

THE EDUCATIONAL ACTIVITIES OF THE ROYAL METEOROLOGICAL SOCIETY

J. Malcolm Walker *
Royal Meteorological Society, Reading, UK

1. INTRODUCTION

The world has changed greatly with the coming of 'the web', which is now (in the United Kingdom and many other countries around the world) a major means of delivery in school and popular meteorological education. In other ways, though, the world has not changed, as the following quotations show. They are taken from the Proceedings of the First International Conference on School and Popular Meteorological Education (Walker, 1985, pages 248-252).

In school and popular meteorological education, much depends upon the enthusiasm of individuals. A great deal of progress towards the goal of adequate public weather awareness and literacy world-wide can be achieved through this enthusiasm being infectious.

Endeavours to improve weather awareness and literacy should be aimed largely at children. The emphasis should be upon exciting curiosity about the weather, developing an enquiring mind, encouraging observations and generating a sense of wonder at atmospheric behaviour. There should be no attempt to teach meteorology to all and sundry. There is a need to determine precisely what the populace ought to know about atmospheric behaviour, distinguishing carefully between meteorology and meteorological awareness.

At the conference, the conclusion was that the primary rôle of a meteorological society should be:

The provision of clearing-house services for the sharing of information, techniques and resources that can be used in the formal and informal education of the general public on weather and weather-related matters;

The support of activities that foster an interest in, and appreciation of, weather and climate by the general public, interested amateurs and educators.

* Corresponding author address: J. Malcolm Walker, Education Resources Manager, Royal Meteorological Society, 104 Oxford Road, Reading, RG1 7LL, UK; e-mail: education@rmets.org

These conclusions and recommendations underpin much of the Royal Meteorological Society's educational work, with the web now exploited as a major means of communication. To deliver its educational services and activities, the Society employs an Education Resources Manager. The appointment is currently part-time (24 hours per week).

In accordance with its Charter, the Royal Meteorological Society advances meteorology and related sciences. It does so by means of, *inter alia*, education; and it is a leading player in the field of education among the meteorological societies of the world.

2. UK NATIONAL CURRICULA

The Council of the Royal Meteorological Society agreed long ago (in the 1980s) that the Society's educational activities should be aimed largely at schoolchildren, especially children in primary schools. Accordingly, the Society's educational activities have for many years been directed towards school teachers and their students, with not a little reference to the national curricula of the United Kingdom. There are three of these curricula: one for England and Wales, another for Scotland and another for Northern Ireland. None contains a large amount of meteorology; and the meteorology that is included in the curricula is largely within *Geography* in England and Wales, *Environmental Studies* in Scotland, *Geography* in Northern Ireland.

Meteorological topics in the curricula include:

- atmospheric composition;
- the water cycle;
- fog, cloud and precipitation;
- orographic processes;
- the atmospheric general circulation;
- climatic zones;
- global warming and climate change;
- relationships between isobars and winds;
- middle-latitude weather systems;
- ozone depletion;
- interpretation of satellite images;
- impacts of weather on society;
- weather as a hazard;
- usage of meteorological instruments.

The fact that meteorology is prescribed only in Geography and Environmental Studies does not mean that it cannot be introduced into other subjects. There is, for example, plenty of scope for integrating meteorology into the science curriculum. Radiation, convection, conduction, potential and kinetic energy, condensation, evaporation and latent heat are fundamentally important in meteorology and are topics which are included in science syllabuses. They are relevant to everyday life when related to the 'weather machine', and it is surely good educational practice to use meteorological exemplars to teach them. As listed on page 250 of the Proceedings of the First International Conference on School and Popular Meteorological Education (Walker, 1985), many scientific topics serve to stimulate observation and scientific reasoning:

- use of instruments, including precision and accuracy;
- principles of instrument design;
- construction of simple instruments;
- setting up of a small weather station;
- exposure and representativeness of the instrument site;
- data collection (manually or via computer-based devices);
- simple quality-control procedures;
- presentation of observations;
- analysis of observations (using statistical techniques, graphical representation, computer software, etc).

As the Royal Meteorological Society has found, imaginative and resourceful science teachers do indeed incorporate meteorology into their teaching programmes and seek educational material to assist them. And it is not only science syllabuses that offer opportunities for promoting study of weather and climate.

