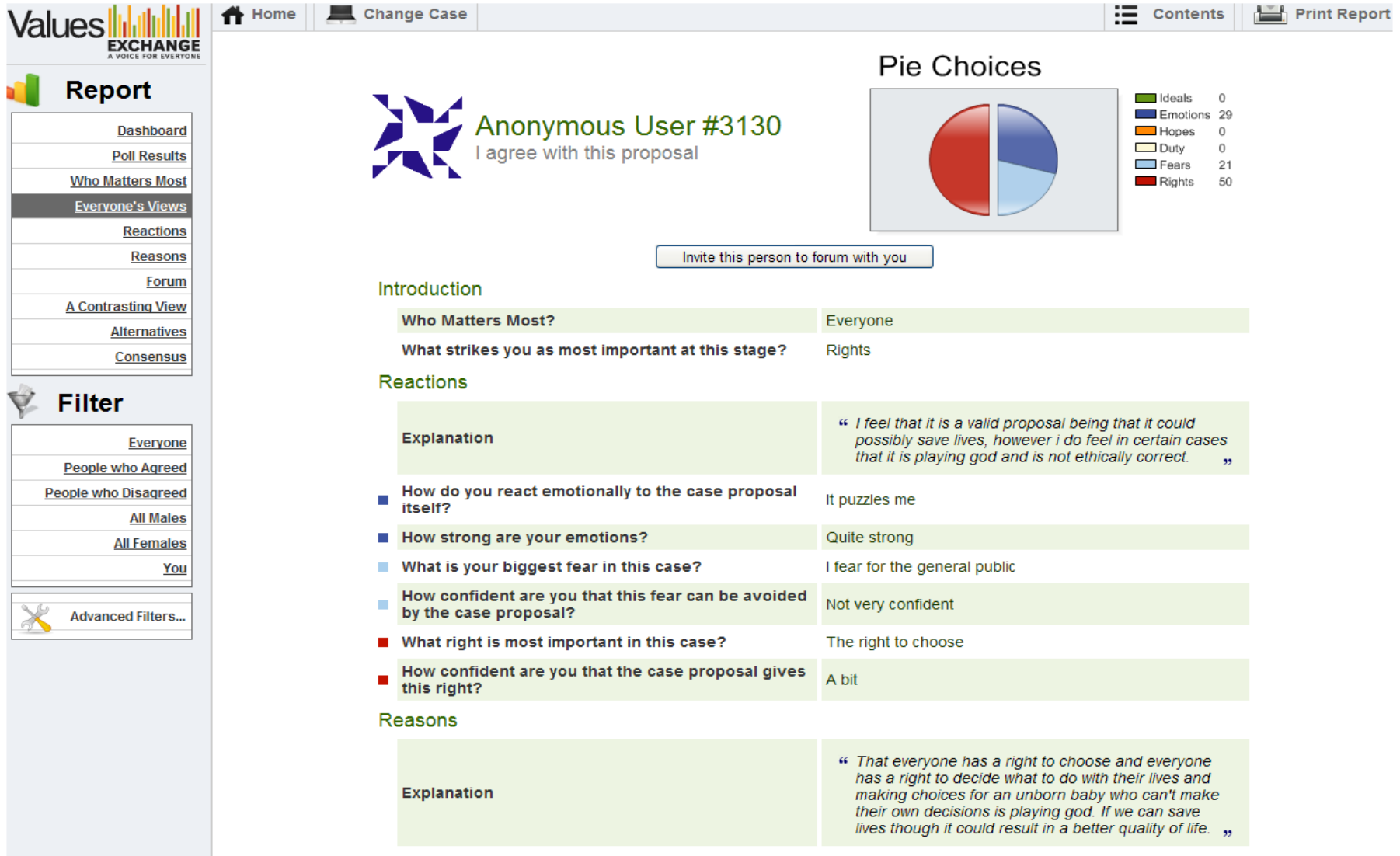
**David Jerogin:** I think that designer babies are the wrong thing to do because it seems like your god, making all the rules and what happens if something goes wrong, it'll be on your hands, i think we should leave child birth and let life run its course



**Anonymous User 3306:** they should only be allowed to change the dna so that the baby can live without diseases and syndromes that will



# Dashboard with student response





<http://knox.values-exchange.com>



*“Assessment should be first and foremost for the learner’s sake, designed and implemented to provide useful feedback to the learner on worthy tasks to make improved performance and ultimate mastery more likely” (Wiggins, 2006).*



# Importance of Feedforward

- *“An expert teacher, mentor or coach can readily explain, demonstrate and detect flaws in performance. He or she can also identify talent and potential, and build on these.”*
- *“In contrast, trial and error learning or poor teaching are less effective and take longer. If performance flaws are not detected and corrected, these can become ingrained and will be much harder to eradicate later. Learners who don’t receive instruction, encouragement and correction can become disillusioned and quit due to lack of progress.”*

*(Dinham, Feedback on Feedback, 2008)*



# The Power of Feedback in School Settings

John Hattie (2003)

Feedback directed to the 'self'  
(e.g.: "You are a great student").  
'Rarely does it enhance  
achievement or learning'.

Increases the  
ability to  
accommodate  
feedback and  
create internal  
feedback...

## Level 3: Self-regulation

Relates to greater skill in self  
evaluation/self regulation

Feedback at this  
process level  
appears to be  
more effective  
than at the task  
level for enhancing  
deeper learning'

## Level 2: Process

Aimed at the processes used to create  
the product/task

'Having correct  
information is a  
pedestal on  
which processing  
and self-  
regulation can be  
effectively built.'

