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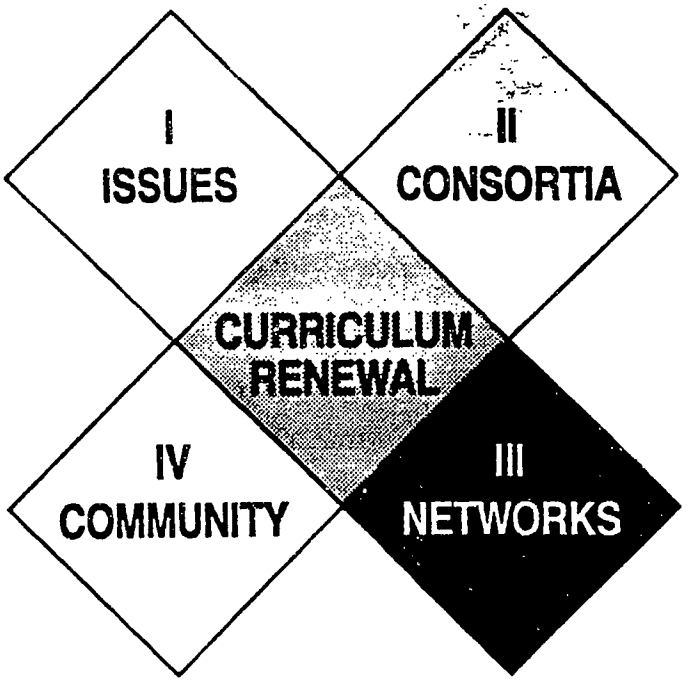
ABSTRACT

Resources to support curriculum renewal in small rural schools are severely limited. This handbook reports how five professional teacher networks expand available resources through the collective efforts of network members. The networks are Big Sky Telegraph (Montana), Alaskan Teacher Research Network, Bitterroot Teachers' Network (the Idaho Foxfire network), Lane County Science and Mathematics Teachers' Cadre (Oregon), and Washington Council of Teachers of Mathematics. Teachers reported that these networks had significant positive impact on curriculum renewal in five areas: (1) local input and a sense of ownership; (2) development of materials and approaches with high classroom utility; (3) meeting state curriculum standards; (4) remaining current with new curriculum and instructional developments; and (5) support and followup for classroom innovations. Networks also provided teachers with the professional benefits of collegial relationships, reduced professional isolation, support for individual classroom practices, and access to field tested materials and information. The organization of networks varied in level of formality and structure. However, teachers clearly were the decision-makers within networks. Operational funds were a necessity and came from various sources such as conference fees, dues, grants, and indirect support from colleges and universities. All networks had analyzed the need for network services before beginning operations. Contains worksheets for teachers considering network membership. (SV)

