

Community Computers in Connection with the Welsh "Local Jigsaw Campaign"

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Summary

1 Environmental education does not have validity unless it also involves educating to change the human environment for the better. This involves promoting an understanding of processes and skills by which this can be done by participating citizens.

2 It also requires the presentation of an environmental ethic, and knowledge of the ecological basis of life as a foundation for environmental value judgments. Community education should therefore equip people to answer, and act upon, the following questions; what is good and bad about the environment and why; what is missing from it, and what is superfluous; what could be done to improve it; is it harsh, soft, hostile, friendly, man-scaled, dramatic, relevant to modern lifestyles; what are the factors for change and stability?

3 All of these objectives could be achieved by the organisation of local community monitoring groups to establish a permanent organisation in their town or village to foster active participation in local environmental management. Such groups would have the tasks of delineating the needs of the community and the opportunities for the community to take effective action directly, or by encouraging others to address needs and opportunities identified. A 'community office', preferably with a dedicated microcomputer, would make these tasks much less of a burden to local volunteers.

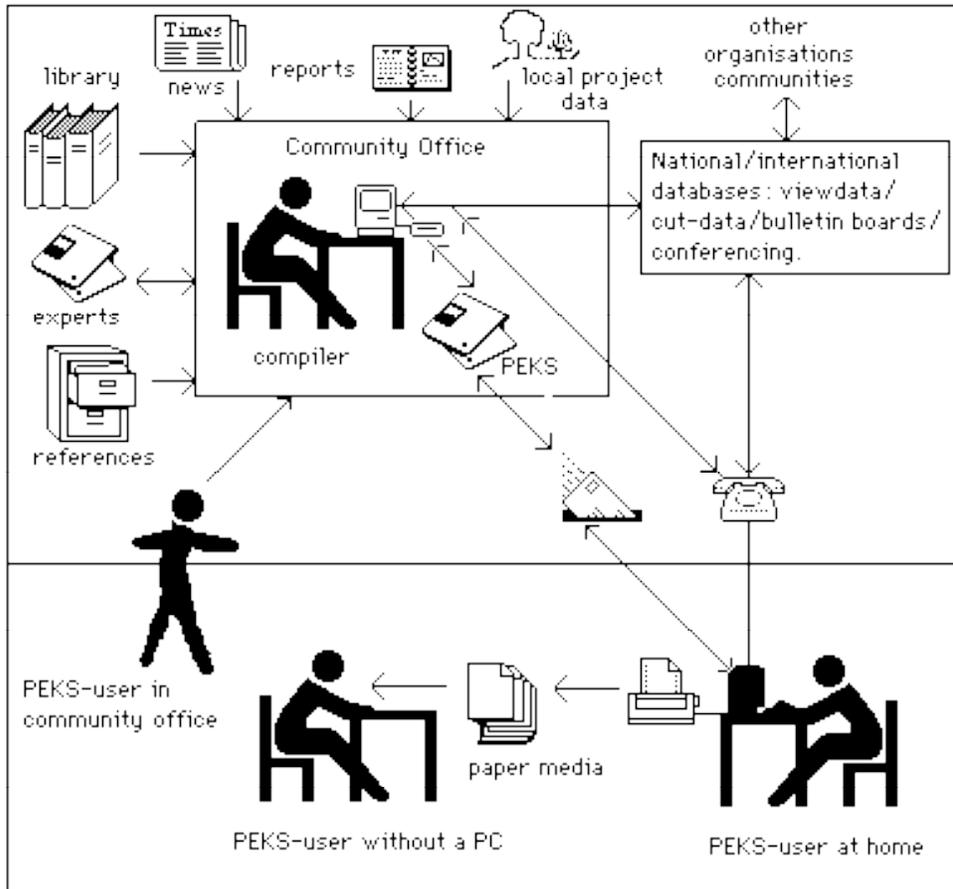
4 People concerned with local action create groups which quickly generate a need for an 'office'. The problems in establishing and maintaining an office routine can be major limitations in realising local action plans. The proposition is that computer literacy may be strategically developed alongside community offices which arise in response to grass roots activities. A community office, as the centre for community action, would introduce people to the uses of microcomputers for carrying out routine office and community tasks. It would also provide a packaging service to turn public domain information, emanating from local authorities and environmental organisations, into user-friendly databases for local use. These two activities are complementary in that computer literacy generates a need for appropriate information packs, and vice versa.

5 The required training would involve wordprocessing, creating databases and spreadsheets, communication by modem, simple desk-top publishing, and the production of elementary information management systems based on hypermedia software. The training programme could be designed so that the skills learned, and confidence gained, would not only be used in the service of the community to collect and disseminate information of local significance, but also introduce IT skills to members of the community relevant to the job market, and further education.

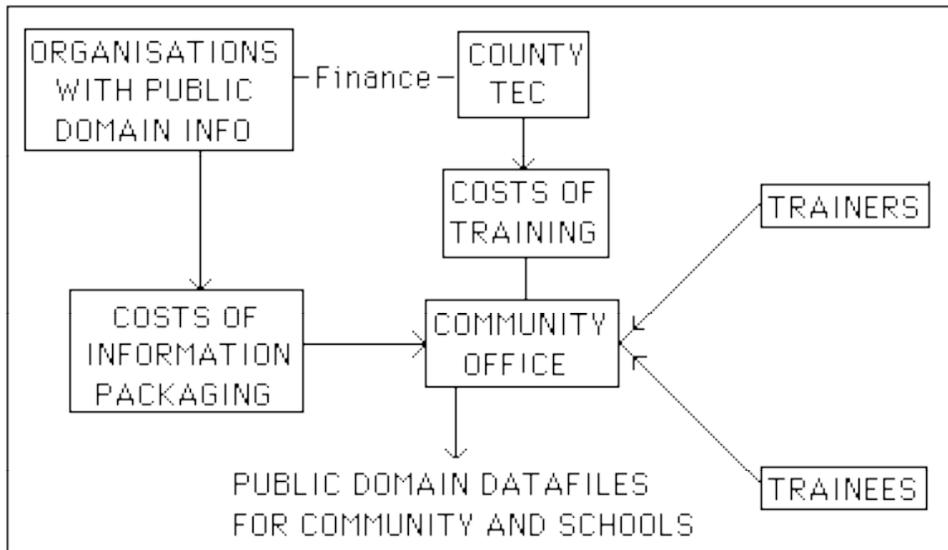
6 Suitable software packages would consist of information generated by local people, and that provided by governmental and commercial organisations, such as council minutes, annual reports, structure plans, bulletins and broadsheets. The information would be packaged electronically using commercial software shells to create user-friendly searchable databases, and reporting systems, of value to all individuals in the community.

