Middleton Grange School

TRIENNIAL REPORT

SCIENCE DEPARTMENT

SEPTEMBER 2018

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Year 10 Projectile motion and forces – firing water bombs across the field

1. Department background

1.1 Learning Area: Year Level Classes and name of Teacher
1.2 Curriculum Area: Courses offered and the number of staff in the Curriculum Area

The science department is a rich, diverse and collegial department. We have 18 different teaching staff (4-part timers) and 1.2 science technician. We have 14 different courses in years 7 – 13. Many staff have responsibilities beyond their teaching classes.

1.1 Staff in Science in 2018:

Staff names		Code:	Position held:
Jenny	Addison	As	Senior Chemistry + Assistant Principal
Susan	Broom	Broom	Science Technician (28 hours terms 1&2, 25 hours terms 3&4)
Joanne	Calder	Cl	Fixed term reliever for Judy Mclean
Janet	Dixon	Dn	Senior Physics, principal nominee, TiC staff relief
Victoria	Goodman	Gm	Senior Chemistry & junior Science
Andrew	Given	Gv	Assistant curriculum leader, TiC Senior Biology (Part time)
James	Harris	Ha	Acting curriculum leader of Science, TiC Y11 general Science and senior Physics
Yvette	Hodge	Hg	Senior Biology & junior Science
Aidan	Harrison	Hr	Senior Biology & junior Science, study scholarship + bi-cultural across school's role.
Rudi	Jansen	JansR	Science maintenance Technician (nominal 5 hours per week)
Lucy	Denne	Ld	2 periods of Y7 Science; Y7 learning team
Anne	MacKechnie	Mc	Senior Biology & junior Science
Judy	Mclean	Me	Senior Biology & junior Science
Lesley	Parker	Pr	Senior Chemistry & junior Science (Part time)
Dave	Read	Re	4 periods of Y7 Science; Y7 learning team
Isaac	Stanton	St	Half junior Science, half PE. Fixed term. TiC middle school science.
Enzro	Smith	Sz	Y12 Chemistry & junior Science
Suzanne	Tennant	Tn	Senior Biology, CENCOL across schools (Part time)
Natalie	Tasker	Ts	2 periods of Y8 Science; Y8 learning team.
Matthew	Vannoort	Vt	Assistant curriculum leader, TiC Chemistry, Senior Chemistry Y12 boys' dean.
Gillian	vanVoorthuizen	Vv	6 hours of Y8 Science. Fixed term (Part time).

1.2.1 Courses taught in Science:

The table below outlines the courses we offer, the number of pupils taking the course (as of 2nd July 2018), the teachers who are teaching and coordinating each course. Staff teacher codes can be found in the table on the previous page.

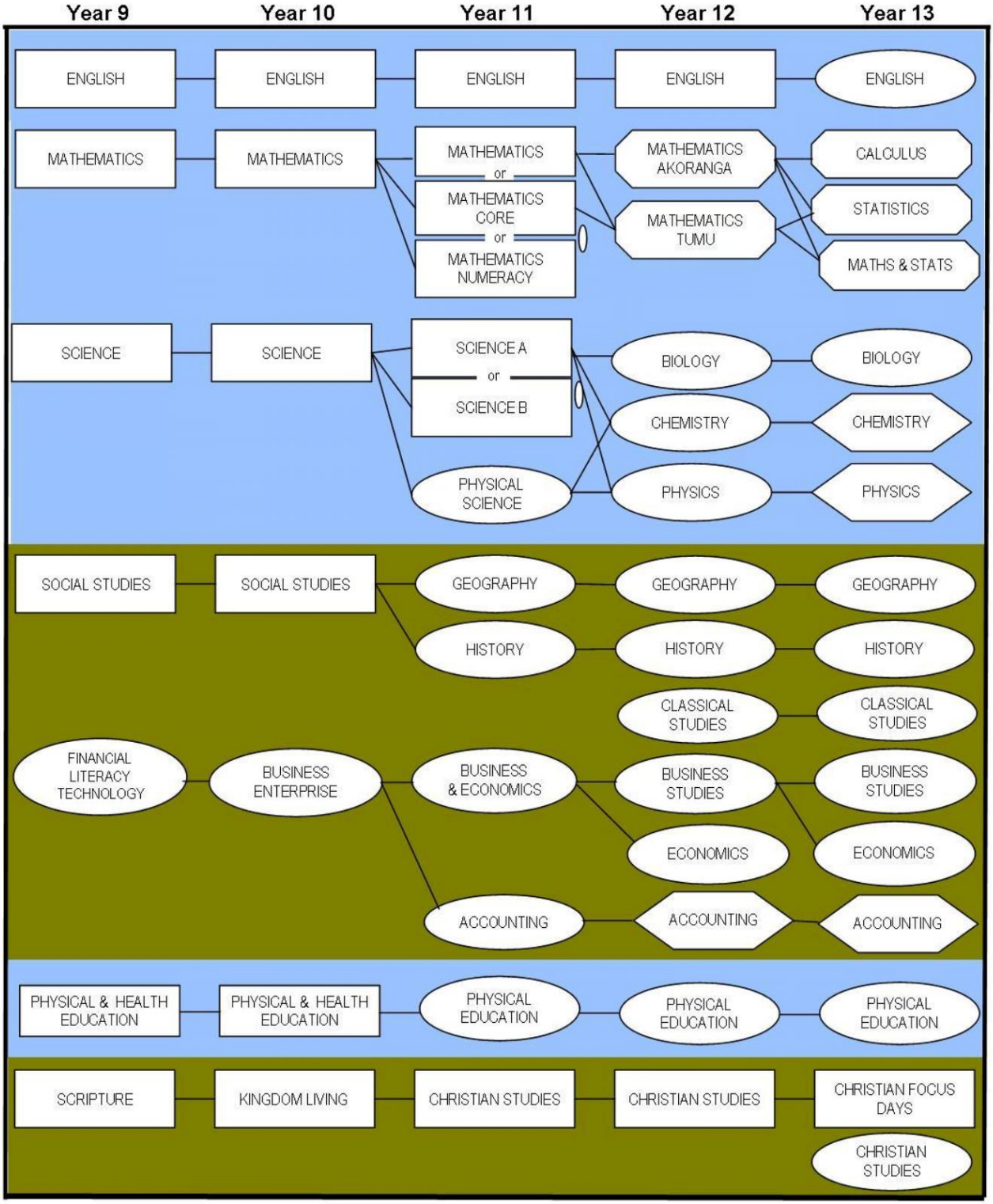
Course |code|		Number of pupils taking this course	Course Coordinator	Teacher	Teacher	Teacher	Teacher
Senior College:							
Year 13 Chemistry	13Che	60	Vt	As x2			
Year 13 Physics	13Phy	47	Ha	Dn			
Year 13 Biology	13Bio	69	Gv	Tn x2			
Year 12 Chemistry	12Che	106	Vt	Pr	Gm	Sz	
Year 12 Physics	12Phy	75	Ha	Dn x2			
Year 12 Biology	12Bio	114	Gv	Me x2	Mc	Hg	
Year 11 Physical science (optional)	11Psc	45	Pk	Gm			
Y11 Science (general)	11Sci	178	Ha	Mc x2	Vt	Gm	Sz x2
Y11 Science (Core)	11SCC	20	Me				
Y11 Science (Internal)	11SCA	15	Pr				
Middle School							
Year 10 Science	10Sci	133	St	Me x2	Mc	Hg	
Year 9 Science	9Sci	129	St x2	Hr x2	Gm		
Year 8Science	8Sci	102	Vv x3	Ts			
Year 7Science	7Sci	101	Re x2	Sz	Ld		

1.2.2 Course outlines:

On the next page is a diagram showing the progression of subjects in years 9-13. Science is compulsory for years 7 – 11. There is an additional optional Y11 course titled "Physical Science". For years 12 -13 science specialises into the 3 specific disciplines of biology, chemistry and physics.

On the 5 pages following the diagram, are the course outlines for Science for the 2018 academic year. These state what courses we offer, what specific standards and how many credits are on offer. A brief overview of each course and the prerequisites for entry are also outlined.

MIDDLETON GRANGE SCHOOL SUBJECTS : YEARS 9-13



This diagram is accurate at the time of printing. Subsequent changes may occur as courses develop.

Codes

- ***Compulsory*** subject
- Subject ***can*** be started at this level
- Subject ***not recommended*** to be started at this level
- Subject ***cannot*** be started at this level
- Subject ***does not*** go beyond this level at present

Option Subject viability does depend on enrolments.

SCIENCES

BIOLOGY (12BIO) — Level 2

COURSE DESCRIPTION:

The Level 2 course provides a basis for work covered in Level 3 Biology as well as providing a general background for work covered in further studies at University or Polytechnic.

The major topics covered are:

- Ecology
- Cell Biology
- Animal and Plant Diversity
- Genetics and Evolution
- Applied Biology

Please note that some details of course may be subject to change should the Curriculum Leader consider it to be of educational advantage to pupils to do so.

PRE-REQUISITES:

Pupils must have a passing grade in Level 1 Science Standards:

- AS90948
- AS90950

ACHIEVEMENT STANDARDS

		No. of Credits Ext.	Int.
AS91153	Carry out a practical investigation in a biology context, with supervision.		4
AS91154	Analyse the biological validity of information presented to the public.		3
AS91155	Demonstrate understanding of adaptation of plants or animals to their way of life		3
AS91157	Demonstrate understanding of genetic variation and change.	4	
AS91158	Investigate a pattern in an ecological community with supervision.		4
AS91159	Demonstrate understanding of gene expression.	4	

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Total No. of Credits **22**

BIOLOGY (13 BIO) — Level 3

COURSE DESCRIPTION:

This course consists of the following units of work:

- Animal and plant practical studies.
- Genetics and evolution.
- Animal behaviour and plant responses.
- Contemporary biological issues.
- Contemporary techniques in biotechnology.

Please note that some details of course may be subject to change should the Curriculum Leader consider it to be of educational advantage to pupils to do so.

PRE-REQUISITES:

Minimum of 12 credits in Level 2 Biology with passes in the two external standards:

- AS91157
- AS91159

ACHIEVEMENT STANDARDS *will be a selection of:*

		No. of Credits Ext.	Int.
AS91601	Carry out a practical investigation in a biological context, with guidance.		4
AS91602	Integrate biological knowledge to develop an informed response to a socio-scientific issue.		3
AS91603	Demonstrate understanding of the responses of plants and animals to their external environment.	5	
AS91605	Demonstrate understanding evolutionary processes leading to speciation.	4	
AS91607	Demonstrate understanding of human manipulations of genetic transfer and its biological implications.		3

This is a university entrance subject

Total No. of Credits **19**

CHEMISTRY (12CHE) — Level 2

COURSE DESCRIPTION:

In their study of chemistry pupils will use their developing scientific knowledge, skills and attitudes to:

- Investigate and develop an understanding of the ways materials and chemical processes interact with people and the environment.
- Carry out a range of practical investigations and use this and other information to explore chemical behaviour.
- Understand important concepts in chemistry and major patterns of chemical behaviour.
  - Atomic Structure and Bonding.
  - Quantitative Chemistry.
  - Physical Chemistry.
  - Organic Chemistry.
  - Oxidation Reduction.
  - Inorganic Substances.

Please note that some details of course may be subject to change should Curriculum Leader consider it to be of educational advantage to pupils to do so.

PRE-REQUISITES:

Passing grades in both of the level 1 standards:

- AS90930
- AS90944

ACHIEVEMENT STANDARDS

		No. of Credits Ext.	Int.
AS91161	Carry out quantitative analysis.		4
AS91162	Carry out procedures to identify ions present in solution.		3
AS91164	Demonstrate understanding of bonding, structure and energy changes.	5	
AS91166	Demonstrate understanding of chemical reactivity.	4	
AS91167	Demonstrate understanding of oxidation-reduction.		3
	Total No. of Credits	**19**	

CHEMISTRY (13CHE) — Level 3

COURSE DESCRIPTION:

In this course pupils will extend their scientific knowledge, skills and attitudes through:

- Practical investigations.
- Familiarisations with materials and how they function.
- Understanding of concepts underlying chemical behaviour.

Areas of study will involve:

- Aqueous chemistry
- Thermochemistry
- Organic chemistry
- Oxidation and reduction processes and analysis
- Atomic structure and bonding.

Please note that some details of course may be subject to change should Curriculum Leader consider it to be of educational advantage to pupils to do so.

PRE-REQUISITES:

Passing grades in both of the level 2 standards:

- AS91164
- AS91166

ACHIEVEMENT STANDARDS *will be a selection of:*

		No. of Credits Ext.	Int.
AS91388	Demonstrate understanding of spectroscopic data in chemistry.		3
AS91390	Demonstrate understanding of thermochemical principles and the properties of particles and substances.	5	
AS91392	Demonstrate understanding of equilibrium principles in aqueous systems.	5	
AS91393	Demonstrate understanding of oxidation-reduction processes.		3
AS91387	Carry out an investigation in Chemistry involving quantitative analysis.		4
			36
This is a university entrance subject	**Total No. of Credits**		**20**

PHYSICS (12PHY) — Level 2

COURSE DESCRIPTION:

The Level 2 course covers the basic principles that provide a good foundation for the future development and understanding of this subject.

The topics covered are:

- Wave systems
- Mechanics (motion, force, momentum and energy)
- Electricity (static and direct current)
- Electromagnetism.
- Atomic and nuclear physics.
- Practical investigation.

Please note that some details of course may be subject to change should Curriculum Leader consider it to be of educational advantage to pupils to do so.

PRE-REQUISITES:

Pupils must have a passing grade in level 1 Science AS90940 plus the algebra mathematics standard to be able to cope with the demands of this course.

ACHIEVEMENT STANDARDS

		No. of Credits Ext.	Int.
AS91168	Carry out a practical physics investigation that leads to a non-linear mathematical relationship.		4
AS91170	Demonstrate understanding of waves.	4	
AS91171	Demonstrate understanding of mechanics.	6	
AS91172	Demonstrate understanding of atomic and nuclear physics.		3
AS91173	Demonstrate understanding of electricity and electromagnetism.	6	
	Total No. of Credits	**23**	

PHYSICS (13PHY) — Level 3

COURSE DESCRIPTION:

The Level 2 course gives a good grounding for subjects such as Physics, Medical Sciences and the various Engineering disciplines at University. It is also a useful basis for many technical careers.

The topics covered are:

- Wave systems
- Translational Motion
- Rotational Motion
- Simple Harmonic Motion
- Electromagnetism
- Electricity DC and AC
- Atomic Physics

Please note that some details of course may be subject to change should Curriculum Leader consider it to be of educational advantage to pupils to do so.

PRE-REQUISITES:

At least 14 credits from Level 2 Physics.

ACHIEVEMENT STANDARDS *will be a selection of:*

		No. of Credits Ext.	Int.
AS91522	Demonstrate understanding of the application of physics to a selected context.		3
AS91523	Demonstrate understanding of wave systems.	4	
AS91524	Demonstrate understanding of mechanical systems.	6	
AS91525	Demonstrate understanding of Modern Physics.		3
AS91526	Demonstrate understanding of electrical systems.	6	
	Total No. of Credits	**22**	

This is a university entrance subject

SCIENCE – General and Core (11SCI and 11SCC) — Level 1

COURSE DESCRIPTION:

The Science Course at Level 1 is built on the Science of Years 9 and 10. It extends the ideas presented there, and while on the one hand it gives pupils a better understanding of the physical world around them, and an awareness of the God who has put it all together, on the other hand this course lays a foundation for the Level 2 subjects of Biology, Chemistry and Physics.

Please note that some details may be subject to change should the Curriculum Leader consider it to be of educational advantage to pupils to do so.

There will be two streams within this course, one doing 20 credits (General), the other 16 credits (Core). Pupils will be placed in one of these two streams based on past results in Science. Pupils in Core will not be able to select Physics as an option at Level 2.

PRE-REQUISITES:

Nil

ACHIEVEMENT STANDARDS

General – 20 credits
Core – 16 credits

		No. of Credits	
		Ext.	**Int.**
AS90930	Carry out a practical chemistry investigation with direction.		4
AS90940	Demonstrate understanding of aspects of mechanics. (General Course only)	4	
AS90944	Demonstrate understanding of aspects of acids and bases.	4	
AS90948	Demonstrate understanding of genetic variation.	4	
AS90950	Investigate biological ideas relating to interactions between humans and micro-organisms.		4

Total No. of Credits **20**

SCIENCE – Internal (11SCA) — Level 1

COURSE DESCRIPTION:

The Level 1 Science Internal Course provides a science programme for pupils of lesser ability who have had limited success in Science in the past. The purpose of the course is to give these pupils some meaningful science – science related to them and their environment, science that motivates them and science in which they can achieve and learn. This course has a strong emphasis on practical work, each pupil being required to participate in individual and group practical sessions. Pupils who take this science course do not continue science subjects at Level 2.

A selection of internal Achievement Standards will be offered.

Topics studied may include:

- Practical science investigation
- Genetics
- Chemical changes
- Microbes
- Plants
- Electricity and magnetism

PRE-REQUISITES:

The pupils are selected on the basis of their performance in their year 10 Mathematics and Science classes. Pupils and parents are then contacted to explain the nature and function of the course.

This course is Internally Assessed

Total No. of Credits **20**

PHYSICAL SCIENCE (11PSC) **Level 1**

COURSE DESCRIPTION:

The Physical Science Course is made available to pupils as an option, in addition to Level 1 Science. It extends the ideas presented there by providing additional units in Physics and Chemistry. This course provides a wider foundation for Level 2 Physics and Chemistry and is particularly suited to pupils who have clear plans to move into further study in these areas. This course is NOT a prerequisite for any of the Level 2 Science courses and pupils who do not take this option will have all of these options still available to them.

Please note that some details of course may be subject to change should Curriculum Leader consider it to be of educational advantage to pupils to do so.

PRE-REQUISITES:

A minimum ability in Year 10 Science is required to cope with this course. This would be shown by Merit passes in the chemistry and physics standards.

ACHIEVEMENT STANDARDS		**No. of Credits**	
		Ext.	**Int.**
AS90935	Carry out a practical physics investigation that leads to a linear mathematical relationship with direction.		4
AS90937	Demonstrate understanding of aspects of electricity and magnetism.	4	
AS90947	Investigate selected chemical reactions.		4
AS90954	Demonstrate understanding of the effects of astronomical cycles on planet Earth.		4
AS91165	Demonstrate understanding of aspects of organic chemistry.	4	
	Total No. of Credits	**20**	

Programmes in the Sciences: Middle School

In the Middle School Science courses at Middleton we aim to foster an appreciation and sense of wonder for God's creation. We aim to encourage pupils to be good stewards of the world around us, caring for the environment in which we live.

During their time in the Middle School pupils should acquire the basic science knowledge required to deal with the demands of Senior College Science courses. We also aim to equip pupils with sufficient knowledge of Science so they can more effectively engage with science-related real life issues.

In Middle School Science classes pupils will learn Science-specific skills relating to assessment including how to study and revise their work in preparation for assessments and how to communicate science ideas clearly. Pupils will learn about the Nature of Science during their time in the Middle School. This will include becoming familiar with the Scientific Method as well as looking at the type of questions Science can and can't answer. Pupils will also gain an appreciation for how Science discoveries have been made and continue to be made today.

Y7 SCIENCE 2018

SPECIFIC YEAR LEVEL SCIENCE FOCUS:

- Pupils learn how to use lab equipment safely and with confidence
- Learning how to record data information in an organised fashion
- Learning to interpret scientific information (e.g. draw conclusions from graphs etc.)
- Pupils learn how to carry out simple Science investigations
- Pupils learn how to make and record meaningful scientific observations
- Pupils learn to communicate scientific ideas in a variety of ways

UNITS COVERED:

1. Introduction to Science (Lab Equipment and Safety)
2. Forensic Science
3. Water
4. Forensics
5. Electricity
6. Moon

Y8 SCIENCE 2018

SPECIFIC YEAR LEVEL SCIENCE FOCUS:

- Learn how to offer reasons for particular observations
- Learn how to make and evaluate hypotheses
- Learn how to carry out multi-step practical experiments
- Learn how to link/explain everyday experiences using relevant scientific theory
- Learn how to make scientific conclusions and discuss results

UNITS COVERED:

1. Introduction
2. Pure Substances and Mixtures
3. Microbes
4. Sound
5. Snail Study

Y9 SCIENCE 2018

SPECIFIC YEAR LEVEL SCIENCE FOCUS:

- To enable pupils to be competent in the Science lab
- To provide pupils with a sound knowledge base in the areas studied (a foundation for Senior College)
- An Appreciation for the Nature of Science (How Science work's poster)
- Engage with "popular" Scientific Ideas e.g. Bees, Energy saver light bulbs, wind power

UNITS COVERED

1. Introduction (Lab Safety, Use of Equipment, Scientific Method)
2. Plant Way of Life
3. Chemical Properties
4. Energy and Heat
5. Ecology
6. The Nature of Matter

Y10 SCIENCE 2018

SPECIFIC YEAR LEVEL SCIENCE FOCUS:

- Expose and inform pupils to Science that affects their everyday lives
- Prepare pupils for the rigour and assessment demands/requirements of NCEA Level One
- Plan fair test experiments identifying and controlling variables
- Provide opportunities for pupils to identify their strengths in the three Science disciplines (Physics, Chemistry and Biology)

UNITS COVERED

1. Focus on Food
2. Kitchen Chemistry
3. Chemistry Around You (Acid/Base)
4. Forces
5. Electricity
6. Earth Science

Pupils wowed by the Van De Graaf generator. A device that makes static electricity causing the pupils hair to go up

2. Teaching and Learning Programmes

2.1 Outline how the Curriculum taught is compliant with the requirements of the New Zealand Curriculum.
2.2 Principles
2.3 Key Competencies
2.4 How is the Special Character of the school and in particular, the Foundational Principles for Curricula, reflected and taught in this Curriculum Area/Learning Area?

2.1 Outline how the Curriculum taught is compliant with the requirements of the New Zealand Curriculum.

The Curriculum taught in the Middleton Grange Science department is compliant with the requirements on the New Zealand Curriculum (NZC).

The fundamental aims of science education are expressed as a series of achievement aims, grouped by achievement objectives; it is these achievement objectives that our teaching and learning programmes cover. See appendix 1.

The Nature of Science strand is the overarching, unifying strand. Through it, students learn what science is and how scientists work. They develop the skills, attitudes, and values to build a foundation for understanding the world. They come to appreciate that while scientific knowledge is durable, it is also constantly re-evaluated in the light of new evidence. They learn how scientists carry out investigations, and they come to see science as a socially valuable knowledge system. They learn how science ideas are communicated and to make links between scientific knowledge and everyday decisions and actions. We assess pupils against the Nature of Science strands. Nature of Science, is required learning for all students up to year 10. The other strands provide contexts for learning. Over the course of years 1–10, our science programme does include learning in all four context strands (Living world, Plant Earth and Beyond, Physical World and Material World). The majority of the units of work we teach are contextual and cover achievement objectives from all areas of Science. Within each unit of work there is a variety of learning experiences and pedagogical approaches to meet the needs of all individuals and to cater for differences in learning styles.

The first 2 pages of a typical scheme of work providing evidence of the link between nature of Science and then a context strand (material world level 4) inherit in our working documents can be found in appendix 2.

Key Competencies are reported on by staff and also pupils reflect and self-evaluate about themselves. All units of work have a key competency focus. Managing Self is a focus of every lesson and is pivotal to the school Learning Culture Plan. In Science, Thinking and Relating to others are also essential skills and these are fostered through cooperative learning, group investigations and through teaching and learning about The Nature of Science. Understanding Language, Symbols and Text is developed as pupils use their current scientific knowledge and skills for problem solving and developing further knowledge. Participating and Contributing is cultivated as pupils use scientific knowledge and skills to make informed decisions about the communication, application, and implications of science as these relate to their own lives and cultures and to the sustainability of the environment.

2.2 Principles in NZC

There are 8 principles outlined in the NZC:

1. High expectations
2. Treaty of Waitangi
3. Cultural diversity
4. Inclusion
5. Learning to learn
6. Community engagement
7. Coherence
8. Future focus

The Science Curriculum at Middleton Grange School endorses and complies with all 8 of the principles of the New Zealand Curriculum.