The Use of Peer-Based Support in Rural Settings

To Effect Curriculum Renewal

BY JACK W. STOOPS



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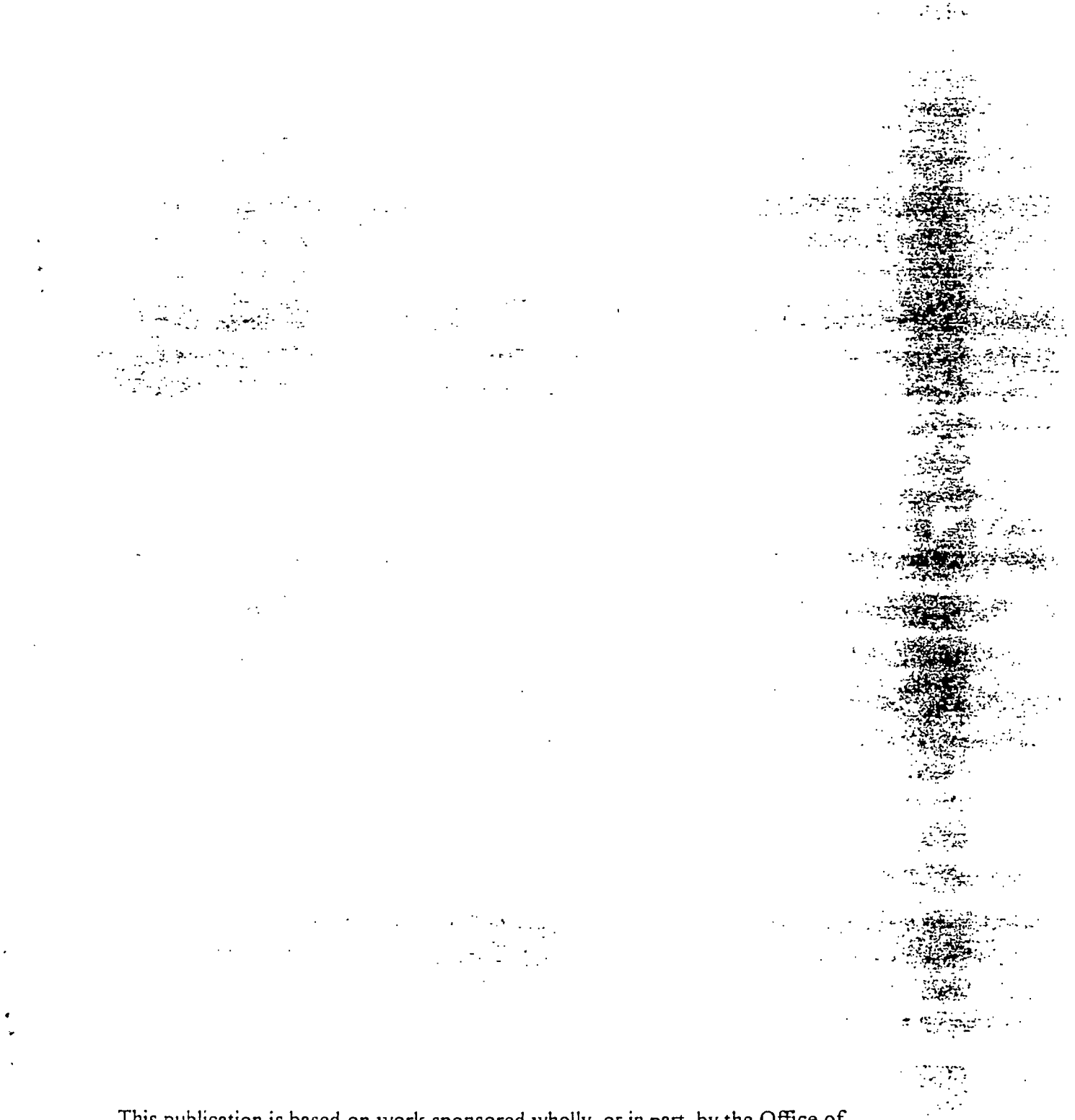

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THE USE OF PEER-BASED SUPPORT IN RURAL SETTINGS TO EFFECT CURRICULUM RENEWAL

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TABLE OF CONTENTS

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EXECUTIVE SUMMARY

Current research and development in small, rural schools has demonstrated a need for support of curriculum designed to enhance the quality of educational opportunities for rural students. Resources to support curriculum renewal among these schools are severely limited. There are cases, however, of small school districts which have implemented creative curriculum renewal approaches to improve the quality of educational opportunity. One of these promising approaches is the use of teachers' professional networks to meet small, rural school districts' curriculum renewal needs. Five professional teacher networks were identified and visited to gather interview data for handbook three. The five visited networks are: the Alaskan Teacher Researcher Network (ATRN) in Juneau, Alaska, the Big Sky Telegraph teacher network in Dillon, Montana, the Bitterroot Teachers' Network in Moscow, Idaho, the Lane County Science and Mathematics Teachers' Cadre in Eugene, Oregon, and the Washington Council of Teachers of Mathematics (WCTM) in Kennewick, Washington.

This handbook, based on interviews with individuals using such a process, reports on the use of the professional teacher networks listed above to facilitate such curriculum renewal efforts. It is organized into two major sections and details the strengths of this approach. The sections are:

- Network Purposes and Membership
- Network Organization and Operations

Following are the highlights of the major findings in each of these sections.