7 The local secondary school offers an ideal base for a community office. It will have the necessary hardware and training skills, and, taking the view that community and school are one, families can focus on the school as a community resource to support environmental appraisals.

8 Summary Fig 1 A community informatics system producing portable environmental knowledge systems (PEKS) to involve local people in environmental and conservation issues



9 Summary Fig 2. A community system for funding training and data packaging.



Prologue

Local government planning exists to solve community problems, but it was only in 1969 that central government, in the Skeffington report "People and Planning", recommended the setting up of machinery for the public to participate in planning and the teaching of planning in schools. From this time it became urgent to find methods of involving the proletariat actively from grass roots in questions of environmental policy.

The objective of this paper is to demonstrate how community initiatives may be coordinated by promoting computer literacy as a means of helping people to deal with local environmental and conservation issues, thereby raising local levels of IT skills.

Major Factors Limiting Local Action

An environmentally conscious society will not be created by passing legislation and developing environmental protection policies based on scientific soundness and sociological platitudes. Preservation of a quality environment will only become a reality if we can develop broad citizen understanding of the short-range and long-range objectives of sound environmental management, and citizen acceptance of the personal commitment necessary to achieve those objectives. The gap between goals and actuality is the one to be filled by a local environmental knowledge system, which not only includes information about heritage and ecological management, but also about the organisation of society and methods of government in decision making.

This was the perception of Patrick Geddes a century ago, who defined environment as the result of an interaction between 'place', 'work' and 'folk'. He proposed that education and the exercise of citizenship go hand in hand, bound by an environmental philosophy, and should be expressed practically in the methods of civic and regional surveying. Unfortunately Geddes' civic orientation of environmental education came to be mistaken as a synonym for "ecological conservation education", and its community impact became dissipated in a multitude of overlapping approaches.

There has been little progress toward the kind of community education that is needed. There are some excellent programmes available; but these represent only segments of a continuum - only segments, because most of the programmes and materials so far produced have stemmed from some individuals' or groups' need to promote their interests. The materials, however well-intended, are in essence public relations materials, not the open-ended total-systems approach needed to educate the public about their environment and its interacting, interrelated problems.

At the other end of the education spectrum, academic courses have not produced the action-education necessary for people to use their knowledge as community volunteers. This, coupled with the fact that professional people tend to move away from the places where they were born, leaves communities bereft of skilled people with a commitment to the local environment.

By far the greatest need is for community perception to be developed for citizens to operate effectively in an integrated spatial and temporal context. A local environment is a set of spatial relationships presenting a mosaic of past decisions taken by private individuals, organisations and public bodies. Yet they are considered to be given and immutable. To counteract this, the environment has to be expressed dynamically in terms of time charts, maps and plans. In this context it has been proposed that graphicacy is a necessary complement to education for literacy and numeracy. There is also a need for elementary environmental literacy (ecosacy?) so that individuals can read their environment by categorising its more significant landscape elements.

Finally, lack of cultural roots, either by ignorance of family history, or inward migration, is also a major factor leading to lack of environmental awareness. Here, the encouragement

of archive skills to provide genealogies and publicise the detailed impact of local history, would help bond people to their landscape, and thereby heighten sensitivity to change.

National Enquiries and Influential Publications

The early 1970s are in many ways a point of reference. The Town and Country Planning Act of 1971 made public participation a statutory requirement for planning authorities. In the same year the Town and Country Planning Association launched the Bulletin of Environmental Education (BEE). In the first issue, Michael Storm urged adoption of a conflict-centred curriculum for environmental studies. This was more concerned with pressure groups and the mechanisms of environmental decision making than with the mere recording of existing landuse.

In 1972 came the Government Report on the human habitat "How Do You Want to Live?" as a contribution to the United Nations Environmental Conference in Stockholm. It stressed that the opening up of opportunities for public participation in decision making would be important to the implementation of all future environmental policies. It demanded an environmental education aimed at developing a local sociobiological picture based on a critical, moral and aesthetic awareness of our surroundings".

A person's surroundings consists of a world of objects and a world of values. The moral purpose of environmental education is therefore to enable citizens to relate to the objects, and understand the values. The Stockholm report linked this task to a form of civic education leading to a more advanced environmental consciousness, which could be expressed through using the political processes governing the creation of the human environment.

There can be no doubt that the need for awareness and participation in environmental decision making by the public is generally recognised. Jean Forbes writing in BEE defined the necessary community centred education as "the study of the activities of people in relation to the physical world around them, and the study of the sociopolitical institutions (e.g. the statutory planning system) which regulates this relationship in the interests of society as a whole"

Years have passed but it is still urgent to establish local environmental awareness programmes concerned with improving environmental quality, aesthetically, culturally, physically, and biologically.

Why Should We Bother?

