Promoting Community-Wide Science, Math And Technology Literacy Through School/Community Outreach Network Testbeds

Contributed by: Frank Odasz <franko@bigsky.dillon.mt.us>
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Here's a short concept paper which I think directly addresses the necessity for school/community synergies.

Promoting Community-Wide Science,
Math And Technology Literacy Through
School/Community Outreach Network Testbeds
by Frank Odasz

Synergy with the following is inevitable:

- Internet networking
- Local School/Community Networking
- Science, math, and technology literacy online support
- Lifelong learning for everyone online from the home or library
- Entrepreneurship education beginning at K12 covering the dynamics for creation of employment and learning opportunities through network access and activities.

To turn around the rural economic decline we need to identify specific opportunities for our own kids to find meaningful employment locally. To sustain our communities requires an initiative to find out just what the known benefits of Internet and community networking might be for rural citizens, specifically.

K12 science and math education should reflect synergy with what's known about applying math, science and technology education to employment through telecomputing. Internet access to satellite photography, federal research and development archives, global niche markets, community networks, and vast resource archives, all relate directly to success in an rapidly emerging information economy.

Public understanding of networking benefits is vital for the public support necessary to sustain any school networking effort. Community awareness and involvement in networking is necessary for the success of school networking initiatives that apply to students integrating their science, math, and technical knowledge toward community issues and eventual personal employment.

Educational reform must include programmatic approaches which link science and math teacher training, classroom activities, community science and math literacy, and school/community networking as necessary integrated components for lasting educational reform.

In our electronic society, students are being taught to be citizens, and citizens are being taught to be lifelong learning students. School and community networking efforts on inevitably on a convergent course.

Our shared mission, of some urgency, is to find what works employing citizen's through telecommunications and teaching how to do it through K12 education, using various telecommunications technologies to the home, as well as to the school, on an ongoing basis. Within this context, the tangible benefits of science and math education need to be showcased with an emphasis on creating employment opportunities, and other community benefits.

Multiple, diverse public access testbeds are needed to "research" methods for online teleliteracy training and showcasing science and math resources gleaned from the Internet, in a "community benefits" context. Articulated as follows:

The Clearinghouse for Rural Excellence at Western Montana College of the University of Montana exists to foster connections, communication, and cooperation between rural entities including schools, libraries and businesses. The Clearinghouse seeks to develop in every community catalysts to promote sustainable connectivity/networking and to champion economic development, enhance access to information, and further lifelong learning among citizens.

K12 Entrepreneurial Training Is Needed
The greatest need for citizens is how to earn a living to replace rapidly disappearing traditional vocations. The opportunity exists to kickstart the proliferation of online jobs and small business "win–win" relationships, globally, without having to wait for the natural evolution of such opportunities to unfold.

An online teaching model similar to Mind Extension University is needed. Minigrants will be used to sponsor demonstration online telepreneurial enterprises, with sponsorship of additional course creation projects.

A model is needed for a "Entrepreneurship Cooperative" to provide training, certification, and joint marketing of skills and entrepreneurial online services for citizens. Model online interactive instructional methods will be demonstrated for both K–12 and Higher Education Entrepreneurial replication.

K12 Entrepreneurship And K–100 Lifelong Learning:
Lifelong learning has become an employability survival necessity. The distinctions between what should be taught in K12 schools, and in the current workplace, are blurring, as more powerful connectivity and information management tools are proliferating at every more affordable prices, and with easier to use interfaces. As mentioned, K12 students have an attitudinal mindset that allows them to typically outlearn adults, if given hands–on access to the appropriate technologies. In short, what's good for K12 is good for training the current workforce in most instances; basic literacy, teleliteracy, and infoliteracy.

The need exists to create initial free entry–level training materials, and create a "for

profit" series of instructional courses centering on entrepreneurial skills and models for success in the emerging knowledge economy. Citizens need an affordable means of learning how to create online courses and services, and to potentially market them.

Supporting Community-wide Entrepreneurial Training

A entrepreneur training, support, and co-marketing online cooperative will help deliver citizen-created, non-credit lessons, and service delivery models exploring how citizens can learn-to-earn, to stimulate even greater interest among citizens in creating their own ventures. The goal will be to create self-fulfilling knowledge-economy models that respond to existing needs.

Entrepreneurial Cooperative's Benefits And Goals:

- Identify what trainable skills best result in employment.
- Give "good idea" businesses free publicity to assure their success and replication/competition.
- Leverage aggregate services through "online mall" mass marketing.
- Allow citizen's to hang an entrepreneurial shingle from a "marketplace" system that already has a critical mass of interest.
- Publish awareness infomercials to expand citizen's visions of what's possible.
- Just-in-Time subcontracting; Online "temporary help" subcontracting.
- "Non-Academic Certification" by competency level; graphics, desktop publishing, writing, organizing, info-searching, condensing, multimedia authoring. Progressive levels of certification to enhance employability.
- Successes sharing; Ongoing showcase of innovations that work, and failures to learn from.
- Share current "inside track tips" on new technologies, efficiency tricks, entrepreneurial trend profiles, facilitate contacts.
- Identify appropriate entrepreneurial instruction for K-12 and Higher Education
- Facilitate education/business online collaborative opportunities.
- Provide working models of successful decentralized workteam businesses.