Network Purposes and Membership

Limited resources, which, in effect, hobble curriculum renewal efforts, are normal conditions for our nation's small, rural schools. Rural teachers, joining in networks with peers facing similar needs, expand their resources through the collective efforts of the

network members. Teachers 'n small, rural school districts reported they joined networks to:

- Reduce isolation
- Gain new knowledge
- Improve curriculum materials
- Provide follow-up to workshops
- Improve instructional delivery skills
- Enhance student achievement
- Rejuvenate one's practice
- Use telecommunications
- Volunteer to serve on a county-wide curriculum cadre

Teachers stated that networks had a significant positive impact in the following five areas of curriculum renewal: ability to provide local input and create a sense of ownership; development of materials and approaches that have high classroom utility; receiving resources that help them meet state curriculum standards; remaining current with the latest curriculum and instructional developments; and, receiving meaningful support and follow-up for new innovations teachers are employing in their classrooms.

Teachers in this study turned to networks for their curriculum renewal needs because networks provided new avenues to expand their classroom expertise and instructional delivery skills. Teachers' gains are clearly professional--they reported the following benefits from their network membership:

- Increased communication among members
- Improved trust and rapport among members
- Reduced isolation
- Established collegial relationships
- Focused attention on teachers' continuing classroom needs
- Offered building assistance to other teachers

- Created a powerful, yet inexpensive form of professional development
- Validated individual classroom practice
- Supplied field tested materials and information
- Became a district resource available to other teachers and administrators
- Provided access to additional professionalization opportunities.

Network Organization and Operations

Networks are organizations created to fill a professional development vacuum which meets teachers' and school districts' curriculum renewal needs. Interview data indicated that the networks analyzed in this study have two forms of organizational structure created to assist them to meet their members' needs. Two of the networks are much more tightly structured and formal than are the other three. Regardless of the organizational structure, however, both forms work well for their members.

Each of the networks in this study reported that funding is an operational necessity to provide requested services to its members. Operational funds come from a variety of sources for these networks: fees from a major conference, dues, private and public grants, and indirect support from colleges and universities.

All five networks in this study first analyzed the need for their services before they began operations. This analysis assisted them in developing the following organizational principles which guided them in their early operational phases:

- Determine that a professional teaching need exists that the network will be able to address
- Secure adequate operational funding
- Develop an organizational structure operated by teachers
- Allow for ample teacher input when setting goals, objectives, activities and network direction
- Maintain a focus based on teacher needs; don't allow the focus to drift

- Establish an effective communications system
- Advertise among teachers the network's existence, goals, and benefits it will provide to members

Teachers clearly are the decision makers within networks; each network designed its operations to solicit and include teacher input. Whether a network is organized to reflect its teachers' input directly or is organized more formally with elected representatives, chairs, and a committee structure, teachers' opinions and votes count. This keeps the networks' goals, operations, and activities continually reflecting teachers' needs which they may employ to improve their classroom practice.

Teachers reported that networks were particularly effective in providing assistance in the following areas of curriculum renewal:

- Allows for local input and ownership
- Develops materials and approaches with high classroom utility
- Provides assistance and even leadership in meeting new state curriculum standards
- Keeps members current with the latest curriculum and instructional developments
- Provides vital follow-up and support for the new innovations they employ in their classrooms

While participation in teachers' professional networks leads to more teacher efficacy, a word of caution is needed. Teacher membership in networks is very much determined by personal needs and may or may not contribute to a district's overall curriculum articulation. Teachers may well be engaged in network activities that could be very beneficial to a small, rural, school district's curriculum renewal needs. District officials should be alert for those teachers who belong to networks and approach them with offers to support their network endeavors. If school district officials are unaware, and do not take advantage of their teachers' network membership, then only the teacher may benefit.

