The Mathematics Learning Support Centre at Loughborough University

Tony Croft ▪ Maths Learning Support Centre ▪ Loughborough University

Abstract

The Centre was established in 1996 within the Department of Mathematical Sciences in order to underpin the Department's service teaching commitment to engineering undergraduates. In the first instance funding had been made available through an internal university learning and teaching initiative for a period of two years. Because of its early successes the Centre became a permanent feature in 1998 and now serves any student in the university who might benefit from additional resources, over and above those normally provided, to help them in their learning of basic mathematical techniques.

The Execution

In 1996 forward-looking members of the Department of Mathematical Sciences secured funding from an internal university learning and teaching initiative sufficient to open a Mathematics Learning Support Centre. The main reasons for doing this were to underpin the substantial service teaching commitment of the Department to engineers, and to recognise a deteriorating situation regarding preparedness of many of these students for the mathematical demands of their programmes. A full-time manager was appointed with the task of developing the Centre, initially for the period of two years. Prior to the appointment of the Manager, space was made available within the Department sufficient to accommodate the Centre itself and an office for the Manager.

In October 1996 the Centre opened, drop-in surgeries were started from the third week of the autumn term, and a vigorous programme of advertising was undertaken to raise awareness amongst first year engineering students. At the same time supporting materials were either purchased or developed in-house. These included supporting computer packages such as Transmath, Mathwise, various GCSE and A level items of software, videos etc.

Almost immediately the Centre had a positive effect on the student experience. It also became apparent that many of the resources available to support engineering students were also highly relevant to the physical sciences, mathematics, business and economics. Before the end of the initial two-year period a decision was made in the University to establish the Centre on a more permanent basis and to fund its management by top-slicing all three faculties in the university according to student usage. This formula has remained in place since then.

A wide range of supporting mechanisms are available. Drop-in surgeries are staffed either by the Manager or by other members of staff from the Department of Mathematical Sciences. Leaflets are available covering a very wide range of topics.

A variety of pre-sessional materials have been developed. For example, An Algebra Refresher is a booklet which is sent out to all honours and joint honours mathematics students during the summer vacation. Recently the booklet has also been sent to some groups of engineers, and physicists.

What Support Was Needed?

The Centre, since its inception, has been managed by an experienced university teacher, who has prior first-hand experience of the difficulties non-specialist students face in getting to grips with the mathematical demands of their courses. No staff training was available in the early days; with hindsight this has been a weakness and is one which is being addressed in part now. Consideration is now being given to offering staff development sessions for academic staff in other departments to help them to introduce supporting measures within their own teaching.

The Barriers

One of the barriers has been a reluctance on the part of many students to seriously engage in a program of remedying deficiencies in their prior knowledge, even when these are pointed out through diagnostic tests or poorly-graded coursework. Internal pressures on staff to engage in research activity rather than devote time to learning and teaching developments has meant that it is difficult to change patterns of teaching to cope with the more diverse student entry.

The Loughborough Centre was well-endowed in the first instance because the initial grant was sufficient to provide, amongst other things, a number of computers and software. However there was no recurrent grant other than a token amount to cover day-to-day expenses such as printing costs. Consequently, it has been impossible to plan a hardware renewal or maintenance strategy.

The Enablers

A great deal of work was done, especially in the early days, to promote the Centre around the university and through all of its support mechanisms, e.g. the counselling service, the university's study skills unit. The university's undergraduate prospectus has a piece on the Centre and includes a photograph. Together these have resulted in a relatively high level of awareness amongst the student body in general and amongst engineers and mathematicians especially. In addition packs of information were provided to admissions tutors for use during the induction process.

Evidence of Success

An important source of evidence is usage statistics. In addition to knowing the total number of students who have visited the Centre for help it is useful to distinguish between different programmes and different departments from which students have come. At the Loughborough Centre 'Comment Cards' are available which students can complete and deposit in a box in the Centre. Another source of evidence of success is the External Subject Review (or Teaching Quality Assessment). This is particularly valuable in that it is external. During the past few years a number of these have taken place and students have reported to assessors on the quality of service that they have received from the Centre.

How Can Other Academics Reproduce This?

Establishment of a Centre is not a trivial task and requires a major commitment from the university. It will require the determination of a staff member to raise awareness of the need in his/her department and to convince the relevant authorities of the benefits of such a Centre. A sympathetic Head of Department will be able to move things forward. On occasions sources of funding do become available for learning and teaching initiatives and it is important to look out for these. It is important to build up a network of allies who will support applications for funding in this area – for example colleagues in engineering or the Business School who are aware of the mathematics problem, colleagues in Study Skills Units and other support units. If significant sources of funding are not available, a keen member of staff could start a low-key operation, especially now that the LTSN Math, Stats and OR Network is making a range of resources available to facilitate this.

Quality Assurance

The Centre at Loughborough has a management committee which now meets once a year. In the early days it met more frequently and helped to guide the manager. It can act as a conduit through which information can be passed to other parts of the university. One of the frustrating experiences of running a Centre has been that, by and large, the Centre has tried to respond to a problem, rather than be able to influence in a significant way what is taught and how it is taught.

Other Recommendations

The main recommendations would be, that if a Centre is to exist at all;

- Ensure that adequate administrative and technical help is in place, and sufficient funding is available to enable an on-going staff development programme.
- Be very clear about which students in the university are entitled to use its facilities.
- Be very clear about the sorts of questions you will deal with and which you will not.
- Be clear about boundaries. For example, we have recently offered a special service to students who are registered as dyslexic. The English Language Study Unit do likewise. We have had to be very clear about what the tutor can and cannot do, for example she has been told not to receive or comment upon assessed coursework attempts and this is made clear to students during their first visit.
- It is strongly recommended that a number of staff are involved in a serious way so that the load is shared, and there can be a common purpose.
- It is essential that adequate administrative and technical support is available.
- It should be made clear to the university authorities that a support centre alone cannot solve the very many deep-rooted problems caused by an inadequate mathematics education system.

References

A Guide to the Establishment of a Successful Mathematics Learning Support Centre, *International Journal of Mathematics Education in Science and Technology*, 31(3), Croft, A. C., (2000).

Mathematics Learning Support Centre; http://learn.lboro.ac.uk/sci/ma/mlsc/; (16-09-02).