# Mathematics Links

**NSW Department of Education and Training**

**Curriculum K-12 Directorate**

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# Email Alert

## Welcome to *Mathematics Links* November 2007

*Mathematics Links* is an electronic update for mathematics faculty leaders and mathematics teachers informing on the latest additions to the *Curriculum Support* website, professional learning opportunities and links to relevant resources.

## *Curriculum Support* updates

- **Update on the National Numeracy assessments** - With the introduction of the National Numeracy assessment in May 2008, it is important that year 7 students have an opportunity to become familiar with their calculators early in the school year. Material has been placed on the Curriculum Support website to assist planning for calculator assessment in Year 7 next year at http://www.curriculumsupport.education.nsw.gov.au/secondary/mathematics/years7_10/teaching/list.htm
- The State **Numeracy K-12 Policy** is now available on the Department's website at https://www.det.nsw.edu.au/policiesinter/category/search.do?level=Schools&categories=Schools%7CCurriculum+%26+school+work%7CLiteracy+%26+numeracy
  The policy describes the role of teachers in developing students' numeracy skills to support specific numeracy demands across key learning areas; and outlines the assessment and reporting to guide numeracy programs and provide information to parents, caregivers and communities.
  The Curriculum Support website has resources to support implementation of the Numeracy K-12 policy at http://www.curriculumsupport.education.nsw.gov.au/secondary/mathematics/numeracy/index.htm
- **Assessment and reporting**

With yearly reports looming fast, assessment and reporting are hot topics, particularly for Year 9 and 10 yearly reports. The assessment page on the website offers mathematics specific PowerPoint presentations on A-E reporting. They include – Consistency of teacher judgement in mathematics; Consistency of moderation in mathematics; and Consistency of assessment in mathematics. These presentations could be used with your faculty to initiate a discussion on assessment and reporting.
http://www.curriculumsupport.education.nsw.gov.au/secondary/mathematics/years7_10/assessment/index.htm

***What has changed for reporting student achievement during Stage 5 in***

***mathematics?***

Reporting ***during*** Stage 5 should also be part of an ongoing process of communication between teachers, students and parents about each student's progress on the mathematics learning continuum. During Stage 5 schools describe student achievement using a five point achievement scale (A-E or equivalent word descriptors) twice a year across the stage. Unlike the previous Stage 5 Mathematics syllabus that had 3 courses for Stage 5, the current Mathematics 7-10 syllabus does not have defined separate courses. Instead, the minimum expected standard for Stage 5 mathematics is described by the 5.1 outcomes. Students who may need additional time to reach the standard described by 5.1 outcomes can achieve this by accessing appropriate material from the Mathematics 7-10 syllabus over the 4 years. Reporting achievement against the syllabus expectations is premised on recognising that a sound understanding of the 5.1 content by the end of Stage 5 would correspond to a C grade. A sound understanding means that the student has achieved most of the knowledge, skills and understanding described in the syllabus.
(Excerpt from ***Stage 5 reporting advice, March 2007***, attached to this email)

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The **Mathematics K-10 continuum posters** provided to schools with the release of the new syllabus may assist in outlining what students need to demonstrate by the end of Stage 5 as well as what performance for the higher grades would entail. Displaying a continuum poster next to a copy of the Stage 5 Mathematics CPD's in every mathematics classroom may assist communication of the expected performance for both students and teachers. Using the display at parent teacher interviews may also be effective for improving communication.

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**Numeracy projects on the AGQTP noticeboard.**
The focus for this terms AGQTP noticeboard is numeracy projects.

These projects highlight the professional development strategies of three schools that have used Australian Government Quality Teacher Programme (AGQTP) projects to bring about improvements in the numeracy skills of their students. To view the articles and school stories go to:

http://10ss.qtp.nsw.edu.au/nl073/

Interviews with teachers from Kambala, Rose Bay; Sir Joseph Banks High School at Revesby **(well done Paul Endicott and team)** and Our Lady of Lebanon College, Harris Park.

## Professional learning opportunities

- There is one more **Mathematics Head Teacher workshop** offered this semester in term 4 at **Armidale in the New England region, 6-7 December 2007 (Event no. 4877).** This workshop is for head teachers of mathematics and mathematics teachers aspiring to be head teachers and aims to support leadership development and curriculum management.