People need to bother, firstly because the inadequacies of community life and its underused resources will only be overcome by the community itself. There is no doubt that any community has the skills to do this. But it must first recognise certain facts: that it bows to imperatives which can be changed, and that each individual contribution to the community brings satisfaction to the individual as well as well-being to the community.

In particular, youth must be admitted to that role, for like everybody else, young people need the confidence in themselves which will let them realise their particular skills. Significant among these are initiative, enterprise, energy and ingenuity, all of which can be realised in the service of the community. And like everybody else, young people need the confidence to assert that they do not need constant ministrations, only an opportunity to assert their value within the community.

By designing a sociobiological picture of their community, individuals should get answers to the questions: What are the inadequacies and limitations faced by people in our community? 'What are my skills?' 'What have we to offer in our group?' 'How we can apply what we know, in terms of the facilities at our disposal, and the interests we have, for the benefit of others in the solution of local environmental problems.

Local Environmental Appraisal

Ralph Jeffrey, inspired by a book by De Wolfe written in 1964 on Italian towns, was one of the first to advocate a formal system of environmental appraisal to stimulate community participation in local planning. He advocated that this should start with local people making a 'visual enquiry' to establish the local 'spirit of the place' by posing leading questions centred on

- its spaces;
- its decoration;
- its light
- and its buildings.

However, it was not until the 1980s that attempts were made to formalise local environmental appraisal. In 1987, based on several hundred village appraisals in England, 'Action for Communities in Rural Areas (ACRE)' and 'Common Ground', launched a national promotion funded by the Countryside and Rural Development Commissions. This reached Wales in 1988 under the name 'Jigsaw', with the aim of increasing the awareness of local communities in the Principality of issues such as local housing, planning, ecology, culture and heritage. Currently, 'Jigsaw' is based on a local questionnaire designed to make a 'community appraisal', and a 'local map'. The appraisal is a stock-taking of a village, town, or community; its people, its services, facilities, and environment, how it has changed, what is important, what needs improving, and what is lacking. The map is a representation of local feeling about a place, its culture, history, and environment; in other words, its distinctive character seen through the eyes of local people. It can be a map in the conventional sense, but there are many other imaginative ways of presenting what is really a community knowledge design. Furthermore, this knowledge design does not have to be assembled all at once. It makes organisation sense and often meets the financial realities to take up each major element of the environment in separate thematic campaigns; i.e this year might concentrate on 'infrastructure', next year on 'trees', and the year after on 'water' or 'local history'.

The value of a Jigsaw campaign is to produce a corporate identity to the community. This means bringing important elements of the community to a common point of focus, which of necessity will involve the delivery of the necessary education, and training to produce a corporate identity.

Factors Limiting Environmental Appraisal

Colin and Mog Ball in the mid 70s were the first to champion a community approach to environmental education. What follows is an attempt to extend their view of the connection between community studies and environmental action.

The three main factors limiting the involvement of communities in environmental appraisal, and which require funding a permanent organisation within the community, are:-

- the difficulty of making and sustaining links that have to be established between a relatively small voluntary body, and the permanent organisations providing help, contacts, resources and detailed information;
- the lack of knowledge and confidence in establishing procedures for local volunteers to participate and act in environmental appraisal schemes;
- the need for data handling systems associated with a permanent community office (based on the requirements for typing, filing, and telecommunications), to elicit, manage and monitor actions arising from the appraisal.

Difficulty of making and sustaining external links

The Local Jigsaw booklet, from which a community gets its guidelines to set up a village appraisal, presents the volunteers with an awesome list of the expert skills and contacts they will probably need.

To make their appraisal they will require the help of professionals and experts such as photographers, clergy, doctors, health visitors, designers, local historians, the local school and its children, and policy and planning officers.

To fund their activities they have to persuade the local community council to raise a special rate. They have to make sponsorship requests to local businesses, government agencies and trusts for grants to maintain their initiative and carry out their action plans for years to come. Although the County Voluntary Council "is first point of contact which allows you to plug into the system", the 'Jigsaw' guide gives 14 regional and national contacts as sources of help, from the "Countryside Commission" to "UK 2000".

A particular problem here is that Jigsaw is not the only initiative aimed at linking communities and environment in Wales. Local environmental improvement grants are provided independently by UK 2000 Cymru and the Prince of Wales' Committee. UK 2000 Wales also gives grants and provides support training, and is a focus for all voluntary environmental groups in Wales. In South Wales, Gwent Community Design operates a questionnaire system with follow up workshops, and the Welsh Natural Economy Research Unit in the National Museum of Wales supports the establishment of community action groups based on a computer loan scheme, and helps with follow-up sponsorships, to buy a computer for the community.

This brief account of the complex world of local environmental action indicates the importance of establishing a firm physical/secretarial base for the community operations which may be described as a community office.

Lack of Knowledge

It has been said that a failure of our schools is that young people emerge from them unaware of the imperatives governing their local environment and the possibility of changing them; most, therefore, although familiar with global environmental issues, have no confidence in their own ability to make local environmental improvements for the benefit of themselves or others.

Colin and Mog Ball put it this way "Whatever we call home, comely cottage or high-rise flat, we live these days in a built environment. Yet although the fields, streets, buildings where we live and work, and even the very air we breathe, are all made by PEOPLE, they have an iron grip on OUR actions. They are the imperatives which define the scope of our lives. Maybe we are just kidding ourselves when we say that we make and shape our environment: for most of us it is the environment which shapes us. This results in the paradox that, as adults, we are controlled, dominated and harassed by the very environment people have created".

A community design, i.e. 'jigsaw', 'mosaic' 'community map', or 'learning frame' is a conceptual knowledge system produced by the members of the community. It is based on the gathering of local data and information. This is then structured to provide knowledge to encourage 'helping-relationships' between people. In particular, it enables young people, growing up into an adult-made world, to see that it is necessary and possible to change that world.

