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# **The Social and Technical Infrastructure for the Virtual University in Rural Areas**

**by John O'Donoghue**  
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## Abstract

Rural Broadnet is funded by the HEFCE under a widening provision programme which is designed to increase access to higher education for groups within society who traditionally suffer from poor access. The project's brief is to widen HE participation in rural areas utilising, where possible and necessary, an information technology infrastructure. The project's programme is needs led and characterised by community level partnerships; it does not aim for high specification hardware, software or communications technology. Its focus is to facilitate delivery of education, training, information and advice to local rural communities using technology which is accessible to, and affordable by, those communities. Particular target groups are the unemployed, women returners, older people, the 16+ age group and those on low or negative income. Local businesses, mainly agriculture-related sole traders, with low skill levels and a poor tradition of training, are also seen as a target group.

This project differs from many others in that it has focused on communities, has identified local needs and attempted to meet those needs, rather than simply imposing the established University 'learner' model. A number of locally based and managed IT centres have been established, and these support a diverse range of course delivery and learning materials, from basic word processor use to Internet access and web site development. The Rural Broadnet team have become facilitators of a negotiated, student-centred learning experience which is supported at the local level by collaborative partnerships involving community groups, voluntary sector organisations, training providers and other agencies.

## The author

### JOHN O'DONOGHUE

My educational experience spans some 23 years from teaching in a social priority area school, post graduate lecturing, advising and consultancy for local education authorities to my last position as a senior education officer with Berkshire education department.

In 1990 I became involved, whilst with the University of Keele, in preparing a distance learning module on the management of information systems. This is a fundamental component of their M.B.A. (Education) course. I am still involved in the delivery of the course and the presentation of seminars at the residential weekends.

I have long been an advocate of the 'global classroom' and have developed an active research link, funded initially by The British Council. This has enabled the development and application of computer technology within Russian schools. My visits to the former USSR have been to instigate a collaborative study of the application of computer technology to enhance and enrich the curriculum. Exchange schemes for students/lecturers have also been instituted as are the joint publication of research papers in both countries.

In 1991 I was granted the position of Honorary Research Fellow from the University of Keele. This was a non-funded position enabling me to continue on behalf of the University to further my research in Russia and the CIS. In August 1998, I was invited to join a team of researchers as part of a UNESCO funded project. The emphasis on the research is on the use and development of technology in educational applications in Russia.

In 1998 I became a Visiting Research Fellow at the University of Wollongong, Australia. The role was in the development and delivery of flexible course material via multiple media - to include CD-ROM, Television, Radio and the Internet. I continue to work as a consultant to a number of Australian projects and have presented a paper, subsequently published by ASCILITE (ISBN 0 864 18 552 9 - Australasian Society for Computers in Learning in Tertiary Education) on 'Virtual Universities' via a video conference to a major conference in Sydney.

I have written and published extensively on the use and exploitation of the information in information technology and have been responsible for the development and implementation of a number of delivery platforms.

## The social and technical infrastructure for the virtual university in rural areas

Rural Broadnet, funded by the HEFCE for four years to 1999 as a widening provision project, has a brief to utilise information technology to overcome the barriers, particularly of distance and isolation, faced by rural communities in accessing education, training and associated advice, guidance and information. Our target area allowed us to consider the whole of the Marches, but initially effort was directed to part of south west Shropshire. Target groups were those deemed to be in greatest need; women returners, older people, the 16+ age group and those on low or negative incomes. Local businesses were also seen as a target group, particularly small farm businesses where there is little tradition of in-service training.

Our methodology drew both from Community Development and Andragogy. From the former, we laid great emphasis on locally identified needs and working partnerships with existing local organisations to meet those needs. From the latter we took the ideas, articulated by Knowles (1990), that adult learners can, with support, identify their own learning and training needs, that they are self-directed and prepared to undertake learning episodes, particularly where these contribute directly to their current life needs.

