Mathematical Education on Merseyside

Beginnings

Mathematical Education on Merseyside represents the coming together of groups and individuals sharing an interest in promoting the wider enjoyment of mathematics. The participating groups and individuals are drawn from the University of Liverpool, Liverpool John Moores University, Liverpool Hope University College, the Liverpool Mathematical Society and teachers in schools.

It was in the 1970’s that the need was recognised for a forum for the exchange of information and for a vehicle for collaboration between the groups listed. To meet this need, Mathematical Education on Merseyside was established with Professor James Taylor as President and Dr Ian Porteous as Chairman. When at an early stage James Taylor moved elsewhere, Ian Porteous was elected President and continues in this role at the time of writing, 2005.

The partnership approach

Our approach includes a number of partnerships with colleagues from the groups listed, with undergraduate and postgraduate students, with recent graduates now working elsewhere, with teachers in schools and indeed with school students.

The partnership approach facilitates inputs of expertise and experience not otherwise directly available to any single group. The providers of these inputs are able rightly to share in the satisfaction of the success of the outcomes.

Background

Principal activities drawing from these partnerships include;

- since 1991, Masterclasses for school years 8 & 9 – in association with the Royal Institution of Great Britain - held fortnightly on Autumn Term Saturdays.
- since 1999, in through the Liverpool Mathematical Society a “FunMaths Roadshow” with graded content suitable for groups initially from years 6 & 7 but now progressively extended through to the GCE A level/Higher Education entry interface.
- since 2000, a University of Liverpool-based “Maths Club” for years 10 & 11 held monthly on Autumn and Winter term Saturday mornings.
- since 2003, participation in SETNET events.
- annual competitions, “Challenge” for years 7 & 8 and “Senior Challenge” for years 9 & 10 respectively.
- also an annual competition through the Liverpool Mathematical Society, “Open Challenge” primarily for years 10 & 11 but entrants from earlier years are welcome.
- a newsletter, the MEM Orbiter, compiled and circulated by the local coordinating group to all secondary schools and interested primary schools over a wide geographic area. It is now also available on the internet.

Acknowledgements

The input of the many individuals who have contributed and continue to contribute to the success of these activities is gratefully acknowledged.

Also gratefully acknowledged is the generous financial help and support received from our sponsors. For 2004-05 these were

- Alliance and Leicester Commercial Bank
- Mercer Human Resource Consulting Ltd
- Royal & Sun Alliance
- The Holt Charitable Trust
- W.H. Smith Ltd.
- Liverpool John Moores University
- Liverpool Hope University College
- The University of Liverpool

For the last two years much of the outreach work has been supported by a Widening Participation grant as well as by a PPA grant from EPSRC.
Commentary
The Masterclasses programme is a collaboration principally between colleagues in the three higher education institutions. Hosting the classes is shared between the institutions.

The Maths Club was set up within the university at the insistent request of able pupils who had completed their programme of Masterclasses. It is designed for Years 19 & 10, though many in earlier and later years benefit from the activities there. The idea is to present challenging mathematical material, which is nevertheless close to the school syllabus, to enrich the mathematical experience of those attending.

The FunMaths Roadshow was initiated in 1999 by the long-established Liverpool Mathematical Society with strong representation from the higher education institutions, but also crucially involving serving school teachers. The aim was to introduce pupils of all abilities in top junior and lower secondary classes, including pupils with special needs into the joys of mathematics in such a way that everyone succeeds. Colleagues from neighbouring institutions, undergraduates, postgraduates and trainee teachers helped to create the programme and to take it out to schools over a wide area, reaching over 100 schools (about half junior and half secondary) in the first year. Every two years since then the scope has been extended progressively to older groups, this year to year 13.

FunMaths Roadshow material and Senior Challenge questions and answers 1980-2003 are available on CDs.

Review
The response to all the activities has been overwhelming. There have been no cases at all of misbehaviour. Every participant including those with special need remains “on task” for the usual 60-75 minute session.

Support for Masterclasses and the Maths Club remains buoyant. Some Maths Club members travel up to 100 miles to participate.

The Roadshow has proved popular not only in our region of England but also in Scotland, Wales and the Isle of Man. Material was published on a CD in 2003, leading this year to versions in Welsh, Scots Gaelic and French. Schools are wishing to use this material for cross-curricular teaching.