According to Colin and Mog Ball, the community design is concerned with highlighting these imperatives which limit our lives and the lives of other people, within the small community round about. It is a programme TO ENCOURAGE INDIVIDUALS TO DESIGN THEIR OWN KNOWLEDGE SYSTEM that delineates the places people have made, and the way they and others respond to them.

Aims and objectives

A community design starts from the appearance of a local need for environmental knowledge or know-how. It is rooted in the community. The aim is to create a depth of understanding and awareness of their community in individuals, essentially on a personal (and probably emotional), level which is set in a broad environmental context. This should broaden personal understanding of environmental concerns and encourage altruism.

Expert assistance has to be available to help the community to design a system to, elicit, record and disseminate information collected and compiled by members of the community. . . . Wherever possible local information is complemented by information from other environments, past present and future.

Success is allied to the amount of involvement on the part of local residents. The kinds of involvements required to delineate a community -design are those by which the community can be redesigned by all persons, provided they are aware, confident and knowledgeable enough to do it. Thus, the action plan is closely allied to the levels of local social cohesion and communication skills.

Data Handling

The Total View

Awareness of those factors which govern our lives and the lives of other people begins with the mental design of a 'total' view of the community in which one lives. This view must come from individuals in the community, and not from the organisations which plan and manage the environment.

That means everyone must look afresh at data and information about all aspects of community life. These aspects range from how the community originated, how government/non-government agencies and voluntary organisations work, and what aspect of the individual's life they control, to 'on the doorstep' questions, such as, how easy is it to cross the road, how often do the buses run, are there playgroups, where is the playspace, what can you buy in the shops, where do people live, how many people own their homes, how many rent them, what do they pay and is it worth it? It means finding out where people work, and how economic development affects the community, not just through employment, but also through noise, smell and ugliness. It also means looking afresh at the biological features in the community from the point of view of ensuring that that, as far as possible, people can become familiar with a good range of habitats and wildlife communities. In this sense every part of a community is an SSSI (A Site of Special Social Interest)

The data requirements are related to making a community knowledge-design for individuals to answer the questions: 'How does all this affect me - what controls me, what liberates me?' Although many facts and issues are to be discovered, inevitably they will be focussed on the key issues current in any one community. But from that focus a multiplicity of views and angles are possible.

Inevitably this road to personal knowledge by data handling, undertaken at first from an individual standpoint, will extend to the feelings and knowledge which other people in the community have about life there. This will give each resident's feelings some perspective, and will certainly throw up issues which, being in a certain category of age and experience, they had not considered.

As a community design emerges using these methods, there must be an input of experiences from other communities to give bases for comparison. Too often the the 'wheel' is reinvented by communities working in isolation. Every opportunity should be taken to build on the active stance of other groups, and, in particular, to imbibe the confidence of communities that have moved away from a passive stance.

Local passivity, which has been at the root of many unpleasant social and environmental changes, will disappear in the very action required to design a view of the community, to go out from home or school into other parts of the community and, above all, to communicate with people and organisations.

Follow-up Action

Analysing the complexities of a community to find ways of making improvements gives people confidence to take an active stance on community issues, and formulate long term planning objectives. However, to those individuals involved in grass roots action it is clear

that the needs for a secretariat have been grossly underestimated in all discussions of sustaining community involvement with environmental problems.

In reality the needs of even a modestly active group, are more than can be provided by a volunteer secretary using a typewriter and box file. A well equipped secretarial organisation is vital to the efficient gathering and filing of information. The information required will probably be scattered widely in advice bureaux, libraries, record offices, education departments, county educational resource centres, youth and community departments, county voluntary councils, and planning departments. The secretariat will also have to be able to collect and store many different kinds of information such as statistics, maps, and archives, as text, maps, photographs, and sound. It must have the facilities to make reports, a management system to get the best from people with limited time, and trainer/advisors to allow others to use the facility.

In summary, the success of a community project is allied to the amount of involvement on the part of local residents. It is relatively easy to initiate an environmental appraisal, but to turn this into sustained action is a major problem. Success is closely allied to the levels of local social cohesion and communication skills. Both of these limitations hinge on the community's information infrastructure, which is its major force for making democratic decisions and implementing its plans. Sooner or later, data handling will become a problem and a community group will have to make a decision to make use of information technology. This could be as simple as making use of the FAX machine in a local shop or office, but is more likely to be whether or not to assemble a mailing list on a home computer. It is far better if a long-term view of the advantages of IT to the group is taken from the start. Telecommunications and microcomputers may then be integrated into the committee structure and methodologies required for the initial survey, and, more importantly, into the subsequent action plan.

Community Computers

Managing the Project

A microcomputer can be a great asset to a community project. Indeed, the Countryside Commission's guide lines for launching an environmental appraisal recommend that the group should have access to a home computer, and software packages have been produced for community appraisals that members of a community can adapt for their own particular needs. In reality the minimum is a computer fully committed to the project with an appropriate range of software which all members of the community could put to a wide range of tasks required for a successful follow up to the appraisal. This raises the important question of how many independent computer based community initiatives are going to be launched and will they be coordinated or strategically developed.

In the context of community action a computer is simply a multipurpose management tool, which does more efficiently office jobs formerly requiring a diary, an address book, a filing cabinet, typewriter, ledgers, cashbooks, graph paper, a local resource library, and a stencilling machine. Experience has shown that a microcomputer can act as a point of social focus for a community because it provides the much needed lasting dimension as an ever-growing archive of local information. In a large community, the best situation would be to have several computers available to all members of the community to cope with the different types of grass roots activities such as, civic involvement in planning; inter-community communication; local enterprise initiatives; environmental action; community studies; a local information centre.