Shropshire is a large county on the border with Wales, it is predominantly rural and much of the south is rolling hill country. Population spread is at half the national average density and until recently has declined. The south west of the county, where we are based, has amongst the lowest population density in the country. Wolverhampton University has a campus in Telford and there are FE colleges in Telford and four widely spread market towns, including Shrewsbury. In rural areas the impact of social, economic and technological change has meant that most local employment is agricultural based or sole trader. Agricultural decline has allowed for 5b status in the border areas but economic development initiatives must compete with superior funding available close by in Wales. The Wolverhampton Business School Study of local business in the area indicates low skill levels, including in IT, among the local work force and low participation rates in training. Recent figures from Shropshire Chamber's Household Survey show a 10% drop in numbers trained within the Shropshire workforce over the last year and also indicates that less than half the workforce in Shropshire consider themselves well qualified in I.T. There are generally low participation rates in 16+ education and a high level of outward migration of the 16+ age group. There was a perceived need to apply information technology to address some of these issues for, as Parker points out (Parker E. et al 1994), not only do telematics applications have great potential for assisting development in areas such as education or in specific industrial sectors, but the failure to continuously innovate and adopt telematics applications may further undermine economic competitiveness or curtail the social chances of rural dwellers. What was being sought was not a change in 'attitude' but an enlightenment as to the potential advantages of technology 'enhanced' education opportunity.

The first phase of the project has been to work with local organisations on the planning, implementation and development of two local IT Centres which have training, education and economic regeneration functions. The two centres are very different. The Vron IT Centre is situated in the newly built Community Centre at Newcastle-on-Clun a hamlet of 133 people remotely located near the Welsh border. The village has a primary school, parish church, shop, post office, village hall and public house and is a centre for surrounding villages. There are three buses per week to different destinations but no bus to Bishop's Castle, ten twisting miles away, where the secondary school provides the nearest community education programme. As well as the Vron IT room, the Community Centre houses a Children's Centre for pre-school services, a meeting hall, youth room, bar area and is used by a variety of local groups. An outdoor bowling green is also under construction. The Vron Centre has five Pentium computers networked to a printer, provided on loan by Wolverhampton University. There is an Internet connection and ISDN2 communications. The Vron IT Centre has run

in its first year entirely on volunteer support. The Community Centre, constituted as a Charity, is managed by a Management Committee of local people who have submitted an application for a 'not for profit' charitable company status.

Bishop's Castle is a small market town, close to the Welsh border, with a population of 1600 people. The town serves as a local centre for a sparsely populated and hilly rural hinterland, and its facilities are used by some 9000 people. The Bishops Castle IT Resource Centre is a project developed from the local Rural Challenge programme with the active support of South Shropshire District Council and other local organisations. It is housed in a large converted factory building which comprises offices for local agencies and businesses and 6 small business workshops. A further complex of offices and workshops, close by, is also part of the wider project. Staffing of two full-time and two part-time posts includes the Manager and Caretaker who have responsibilities for the wider project. The IT Centre has ten Pentium computers, networked to a server and two printers. There are also colour and black photocopiers, scanner, two Internet connections, with ISDN2 communications, fax and other minor equipment. The Rural Challenge appointed Management Committee consists of representatives from the local Council and other local agencies.

Both IT Centres function so that computers may be booked on a drop-in or hire basis. Both run a range of training courses from introductory courses for non-users through to courses for specific software programmes or targeted at specific groups such as business groups. The bulk of current training is conducted through traditional pedagogy, using face-to-face tutors, with a small amount of self-directed work from paper packs, disks or CD programmes. Training courses are tailored to meet demand with recent local evidence suggesting a felt need for 'managed learning' with appropriate support. In coming months, Rural Broadnet will deliver educational guidance and information services by video-conferencing from the Wolverhampton HE Shop to local centres, including a local secondary school. Information on training was sought by 25% of the Shropshire workforce last year, and educational establishments are considered valuable sources of information. Rural Broadnet will also deliver training and education and through off-line and on-line computer delivery.