In the course of language and literacy education, children – particularly primary-school children – can read and write about the weather. Numeracy classes, too, can be enlivened by analysis of meteorological observations, especially if the observations have been made by the children themselves. In art classes, children may produce drawings or paintings of the weather which are subsequently discussed with them in respect of the meteorology they portray. And interest in weather and its vagaries may be stimulated by studies of relationships between gardening and the weather, agriculture and the weather, pollution and the weather, and historical events and the weather. It may also be stimulated by studies of the weather to be expected in holiday localities or the effects of weather on sporting

activities. Whenever possible, the present author draws the attention of teachers to such opportunities for promoting study of weather and climate.

In respect of the production of curriculum-based materials for school teachers, a recent development for the Royal Meteorological Society has been the employment of a primary-school teacher for the academic year 2004-2005 to write and trial meteorological material intended for all who teach the 5-14 age group. She is based in the University of Edinburgh's School of Education and the work is funded by the Royal Meteorological Society, the City of Edinburgh Education Authority and the Royal Society of Edinburgh. The material is required initially for a meteorology module in the University of Edinburgh's Master of Teaching degree scheme, a programme which helps teachers achieve Chartered Teacher status, but will soon be made available more widely and promoted for use in the curricula of England and Wales and Northern Ireland.

Another recent development is the employment of undergraduate students in the Meteorology Department of the University of Reading in the summer vacations of 2003 and 2004 to write meteorological PowerPoint presentations called "Talks in a Box". These are intended for use by school teachers and others who require material for lectures.

3. CLEARING-HOUSE SERVICES

The Royal Meteorological Society answers about 1,400 enquiries per year from the public, including school teachers and school students. This clearing-house rôle of the Society will continue into the foreseeable future. Most commonly, those who contact the Society require advice or guidance on careers in meteorology or the choice and purchase of meteorological instruments, but, in fact, the range of subjects covered by the enquiries is very wide. To facilitate the answering of queries, a number of leaflets have been produced, for example *Careers in meteorology*, *Meteorology courses in British universities*, *Instruments and weather stations*, *Weather projects for the 14-16 age group*, *Weather on the web* and *Climate on the web*. Several leaflets which provide information about meteorological processes have also been produced and almost all are now available on the web (through <http://www.rmets.org/education/index.php>).

Requests that can be met by simply sending the *Careers in meteorology* leaflet and/or the *Meteorology courses in British universities* leaflet

without any covering letter are handled by the Society's Despatch Assistant (the number of these being about 400 per year). Most of these requests are received by post. Of the other 1,000 enquiries (almost all of them handled by the Education Resources Manager), about 50% are received by email, 30% by telephone and 20% by post.

Care has been taken to avoid duplication of educational material produced by others, particularly the Met Office and the BBC. The material produced by the former has been tailor-made for UK schools following consultation with teachers through meetings of focus groups. The material produced by the latter is intended for the one-stop-shop market. Some of the Society's material focuses on weather as a hazard, while other material is intended to excite curiosity about the weather, help develop an enquiring mind, encourage observation and generate a sense of wonder at atmospheric behaviour.

4. COURSES, WORKSHOPS, PROJECTS AND QUALIFICATIONS

The web is seen by the Royal Meteorological Society as a resource of major importance in weather and climate education, but the Society has recognised that it cannot, in the provision of some educational material on the web, notably modular material, compete with bodies such as the BBC, the Met Office and a number of other bodies which have superior financial, technical and human resources.

The Society does, however, occupy an educational niche in providing courses and workshops for teachers and students, making use of its Education Resources Manager and also of enthusiastic volunteers, most of them members of the Society. The most popular workshops have proved to be those concerned with:

- the availability and exploitation of meteorological resources on the web;
- the choice and use of meteorological instruments;
- best practice when observing and recording the weather.

Foremost among the Royal Meteorological Society's educational activities is its internet-based project for schools and individuals [MetLinkInternational](#), which was introduced in 1998 and has developed year on year. In 2004, it attracted 309 participants in 46 countries. The project facilitates co-operation and collaboration between teachers, students and individuals around the world and thus promotes meteorology as a subject of international importance.

The rôle of the Royal Meteorological Society as a facilitator on an international scale is now fundamental to many of the Society's activities, not just education. International conferences are organized and five journals are published, the one with the greatest rôle in school and popular meteorological education being *Weather*, which is a well-illustrated, monthly magazine and often publishes articles of an educational nature.