**Sessions at these two day workshops include:**

- **leadership and the role of the head teacher mathematics**
- **managing the faculty**
- **interpersonal skills and mathematics team building**
- **promoting effective mathematics teaching and learning**
- **catering for individual differences in the mathematics classroom**
- **using data to improve students' learning outcomes in mathematics**
- **planning for action**
  **To register for the workshop go to**
  http://www.curriculumsupport.education.nsw.gov.au/prolearn07/semester2/s_mathematics.htm
  Registrations close 2 December 2007.

- **Orana Mathematics Association Conference** - 6-7 December 2007 - Charles Sturt University, Dubbo. Sessions include: Mathematics for infants & primary teachers, hands-on activities, Smartboard lessons, Indigenous Mathematics, HSC marking simulation, using graphics calculators, Voc Ed in the mathematics classroom and much more. For further information and registration form see the attached Word document (Registration 07.doc)

## Free online mathematics resources

- Have you visited the **Virtual Math Museum** lately? Click on this link and stroll through the museum http://virtualmathmuseum.org/gallery4.html

The plane curves and mathematical art sections are very worthwhile.
The group in charge of the 3D-XplorMath software development project and the related Virtual Mathematics Museum website project is the 3DXM Consortium, an international volunteer group of mathematicians. The Consortium gratefully acknowledges ongoing support for these projects by The National Science Foundation and is grateful to the Mathematics Department of The University of California at Irvine for hosting the 3D-XplorMath and Virtual Mathematical Museum websites.

## Early career teachers

- No doubt it is that time of year where you are searching for some appropriate comments for your reports. These **report comment starters for mathematics** are available from the website at
http://www.curriculumsupport.education.nsw.gov.au/timetoteach/newreporting/comment_starter_k12_page.htm
(Intranet only)
Copies of the Word docs are attached to this email (stg_4_maths and stg_5_maths)

## Discussion

- Some food for thought in this abstract. Have a read!

**Reflections on numeracy and streaming in mathematics education**

amt: Australian Mathematics Teacher
**Volume 63 Number 2**, 2007; Pages 28–33

Numeracy means having 'the mathematical tools appropriate to the tasks one is engaged in from day to day, and the inclination to use them'. The elements that constitute numeracy will therefore vary between people according to the nature of the tasks they face. For this reason, it may be useful to differentiate maths instruction according to the different uses that students expect to make of the subject. Students' motivations for the study of maths are guided in part by the use they see for the subject in future careers, so maths courses could be aligned to prepare for future careers (eg in administration, the trades, or research and technology). Distinguishing maths subjects in this way would be more useful than streaming by perceived ability level. Streaming does have the

advantage of allowing teachers to pitch a lesson at a level of difficulty suitable for all members in a class. However, it demotivates students who are not selected for advanced classes, encouraging disdainful attitudes towards the subject that block pupils from seeing the potential relevance of maths to their life plans. The authors' arguments are drawn as inferences from his experience teaching Year 8 and 9 students at a government secondary school in Canberra.

- **Another interesting abstract**

  **A trickle from the pipeline: why girls under-participate in maths**

  Professional Educator

  **Volume 6 Number 3**, August 2007; Pages 37–41

  Helen M G Watt

  Girls in Australia perform as well as boys at maths, but less often select high-level maths subjects in senior school, or maths-based careers. In economic terms, this tendency aggravates skills shortages. It also aggravates gender inequality, as it means that girls tend to close off options for many higher paid jobs requiring mathematical knowledge. One barrier to girls' participation in maths is the culture that dominates maths-based careers, which is shaped by 'the values of the majority of male professionals' and does not, for example, accommodate women's family commitments. However, many other factors inhibiting girls from maths-based careers can be dealt with by educators. For instance, educators can reduce the perception of maths as a 'male' career by presenting biographies of successful female mathematicians. They can replace abstract, decontextualised mathematical activities with ones addressed to social needs, an approach that has been found to interest girls in the subject. Parents should be encouraged to provide maths-based activities for their children, especially their daughters. A number of educational reforms that promise to improve teaching generally have also been shown to have particular value for girls. They include replacing competition with cooperative work or individualised instruction; encouraging a 'mastery' orientation to learning that promotes the intrinsic value of learning; and making students more aware of the wide range of careers that demand mathematical knowledge.

Until next month!

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