Conclusion

Lack of community-wide awareness of the options and benefits of "Inner-net" and "Internet" telecomputing is the biggest barrier to proliferation of community/school networks. The economy and convenience of self-directed, mentored online learning opportunities has yet to be exploited for ongoing training of citizens. Specific benefits, particularly those related to income producing opportunities, must be identified and widely promoted to generate interest in the online participation by citizens.

Today's technologies make it possible for everyone to get involved in networking at some level. Since "Expectations increase with connectivity," we need to focus on ubiquitous engagement of all citizens with multilevel testbed projects measuring the benefits associated with the successive connectivity models. The prevailing themes in support of widespread community networking are:

1. Widespread awareness raising of networking options and benefits
2. Development and promotion of self-help training models
3. Local control and economic sustainability

Return to participants' contributions or
Return to Universal Service / Network Democracy or
Return to Information Renaissance home page.

Community Networking
An Implementation Planning Guide

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Date: Sat, 21 Sep 96 9:06:19 MDT

Here's a paper for your review addressing the many issues concerning school/community networking for the archive if you think it is appropriate.

Community Networking, An Implementation Planning Guide
Prepared for The NIE/NSF "Network Montana" Planning Grant
by Frank Odasz, Western Montana College, August 15th 1995

Planning Grant Activities
Since receiving the NIE/NSF planning grant October of 1994 Western Montana College, of the University of Montana, has been creating a community resources Internet-accessible archive. The Big Sky Telegraph staff has continually been gathering information and strategies which are reflected in the final NIE/NSF proposal. The following is a review of key considerations in the implementation of community networks with an emphasis on school/community synergies.

The Need For Community Networking Models
Ironically, at a time when federal funding opportunities are becoming increasingly uncertain, the costs of technology are dropping. Locally-funded telecomputing initiatives are becoming increasingly necessary and feasible.

Optimal online collaboration needs to be modeled and sustained, between regional, state, and local initiatives and organizations with the benefits of sharing updates from ongoing research, and continuous information collection and organization, clearly demonstrated.

The need exists now to promote widespread citizen awareness of the verifiably "appropriate and affordable" methods of initial networking implementation, with an emphasis on using local funding. The need exists now to provide citizens, schools, and communities nationally with accurate, summative information about their self-directed connectivity options from the lowest-cost entry level, to the most elaborate high bandwidth systems.

The successively expensive, and beneficial, connectivity options need to be clarified for all citizens through first hand experience allowing citizen evaluation of the possibilities, with an emphasis on how to get started with minimal cost and effort.

Readiness to benefit from full Internet connections can be developed through many successive connectivity models in both cost and required skills.

The Current Status Of The Art Of Community Networking
The term "community networking" does not appear in the literature prior to 1992. Though the term has immediate appeal, many misconceptions exist.

For example; most activity on community networks is independent browsing by individuals, not purposeful group activities that help build community relationships and produce benefits. Despite 250 recorded public access networks, no community can boast even 15% community participation. Most community networks are more communities of networkers rather than networked communities.

"Community Networking" means different things to different people. There are two basic orientations toward community networking:

1. The "Internet" model of community networking is providing free Internet access to citizens to access the benefits of the Internet. More recently, this has taken the form a WWW home pages interface. Critics argue that this does little for the community as a whole and nothing to build relationships among community members.

Problems have arisen from University-based community networks due to complaints from commercial vendors about unfair competition using public funds. "Restraint of Trade" counter arguments attempt to check this complaint, but differing options are common. State and University support for community networking has thus come under fire.

National online service providers also claim they can do a better job of providing centralized community specific services while opponents claim local control is the only way to assure a communities best interests are kept foremost in mind.

Modem banks can quickly become overwhelmed and prohibitively expensive once large numbers of citizens begin using the networks. Hardwired infrastructures like cable TV and fiber optics are considered the only long term solution for mass utilization of community networks. Wireless solutions may well pre-empt even these hard-wired solutions.

2. The "Inner-net" model of community networking is providing free local access to community based conferences and information resources. Nebraska's Community Networking Institute (CNI,) project argues that the greatest need is to build better relationships within communities and between communities. CNI argues that anyone that wants Internet can buy their own for under $5/hour from services such as Netcom.

Building Citizen-to-Citizen Connections Within The Community
The success of the National Information Infrastructure depends on citizens learning to use telecomputing for purposeful group interaction. Ubiquitous entry-level opportunities are needed to help citizens understand the merits of the successively greater bandwidth connectivity options. Eight-five percent of the American populace has yet to take their first step toward the electronic pathways. Until citizens can begin to assess the potential of the National Information Infrastructure (NII,) firsthand, and assist one another in learning to evaluate and derive these benefits, adoption of interactive technologies will suffer.

- We're moving from personal information access to public problem-solving.
- We need to build the rural capability for public problem- solving; working together

online from remote locations.

