

National Newsletter: Mathematics and Statistics

Information and resources for middle leaders in secondary schools | Term 4 2013

Whakatauki

He iti hoki te mokoroa nāna i kakati te kahikatea

The mokoroa (grub) may be small but it cuts through the kahikatea (white pine). This can refer to the fact while we are taking small steps, our contributions matter and with every little bit of effort great things can come of it.

Welcome to term 4

We hope that you've had a relaxing break with plenty of downtime before getting into a busy term ahead. It was great for the facilitators to meet so many of you at the NZAMT13 conference in Wellington. What a wonderful celebration of work within the Mathematics and Statistics learning area!

With the theme being 'Absolutely, Positively Maths and Stats', the workshops were varied, innovative and had the students at the centre of learning. It was great to hear the inspiring keynote speakers who were able to leave us on a high note.

Huge congratulations to everyone involved in the organisation of this conference. It takes such dedication and commitment, all on top of your teaching programmes. The banner has been handed on to the next region to host NZAMT14 – Auckland 2015.

Mathematics and Statistics survey results

Almost 200 middle leaders of mathematics and statistics responded to a survey on their priorities for 2014. Two thirds identified L3 NCEA as their highest priority for professional development, with NCEA L3 Statistics being identified as the most urgent need. Additional areas for specific focus were subject specific literacy, managing course designs, and year 9-10 preparing for NCEA. The preferred time for PLD was for whole school days, but timing, school budget and inability to access their priority topics were identified as barriers to attending.

Two thirds of respondents attended cluster meetings and see the networking and collegial learning that happens there as valuable. Those that don't attend would prefer cluster meetings to be more focused and relevant to their priorities. 80% of respondents attended PLD offered by their local association.

Almost 80% of respondents indicated an interest in being part of an ongoing cluster focusing on using student data effectively. Issues limiting their role as middle leader included time, lack of resources and support with NCEA, and a need for focused, subject-specific PLD. The full survey report is available at: mathstatsfacilitators website

iNZight

A new version of iNZight is now available. It is essential that teachers and students use this latest version due to new features and corrections: <https://www.stat.auckland.ac.nz/~wild/iNZight/dlw.html>

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The 2014 PLD landscape

Secondary Student Achievement professional development

Secondary Student Achievement is our professional development contract for secondary schools funded by the Ministry of Education. The Government goal is that 85% of all 18-year-olds will have achieved NCEA Level 2 or an equivalent qualification in 2017. To support this, the focus for this PLD in 2014 will continue to be working with secondary **senior leaders, middle leaders and teachers** to help raise achievement for all students, and particularly for **priority learners** - Māori students, Pasifika students and those with special education needs.

Building success in Mathematics and Statistics

Effective feedback is essential to the learning process. A learning log is one mechanism used to promote feedback between student and teacher to support writing and literacy awareness in mathematics and statistics. It is useful for improving feedback/feed forward processes, particularly for our priority learners.

To engage with how learning logs have encouraged the acceleration of learning, take the time to read the BES exemplar 'Learning Logs' – a series of exemplars from Quality Teaching for Diverse Students in Schooling: BES [educationcounts - BES-Exemplar-5.pdf](#)

Source: Educational Leadership "Feedback for Learning." (Volume 70, Issue 1). For more information and further reading to develop these ideas, visit: [educational-leadership Seven-Keys-to-Effective-Feedback](#)

Public achievement information (PAI)

Some newly released documents from MoE regarding student achievement and the public targets across all sectors of education. The web link to PAI: <http://www.educationcounts.govt.nz/topics/pai-pipeline>

Senior secondary guide update

There are new teaching and learning resources on SSTLG on TKI for AO S8-4 relating to probability and distributions. The glossary of terms has also been updated.

Credit splitting for UE subjects

Students [entering University in 2015](#) will need 14 credits from each of three approved subjects. From 2013 there are now three UE approved subjects defined by NZQA: Calculus, Mathematics, and Statistics. If a student gains 14 credits from Mathematics Standards AS91573 to AS91579 and AS91587 they will have a UE subject in Calculus. A student who gains 14 credits from Statistics standards AS91580 to AS91588 will have a UE subject in Statistics. 14 credits from a combination of Mathematics and Statistics standards is a UE subject in Mathematics.

Note: In 2013, for [entering University in 2014](#) the UE requirement is still for only 2 approved subjects, but Mathematics can be one of these subjects. For example, a student gaining 22 credits in the new standards in Statistics (8 spare credits) and 6 credits of new standards in Calculus will meet the University Entrance requirements using Statistics and Mathematics as two approved subjects. They will still require 14 credits from one or two additional domains or approved subjects.