## Level 1: Task

'corrective feedback'  
information focussed

Pedestal of  
feedback

Most feedback  
remains task  
focused



# Feeding Forward

- Constructive
- Precise
- Connected to what is being assessed
- Timely
- Frequent (Holmes & Papageourgiou, 2009)
- Invites self-assessment and self-reflection
- Informs future teaching and learning



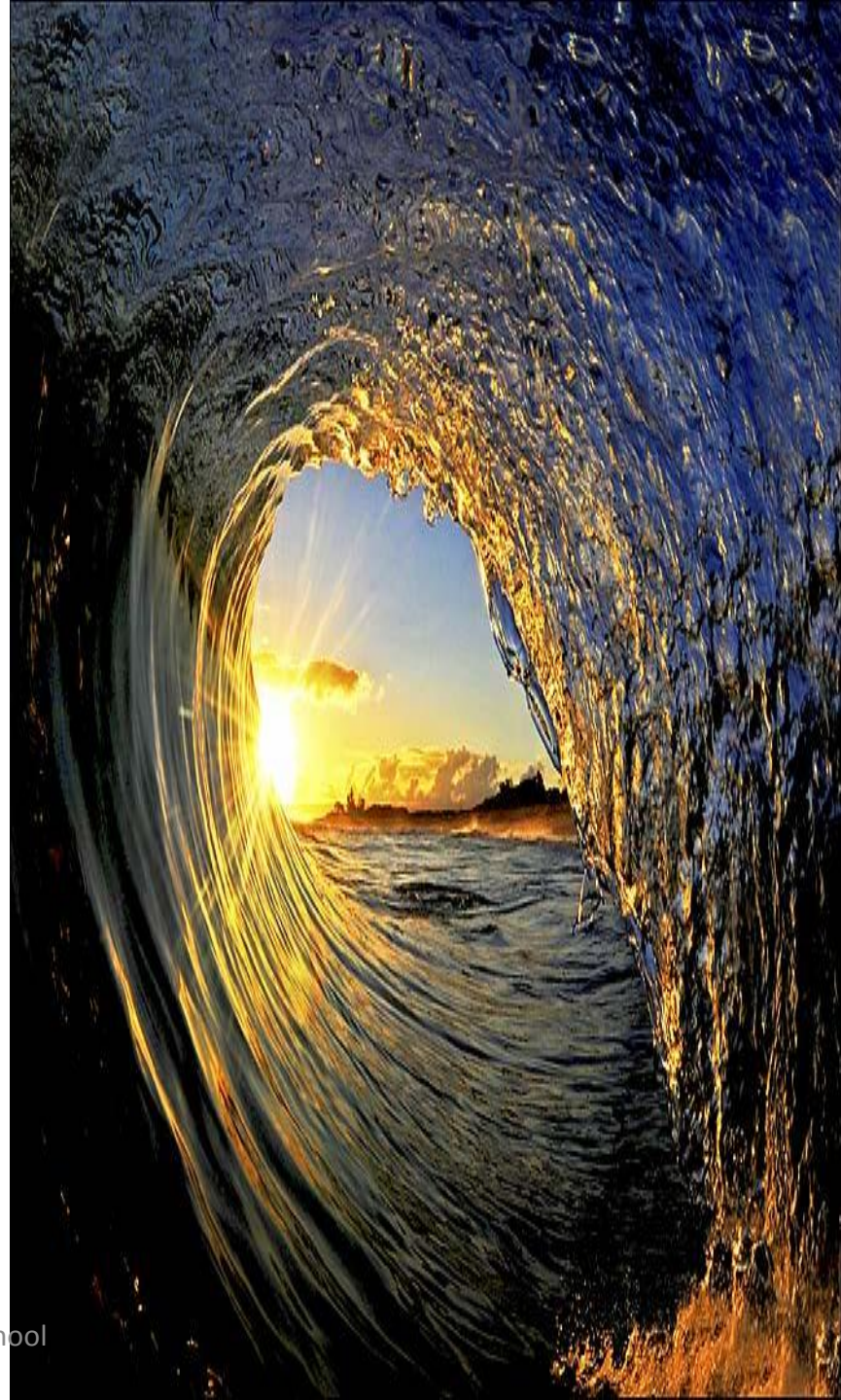


# Quality Feedforward

**Effective feedback  
answers three  
questions:**

- Where am I going? (the goals) Feed up
- How am I going? Feed back
- Where to next? Feed Forward