- We need sponsorship of high profile multi-community initiatives.
- The NII won't realize its potential until ubiquitous access is achieved.
- The NII should provide free/cheapest access to keep innovation levels high.
- Expectations increase with connectivity – at any level!

The online medium represents the first mass interactive medium in human history, and inherently holds the promise for inexpensive mass teaching, learning, and collaboration. Successful text-based interaction is not dependent on high bandwidth, high costs, or extensive training. Mass collaboration, the most important component of a scaleable NII, is possible today with inexpensive technologies.

The Ideal Solution:
While a local bbs can be an economical first level for a community network, WWW conferencing systems and continuing advancement of programming environments, such as HotJava, will soon make it possible to have the best of both Innernet and Internet features.

The ideal sociology would be for citizens to have access to self- directed online lessons, mentored by other citizens, until they are confident enough to offer mentoring help themselves. Citizens would ideally learn how to conduct purposeful group activities within the community as well as through global communities of interest via Internet. Bringing the best information available globally, home, to meet specific community needs, would be the ideal online behavior for citizens.

The issue of how to prohibit access to obscene materials by minors has created a flurry of new firewall and censorship products such as SurfWatch, and Cybersitter. No foolproof options exist. K12 Authorized Usage Policies (AUP's) are vitally important for liability protection for schools and network sponsors.

Raising Awareness Of The Benefits Of Community Networking
The biggest single barrier to community networking success is economic sustainability, which requires establishing a widespread vision with a community of just what community networking is, and can become. Successively more involved strategies are listed below as recommended components for a "Community Teleliteracy Program."

For the public support necessary for sustainable community networking, the "real benefits for real people" must be clearly understood. An ongoing mechanism for citizen evaluation of the verifiable benefits of community networking is needed, with the results widely disseminated on a regular basis. The following are specific strategies for raising community awareness of the benefits of community networking.

1. Promoting Basic Awareness Of Options And Benefits

Goal:

Inform citizens as to their present and emerging telecommunications options for creating their own opportunities for self-directed learning and employment in a knowledge-based economy.

Strategy:

- Collect exemplary articles, project descriptions, shareable project deliverables, and archive sites to summatively display via gopher/WWW/ftp clearinghouse services.
- Collect and disseminate sources of starter kits for various connectivity levels, and cost thresholds.
- Collect and disseminate public domain Internet and networking videos and clarify copyright restrictions for copyrighted/commercial videos.
- Create and disseminate disk-based online simulation demo disks of exemplary Internet interfaces, archives, and innovative community networking services to allow a maximum number of citizens to appreciate the growing ease of access to networking, and the value of the information available.
- Create multiple opportunities for specific community groups to view demonstrations of how their specific group can benefit from participating in a community network.

Starting Small Can Help Facilitate Longterm Goals

Where high-end community networking infrastructure is not yet available, important awareness raising opportunities can be realized from implementation of low-end community networking "starter" configurations, such as bulletin board systems.

Longterm goals of leveraging greater capability with greater connectivity can be facilitated through initial use of low-end systems because "Expectations increase with connectivity" and low-end systems give a community a place to start, a place to discuss and review the potential benefits online, available locally at minimal cost. Most skills learned on low-end systems transfer directly to high-end systems such as online conferencing, file sharing, etc.

Communities with high-bandwidth systems need to partner with communities with low-bandwidth systems so the advantages can be better understood. While perhaps many Montanan communities may be technically and economically able to implement a high-bandwidth network, many need more awareness-raising activities before they will be able to garner the support of their citizens.

2. Provide Entry-Level First Experiences With The Offer of Follow-up Training

Goal

Provide ongoing "low-threat" minimal-cost teleliteracy learning opportunities to build skills, awareness, and engage citizens in online group activities.

Strategy

- Conduct a model low-cost collaborative project, using Offline Readers where necessary to provide simple online self-directed, mastery learning online lessons.
- Post samples of quality resources gleaned from the Internet.
- Post for easy access the best entry-level online experience opportunities including free access specials from vendors, NASA, The Well, Freenets, Government 800 numbers, etc.
- Post sources of free online Internet lessons, guides, software tools, client software, demonstration disks, etc.

- Provide a roster of volunteer mentors willing to assist those new to the online medium.
- Supporting the creation of "beginner support" forums for special interest groups and "at risk" populations.
- Facilitating the networking among communities and citizens, especially through the public library systems.
- Facilitating the networking within the educational system, i.e. helping schools and students reach out to one another, and the community.

3. Clarify Implementation Choices

Goal

Summarize known models and evaluate technical features, maintenance overhead, and social implementation strategies. Identify quality evaluative metrics. Broker expertise.

Strategy:

- Collect the top whitepapers in the field for distribution
- Maintain a current list of projects, schools and communities that have implemented successful models as a resource for validation of what's proven to work, with prearranged consent for posting a contact person..
- Maintain a "Methodology for Creating a School/Community Network" outline.
- Maintain a "Technical Features to Consider" Checklist with the most common decisions necessary in configuring a School/Community network.
- The successive connectivity models, by cost, are:
    1. Offline Readers (local or long distance)
    2. Dialup Access (ideally local, but often long distance)
    3. Dialup SLIP to allow WWW access and other benefits
    4. Hard-wired full Internet connections

    (* Wireless; higher bandwidth at less cost is an emerging option.)