THE USE OF PEER-BASED SUPPORT IN RURAL SETTINGS TO EFFECT CURRICULUM RENEWAL

PREFACE

The concept and development of a series of curriculum renewal handbooks evolved through several phases. It first began when NWREL found more and more small, isolated, rural school districts facing the challenge of curriculum renewal with limited, time, resources and expertise. This concern surfaced again when the regional needs assessment affirmed that curriculum renewal was of critical importance to the region's small, isolated school districts. NWREL's Rural Education Program subsequently identified alternative approaches effectively employed in the field for supporting curriculum renewal. Specifically, the use of consortia, teacher networks and community resources could help stretch scarce resources for curriculum improvement. The Rural Education Program next proposed to develop a series of handbooks describing the alternative strategies, technical assistance, and resource information small, isolated, rural school districts may utilize to effectively engage in curriculum renewal. For the purposes of the handbook series, the Rural Education Program defined curriculum renewal as follows:

> The process of those steps, procedures, and activities schools engage in to bring about change, modifications, refinement and improvement to the desired learner outcomes, materials, assessment procedures and instructional strategies. (Stoops, 1991, p.9)

An initial phase of this process began with a Curriculum Study Committee Conference held at NWREL in January, 1991. Seven regional educators representing state departments of education, rural education consortia, and educational service districts were asked to assist in meeting two objectives. NWREL desired input and discussion from these committee members about the alternative rural curriculum renewal models it

had identified. Second, NWREL had decided to begin with the study of rural school consortia as a curriculum renewal model, and sought case study sites suitable for study. The Committee successfully met these purposes.

The second phase involved conducting a regional depiction study describing the status of curriculum renewal in small, isolated school districts. Completed in March of 1991, the depiction study examined issues of common concern and explored their implications for subsequent phases of the project. The major findings were:

- Curriculum change is viewed throughout the region as being particularly timely and deserves attention and allocation of resources to effect renewal.
- Although many small, rural schools have confronted limitations to curriculum renewal efforts, many of them are unaware that promising approaches exist which address these limitations.
- An important concern is not the further development of materials to meet standards or to strengthen curriculum. Rather, approaches are needed which stretch scarce resources to provide training, technical assistance, and opportunity for small, remote schools to build their capacity within the identified models. (Stoops, 1991)

The committee members, however, also strongly urged NWREL to develop first an additional handbook not originally considered. This first handbook serves as a guide to assist small, remote school districts to determine initially the status of curriculum renewal efforts in their districts. NWREL followed these suggestions and wrote Handbook One of the series. The handbook, *Curriculum Renewal in Small, Rural Schools--What is Involved?*, was published in the spring of 1992. Practitioners are encouraged to read this handbook first because it assists districts to analyze their level of planning for curriculum renewal efforts before deciding which approach is best for them.

For the remaining handbooks in the series, NWREL initiated an annual review process involving members of the curriculum support committee. The committee meets yearly in NWREL offices to discuss case study site locations, and format and content suggestions for each of the handbooks. Committee members and NWREL staff agree on

case study sites. Then NWREL staff conduct the case studies and present committee members with a rough draft of each handbook for their field review. Each handbook in the series is primarily developed from field interview data, curriculum support committee member input and field review.

For handbook two, *The Use of Consortia to Engage in Curriculum Renewal*, published in August 1992, committee members had several recommendations. They suggested that it address the following: interactions of member school districts, consortium funding, governance, the role of teachers, administrators and the consortium appointed curriculum director, and the results of the consortium model to effect curriculum renewal. Five case study sites were visited: Union-Wallowa County Consortium in northeastern Oregon, The Blue Mountain Small Schools Consortium in southeastern Washington, The Silver Valley Vocational Education Cooperative in northern Idaho, the Southwest Region and Dillingham, Alaska School District's Cooperative in southwestern Alaska, and the South Central Curriculum Cooperative in South-Central Montana.

For handbook three, *The Use of Peer-Based Support in Rural Settings to Effect Curriculum Renewal*, published in September 1993, curriculum support members and NWREL staff discussed the meaning of the phrase *Peer-Based Support*. Those in attendance at the meeting agreed that *Peer-Based Support* refers to the curriculum renewal work of professional teacher networks in small, rural school districts. Therefore, in handbook three, professional teacher networks is utilized throughout as the synonym for *Peer-Based Support*.

