Promoting the Surveying Profession in New South Wales, Australia

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Institution of Surveyors, NSW Inc.
Careers sub-committee

Context in NSW

- NSW has about 1500 Registered Surveyors of which around 900 are active
- If they stay in practice for 30 yrs, we need around +30/yr to maintain a steady state
- However, most are mid-50s and we have more Registered Surveyors over 60 than under 40 (Fryer, 2008)

We need graduates who become registered
ISNSW Careers sub-committee

- Setup to encourage high school leavers and others to commence a career in surveying
- Member based group comprising 10+ surveyors
- Regular monthly (face-to-face and teleconference) with agendas, minutes, an allocated budget and action items
- Members well distributed across NSW
- Work experience, careers markets, Surveying Spectaculars, marketing campaigns

Work Experience

- One of the best forms of promotion for the profession is work experience
- Surveyors can offer some real work to high school kids
- Danger that surveyors are not prepared and offer a poor experience
- Committee tries to advise members about Occupational Health and Safety, Child Protection, Privacy, Equal Opportunity and Anti-Discrimination legislation
- Surveyors should seek a good relationship with local careers advisor at school
Careers Markets

- Organised by local Rotary clubs and clusters of careers advisors in common geographical regions
- Designed to be “one stop shops” for year 10 and 11 students to consider their career options
- Careers committee coordinates a box with banners, DVDs, posters and promotional brochures from the TAFEs and Universities in NSW.
- Local coordinators attend markets and promote the profession to local high school students
- Last year ISNSW attended 14 careers markets across NSW

Promoting the profession
Careers Markets

ISNSW booth at various careers markets

Surveying Spectaculars

Promoting the profession
Aims of Surveying Spectacular

- Develop a passion for mathematics through its practical application
- Promote awareness of what a surveyor does
- Encourage students to consider surveying as a career

The strategy

- Give them some interesting mathematical problems surveyors face, BUT
- THIS IS NOT AN EXAM!
- We try to get the students to think for themselves, assisting them only if they have trouble.
- Involve them with our toys and as much hands on as possible
- THE EXPERIENCE MUST BE ENJOYABLE!
Bicentennial Park

- Central location
- Bus parking
- Toilet facilities
- Open spaces and trees

Promoting the profession

- Sundial
- Towers and sculptures
- Geometric gardens
- Classroom to set up a computer lab

Program of Activities

A. Height of Treillage Tower using trigonometry
B. Mapping in the Hedged Garden
C. Photogrammetry, Laser Scanning, Historical Surveying Equipment
D. Sundial, Radius of earth by Eratosthenes’ method
E. Peace Monument – Heights using similar triangles
F. MiniCAD in computer classroom

<table>
<thead>
<tr>
<th>Time slot</th>
<th>Group1</th>
<th>Group2</th>
<th>Group3</th>
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</thead>
<tbody>
<tr>
<td>9:00 - 9:20</td>
<td>Arrival, registration, brief introduction</td>
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<tr>
<td>9:25 - 10:00</td>
<td>A</td>
<td>B</td>
<td>C</td>
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<td>10:05 - 10:40</td>
<td>B</td>
<td>C</td>
<td>A</td>
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<tr>
<td>10:45 - 11:20</td>
<td>C</td>
<td>A</td>
<td>B</td>
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<td>11:25 - 12:00</td>
<td>LUNCH</td>
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<td>12:05 - 12:40</td>
<td>D</td>
<td>E</td>
<td>F</td>
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<tr>
<td>12:45 - 1:20</td>
<td>E</td>
<td>F</td>
<td>D</td>
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<tr>
<td>1:25 - 2:00</td>
<td>F</td>
<td>D</td>
<td>E</td>
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<tr>
<td>2:00 - 2:15</td>
<td>Tidy up, return equipment, collect showbags</td>
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Promoting the profession
The Surveyor’s Playground

Measuring the Peace Monument

- Measuring shadows
- Applying similar triangles
Measuring the Peace Monument

If there is no sun, there is an alternative method...

