Maths & ICT: a Three Page Starter

ICT can be involved both within planning for the strands and the essential skills within the strands. There are some strands i.e. geometry and statistics that suit excellent integration with other topic areas to enhance the understanding of them and deepen learning within the topic.

Starter Place for Internet Links

Use Jetlinks database from in2edu.com and visit the maths section (either in N.Z curriculum for NZ only links, or the Curriculum Centre for world wide links.
Or go online the database:

1. Maths Integrated units: http://www.in2edu.com/edulinks/themes_integrated%20units_maths%20themes_thematic%20units.htm
2. Maths in NZ: http://www.in2edu.com/edulinks/new%20zealand_curriculum%20-%20new%20zealand_maths%20-%20new%20zealand.htm
3. Maths Sites World wide:http://www.in2edu.com/edulinks/curriculum_maths.htm
4. Make up or download worksheets: http://www.in2edu.com/edulinks/worksheets%20&%20taskcards%20&%20learning%20centre.htm
5. http://www.tki.org.nz/e/maths/

General Ideas

1. Think about ICT used in the mathematics world… in design, surveying, building, statistics businesses… it is very prevalent in some areas… but is simply a tool!
2. We can use software/hardware to achieve maths outcomes within other curriculum areas i.e. as we create a web-site we create original surveys/graphs, use digital camera, use statistics
3. We can use e-mail, conference calls, video links or chat to communicate with experts or specialists
4. The Internet has a vast trove of maths resources… statistics, measurement, number, geometry etc (use links above to get started)

Software Ideas

Some software can carry out many functions

Free software here: http://www.in2edu.com/edulinks/ict_freeware - recommended.htm

1. Art Programs: Paint -Bitmap Graphics software (i.e. Ultimate Paint Freeware, Paint, Drawing4Children Freeware, Paintshop, Corel Draw, KidPix- many have shape and symmetry tools) and Draw - Vector Based software (Corel Draw, Xara, Adobe Illustrator – many of these paint as well) Desktop publishing software or Word processors use art tools in them *Maths use: Geometry (spatial perception, rotation, reflection, 3d objects, symmetry)*
2. Graphical organizers (Inspiration, IHMC concept Map) *Maths use: Flow Charts and concept mapping ideas*
3. Logo software (you can program the pointer to draw), *Maths use: Geometry, Measurement*
4. Desktop publishing software or Word processors use art tools in them…i.e. draw, rotate, align, distribute, autoshapes (Appleworks, Word, Publisher, StarOffice 6) Desktop publishing software or Word processors use art tools in them *Maths use: Flow Charts and concept mapping ideas, Geometry (spatial perception, rotation, reflection, 3d objects, symmetry)*
5. CAD software (3D design, designing, planning i.e. Bryce, Floorplan Lite Freeware)
6. Web Design software (Frontpage, Dreamweaver, Fireworks) *Maths use: to present information about concepts ideas or results of an investigation*
7. Presentation Software (PowerPoint, Appleworks, StarOffice Presentation, KidPix) *Maths use: to present information about concepts ideas or results of an investigation*

8. Video Editing Software (imovie)
9. Drill or maths game software: some of this has a use. For many titles the time spent to achieve a learning outcome is that more time is spent playing rather than learning – check before using. Drill software can be good for reinforcement, maths game for learning styles where other methods are not achieving results.

Hardware Ideas

1. A digital camera *pictures of maths for class web/school records/portfolios, create a maths scene (i.e. assemble shapes in a creative way and take photo,*
2. Scanner
3. Technology and computers i.e. programming Lego robots Maths Use

Online Ideas

1. See links above
2. Resources (teacher information on art or concepts I am not sure about)
3. Lesson plans
4. Museums
5. Online activities

Mathematical Processes

The mathematics curriculum intended by this statement will provide opportunities for students to:

- develop flexibility and creativity in applying mathematical ideas and techniques to unfamiliar problems arising in everyday life, and develop the ability to reflect critically on the methods they have chosen.. ***use of concept mapping software, de bono hats etc,***
- become effective participants in problem-solving teams, learning to express ideas, and to listen and respond to the ideas of others;
- develop the skills of presentation and critical appraisal of a mathematical argument or calculation, use mathematics to explore and conjecture, and learn from mistakes as well as successes; ***present ideas using ICT, digital cameras, video, OHP, use spreadsheets to investigate statistics (graphing and analysing)***
- develop the characteristics of logical and systematic thinking, and apply these in mathematical and other contexts, including other subjects of the curriculum;
- become confident and competent users of information technology in mathematical contexts; ***(see other comments)***
- develop the skills and confidence to use their own language, and the language of mathematics, to express mathematical ideas;
- develop the knowledge and skills to interpret written presentations of mathematics.

Number

The mathematics curriculum intended by this statement will provide opportunities for students to:

- develop an understanding of numbers, the ways they are represented, and the quantities for which they stand;
- develop accuracy, efficiency, and confidence in calculating — mentally, on paper, and with a calculator;
- develop the ability to estimate and to make approximations, and to be alert to the reasonableness of results and measurements. ***ICT Starter Ideas: record estimations, measurements and final comparisons of results)***

Measurement

The mathematics curriculum intended by this statement will provide opportunities for students to:

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- develop knowledge and understanding of systems of measurement and their use and interpretation; ***ICT Starter Ideas: Internet Research, use of measurement i.e. rulers in software used,***
- develop confidence and competence in using instruments and measuring devices; ***ICT Starter Ideas: Presentations exploring what they have learned***
- predict and calculate the effects of changes in variables and rate of change of variables on systems representable by simple mathematical models. ***ICT Starter Ideas: Concept Mapping software***

Geometry

The mathematics curriculum intended by this statement will provide opportunities for students to:

- gain a knowledge of geometrical relations in two and three dimensions, and recognise and appreciate their occurrence in the environment; ***ICT Starter Ideas: Digital or video images from environment geometry, presentation of geometry discovered in show,***
- develop spatial awareness and the ability to recognise and make use of the geometrical properties and symmetries of everyday objects; ***ICT Starter Ideas: use of word art and drawing tools (rotation, copy, paste, tessellate)***
- develop the ability to use geometrical models as aids to solving practical problems in time and space.

Algebra

The mathematics curriculum intended by this statement will provide opportunities for students to:

- recognise patterns and relationships in mathematics and the real world, and be able to generalise from these; ***ICT Starter Ideas: use of fill in spreadsheet to create patterns***
- develop the ability to think abstractly and to use symbols, notation, and graphs and diagrams to represent and communicate mathematical relationships, concepts, and generalisations; ***ICT Starter Ideas: use of spreadsheet, use symbols in clipart, using concept mapping software and drawing software for diagrams, relationships***
- use algebraic expressions confidently to solve practical problems.

Statistics

The mathematics curriculum intended by this statement will provide opportunities for students to:

- recognise appropriate statistical data for collection, and develop the skills of collecting, organising, and analysing data, and presenting reports and summaries; ***ICT Starter Ideas: a great place to provide rich integrated units where data is collected, analysed and presented using ICT (digital camera, presentation software, concept mapping, spreadsheets)***
- interpret data presented in charts, tables, and graphs of various kinds; ***ICT Starter Ideas: Use of spreadsheets, presentation of results in presentation software***
- develop the ability to estimate probabilities and to use probabilities for prediction.