Five professional teacher networks were identified and visited to gather interview data for handbook three. The five visited networks are: the Alaskan Teacher Researcher Network (ATRN) in Juneau, Alaska, the Big Sky Telegraph teacher network in Dillon, Montana, the Bitterroot Teachers' Network in Moscow, Idaho, the Lane County Science

and Mathematics Teachers' Cadre in Eugene, Oregon, and the Washington Council of Teachers of Mathematics (WCTM) in Kennewick, Washington.

NETWORK PURPOSES AND MEMBERSHIP

"You are the only science teacher in the school. The next school is 60 miles away. There's no one to talk to about the new National Science Teachers' Association (NSTA) and Project 2061 science standards. You're alone." Professional isolation is common to the rural school setting. Teacher collaboration is one of the ingredients for engaging in curriculum renewal at the local level. And it can be done in small, rural, isolated school districts through teacher networks.

Networks are becoming increasingly popular among the region's rural teachers. Teachers join networks because they provide more cogent information and materials to meet their classroom needs than do other staff development approaches. Lieberman and McLaughlin (1992) explain that effective teacher networks have a central and clearly defined area of emphasis that drives their functions. Teachers gain a sense of identity and accomplishment through their participation in activities in specific areas of interest that are a vital part of their professional existence. There are numerous examples many readers are familiar with, e.g.: The National Writing Project, professional associations at the national and state levels such as the Association for Supervision and Curriculum Development, the outcome-based education network, the Foxfire Teacher Outreach Network, and The National Council of Teachers of English all provide their members with information or materials specific to their teaching assignments. The increased interest and participation in networks are clear indicators that more and more teachers are turning from traditional inservice offerings which fail to satisfy their curriculum renewal needs.

Teachers gain a sense of identity and accomplishment through their participation in activities in specific areas of interest that are a vital part of their professional existence.

There are many different types of teacher networks, e.g., subject-area, general professional development, instructional delivery, curriculum development, personal interest, etc. The high and diverse number of networks testifies strongly to their popularity and use among teachers. To clarify the relationship between teacher networks and curriculum renewal, the following definition is used in this handbook.

> Teacher networks are collegial and collaborative professional relationships intended to address teachers' professional development needs. Formal networks have an organizational design and structure within which interactions take place. Network participation allows teachers to exchange information, materials, and techniques that enrich and expand their classroom expertise and leadership roles for purposes of curriculum renewal.

To find out more about how and why these networks function, we went to small, rural schools in Alaska, Idaho, Montana, Oregon, and Washington to see them first hand. Interviewees extensively involved in the development of their networks explained that a critical renewal issue arose among their teacher colleagues. Teachers wanted a mechanism that provided specific service(s) and an organizational structure to meet their needs. Someone, or a group of people with similar professional goals, decided that there must be others, like themselves, who could use the services they envisioned the network providing. In northern Idaho, a group of teachers committed to teaching the Foxfire approach wanted to establish a support network helping other teachers using Foxfire methods. Bitterroot Teachers' Network Coordinator Reva Luvaas-Hess noted.

Network participation allows teachers to exchange information, materials, and techniques that enrich and expand their classroom expertise and leadership roles for purposes of curriculum renewal.

> Back in 1987, a group of teachers and I decided we wanted to have a support system for ourselves. I was in the position to devote time to it. That's how we started and we've just grown since then and I have been the coordinator throughout.

The network organizers' realization of the need for a network coincided with that of many teachers. The teachers knew they needed some form of new and creative support system to assist them in meeting the daily needs of their classrooms--networks fit this need very well. Many respondents to the interviews in these case studies indicated that the primary reason they joined their particular network was to improve their teaching or to increase the amount of information they could provide their students. Traditional, professional inservice approaches were not providing the training these teachers' sought.