The training record of Newcastle-on-Clun has been notable in two respects: firstly, evidence nationally suggests that it is more difficult to involve women in IT than men. However experience at Newcastle has been of more female users than male. It has also been true that females have dominated day-time usage, whilst more males than females have used evening sessions. Secondly, recent surveys (Shropshire Chamber of Commerce, 1997) indicate there is both a low level and low take-up of training in small, and agricultural, businesses and anecdotal evidence suggests that local farmers were particularly unresponsive to training initiatives. From the very first day of opening at Newcastle, the level of interest from local farmers in farming software programs and the application of computer technology to farming was high and has remained a constant feature. Almost all courses are fully subscribed at Newcastle.

The high level of response from women and farmers would seem to relate directly to the role of the Village Hall, now known as the Community Centre, and the local social networks in which it is centrally located. The Community Centre and most of the organisations affiliated to it are run mainly by women. Many of these women are farmers or farmers' wives whose role is crucial to the running of farms. Local research has identified training needs in farm accounts and areas of farm diversification such as hygiene requirements for bed and breakfast business for local women.

In this close knit community, the fact that the Vron IT Centre is located on familiar territory and is under local community control has given the whole community an entree. The local Community Centre is clearly a non-threatening environment. Local networks have facilitated that highly prized 'word of mouth' promotion, sometimes in advance of events. The fact that many community groups use the Community Centre has led to other valuable cross-fertilisation. For example, an informal encounter with the 'Cameo Club', a group of older people, led on to a visit and a series of well-attended training sessions for members of this group. Much of the training undertaken at Newcastle

has been related to agricultural business needs, introductory work followed by work on standard wordprocessing and spreadsheet programmes. There is also an intention to develop appropriate skills for purposes of setting up a teleworking facility.

Bishops Castle IT Centre has been successful in the face of some negative dynamics in its planning and early development phase. Some elements of the Rural Challenge Programme were controversial, including the location of the IT Centre at Enterprise House. Other groups were considered to have strong prior claims to such a facility, the local secondary community school with a history of community education and training, including IT, and a local Trust with strong IT track record. The development of an independent IT and Business Centre was viewed by some as unnecessarily expensive, unrelated to local needs and unresponsive to local initiatives on the ground. The opening, managed by Rural Broadnet, was deliberately low key but early training sessions recruited well and the Centre has been well received by the local community.

Unlike the Centre at Newcastle, the Bishops Castle IT Centre is not an integral part of the social fabric of the town. On the contrary, it is a project which has to develop new traditions, new patterns of behaviour within the local community. The Project is new, and the concept previously unknown, consequently it cries out for strong marketing images. However, it must promote its work with careful complementarity with the community secondary school. Outright competition would be frowned on by a community anxious to preserve its school. Work with business is being targeted: a range of introductory courses for small businesses is recruiting well and a parallel business support scheme is in place. Of registered users, 25% are self-employed matching the number of sole-traders registered in the area. Evidence indicates that the self-employed have higher levels of qualification, work longer hours and thus have less time available for training. A local centre offering courses may therefore encourage this group to take up training opportunities. In its first year of operation the IT Centre is still creating its market niche. The long haul to sustainability lies ahead.

Whilst both Centres seek to achieve a certain level of 'sustainability', the issue is perceived in different contexts. Bishop's Castle (BC) work to a clearly defined profit oriented objective, whereas Newcastle's community supported Centre work on a cost recovery basis. BC have targets which imply considerable market development, but with a wage bill of £40,000+ pa self-sustainability is not an easily achievable goal.

Newcastle, managed in its first year purely by volunteers, has from prior to its opening been seeking funding to employ a centre manager. These attempts have been unsuccessful. The toll of running solely by volunteer effort, particularly when this does not form part of the philosophy of the management, has been considerable. Some individuals have been put under great pressure, others have exited the project. A salaried manager will be appointed in the autumn for a nine month period only. Other funding bids have been made to continue a manager post but the long term objective is sustainability underpinned by revenue generated from a community based Teleworking company. Without a manager, overheads at the Vron Centre are relatively low, generating the money required to pay a manager may prove an ambitious objective.

Rural Broadnet has initially opted to work with community based centres rather than with existing, traditional adult/community education providers. This model of matching technology with organisational needs is supported by current research which suggests that the technology is adapted to serve the organisational needs and constraints i.e. the environment and user community are the 'drivers' not advanced or innovatory technology. (Thompson D.M. et al 1998). However there is no one model for collaboration with such organisations and relationships tend to lack the clarity of more clear cut professional models. Issues of personal interaction may come more to the fore and other local factors may influence progress.