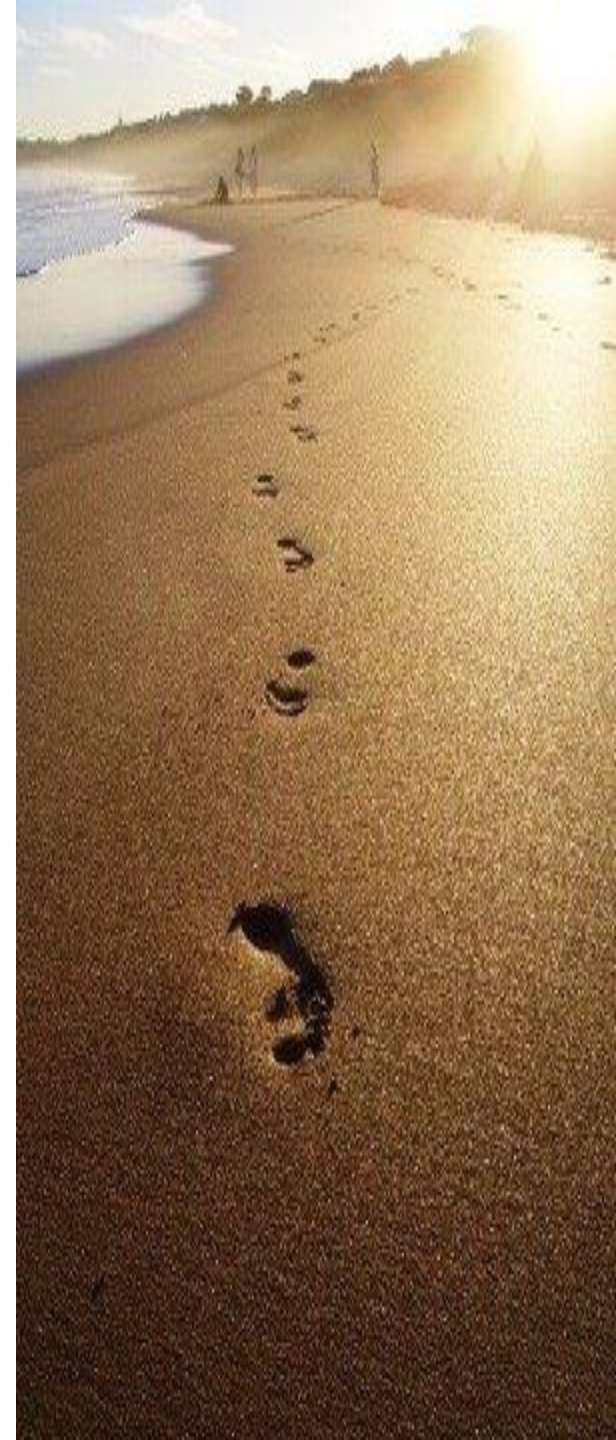
(Hattie & Timperely, 2009)





# Journey to self & peer assessment

- Encourage peer discussion about what constitutes effective use of language.
- Invite diagnostic peer and self assessment by using a rubric and marking scheme that has been clearly explained to the students.
- Require students to design the assessment task and marking criteria.
- Require students to develop an individualised personal learning plan.





The story, War, opens with the soldier and his unit battling to overcome the harsh environment that pose a risk to their physical health. Nature's extremes are personified. 'ferocious wave of sand and smoke' and a 'voracious beast of destruction' are two early examples of the extended metaphor, attributing animal characteristics to natural events. The relationship between two contrasting environments also acts as a motif of the ocean, recurring throughout the course of the story. Sibilance used is intended to make the reader feel discomfort, mirroring the state of the speaker. As with water, the "wave" sucks the lungs empty and then floods them with their matter – a sense of drowning, that hopefully the reader can relate to at some level.

The story progresses with the following: 'each breath marches onward while we battle with our alien surroundings'. Here, the intention was to use language that draws the reader's cumulative memories of participating or observing military drill and repetitious marching. The combined words "marches onward" recalls the visual image of an army marching in time, cohesively moving in a singular direction, that also connects to our own personal dependency on the rhythmic patterns of breathe and heart.



# Self assessment

- **E-Portfolios:**

- Recreate the narrative of learning
- Scaffolded and strategic
- Power Point, One Note, Word, MovieMaker...

- **Graphic organisers:**

- Inspiration or Kidspiration -  
<http://www.inspiration.com/>
- Webspiration:  
<http://www.mywebspiration.com/>
- Freemind:  
<http://freemind.sourceforge.net/wiki/index.php/Download>





# Self Assessment

- **Voki:** <http://www.voki.com/>  
<http://>
- [www.xtranormal.com/](http://www.xtranormal.com/)
- **Wordle** -  
<http://www.wordle.net/>
- **Tagxedo:**  
<http://www.tagxedo.com/>
- **Museum Box:**  
<http://museumbox.e2bn.org/>





Winds whipping up fresh snow, chilly winds sending shivers down your spine and the adrenaline rush as fly like a bullet down the mountain. As you reach the bottom you stare back up at the massive peak **which** you just descended in under a minute. **As you** stare back up at the mountain, the snow covering the cap of the mountain floats in the air and drifts back down earth like **sparkling** rain. **As it** hits the ground it is absorbed into the shining white layer that covers the rock **beneath**.

The chair lift sways as it climbs the majestic peak; your breath making larger clouds as the temperature becomes **colder**. Dismounting the chairlift, the view takes your breath away. The base is crowded

Comment [P1]: Not needed

Comment [P2]: Replace or delete

Comment [P3]: Replace with another adjective – too clichéd.

Comment [P4]: Replace – vary sentence beginnings

Comment [P5]: Effective use of sibilance

Comment [P6]: Fabulous



# Peer Assessment

- *“When students are more active participants in the whole process, then feedback is likely to be most useful to students’ learning” (Hattie & Timperley, 2007).*
- *“When students get to see other students’ work it deepens understanding of the learning goals” (Nicol, 2008)*





*‘When learning something challenging we don’t always get it right the first time. **Errors are inevitable.** Indeed they are helpful; learning is a **trial and error process**, with success achieved by recognising errors and correcting them to obtain a closer approximation to the final goal. Students shouldn’t be crippled by errors, instead they must take **responsibility** for correction’  
(Petty, 2009).*



# IS THIS GOOD FEEDBACK?

## Radioisotopes (Industry and Medicine)

(HSC Q19 2007, 7 marks)

Underline  
the  
key terms

There are many benefits and problems associated with the use of radioisotopes in industry and medicine. Evaluate the impact on society of the use of radioisotopes in both industry and medicine. In your answer, give examples of specific radioisotopes, making reference to their chemical properties. (7 marks)

Evaluate

Make a judgement based on criteria; determine the value of.