Successive Connectivity Levels:

- Entry Level Internet Email: Lowest-cost, with minimal training;
    - Offline Reader Starter Kit with Internet email-based short "how-to" exercises.
    - Provide options for local, regional, and global email, including newsgroup and listserv conferencing.
- Intermediate Internet Exploration:
    - Access to Full Internet and progressive online task-based lessons through long distance phonecalls.
    - Ideally through a SLIP connection on a school LAN, as a means of cost-controllable Internet exploration extending access to multiple persons simultaneously through a single long distance phonecall.
- Local School/Community Networks:
    - Local LAN and dial-in access community-wide to a local network to showcase gleaned Internet resources and provide an opportunity for basic telecomputing awareness development through local online interaction and file sharing.
    - Provides a free public innovation support networking environment that all citizens can participate in.

- Provides important vehicle for school/community outreach and convenient communications and joint exploration of the potential of local networking.
- Advanced Integrated Local/Global School/Community Implementation:
  - Local full Internet access through a School/Community Network with provision for public Internet access through public access PC's at libraries, schools or other public offices.
  - Provides opportunity to evaluate synergy between local and global networking

4. Share Through Multiple Information Channels:
Demonstrate how multiple community, and institutional, entities can support one another through ongoing development, integration, and sharing of resource collection/dissemination and training programs via distributed conferencing, listservs, newsgroups, gopher menus, FTP and WWW. (NOTE: Both low-end and high-end systems can benefit through these communications methods!)

4.1. Community Resource Sharing Program

Goal

Create a continually-updated clearinghouse of the highest value resources possible relevant to community needs, to include online training opportunities.

Strategy:

- Demonstrate how information can be shared on an ongoing basis between multiple systems using WWW, FTP, gopher, newsgroups and listservs.

4.2. Facilitate Online Dialog;

Goal

Developing online communities of interest between multiple geographic communities. Listservs and Newsgroups will facilitate ongoing dialog among community groups, and between communities, demonstrating the benefits of collaborative dialog and ongoing information sharing.

Strategy

A Community-of-Communities component will link community networking efforts with each other to share information such as grant opportunities, grantwriting assistance, training materials, community "programs-of-work" outlines and success stories on citizen innovations that work; via print, online, videotapes, and possibly CDROMS.

Implementation Strategies; A Top Down Model
The National Public Telecomputing Network (NPTN,) advises a formal advisory council consisting of strategic partnerships from the four cornerstones of any community; the business community, the educational community, the healthcare community and the governmental (local/county) community. Establishing support from each of these communities is vital to sustainability. The problem in the past has been each constituency has attempted to create their own independent networking plan. Their key to sustainable networking is to partner with the other constituents to share costs and benefits.

A Bottom-Up Model

The 1993 report "Making Government Work; Electronic Delivery of Federal Services," strongly recommends citizen minigrants as stimulus for widespread innovation. "The diversity of applications necessary for a successful National Information Infrastructure can only come from the citizens themselves."

The following is a general outline of guidelines to consider regarding the recommended methodology for establishing a community network through the top-down strategic partnering model. The Community Networking Institute's RFP packet reflects this approach.

A Community Networking Methodology Outline:

- Engaging the Community/Innovation diffusion strategy
    - Awareness building experiences;
        - Printed articles
        - Local newspapers
        - Radio shows
        - Community info. technology discussion groups
        - Exemplary short videos
        - Group specific demos
        - Create hands-on first experiences for citizens
        - Community microlabs
        - Loaner laptops
        - Self-directed citizen home study
        - Recognition/award programs, sharing success stories
        - Monitoring and mirroring back application's measured benefits
        - Citizen training, participation, sharing the vision
        - Community groups as evangelists
        - Student-centered, school-based demonstrations
        - Minigrants to local trainers with strategic affiliations
- Strategic partnering for self-sufficiency
    - Detailing the true economics
    - Balanced strategic partnering; govt. nonprofit, commercial;
    - Cost recovery options
- Community resources inventory
    - Existing telecommunications infrastructure locally and regionally; existing networks and available bandwidth, pipes
    - Local equipment for citizens to get online
    - Talent and resources inventory
    - Community groups already interested, potentially interested - Community Information Technology committees
- Engaging segments of the community
    - Business
    - Government
    - Education

- Medical/Health
- Non-profits
- Political; city, county, state, national
- Other community organizations, religious, public service
- Professional volunteers
- Telco providers, Electrical coops, PSC, PUC
- Tieing in other existing networks under the comnet umbrella;