Making The Community Picture

A design of how the community works can be as simple as a poster which sets out the relationships between the different organisations providing help and services. Such a network design initiates the project. It provides mental 'hooks' upon which to 'hang' basic data and information, such as letters, maps, reports, historical documents, statistical information and pictures. These details fill out the community picture, but the network is returned to as a point of focus and extension. Once the knowledge network has been

produced much can be done to create a model of the community with conventional paper media from broadsheets to boardgames.

Sooner or later however the design of a total knowledge system will have to be considered.

In its simplest form this will be a filing cabinet to hold data and information, indexed in a way that makes sense to the users. Here the community will encounter its first major difficulty. It is individuals who will use the information in a very personal way. They will want to rearrange it, make extracts from it, and probably make a personal statement or essay to communicate with other people.

It is at this point that the community must have a computer. The need for a community computer will probably arrive in any case with the decision to adopt desk-top publishing for producing and disseminating paper media.

However, a computer with simple software has much more to offer. It can be a set of community tools by which people can assemble data and information and navigate through the complexities of historical processes, administrative hierarchies and action plans. A computer is not essential for the project, but, if available it will contribute greatly to its momentum by facilitating personal involvement of many individuals with a wide diversity of information.

A community computer simply provides ways of looking at large amounts of data and information. It provides windows into documents, maps, pictures and statistics. It also allows the user to select items or parts of items and link them as a personal statement, which can be printed out. Personal statements automatically become part of the community's database. A computer can therefore play a key role in the creation of a community's history, which it also records for posterity.

People who want to use computers vary enormously in their backgrounds and in what they want their computers to do for them. From this viewpoint, all machines will allow the user to handle data and present it in basically the same ways. Differences, and difficulties encountered by the user lie entirely in what is called the user environment.

Broadly speaking, there are two kinds of user environment exemplified by Apple on the one hand, and IBM on the other. Apple have put their efforts into providing a simulation of the screen as a "desk top", where off-the-shelf programmes and the files they produce are represented pictorially, to be opened and moved about like everyday objects in the real world. The mouse and its screen pointer, with an easy-on-the-eye screen, are an integral part of this world. The Apple Macintosh has been designed to use commercial software packages all built to this common user interface. With regard to the computer interface required by people who have no knowledge about computers, but who wish to develop and use a personal database to gain, interpret, and transmit knowledge, the Mac is better than any other machine for two reasons. Apple invented the user-friendly medium and consequently has a substantial lead over rivals, and the Macintosh is designed with a built in graphics interface and across-the-board compatibility. These advantages have come into their own in publishing, particularly in the layout of broadsheets, bulletins and booklets. The easy user interface allows Macintosh machines to be assimilated into a community environment in a fraction of the time of computers of the IBM type with which, in any case, they are compatible. The standard Mac is also portable, and the Community Office mounted on a computer can therefore be moved within the community according to where the current activity is.

Needs for Training in Computer Skills

Numerous reports from government and industry have stressed the expanding need for people to be trained in computer skills associated not only with routine office jobs, but also with information handling in community and home. Computer literacy is virtually zero, not because of the difficulties in handling computers and the shortage of user-friendly software tools, but because people do not know how computers can help them with tasks they are already engaged in, or feel they cannot carry out because of organisational difficulties in a paper-based world.

In introducing computer skills to the community, the main aims are to give people a state of the art perspective and confidence by demonstrating how computer skills may enhance their employability and entrepreneurial horizons. Another aim is to show how computer literacy will allow them to become more closely involved with environmental and conservation issues which arise in local development.

The latter perspective is becoming increasingly important as people are encouraged to become involved with local environmental action. A major factor limiting their involvement is that groups dealing with the complexity of environmental management require above average secretarial resources to provide organisational stability and cope with management tasks, as well as letter writing, publicity and communications.

Local training in computer skills allied to this broad 'community action' perspective is likely to draw in more trainees than a more limited business viewpoint. However, computer literacy can actually be impeded by simply throwing software at a community and hoping that a local computer literate person will take it up and dedicate their home computer to the project. Success depends on the group's first response to the demonstration of a particular combination of hardware and software, which if it is not carefully balanced in relation to local skills and immediate needs, can actually be a catastrophic failure, and leave people with the impression that computers are too difficult to use.

Electronic Packaging of Public Domain Information

The movement of information from organisations to people is at the mercy of the transportation systems available. The term 'transportation system' covers not only the mode of delivery, as marks on a page or screen, and the sounds of speech and music, but also the means of publicising the information, and the method of accessing it.

For organisations that have the task of telling the public what they are doing, current transportation systems are based on the production of non-indexed printed paper. The information usually consists of letters, broadsheets and reports, issued regularly, or at random, which, taken as a whole, are a vital summary of current work and future plans. As such the potential for public involvement is enormous. The problem is that the documents cannot be accessed as a whole by individuals who are likely to make a very personal demand on a relatively small portion of the information, and who often require a survey of past publications.

The basic problem is that the user is often supposed to read what are essentially difficult-to-read publications from beginning to end, or at the least, scan them quickly by eye to see if any words or phrases stand out. Whatever the approach, any future reference relies on memory, perhaps helped by making an entry to a personal filing system.

For example, a ratepayer may want to know what his elected representatives have been doing about a local problem of dogs fouling the pavement. His public domain database is the minutes of council meetings. These exist as separate documents. They have no index, so he has to find where the minutes are kept, get hold of as big a selection as possible and scan every page, going back as far as time will allow, looking for the word 'dog'. Similarly, a politician, teacher, or pupil, wishing to know about the development of an environmental agency's policy on energy will have to find the annual reports (non-indexed), then go back page by page looking for a whole set of key words appertaining to their particular perception of 'energy'. Needless to say such inquirers will be defeated before they start. Even if they stay the course it is possible that they will miss the reference they are looking for because of eye and brain fatigue. There can be little doubt that vast amounts of potentially useful information on paper remains as inaccessible as though it had never been issued.