MEDICINE Technetium

RADIOISOTOPE: ~~Technetium~~ -  $^{99m}\text{Tc}$

USE: Used in medicine as a radioactive contrast

properties: material to be used in various scans, including CAT scans and MRI's, to highlight any tumors or abnormalities, which can be then specifically treated.

? how → IMPACT ON SOCIETY: Various conditions, such as cancer, can be diagnosed and treated correctly through the radioactive alpha, beta and gamma radiation.

Technetium

~~Technetium~~  $^{99m}\text{Tc}$  emits, through the decay of its nucleus:

Technetium  $^{99m}\text{Tc} \rightarrow \text{U}^{82} + \gamma$  gamma radiation X Re-do

INDUSTRY

RADIOISOTOPE: ~~Americium~~ AMERICIUM

Properties → equation

USE: Used in smoke detectors, smoke allows the radiation from the Am to conduct electrons, thus making a circuit and switching the alarm on.

IMPACT: Saves lives by detecting smoke from fire, fires can be averted by early detection.

Needs a full review

→ No evaluation?

Re-do

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2.  
Just 1.



# OR IS THIS BETTER?

## Radioisotopes (Industry and Medicine)

(HSC Q19 2007, 7 marks)

o evaluation  
i your  
answer

There are many benefits and problems associated with the use of radioisotopes in industry and medicine. Evaluate the impact on society of the use of radioisotopes in both industry and medicine. In your answer, give examples of specific radioisotopes, making reference to their chemical properties. (7 marks)

**Evaluate**

Make a judgement based on criteria; determine the value of.

Use an equation  ${}^{99}_{42}\text{Tc} \rightarrow {}^{99}_{42}\text{Tc} + \gamma$

MEDICINE Technetium

RADIOISOTOPE: ~~Technetium~~ -  ${}^{99}\text{m}$

USE: Used in medicine as a radioactive contrast

more specific  
1.  $\gamma$  is penetrating material to be used in various scans, including CAT scans

end MRI's, to highlight any tumors or abnormalities, No problems e.g. radiation, DNA mutation, & workers at risk.

o look at which can be then specifically treated  
all life  
of 6 hrs

IMPACT ON SOCIETY: Various conditions, such as cancer,

can be diagnosed and treated correctly through

the radioactive alpha, beta and gamma radiation

Technetium  ${}^{99}\text{m}$  emits, through the decay of its nucleus:

Technetium  ${}^{99}\text{m} \rightarrow \text{U}^{82}\text{Te}$  gamma radiation

INDUSTRY

RADIOISOTOPE: ~~Americium~~ AMERICIUM  $\rightarrow$  how about Sodium  ${}^{24}\text{Na}$   ${}^{23}\text{Na} + \text{a}^1\text{n} \rightarrow {}^{24}\text{Na}$

USE: Used in smoke detectors, smoke allows the radiation from the Am to conduct electrons, thus completing the circuit so alarm sounds.

With  ${}^{24}\text{Na}$

or can

look at

show half

life

a the

rate of

3 particle

detection

with a larger

count

making a circuit and switching the alarm on

IMPACT: Saves lives by detecting smoke from fire,

fires can be averted by early detection

Needs a full review

Evaluation: A good example would be something like.

Radioisotopes have benefited society through

their application to medicine & industry. The

problems listed are regulated in Australia & technology will ensure constant improvement.



# This feedback is used as a starting point for self and peer assessment

## Radioisotopes (Industry and Medicine)

(HSC Q19 2007, 7 marks)

Underline the key terms

There are many benefits and problems associated with the use of radioisotopes in industry and medicine. Evaluate the impact on society of the use of radioisotopes in both industry and medicine. In your answer, give examples of specific radioisotopes, making reference to their chemical properties. (7 marks)

Evaluate

Make a judgement based on criteria; determine the value of.

MEDICINE Technetium

RADIOISOTOPE: ~~Technetium~~ -  $^{99m}\text{Tc}$

USE: Used in medicine as a radioactive contrast

properties: material to be used in various scans, including CAT scans and MRI's, to highlight any tumors or abnormalities, which can be then specifically treated.

? how → IMPACT ON SOCIETY: Various conditions, such as cancer, can be diagnosed and treated correctly through the radioactive alpha, beta and gamma radiation.

Technetium  $^{99m}\text{Tc}$  emits, through the decay of its nucleus:

Technetium  $^{99m}\text{Tc} \rightarrow \text{U}^{82} + \gamma$  gamma radiation. Re-do

INDUSTRY

RADIOISOTOPE: ~~Samarium~~ AMERICIUM

USE: Used in smoke detectors, smoke allows the

radiation from the Am to conduct electrons, thus making a circuit and switching the alarm on.

IMPACT: Saves lives by detecting smoke from fire, fires can be averted by early detection.

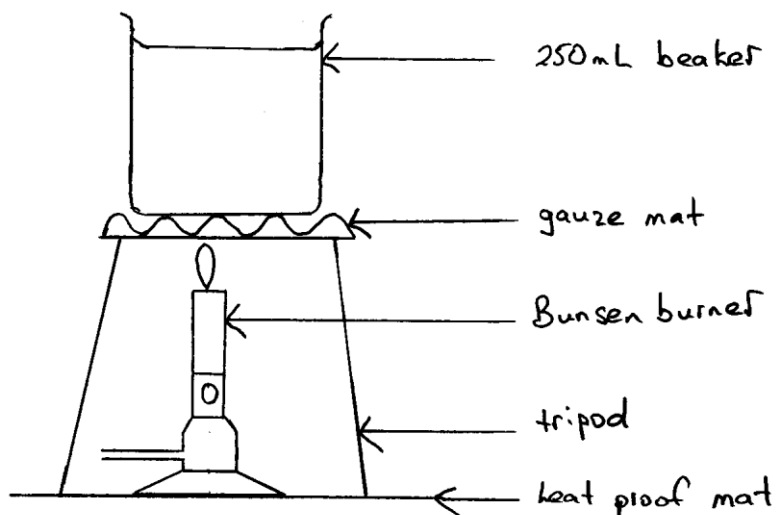
Needs a full review

→ No evaluation?