The Royal Meteorological Society also runs an accreditation scheme for professional meteorologists (the Chartered Meteorologist qualification) and has played a leading rôle in establishing the UK's National Vocational Qualifications in weather forecasting and meteorological observing. The Chartered Meteorologist qualification was introduced in 1993 and quickly became a *sine qua non* for meteorologists who practise their profession in commerce or industry. The National Vocational Qualifications, which are in-service qualifications for forecasters and observers, have been introduced in the past few years with a commitment from the Met Office, the Royal Navy and private-sector employers that the qualifications will define essential occupational standards of competence for forecasters and observers and, as such, be used as a basis for staff development.

5. SCHOOL CORPORATE MEMBERSHIP

The Royal Meteorological Society offers School Corporate Membership and through it forges links with individual schools. Perhaps the most important advantage of this form of membership is that schools may benefit from the Society's Legacies Fund, from which money may be allocated for any of the following purposes:

- to provide grants that help schools carry out small research projects which may include field work;
- to help schools purchase equipment to be used in research projects or on field courses;
- to help support scientific activities concerned with the study of meteorology in schools and to help fund other meteorological activities of an educational nature;
- to provide bursaries for teachers and sometimes students to take part in educational courses.

Other benefits of School Corporate Membership are as follows:

- meteorological instruments may be borrowed from the Society for an agreed purpose;

- advice and guidance are available from the Society on a wide range of matters relating to meteorological education;
- members can purchase items from the Society's list of publications at discount prices;
- the nominated representative of the school is allowed access to the restricted area of the Society's website.
- the nominated representative of the school receives the magazine *Weather*.

6. THE FUTURE

As regards clearing-house services, the Royal Meteorological Society will continue to react to enquiries and to requests for information. Answering these enquiries and requests can be quite time-consuming. The approach of the Society has been to streamline the enquiry service as much as possible by the production of informative leaflets that are available in paper form and on the web. A frequently-asked questions facility will be added to the Society's website soon.

The Royal Meteorological Society has an important rôle in active outreach to schools, through workshops for children and educators and Continuing Professional Development for teachers. By means of the School Corporate Member scheme, links to individual schools will in the future become even stronger than they are already. The relationship between the Society and its School Corporate Members can be mutually beneficial. Developed as centres of excellence in meteorological education, these schools may provide trainers and networks for dissemination of ideas and thus enhance the profile of the Society in the wider education community.

Though the Society's educational activities will continue to be aimed largely at schoolchildren, activities and services for adults will continue. The Society will continue to be a significant source of educational material for amateur meteorologists, distributing it through *Weather*, published leaflets and the internet. The Society will also continue to provide advice on careers, as well as advice on meteorological qualifications. In co-operation with others, the Society will continue to provide advice to the public, thus enabling them to understand and make better use of meteorological and climatological services of all kinds.

The Education Resources Manager currently receives each year approximately fifty requests for information about on-line or correspondence courses which lead to qualifications in meteorology. No such courses appear to exist in the UK, which suggests there is a niche for distance-learning courses. The Royal Meteorological Society has no plans to offer such courses. Delivery of them would require considerably greater human and financial resources than the society is likely to have at its disposal in the foreseeable future.

7. CONCLUDING REMARK

This paper reflects the experiences of the Royal Meteorological Society over more than a century of promoting school and popular meteorological education (see Walker, 1993). What has worked for this Society, though, may not necessarily for another. In the words of the First International Conference on School and Popular Meteorological Education (page 249):

Climate, cultures, educational systems and other local circumstances vary from country to country. So, too, do approaches to meteorological education. Accordingly, a teaching technique which is appropriate in one country may not be in another. Nevertheless, there is much in education that is generally applicable.

8. REFERENCES

- Walker, J.M. (Ed.), 1985: *Weather Education*. Proc. First International Conference on School and Popular Meteorological Education (Oxford, UK, July 1984), Royal Meteorological Society, 264 pages.
- Walker, J.M., 1993. The educational activities of the Royal Meteorological Society. Part 1: Medals and Metmaps. *Weather*, **48**, 2-7. Part 2: Soap bubbles and sophistication. *Weather*, **48**, 34-40.