RSS feeds: TKI, NZQA, nzmaths, C@S, NZAMT

Register for these updates via RSS feeds or add to your favourites:

TKI www.tki.org	NZQA www.nzqa.govt.nz
NZAMT www.nzamt.org	nzmaths www.nzmaths.co.nz
C@S http://new.censusatschool.org.nz/	

Resources and weblinks

Pasifika Education Plan

Aiming to achieve optimum learning to guide and support Pasifika learners, their families and educational providers. <http://www.minedu.govt.nz/NZEducation/EducationPolicies/PasifikaEducation/PasifikaEducationPlan2013.aspx>

Ka Hikitia strategy

<http://www.minedu.govt.nz/theMinistry/PolicyandStrategy/KaHikitia.aspx>

iNZight - update

An updated version of iNZight is now posted and can be downloaded from <https://www.stat.auckland.ac.nz/~wild/iNZight/dlw.html>

Note: It is a new install NOT an update.

nzmaths Learning Community Forums

These forums are still active and we encourage you to continue posting questions so that the mathematics community can continue to be well informed. Registration for new participants via: <http://nzmaths.co.nz/user>
All seven forums can be accessed via: <http://nzmaths.co.nz/plc>

Secondary Literacy Online

These pages will help all secondary teachers gain an understanding of the literacy demands within subject areas: <http://literacyonline.tki.org.nz/Literacy-Online/Secondary-Literacy>

ESOL Online

Online resources for ESOL specialists, primary, and secondary teachers: <http://esolonline.tki.org.nz/>

Teachers as learners

Improving outcomes for Māori and Pasifika students through inquiry: [Case-studies/Teachers-as-learners-Inquiry](#)

Wellbeing@school

The Inclusive Practices Tools are designed to support primary, intermediate and secondary schools to engage in a review process: [about-inclusive-practices-tools](#)

NZQA Best Practice workshops

Registrations for Palmerston North (24 October) are needed to make sure minimum numbers are met. To register, see the [NZQA website](#)

24 October	Palmerston North	Numeracy
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'Connecting With Contexts' NZQA Best Practice Workshops

These are running in term 4, 2013. These are intended for teachers who would like to develop their skills in easily modifying existing assessment resources to better meet the needs of their students while still ensuring authenticity. Sign up here on the [NZQA website](#).

13 Nov Rotorua	20 Nov Whangarei	26 Nov Hokitika
14 Nov Gisborne	20 Nov Napier	27 Nov New Plymouth
19 Nov Invercargill	26 Nov Wanganui	27 Nov Blenheim

TLRI report on bootstrapping and randomisation

Major implications, paraphrased from page 2 of the document linked below:

- Shifting the learning of statistics to a computer-based empirical approach.
- Hands on activities, clear communication, connected visual imagery, interpretation, learning to argue under uncertainty.
- Engaging students' imagination to develop statistical reasoning.

A full report is located at: [tlri - summary report bootstrapping](#)

Other inferential reasoning activities and resources can be found at:

<http://www.gobookee.net/inferential-reasoning-activities/>

Mathematics and Statistics facilitators' website

Recent additions include a list of Level 3 Standards and the clarifications. [Level 3 Achievement Standards with Clarifications.](#)

The fifteen L3 Achievement Standards 'big picture' revised by the facilitators: <https://docs.google.com/file/d/0BxzqhN3VTLPRzBwdmp4WGVHUm8/edit?usp=sharing>

nzmaths

The Secondary mathematics link is

<http://www.nzmaths.co.nz/secondary-mathematics-and-statistics>

There are many rich resources to support teaching and learning programmes in years 9 and 10 with lesson plans to explore.

ERO report on raising student achievement

The latest national ERO report looks at work done to lift student achievement at 16 secondary schools, as part of a Ministry of Education initiative. It contains excellent material for departmental self-review. There is also a two-page summary of the full report, with all the review questions.

[ero - Report on Increasing educational achievement in secondary schools](#)

Youth Guarantee website

The profile builder on this website allows a student to enter achievement standards in their subject areas and shows how these relate to the six broad employment sectors. Information about jobs within sectors can be explored. Teachers can use this tool to check the focus of mathematics courses. There is an expectation that courses suit student aspirations. See:

<http://youthguarantee.net.nz/start-your-journey/>

Educational Leaders website

The Educational Leaders section of TKI has resources, readings and case studies relevant not only for senior leaders but for middle leaders too. Check out the 'Leadership development' link on the menu and then the 'Professional information'. View: [Leadership-development - Professional-information](#)

Resources and weblinks

Teaching as Inquiry - Responding to Learners

ERO report

<http://www.ero.govt.nz/National-Reports/Teaching-as-Inquiry-Responding-to-Learners-July-2012>

My Friend Google

Use Chrome as your browser and explore the add-ons in "Play". Google "Math add on for Word" and add 3-D equations solver and grapher to your computers.