Challenge –
- Find the length of the overhead beam AB
Mapping the Hedged Garden

- Use a tape measure to measure up one of the lawns and a magnetic compass to find bearings
- Prepare a table of bearings and distances to use later on to draw a map using a CAD program
- Draw a scale map of the lawn on grid paper provided
- Locate hypothetical hidden land mines under the grass given some bearing/distance information
- Calculate the area of the lawn
Mapping the Hedged Garden

- Students enter bearings and distances to create a map on screen.
- The software lets them draw the circular arcs and calculate the area.
- They enter information about the landmines to mark their positions.
- An aerial photograph can be “geo-referenced” to check their measurements.

miniCAD: the computer classroom
miniCAD: the computer classroom

The end product!

Height of Treillage Tower

- Students begin by estimating the height of the tower
- Using a total station they measure zenith angles from the observation point O to the top of the tower T, and to point P vertically below T
- An EDM allows them to find the exact distance to the prism (OP)
- Trigonometry in right-angled triangles is used to calculate the height of the tower
Height of Treillage Tower

Students hard at work

Promoting the profession

Activities around the Sundial

- How a Sundial works
- Finding the radius of the earth using Eratosthenes method
- Looking at Daylight stars

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Radius of the Earth

We adapted the method devised by Eratosthenes (276-194 BC)

Sydney and Rockhampton are on approximately the same meridian of longitude.

Students measured the zenith angle at Sydney.

They were given the zenith angle at Rockhampton, and the distance between Sydney and Rockhampton.

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History of Surveying

Students were fascinated with antique calculators …
History of Surveying

... and theodolites

Photogrammetry

Promoting the profession
Laser Scanning

Setting out and identifying a pattern

- Using surveying equipment to pinpoint locations on the lawn
- Estimating distances and directions
Take home goodies

- At the end of the day, all students take home a free USB flash drive with the ISNSW logo and the NSW “Open Up Your World” surveying video permanently burnt onto it
- The flash drive is placed in a showbag with tertiary study information and a “Surveyors Rule” ruler

Publicity

- We invite the education editors from the Sydney Morning Herald and Daily Telegraph
- We send an invite to every local paper which has a school in its distribution area attending
- TV?
The measure of success

- Partially intangible. Feedback forms provide some guide to assess if we are achieving our aims
- We make all schools give us their students names under the pretext of printing name badges
- We want to match student names against tertiary entrance into surveying courses

Schools Promotion

- Presentation to Year 2 students!
- I made my jigger turn right angles with no hands
- 2 right angles makes a straight line
- They made a map using right angles
- They all looked through my jigger
Schools Promotion

- 3 distinct exercises
- Students map oval and obstructions
- Students design running track
- Students setout running track

100 Year 10 girls
- 2 bearing intersection to a lighthouse to calculate its location
- Vertical Angles to calculate its height
Maths Association Conference

- The first of 3 successive years presenting here
  - 1 – Peter’s school
  - 2 – Queenwood
  - 3 – Survey Spectacular

Maths Curriculum

- Fruitless attempt to influence the NSW curriculum. Next try National!
Maths Textbooks

- Guess who plays comp tennis against a guy who writes Maths texts?
- Next publication has a chapter on SURVEYING!

Advertising materials

- Careers committee have produced banners and posters for the Careers market booths
- Members of the committee are also active in producing other materials ie SMIC brochure and DVD (in cooperation with ACS)
- Try to keep website up to date
Media opportunities

- SMH weekend careers section June 13, 2009

Promoting the profession

Media opportunities

- Newcastle careers market, May 2009

Promoting the profession
Media opportunities

- North Shore Times, May 2009

Promoting the profession

Media opportunities

- SMH careers section, March 2009

Promoting the profession
Target the Scout Association

- Scouts are into mapping and the outdoors – perfect for a career in surveying
- Jamboree in Sydney Jan 2010
- Easter activities for statewide Venturers
- Potential problems with leadership training and qualifications

A life without limits campaign
Summary

- ISNSW Careers committee is very active
- Try to focus on hands-on activities and leave high level promotions to others
- Try to coordinate activities and recruit new members of the profession – preferably young – to assist
- New students and new graduates are the professions’ life blood.
- Marketing activities can never stop!