

## **TSTS Research Investigations: Where do we start?**

Many teachers devote a portion of classtime to an inquiry-based research project, reinforcing the process of “scientific method” and allowing students some free-rein to develop a personal interest to a greater depth.

The Research Investigations section of TSTS can be used as a “carrot” with a specific deadline for completion, and considerable reward through public acclamation and a monetary prize. High achievement in TSTS is a worthwhile addition to any student’s CV. This year, TSTS has been made all the more exciting and rewarding by the automatic entry of winning projects into the BHP Billiton (secondary level) and CSIRO (primary) national competitions, and the possibility of prizes up to \$1500 and the ultimate prize of a trip to Albuquerque USA!

Any science-based topic is acceptable, but certain topics are linked to specific-sponsor prizes. Highlighting these might well broaden the students’ interest and knowledge, and teachers would do well to encourage careful consideration of these areas.

### **Some suggestions and extra websites for Research Investigations (esp for Sponsor set topics!)**..see other websites and details of these topics in TSTS Booklet or website

#### **1. Forest Education Foundation** [www.forest-education.com](http://www.forest-education.com)

Excellent resources and project ideas. Consider eg. seedling growth in different seed-raising media, pH, temperature, amount of sunlight etc: seed viability: emasculating flowers to cross-pollinate with specific pollen...all require long-term work.

Short time projects could involve: comparison of quantity/diversity of plant species in different types/ages of forests ; mini-beasts in forest floor leaf litter: comparison of seed numbers from capsules of different eucalypt species. ....

#### **2. Tasmanian Minerals Council** [www.tasminerals.com.au](http://www.tasminerals.com.au)

Lots of teaching resources and information on Tas minerals, exploration, mining and refining (good game ideas too!): floatation separation of minerals: on-line links to many sites with activities, and some samples available through Education Centre Hobart.

#### **3. Norske Skog** Pulp and Paper Science

[www.cfr.ncsu.edu/wps/k12activities/lectures.htm](http://www.cfr.ncsu.edu/wps/k12activities/lectures.htm) great website with power point presentations on scientific and environmental issues with practicals on pulping,bleaching,papermaking, recycling,testing paper strength, calculating % lignin in pulp samples etc. Could be excellent Senior level investigation, or simple for primaries

#### **4. Tamar Estuary Working Group**

[www.park.tas.gov.au/reserves/tamar/FaunaFlora.pdf](http://www.park.tas.gov.au/reserves/tamar/FaunaFlora.pdf) Record numbers and types of birds along the Tamar. Do numbers vary morning/ evening? Observe behaviour of birds, nesting, feeding etc. Compare structures (eg feet, beaks etc) to diet, habitat etc

#### **5. Riverside Lions, Imbros** ... Weeds, Environmental issues, water analysis

[www.dpiw.tas.gov.au/inter.nsf/Home/1?Open](http://www.dpiw.tas.gov.au/inter.nsf/Home/1?Open) Blackberries, gorse: investigate water quality in your local creek: smoke pollution: introduced weeds: measure noise pollution

#### **6. Hydro** electricity, electric efficiency, electricity audit [www.hydro.com.au](http://www.hydro.com.au)

Good info on power generation, solar power and wind power experiments

**7. TEMCO** wetlands or litter project. Study micro-invertebrates in a wetland, plant species, water quality etc: collect and study roadside litter-sort/analyse with respect to recycling, volume and mass of waste etc

8. **Aust Soc. For Biochemistry and Molecular Biology**: Past winning topics have included factors affecting rates of reactions including enzyme action: genetics-based projects: diffusion through semi-permeable membranes and plasmolysis...

8. **AIFST** Food science , **Tasmanian Alkaloids** Agriculture , **Comalco** Chemistry and **Institute of Physics, Maths and Physics Dept** Physics, all could involve many topics which have endless opportunities for projects. Do some Google searching for ideas and background info.

Read through these topics in the booklet. There are some good prizes for projects allied to these fields and many of the people in the industries are keen to assist interested students.

9. More general ideas on **Weeds, energy, mining, environment**

[www.csiro.au/csiro/channel/ca\\_dch2t](http://www.csiro.au/csiro/channel/ca_dch2t). Energy efficient houses etc .....

Another good starting point, especially for younger students is the “Living Science” 4-part supplement series produced by The Examiner May /July 2006.

See also the Marist College Website [www.mrc.tas.edu.au](http://www.mrc.tas.edu.au) They run an excellent annual science fair, and produce many high-quality prize-winning projects each year. Thanks to Mrs Ann Burke.

Further ideas will be in the next STATIC(magazine of STAT)

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