

# The NZART “*Hands on – to RADIO WAVES*” project: How it originated and developed

Notes by Fred Johnson MNZM ZL2AMJ

## The background - in New Zealand

1. It is known that Amateur Radio is a wonderful way to confirm interest in radio technology and to prepare youngsters for a career in telecommunications.
2. There are countless examples of persons who became radio amateurs while at school and who have gone on to be very successful in technical careers and to occupy high positions involving technical radio knowledge.
3. Many science teachers who were radio amateurs have been responsible for students “catching the bug” and entering into careers in radio and telecommunications.
4. The Amateur Radio “ticket” is a self-standing independent qualification separately examined outside the education system. The certificate is achievable by any youngster and would hang proud on any wall. The youngest radio amateur in New Zealand was age 8.
5. The Amateur Radio Certificate is internationally-recognised.
6. Concern is often expressed about the decreasing numbers of “bright sparks” who take an interest in amateur radio. We need to attract the young and the keen and encourage them to take an interest in the technical aspects of radio. Not just in operating, chatting and talking, but in the technicalities of all aspects of how radio works.
7. At the NZART Conference held in Christchurch in 1999, Sir Angus Tait made remarks about an upcoming shortage of people trained in electronics. He said “Our technology is our sword, we keep it sharp and bright” and went on to say that there is “a very real risk of a serious shortage of people trained in electronics in the not-too-distant future.” These remarks are reported in the NZART journal “Break-In” July/August 1999 on page 10.
8. Science and Technology Fairs are run in many places in the country. The entrants are secondary school students. To encourage interest in telecommunications and in electronics subjects, the NZART Radioscience Education Trust awards prizes to selected participants in the Fairs. Sadly, interest in these Fairs is decreasing.  
( <http://www.nzart.org.nz/nzart/NZART/trustweb.html> )
9. Each year in the Report of the NZART Radioscience Education Trust, there is comment about the lack of interest in radio and associated matters. For example, in the NZART journal “Break-In” Sept 2004 page 24 the Trustees, reporting on Science and Technology Fairs say: “the lack of interest in science and technology concerns the Trustees” and “how do we raise the interest level?”
10. The widest public understanding of radio communication is important for our economy. Radio provides the backbone technology for the information economy: radio and television broadcasting, cellphones, mobile communications, remote controls of many types, keyless car locks, remote door openers, wireless local area networks, satellite navigation, environmental monitoring, radio telescopes and so much more in our world. These all use the same “*electromagnetic waves*” so we should each have a working knowledge of them. Radio communication is so ubiquitous that it is almost taken for granted.
11. There have been enquiries by parents of “home-schoolers” for elementary material for self-driven investigation of technical radio topics.

## The background - in the UK

12. The Radio Society of Great Britain actively supports the concept of regular short technical courses in “radio” being run for school science teachers.

13. A UK educational charity, STELAR, *Science and Technology through Educational Links with Amateur Radio*, ( [www.stelar.org.uk](http://www.stelar.org.uk) ) has the aim:
- To promote an interest in the science and technology of wireless communications in young people.
  - To encourage members of the teaching profession to use amateur radio in school to further their teaching of science and technology.
  - To provide education and training for educators in the science and technology of wireless communications.
14. An updated National Curriculum in Science is in effect in the UK. One of the innovations of the new system is what is called “Applied Science”. Communication science is a part of this and includes work on radio communications. Amateur radio is expected to play a great part in this and STELAR expects that it will encourage members of the teaching profession to obtain the amateur radio qualification. This curriculum change has potential to add a new dimension to learning.
15. There are documents available from web-searches that show the new UK provisions. Searches to find any similar curriculum content on the New Zealand Ministry of Education and similar websites have produced disappointing results. The search is still on. Radio and telecommunications are neglected sciences in New Zealand schools.

### **So, where to now?**

The need in New Zealand is seen to be a source of teaching and guidance material presenting and describing fundamental experiments in radio wave generation, propagation and reception. Theory, practice and applications are required.

The Internet web and CD-ROM technology today makes the copying and distribution of teaching material very easy.

NZART has a website from where information and booklets can be freely downloaded:

<http://www.nzart.org.nz/nzart/waves/radiowaves.html>

A CD-ROM presenting theory and experiments in fundamental radio wave working has been developed and compiled by NZART as a practical contribution to science and radio training in schools. It is labelled as a “draft” so that “polishing” of the content can continue as feedback is reported and new developments are suggested. The structure and the software used are simple so that the contents can be used as a resource and easily modified as required for local use. It is available in small quantities from NZART Headquarters: [nzart.hq@nzart.org.nz](mailto:nzart.hq@nzart.org.nz)

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