High expectations – as a Science department we consistently expect high expectations, both of each other as staff, and for our pupils.

High expectations for staff there are clear expectations they are professional, punctual, attend meetings, consistently produce high quality lessons, use school systems such as LCP, complete attendance accurately and on time. There are expectations that all Science labs are safe places – both physically and emotionally knowing the pupils in their classes. Staff are expected to use the teaching schemes provided and to dialogue with their team, if they want to diverge from those documents, to ensure the positive collegial culture of the Science department is upheld. Staff are expected to reflect the person of the Lord Jesus, and use and find authentic moments in their teaching program to share the biblical truths of the faith and allow pupils to be wowed by the work of the creator.

High expectations for pupils, in science, like there rest of the school there are clear expectations that pupils come to class ready to learn with the correct materials, on time, in the right uniform with their homework complete. They should be attentive in class, positively contribute to classroom activities and be respectful towards their teacher and classmates. It is our expectation that all pupils will try their very best. Excellence for the glory of God.

Science teaching staff have respect for the bi-cultural heritage of Aotearoa New Zealand and acknowledge the **Treaty of Waitangi** and its implications for authentically integrating Maori practices and helping Maori pupils succeed as Maori. Accountability for this is provided through the Practising Teacher Criteria against which Staff are evaluated every three years. This cyclic review is also tied to the Professional Learning Plan. Best practice is encouraged, and any issues identified are addressed in a constructive manner.

In Science, we are blessed to have Aidan Harrison, who has a real passion for biculturalism and from time to time he runs devotions and staff PD on things Maori. We have also purchased a set of resources designed specifically to explore scientific ideas from the Maori world view. These resources are used from time to time in middle school Science classrooms.

Middleton Grange School has rich **cultural diversity** with an international college responsible for over 100 pupils from a range of different countries. Quoting the previous Assistant Director of the International College Tibor Toth, at MGS we have such a great opportunity to share Jesus, we don't need to go out into all the world, they are coming here! Both international and domestic pupils who identify with a different culture are welcomed, supported and encouraged to strive to reach their God given potential. Specifics can be seen in section 5 of this report.

Science staff at Middleton Grange make a concerted effort to be **inclusive** of *all* learners and support them in the best ways possible. Teachers are expected to read learning profiles, access information through KAMAR, and to be familiar with prior data for those in their classes. Pupils are supported through a variety of means such as the Learning Centre, teacher aides, competitions, senior course options and structures, buddying with other pupils, glossaries, individual and co-operative strategies, and teacher monitoring.

Science staff at Middleton Grange support the principle of **community engagement**, by regularly emailing home with assessment dates, revision material and general communication as appropriate. Formal reporting and Parent, Pupil, Teacher Conferences occur twice a year which help foster support for achieving the best outcomes for each pupil. Parents are also involved in the course selection process where different courses and options are available for pupils.

The science curriculum presented at Middleton Grange School as mentioned previously helps support pupils to develop and progress through all of the levels and strands of the NZC. This ensures positive **coherence** of the curriculum is accomplished.

In the Science department we encourage pupils to plan for the future (**future focus**), by making them aware of the senior subject's choices they require to have sufficient foundational knowledge to move into their future studies / vocation. We desire to not only inform our pupils, but to also shape the hopes, dreams and loves of our pupils. Acknowledging that humans are inherently lovers, and shaping our pupil's loves is a core part of our vocation.

In 2018 the Science department has been on the ACT (Authentic Christian Teaching) program. As part of this program we have been developing a rational for teaching Science here at Middleton Grange School, and are currently working on defining a graduate profile. The purpose of this is not to recreate the NZC, but to intentionally describe the skills, thinking and frameworks we want all of our pupils to have been exposed to, to be best prepared to critique and engage and transform contemporary society.

2.3 Key Competencies

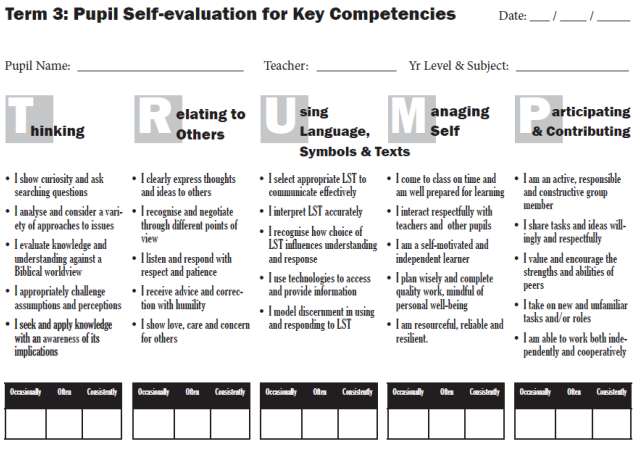
The New Zealand Curriculum identifies five key competencies:

- thinking
- using language, symbols, and texts
- managing self
- relating to others
- participating and contributing

People use these competencies to live, learn, work, and contribute as active members of their communities. More complex than skills, the competencies draw also on knowledge, attitudes, and values in ways that lead to action. They are not separate or stand-alone. They are the key to learning in every learning area.

Key competency links are explicitly identified in all units through the use of teacher schemes. See appendix 2.1 and 2.2.

The key competencies are also reported on to parents during terms 1 and 3. Pupils complete the following sheet for each class and the teacher also records where they perceive the pupil.



Term 3: Pupil Self-evaluation for Key Competencies Date: ___ / ___ / ____

Pupil Name: _____ Teacher: _____ Yr Level & Subject: _____

Thinking	**R**elating to Others	**U**sing Language, Symbols & Texts	**M**anaging Self	**P**articipating & Contributing
• I show curiosity and ask searching questions • I analyse and consider a variety of approaches to issues • I evaluate knowledge and understanding against a Biblical worldview • I appropriately challenge assumptions and perceptions • I seek and apply knowledge with an awareness of its implications	• I clearly express thoughts and ideas to others • I recognise and negotiate through different points of view • I listen and respond with respect and patience • I receive advice and correction with humility • I show love, care and concern for others	• I select appropriate LST to communicate effectively • I interpret LST accurately • I recognise how choice of LST influences understanding and response • I use technologies to access and provide information • I model discernment in using and responding to LST	• I come to class on time and am well prepared for learning • I interact respectfully with teachers and other pupils • I am a self-motivated and independent learner • I plan wisely and complete quality work, mindful of personal well-being • I am resourceful, reliable and resilient.	• I am an active, responsible and constructive group member • I share tasks and ideas willingly and respectfully • I value and encourage the strengths and abilities of peers • I take on new and unfamiliar tasks and/or roles • I am able to work both independently and cooperatively
Occasionally Often Consistently	Occasionally Often Consistently	Occasionally Often Consistently	Occasionally Often Consistently	Occasionally Often Consistently

See appendix 9 for an example KC report and for a brief evaluation of the intersection of the key competencies identified by the New Zealand Curriculum with biblical principles, particularly as these are expressed in the MGS Vision and Mission statements, and the Foundational Principles for Curricula.

2.4 How is the Special Character of the school and in particular, the Foundational Principles for Curricula, reflected and taught in this Curriculum Area/Learning Area?

As already stated, in 2018 the Science department are participating on the ACT (Authentic Christian Teaching) program. As part of this program, as a team we decided to articulate a rationale for teaching Science from a biblically informed position. Although this is still currently a work in progress, I have included it below for your reference:

School Motto: Character, Excellence, Service for the glory of God.

Vision Statement Middleton Grange School assists families in the education of their children by providing an environment in which the Biblical truths of Jesus Christ are taught and lived.

Mission Statement At Middleton Grange School we are committed to a rigorous learning culture based on an understanding of truth as revealed in the whole counsel of Scripture. We equip pupils with the knowledge and skills to understand their heritage and their place in it; and to critique and engage contemporary society. We work with parents to encourage pupils in their gifts and abilities to serve God and others.

Science at Middleton Grange School

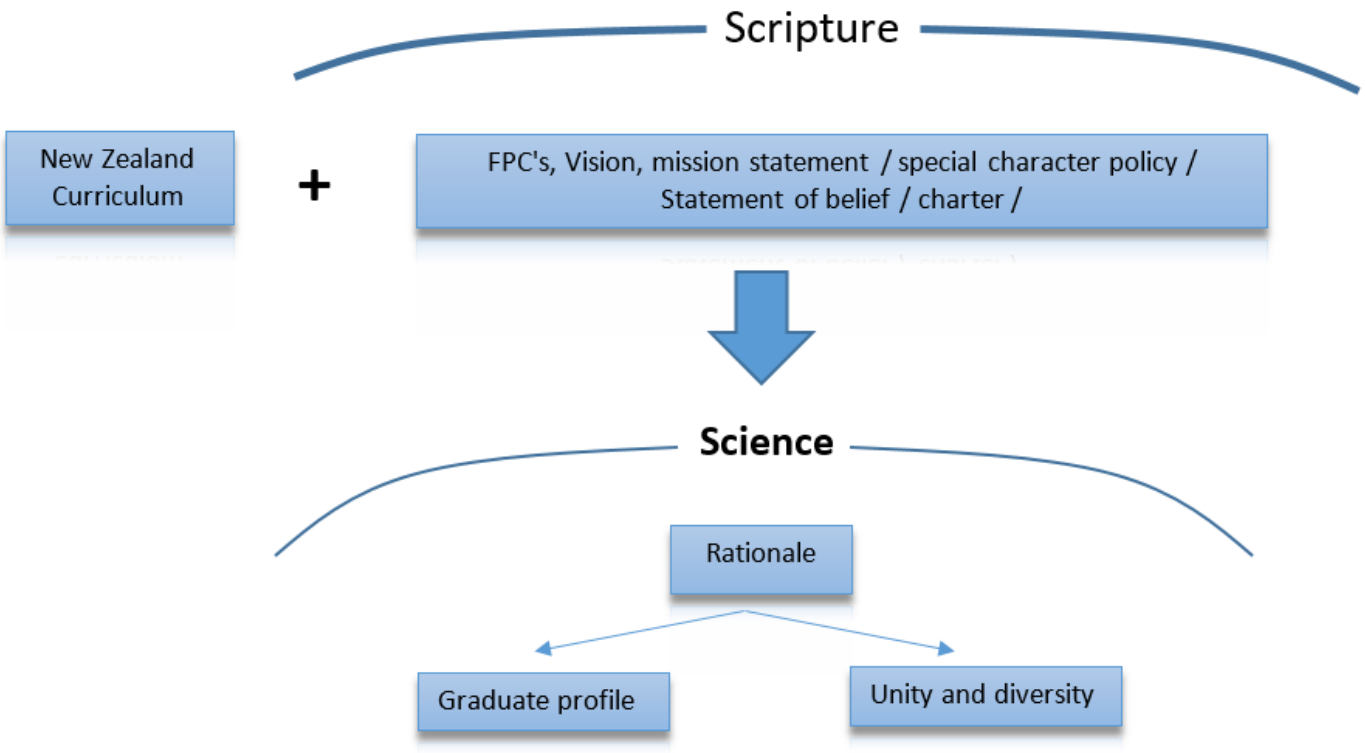
Learning under Christ, through His creation, for His glory

"Kia ako tahi ki te Ariki me tōna Pūtaiao..."

Romans 1:20 (NIV)

For since the creation of the world God's invisible qualities—his eternal power and divine nature—have been clearly seen, being understood from what has been made, so that people are without excuse.

Schematic view of Science:



Our ethos (*Learning under Christ, through His creation, for His glory*) expresses that all Science is exploring God's good creation. God has spoken to us through the Word with which He created all things (c.f Rom 1). Learning about and through the 'book of creation' is undertaken with humility; being conducted under the authority of the living (Jesus) Word, and the written Word (Scripture).

Middleton Grange School Science Rationale

Sitting under scripture is the MGS supporting frameworks, inspired and aligned with the full council of Scripture. The 5 points of our rationale for teaching Science at Middleton Grange are guided from our school mission statement (included below). It is also in alignment with the school's key documents including: Vision & Mission statements; FPCs; MGS school chater Statement of Belief & Board Special Character Policy. The rationale is summarised below in the following statements

Middleton Grange Mission Statement:

At Middleton Grange School we are committed to a [1]rigorous learning culture based on an understanding of truth as revealed in the [2]whole counsel of Scripture. We equip pupils with the [3]knowledge and skills to understand their heritage and their place in it; and to [4]critique and engage and transform contemporary society. We work with parents to [5]encourage pupils in their gifts and abilities to serve God and others.

1. **Through Science at Middleton we are committed to a rigorous learning culture based on a:**
   - First rate general education that is God honoring, fun, engaging, awe-inspiring and captivating.
   - Curriculum that exposes pupils to the broad spectrum of Scientific concepts, both secular and sacred, through a carefully managed journey from first encounters with ideas, information and philosophies which may be interpreted as being in conflict with the Christian faith, to a place of God-honoring engagement.
   - model of lifelong learning demonstrated by staff, being readers, knowers, and thinkers.

2. **Through Science at Middleton we a commited to understanding truth as revealed in the whole counsel of Scripture by:**
   - Upholding the Bible as authoritative in all matters of faith and conduct.
   - Acknowledging that the mega-narrative of Scripture ultimately informs all of our practice, and is the rightful place in which to root our identity and purpose in being.
   - Repeatedly allowing pupils to observe, discuss and engage with ideas at the intersection between Science and Faith.

3. **Through Science at Middleton pupils are equipped with the knowledge and skills to understand their heritage and their place in it by:**
   - Being taught by Scientists who embody a passion for teaching, and learning, about the ultimate scientist; God who is omni*scient*.
   - Leading pupils through a spiral curriculum which trains them to encounter increasing complexity in Science with increasing awe for God.
     "God delights in concealing things; *Scientists* delight in discovering things" (Proverbs 25:2 paraphrased).
   - Immersing pupils in the heritage of faithful Christians that have contributed to our current understanding of Science.

4. **Through Science at Middleton pupils are equipped to critique, engage and transform contemporary society by:**
    - Scaffolding encounters with contemporary debates and contentious issues both within and beyond the Christian faith.
    - Inspiring pupils with models of those who already share a disposition to serve and love people through excellence in Science.
    - Employing Scientific knowledge and skills to understand the complex effects of the fall on God's good creation.

5. **Through Science at Middleton staff will work with parents to encourage pupils in their gifts and abilities to serve God and others by…**
    - Exploring ways to partner with God, through excellence in Science, in His purpose to restore what is broken in our world, at home, at school and in their communities.

Pupils wowed by the Van De Graaff generator. A device that makes static electricity causing the pupils hair to go up

3. Assessment Practices

3.1 How is assessment information on pupil achievement obtained?
3.2 How is this information used to monitor pupil progress through the Curriculum levels?
3.3 What means do you use to reflect on how pupils have performed in assessments?
3.4 What means do you use to evaluate end of units/topics? Please provide a sample of the data which measures pupil progress, evaluation of the Curriculum programme and next steps.

3.1 How is assessment information on pupil achievement obtained?

Formative assessment is collected by individual teachers as a regular component of their teaching and learning practice. This may take the form of a 'Do Now' activity at the start of a lesson, a vocabulary quiz, or something more formalised.

Summative assessment in the middle school typically take the form of an end of unit test that all classes complete. In senior college summative assessment occurs as NCEA internal and external assessments. These vary from single period assessments, to practical experiments and report writing, to research assignments and three hour exams. All summative assessment results are inputted into KAMAR and each TiC (Teacher in Charge) has the responsibility to oversee cohort progress.

All results are recorded on KAMAR using the school-wide system for reporting to both parents and NZQA. This data (including previous years) can be easily accessed to allow comparisons to be made and trends identified.

3.2 How is this information used to monitor pupil progress through the Curriculum levels?

At the start of each year, pupils with specific learning needs, at risk pupils, or strata of pupils who historically have underperformed in comparison to national statistics get identified. For 2018 this group involved most pupils who identified as Pasifika, informed by our 2017 NCEA results. From this list, each of these pupil's names are then added to our end of unit reviews that staff complete at the completion of a section of work. This provides accountability, evidence and a regular reminder to specifically check in on the learning needs of certain pupils.

3.3 What means do you use to reflect on how pupils have performed in assessments?

It is an expectation that staff monitor their own classes, knowing their own pupils and tracking and implementing any changes required to better cater for the individuals in their classes.

It is an expectation that TiC's together with their teams will complete end of unit reviews (Science now does this using OneNote so all teachers in a team can see and contribute to) See appendix 3. As part of the end of unit review process, KAMAR cohort statistics are generated and analysed. These split the data into gender, ethnicity, national and decile 9-10 statistics.

At the end of the academic year (following calendar year), the curriculum leader produces a report (AR1), course by course to present to senior management. This with consolation with staff informs goals, staffing and course changes.

3.4 What means do you use to evaluate end of units/topics? Please provide a sample of the data which measures pupil progress, evaluation of the Curriculum programme and next steps.

End of unit reviews (EOURs) are the primary mechanism we use to evaluate our units and topics. See appendix 3 for a full example of an EOUR, snap shots have been included below for convenience. This is done by a secure OneNote page that teaching staff each contribute to. Staff can only see the courses they teach or have oversight over. Pupils also regularly give pupil voice, to inform classroom practise.

Once teams have collaborated together to produce their EOUR, the curriculum leader then reads the review and creates an 'end of year to do list', categorising all of the actionable points required to update assessments, resources, teacher / technician notes etc. to ensure the unit is as successful as possible, the next time it is taught.

The screen shots below show specific pupils identified and comments made about their progress. It also shows specific content / curricular related comments. Next steps are also identified.

End of Unit Review

SUBJECT : Focus on Food **Year :** Year 10 Science

Tick once done:

- ☐ **Check marking done between teachers internally**
- ☑ **Next step comments completed below** (comments can / should be added during the unit)
- ☑ **Marks entered into KAMAR within 3 weeks**
- ☐ **Screen shots of data added below**
- ☐ **Comments made about the data**
- ☑ **If required, important changes / feedback affecting next year is highlighted.**
- ☑ **Marks published [double Green tick]**

IS

IS

Next steps (complete at any time during the unit):

At risk pupils identified and early intervention strategies in place are:

[redacted] 10La (discussion with dean, and other subject teachers regarding progress, monitor class behaviour and engagement, email progress updates home regularly) ST

10Mc: [redacted] - Monitor class engagement closely and check up on their bookwork regularly (one to one), pay extra attention to LC profiles, email home regularly.

Last	First	Gender	Form	Year_level	Ethnic 1	Ethnic 2	Ethnic 3	Classes
[redacted]		F	10LH	10	Pasifika	Samoan	Samoan	LH-10SCI
		M	10MC	10	Pasifika	Samoan	Samoan	MC-10SCI
		M	10TE	10	Pasifika	NZ European/Pakeha	Pacific Peoples	TE-10SCI
		M	10TE	10	Pasifika	Tongan	Tongan	TE-10SCI
		F	10TE	10	Pasifika	Tongan	Tongan	TE-10SCI

AM

What worked well:

- Range of Experiments(e.g. rat dissection, banana chip, food tests) to help build understanding of class concepts ST
- Timing good, not too long so kids not bored ME HG

What did not work well:

- scheme not up to date - no coeliacs etc ME HG

JM

Ways nature of Science was incorporated into the classroom:

- Investigating and questioning food testing of cheeseburgers ST
- Analysing digestion through Mechanical and Chemical Digestion, to discover meaning behind the structures God put in our body. ST
- Compare contrast issues with fad diets

Comments are added in about each pupil who has been identified (named removed for this report).

Pupil achievement comments

Overall Pupil Achievement	41% Excellence, 6% above D9 schools. Pleasing. Our NA rate is quite high with 14 pupils 8% getting NA.
Boys Achievement	Doing ok, a lot of NA Male National Stats 2017: 12% 43% 26% 19% Male National Stats Decile 9: 6% 33% 30% 31% Males for Class: 12 15% 21 26% 23 28% 26 32%
Girls Achievement	Girls getting much better grades than the boys. Better at jumping through the necessary hoops of this task. Female National Stats 2017: 9% 32% 30% 29% Female National Stats Decile 9: 4% 20% 35% 41% Females for Class: 2% 7 19% 27 30% 44 49%
Priority Learners Maori Achievement	equivalent to national stats. Maori National Stats 2017: 16% 47% 25% 12% Maori National Stats Decile 9: 10% 32% 32% 26% Maori for Class: 6% 5 29% 8 47% 3 18%
Priority Learners Pasifika Achievement	VERY well, mostly excellence Pasifika National Stats 2017: 18% 44% 24% 14% Pasifika National Stats Decile 9: 8% 38% 31% 23% Pasifika for Class: 1 17% 5 83%
Priority Learners Special Needs Pupils	

Last	First	Classes	Teacher comment:
		1-4-11SCI-GM	Gained E in this assessment, although she was really surprised with this grade. She is not very confident.
		6-1-11SCI-MC	Gained an Excellence in this assessment. She is very diligent, and asks questions when unsure
		6-1-11SCI-MC	Gaines an Excellence in this assessment. She works hard in class and always contributes in class discussions.
		1-1-11SCI-SZ	Achieved with Merit. She is a diligent learner. She is very quiet however will respond/contribute to class discussions when prompted.
		1-4-11SCI-GM	Gained E in her assessment. She is a keen learner and very diligent.
		6-2-11SCI-SZ	Achieved with Excellence. She is a very bright learner. Contributes toward class discussions when prompted.

In senior college, as previously mentioned the curriculum leader does mass data analysis to complete their annual reports. This analysis can at times also highlight praise and concern points.

Pupil voice is another method of course analysis.

4. Pupils at Risk of Not Achieving Academic Potential:

4.1 How does the Curriculum Area /Learning Area identify pupils at risk of not meeting their academic potential? (Include at risk of failure and Gifted and Talented pupils.)
4.2 What early intervention strategies are put in place?
4.3 What other intervention and support strategies are put in place?
4.4 What evidence is there of success or otherwise. Please provide examples as appropriate.
4.5 What links have been established with the Learning Centre or other agencies to support high levels of success for these pupils?

4.1 How does the Curriculum Area /Learning Area identify pupils at risk of not meeting their academic potential? (Include at risk of failure and Gifted and Talented pupils.)

Senior college starts the academic year with course confirmation (an initial day where pupils come in to discuss with staff if the results they obtained in the previous year's academic study have highlighted

concerns for future study in a certain discipline). Each of the three senior subjects we offer – Biology, Chemistry and Physics have minimum entry requirements (prerequisites) to ensure pupils have the sufficient background knowledge and skills to be successful. Historically we have found, pupils not meeting these minimum prerequisites have been at a high risk of not meeting their academic potentials.

At the start of each year, teaching staff are expected to review all of the pupil information available on KAMAR. This includes pupil learning, behavioural and social needs. This allows individual staff to know who is at the most risk and implement constructive intervention.

In middle school at the start and end of each academic year, every pupil completes an NZCER Science thinking in evidence assessment. This multiple-choice test, provides a standardised score to determine year on year progress and also identifies pupils who are at risk of failure (a low score) and those who are very capable (a high score). The results from this assessment tend to be highly indicative of a pupils ongoing capability in science.

Teachers in charge (TiC's) of each course, as part of their regular end of unit reviews analyse pupil achievement data. One purpose of this is to identify, monitor and support pupils who are at risk.

During a meeting with SLT regarding the Science 2017 annual report, results from Maori and Pasifika were identified as lower in comparison to other ethnic groups. This was partly a true reflection and also due to very low numbers skewing the statistics. Resulting from this meeting, we identified all Maori and Pasifika pupils taking Science in years 7 – 13 to track their academic progress, with individual staff needing to attest to what interventions (if necessary) they were doing with these pupils.

Gifted pupils are also typically identified by staff, when certain opportunities arise limited to a small number of pupils. Opportunities such as ICAS Science, Science competitions at ARA and UC etc.

Pupils identified as at risk are also typically identified by staff. Dialogue typically occurs with the curriculum leader / TiC and dean to implement support for the pupil or a decision can also be made for a course change. Staff often also meet in their own time with pupils to provide further tutoring as and when required.