→ Re-do



# Year 10 Skills Exercise: Moving towards self – assessment through constant modelling



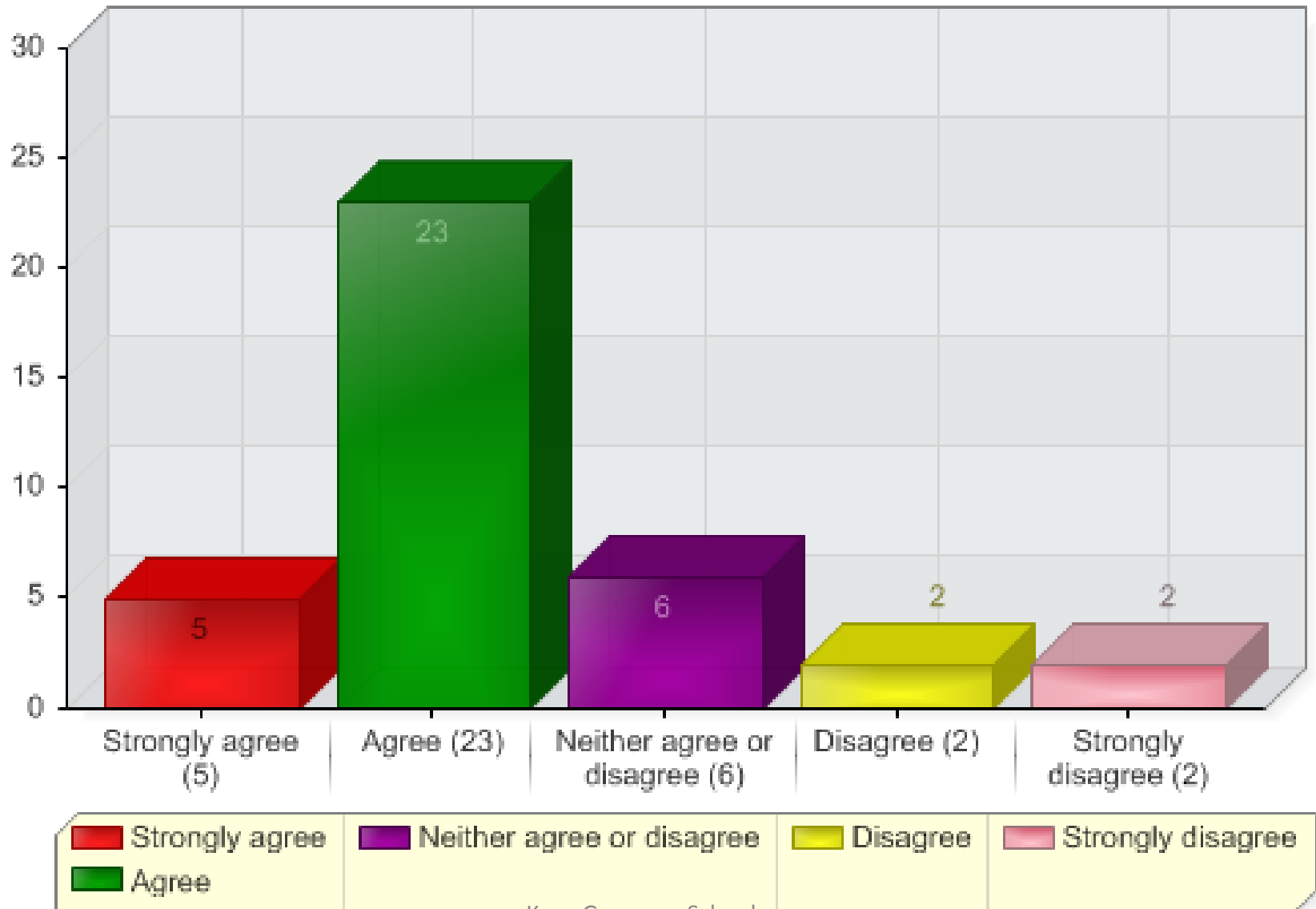
- Diagrams must be done in pencil.
- Diagrams must have a heading.
- Scientific diagrams are always done 2 dimensionally (cross section) and a ruler must be used for all straight lines.
- The diagram is to be large and all components must be in proportion.
- No lines are to be drawn across the top of glassware or where liquid is to pass through.
- All components of the diagram must be labelled (in pencil) and labels are to be clear and the arrow head is to touch identified object.

A typical student who achieves Academic Honours in Science extensively analyses and assesses examples of past and present effects of science on society, technology and the environment and their interactions. He applies and relates appropriate models, theories and laws, systems and **structures** to a wide range of situations. He plans and completes appropriate first-hand investigations, both individually and in teams and locates, extracts and evaluates information from a wide variety of first-hand and secondary sources. He independently justifies choices made from data to draw valid conclusions and selects, integrates and uses the most appropriate way to **demonstrate a very high level of competence in communicating** ideas and arguments.