- Grantwriting/Fundraising
  - Building on successful grants
  - Sharing text of successful grant applications
  - Getting professional fundraising help
  - Grantwriting tips/ sources via Internet
- Business Plan
  - Physical location/rent
  - Board of Directors
  - Executive Director
  - Advisory Board(s)
  - Bylaws
  - Delegated officers
  - Projected budget, fundraising and self-sufficiency plan
  - Promotional plan to grow self-sufficiency
  - Community needs assessment
  - Tailor applications to specific needs
  - Universal access issues; walkin centers, loaner laptops, used equip. programs
- Strategic Partners Proposed Workplan
  - Provide resources and online resource persons
  - Implement their internal staff teletraining and promote employee participation
  - Share in responsibility for promoting use, sharing success stories, and assuring economic sustainability
- Executive Director's Proposed Workplan:
  - Promote project and engage sponsors
  - Identify and post highest-value content
  - Devise citizen training program
  - Measure system use, innovations
  - Promote successes via the media
  - Define programs for awareness, access, training, implementation and evaluation
  - Convene weekly computer club meetings
  - Maintain online leadership visibility
- Technical Planning
  - Hardware choice, maintenance plan, scaleability for growth
    - Modem bank feasibility vs hardwired options such as cable/fiber
    - Consider ISDN and spread spectrum radio options
    - Operating system selection
  - Network software choice and awareness of tradeoffs
  - Free vs fee-based for basic access
  - Internet relay chat vs no chat options
  - Internet free vs fee-based

- Ubiquitous access models, kiosks, public access terminals
- Online mentorship options
- Offline reader options to minimize online time
- Internet provider and technical hookup specifications
- Proprietary client software vs text-based interfaces

- Message and Conference Transport Mechanisms:
  - Internet protocol (IP,) and SLIP (serial line internet protocol)
  - Fidonet gateways, UUCP, SMTP, bandwidth and protocols
  - Costs: number hardware boxes needed, modem banks, lines
  - Interface client required; Multiplatform
  - Dbase compatibility, autotransference of files and dbase updates
  - Speed and types of connections; leased lines, polls, pops
  - Ease of maintenance; ergonomic development level, staff overhead, remote maintenance considerations
- Existing Comnet System Classification Criteria:
  - Hardware/software structure
  - Mission statement(s)
  - Content and applications
  - Local, regional, national, global components/percentages
  - Volume of use and capacity
- Current activity percentages:

  - Downloading files
  - Live chat
  - Internet access
  - Local asyncronous interaction
  - Internet asyncronous interaction

  - Nonproprietary
  - Scaleable
  - Modular
  - Interoperable
  - User-friendly
  - Retrieval/search/dbase capable
  - Open platform to allow development
  - Interface type
  - User-initiated conferences option
  - Dbases and keyword searching capabilities
  - Transport mechanisms
- Establishing value in information and communication services
  - Economic development
  - Demonstrating economics for citizen-generated knowledge- based products and services
  - Possible distribution channels and fee-based options
- Content on Comnets
  - Volunteer conference moderators
  - Volunteer resource persons
  - Self-assessment measures; measurements of success detailed
  - Strategic sponsors ongoing contributions of content

- Dbases, CDROM archives
- Distributed conferences and newsletters from Internet/Fidonet

- Enabling services
  - Community training & learning centers
  - Equipment/software donor/donee match
  - Technical mentoring
  - Application mentoring

- Culture of Comneting
  - Reflections of society; positive and negative
  - Privacy, copyright, censorship/porn
  - Encouraging the positive/downplaying the negative
  - Sport hassling as a metajoke; dealing with crazies
  - Lawsuits and out-of-date laws

Community Networking Features Checklist:
The following is a expanded checklist of technical decisions that will need to be made regarding the specific features and function to be engineered on a specific community network:

Operating System:

- Open platform for development
- True multiuser
- Volume of public domain development tools available
- Performance measures
  - Number simultaneous users
  - Number project modems for incoming calls

Interface:

- Menus totally customizable
- Graphical User Interface options
  - Text-only option within Graphical User Interface
  - Graphic display options
  - Proprietary client software required

    - Plan for distribution to users, attached costs

  - Microsoft NT Server
  - Softarc's First Class Macintosh system
  - Apple's new Macintosh World Wide Web Server

- Conferencing features:
  - Users can post public messages vs not allowed without review (Freeport software doesn't allow this)
  - Users can create their own conferences vs not allowed
  - Keyword searching of message bases, by subject line, and other searching options

- Threaded "branch/tree" conferences vs linear threads only
- File attach feature for messaging
- Conferences can be distributed as newsgroups, Fidonet
- Internet gateway software options
- Ergonomic design of message editor, necessary commands simply displayed on screen
- Friendly look of conference listings
- Message summary information and display
- Permission levels for all network features
- Private conferences in addition to public messages?

- User accessible dbase on users
  - List features

    - Users online today, or on a given day
    - Search by name, town, interests
    - When was a person last online

- Files area features
  - Anyone can upload a file for public access vs monitoring uploads
  - Uploads should allow for a description
  - Keyword searching of files areas
  - Batch file transfer option
  - Binary transfers option
  - Records number of times a file has been downloaded
  - accessible to all users vs accessible to sysop only
- Dbase capability
  - Autosharing of updates with dbases on other systems
  - Menu-driven customizability
  - Auto-echo of whole menu structures with new listed resources
  - CDROMS online:

    - Licensing agreements

- Offline Reader options
  - Multiplatform offline readers
  - QWK packet compatible
  - Newsreader capability vs email only
  - List full range of features