4.2 What early intervention strategies are put in place?

Early intervention requires academic / social needs to be identified early. All staff are encouraged to know their pupils well. If they notice a pupil in their class that is not doing well academically there is an expectation that they notify the appropriate people. This might mean, they talk with the pupil and the dean about what might be happening outside of school and make a plan to rectify the situation. It may also mean a phone call or email home to flag the concern and make a plan to rectify.

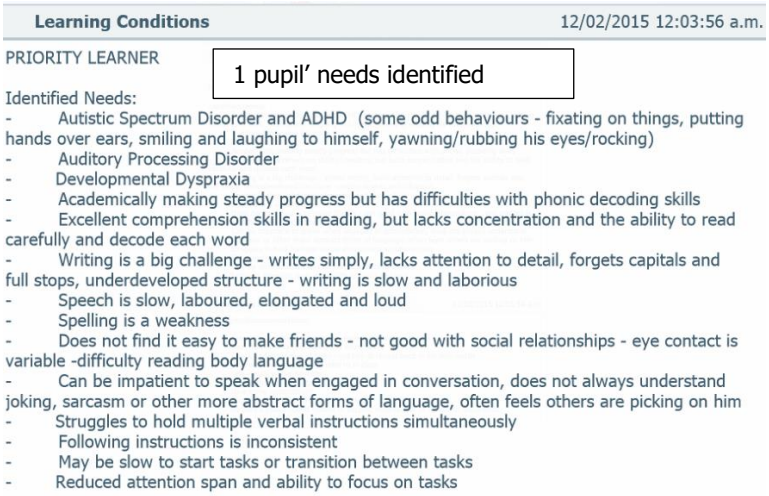
Prior to the term 1 PPTC's (Parent-Pupil-Teacher-Conferences), staff are invited to identify pupils causing concern, whether it be for academic or behavioural reasons. Parents of these pupils then receive a letter specifically requesting their attendance. Staff are expected to have already made contact home prior to this letter.

4.3 What other intervention and support strategies are put in place?

The monitoring of achievement data over the year from internal assessments, is a key component of identifying pupils who are at risk. As started above, this regularly occurs by the TiC of each course using the End Of Unit Review (EOUR) process.

In reality, there are a range of reasons pupils may be at risk of not meeting their academic potential and the intervention will be different depending on each situation.

- Pupils with specific learning needs – such as Asperger's, dysgraphia, dyspraxia, ADHD, auditory processing disorder etc.
    - Pupils are identified, tested and notes are then recorded on KAMAR. Often strategies / recommendations are also included in these notes. Staff are expected to be familiar with the needs of the pupils within their classes and use the strategies / recommendations provided.



Learning Conditions 12/02/2015 12:03:56 a.m.

PRIORITY LEARNER

1 pupil' needs identified

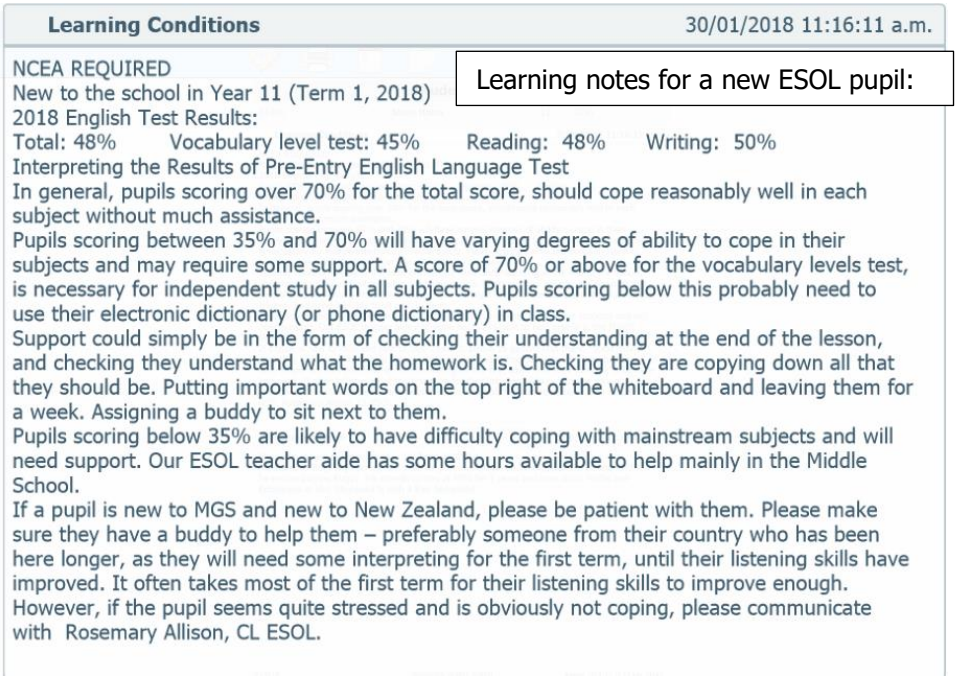
Identified Needs:
- Autistic Spectrum Disorder and ADHD (some odd behaviours - fixating on things, putting hands over ears, smiling and laughing to himself, yawning/rubbing his eyes/rocking)
- Auditory Processing Disorder
- Developmental Dyspraxia
- Academically making steady progress but has difficulties with phonic decoding skills
- Excellent comprehension skills in reading, but lacks concentration and the ability to read carefully and decode each word
- Writing is a big challenge - writes simply, lacks attention to detail, forgets capitals and full stops, underdeveloped structure - writing is slow and laborious
- Speech is slow, laboured, elongated and loud
- Spelling is a weakness
- Does not find it easy to make friends - not good with social relationships - eye contact is variable -difficulty reading body language
- Can be impatient to speak when engaged in conversation, does not always understand joking, sarcasm or other more abstract forms of language, often feels others are picking on him
- Struggles to hold multiple verbal instructions simultaneously
- Following instructions is inconsistent
- May be slow to start tasks or transition between tasks
- Reduced attention span and ability to focus on tasks

Strategies / recommendations for staff to implement noted for a different pupil

Learning Strategies 12/02/2015 12:03:59 a.m.

Strategies/Recommendations:
- Needs clear guidelines and routines. Written or visual instruction is preferred.
- Give auditory information slowly, one step at a time
- Check for understanding of tasks, likes explanations and reassurance
- Chunk tasks in manageable parts - give check lists
- Prepare him for any change - needs structure
- Give information visually: charts, diagrams, prompts, instructions
- Allow breaks or a safe place to retreat to when overloaded
- Modify his programme bearing in mind he is gifted
- Help understand social skills, how others are feeling, acceptable social behaviour
- Use of computer in some tasks
- Allow some tasks to be done orally but don't put him on the spot to answer questions
- Use of timetable, watch, To Do Lists to help him manage his time
- Give limited choice
- Provide a kind and patient buddy

- ESOL speakers or pupils new to New Zealand
    - New pupils from international college with low English comprehension are at risk of not meeting their academic potential. All pupils are tested and notes made available to staff using KAMAR. These pupils often receive extra English support via the International College. International College also run an induction plan for these pupils. In Science we buddy up these pupils so they feel included and have someone to refer to. Many courses have online OneNote pages available for pupils to access. We provide the International College with vocabulary lists ahead of time, and all classes receive vocabulary lists at the start of each unit. Often teachers invest extra time with these pupils to



Learning Conditions 30/01/2018 11:16:11 a.m.

Learning notes for a new ESOL pupil:

NCEA REQUIRED
New to the school in Year 11 (Term 1, 2018)
2018 English Test Results:
Total: 48% Vocabulary level test: 45% Reading: 48% Writing: 50%
Interpreting the Results of Pre-Entry English Language Test
In general, pupils scoring over 70% for the total score, should cope reasonably well in each subject without much assistance.
Pupils scoring between 35% and 70% will have varying degrees of ability to cope in their subjects and may require some support. A score of 70% or above for the vocabulary levels test, is necessary for independent study in all subjects. Pupils scoring below this probably need to use their electronic dictionary (or phone dictionary) in class.
Support could simply be in the form of checking their understanding at the end of the lesson, and checking they understand what the homework is. Checking they are copying down all that they should be. Putting important words on the top right of the whiteboard and leaving them for a week. Assigning a buddy to sit next to them.
Pupils scoring below 35% are likely to have difficulty coping with mainstream subjects and will need support. Our ESOL teacher aide has some hours available to help mainly in the Middle School.
If a pupil is new to MGS and new to New Zealand, please be patient with them. Please make sure they have a buddy to help them – preferably someone from their country who has been here longer, as they will need some interpreting for the first term, until their listening skills have improved. It often takes most of the first term for their listening skills to improve enough.
However, if the pupil seems quite stressed and is obviously not coping, please communicate with Rosemary Allison, CL ESOL.

ensure they are familiar with the content and academic expectations of the course.
    - On occasion, some international pupils find the transition to NZ challenging. At times staff need to converse with the International College dean, to indicate certain pupils need further support (academically or behaviourally).

- Pupils deemed at risk, are added to a priority learner database.
    - Notes on KAMAR exist for most of these pupils identifying why they are deemed at risk. Staff are expected to be familiar with these notes and implement the strategies / recommendations provided. It is common for us to buddy these pupils up and for staff to give these pupils specific individualised attention. As part of our EOUR's staff need to specifically note academic progress for these pupils.

Learning notes for a priority leaner:

Learning Conditions 12/02/2015 12:03:56 a.m.

PRIORITY LEARNER

Identified Needs:
- Autistic Spectrum Disorder and ADHD (some odd behaviours - fixating on things, putting hands over ears, smiling and laughing to himself, yawning/rubbing his eyes/rocking)
- Auditory Processing Disorder
- Developmental Dyspraxia
- Academically making steady progress but has difficulties with phonic decoding skills
- Excellent comprehension skills in reading, but lacks concentration and the ability to read carefully and decode each word
- Writing is a big challenge - writes simply, lacks attention to detail, forgets capitals and full stops, underdeveloped structure - writing is slow and laborious
- Speech is slow, laboured, elongated and loud
- Spelling is a weakness
- Does not find it easy to make friends - not good with social relationships - eye contact is variable -difficulty reading body language
- Can be impatient to speak when engaged in conversation, does not always understand joking, sarcasm or other more abstract forms of language, often feels others are picking on him
- Struggles to hold multiple verbal instructions simultaneously
- Following instructions is inconsistent
- May be slow to start tasks or transition between tasks
- Reduced attention span and ability to focus on tasks

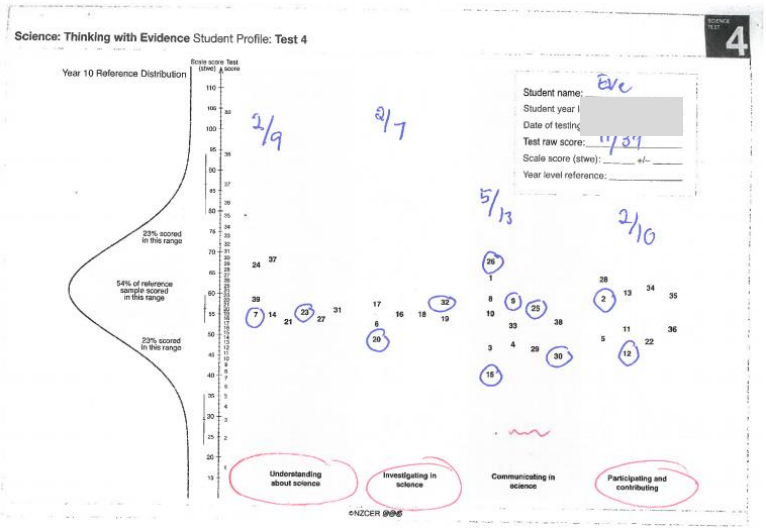
All science classes are expected to use seating plans (stored in a central staff OneNote). This allows pupils at risk to be helpfully buddied up and provides consistency in their learning.

4.4 What evidence is there of success or otherwise. Please provide examples as appropriate.

The services the learning centre offer many of our at risk pupil is phenomenal! The handwriting of many of these pupils is eligible, and some struggle to communicate their ideas on paper using a pen.

Over the past few years, Judith Bennetts as the science facilitator at the University of Canterbury has worked with a small number of science staff, covering key ideas of the Nature of Science through an inquiry cycle. As part of this professional development staff needed to look at their classes, work though all of the learning, behavioural and academic needs. They then needed to complete some initial testing (NZCER in middle school, review prior results in senior college etc.) and from this process 5 or 6 focus pupils were identified.

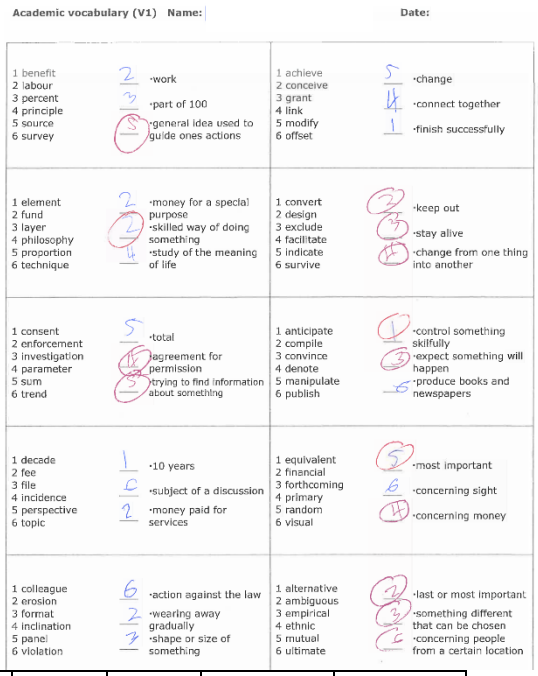
In middle school which Nature of Science sub-strand (understanding about Science, investigating in Science, communicating in science, participating and contributing) the pupils were weakest in was identified and pupil specific interventions were introduced to help pupils progress.



For one staff member, all 5 of their focus pupils scored poorly in communicating in science. Strategies that were used involved: giving lists of vocab words at the beginning of each unit, quizzes and 'do now's' and a range of vocab activities in class.

Tools like the academic vocab test were also employed to help to identify pupils and to help them improve in that area of learning.

Below is the summary of results for the 5 target pupils from one class. These results show evidence of success for these pupils who were at risk of Not Achieving. Although a single assessment result per test does not necessarily reflect the input from staff and the pupil progress and growth, it is encouraging to see some of these target pupils obtain Merit grades towards the end of the year.



Last Name	First Name	Gender	Teacher	Focus on Food	Chemistry - Part 1	Chemistry - Part 2	Nzcer	Forces	Electricity	End of Year Exam
		M	ME	A	A	A	43	A	A	A
		M	ME	A	A	A	43	A	A	A
		M	ME	A	AA	A	30	M	AA	A
		M	ME	A	AA	A	71	M	M	A
		F	ME	A	A	A	28	A	NA	A

Other anecdotal evidence, is that of some year 11 pupils in the science internal class over multiple years, showing real progress, both in their desire to engage with content and their ability to be successful in assessments. The staff who teach the internal and core science classes, especially invest significant amounts of time and energy shaping and enriching the scientific literacy of our young people.

4.5 What links have been established with the Learning Centre or other agencies to support high levels of success for these pupils?

As outlined above in 4.3, the learning centre (and other agencies they use) plays a significant role partnering with science staff to ensure pupil needs are identified and the best support that is available is offered to pupils.

An example of this is the enormous volunteer base the learning centre uses to allow for the large number pupils who require special assessment conditions (access to a computer, reader / writer during assessments).

One significant struggle most staff face, is the limitation of no special assessment conditions being available on Fridays, significantly limiting when assessments can take place.

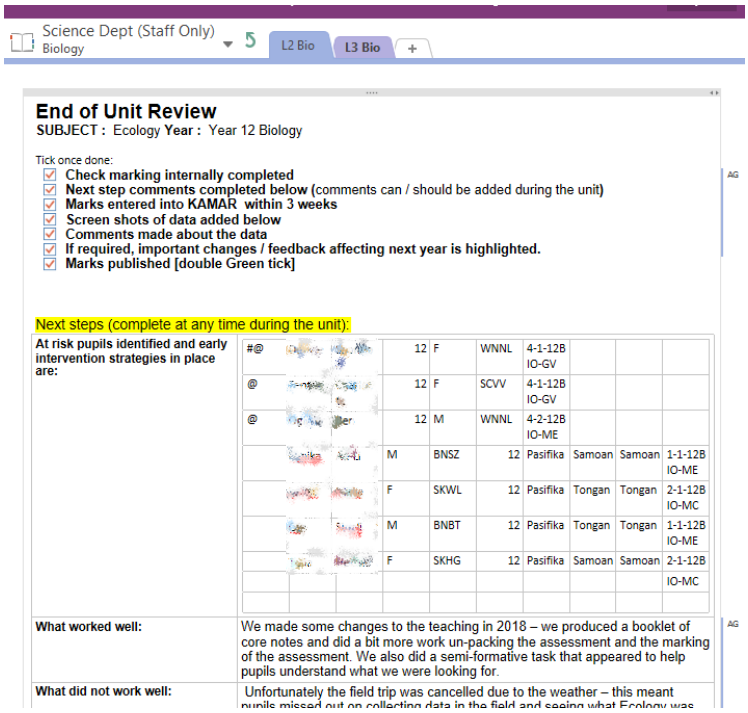
5. Māori, Pasifika, and International (ESOL)

5.1 How is progress for these groups of priority learners monitored?

5.2 What specific initiatives are identified for these groups of pupils?

5.1 How is progress for these groups of priority learners monitored?

Progress for Maori, Pasifika and international (ESOL) pupils is monitored using all of the same mechanisms noted in the previous sections. All priority, at risk and Pasifika pupils are identified by name, on our end of unit reviews (EOUR) for each course in science. At the end of every topic an EOUR is completed and staff need to comment on the progress of each pupil named, and the general Maori achievement.


Science Dept (Staff Only) Biology 5 L2 Bio L3 Bio +

End of Unit Review

SUBJECT : Ecology **Year :** Year 12 Biology

Tick once done:

- ☑ **Check marking internally completed**
- ☑ **Next step comments completed below** (comments can / should be added during the unit)
- ☑ **Marks entered into KAMAR within 3 weeks**
- ☑ **Screen shots of data added below**
- ☑ **Comments made about the data**
- ☑ **If required, important changes / feedback affecting next year is highlighted.**
- ☑ **Marks published [double Green tick]**

Next steps (complete at any time during the unit):

At risk pupils identified and early intervention strategies in place are:	#@	12	F	WNNL	4-1-12B IO-GV			
	@	12	F	SCVV	4-1-12B IO-GV			
	@	12	M	WNNL	4-2-12B IO-ME			
		M	BNSZ	12	Pasifika	Samoan	Samoan	1-1-12B IO-ME
		F	SKWL	12	Pasifika	Tongan	Tongan	2-1-12B IO-MC
		M	BNBT	12	Pasifika	Tongan	Tongan	1-1-12B IO-ME
		F	SKHG	12	Pasifika	Samoan	Samoan	2-1-12B IO-MC
What worked well:	We made some changes to the teaching in 2018 – we produced a booklet of core notes and did a bit more work un-packing the assessment and the marking of the assessment. We also did a semi-formative task that appeared to help pupils understand what we were looking for.							
What did not work well:	Unfortunately the field trip was cancelled due to the weather – this meant pupils missed out on collecting data in the field and seeing what Ecology was							

On the right is part of a Y12 Biology EOUR (names hidden). The top 3 pupils have been identified as at risk, with the bottom 4 pupils identifying as Pasifika (a specific focus for science in 2018). In many cases after the first 2 or 3 units, some pupils no longer need specific commenting because they are making pleasing academic and social progress.

Below is an extract of typical comments about priority learners. See Appendix 3 to see a full EOUR and what the typical statistical analysis from KAMAR looks like.

Priority Learners Maori Achievement	Only 4 pupils identified as Maori. Results for these pupils were excellent.
Priority Learners Pasifika Achievement	Only 4 pupils identified as Pasifika. One of these pupils obtained an NA.
Priority Learners Special Needs Pupils	5 of the 7 pupils identified above as priority learners passed the standard (4 x A, 1 x M). Two did not achieve.

:

5.2 What specific initiatives are identified for these groups of pupils?

In some courses, the numbers of pupils taking science who identify as either Maori or Pasifika is relatively low. In middle school 30 pupils identify as Maori (6.3%) and 19 pupils identify as Pasifika (4%) from a total of 471 (Aug 2018). In senior college of the 451 pupils who take science, 31 pupils identify as Maori (6.9%) and 10 pupils identify as Pasifika (2%) (Aug 2018). For this reason, both individual assistance and broader strategies have been implemented.

Specific initiatives include the work Aidan Harrison started in 2014, mapping our middle school curriculum with specifically Maori contexts that allow for natural incorporation of things Maori. The primary goal of this task was to allow *"Māori enjoying educational success as Māori".* See appendix 8 to see this work.

Aidan Harrison has been a wealth of insight to things Maori and from time to time has run PD and devotions incorporating things Science and Maori. This process provides staff with more awareness and confidence to replicate these ideas in the classroom.

The school also purchased a range of Maori science comprehension activities for middle school. These are a great start, although more work is required to fully integrate these.

Attainment of vocabulary is often a struggle for these groups of pupils, yet is fundamental to success in science. Science has a vast quantity of vocabulary and significant work is spent in middle school training and testing pupil's vocabulary. Glossary sheets are given to all pupils at the start of each topic and staff frequently refer back to these during their teaching time.

For many of the science courses taught, staff are often very willing (and frequently do) give up their own time to meet with these pupils one on one or in a tutorial situation.

6. Transitions from Primary to Middle School to Senior College

- The 7th principle of the NZC is 'coherence'-the curriculum…makes links within and across learning areas providing for coherent transitions and opens up pathways to further learning.'

6.1 Describe the links your Curriculum Area/Learning Area has between the schools. Cover transfer of assessment information, curriculum planning and sharing of resources.

6.2 Please suggest some methods of improving communication within the curriculum area/learning area between the schools.

6.1 Describe the links your Curriculum Area/Learning Area has between the schools. Cover transfer of assessment information, curriculum planning and sharing of resources.

The transition from Middle School to Senior College in terms of design of curriculum, sharing of resources and assessment information flows well as science is one curriculum area from Years 7 to 13. As can be seen in section 1.2.1, a good number of science staff teach in the Middle School and the Senior College, although in 2018 this ratio was lower than normal, causing some difficulty in this area.

We cover all the stands of science and we are continually making adjustments to improve the middle school and senior college programme. In 2016 and 2017 significant work was made to update the Year 10 programme to better reflect the assessment style of NCEA to better prepare our pupils for Year 11. In 2017 and 2018, significant work has been made to the Year 9 programme to combine two similar units and introduce the Science Fair, that all Year 9 pupils now complete. The design of science courses in the Middle School takes into account the need for pupils to have sufficient knowledge and skills once they begin science courses in Senior College.

In Years 1-6, due to the nature of education at this level, science does not have an explicit timetabled weekly or daily slot and is completed in a more thematic style. There is no standard formal assessment of science in the Primary School and hence assessment information about science specifically does not happen. We use the information from KAMAR around numeracy and literacy to inform us about pupils when they reach Year 7. We have invited pupils from Year 6, up to experience a "taster" day in science each year.

We are supportive of the science that occurs in the primary school and share resources, ideas and equipment where needed. Although the coherence between primary and middle school could be improved.

The biggest challenge in terms of transitions is brought about by the contributing schools. Pupils come to Middleton with varied backgrounds in science depending on the school they have attended. The

communication with contributing schools has improved in recent years, but this has not lead to them modifying their middle school programs. More detailed and standardised information would be extremely beneficial to help with correct class placement and a smooth transition for those pupils concerned.

6.2 Please suggest some methods of improving communication within the curriculum area/learning area between the schools.

Science (Middle School / Senior College) is a very large department (18 teaching staff, a number who are part time, multiple departments or have other school wide responsibilities) teaching a large number (13) of courses across a range of specialities. Getting all the necessary people together can be quite a challenge.

Staff who only teach a couple of Middle School periods and lack senior college expertise do pose a challenge. Streamlining the team or more time to provide science specific professional development would be advantageous. Also improving the mix of Senior College and Middle School classes staff have would help.