To overcome the problem requires a system that will, on demand, automatically reveal every occurrence of every word in a collection of documents. In terms of current information technology the solution is to encode the words in a computer programme so that a searcher can quickly list every word and its frequency, then automatically select every occurrence of those words that seem to fit the particular demand for information. Such delivery systems are classed as 'hypermedia', and one composed entirely of text may be called an 'electronic book'.

Relatively cheap, user friendly software is now available for people with personal computers to make electronic books from collections of individual word processor files, or printed handouts and reports. This facility brings another important dimension to a community office, not only with regard to the creation of customised databases, but in communications with other communities via portable environmental knowledge systems passing between community offices on floppy disk.

These software tools and the databases they support are collectively known as 'hypermedia', and open up great opportunities for the creation and distribution of data, information and knowledge systems as community resources.

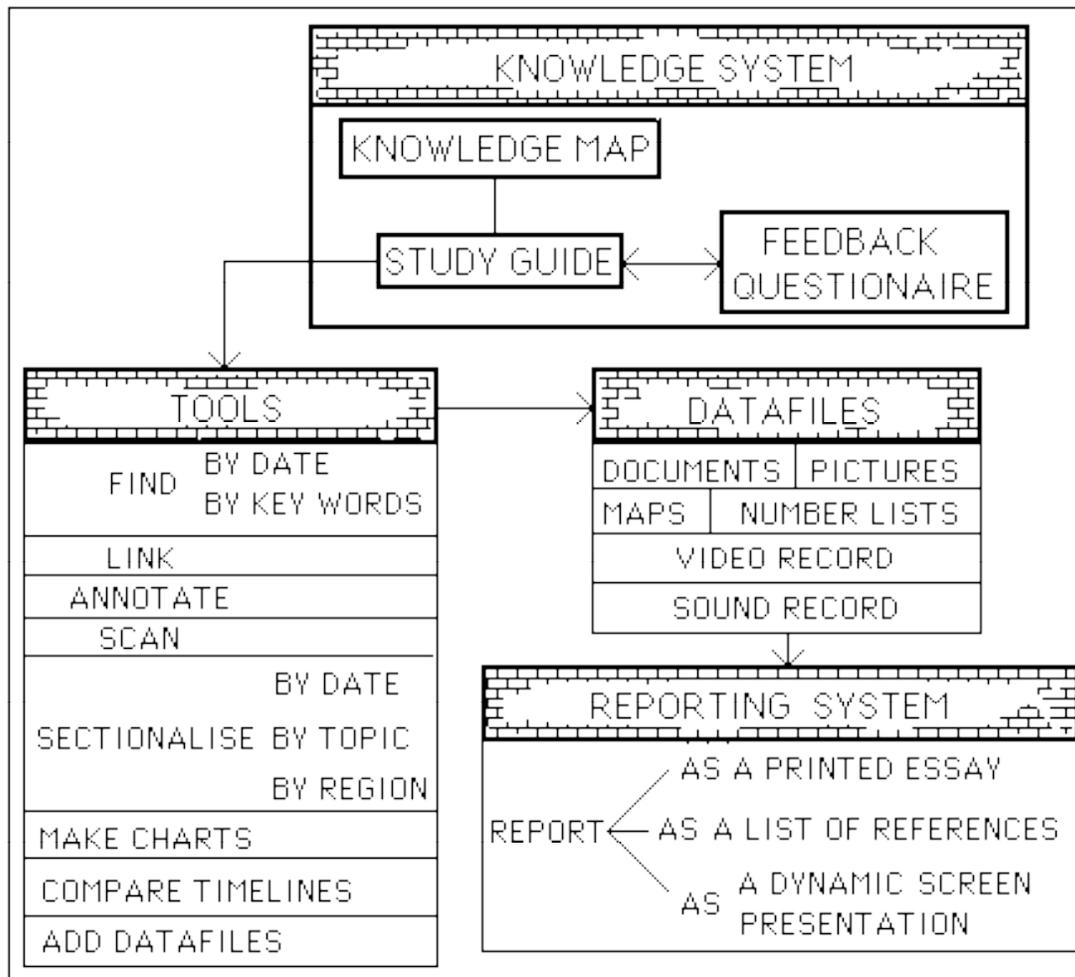
Hypermedia Software Packages as a Community Resource

Computers are particularly good at:-

- carrying out rapid and accurate calculations;
- processing text, diagrams and pictures;
- graphing and charting numerical relationships
- recording and retrieving data;
- turning lists into hierarchical knowledge structures.
- assembling dynamic system models

The first four characteristics allow people with simple keyboard skills to carry out routine office tasks very efficiently, and are the basis of modern business activity. At a community level there are many user-friendly, multi-tasking software programmes that will allow groups to maintain a corporate diary, write letters, and produce broadsheets. Most computers are now sold bundled with software that will allow the novice to perform tasks previously restricted to highly trained professionals, such as communicating with other computers, and setting up, and analysing, local questionnaires, with results presented numerically in the form of histograms and pie charts.

Fig 3. A hypermedia database structured and catalogued for creative retrieval



Hypermedia software is a particular development of the last two characteristics of computers in which information is delivered in forms that go beyond traditional list and database report methods. It means that the user does not have to follow a predetermined organisation scheme when searching for information. Instead, there is a facility to branch instantly to related facts. The information is eternally cross referenced, with fact linked to fact, linked to fact. The user has complete freedom to focus more on content while ignoring the organisation.