There are international aspects as well. Staff and trainee teachers from a neighbouring institution have used the material in Northern India and in Southern Africa.

Achievements
Excellence
- Nationwide demand for Roadshow materials and visits.
- Roadshow material in use for outreach from four universities elsewhere in the UK.
- Individual Maths Club former members have a notable record of academic achievement.

Value and benefits
- Opportunities for prospective students to meet staff in non-competitive situations, both in schools and within the participating institutions.
- Local mathematical education professionals working in collaboration.
- Mathematical activity for school students of all abilities at all levels in a non-judgmental context.
- FunMaths Roadshow materials used nationally and internationally.

Current new developments and different approaches
- Collaboration with specialist schools – in mathematics and in languages.
- Possible future versions of the CD in German and in Spanish.

In conclusion
We believe that:
- our partnership approach is a source of strength,
- the Roadshow is unique in range of material and in cost-effectiveness,
- all our activities, as described, have proved successful in achieving their aims.
The Roadshow – further details

During the last two years the Roadshow Committee of the Liverpool Mathematical Society has comprised Ian Porteous (chair), Ken McKelvie (active in MEM since its inception), Mark Holland, Chris Sawer, Michael Jones and Michelle Thomson, with assistance also from Mark Hollingworth and others.

Mark Holland was responsible for involving Manchester University in Roadshow activities when he held a PostDoc position there in 2002/3, and there has been strong collaboration with Barbara Grundy and John Begg (previously of UMIST) since then.

Chris graduated from Liverpool University in 2002, subsequently studying for an MSc in Computing at UMIST. Michael and Michelle graduated in 2004, but joined the Committee a year earlier, having been recruited by Mark Holland, when he was teaching a module at Liverpool University.

During the summer of 2003 there was a thorough revision of the existing Roadshow material (Boxes 1 to 8) and, thanks to the expertise of Chris, everything was put on a CD, replacing the earlier paper version. This has been available since then from Liverpool Hope University College.

During the summer of 2004 new Boxes 9 and 10 were created, aimed at the Sixth Form/University interface. The material was trialled first at a Maths Club session, then at UCAS visits at Liverpool University, but the final trial was in February 2005 at Runshaw College, Leyland, jointly with John Begg from Manchester University. This FE College currently has over 500 students taking A level Maths modules, and we saw over 300 of them in four 75 minute sessions of about 80 students each time. The material was very well received.

Michelle is now studying for PGCE at Chester College and earlier the same week she arranged for herself and three fellow students to take Boxes 1 and 2 of the Roadshow to Blacon HS, Chester, for use with Year 3 pupils from neighbouring primary schools – the very first time that Year 3 pupils have seen the material. This also was a complete success.

Finally on the Friday of that same week Michael joined Ian in taking the Roadshow to a group of asylum-seeker teenagers at an ESOL class at Liverpool Community College. Again great enthusiasm. The star pupil was from Mongolia, a few months previously found alone at Liverpool Airport with nothing and no English.

The LMS became an associate of SETNET in 2003, and we have regularly been involved in activities of the Greater Merseyside SETPOINT since then, mainly at Anfield, but recently also at Manchester University. The North of Scotland SETPOINT has used Roadshow materials for some years. In the summer of 2003 Ian demonstrated the Roadshow to East London SETPOINT, while in October of that year Ian and Mark Holland demonstrated the Roadshow to Hertfordshire SETPOINT at a school in St Albans, and we recently heard that the material is to be used in schools all over that County. As this report is being written Michael Jones is presenting the Roadshow to ten schools across Belfast during two weeks at the invitation of Northern Ireland SETPOINT.

Other Languages

A Welsh version of the Roadshow has been in preparation for some time by CYNNAL in Caernarfon and during the last few months trials have been held at St Asaph, Blaenau Ffestiniog and Caernarfon, with a view to publication this Easter.

A Scots Gaelic version has been commissioned by North of Scotland SETPOINT, and that is now completed, though not yet trialled.

A French version is almost ready, with Boxes 1 and 2 already trialled at two Primary Schools in Lancaster, in association with Ripley St Thomas C of E High School, now a Languages Specialist College. The material was received by the year 5 pupils with great enthusiasm.

Websites