Having a person dedicated and remunerated to lead middle school science this year, has made a significant improvement with the educational outcomes and communication between staff teaching in middle school.

A regular meeting time between an allocated teacher of Middle School and Senior College sciences with the lead science teacher in primary would also improve our communication.

7. Home and School Partnership

7.1 How are parents/caregivers/external agencies connected or involved in this area of the school?

We encourage communication with parents. All staff are encouraged to email home at the start of the year to introduce themselves and provide an outline to the course. This gives parents a contact to come back to if they feel the need.

For a number of courses, the TiC or individual teacher will email home before an upcoming assessment and inform the parents of this assessment and will often provide a link to the class OneNote page or some other revision material. We have had significant positive feedback from this approach. Parents love to be informed of assessment dates (it appears pupils are not always forthcoming in the homework they need to complete) and the revision material empowers parents to actively engage with their son/daughter.

Parents are encouraged to attend the Parent Pupil Teacher Conferences (PPTC's) that occur in the last week of term 1 and the first week of term 3. This allows a natural face to face meeting to converse about the progress of the pupil and for the parent to share any concerns or information they deem necessary. Formal written reports are completed during term 2 (and term 4 for Middle School pupils). Also at the annual course selection evening we are able to interact and dialogue with parents and inform both pupils and parents of what our courses entail. The KAMAR parent portal also allows parents to get up to date information about attendance and academic achievement for our pupils.

In science we have a small number of field trips and on occasion invite external agencies to speak to our pupils. For example, our Year 12 Biology pupils go on a field trip to the Groyes using the external company http://www.waterwatch.co.nz/. We have also had guest speakers from the University of Canterbury come and speak to our pupils. A number of representatives from a range of tertiary institutes frequently come and speak to our pupils.

8. Pupil Achievement Targets for the Year

8.1 Include the completed Pupil Achievement Plan (AR3) from the previous year as an appendix to show links to pupil learning, pupil outcomes and any analysis of variance.
8.2 State pupil achievement targets (show *one* example only) in this Curriculum Area/Learning Area.
8.3 Is the Curriculum Area/Learning Area on track to meet or exceed this goal?
8.4 Outline the links to the school Strategic Goals for this calendar year.

8.1 Completed Pupil Achievement Plan (AR3)

See appendix 4 to see the 2017 AR3.

8.2 State pupil achievement targets (show *one* example only) in this Curriculum Area/Learning Area.

Pupil achievement targets for 2018:

1) Raise the percentage of Excellence grades in the external exams for **Level 2 Chemistry**, so that MGS is above decile 9 national stats for 2018.
2) Raise the percentage of Excellence grades in the external exams for **Level 2 Physics**, so that MGS is above decile 9 national stats for 2018.
3) Raise the percentage of Excellence grades in achievement standard **2.2 Analyse the biological validity** of information presented to the public (AS91154), so that MGS is at or above the national stats for 2018.
4) Raise the percentage of Pasifika pupils obtaining results below the standard or national statistics.

The first 2 targets for 2018 arise from the fact the percentage of our pupils obtaining excellence in their external exams in Level 2 Physics and Level 2 Chemistry were about 7% less than the national statistics for decile 9-10 schools in 2017. These two targets are challenging to quantify until after the final examinations.

Target 3, involving an internally assessed standard in Level 2 Biology. Biology bucks the trend with chemistry and physics, getting worse internal results, but much better external results. Much work, over a number of years has been invested into determining and rectifying this situation.

I have included this example as Appendix 5, that provides evidence of the significant work which has been made to modify the course and improve pupil outcomes. However, after all of this effort, the percentage of pupils obtaining excellence actually decreased in 2018. A disheartening and humbling result.

8.3 Is the Curriculum Area/Learning Area on track to meet or exceed this goal?

As discussed in 8.2 and in Appendix 5, target 3 was unfortunately not met this year. Of the 3 next steps identified, further discussion with other schools surrounding the marking of internal biology assessments has been encouraged to ensure we are simply not marking 'too hard' (although significant and comprehensive internal moderation is undertaken) as the disparately between internal and external results in perplexing. In 2018 the concept of giving pupils more in class time to complete assessments (rather than setting all research at homework, at first glance looks to be proving more positive. This approach was implemented with another Level 2 standard. Continued pupil voice will also allow us to determine the pupil's perspective.

8.3 Outline the links to the school Strategic Goals for this calendar year.

The school has 5 strategic goals (2014 – 2019) see appendix 6. The strategic goal being focused on for 2018 is:

"1.3 the curriculum is innovative in meeting the needs of the akonga with a specific focus on e-learning".

All 4 of the Pupil Achievement Targets (PAT) for Science for 2018 (see 8.2) align with the above goal. Our first 3 goals are focused on improving higher order thinking in the classroom, measured by an increase in Excellence results obtained in assessments (although these two are not always directly aligned). As staff we are attempting to be innovative in meeting the needs of our akonga, by providing them with the critical, analytical, connecting, synthesising higher order thinking skills that will provide them the most helpful framework to ensure they are successful lifelong learners.

PAT goal 4, is about meeting the needs of all akonga, even those in our community who are less represented and have historically on average underperformed in standardized based assessment.

E-learning:

The final part of strategic goal 1.3 is a specific focus on e-learning. Although not specifically accounted for in our PAT's, this is an area as a department we have been steadily embracing. In 2018 we moved all our Science moderation, end of unit reviews, meeting items and general administration on to OneNote. A major change for some staff. Over the past 2 to 3 years, many courses have now got a core 'content library' accessible by all pupils in a course – a significant amount of work and an invaluable resource moving forward towards BYOD. In 2017 all staff were highly encouraged to complete their appraisal using OneNote. All of these steps (and all of the professional development offered) has helped the Science staff move multiple steps forwards towards confident, competent helpful integration of ICT to support learning. We are also in the process of actively reviewing (by staff using with their pupils) education perfect, an external online learning platform to consider its benefits and drawbacks for department wide implementation.

ACT:

Separate to our PAT's, our curriculum goal for the staff on the Authentic Christian Teaching (ACT) program is "critically think about how our Christian faith informs our classroom practise". This is an ongoing and exciting target that is reflected in strategic goals (see appendix 6) 1.1, 1.3, 1.4, 2.7, 3.1 and 5.2 :

1.1 Biblically-based and authentically infused by the Foundational Principles for Curricula (FPC)
1.3 innovative in meeting the needs of akonga
1.4 challenging, develops critical thinking, and inspires action
2.7 middle leaders are instructional leaders
3.1 Christ-centred, striving for personal best in all endeavours – "My utmost for His highest"
5.2 the curriculum provides opportunities for service

9. The Future

9.1 What are the most important areas this Curriculum Area/Learning Area needs to concentrate on in the next one to three years?

9.2 Is there anything the Board needs to consider at a governance level to support staff in the Curriculum Area/Learning Area in this effort?

9.1 What are the most important areas this Curriculum Area/Learning Area needs to concentrate on in the next one to three years?

1) Authentic Christian teaching:

In 2018 five members of the Science curriculum area have participated in the Authentic Christian Teaching (ACT) program. The first 2 terms of this program were composed of weekly lectures, readings and small group discussion times. These proved highly pivotal in shaping the thinking of the attendees. In term 3 and 4 the focus changed towards investigating, modifying and creating resources and tangible links between the content being taught and our responsibility as Christian educators. We worked on answering the question what is the purpose of Christian education, thinking through a 'graduate profile' – a description of the outcomes we desire pupils having been taught in the science department to have. We have also sought to produce a philosophical framework / rational for teaching science, unpacking what the school mission statement means for science and being guided by our school's key documents including the Vision & Mission statements; Charter; FPCs; Statement of Belief & Board Special Character Policy.

In 2019 the science department is going to complete a second year of ACT, with 4 different staff. This is an important area to ensure all staff are familiar with the ideas learnt during ACT and that as a department we can support each other to be more effective at communicating biblical truth (though the whole counsel of scripture), equip our pupils to understand the giants of the faith who were also impressive scientists, to have a rigorous learning culture where pupils learn good science, but are also equipped with the knowledge and skills to engage, critique and transform contemporary society, using their gifts and abilities to serve God and others.

ICT and BYOD

In 2019 BYOD will be optional and in 2020 compulsory for pupils in years 9 – 13 to bring devices (laptops) to school. This is a significant directional change, that will require substantial staff professional development. Resulting from this decision, the science department has already been investigating the use of major science based ICT tools such as Education Perfect and stileeducation. We have a desire to implement BYOD well as a department and use the technology to further the educational outcomes for our pupils.

9.2 Is there anything the Board needs to consider at a governance level to support staff in the Curriculum Area/Learning Area in this effort?

Firstly, a huge thank you for the recent renovations in science. Over the 2017 / 2018 Christmas holidays as part of the 10-year property plan for D-block, significant renovations were undertaken. The largest part of the renovation was to turn D104 from an undesirable, cramp and difficult to use classroom into a well-designed, purpose built senior laboratory. Now with a walk through Physics store room. A new larger technician's area was made and internal access doors installed to a combined multi-teacher workspace.

Thank you for allowing this project to be undertaken. It has received very positive feedback from all staff and pupils, who have been enjoying the space we now have.

Educational change:

Education appears to undergo significant and ongoing change. A good deal of these changes have a large impact in senior college NCEA courses, causing all staff significant work load updating courses, writing new tasks and completing administrational duties such as moderation. Many of these changes are good and right in their time. However, ensuring staff and pupils have a healthy work life balance with positive waiora is also fundamental to an effective and healthy school.

With the potential changes signalled by the latest government and the introduction of BYOD, I feel it necessary to highlight that such changes do cause staff significant workload that can at times take staff attention away from the most important area of focus - on high quality, engaging pedagogically sound learning experiences. My prayer is for wise implementations of the imminent changes.

Appendices:

Appendix 1: chart of achievement objectives for science (NZC)

The fundamental aims of science education are expressed as a series of achievement aims, grouped by strand. The achievement objectives at each level are derived from the aims and are similarly grouped by strand. Below is one page (Levels 3 and 4) showing the 5 strands of science – Nature of Science; Living world; Plant Earth and Beyond; Physical World; Material World.

	Level Three	Level Four
Nature of Science	*Students will:* **Understanding about science** • Appreciate that science is a way of explaining the world and that science knowledge changes over time. • Identify ways in which scientists work together and provide evidence to support their ideas. **Investigating in science** • Build on prior experiences, working together to share and examine their own and others' knowledge. • Ask questions, find evidence, explore simple models, and carry out appropriate investigations to develop simple explanations. **Communicating in science** • Begin to use a range of scientific symbols, conventions, and vocabulary. • Engage with a range of science texts and begin to question the purposes for which these texts are constructed. **Participating and contributing** • Use their growing science knowledge when considering issues of concern to them. • Explore various aspects of an issue and make decisions about possible actions.	
Living World	*Students will:* **Life processes** • Recognise that there are life processes common to all living things and that these occur in different ways. **Ecology** • Explain how living things are suited to their particular habitat and how they respond to environmental changes, both natural and human-induced. **Evolution** • Begin to group plants, animals, and other living things into science-based classifications. • Explore how the groups of living things we have in the world have changed over long periods of time and appreciate that some living things in New Zealand are quite different from living things in other areas of the world.	*Students will:* **Life processes** • Recognise that there are life processes common to all living things and that these occur in different ways. **Ecology** • Explain how living things are suited to their particular habitat and how they respond to environmental changes, both natural and human-induced. **Evolution** • Begin to group plants, animals, and other living things into science-based classifications. • Explore how the groups of living things we have in the world have changed over long periods of time and appreciate that some living things in New Zealand are quite different from living things in other areas of the world.
Planet Earth and Beyond	*Students will:* **Earth systems** • Appreciate that water, air, rocks and soil, and life forms make up our planet and recognise that these are also Earth's resources. **Interacting systems** • Investigate the water cycle and its effect on climate, landforms, and life. **Astronomical systems** • Investigate the components of the solar system, developing an appreciation of the distances between them.	*Students will:* **Earth systems** • Develop an understanding that water, air, rocks and soil, and life forms make up our planet and recognise that these are also Earth's resources. **Interacting systems** • Investigate the water cycle and its effect on climate, landforms, and life. **Astronomical systems** • Investigate the components of the solar system, developing an appreciation of the distances between them.
Physical World	*Students will:* **Physical inquiry and physics concepts** • Explore, describe, and represent patterns and trends for everyday examples of physical phenomena, such as movement, forces, electricity and magnetism, light, sound, waves, and heat. For example, identify and describe the effect of forces (contact and non-contact) on the motion of objects; identify and describe everyday examples of sources of energy, forms of energy, and energy transformations.	*Students will:* **Physical inquiry and physics concepts** • Explore, describe, and represent patterns and trends for everyday examples of physical phenomena, such as movement, forces, electricity and magnetism, light, sound, waves, and heat. For example, identify and describe the effect of forces (contact and non-contact) on the motion of objects; identify and describe everyday examples of sources of energy, forms of energy, and energy transformations.
Material World	*Students will:* **Properties and changes of matter** • Group materials in different ways, based on the observations and measurements of the characteristic chemical and physical properties of a range of different materials. • Compare chemical and physical changes. **Chemistry and society** • Relate the observed, characteristic chemical and physical properties of a range of different materials to technological uses and natural processes.	*Students will:* **Properties and changes of matter** • Group materials in different ways, based on the observations and measurements of the characteristic chemical and physical properties of a range of different materials. • Compare chemical and physical changes. **The structure of matter** • Begin to develop an understanding of the particle nature of matter and use this to explain observed changes. **Chemistry and society** • Relate the observed, characteristic chemical and physical properties of a range of different materials to technological uses and natural processes.

Appendix 2.1: Example middle school scheme: **YEAR 10 SCIENCE - Chemistry Around You Teacher Scheme:**

BIG SCIENCE IDEAS:

Acids and bases are a group of chemicals with similar properties that are used in many ways by humans to meet their needs.

LENGTH OF UNIT: 26 Periods max (inc test)
TIMING OF UNIT: Term One and Two - 9 weeks total
FPC:

- **4**. Man's ability to think, plan, be creative and communicate- Use of acids and bases and communication of which is useful

- **6**. Stewardship God created everything good and for a purpose. Acids and Bases are found in nature and have purposes

NATURE OF SCIENCE:

Understanding about science

Appreciate that science is way of explaining the world and that science knowledge changes over time

Investigating in science

- Build on prior experiences, working together to share and examine their own and others' knowledge.
- Ask questions, find evidence, explore simple models, and carry out appropriate investigations to develop simple explanations.

Communicating in science

- Begin to use a range of scientific symbols, conventions, and vocabulary. E.g. pH, concentration, indicator…

Participating and contributing

- Use their growing science knowledge when considering issues of concern to them
- Explore various aspects of an issue and make decisions about possible actions

CURRICULUM: Level 4- Material world

Properties and Changes of Matter- Group materials in different ways, based on the observations & measurements of the characteristic chemical and physical properties of a range of different materials

Chemistry and Society- Relate observed, characteristic chemical and physical properties of a range of different materials to technological uses and natural processess

KEY COMPETENCIES: Thinking (T), Managing Self (MS), Language Symbols & Text(LST), Thinking (T), Participating and contributing (P & C)

TOPIC	PERIOD	PUPIL LEARNING OUTCOMES we are learning to...	LEARNING EXPERIENCES
Introduction	1	• Understand that chemicals are all around us.	• SLO Sheet • Vocab List • **MUST DO PRACTICAL:** Tasting chemicals (Raro, baking soda, sucrose, glucose, etc) This reminds students that chemicals are rather important, and you cannot have "chemical-free" food.
Physical and Chemical Properties	5	• Identify and list the physical properties of common substances • Measure the density of an object • Explain the chemical properties of a substance, given a context	• Physical Properties – What something IS • Use **SADOS** acronym to explain **physical properties** – **S**tate, **A**ppearance, **D**ensity, **O**dour, **S**olubility (in water). Density will need a few lessons spent on it, 1 on density of objects with a regular shape, and 2 on objects with an irregular shape. • **MUST DO PRACTICAL:** Pencil Sharpener Density • **Optional Demo:** Can float various objects in a large fish tank and discuss why some float/sink. (small ice cube, big ice cube, apple, ruler, etc) • **MUST DO PRACTICAL:** SADOS Experiment. This links all physical properties together. Set up stations around lab with different items to observe/measure. Liquids/sugar – measure 10mL into a sample pot. Give empty pot too so you can get mass of just the sample. Need scales, measuring cylinders etc • Show Archimedes video. Discuss how Archimedes found that the Kings crown was a tad dodgy • Chemical Properties – What something DOES • Can demo Na in water. Talk about its physical properties, and show it reacting with air (cut it, it goes dull (oxidises) quickly) and water (small piece in a large beaker or container). Chemical properties are that it can react with air (oxygen), water and acid (DON'T DEMO THIS). See VT if help needed with either demo.

Appendix 2.2: Example Senior college scheme **YEAR 11 SCIENCE 2018**

Humans and microbes

BIG SCIENCE IDEA:

Pupils learn to describe the life processes of bacteria, fungi and virus. Pupils will then apply the requirements for life of these microorganisms to culturing and growing examples of bacteria and fungi in the lab.

Pupils will discover microorganisms which are useful to humans and pupils will have the opportunity to use lactic acid bacteria and yeast to make common food products eg. Yoghurt. This will give pupils the opportunity to discuss and link how the growth requirements and growth products of a particular microorganism are used to benefit our requirements for food processing ie.in food preservation and production.

Pupils will discover microorganisms which are harmful to human and will learn the different mechanisms of disease spread. Pupils will learn about actions we can take to prevent infection and also the ways our bodies fight disease causing microbes if we are infected. The assessment will focus on disease-causing microbes and their interaction with humans.

Change for 2018:

- A key focus for this year is food preservation, why does food go off and what can we do to minimise / reduce these effects.
- another key focus for 2018, is to include more explicit examples of Christians and their work with microbes.

LENGTH OF UNIT: 17-20 lessons

TIMING OF UNIT: Term 2 2018

FPC:

- 3/1: God is good – His ways are perfect and His laws are just.
- 4/3: God created us with the ability to think and reason.
- 5/3: As a result of the fall, sin has corrupted relationships
- 6/2: God has given dominion of creation to mankind.
- 6/3: God continues to sustain His creation in implementing His sovereign plan.

NATURE OF SCIENCE:

Understanding about science

- Understand that scientists' investigations are informed by current scientific theories and aim to collect evidence that will be interpreted through processes of logical argument.

Communicating in science

- Uses wider range of science vocabulary and symbols
- Apply their understandings of science to evaluate both popular and scientific texts

Participating and contributing

- Develop understanding of socio-scientific issues by gathering relevant scientific information in order to draw evidence-based conclusions

CURRICULUM: Level 6

- Life Processes – Identify structural features of microorganisms
- Environmental features which affect life processes

KEY COMPETENCIES:

Thinking: Considering the ubiquitous nature of organisms and how humans are able to apply the characteristics of different organisms for microbe control or production.

Relating to Others: Working together in group discussions and laboratory activities

Understanding Texts and Symbols: Reading and researching articles about microorganisms

Managing Self: Being ready and bringing the correct books and stationary for each lesson. Keeping up with 'milestones' for assignment.

Participating and Contributing: Giving feedback and ideas about different health initiatives eg. vaccinations, hygiene and medical advancements to treat microbial diseases.

Links to famous Christians:

TOPIC	PERIOD(S)	PUPIL LEARNING OUTCOMES	POSSIBLE LEARNING EXPERIENCES	RESOURCES **Books Available:** **New Directions Workbook (ND)**
Intro	0.5	• I can identify the existence of microbes in everyday life.	• Brainstorm what pupils know about microbes ○ Set up a display of the items related to microbes. Students react to these items by writing in their science notebooks a word (or words) that explains how the items are related. • Observations task: Have 4 stations set up, and get pupils to go around each station and look for the connection between each one 1. A piece of mildewed bread or fruit. Or mould pictures 2. An empty prescription bottle labelled penicillin. 3. A package of dry yeast. 4. A microscope with a prepared slide of a bacteria or amoeba.	There is a 40 page pupil booklet (PB), that can be found on the drive and is referred to significantly in here. PB page 4
Intro: What are microbes?	3	• I can name some examples of microbes • I can describe the relative sizes of bacteria, viruses and fungi • I can describe and explain what 'bugs' are and how they link to food poisoning. • I can describe some of the main features of microbes	• Show relative size of microbes (see website re scale in Resources) • Intro Standard (booklet) • Microbes Introduction (booklet) • Measuring Micro-organisms (booklet)	Pupil booklet pages 5 - 10 Website summary of main types of microbes notes: http://learn.genetics.utah.edu/content/microbiome/intro/ Ted-ed you are microbes: https://www.youtube.com/watch?v=1X8p0vhsWRE Web-based demo showing scale of microbes etc http://learn.genetics.utah.edu/content/cells/scale/ https://www.youtube.com/watch?v=nxs5wye0JXs http://htwins.net/scale2/ https://www.youtube.com/watch?v=ycvIJ9XMd94 Short overview video: https://www.youtube.com/watch?v=_Vj0cIgwpQI Longer, more detailed video https://www.youtube.com/watch?v=k7cCBlQARg0 Don't bug me video: https://www.youtube.com/watch?v=_SjBTichSuY What's bugging you notes: https://www.extension.iastate.edu/foodsafety/L1.1

Appendix 3: Evidence of End of Unit Reviews

These are completed on OneNote, where all teachers in a team have access and contribute.

Ecology EOUR - AS91158

Monday, 11 June 2018 1:59 PM

End of Unit Review

SUBJECT : Ecology **Year :** Year 12 Biology

Tick once done:

- ☑ **Check marking internally completed**
- ☑ **Next step comments completed below (**comments can / should be added during the unit**)**
- ☑ **Marks entered into KAMAR within 3 weeks**
- ☑ **Screen shots of data added below**
- ☑ **Comments made about the data**
- ☑ **If required, important changes / feedback affecting next year is highlighted.**
- ☑ **Marks published [double Green tick]**

Next steps (complete at any time during the unit):

At risk pupils identified and early intervention strategies in place are:	#@ [redacted] 12 F WNNL 4-1-12B IO-GV @ [redacted] 12 F SCVV 4-1-12B IO-GV @ [redacted] 12 M WNNL 4-2-12B IO-ME [redacted] M BNSZ 12 Pasifika Samoan Samoan 1-1-12B IO-ME [redacted] F SKWL 12 Pasifika Tongan Tongan 2-1-12B IO-MC [redacted] M BNBT 12 Pasifika Tongan Tongan 1-1-12B IO-ME [redacted] F SKHG 12 Pasifika Samoan Samoan 2-1-12B IO-MC
What worked well:	We made some changes to the teaching in 2018 – we produced a booklet of core notes and did a bit more work un-packing the assessment and the marking of the assessment. We also did a semi-formative task that appeared to help pupils understand what we were looking for.
What did not work well:	Unfortunately the field trip was cancelled due to the weather – this meant pupils missed out on collecting data in the field and seeing what Ecology was actually like. This was very disappointing.
Ways nature of Science was incorporated into the classroom:	A lot of focus was put on using real-life examples and relating what were were doing in terms of the theory of Ecology to what happens in the field.
Changes to the assessment /curriculum/delivery:	We had planned to run the 5 classes across two days for the field trip – we may look at trying to have all 5 classes go on one day in the future (perhaps a ½ day each?). This would make it easier to have a "reserve" day. We could look at alternative ideas for a field trip. Ideally we would do something local that had som bigger significance (e.g. look at monitoring stream quality by sampling invertebrates in a local "recovering" stream).