    - Self-select conferences

  - Automatic file sharing
  - Multiple offline readers supported
  - Fully automated autodial features
- Training:
  - Printed starter kit(s)
  - Demo disk(s)

- Instructional software tools (Online simulation software)
- Online self-teaching or mentored lessons

Internet Options:

- Amount of bandwidth and scaleability projections
- SMTP, UUCP, SLIP
- Internet email
    - Choice of mailreader software
    - Personal filespace for users

        - Size limits/ policy for management of personal filespace
        - Charges for extra memory

- Gopher server or client only
    - Offer access to other Freenets
    - Option to allow access to community system from other Freenets
    - Choice of accessible systems
- Newsgroup selection options
    - Censorship policy and methods for objectional material/newsgroups
    - System specific, user-created, and external newsgroups
    - Choice and design of newsreader software
- Listserv software choices
    - Capability and flexibility
    - Listproc, majordomo, digests option
- SLIP/PPP supported
- World Wide Web server
- Anonymous FTP
- Internet Client software supported:
    - Eudora for Mac or Windows
    - Webcrawler
    - Turbogopher
    - CUSeeMe videoconferencing

- System Operator Maintenance:
    - Point and click environment for easy maintenance
    - Full list of required maintenance features
    - Full list of automated maintenance features
    - Remote technical support option
    - Data automatically archived option

        - Data automatically graphed option
        - Labor issues for extracting additional data

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A model is needed for a "Entrepreneurship Cooperative" to provide training, certification, and joint marketing of skills and entrepreneurial online services for citizens. Model online interactive instructional methods will be demonstrated for both K-12 and Higher Education Entrepreneurial replication.

K12 Entrepreneurship And K-100 Lifelong Learning:
Lifelong learning has become an employability survival necessity. The distinctions between what should be taught in K12 schools, and in the current workplace, are blurring, as more powerful connectivity and information management tools are proliferating at every more affordable prices, and with easier to use interfaces. As mentioned, K12 students have an attitudinal mindset that allows them to typically outlearn adults, if given hands-on access to the appropriate technologies. In short, what's good for K12 is good for training the current workforce in most instances; basic literacy, teleliteracy, and infoliteracy.

The need exists to create initial free entry-level training materials, and create a "for profit" series of instructional courses centering on entrepreneurial skills and models for success in the emerging knowledge economy. Citizens need an affordable means of learning how to create online courses and services, and to potentially market them.

Supporting Community-wide Entrepreneurial Training
A entrepreneur training, support, and co-marketing online cooperative will help deliver citizen-created, non-credit lessons, and service delivery models exploring how citizens can learn-to-earn, to stimulate even greater interest among citizens in creating their own ventures. The goal will be to create self-fulfilling knowledge-economy models that respond to existing needs.

Entrepreneurial Cooperative's Benefits and Goals:

- Identify what trainable skills best result in employment.
- Give "good idea" businesses free publicity to assure their success and replication/competition.
- Leverage aggregate services through "online mall" mass marketing.
- Allow citizen's to hang an entrepreneurial shingle from a "marketplace" system that already has a critical mass of interest.
- Publish awareness infomercials to expand citizen's visions of what's possible.

- Just-in-Time subcontracting; Online "temporary help" subcontracting.
- "Non-Academic Certification" by competency level; graphics, desktop publishing, writing, organizing, info-searching, condensing, multimedia authoring. Progressive levels of certification to enhance employability.
- Successes sharing; Ongoing showcase of innovations that work, and failures to learn from.
- Share current "inside track tips" on new technologies, efficiency tricks, entrepreneurial trend profiles, facilitate contacts.
- Identify appropriate entrepreneurial instruction for K-12 and Higher Education
- Facilitate education/business online collaborative opportunities.
- Provide working models of successful decentralized workteam businesses.

Conclusion

Lack of community-wide awareness of the options and benefits of "Inner-net" and "Internet" telecomputing is the biggest barrier to proliferation of community/school networks. The economy and convenience of self-directed, mentored online learning opportunities has yet to be exploited for ongoing training of citizens. Specific benefits, particularly those related to income producing opportunities, must be identified and widely promoted to generate interest in the online participation by citizens.

Today's technologies make it possible for everyone to get involved in networking at some level. Since "Expectations increase with connectivity," we need to focus on ubiquitous engagement of all citizens with multilevel testbed projects measuring the benefits associated with the successive connectivity models. The prevailing themes in support of widespread community networking are;

1. Widespread awareness raising of networking options and benefits
2. Development and promotion of self-help training models
3. Local control and economic sustainability

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Big Sky Telegraph: Vision And Summary "Growing an Innovation Support Testbed"

Contributed by: Frank Odasz <franko@bigsky.dillon.mt.us>
Date: Thu, 26 Sep 96 9:19:32 MDT

Here's a 3 pg summary of BST for the archive.

For over eight years, Big Sky Telegraph (BST) based at Western Montana College of the University of Montana, has strived to create an online educational community supportive of grassroots innovations and experimentation focused on 'Real Benefits for Real People.' BST functions as a service to the college, and all Montanans, providing free online resources and training to reduce the risk of creating rural information have–nots, or know–nots. BST offers free access, and free online lessons, to anyone, anywhere, anytime.