Teachers often are unsatisfied with their classroom practice and feel that their curriculum materials are not adequate to challenge sufficiently their students' abilities; they want to renew their curriculum and rejuvenate their instructional delivery techniques. A group of teachers in Idaho wanted to learn new models which would engage their students more, enhance their achievement, and make learning more "fun". Joining a network taught these teachers how to enliven their curriculum by bringing more community resources into the school which subsequently opened the community more to their students. This involvement has been an effective arrangement which improved community-school relations and teacher-to-teacher interactions and communications. One teacher member explained.

Teachers often are unsatisfied with their classroom practice and feel that their curriculum materials are not adequate to challenge sufficiently their students' abilities; they want to renew their curriculum and rejuvenate their instructional delivery techniques.

> Kids should be excited about what they are doing. I have the belief that we need to create life-long learners. I cannot give them all of the information they need. I need to help them learn how to go out and get the information on their own.

The lack of such inservice opportunities influenced Bitterroot's planners to make its workshop training sessions more relevant to teachers' needs. Luvass-Hess describes the network's primary goal.

> Our major goal is to implement the core practices of the Foxfire teaching approach. Probably out of that, one of the critical areas of emphasis is the role of the teacher and the student because it is a different role than we have been traditionally been taught. That seems to be the key.

One teacher, in another state, stated that her network's training provided information, materials and collegial support she was unable to obtain from other sources. Deanna, a rural Alaskan teacher, explains the attraction her network held for her.

> I went to the first meeting held in Anchorage and it was absolutely electrifying. We were instantly focused and the room was charged with power, charged with ideas and creative energy and support, that if you are a lone teacher in a small rural village you miss and desperately need.

Teachers feel that belonging to Alaska Teacher Researcher Network (ATRN) empowers them to improve their teaching. Membership gives them the tools to look objectively and reflectively at what they do in the classroom. This new training enables teachers to make sense of their classroom practice and to make changes where needed to improve their teaching. Shirley K., a rural Alaskan teacher, reports.

The major purpose of ATRN is to allow the teacher to become her own staff development agent. When you look reflectively at your classes, you identify some particular thing that you are very interested in.
Shirley K.

> The major purpose of ATRN is to allow the teacher to become her own staff development agent. When you look reflectively at your classes, you identify some particular thing that you are very interested in. You collect your data, you think about it, you read what is current as far as the literature is concerned. You learn so much. It is a very innovative and amazing way to keep teachers current and developing.

One of the issues teachers deal with daily is the isolation that accompanies their work in rural settings. Telecommunication is a relatively inexpensive and efficient method for teachers to interact professionally. Many of these teachers had no one else to talk to, or other means of exchanging information and acquiring answers to their professional

questions. In large schools there is always someone to talk to about your curriculum subject matter. That is seldom the case in small, isolated schools. Networking with telecommunications filled that need. In Montana, it also opened direct communications between rural schools, county superintendents of schools, and the Rural Education Center housed on the campus of Western Montana College. County Superintendents and rural teachers had immediate access to the college and to each other via the network connections. Membership in the network has immediate benefits for teachers. Theresa and Diana, two teachers in a rural, isolated Montana school, explained:

Montana has 800,000 people living in the fourth geographically largest state and it is very difficult for the teachers to meet regularly because of the distances between schools.

> We really needed help in locating new and different teaching materials for our classes, as do a lot of rural teachers. The network provided that access. We have to teach the same kids for four years and we have to get different things every year.

In an effort to relieve the isolation in rural Montana, Big Sky Telegraph connected rural Montana school teachers with each other, and with teachers in other states and countries. Membership in Big Sky provides teachers with access to curriculum materials, lesson plans, current research, and perhaps most important of all, contact with other rural teachers. Montana has 800,000 people living in the fourth geographically largest state and it is very difficult for the teachers to meet regularly because of the distances between schools. Laurel O'Rourke, high school teacher in Sheridan, describes her perception of Big Sky's major purpose.

> I guess I think of Big Sky Telegraph as being a way that we can communicate in rural areas with other people. It ties us together with people in our own profession and it also ties us with research materials we don't usually have.

Other teachers join networks for special purposes such as to update county wide curriculum units for all rural schools or to write curriculum incorporating new state standards that will be made available to all county districts.