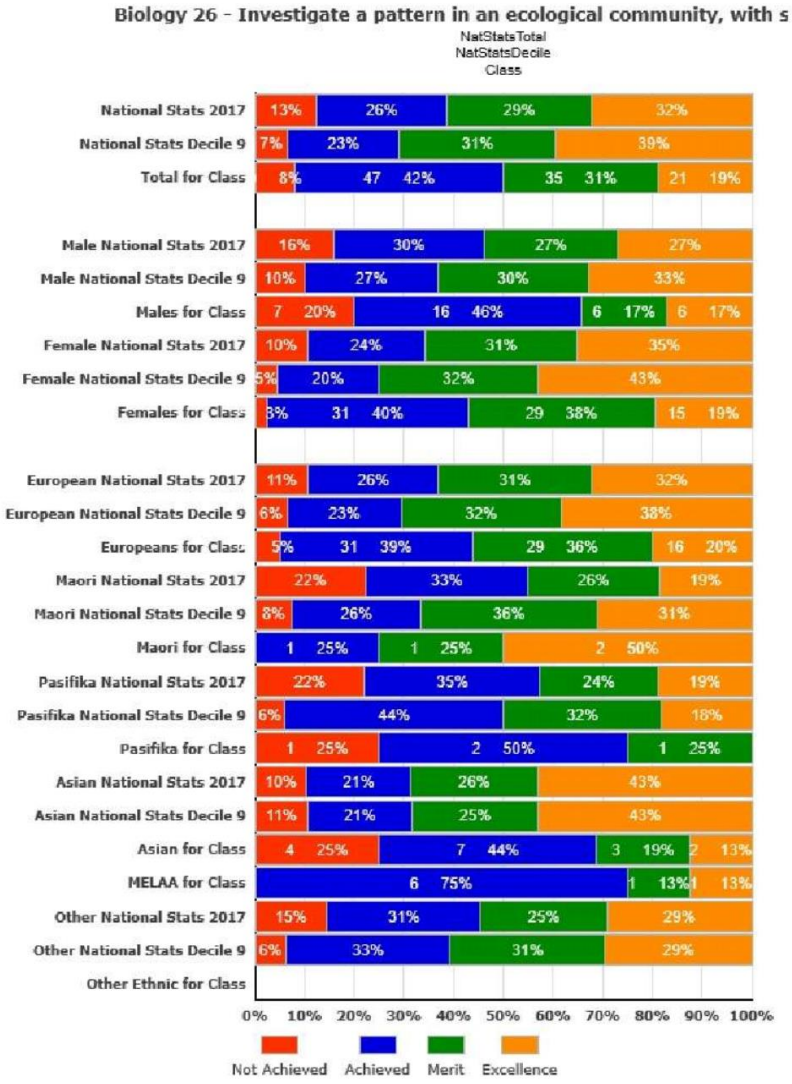
Statistics:

Please add screen shots (or insert PDF's) of class by class results and overall cohort results here

12BioEcolo gyAS9115...

L2 Bio Page 1

12BioEcologyAS9115...



Pupil achievement comments

Overall Pupil Achievement	Overall pass % very good (similar to Decile 9/10 schools and better than overall NZ data). However, the % of NA grades low (19%) compared to 39% for Decile 9/10 and 32% for National averages. M % good (similar to Decile 9/10) and A % higher at MGS.
Boys Achievement	**A concern.** 34% good passes at MGS (M or E) compared to 54% (Nationally) and 63% (Decile 9/10). A bit tail with MGS boys with 46% A and 20% NA grades. **Again, a big concern.**
Girls Achievement	While not as bad, the data for girls at MGS reflects the boys data. The % of E grades is lower than for Decile 9/10 schools and lower than Nationally. The % of A grades for MGS girls is high (40%). **Again, a concern.**

Priority Learners Maori Achievement	Only 4 pupils identified as Maori. Results for these pupils were excellent.
Priority Learners Pasifika Achievement	Only 4 pupils identified as Pasifika. One of these pupils obtained an NA.
Priority Learners Special Needs Pupils	5 of the 7 pupils identified above as priority learners passed the standard (4 x A, 1 x M). Two did not achieve.

Does the above data show any patterns?	Yes – see comments above. The big issue is the low E (and to some degree M) grades – this is a conern shared with 13 Bio (not as bad). We do feel that this is not the strongest Year 12 group with a big tail, but do feel that more pupils should be obtaining E grades. One concern is the number of internal assessments (4 in 12 Bio). Are they too stressed / pushed and/or picking and choosing what they put effort into?
What action could/should be taken based on the above results	We are looking at reducing the internally-assessed component of this course. This may give pupils a bit more time and space to prepare for this assessment and may see their academic performance improve (maybe!).

The above end of unit review is for L2 biology internal. The end of unit review below is for the year 9 Science course, specifically the year 9 introduction to science unit.

Intro to Science EOUR

Tuesday, 14 November 2017 1:59 PM

End of Unit Review

SUBJECT : Intro to Science **Year :** Year 9 Science

Tick once done:

- ☑ **Check marking done between teachers internally**
- ☑ **Next step comments completed below** (comments can / should be added during the unit)
- ☑ **Marks entered into KAMAR within 3 weeks**
- ☑ **Screen shots of data added below**
- ☑ **Comments made about the data**
- ☑ **If required, important changes / feedback affecting next year is highlighted.**
- ☑ **Marks published [double Green tick]**

Next steps (complete at any time during the unit):

At risk pupils identified and early intervention strategies in place are:

[redacted] 9Sm (gather info from other subject areas, voice concerns to form teacher, develop plan with will re future units)
[redacted] 9Ga (work with international college to well equip families, provide vocab lists early on.) ST

Last	First	Gender	Form	Year_level	Ethnic 1	Ethnic 2	Ethnic 3	Classes
[redacted]		F	9SM	9	Pasifika	Samoan	Samoan	9SM-9SCI
		M	9SM	9	Pasifika	Tongan	Tongan	9SM-9SCI
		F	9GA	9	Pasifika	Samoan	Pacific Peoples	9GA-9SCI
		F	9SI	9	Pasifika	Cook Island Maori	Cook Islands Maori	9SI-9SCI

[redacted]) - 5B in assessment, engaged, enthusiastic in class

What worked well:

- Changes to the start of the unit increased engagement, as it incorporated learning safety, equipment through experiments. Quickened unit, to allow time for science fair. ST
- Gave students opportunity to bring in equipment to conduct their own fair test, which increased engagement and helped them to grasp concepts better! ST

Good to hear :)

What did not work well:

Ways nature of Science was incorporated into the classroom:

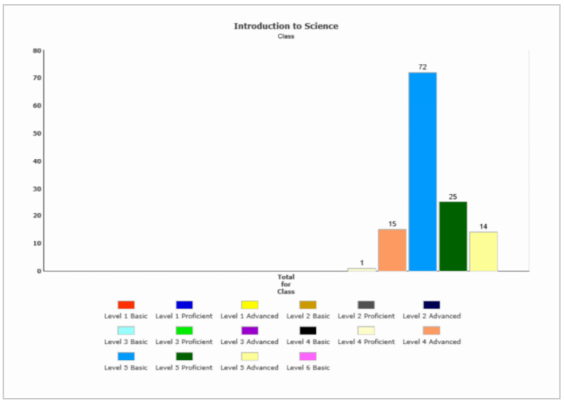
- Fair Testing
- Questioning/Reflecting outcomes from experiments

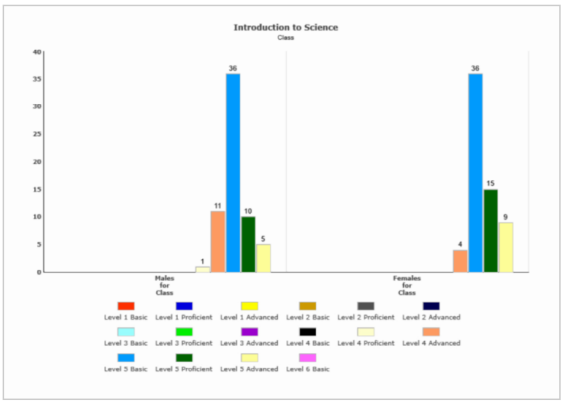
Changes to the assessment /curriculum/delivery:

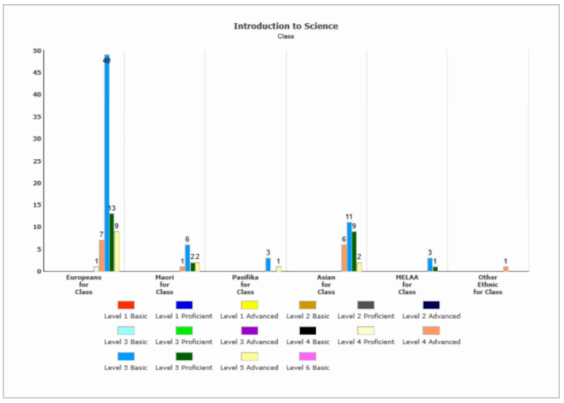
- ST is happy with assessment/unit
- Need to tidy up the wording for the discussion- reliable results and valid method are key terms (Hr)
- Need to make the assessment more year 9 friendly especially the terminology used in the discussion. GM
- The aim of the experiment in the assessment and the instructions in the method are confusing for pupils. Aim says from point A to point B (this indicates the two points are different) and the method says to do one full swing (from one point and back again), stick with the method terminology. GM

Statistics:

Please add screen shots (or insert PDF's) of class by class results and overall cohort results here





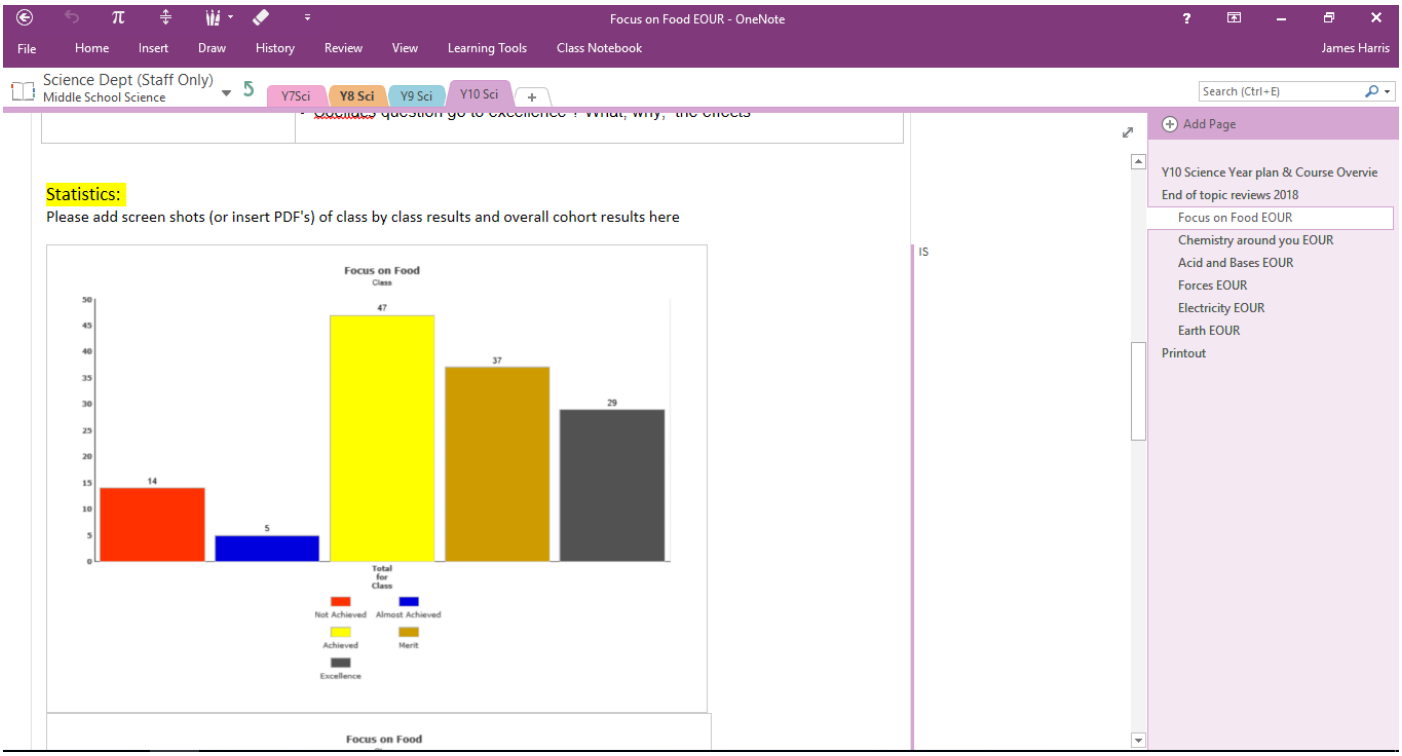


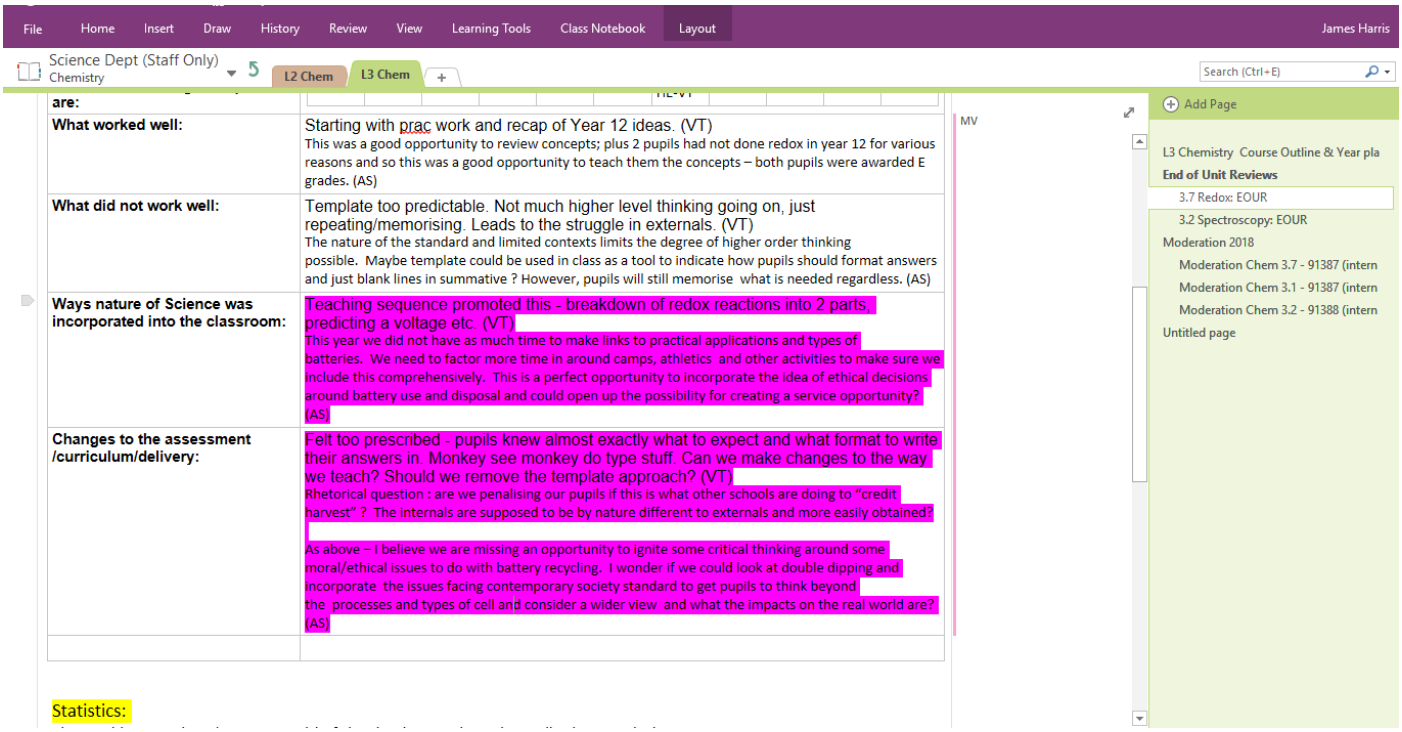
Pupil achievement comments

Overall Pupil Achievement	4A: 1 · 4P: 15 · 5B: 72 · 5P: 25 · 5A: 14
Boys Achievement	4A: 1 · 4P: 11 · 5B: 36 · 5P: 10 · 5A: 5
Girls Achievement	4A: 4 · 4P: 36 · 5B: 15 · 5P: 9
Priority Learners Maori Achievement	4A: · 4P: 1 · 5B: 6 · 5P: 2 · 5A: 2
Priority Learners Pasifika Achievement	4A: · 4P: · 5B: 3 · 5P: · 5A: 1
Priority Learners	4A: · 4P: 2 · 5B: 14 · 5P: 5 · 5A: 4

Does the above data show any patterns?	• Boys are not achieving as 'high' academically as the girls on a proficient and advanced level • Maori and Pasifika and achieving the same as European • More boys received a level 4 grade then girls
What action could/should be taken based on the above results	Focus on boys extending themselves and learning science concepts in full.

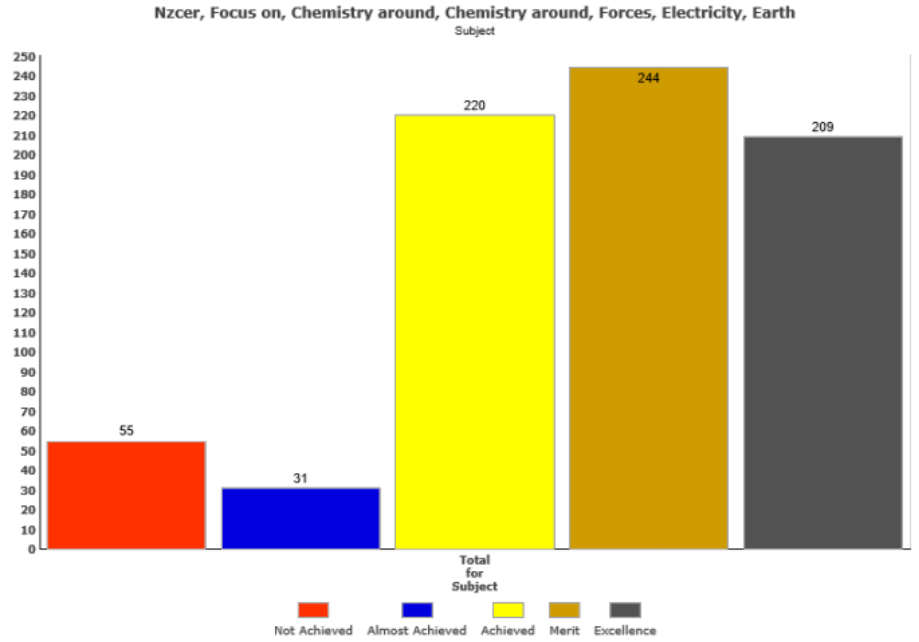
Screen shot from Onenote showing centrally located, staff editable, user tracking, password protected End of Unit Review location.





Appendix 4: 2017 AR3:

Middleton Grange School 2017 Pupil Achievement Plan for SCIENCE	
Pupil Achievement Target: [make pupil outcomes explicit within your CA target/goal] 1) To raise pupil achievement in 13 Biology and Year 10 Science (reducing the number of "not achieved" grades), with particular emphasis on those at the lower end (tail - 10th percentile" of pupils); Maori and Pasifika learners; and pupils with Learning Centre profiles. 2) And also to increase the percentage of excellence grades awarded to meet that of decile 9 school means for 13 Biology.	Baseline data – 2016 Results Generally, overall results compared well to National Stats for Decile 9 Schools. In particular, the % of NA grades at MGS in 13 Biology in 2016 was very low (9% at MGS compared to 15% for Decile 9 and 18% for National aggregate data). The % of grades that were Merit or above was high (62%) compared to 52% for Decile 9 and 46% Nationally. However, the % of Excellence grades at MGS (23%) was marginally lower than that for Decile 9 schools (25%). 5 pupils identified as Maori in the MGS 13 Biology course. The % of NA grades for Maori pupils at MGS was high (20%) but lower than the average for Decile 9 schools (22%). It was concerning that there were no E grades for pupils who identified as Maori in the 13 Bio course at MGS in 2016. 4 pupils identified as Pasifika in the 13 Bio course in 2016. The % of NA grades (12%) was low, but higher than that obtained for the class (but lower than Decile 9 National Data). The % of E grades from MGS Pasifika pupils was low. In Year 10 Science you can see from the graph below that there is a significant number of pupils who are getting not achieved and almost achieved grades. Also the results of the pupil engagement survey conducted last year indicate some áreas of concern. Despite the survey not being subject specific the following feedback was given by pupils: was as follows:

	• They identified content that was boring, not relatable, out of their context, over assessed and not clearly linked to specific outcomes. • Too much content was repeated from previous years and seemed irrelevant. • Staff taught in a predictable lecture style and did not allow for peer to peer discussion and for seeking help from a peer as this was seen as 'disruptive' behaviour. • They did not feel that their next steps were individualised, rather, they were aimed to the class as a whole. • They did not feel the tone of the classroom was conducive to learning, did not enjoy the year in general, and did not feel prepared for the demands of year 11. 

Strategic Goal/s underpinning Pupil Achievement Target (SCHOOL AND CURRICULUM AREA) Annual Goal 1 Curriculum **1.3** the curriculum is innovative in meeting the needs of the akonga with a specific focus on Year 10			
Key Improvement Str\ategies			
When	What	Who	Indicators of Progress
Term 1 Weeks 1 to 6	Get to know pupils and prior achievements, areas of success and areas of weakness / difficulty. Conduct NZCER engagement survey and analysis results	Year10 Teachers and Year 13 Biology Teachers	Details recorded in Class specific planning and shared at Science department meeting
Week 6 Week 7	Select a target group of pupils to closely monitor Set targets for pupils and give timely, regular feedback. Scaffold the learning, use graphic organisers, teach how to plan answers and set out working consistently, plenty of guided practice.	Year10 Teachers and Year 13 Biology Teachers	Details recorded in Class specific planning and shared at Science department meeting Get feedback from pupils re: confidence, understanding.

	Incorporate science capabilities into units of work and seek feedback from pupils.		
Up to the end of Term 1	Share strategies and be intentional about achievement outcomes. Use success criteria for lessons and be deliberate about processes and get the pupils to communicate these back. Utilise reciprocal teaching where appropriate and use as many literacy strategies as possible with a big push on vocab.	Year10 Teachers and Year 13 Biology Teachers	Review progress of pupils and share findings with the Science teacher group. Determine useful strategies/approaches and devise further actions for term 2.
Term 2 and 3	Pupils of concern highlighted in classes. Mini individual conferences with pupils and their teachers. Pupils invited to attend at risk tutorials, parents kept informed about upcoming assessments	Year10 Teachers and Year 13 Biology Teachers	Get feedback from pupils re: confidence, understanding. Analyse achievement data
Monitoring: How are we going? Where are the gaps? What needs to change? This is a commentary during the year on how the plan is working**.**			

Type into this section progress updates during the year. The final comment in this box is the ACTUAL result and any analysis of variance – which is any case should not be a surprise based on the monitoring during the year.

DL – reflection (10SI and 10FS)

I have been looking at trying to engage my at-risk students, checking on them frequently to ensure they are "on-task" and are getting down the essential minimum of notes, and where possible helping each to understand the work.

Communication has been a focus for me to try to get these kids to improve how they express and describe ideas and concepts. I have included learning definitions in game form- Pictionary, +Bingo which most of the class enjoy. I have spent a few minutes each or every second lesson with snap tests- questions with one word answers which are non-threatening, and easy to mark. These have helped the entire class learn vocabulary and other facts relating to the topic.

When help has been needed – which is frequently -I have tried to draw these kids out with - "what do we know?" "Do we have anything we can use to help us here?" Etc to try to get them to work through the issue themselves and to realize it is very do-able. For most they arrive at the answer themselves which helps grow confidence. I have 5 kids who struggle to keep their books up to date and for them, I have sent a complete set of notes home before a test so that parents can help them. Games and lots of practical have helped draw kids in and have them contribute positively- my least confident kids do really well in Pictionary!

I think this is having a positive effect as a number of my at-risk students have either gradually achieved a pass in their tests or seem to have been maintaining a good grade (1for them) throughout the tests. For example, my at risk pupils are now achieving Merit instead of a "just squeaked through achieved" Since these grades most pupils are making really helpful contributions in class. With a couple of pupil's work is ongoing and I have asked parents how best to help and am working on a number of strategies there. Most of my pupils are fairly well engaged and those who aren't periodically, I "visit" to see what the problem is. It has been really important to have every pupil doing practical's and NO spectators. This has also grown an "I can do this" approach.