Hypermedia software is particularly good at presenting bilingual documents where a simple screen 'click' can replace a word or a paragraph with translations in other languages.

By presenting documents as hypermedia their value and usability can be greatly improved because the data and information is structured to be interrelated. The computer is used simply as a means of offering the user choices of different ways of looking at a large resource collection. In particular, the programme may be constructed to provide the searcher with a range of viewpoints into documents, maps, pictures and statistics. Very large volumes of information may be navigated quickly to locate exactly what is needed. By incorporating suitable tools into the cataloguing system, users are not only given the power of rapid selection, but also the capability of selecting items, or parts of items, and linking them as a list, or personal statement, which can be printed out. Personal statements automatically become part of the database. In such an interaction with a structured access retrieval system the computer plays a key role in the abstraction of a personal body of knowledge.

Databases which allow the necessary freedom of pace, choice of subject matter and organisation of individual study routes have from the outset to be carefully selected and catalogued for creative retrieval. This means not only providing a suitable basic knowledge system that can support a wide range of likely points of view of learners, but also incorporating appropriate user-friendly tools to gain access to datafiles and make personal data sets and reports. A diagram of the arrangement of a database, structured, and catalogued for creative retrieval, is given in Fig 3.

Hypermedia is particularly useful in presenting a learning situation, where, in sequence, the user starts with a knowledge map which outlines the contents of the database and the broad question that it can provide answers to. The learner's choice of approach is sharpened up by an interactive study guide, which may have a built-in feedback questionnaire to help the learner to choose an appropriate point of view towards the database. The three elements of 'knowledge map', 'guide', and 'questionnaire', together make up the knowledge system for the database.

The datafiles in hypermedia packages may be a collection of documents, maps, pictures, numerical data and other types of resource material such as videos and sound. The datafiles are entered or catalogued in such a way as to make them accessible to various tools for interrelating them according to personal viewpoints. 'Hyperbook' programmes will allow a standard IBM compatible home computer with a small external drive to handle 300 pages of text, as a single file. This is equivalent to an average sized text book, two to three years worth of annual reports or about five years of community council minutes. It was designed for children to read, search and edit books and source materials. The size of the books is only limited only by the size of the computer's memory. Hyperbook operates via simple, interactive, easy-to-use windows and menus, using a mouse or keyboard to select the functions that are required. There is no need to swallow a 300 page manual to learn how to use it!

Searching does not depend on the previous listing of selected key words in fixed fields. All words may be listed together with their frequencies. The user can move to, any word or combination of words instantly. These references may be built into personal indexes and selected material prepared for printing or viewing. Up to four consecutive searches may be made whilst the user continues to browse through the text. Every finding can be printed as a line, a paragraph or a page with its appropriate page number.

Two Welsh Models of Community Offices

A community office is a place where basic office IT tools and information relevant to the needs of local people is held in the memory of a microcomputer. It is not a 'telecottage' where the emphasis is on telecommunications and the support of commercial operations. It has wider and more elementary roles, although the special communication features of a telecottage can be included in the work of a community office according to local needs. Two Welsh models of community action will be briefly outlined to show the kinds of grass roots initiatives which have independently evolved the concept of a community office to solve the problem of sustaining local action.

The Crickhowell Model

The Crickhowell Community Office was generated from grass roots action through the Crickhowell Innovations Forum. The Forum was created in response to the needs of local people to develop information technology to commercialise locally produced innovations in education, and enable the community to become more actively involved in managing its environment.

It is now generally accepted within Wales and the English border counties that Crickhowell High School is leading the way in the development of a Community Office. The way the office uses school facilities for the benefit of the local community and the schools' pupils, was the subject of the "Open Space" programme transmitted on BBC 2 on December 3rd 1990. The Community Office is being approached by organisations for advice and consultancy. For example, Hereford and Worcester County Council has entered into discussions regarding a joint venture to establish community offices in the counties they serve. A model of the office will be promoted at the Garden Festival of Wales to show what microcomputers can do to stimulate, and aid, community action.

Crickhowell High School is a 'community school' in that part of its buildings are reserved for community use. The school is equipped with SKY and OLYMPUS satellite dishes, which allow school and community to communicate world-wide.

The development of a community office in association with the school has the approval of the board of governors and is seen as a way of generating funds for the school, in addition to providing further facilities for school and community use. In particular it is envisaged that the project, by providing extra computing facilities and raising the profile of information technology will improve the schoolchildren's use and understanding of the modern applications of computers.

The Narberth Model

The Narberth Community Office is being established in the town's community centre which serves a very large rural area. The project arose from grass roots in response to the need to follow up one-year community appraisals that were carried out under the Countryside Commission 'Jigsaw' initiative. Community computers will be available for local people to use, with priority being given to adults in the morning, small businesses in the early afternoon; children between late afternoon and early evening; and adults at night. The project is running in association with the Taff-Cleddau Rural Initiative Ltd and involves the 18 communities associated with the TCRI.

Computer Training at Crickhowell

The Crickhowell model is particularly relevant to discussion of the organisation of local computer training.

The Office has obtained a grant from Powys TEC and the Board for the Rural Development of Wales to enable it to run training classes in computer skills, which will operate in the evenings, at weekends, and other times when the facilities are not in use by the school.

The courses are offered on two evenings a week and an average of one Saturday per month for eight months per annum (for 3 ten week terms).

The courses are fully advertised through the Crickhowell Community Centre and the County Council, and are targeted at:-

- Local people with some latent skills in keyboarding who now wish to learn Business Technology - this would be particularly suitable for women returners.
- Local people with elementary skills in Business Technology who wish to increase and expand their skills.
- People with no skills in Business Technology who need Introductory/Elementary Courses - in particular unemployed persons and women returners.
- Self-employed people in the area - particularly farmers and their wives - who would benefit from the use of business technology in the administration of their businesses.