The second phase of Rural Broadnet's programme involves three elements: the development of technical networks via video-conferencing and use of Internet and Web Sites to allow for the

extension of the Virtual Campus within this rural area; the development of wider networks of contacts; the dissemination of educational guidance and information and HE and pre-HE learning materials via these networks. All these elements are seen as beneficial to enable the development of the 'Complete Learning Environment' (Hearnshaw D., 1997. Merali Z., et al, 1996)

Additionally, The Rural Schools Broadnet, run in collaboration with the LEA, will interlink with these other networks. It will focus upon use of the Internet and Web Sites to develop external links and a broad range of initiatives in relation to the work of designated schools, including their involvement with adults and community. This is particularly for the development of 'virtual learning environments' which are generally outside the scope, experience and understanding of mainstream pre HE. Clearly such developments will necessitate a change in the teaching and learning culture, (Fox, M., 1997). Other collaboration, to support the IT needs of local communities, voluntary projects and businesses, offers the potential to develop a host Web Site for a wide range of community information. This may combine training information and a wider range of community information from local government and voluntary agencies. The support and development, at local rural community level, of teleworking and agricultural support services within the county may also be facilitated via the Web Site and other means. Thus the Virtual Campus may be brought closer to this specific local community by linking it to other services controlled and originated from within that community. Technical issues pose a number of problems for distance rural locations. Technical support in the field, and user training for staff and students, is required for the range of problems routinely experienced with hardware and software, including video-conferencing systems. It is possible that the required level of technical expertise may become less of a priority over-time as development produces IT systems capable of technical management from one central location and which are available at affordable prices, such developments would have particular significance for rural areas. Routes for connection to the Internet can be very slow and unreliable, raising questions about the nature of infrastructure connections. Shropshire suffers from a lack of adequate provision and this remains a priority for the County IT Strategy, with an ambitious objective to install broadband communications into almost 50,000 domestic and business addresses by 2001. Present reality is that the installation of ISDN has proved to be slow and problematic from the supplier side.

The technical needs of local rural centres are for solutions with low running costs and, given poor local infrastructure, capable of being run on low technology connections. There is a growing user realisation of the potentially high scale of cost that the application of ISDN, if available, may incur for switching equipment, multiple line installation.. Such factors may dissuade some rural centres from the use of real-time audio-visual work in information technology communications systems. New hybrid developments, for example, involving use of digital telecommunications and low cost Internet access arrangement, may facilitate the long-term provision of viable systems for delivery of training materials, educational and community information. However, technical developments, without adequate attention to developing appropriate social infrastructure arrangements within rural areas, is likely simply to exacerbate the gap between the educational and technological 'haves' and 'have nots', will simply reinforce the exclusion of disadvantaged social groups. In rural areas at least, particular attention needs to be given to utilising local social networks, as at Newcastle, whether they be networks for young people, women, particular occupational; or other groups, in order to widen participation in education and training, as Dearing proposes. Whereas secondary schools represent a valuable local resource for ICT and other education and training purposes in rural areas, they are not ideal training centres for the 16+ age group and for disadvantaged adults who have often had negative experience of schooling. There is an argument for even more localised small rural centres, as at Newcastle, for the delivery of education, training and information.

The development of social and technical networks in rural Shropshire make the achievement of an effective Virtual Campus possible. Such a campus may be closely linked to the local community via established local centres and by virtue of interconnections with other parallel community information services meeting the needs of different sectors within the community. Such a vision requires a

multitude of partnerships from schools, FE sector, community, voluntary, local governmental and business organisations. If it is to prosper and be sustainable long term, it requires appropriate technical solutions to meet the user requirements of such a system. The vision offers compelling possibilities in a post-Dearing age. Pressures to rationalise Higher Education, combined with Dearing's impetus to wider access to the HE experience and greater literacy, the application of HE expertise to the University for Industry and the National Learning Grid initiative, all point to the future importance of IT or ICT based open, flexible and distance learning systems and environments.

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