Both classes passed their last test with NO kids failing to achieve- we celebrated their success with an ice cream treat they seem keen to try for the same in the next test. I am happy to provide that if it helps some kids to strive to be better. (There are obvious hang ups in this too so I need to be very careful!!)

ME Reflection (10BG and 10TE)

Content delivered through:

- Pupils learning to plan and conduct experiments
- Vocabulary games to increase learning of specific terminology
- Skill in answering questions to show evidence of higher order thinking
- Exercises and questions for critical thinking and application to real life examples

Assessment was as planned in the unit. Informal quizzes used in class to gage progress of pupil learning.

All at risk pupils are engaged with the work and completing tasks. For one pupil - discipline and behavior improvement evident. Grades have been consistent and at the Achieved level for all of them at present except for one pupil functioning at an Excellence level.

Eight pupils identified as at risk (priority learners and learners requiring learning support)

Regular checks of book work and progress in class quizzes. Talking to pupils and spending time interacting with them and giving verbal encouragement. Taking an interest in their lives in general and establishing a positive relationship.

Vocabulary and content learning through games, repetition and hands on activities.

Email home to caregivers and parents to connect and garner home support and give feedback of pupil progress.

Meet with parent with concerns to discuss and identify areas where improvements can be made to delivery and learning of pupil.

What has worked well to date:

A shorter punchier topic than 2 years ago. Started the year well with the energy of food experiments. The whole topic is full of experiments and is highly relevant to pupils lives, but also includes a good depth of Science.

Pupils enjoys the Rat dissection, with the new model rat being able to be shown a period or two before, encouraged more pupil buy in, with less pupils not being willing to conduct the dissection.

Summative Comments Against Indicators:

Improved inquiry/evaluative capabilities: Teachers have completed an inquiry focusing on the introduction of the science capabilities in junior science. This was short as the PLD only started in May. Despite the shortness of the inquiry the teachers are developing a good understanding as the teaching as inquiry process and this will be further developed in 2018.

Understand what needs to change to lift pupil outcomes: Classroom behaviour and engagement has improved. Science Thinking with Evidence has been used as a tool to measure student outcomes in relation to the Nature of Science and data shows Many of the teachers have shifted in practice from teacher directed to student directed learning.

Cultural Responsiveness: The teachers are aware of the need to be culturally responsive and will continue to work on this next year.

Build new knowledge and transfer Practice: Within the group of teachers, there is a range of abilities to transfer their new knowledge into practice.

Develop more effective leadership for learning: In 2018 there will be a need to work with the new Acting Curriculum Leader to ensure consistency across the department.

Improve pupil achievement: As this inquiry has only been going for six months it is too early to quantify any significant achievement gains, however, there have been increased levels of engagement.

Build Educationally powerful connections: Most of the teachers have shared examples of successful teaching strategies and examples of changing practice. Facilitator led curriculum meetings have assisted with this.

Senior Biology (13 Biology) – Progress and Final Comments (Gv)

Progress (September 18th 2017)

Actions Taken

1. More time spent going through the various levels of achievement - showing pupils exactly what is required for A, M and E (exemplars etc)
2. Feedback obtained re pupil progress etc - allowed for intervention for pupils who were struggling etc

3. Milestones created for some of the internal standards (e.g. Plant Investigation - where planned, set up and collected data from their own germination experiment. Work was checked on these milestones and pupils given advice as to next steps etc.
4. Timing of Assessments - some adjustments were made to when the three internally-assessed standards were assessed / due. We also gave pupils in-class time to complete their write-up for the BioEthics Assessment (focussed on PGD). This allowed pupils to spend some time in class completing their write-up having completed the research component of the assessment. This was seen as a way of relieving the stress particularly as there were several other assessments due in other subjects at a similar time to this one.

Initial Analysis - (September 18th 2017)

GOALS:

1. To raise pupil achievement in 13 Biology (reducing the number of "not achieved" grades), with particular emphasis on those at the lower end (tail - 10th percentile" of pupils); Maori and Pasifika learners; and pupils with Learning Centre profiles.
2. To increase the percentage of excellence grades awarded to meet that of decile 9 school means for 13 Biology.

Result to date – Based on Results from Internally-assessed standards:

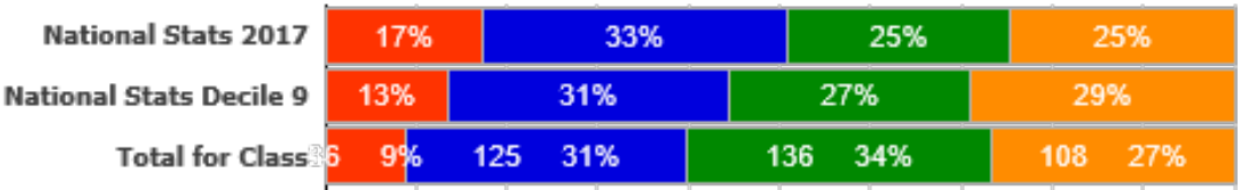
The three internally-assessed standards have been completed in 13 Biology. Overall features of the combined data for these three standards are as follows:

- The % of good passes (M and E) was high (higher than National % and Decile 9 %)
- The % of NA grades was low (2%) compared with 15% National average and 10% (Decile 9 schools)
- However, the % of E grades (30%) was still lower than the % Nationally (32%) and Decile 9 Schools (38%). **This remains a concern.**
- **However,** when results are compared to the previous year at MGS (2016), we have seed some improvements in results (see below). In particular the % of E grades in 2017 (30%) was higher than that seen at MGS in 2016 (27%) and the % of E grades in 2017 (2%) was lower than the 4% seen at MGS in 2016.
- While our results in Internally-assessed standards are not matching those in Decile 9 schools (and even Nationally) **we are moving in the right direction** given the improvements from 2016 that we have seen.
- The % of NA grades at MGS is lower than that seen Nationally and at Decile 9 schools.
- The % of NA grades has also reduced since 2016 (details in graph below)
- Maori pupils performed well in the internally-assessed standards at MGS. For example, 53% of grades for Maori pupils at MGS were E grades, much higher than that seen Nationally and in Decile 9 schools.

- The % of E grades in MGS was much higher than that seen in 2016 at MGS.

Final Comments and Analysis – Based on all results (including Internally-assessed standards and NCEA exam results)

Overall we have seen some significant improvements in the performance of our 13 Biology group compared to previous years and National data. We believe that we have raised pupil achievement in this course and this is shown by the low % of NA grades (9% compared with 17% Nationally and 13% for Decile 9 schools) when total data was analysed. **Shown below are results from all standards (internal and external) in 13 Biology for 2017.**

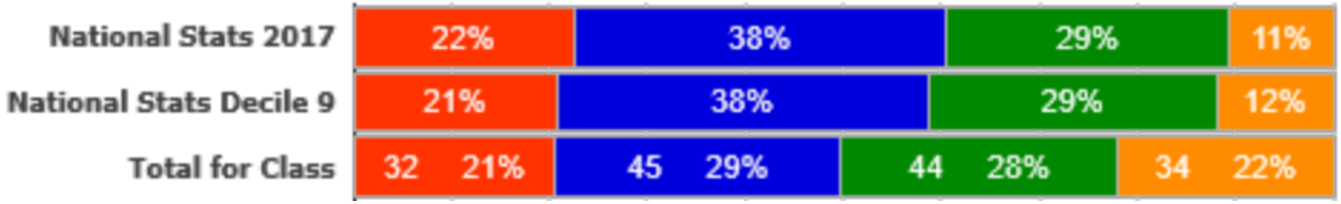


Furthermore the performance of Maori and "Special needs pupils" was good. For example there were 6 pupils identified as Maori in the 13 Biology course at MGS in 2017. The % of E grades for this group was extremely high (43%). No NA grades were obtained for Maori pupils. Two pupils were identified as "Special Needs Pupils". One obtained good results, passing all standards expect one (an externally assessed standard). The other pupil obtained an excellent set of results including an Achieved grade, two Merits, and two Excellence grades, including one in the demanding end of year NCEA Biology exam.

Of concern is the relatively high % of NA grades in the externally-assessed standards. Here the % of NA grades (21%) was similar to that for Decile 9 (21%) and National stats (22%). We need to look at how to continue to improve the performance of struggling pupils in the externally assessed standards in 13 Bio. While our data is the same as Decile 9 schools, we have seen massive improvements in the performance of our high-achieving pupils (see below) were their results are far better than those in Decile 9 schools nationally and so would like to see a similar pattern for our lower ability pupils (i.e. perhaps reduce the NA % in external exams in Biology at Level 3 to 10%).

We believe we have made significant progress in terms of the second goal (To increase the percentage of excellence grades awarded to meet that of decile 9 school means for 13 Biology). In terms of Excellence grades, our results were better than the National stats with 27% E grades (compared

with 25% Nationally). This was slightly lower than the 29% for E grades for Decile 9 schools. However, results at MGS in 13 Biology are moving in the right direction. Furthermore, when we look at internal vs external results, we see we are still maintaining a lower % of E grades in the internally-assessed standards. When we look at results in externally-assessed standards, the % of E grades is outstanding with 22% of total externally assessed grades being Excellence grades. This is double the national average and almost double that seen in Decile 9 schools nationally. This was an improvement on what was seen in 2016. **Shown below is results from externally-assessed standards.**



In 2018 we need to continue to look at ways of improving performance in the internally-assessed standards. We have made some changes to our Year 13 Biology course that we believe will improve pupil engagement (for example, introducing a "Homeostasis" Unit – human biology that many pupil have an interest in). We are also going to re-visit each of our internally assessments and ensure pupils are clear about the expectations for the various levels of achievement.

Key areas to focus on in 2018:

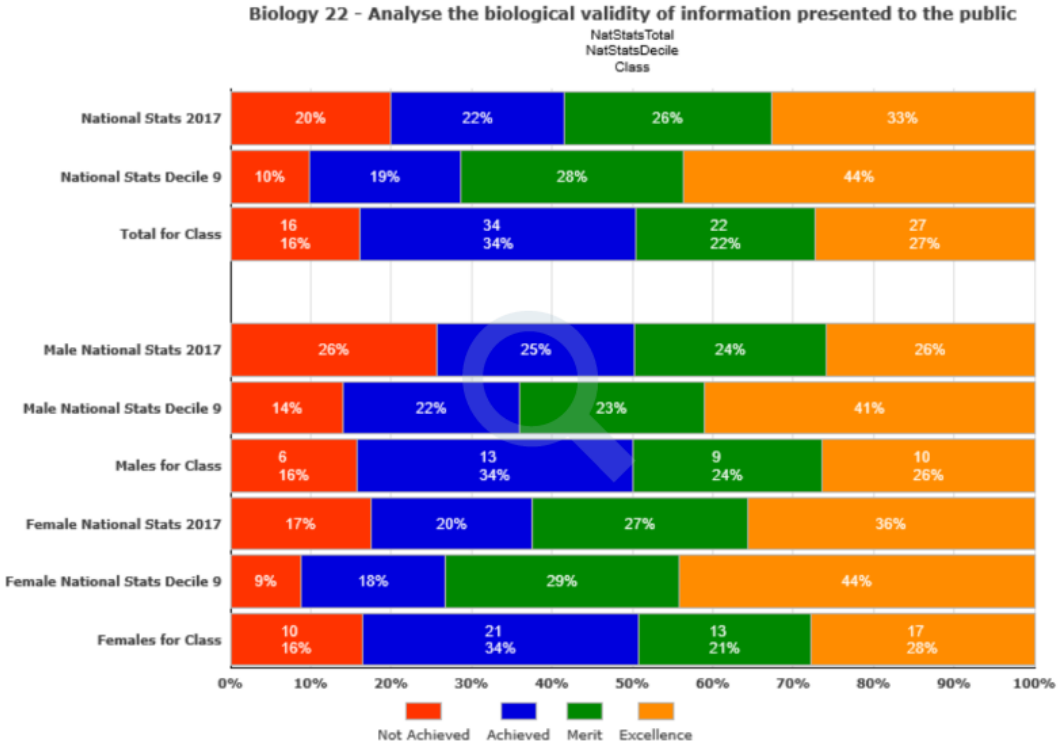
1. The performance of lower ability / lower performing pupils (especially boys/priority learners), particularly in the externally-assessed standards – goal to reduce the % of NA grades
2. Continue to push the high-ability pupils, maintaining (and improving) on the % of E grades – an emphasis here needs to go on the internally-assessed standards. We should aim to meet or better the Decile 9 results for all internally-assesed standards (as well as maintain the high levels of achievement in externally-assessed standards)

Resourcing: KAMAR, Teachers, Parents

Abbreviations: eg: CL, Curriculum Leader, Year10 Teachers (HA, ME, DL), Year 13 Biology Teachers (HR, GV, ME)

HA = James Harris, ME = Judy McLean, GV = Andy Given, HR = Aidan Harrison, DL = Liz Dimbleby

Appendix 5: 2018 AR3, target 3:

3) Raise the percentage of Excellence grades in achievement standard **2.2 Analyse the biological validity** of information presented to the public (AS91154), so that MGS is at or above the national stats for 2018.	

Strategic Goal/s underpinning Pupil Achievement Target (SCHOOL AND CURRICULUM AREA)

Annual Goal 1 Curriculum

1.3 the curriculum is innovative in meeting the needs of the akonga with a specific focus on e-learning

Key Improvement Strategies			
When	What	Who	Indicators of Progress
Term One	Get to know pupils and prior achievements, areas of success and areas of weakness / difficulty.	Y12 biology teachers	Details of pupil progress. Planning and shared department time.
Term Two	See below:		
Term Three	N/A		
Term Four			
Monitoring: How are we going? Where are the gaps? What needs to change? This is a commentary during the year on how the plan is working**.** **Type into this section progress updates during the year.** The final comment in this box is the ACTUAL result and any analysis of variance – which is any case should not be a surprise based on the monitoring during the year.			
Resourcing:			
Abbreviations: eg: CL, Curriculum Leader;			

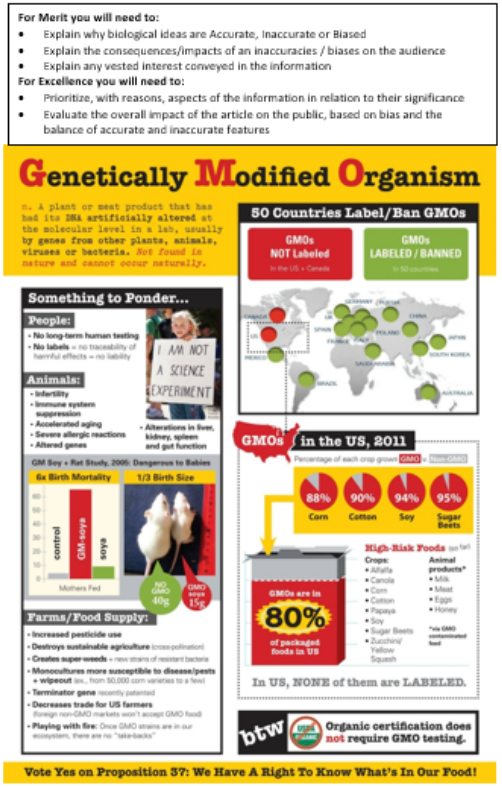
AIM: The goal was raise the percentage of Excellence grades in AS 2.2 so that MGS is at or above the National Stats for 2018

BACKGROUND: In 2017 84% of pupils passed this standard (NA = 16%) compared with 20% NA nationally and 10% for Decile 9/10 schools. The % of Excellence grades at MGS was low (27%) compared with 33% Nationally schools and 44% for Decile 9/10 schools. The goal was to improve on these results in 2018.

CHANGES / MODIFICATIONS IN 2018:

In 2018 we made several changes to the teaching/marking in an effort to improve the results in this standard.

1) We spent more time during the teaching going over the requirements for A/M/E for the standard (see example from doc shown on the right)
2) We gave pupils an Excellence exemplar and went over this in class, showing them the depth required in their discussion of the sources of information for Excellence (see doc below).
3) We did many examples in class where pupils were able to practice discussing ideas at the Excellence level.
4) We peer-marked and made sure we looked at papers on the boundary of M and E to ensure we were marking to the standard.



Poster from https://skycolorsustenance.com/2012/08/14/gmos-in-california/

EXAMPLE RESPONSE:

There are several biological ideas regarding GMOs in this poster. The definition of a GMP shown at the top left is accurate. However, there are the statements under "people" and "animals" are vague and generic. For example, under animals the word "infertility" is stated. There is no explanation of what this means. Does this mean that GMOs can cause infertility in some animals? Similarly, "accelerated aging" is stated. This needs further explanation.

The poster than shows the results of a 2005 study of GM Soy and Rats. This appears quite convincing in showing that Rat mortality increased with the use of GM soya and that those fed the GMO were smaller. However it is clean when looking online that this study is not universally accepted: (https://acnfp.food.gov.uk/sites/default/files/mnt/drupal_data/sources/files/multimedia/pdfs/acnfpgmsoya.pdf)
The publication showing these results was not peer-reviewed and so cannot be regarded as credible.

Most of the statements under "Farm/Food Supply" require more explanation to be useful and are generalizations/exaggerated statements. For example there is some suggestion that GMOs can lead to "increased pesticide use" but this is clearly not always the case. Furthermore the statement "creates super-weeds" is certainly a possibility but not inevitable. Other statements here are very sensationalist e.g. "playing with fire: Once GMO strains are in our ecosystem, there are no "take-backs"". The meaning of this is not clear.

Overall, the biased nature of this article and in particular the use of one study, with very little scientific support (the Rat/GM Soy study) means the article is not helpful in helping the public make a decision on how GMOs should be used. Too much of the information in the article is vague and exaggerated. Statements are made without explanation and there is no mention of any of the potential positive impacts of GMOs (i.e. the information is very biased). The one scientific study mentioned (Rat/Soy GMO) could provide the public with a negative view of GMOs. This has the potential to be quite influential (due to the convincing graph and photo) and it is only on checking this online that it become clear that this study was not universally accepted by the scientific community.

Furthermore, in terms of the effect of GMOs on human health, the only things stated are that there is "no long-term human testing" (perhaps a valid concern), the idea that a lack of labels means that harmful effects can't be traced and the use of a photo with a child holding the sign "I am not a Science experiment". Again, this is emotive and the information does not contain convincing evidence regarding the negative impact(s) of GMOs on human health.

Overall, there is a lack of accuracy in the information as well as some vague/generalized statements. The information is also strongly biased and therefore not helpful in assisting the public in making decisions around the used of GMOs.

ANALYSE THE BIOLOGICAL VALIDITY OF INFORMATION PRESENTED TO THE PUBLIC (AS91154)

Biological validity *refers to scientifically accurate information that is used in an unbiased way to convey a biological idea*

In this standard you will look at how biological information is presented to the public. In particular, you will assess how accurately scientific ideas are expressed, whether or not biases exist in how information is presented and look at how the way information is presented can impact on the public.

The context we will be looking at is GMOs (Genetically Modified Organisms). In class we have learnt about how GE (Genetic Engineering) techniques are used to create these organisms. We have looked at some of the positive effects GMOs have and have also discussed the negative side of GMO production.

In the assessment you will be given several examples of how information regarding GMOs is presented to the public. You will then present a report where you analyze how the various examples portray the information.

Achievement	Achievement with Merit	Achievement with Excellence
• Analyse the biological validity of information presented to the public.	• Analyse in-depth the biological validity of information presented to the public.	• Comprehensively analyse the biological validity of information presented to the public.

For Achieved you will need to:
- Recognize and describe Biological ideas and identify them as Accurate, Inaccurate or Biased
- Describe the purpose of the information (who produced it and who is it for?)

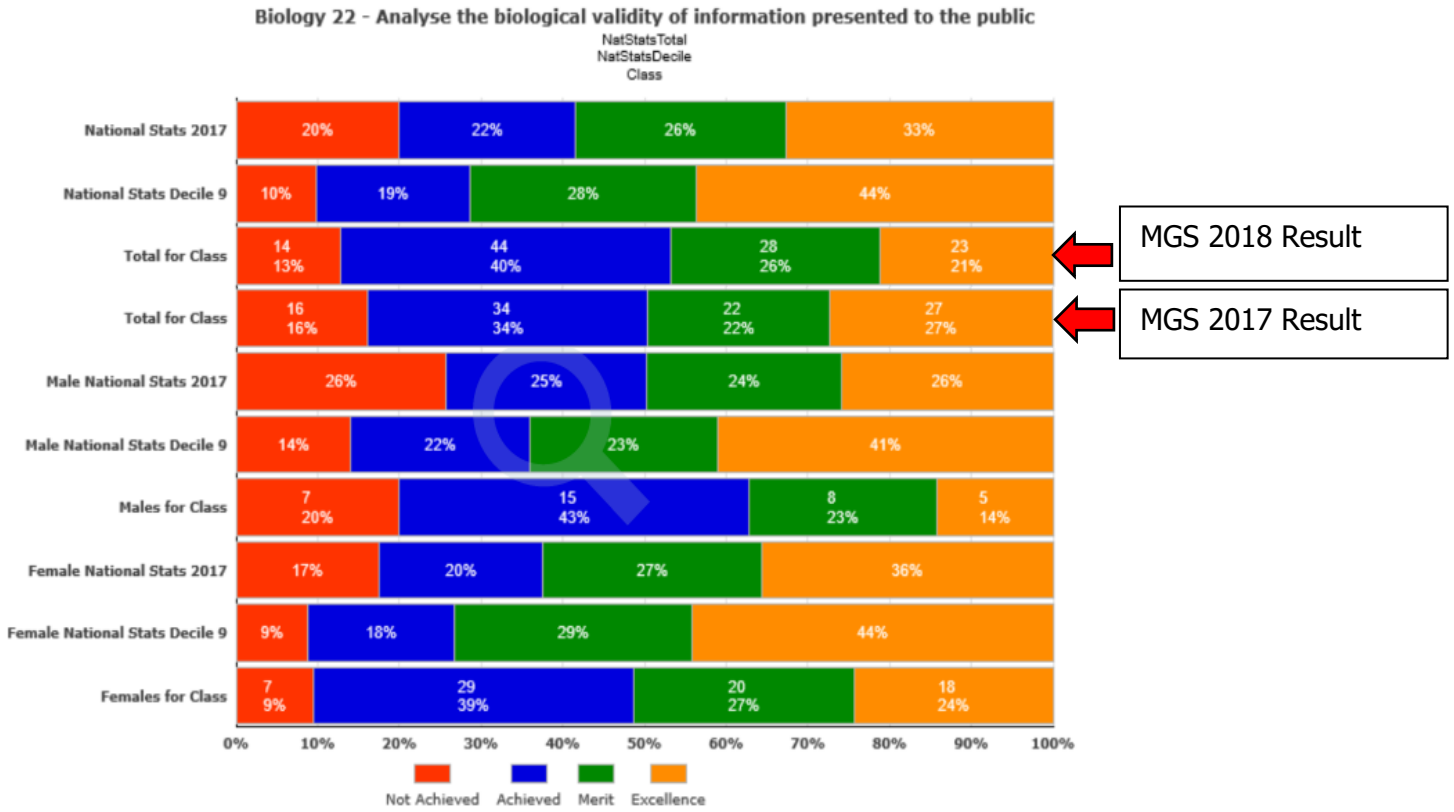
For Merit you will need to:
- Explain why biological ideas are Accurate, Inaccurate or Biased
- Explain the consequences/impacts of an inaccuracies / biases on the audience
- Explain any vested interest conveyed in the information

For Excellence you will need to:
- Prioritize, with reasons, aspects of the information in relation to their significance
- Evaluate the overall impact of the article on the public, based on bias and the balance of accurate and inaccurate features

PROGRESS TO DATE:

The assessment of this standard was completed in Term Two. Overall the results for Middleton Grange School have changed very little. The % of NA has improved with 13% in 2018 vs 16% in 2017 for MGS. However, the % of Excellence grades has decreased with 21% E in 2018 vs 27% E in 2017. This is well below the Decile 9/10 % for E grades (44%) and still below the % of E grades Nationally (33%) for this standard.