In Crickhowell and its surrounding area a fairly large proportion of the inhabitants are professional and semi-professional young families living on new estates. There is therefore a receptive group of young women for retraining courses and "confidence boosting" recap courses which will provide an insight into the rapidly changing technology involved in the modern business world. There is also an army camp in Crickhowell and the wives would find the skills from the courses on offer very useful wherever they go in the world.

The main service is for the local inhabitants and those living in the rural areas surrounding the town. The wives of farmers are being offered the opportunity of training in business technology, so that they could use modern technology to administer the farm business (accounts, stock control etc.) and also to give them an opportunity to meet socially. It is hoped that a creche facility could be created if that should prove helpful.

All the courses would be aimed at specific qualifications including WJEC, Pitmans, RSA in word processing, databasing, spreadsheets, desk-top Publications, electronic communications and hypermedia information systems.

In Crickhowell, Longman Logotron's 'Hyperbook' software is being used by the Community Office to set up a business to package public domain textual information.

The Crickhowell Community Office packaging service is based on a business plan for the commercial costs of making Hyperbooks, which envisages the employment of at least one full time secretarial post for encoding computer files. It has been estimated that this minimum staffing level would produce an income above outgoings on salaries and consumable expenditure of about £10,000 per annum

The Promotion of Community Informatics

The two main factors limiting the uptake of community computers are the lack of hands on experience and the need for a knowledge guidance system about community development. These two limitations were addressed by the Natural Economy Research Unit (NERU) in University College Cardiff, in 1985. The research concentrated on providing a learning frame for handling data and information about local development in a global setting. This system links the industrial use of natural resources to the need to create socioeconomic systems for their sustainable use. Because of the need to interrelate different kinds of specialist information, natural economy has been modelled on hypermedia software such as 'Hyperbook', 'Hypercard', 'Guide', and 'Linkway'.

NERU has been associated with the authoring and production of hyperbooks since the Longman Logotron software was launched in 1988. The Unit has produced the first example of an electronic journal, the 'Welsh Environment Journal' for schools. This is issued six

times a year, and accumulates to provide a 600 page data base about current environmental issues in Wales, set in an international context. Annual volumes can be combined to give an ever-growing encyclopaedia. In association with Shell, and with the help of Welsh communities, it is extending the Shell Guide to Wales to create an electronic 'Domesday' of local community information.

In association with Daitercl Ltd, and Longman Logotron, NERU has also produced a hyperbook from the unwieldy collection of documents released by the Ministry of Education to inform schools about the requirements of the Education Reform Act. Individually these publications are relatively small, but there are many of them issued over a long period, covering all aspects of education policy, from 'salary structure' to 'child abuse'.

NERU offers its services to any organisation wishing to explore what hyperbook filing can do to improve the use of its public domain information, in terms of production, costs and dissemination.

Since natural economy is taught, practically, through methods of local landscape analysis to reveal past and present aspects of natural resource utilisation, it is a good knowledge framework for handling local community developments. This aspect led to research to assess the limiting factors in local community action. The outcome of this work, funded by UK 2000 Cymru, was the creation of FFORDD, a free file organisation for rural and regional development databases. NERU is the coordination, demonstration and training centre for FFORDD, which is based upon a network of Welsh grass roots community action groups in schools and communities.

FFORDD has the aim of introducing the potential of microcomputers to community groups and schools that are trying to carry out environmental appraisals and act upon them, and also disseminates information about local community initiatives, and information packs produced by communities, via computer files and paper printouts (Appendix 1).

A Schools/Community-Based Welsh Environmental Knowledge Network

FFORDD is a voluntary organisation based in Welsh schools and communities aimed at helping people to become actively engaged with problems of local development, first by designing a community knowledge system and then taking actions to enhance their environment and social life.

FFORDD works on the assumption that in a rapidly changing world all communities face communications problems. These may disadvantage individuals, who are often not aware of opportunities for financial and intellectual development, and often impede community action, because of the lack of an up-to-date knowledge system about the workings of the industrial, commercial and natural elements of their environment.

FFORDD addresses this problem of unskilled individuals, and lack of community cohesion, by offering a coordination, training, and communications system for people to design an interactive knowledge network to make 'roads' through community information.

The network-design can be paper-based, but FFORDD focuses on the creation and transmission of computer files, and runs a demonstration/loan/training service so that active communities can find out for themselves how a microcomputer can help establish and run a community office as a focus for tackling local environmental and conservation issues.

By participating in FFORDD, the psychological barrier between people and computers is broken, and participants are able to see that a personal computer is not just a tool for home learning, but may provide 'knowledge-power' for local action, and also spread employment skills through the community. As a follow-up to the loan scheme, help is given to obtain local sponsorships for a community micro .

FFORDD:- "A Free-File Organisation for Rural/Regional Development Databases"

Coordination:- The Natural Economy Research Unit, National Museum of Wales, Cardiff.

Communication:- Welsh Information Network (UK 2000 Wales).

Sponsorship:- Barclay's Bank: British Steel Corporation: National Westminster Bank:
S4C: UK2000 Wales: Cardiff Bay Development Corporation.

County Nodes:- Dyfed, Powys, Gwent, Gwynedd.

Communities/Schools:- Bettws, Caerleon, Clunderwen, Crickhowell, Cwmbran, Henllan Amgoed, Lampter Velfrey, Landshipping, Lawrenny, Llanboidy, Llandewi Velfrey, Llandissilio, Llangefni, Llawhaden, Ludchurch, Martletwy, Milford Haven, Nantyglo, Narberth, Oakdale, Reynalton, Robeston Wathen, Tavernspite, Templeton, Whitland, the Cardiff Bay Communities.