[Example of student work](#)

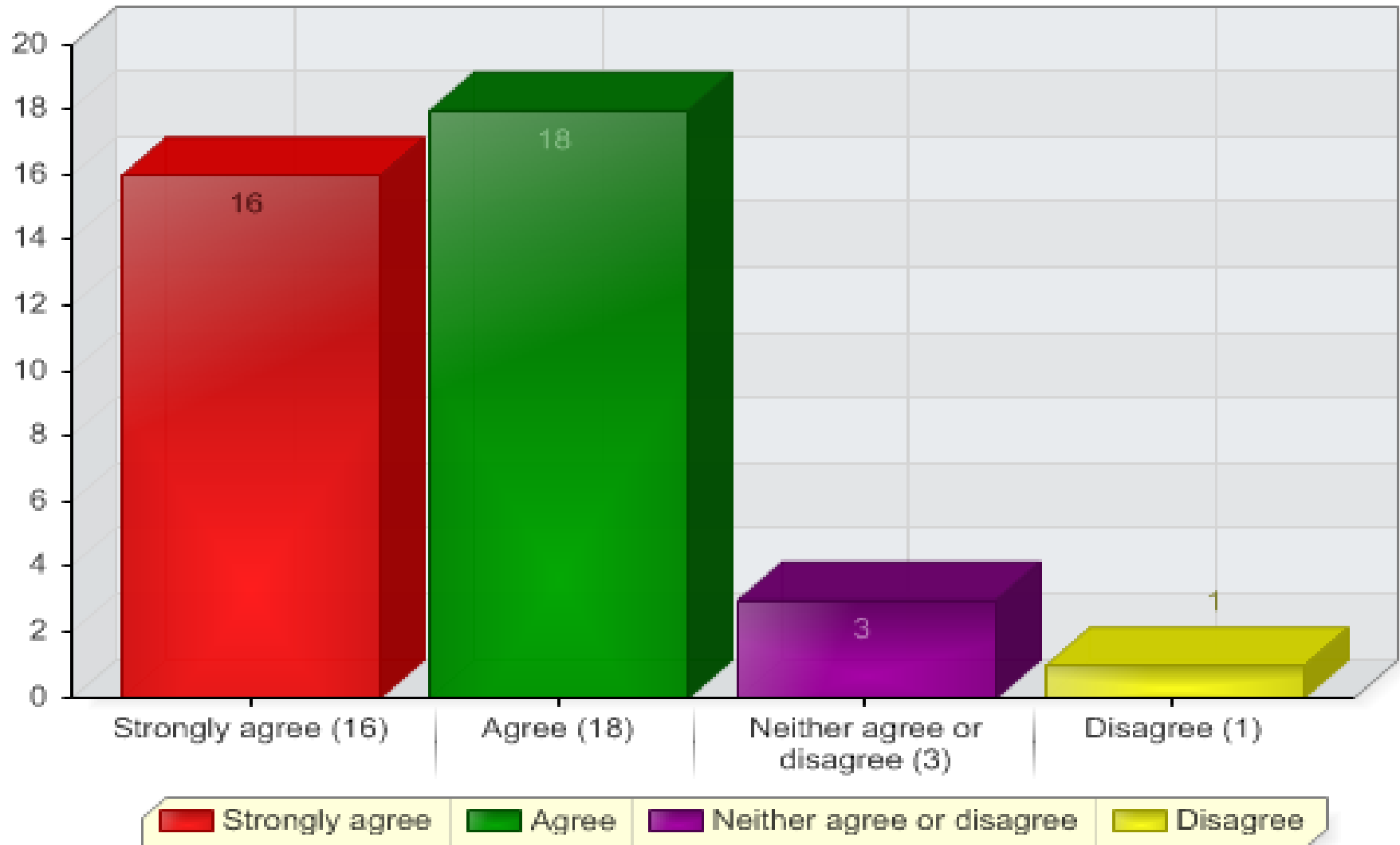


# I enjoyed learning through this skills exercise



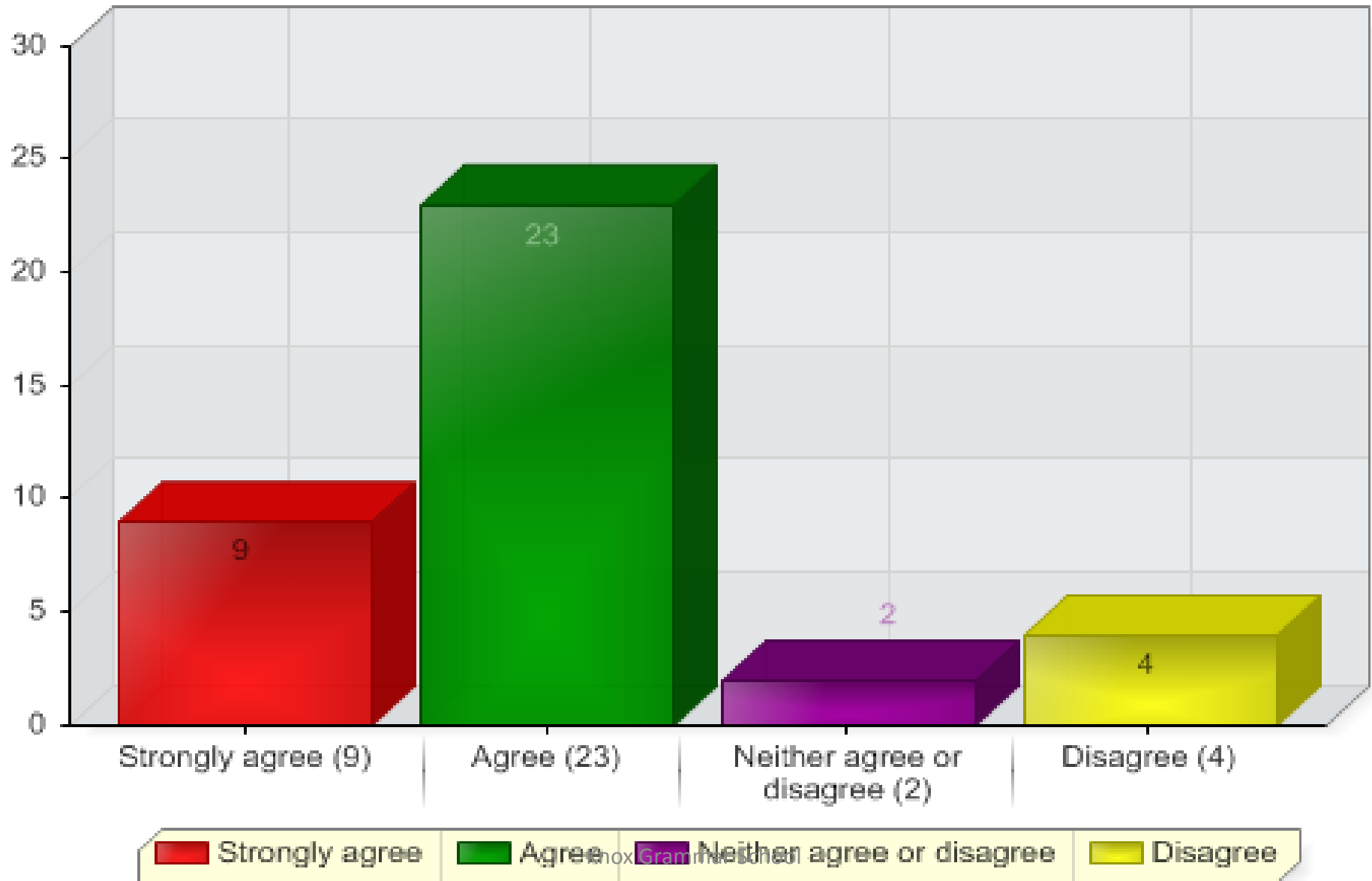


# This exercise will change the way I approach future experiments



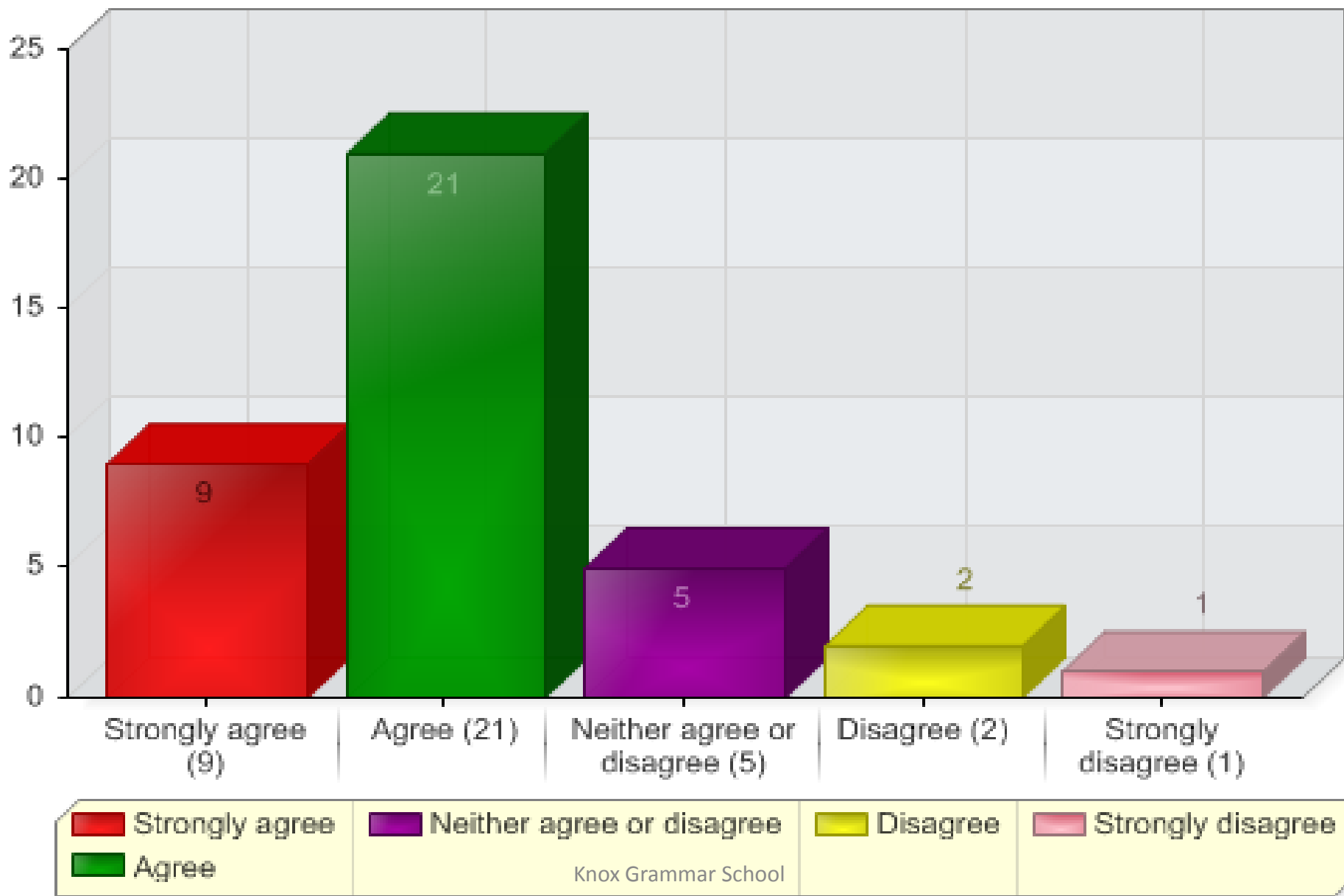


# I have a better understanding of the scientific method since doing this exercise





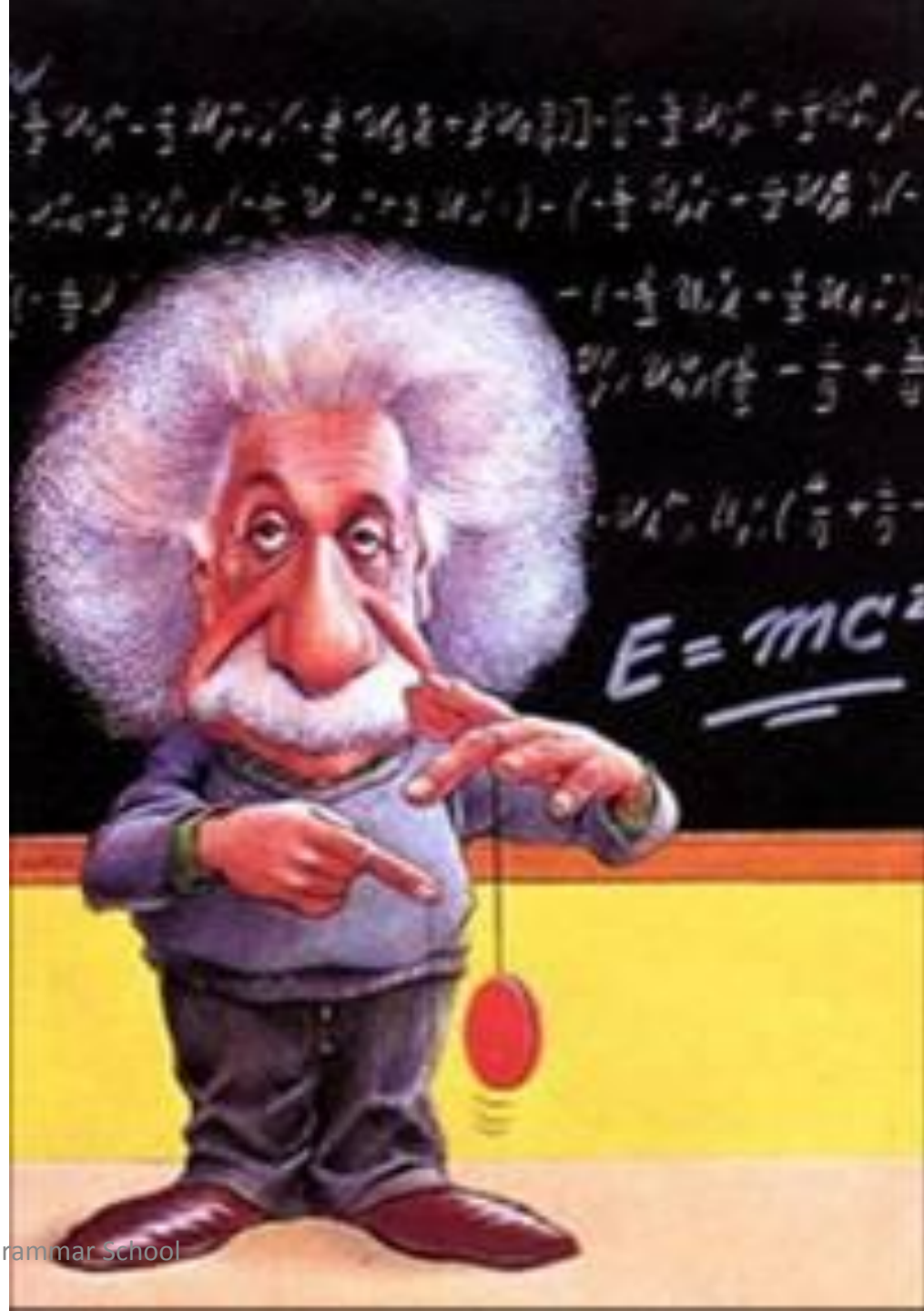
# I feel more confident with the basic skills since doing this exercise





# Year 12 Friday pHunday and Wednesday pHeedback

- It IS timely
- It IS specific
- It IS understandable to the receiver
- It DOES allow the student to act on the feedback (refine, revise, practice and retry)
- It IS collaborative.
- The objective is SELF AND GROUP REGULATION by September
- It is a mark free zone.





# Yr 12 Friday pHunday and Wednesday pHeedback

- Students answer a past final exam question on Friday.
- The question is marked with a comment rubric only
- Students come in each [Wednesday](#) morning before school for the review.
- Students are grouped to get a spread of abilities and classes.
- Names are not on comment feedback sheets.
- Students must read each script to match up the comment sheet with the script.
- Students then work collaboratively to rewrite the part of the answer that needs reworking.
- Students are encouraged to resubmit.



## [Student samples](#)

Students in action [Video 1](#)

Student comment [Video 2](#)



# Innovation

- **Global connections:**
  - Project with Korean students and PLC
  - Inquiry-based learning projects using Sim City
  - International project and decathlon: Links with da Vinci Museum in Milan and schools across the United States, South Africa, Asia and Europe





*“It is about learning to learn, about becoming independent thinkers and learners. It is about problem solving, team-work, knowledge of the world, adaptability, and comfort in a global system of technologies, conflict and complexity. It is about the joy of learning and the pleasure of productivity of using one’s learning in all facets of work and life pursuits” (2006, Fullan, Hill and Crevola, Breakthrough).*



<http://assessment4quality.wikispaces.com/>



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