BST demonstrates how an educationally–focused community network can support K–100 lifelong learning. BST will customize its services to support grassroots innovations and projects.

BST no longer offers Internet access subscriptions due to widespread availability of flat rate Internet offered by multiple sources, but continues to offer and develop online training opportunities and resources.

Big Sky Telegraph's World Wide Web home page is http://macsky.bigsky.dillon.mt.us/ from which our interactive BBS is accessible.

Big Sky Telegraph promotes teleliteracy for rural citizens for self–directed online lifelong learning by offering free public access to a summative clearinghouse available to anyone, anywhere, anytime via dial–in modem and direct Internet by either Telnet or WWW.

Serving as a Public Interest Network Testbed, BST advocates citizen teleliteracy and lifelong learning by providing a clearinghouse for the best Internet resources for:

- Internet training lessons, tutorials and courses
- School technology planning guidelines
- Community networking resources, models and studies
- Tutorials and resources for web page design and development
- Parenting, kids and home learning resources

Apple Computer has donated a Macintosh web server and Macintosh workstation to support BST's transition to Internet multimedia distance learning delivery.

Big Sky Telegraph has been cited for excellence by the White House's 1992 Agenda Report on the National Information Infrastructure and by the former Congressional Office of Technology Assessment's report "Making Government Work; Electronic

Delivery of Federal Services." BST is featured as a model educational and community network in dozens of books and publications and enjoys a widespread reputation as an innovative bottom-up grassroots network.

The BST PHILOSOPHY: Value bandwidth and human bandwidth will ultimately prove more important than volume bandwidth. By demonstrating how all citizens can be both learner and teacher, we're demonstrating how ongoing knowledge access skill training, and citizen evaluation of highest value resources, can become a vehicle for rehumanizing and revitalizing communities of all descriptions.

BST is currently conducting the following major national collaborative programs:

1. The Electronic Model Congress (TEMC)
Funded by the U.S. Dept. of Education is a "K12 Electronic Model Congress" project including 80 High School teachers from 19 states, supported by 23 congressional offices. This project dovetails with a Salmon Fisheries Environmental project including 60 teachers from 19 states, Finland, and British Columbia. These two projects will be collaborating around environmental debate, electronic information gathering, and advising our elected leaders on policy issues, electronically....the exact same skills all citizens will need to acquire if they are to participate in an electronic democracy. One hundred forty teachers were trained via BST's online course, mentored by a talented teacher in Oklahoma.

This project is the result of BST's longstanding partnership with the Columbia Education Center, of Portland, OR, which has worked with over 450 rural and small town teachers.

2. Reach For The Sky
Funded by the Annenberg/CPB Math and Science project, and the US WEST Foundation, BST's "Reach for the Sky" rural telecomputing project has demonstrated how providing rural teachers with laptops, and online training, can produce teleliterate teachers able to integrate many components of the Internet into their curriculums. The 20 first year trainees mentored an additional 80 teachers across a five state region demonstrating a scaleable "teacher mentoring" program suitable even for the most remote rural teachers. The economics and ergonomics of this project are of national significance, as are the methods used to teach telecollaboration. The original 20 teachers stand ready to train others, and can speak to the effectiveness of this project.

3. BST, in partnership with the Big Horn Network formerly operating in Cody, WY, offered a online High School course in Chaos Theory taught by a professor from MIT. As a direct result, two Cody HS students are now at MIT.

Executive Summary Of Bootstrap Coalition Proposal:
In 1995, as part of the process of gathering information on community networking, Big Sky Telegraph prepared and submitted "The Bootstrap Coalition," a grant proposal (unfunded) for the National Telecommunications Information Agency that articulates a plan for support of community networking.

The Bootstrap Coalition is a detailed plan to create measurable optimal collaboration models between multiple networking projects, using a decentralized workteam, to include selected experts, in the creation of a Rocky Mountain clearinghouse to engage and support small local rural citizen, school, library, medical, and community telecommunications initiatives.

For copies see the Bootnarratives file available via anonymous FTP at ftp://192.231.192.1 Directory:/ul/ftp/pub/franko

Director's Biography:
Originally from Cody, Wyoming, Frank received a B.A. in Psychology from the University of California, Davis, in 1974, then worked in Wyoming as an oilfield roughneck, independent carpenter, and dude ranch manager until receiving a Master of Science in Instructional Technology from the University of Wyoming in 1984. Frank has been an assistant professor of computer education at Western Montana College since 1985, where in 1988 he founded Big Sky Telegraph, an online educational community network.

BST was created primarily through the efforts of Director, Frank Odasz, who wrote a small grant to establish the system in 1987, and continued to write successively larger grants as the project demonstrated real benefits. Western Montana College received the grant funds and utilized BST for preservice teacher training as well as inservice training, via modem, for K12 teachers in the field. Big Sky Telegraph is one of the oldest and best known rural networks in the country and is a unique Internet resource and vocal advocate of rural telecomputing.