While the pass rate (84%) is well above the National Pass rate (80%) and is similar to the 90% pass rate for Decile 9/10 schools, the % of E grades is still significantly lower.



POSSIBLE EXPLANATIONS FOR THE OBSERVED RESULTS:

1) We have made some changes (improvements) in 2018. This does not appear to have improved the results in this standard. It is possible that the 2018 Year 12 Biology group are academically not as strong as 2017 (there are some suggestions in discussions with other staff in the department that there is a longer "tail" in this year's group. This could have contributed to the observed results.

2) We could be marking too hard. We have considered this and re-visited the standard and clarifications and feel that we are being consistent with the requirements and are marking to the standard.

3) We do not offer a resit. Other schools may offer a re-sit / re-submission for this standard. We do not as we feel it is very difficult to come up with another assessment task, especially in a busy school year that is already packed with assessments. **It may be if we want to improve our stats we look at this** (would need to reduce course load / number of assessments first).

4) Pupils may not have put the required effort in / paid attention to advice re Excellence etc. While we felt that we made it very clear what was required for E etc, the pupils still need to do the work / put the effort in and may not have done this.

5) Typically, our results in external assessments for 12 Bio and 13 Bio are much better (in terms of % of E grades etc) than National and Decile 9/10 stats. The opposite is true for internals. Is it something we are doing wrong, or it is a reflection on the multiple opportunities / coaching / withdrawing of pupils that **may** happen at other schools.

NEXT STEPS

1) Review task prior to giving to pupils in 2019.
2) Look at resit option for 2019 depending on other changes (reduction in assessments) that may occur
3) Review marking – may talk to other schools who teach and assess the same standard for feedback / ideas.
4) Complete pupil voice to determine if pupils find internal biology assessments too difficult, or invest a different amount of time into them compared to other Science internals.

Appendix 6: Strategic Goals

MIDDLETON GRANGE SCHOOL

STRATEGIC GOALS 2014 – 2019

1. Curriculum

At Middleton Grange School there is a seamless, biblically-based Curriculum that is authentic and encourages critical engagement with contemporary society.

In 2019 our curriculum is

1.1 Biblically-based and authentically infused by the Foundational Principles for Curricula (FPC)
1.2 seamless across Years 1 – 13
1.3 innovative in meeting the needs of akonga
1.4 challenging, develops critical thinking, and inspires action

2. Building Professional Capacity

At Middleton Grange School all teachers are reflective, lifelong learners. They deliver the highest quality teaching and learning within and across Year Levels and learning areas.

In 2019:

2.1 professional learning and development is regular, differentiated and of the highest quality
2.2 a de-privatised teaching culture is built on trust and strong, professional relationships
2.3 new and appropriate technologies are integrated into teaching practice
2.4 effective practice is clarified, personalised and embedded
2.5 achievement data (qualitative and quantitative) is easily accessed and regularly used in meaningful ways to improve the learning of all akonga
2.6 pupil voice regularly informs planning and teaching through inquiry and reflective practice
2.7 middle leaders are instructional leaders

3. Culture

At Middleton Grange School pupils, parents and staff work within a culture of excellence with Christ's character permeating every aspect of school life. As a connected family, we serve together, celebrate with one another, and realise the gifts God has placed in us.

In 2019, our culture is:

3.1 Christ-centred, striving for personal best in all endeavours – "My utmost for His highest"
3.2 one of personal and professional commitment to a rigorous learning community – Ako
3.3 respectful, restorative, and holds one another accountable – whanaungatanga
3.4 connected, practising hospitality and kindness – manaakitanga
3.5 one where effort, success and the school's ethos are appreciated and celebrated

4. Parent Community

At Middleton Grange School there is high quality communication and a strong partnership between home and school. Parents are actively involved in the life of the school for the benefit of pupils, and have a clear understanding of a biblically-based education.

In 2019:

4.1 parents are well informed about all aspects of their children's education
4.2 parents are involved in the life of the school for the benefit of the pupils.
4.3 two-way communication between home and school supports teaching and learning

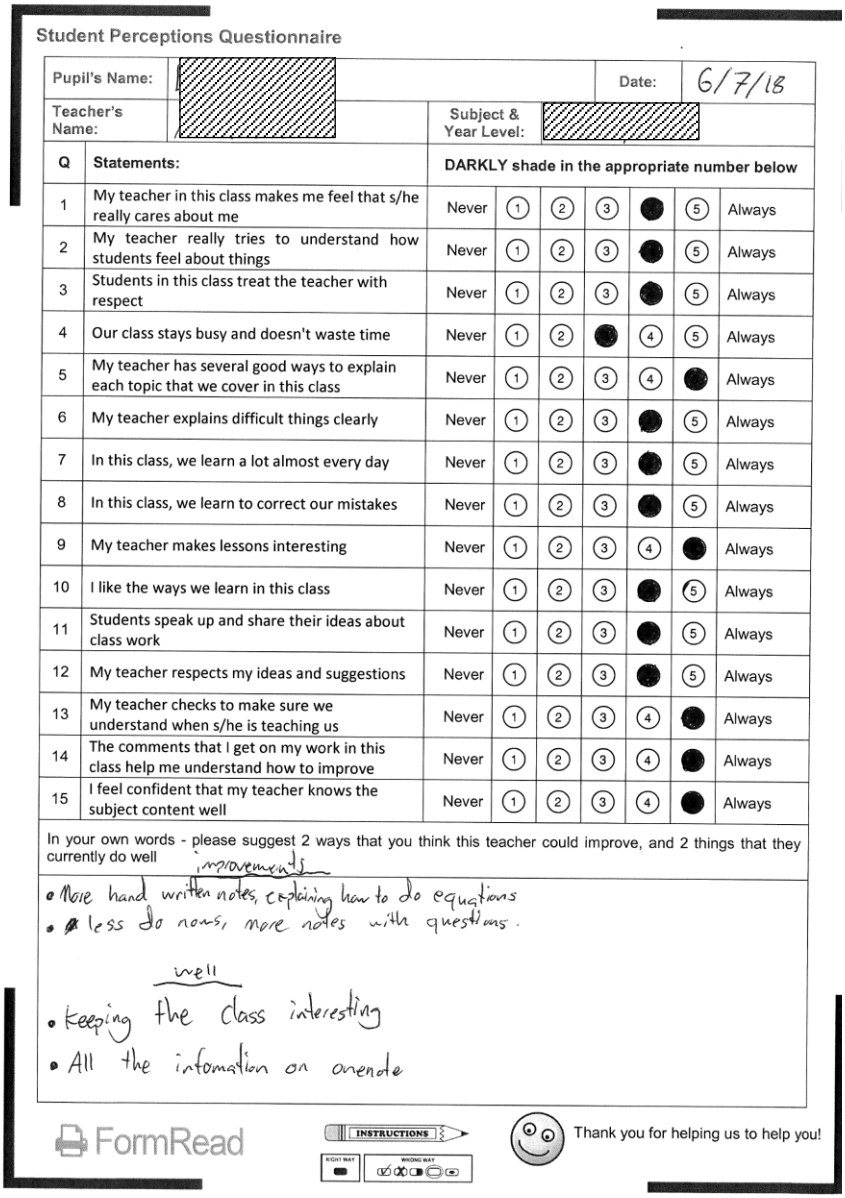
5. Service

At Middleton Grange School pupils, parents and staff are motivated by love and compassion to serve purposefully within school, local and wider communities. Opportunities for all pupils to use their giftings for practical acts of service are provided through our curriculum and school life.

In 2019:

2.4 an authentic culture of service exists across our school community
2.5 the curriculum provides opportunities for service
2.6 pupils are using their gifts to serve
2.7 sustainable programmes of local, national and international mission operate
2.8 parents serve within classroom, co-curricular and mission activity

Appendix 7: Examples of pupil voice:



Student Perceptions Questionnaire

Pupil's Name: [redacted] Date: 6/7/18

Teacher's Name: [redacted] Subject & Year Level: [redacted]

Q	Statements:	DARKLY shade in the appropriate number below
1	My teacher in this class makes me feel that s/he really cares about me	Never ① ② ③ ● ⑤ Always
2	My teacher really tries to understand how students feel about things	Never ① ② ③ ● ⑤ Always
3	Students in this class treat the teacher with respect	Never ① ② ③ ● ⑤ Always
4	Our class stays busy and doesn't waste time	Never ① ② ● ④ ⑤ Always
5	My teacher has several good ways to explain each topic that we cover in this class	Never ① ② ③ ④ ● Always
6	My teacher explains difficult things clearly	Never ① ② ③ ● ⑤ Always
7	In this class, we learn a lot almost every day	Never ① ② ③ ● ⑤ Always
8	In this class, we learn to correct our mistakes	Never ① ② ③ ● ⑤ Always
9	My teacher makes lessons interesting	Never ① ② ③ ④ ● Always
10	I like the ways we learn in this class	Never ① ② ③ ● ⑤ Always
11	Students speak up and share their ideas about class work	Never ① ② ③ ● ⑤ Always
12	My teacher respects my ideas and suggestions	Never ① ② ③ ● ⑤ Always
13	My teacher checks to make sure we understand when s/he is teaching us	Never ① ② ③ ④ ● Always
14	The comments that I get on my work in this class help me understand how to improve	Never ① ② ③ ④ ● Always
15	I feel confident that my teacher knows the subject content well	Never ① ② ③ ④ ● Always

In your own words - please suggest 2 ways that you think this teacher could improve, and 2 things that they currently do well

improvements

- More hand written notes, explaining how to do equations
- less do nows, more notes with questions.

well

- keeping the class interesting
- All the infomation on onenote

FormRead INSTRUCTIONS Thank you for helping us to help you!

A pupil voice, done on paper, that once scanned and put into the website www.formread.org automatically generates the average, min and max for each question.

ID	Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q 9	Q 10	Q 11	Q 12	Q 13	Q 14	Q 15
0	3	3	1	2	4	4	2	4	3	1	2	5	4	3	4
1	5	5	4	5	5	5	5	5	5	5	4	5	5	4	5
2	5	5	5	5	5	5	5	5	3	5	3	5	4	5	5
3	5	3	3	3	5	5	5	4	5	3	2	4	5	5	5
4	3	3	3	2	3	3	4	3	3	3	5	3	3	3	3
5	3	3	2	2	4	4	3	2	4	3	3	5	4	3	5
6	4	3	2	3	4	5	4	3	4	4	4	3	5	4	5
7	3	4	3	2	4	4	4	4	2	2	2	4	5	5	5
8	4	3	2	2	4	5	4	3	4		3	5	5	5	5
9	5	4	1	2	5	5	5	5	5	5	5	5	5	5	5
10	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5
Average	4.09	3.73	2.73	3.00	4.36	4.55	4.18	3.91	3.91	3.60	3.45	4.45	4.55	4.27	4.73
Min	3	3	1	2	3	3	2	2	2	1	2	3	3	3	3
Max	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

YEAR 12 BIOLOGY – UPDATE – MARCH 2017

Name: [redacted]

Answer Questions 1-4

1 = Not much **3 = Somewhat** **5 = Very much**

1. How happy are you with your progress in Biology so far this year (Circle the number that represents your answer)

   1 2 3 (3.5) 4 5

2. How much are you enjoying Biology this year?

   1 2 3 4 (5)

3. How much work are you doing in Biology compared to your other subjects?

   1 (2) 3 4 5

4. How much are you enjoying the style of teaching in Biology?

   1 2 3 4 (5)

5. Have you started your background research for the Ecology Assignment? Yes

6. What result do you hope to get in the Ecology Assignment? (circle one)

   Not Achieved Achieved Merit Excellence

7. Are you hoping for an endorsement in Biology this year? If yes are you aiming for Merit or Excellence? Yes, Excellence

8. What things could I do as a teacher to help you achieve your best results in Biology this year?

   Extra work to if wanted (not homework)

9. What things could you do to help you achieve your best results in Biology in the remainder of the year?

   Study

10. Any questions/comments? (write on back if more space needed)

    Thanks for being a great teacher ♡

    Loving Bio

YEAR 12 BIOLOGY – FEEDBACK (AUG 2018)

NAME: [redacted]

1. How much have you enjoyed Biology so far this year?

Not much at all	A bit	Quite a lot	Really enjoyed it ✓

2. How hard have you had to work in Biology this year?

Not hard at all	Had to work a bit	I've done quite a bit of work ✓	It's been hard work

3. How much have you learnt in Biology class this year?

Not much at all	A bit	Quite a lot	Heaps ✓

4. How well prepared did you feel for the Gas Exchange Assessment?

Not at all prepared	Adequately prepared	Well prepared ✓	Really well prepared

5. What grade are you expecting in the Gas Exchange assessment? 'would like an

Not Achieved	Achieved	Merit ✓	Excellence

6. How well do you feel you know the content for the Gene Expression standard that we covered last term? (Transcription/Translation, Mutations, Codon Table, Metabolic Pathways, Genes and the Environment)

Not at all well	Okay understanding	Pretty good understanding ✓	Understand it well ✓

7. What grade are you aiming for in the first externally assessed standards (Gene Expression)? (The one we've covered content for already)

Not Achieved	Achieved	Merit ✓	Excellence trying for

8. Are you planning to do Year 13 Biology?

Yes ✓	No	Maybe

9. Explain your answer to Question 8
I really enjoy this year and the content for yr 13 seems good

10. What are some things you need to do this term to ensure you get the results you want in the end of year NCEA exams? memorise content/understand it

11. What are some thing you would like me to do as you teacher to help you? (could be to do with how I run the class / the way I teach / feedback etc) Review content for exams

12. Any other comments??

Appendix 8: Maori contexts in Science:

Document produced by Aidan Harrison 2014.

2014 Science Curriculum Review at Middleton Grange- Maori contexts and content

Brief:

Science curriculum mapping

- Design of a Curriculum matrix that could be used across other curriculum areas.
- The Science curriculum Year 1-13 is to be mapped as to current Maori content and context and then recommendations made for changes if necessary.

Rationale:

A current Ministry initiative is to support the organisation and accountability of

"Māori enjoying education success as Māori".

The aim of the initiative is to develop and implement key policies and programmes that develop Maori (and other pupils) knowledge and understanding of identity, language and culture[1].

New Zealand has been founded on the bicultural treaty of Waitangi and several of the Registered Teachers Criteria refer to this bicultural heritage.

- 3. demonstrate commitment to bicultural partnership in Aotearoa New Zealand, demonstrate respect for the heritages, languages and cultures of both partners to the Treaty of Waitangi, continue to develop understandings of the Treaty of Waitangi
- 10. work effectively within the bicultural context of Aotearoa New Zealand,
  - i. practise and develop the relevant use of te reo Māori me ngā tikanga-a-iwi in context
  - ii. specifically and effectively address the educational aspirations of ākonga Māori, displaying high expectations for their learning

The following pages show the beginning of the process of mapping the Science curriculum from Years 1-13 for Maori contexts.

Primary School Year 1-6

Currently the Science curriculum is undergoing a period of development and change which will provide future opportunities to incorporate Maori contexts when the general content has been agreed upon.

Middle School Year 7-10

Summary: There appeared to be little to no evidence of Maori contexts or content in the schemes of work for Yr 7-10 Science. Above each year level are the current Maori contexts. A * indicates further research is necessary.

1 http://www.minedu.govt.nz/theMinistry/PublicationsAndResources/AnnualReport/AnnualReport11/DetailedInformation/MaoriEducationSuccess.aspx

Below is a matrix of potential contexts and content that could be used to supplement the currently existing schemes.

Yr 7 scheme appeared to have no written links to Maori contexts. Below is a list of suggested context and content.

Year 7		
Topic	Context	Content
Intro	*	*
Forensics	*	*
Electricity	Maori view of Electricity-	Natural form of Electricity- Lightning/Hiko
Water	Water use- who owns the water? Kaitiakitanga- guardianship/stewardship	Mighty river power shareholding- govt/investors/local iwi- stand on a ownership continuum- none-----all , cover water cycle and arrival of Maori to NZ circa 1300AD then stand on continuum again. Maintaining and protecting river ecosystems and its flora and fauna
Harakeke/Flax /Last unit often not covered	*	
NZ scientist	Maori Scientist working in local fields	

Yr 8 scheme appeared to have no written links to Maori contexts apart from the Rat study and the Kiore rat introduced by Maori to NZ. Below is a list of suggested context and content.

Yr 8		
Topic	Context	Content
Intro	Communication- Using Maori/sign language and other languages to communicate instructions for a task	Air drawings, (draw in air with finger pupils copy but use different language to help detail your drawing, barrier activity using Maori key words e.g. Tapatoru triangle, tapawha square
Pure substances and Mixtures		
Microbes	Epidemics in NZ as a result of Europen migration	Small pox, TB outbreaks in Maori pa/village communities no natural immunity decimated population of Maori
Rat Study	Kiore/rat Kaitiakitanga- guardianship/stewardship	Maori first to into rat to NZ. Pacific island rat found in South America shows extent of travel of Maori in pacific. Kiore holds special significance to Maori- believed to be linked to their ancestors
Sound	Taonga Puoro, (treasures Music/song) Traditional Maori musical instruments	Conch shell used in haka/dance, Powhiri official welcoming ceremony, noseflute http://en.wikipedia.org/wiki/Taonga_p%C5%ABoro

Yr 9 topic of New Zealand Biodiversity contained links to : The story of Maori bird names, NZ Native animals and their habitat and a wetland habitat focus.

Yr 9		
Topic	Context	Content
Intro		
Plants/Nga Tipu/otaota??	Traditional Maori use of native plants for Medicinal/Food/Technology	Kawakawa/Manuka leaves- tea, antiseptic/antibacterial e.g manuka honey , Cabbage tree, Flax for rope, Kite bags, wood for houses Nga Tikanga o te Ngahere (Uses of the forest) resource
Nature of Matter	*	*
Radiant Energy/ Te Haeata(Shining Light) Te Ao Marama (light of the world)	Maori Art, Carvings Refraction of Light	Paua used for reflection and colour Eeling/Tunaheke, lake Ellesmere Waihora. Spearing fish/eel need to allow for refraction- fish appears closer and shallower Aniwaniwa- Rainbow
Energy/Pungao	Ownership of Natural resources-oil and coal Korowai/Maori Cloak	Oil/coal on Maori land. Stand on continuum of compensation none-------all, teach process of oil formation & arrival of Maori to NZ circa 1300AD then stand on continuum again. Tribal/Family significance- Made up of native bird feathers- traps layer of air under feathers to reduce convection loss of heat
Chemical properties	Maori words for Chemistry made from existing words	ngota/ atom, fragment, piece Karihi- stone of fruit=nucleus ira- life force, oho- awaken Moe- sleep, hiko – lightning/electricity Iraoho-proton (positive charge Iramoe- neutron Irahiko- electron
NZ Biodiversity	Kaitiakitanga-guardianship/stewardship	Case study of Lake Ellesmere/Selwyn river flora and fauna. Eel, Inanga(whitebait) Kokopu (adult whitebait). (Waihora/Waikirikiri) Wai-water, Hora-wide, Kirikiri-sand/gravel

Yr 10 contained some links with Maori names for each topic and others highlighted in red italics.

Yr 10		
Topic	Context	Content
Focus on Food/*Nga Kai*	Makatu/Maori curse- stomach cancer Food chains/webs- Kaitiakitanga Kaitangata- Cannibalism	Gene in East Coast(poverty bay)Ngati Porou and Ngai Tahu-descendants- removal of stomach at early age to prevent cancer Protection, conserving use of local food areas. Wetlands, avon heathcote estuary- mudsnail Early missionaries taught against prevalent practice main land animals before Europeans = birds e.g. Moa, Kereru/wood pigeon
Kitchen Chemistry	Rena shipwreck in Tauranga caused widespread pollution-Kaitiakitanga	Local iwi, elders involved in clean up organisation.
Forces/Nga Topana	*	*
Electricity/*Hiko*	Maori words for Electricity made from existing words Water use- who owns the water? Kaitiakitanga- guardianship/stewardship	ngota/ atom, fragment, piece Karihi- stone of fruit=nucleus ira- life force, oho- awaken Moe- sleep, hiko – lightning/electricity Iraoho-proton (positive charge Iramoe- neutron Irahiko- electron (already covered) Mighty river power share holding-govt/investors/local iwi- stand on a ownership continuum- none----all , cover water cycle and arrival of Maori to NZ circa 1300AD then stand on continuum again.
Changing Earth/ Te Ao Whakarereke		ahimanawa ranges (tectonic plates/epicentre activity ahi= fire Manawa = heart.Translation= ground containing a burning heart= volcano!
Acids and Bases Nga Waikawa me nga putake	*	*
Astronomy/Tatai Aorangi		Matariki-Maori new year, significance, use, signalling, navigation

Yr 11 Science A		
Topic	Context	Content
Chemical Reactivity	Maori words for Chemistry made from existing words	ngota/ atom, fragment, piece Karihi- stone of fruit=nucleus ira- life force, oho- awaken Moe- sleep, hiko – lightning/electricity Iraoho-proton (positive charge Iramoe- neutron Irahiko- electron
Chemical practical- Rates of Reaction/ Tere o te tauhohenga		
Genetics		
Mechanics		
Microbes/Nga Moroiti		

Yr 11 Science B		
Topic	Context	Content
Use of equipment	Taputapu- Maori names for Science lab equipment (Made from exisiting Maori words)	e.g. Whariki arai – screen block out mat- heating board, tripod- toru wae, ine mahana (masure warmth- thermometer)
Microbes/Nga Moroiti	Introduction of infectious diseases by Europeans to Maori communities in the 1800's	Tuberculosis, small pox and flu viruses all had hugely damaging affect on Maori health and killed thousands of Maori as they had never been exposed to these diseases previously and had no resistance
Biology Practical Investigation		
Organ Systems	Heart and arteries Made from existing Maori words	Manawa- heart, Uaua ki te Manawa – artery, Toto paru, Toto ora (dirty deoxygenated blood, oxygenated.
Chemical practical- Rates of Reaction/ Tere o te tauhohenga		

More time is required to complete and fully integrate this document.

Appendix 9: Key Competencies

Example report emailed to parents in term 1:

Middleton Grange School

Character Excellence Service for the glory of God

Name:

Form Teacher:

Date: **March 2018**

This report indicates teacher impressions of the work ethic your son/daughter demonstrates in this/her approach to classroom and homework activities and learning for 3 of the 5 Key Competencies outlined in the National Curriculum Framework. The purpose of the report is to provide early information on attitude, work ethic and interactions with the learning and with others in the class.

Key Competencies for Learning

Relating to Others

- Clearly expresses thoughts and ideas to others.
- Recognises and negotiates through, different points of view
- Listens and responds with respect and patience
- Receives advice and correction, with humility.
- Shows love, care and concern for others.

Subjects	Occasionally observed	Often observed	Consistently observed
Year 11 Christian Studies	X		
Year 11 Digital Technology Computer Science		X	
Year 11 English			X
Year 11 Mathematics			X
Year 11 Physical Science			X
Year 11 Science - General			X
Year 11 Workshop Technology			X

Managing Self

- Comes to class on time and is well prepared for learning.
- Interacts respectfully with teachers and pupils.
- A self-motivated and independent learner.
- Plans wisely and completes quality work mindful of personally well-being.
- Is resourceful. reliable and resilient.

Subjects	Occasionally observed	Often observed	Consistently observed
Year 11 Christian Studies	X		
Year 11 Digital Technology Computer Science		X	
Year 11 English			X
Year 11 Mathematics		X	
Year 11 Physical Science		X	
Year 11 Science - General			X
Year 11 Workshop Technology			X

Participating and Contributing

- An active, responsible and constructive group member.
- Shares tasks and ideas willingly and respectfully.
- Values and encourages the strengths and abilities of peers.
- Takes on new and unfamiliar tasks and/or roles.
- Able to work both independently and co-operatively.

Subjects	Occasionally observed	Often observed	Consistently observed
Year 11 Christian Studies	X		
Year 11 Digital Technology Computer Science		X	
Year 11 English		X	
Year 11 Mathematics			X
Year 11 Physical Science			X
Year 11 Science - General			X
Year 11 Workshop Technology		X	

NZ CURRICULUM KEY COMPETENCIES

A BIBLICAL RATIONALE

A brief evaluation of the intersection of the key competencies identified by the New Zealand Curriculum with biblical principles, particularly as these are expressed in the MGS Vision and Mission statements, and the Foundational Principles for Curricula.