2014 PLD links

- [Secondary-middle-leaders/Professional-learning-and-development](#)
- [Secondary-middle-leaders/News](#)
- [System-of-support-incl.-PLD](#)
- [E-newsletters](#)

A request from the NZAMT executive

Any teachers who have received moderation reports on an unaltered NZAMT task which is deemed "not at the standard" or has any issues attached to it are asked to please send a scanned copy of the moderation report to nzamtresources@gmail.com

This will enable the resource coordinators to adjust the task on the website as soon as possible.

NZAMT13 Absolutely Positively Mathematics & Statistics Biennial conference

The keynote speakers and workshop files will be placed on NZAMT website soon.

Jim Campbell Awards are presented for 'Contribution to mathematics education, support of local mathematics association, and teaching excellence'.

Congratulations to:

Andrew Kilham, Matamata College

Anna Martin, Avondale College

Brian Law, Christ's College

Debra Leong, Hamilton Girls' High School

Johanne McHardy, Mount Albert Grammar School

Lynne Bull, Avonside Girls' High School

Michelle Dalrymple, Cashmere High School

NZAMT writing camp 2014

Once again a group of teachers will be giving up a week of their Christmas holidays to write assessment resources for NCEA. Our term 1 newsletter will give details of new resources available for 2014.

Literacy Online and annotated student work

This annotated exemplar on the level 2 achievement standard AS91265 'Conduct an experiment to investigate a situation using statistical methods' helps teachers to support the literacy and language learning of students in mathematics and statistics.

Visit:

[Literacy-Online-Annotated-exemplar-Mathematics-and-Statistics](#)

From the facilitators' notebook

Facilitators around the country have been working in-depth in a number of schools. The focus has been on strategies to improve student achievement for priority learners, especially at NCEA Levels 1 and 2.

Facilitators have observed:

- Increased tracking of students to monitor progress.
- Strategies established to accelerate learning of students who are working well below the expected curriculum level.
- Inquiry based teaching with an emphasis on 'knowing the learner' to build relationships.
- Acknowledgement that subject specific literacy is an essential focus for student success.
- Increased awareness that improving NCEA achievement starts at Year 9 and before.
- Context based learning and teaching is essential at every year level.
- Teachers are realising the need to understand strand progressions through curriculum levels 2 to 6.

NCEA overview

[subjects](#)

Mathematics and Statistics

[Mathematics level 1](#)

[Mathematics level 2](#)

[Mathematics level 3](#)

Assessment specification 2013

[Mathematics level 1](#)

[Mathematics level 2](#)

[Mathematics level 3](#)

Past examination papers

[Mathematics level 1](#)

[Mathematics level 2](#)

[Mathematics level 3](#)

Assessment schedules & judgement statements

[Mathematics level 1](#)

[Mathematics level 2](#)

[Mathematics level 3](#)

Assessment reports

[Mathematics level 1](#)

[Mathematics level 2](#)

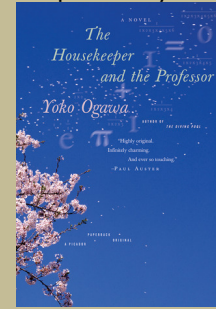
[Mathematics level 3](#)

Ko ngā tamariki o ēnei rā hei rangatira mō āpōpō

The children of today are the leaders of tomorrow

The Housekeeper and the Professor

by Yoko Ogawa (translated by Stephen Snyder)

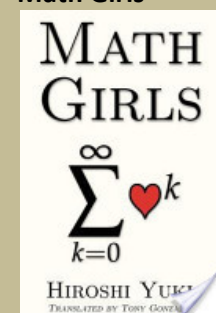


He is a brilliant mathematics Professor with a peculiar problem. Ever since a traumatic head injury, he has lived with only eighty minutes of short-term memory. The book covers the following mathematical curiosities:

- [root](#)
- [imaginary number](#)
- [factorial](#)
- [amicable number](#)
- [prime number](#)
- [twin prime](#)
- [perfect number](#)
- [abundant number](#)
- [deficient number](#)
- [triangular number](#)
- [Ruth-Aaron pair](#)
- [Mersenne prime](#)
- [Napier's constant](#)
- [Euler's formula](#)
- [Fermat's Last Theorem](#)
- [Artin's conjecture](#)

Source: http://en.wikipedia.org/wiki/The_Housekeeper_and_the_Professor

Math Girls



The unnamed narrator and his schoolmates Miruka and Tetra are Japanese high school students with an interest in mathematics. They explore the world of mathematics, helping each other solve problems, from extensions of high school mathematics to problems previously addressed by famous mathematicians. Source: http://en.wikipedia.org/wiki/Math_Girls