For more information search the World Wide Web for:
1. Big Sky Telegraph – 50,000+ citations
2. Frank Odasz – 500+ citations

My prime personal goal is to create a center focusing on providing ongoing online training and technical support for citizens, first in Wyoming, and potentially worldwide, with an emphasis in entrepreneurship and multiculturalism, potentially in a guest ranch environment.

Essentially, I believe our country needs a 'Camp David of Rural Community Networking Strategy,' serving as a leadership teleliteracy training center, a high level thinktank, and hosting a free public access web site offering the best self-directed learning opportunities on the Internet. Big Sky Telegraph is a working prototype: http://macsky.bigsky.dillon.mt.us/

** Note the international trade training links in the 'Community Networking' clearinghouse, and the many online courses listed under the 'Self-directed Learning' section.

Recent Conference Presentations:
For the past five years I've been averaging three national conferences a month. During the past year, I have presented keynote speeches on community networking for the

following conferences;

- University of Missouri's first Community Networking Conference, March 6th, 1996
- National Public Library Association's preconference on community networking, March 26th, 1996
- Taos Community Networking conference sponsored by NTIA, Kellogg, Apple, and the Morino Institute. Three plenary presentations and two panel discussions, May 14–17, 1996
- National Center for Supercomputing Applications (NCSA) first Community Networking conference, June 26, 1996
- Benton Foundation/NTIA "Up for Grabs" conference, Washington DC June 9–10th, 1996 (discussion participant, only)
- Southern Illinois Regional Library Assoc. conference on community networking, Aug. 1st.

Last year I presented on "Leveraging the Public Good, Electronically" (presenting visions for lifelong learning, community networking, and electronic democracy) for:

- The Council on Foundations in San Francisco, CA, May 1995
- The Michigan Council on Foundations, Kalamazoo, MI, Fall, 1995
- A Kauffman Foundation Seminar, Washington DC, Fall, 1995

BST has a demonstration school/community networking clearinghouse up at http://macsky.bigsky.dillon.mt.us/ (Including pointers to the best self–directed Internet training materials.)

BST is lauded as a pioneering network for K12 online instruction and community networking by the following books:

The Virtual Community; Homesteading the Electronic Frontier, by Howard Rheingold, published by Addison Wesley
New Community Networks; Wired for Change, by Douglas Schuler, published by Addison–Wesley.
Learning Networks; A Field Guide to Online Learning and Teaching, by Linda Harasim
Netlearning; Why Teachers Use the Internet, by Ferdi Serim, published by O'Reilly Associates.
The Educators' Guide to the Internet, by the Virginia Space Grant Consortium, published by Addison Wesley.

Chapters on BST are included in:

Public Access to the Internet, published for the Harvard University Information Infrastructure Project by MIT Press, edited by Kahin and Keller.
Empowering Computer Networks in Education, by Michael Waggoner, published by Educational Technology Publications.

Other Publications;

Congressional Office of Technology Assessment Study; "Making Government Work; Electronic Delivery of Federal Services."
US Distance Learning Association Journal; Online Teaching; A Significant New Pedagogy, by Frank Odasz (article.)

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Universal Service Provisions of the Telecommunications Act of 1996

Contributed by: A. P. Picadio <72002.2736@compuserve.com>
Date: Aug 26, 1996

Section 254 of the Telecommunications Act of 1996 establishes a Federal-State Joint Board and charges it with the responsibility of recommending changes to the FCC's regulations in order to implement the Universal Service Provisions of the Act. The Board is required to make its recommendations within nine months after the enactment of the Telecommunications Act of 1996. The FCC then is required to initiate a proceeding to implement the recommendations of the Board and is required to complete the implementation within fifteen months after enactment of the Telecommunications Act of 1996.

On March 8, 1996, the FCC issued a Notice of Proposed Rulemaking and an order establishing the Joint Board. The Notice of Proposed Rulemaking requested comments from the public as to how the FCC might best go about complying with the Universal Service Provisions of the Act.

The term "Universal Service" refers to those telecommunications services which are financially supported by various support mechanisms available to the FCC. These include requiring telecommunications carriers to provide services falling within the definition of Universal Services at reduced or affordable cost to those entitled to receive such service.

One of the "Universal Service Principles" which Congress adopted in Section 254(b)(h) of the Telecommunications Act of 1996 provides that all telecommunications carriers, "upon a bona fide request for any of its services that are within the definition of Universal Service, provide such services to elementary schools, secondary schools, and libraries for educational purposes at rates less than the amounts charged for similar services to other parties." This provision goes on to state that the discount shall be an amount that the FCC and the States determine is appropriate and necessary to insure affordable access to and use of such services by elementary schools, secondary schools and libraries.

Both the Federal-State Joint Board and the FCC are empowered by the Act to take into account advances in telecommunications and information technologies and services. In defining the term "Universal Service" the Joint Board and the FCC are required to consider the extent to which advanced telecommunications services are essential to education, among other things. Finally, under Section 254(b)(6) of the Act, the FCC is required to establish "competitively neutral" rules to enhance access to advanced telecommunications and information services "for all public and non-profit elementary and secondary school classrooms, health care providers and libraries" and to define the circumstances under which a telecommunications carrier may be required to connect its network to such public institutional telecommunications users.