The basic tenor of these observations is constructive, whilst acknowledging there are basic worldview differences between secular documents such as the Key Competencies and the vision and mission of a Christian school such as MGS. For example, MGS operates on the basis of a clear commitment to ultimate truth, while respecting those who differ, whereas the KCs are necessarily open-ended, reflecting the relativism and pluralism of our secularised society. Also, while the KCs have a focus on the individual in society, the Christian worldview proposes a dual focus on God and others (Matthew 22:36-40).

KEY COMPETENCY 1: THINKING

"Finally, brothers, whatever is true, whatever is honourable, whatever is just, whatever is pure, whatever is lovely, whatever is commendable, if there is any excellence, if there is anything worthy of praise, **think about these things**. What you have learned and received and heard and seen in me—practice these things, and the God of peace will be with you." (Philippians 4:8,9)

Thinking

Thinking is about using creative, critical, and metacognitive processes to make sense of information, experiences, and ideas. These processes can be applied to purposes such as developing understanding, making decisions, shaping actions, or constructing knowledge. Intellectual curiosity is at the heart of this competency.

Students who are competent thinkers and problem-solvers actively seek, use, and create knowledge. They reflect on their own learning, draw on personal knowledge and intuitions, ask questions, and challenge the basis of assumptions and perceptions.

"… proviing an environment in which the Biblical **truths** of Jesus Christ are taught and lived."

(MGS Vision Statement)

"… committed to a **rigorous learning culture** based on an understanding of truth as revealed in the whole counsel of Scripture."

"… and to **critique and engage** contemporary society." (MGS Mission Statement)

Remarks:

The Bible's teaching on the uniqueness of mankind as being made in the **"image of God"** (Genesis1: 26, 27) forms the basis for our appreciation of human beings as creatures capable of intelligent thought, logic, complex reasoning, creativity, planning, abstract thought, etc. Unlike other creatures, humans are not directed by circumstances or instinct alone. The picture of ideal humanity given in the Bible, in its description of Jesus' life on earth, includes someone who is growing and developing *intellectually*, physically, spiritually and socially (Luke 2:52).

In the Bible people are encouraged to **think deeply and seriously**, and not uncritically accept ideas presented to them (Psalm 1:2, 3; Proverbs 18:13, 17; Acts 17:10,11; 1 Thessalonians 5:21; Philippians 4:8; 2 Timothy 2:7). Intellectual curiosity about God and his world is a good thing (Proverbs 2:2-5) and is to be encouraged and resourced.

Jesus Christ repeatedly challenged people to think throughout his ministry. Asking penetrating questions and making bold statements that often challenged personal presuppositions and prevailing societal, cultural and religious norms were part and parcel of Jesus' teaching style. (Matthew 16:13-15; Matthew 5:21, 22, 27, 28, 38-42, 43-47).

Thinking has a **central**, and not a peripheral, part in human life. What a person thinks significantly shapes how they live (James 3:13; Romans 12:1,2).

Because thinking is so central to human life, the Bible reinforces again and again that our thinking must be shaped by, built upon and consistent with God's revelation of his truth in the Bible (Psalm 119:105; John 17:17; 2 Timothy 3:16,17). The Christian has an appreciation of ultimate truth - that **there are some things that are universally and timelessly true**, regardless of culture or century. These central, unchanging truths are to form the core of what is most important for us to know and think deeply on (Philippians 4:8).

Thus, thinking for the Christian **always has a clear framework and reference point, provided by the Bible** (John 17:17). Thinking is not to be undisciplined, random and directionless. The Christian seeks to "take every thought captive to obey Christ" (2 Corinthians 10:5), and to love God with all his heart soul and *mind* (Matthew 22:37).

THINKING - WHAT WILL IT LOOK LIKE?

In the school context what will 'thinking' look like in the lives of pupils?

While it will obviously vary according to the age of the child etc, what are some areas in which we can legitimately look for evidences that this key competency is taking root in a pupil's life?

1. A pupil demonstrates a **growing understanding of a solidly Biblical worldview,** which then forms the basis for assessing and using the knowledge presented to them, and discovered by them.
2. The development of **critical thinking skills,** whereby a pupil can evaluate ideas, arguments, presuppositions and other worldviews; not just accepting or rejecting things on face value or peer pressure.
3. There will be a developing ability to **independently acquire relevant information** on the various subjects and themes. A growing ability to do more than 'regurgitate' information presented to them by teachers and others – to go beyond this by personally researching, collating and understanding other material and assessing its relevance and usefulness.
4. A pupil will be learning to carefully and fairly evaluate information and ideas by **asking relevant questions.** They will have been taught how to frame good questions which help in thinking through an issue.
5. A pupil will be exposed to the discipline of **problem solving** as both an individual and team activity.
6. Pupils will be taught to **think through the implications of their beliefs, and the consequences of their actions**. They will realise that ideas have many real-life applications.
7. A pupil will have a **growing ability to coherently present their thoughts and communicate them to others** (teachers, parents and their peers). They will learn to defend their position, listen well to alternative views, accept and evaluate feedback, and sharpen their thoughts accordingly.

KEY COMPETENCY 2: USING LANGUAGE, SYMBOLS AND TEXT

"Do your best to present yourself to God as one approved, a worker who has no need to be ashamed, rightly handling word of truth." (2 Timothy 2:12)

Using language, symbols, and texts

Using language, symbols, and texts is about working with and making meaning of the codes in which knowledge is expressed. Languages and symbols are systems for representing and communicating information, experiences, and ideas. People use languages and symbols to produce texts of all kinds: written, oral/aural, and visual; informative and imaginative; informal and formal; mathematical, scientific, and technological.

Students who are competent users of language, symbols, and texts can interpret and use words, number, images, movement, metaphor, and technologies in a range of contexts. They recognise how choices of language, symbol, or text affect people's understanding and the ways in which they respond to communications. They confidently use ICT (including, where appropriate, assistive technologies) to access and provide information and to communicate with others.

"We equip pupils with the **knowledge** and **skills** to understand their heritage and their place in it; and to critique and **engage** in contemporary society."

(MGS Mission Statement)

Remarks:

The use of language and the range and level of sophisticated communication we human beings are capable of is further evidence that we were made in **the image and likeness of God** (Genesis 1:26, 27).

The Bible over and over again evidences God's concern that His truth be clearly communicated to all the nations of the earth (Matthew 28:18-20; John 1:1ff). The sure hope of the Christian is that men and women from every tribal, ethnic and *language* group will be in heaven (Revelation 5:9, 7:9).

God, of course, has graciously **communicated His truth to us in human languages** (predominantly Hebrew and Greek). The New Testament was written in Greek, the *lingua franca* of the Roman Empire that dominated the ancient world in the first century AD, thus facilitating the communication of the Christian message and the spread of the church.

Christianity is clearly **a word-based faith, centred on a sacred Book** (Romans 10:17; 2 Timothy 3:16). The use of language to communicate these basic tenets is obviously central to the Christian religion. In this

regard, Christian missionaries and teachers have often been at the forefront of linguistic work - learning new languages, sometimes committing them to writing for the first time, etc.

The Bible teaches us to value good communication, and to aim at a good level of **understanding** in our relationships (Nehemiah 8:8).

The Bible is also full of instruction on the **right use of language in relationships**. Words are powerful and must be used with real care and discrimination, that others might be helped and not hurt (James 3:6-10; Proverbs 12:17-19; Proverbs 15:4, 23; Proverbs 16:24; Proverbs 17:27-28; Ephesians 4:29). So the development of language skills in pupils must also incorporate this ethical element, highlighting integrity, love and appropriateness.

USING LANGUAGE, SYMBOLS AND TEXTS - WHAT WILL IT LOOK LIKE?

In the school context what will the use of language, symbols and texts look like in the lives of pupils? While it will obviously vary according to the age of the child etc, what are some areas in which we can legitimately look for evidences that this key competency is taking root in a pupil's life? *There are many direct applications of this key competency in a variety of curriculum areas*.

1. A pupil will have a growing ability to **communicate in English and/or their own first language**. They will have a growing knowledge of grammar and vocabulary that will equip them to do this well.
2. The pupil will also have a developing understanding and experience **in using a variety of spoken and written forms of English expression**, eg. reports, essays, debates, poems, speeches, etc.
3. Alongside this, pupils will be **introduced to a variety of literature that models effective communication** in different forms; learning to appreciate and interact with different texts and modes of expression.
4. The pupil will be exposed to **opportunities to learn other languages**.
   Learning how to communicate in another language not only exposes a pupil to different languages, symbols and texts, but also strengthens their abilities in their native language

5. In the fields of Mathematics and the Sciences, pupils are **learning to use numbers and different symbols.** In this area the use of various computer languages and codes is also a direct application of this key competency.
6. In the field of the Arts and related disciplines a pupil has opportunities to develop in their appreciation and use of various **visual, musical and movement elements** to communicate their ideas
7. The pupil will be given the **basic tools for correctly interpreting the Bible**, and given regular opportunities to develop their skills in this area. To be able to appreciate the various genres of Scripture, and get at a right understanding of the meaning of a passage or verse in context, is a crucial skill for Christian life and service.
8. The pupil will also be growing in their understanding of the **appropriate use of languages, symbols and texts in a variety of contexts**.

KEY COMPETENCY 3: MANAGING SELF

"A man without self-control is like a city broken into and left without walls." (Proverbs 25:28)

Managing self

This competency is associated with self-motivation, a "can-do" attitude, and with students seeing themselves as capable learners. It is integral to self-assessment.

Students who manage themselves are enterprising, resourceful, reliable, and resilient. They establish personal goals, make plans, manage projects, and set high standards. They have strategies for meeting challenges. They know when to lead, when to follow, and when and how to act independently.

"… providing an environment in which the Biblical truths of Jesus Christ are taught and **lived**."

(MGS Vision Statement)

"We equip pupils with the knowledge and **skills** to understand their heritage and **their place in it**…"

"We work with parents to encourage pupils in **their gifts and abilities** to serve God and others."

(MGS Mission Statement)

Remarks:

Once again, we commence with the foundational perspective that human beings are **made in the image of God**, and that this asserts that we are **responsible, moral beings** who are accountable for our actions before God and others. We are therefore responsible to live and 'manage ourselves' in a way that respects God and others. In this regard God has provided all human beings with a conscience (Romans 2:14-16; Acts 24:16), that enables us to distinguish between right and wrong. As FPC #3 states "God holds individuals responsible for their moral and ethical actions and choices."

The ability to 'manage self' has obviously been **seriously marred by the Fall** and the introduction of sin into God's world. Humans are still morally responsible, but are born with a bias to sin and self-centredness (Jeremiah 17:9; Ecclesiastes 7:2; Isaiah 53:6). The reality of God's judgement (Romans 14:12; Hebrews 9:27; Romans 2:16; Matthew 12:36) shows that God holds all people morally responsible for their thoughts, words and actions in this life.

The teaching / learning environment must, therefore, **both** encourage pupils to be responsible and manage themselves, and also realistically provide for the management of pupils who, at times, cannot or will not manage themselves! A school must have in place good examples of men and women 'managing themselves' (2 Thessalonians 3:9; Hebrews 13:7; 1 Corinthians 10:31–11:1), and the necessary procedures and disciplines to help train pupils to manage themselves, and to constructively deal with those who fail to do so. Part of learning to mange self is to expect that **there will be consequences for my actions!** (Galatians 6:7)

In a Christian school environment there must also be an awareness of how this whole area of managing self is **impacted by the Bible's teaching on salvation**. The person who has been redeemed by God's grace and indwelt by His Spirit, obviously has a new capacity to 'manage self'. One of the fruit of the Spirit is "self-control" (Galatians 5:22, 23).

For the Christian there is a new awareness of the concept of **stewardship**, that all that I am and have has been entrusted to me by God and is to be used for His glory and the good of others (Luke 16:1-13; Colossians 3:23). There is the exciting awareness that God has uniquely gifted each individual and equipped them with abilities and opportunities to serve God and be useful in the world (1 Corinthians 12:7)

Managing self does not mean "doing it by yourself without help". Even in the secular environment there is an acknowledgement of the need for others to model, encourage, and train pupils in 'managing self' – that this is not automatic or easy. Learning cannot be totally self-driven and self-managed, but there is a place for others to facilitate and help in this. For the Christian, aware of his or her own heart, and the ease with which human beings 'stray' when left to themselves (Judges 17:6; Judges 21:25; Joshua 24:31), there is a greatly enhanced appreciation of the need for the input of others. Prone to selfishness, foolishness, arrogance, etc, we need others to help teach, train, reprove and encourage us.

MANAGING SELF - WHAT WILL IT LOOK LIKE?

"A man without self-control is like a city broken into and left without walls."

(Proverbs 25:28)

In the school context what will 'managing self' look like in the lives of pupils? While it will obviously vary according to the age of the child etc, what are some areas in which we can legitimately look for evidences that this key competency is taking root in a pupil's life?

1. **Organisational matters.** A pupil is developing habits of punctuality and is coming to class with all the necessary equipment, ready and in good order for the lesson.
2. Management of **personal health and fitness**. A pupil is developing good habits of personal good health, diet, fitness, and adequate rest. They are coming to school able to really benefit from the day and give themselves with a fresh and prepared mind to the task at hand.
3. **Time management.** The pupil is being trained to use their time well in relation to their wider life and their schoolwork. They are developing the ability to discern priorities, handle distractions, plan out their work, allot appropriate time to different tasks and subjects, prepare for upcoming exams and assessments, etc
4. **Interaction with others.** A pupil is learning to discipline themselves in the classroom situation, particularly in their words and actions. A growing ability to curb their speech so that it shows respect for others, does not distract or disrupt the class, but is learning to make a positive contribution. Learning to listen as well as speak. (Proverbs 18:13, James 3:8)
5. **Respecting and working with teachers.** The literature speaks of "knowing when and how to follow someone else's lead or make their own well informed choices." Managing self "does *not* mean doing it by yourself without help." A growing capacity to realise that I do not know everything, and I need the instruction and input of others.
6. Growing as a **self-motivated and autonomous learner**. A pupil, while benefiting from instruction, is learning the skills to work on their own. Learning how to plan, set goals, research, use tools, reach and express valid conclusions, etc. Learning to discipline themselves and maintain high standards. Essential skills for lifelong learning.
7. Managing self involves **knowing self**. We would look for a developing understanding, and a realistic assessment, of personal strengths and weaknesses, gifts and abilities.
8. Ultimately what we are looking for as Christians in this area is the **fruit of the Spirit** known as self-control (Galatians 5:22,23). We know that, left to ourselves, we are more likely to be characterised by self-centredness, being "lovers of self, lovers of money…without self-control…swollen with conceit" (2 Timothy 3:1-5). **To truly know and manage self involves knowing God.** Therefore we must work and pray to help pupils understand who God is, and their place in God's world.
9. **Reasons and motivation.** To really 'manage self' over the long haul involves knowing *why* I should do this, having in place adequate motivation. While our desire is that the ultimate reason should be to please and honour God, we also want to help the pupils to have a developing personal motivation that holds them to course.

KEY COMPETENCY 4: RELATING TO OTHERS

"And as you wish that others would do to you, do so to them." (Luke 6:31)

Relating to others

Relating to others is about interacting effectively with a diverse range of people in a variety of contexts. This competency includes the ability to listen actively, recognise different points of view, negotiate, and share ideas.

Students who relate well to others are open to new learning and able to take different roles in different situations. They are aware of how their words and actions affect others. They know when it is appropriate to compete and when it is appropriate to co-operate. By working effectively together, they can come up with new approaches, ideas, and ways of thinking.

"We equip pupils with the knowledge and skills to **understand their heritage** and their place in it; and to **critique and engage contemporary society**."

"… we work with parents to encourage pupils in their gifts and abilities to **serve … others**"

(MGS Mission Statement)

Remarks:

Once again, the fact that we are capable of relating to others in such a complex, deep and multifaceted way is a reflection that human beings have been **made in the image of God.** (Genesis 1:26, 27). As we relate with other human beings we are mirroring relationships within the Trinity between the Father, the Son and the Holy Spirit

It is one of the **fundamental principles of the Christian faith** that the Christian is to love his neighbour as himself (Matthew 22:39). Selfless love for others is a Christ-like quality that is to characterise the lives of all believers (1 John 3:16-18; Philippians 2:3, 4). This is not only to be expressed toward close family, friends or fellow Christians, but also to men and women of all races, creeds, etc, even to those who could be considered 'enemies' (Luke 6:31; Galatians 6:9, 10; Romans 12:17; Romans 13:8-10; Romans 15:2; Romans 12:19-21; Matthew 5:43-47).

There is a fundamental concept of **inter-dependency and cooperation** that is to characterise the way Christians relate together. One of the clearest expressions of this is the **analogy of the body** (1 Corinthians 12-14). We need one another and are responsible to work together for the glory of God and the good of one another. Relating to others is not an optional extra in the Christian life, but an essential expression of faith.

Relating to others obviously **requires a real degree of mastery of self**. The proud, arrogant, self-centred person has an agenda (the priority of personal desires and purposes) that is fundamentally at odds with the ability to relate well to others (Philippians 2:3,4). If we are to live in harmony with others we must not be proud or conceited; we must be careful to have regard for what is right in the sight of others; and, as far as it depends on us, we are to live peacefully with others (Romans 12:16-18).

As Christians we acknowledge that the **ultimate basis** for relating well to others is to enter into a right relationship with God through Christ (1 John 1:3). This relationship with God empowers the believer to selflessly love others in a way that, outside Christ, we are unable to do.

The Christian is to relate to others with **discernment and sensitivity**, not thoughtlessly imitating their attitudes, perspectives or behaviour, nor carelessly offending or disrespecting them (1 Corinthians 8:9; Romans 14:13). We must learn to understand and appreciate the viewpoints and culture of those around us, and think about the relationships we develop and are involved in.

RELATING TO OTHERS - WHAT WILL IT LOOK LIKE?

In the school context what will 'relating to others' look like in the lives of pupils?

While it will obviously vary according to the age of the child etc, what are some areas in which we can legitimately look for evidences that this key competency is taking root in a pupil's life?

1. **Respecting and working with teachers.** We are looking for a maturing appreciation on the part of pupils that teachers are there to instruct them. This will involve such things as showing respect, listening carefully, submitting to instructions, and engaging seriously with the material presented to them.

2. **Respecting and working with parents.** Developing honest communication with their parents, characterised by respect, love and obedience (Exodus 20:12).
3. **Respecting and working with other pupils.** A maturing ability to help rather than hinder fellow pupils in learning and in life. A growing awareness of how their words, attitudes and behaviour impact others.
4. A developing understanding of the **biblical basis for relationships.** The pupil is exposed regularly to the principles of the Bible in this area, and is learning to appreciate what God requires and delights in. At its heart is the 'Golden rule' – "as you wish that others would do to you, do so to them".
5. **Developing listening skills.** The tendency is to immediately give **my** opinion (even before I have heard everything the teacher or other pupil is trying to say). In contrast to this the Bible's counsel is to be "swift to hear, slow to speak" (James 1:19). Pupils must be taught and encouraged to practice this in the classroom and beyond: listening with respect and patience, thoughtfully evaluating what I have heard; then responding.
6. **A growing ability to verbalise thoughts and opinions.** Instead of assuming others know what they are thinking, pupils need to develop in the ability to express their thoughts in words, clearly and confidently (rather than others having to guess what is on their mind).
7. Because all of our relationships are imperfect, and subject to misunderstandings, pupils need to be **open to receive and accept correction** in this area. To be given advice on improving our skills in this area is not an insult but an expression of love and concern (Proverbs 15:5, Proverbs 9:7-9).
8. Because we all fall short in this area, pupils need to be aware of the need to continually **work at their relationships**. Rather than giving up when a relationship doesn't 'work' with a teacher or another pupil, pupils need to be encouraged to learn the necessary skills to work at relationships (Romans 12:18; Romans 14:19).

KEY COMPETENCY 5: PARTICIPATING AND CONTRIBUTING

"To each is given the manifestation of the Spirit for the common good." (1 Corinthians 12:7)

Participating and contributing

This competency is about being actively involved in communities. Communities include family, whānau, and school and those based, for example, on a common interest or culture. They may be drawn together for purposes such as learning, work, celebration, or recreation. They may be local, national, or global. This competency includes a capacity to contribute appropriately as a group member, to make connections with others, and to create opportunities for others in the group.

Students who participate and contribute in communities have a sense of belonging and the confidence to participate within new contexts. They understand the importance of balancing rights, roles, and responsibilities and of contributing to the quality and sustainability of social, cultural, physical, and economic environments.

"…we are committed to a **rigorous learning culture**."

"We equip pupils with the **knowledge** and **skills** to understand their heritage and **their place in it**…and to **critique** and **engage contemporary society**."

"We work with parents to encourage pupils in their **gifts** and abilities to **serve God and others**."

(MGS Mission Statement)

Remarks:

As Christians we acknowledge the fact that **human beings were made for community** and relationships. God Himself said that "it is not good that man should be alone" (Genesis 2:18) God's purpose from the beginning was that mankind should live and function in communities. Community is His idea – family (Psalm 68:6), church (Ephesians 4:11, 12) and society (Romans 13:1-3) are all acknowledged as legitimate and good in the Bible.

As Christians we acknowledge that, as beings made in the image and likeness of God, we are created to be **actively and constructively involved** in the communities of which we are a part, in God's providence (Acts 17:26).

Daniel, Joseph and Nehemiah are all examples of godly believers who were 'excellent' and 'significant' **contributors to their secular societies**. As Christians we are not only to make a real contribution to our church communities, but also to the wider society (1 Corinthians 10:31). We are to do good to all men, and especially to those of the household of faith. (Galatians 6:9, 10).

The Christian's involvement in community involves a balancing of rights and responsibilities. Participating without compromising our distinctives, while showing genuine respect for those with whom we differ, as fellow beings made in the image of God (Romans 14:14-15:3) is what God has called us to do.

We also acknowledge that we have all been given different gifts, abilities and strengths to be **employed for the common good** (1 Corinthians 12:7; 14:12, 26), not spent on advancing self-interest.

As we work with believers of different gifts, abilities and backgrounds in the church and in the community, we experience a **unity in diversity**. Working with others for a common purpose, yet each one bringing our different strengths and contributions to the task. For this to work in practice it demands a humility that genuinely appreciates others (Philippians 23,4), rather than a proud commitment to seeking our own agenda. The Bible warns of being "wise in our own eyes." (Proverbs 3:7)

At the heart of this competency for the Christian is **the cultivation of a servant heart**. (Mark 10:43-45) The concept of life as serving God and serving others, rather than pursuing self interest, must be uppermost in our minds, and undergirding all our actions.

PARTICIPATING & CONTRIBUTING - WHAT WILL IT LOOK LIKE?

In the school context what will 'participating and contributing' look like in the lives of pupils? While it will obviously vary according to the age of the child etc, what are some areas in which we can legitimately look for evidences that this key competency is taking root in a pupil's life?

1. In order to effectively participate and contribute in the school community a pupil needs to develop a **sense of belonging** to that community. To achieve this the school will be providing a **variety of settings and opportunities** to foster this (eg. class groups, house groups, sporting teams, musical groups, vertical groups, etc)
2. Within various subject areas, teachers will **encourage active participation and contribution** on the part of the pupils. A variety of
   learning strategies will be implemented, and activities provided to facilitate pupil involvement.

3. Pupils will be learning to **actively participate in the classroom context**, by listening well to their teacher's instructions, doing the work required of them, listening well to the contributions of their peers, and not complaining about what is expected of them (or constantly suggesting their own preferences and alternatives). Contributing does not mean dominating a discussion or being addicted to their own opinion.
4. Pupils will be learning to **value and encourage the contributions and varying strengths and abilities of their peers.**
5. There will be a **growing capacity** to work together with their peers in the classroom or other school contexts.
6. Pupils will be **actively cultivating opportunities** to participate in, and contribute to, the wider life and service of the school, the church and the community.