In Oregon, many of the upper elementary and middle school teachers wanted assistance in developing science curriculum and instructional units. Student interest in science was declining and teachers wanted to improve that situation. Funding was available to pay for instructional aides but few had any experience or confidence they could improve science instruction. Part of the initial desire for the network was to teach and convince these aides that they could be effective in the classroom. Lane County Project Director Kermit Horne describes the network's major goal created to address this need.

> The major goal is to build local leadership--develop teacher leaders within their districts, within their schools, and also across districts. For example, we bring teachers together from all of the districts into a common group. They get to talk and exchange ideas and materials. I have seen many long term professional relationships develop between teachers in this sort of format.

In Washington, the Washington Council of Teachers of Mathematics strives to focus on classroom teachers by developing and maintaining activities that support their professional growth in teaching mathematics. The Council also attempts to stay current with national and international curriculum and instructional trends and disseminate this information to teachers in council publications and at council conferences. Kathy Kloch, staff development coordinator at North Central Education Service District, describes the Council's major purpose.

> The Washington State Mathematics Council is really interested in promoting the best in math education. The current emphasis is to bring in the standards that the National Math Council has set. We want to get everyone familiar with the standards and then to begin work on implementation.

Effects of Teacher Networks on Local Curriculum

Participation in teacher networks provides many opportunities for rural teachers to locate and to use new curriculum materials and to learn new approaches that improve their instructional delivery skills. Network membership also creates a community among members which sustains meaningful continuing professionalization by opening new channels of communication with their peers. For many rural, isolated teachers, networks provide the best source of new curriculum ideas and materials that increase their knowledge and invigorate their classrooms. Clearly, networking among peers in rural, isolated school districts is a valued and meaningful resource. Indeed, for those districts forced to reduce or to eliminate funding for new curriculum materials or for staff development, networking may be their teachers' most effective resource.

Indeed, for those districts forced to reduce or to eliminate funding for new curriculum materials or for staff development, networking may be their teachers' most effective resource.

Interview data indicate that teacher networks significantly contribute to curriculum renewal in the following areas:

- Allows teachers to develop curriculum that reflects a sense of local ownership and input
- Provides materials and approaches that have high utility in the classroom
- Enables teachers to infuse the latest curriculum and instructional developments into their district's curriculum
- Supplies teachers with new resources and methods to meet state standards
- Gives needed support and follow-up to innovations used in the classroom.

Local input and ownership. Membership in a network for curriculum renewal purposes gives teachers considerable latitude. For example, teachers may add as much to, or remove from, the curriculum materials they receive that they feel is necessary to fit their

individual classroom's needs. Freedom to adapt the materials in this manner develops a strong sense of ownership for these materials within teachers and school districts. Teachers feel that their empowerment in this dimension of the curriculum renewal process is significant and one of the most important attributes of the networking model of curriculum renewal. Teachers know they have a pivotal role in deciding how the curriculum materials they obtain from their network affiliation(s) will best meet their local needs. They can make whatever changes they feel are necessary for their classes--a major factor sustaining participant ownership in this critical element of curriculum renewal.

Teachers know they have a pivotal role in deciding how the curriculum materials they obtain from their network affiliation(s) will best meet their local needs. They can make whatever changes they feel are necessary for their classes--a major factor sustaining participant ownership in this critical element of curriculum renewal.

More often than not, small, rural school districts will have only one content area teacher at the secondary levels. This individual is that particular program area's entire department, e.g. one English, science, mathematics, and social studies teacher. Indeed, many times an individual may be the only teacher in a combined department, such as mathematics and science. Also, this person usually has the responsibility to develop and implement the curriculum in her/his area(s) of responsibility. Network participation exposes these individuals to current, alternative curriculum materials that they may adapt to their needs and use in their classrooms. Adapting these materials gives teachers ample opportunity to add whatever local input they feel is necessary into the new curriculum products. Teacher Bill Sherzer, Lowell, Oregon, School District explains:

> My middle school science curriculum has completely changed because I'm a member of the network. We only have four middle school teachers and one-fourth of them belong to the network. We have also changed the middle school curriculum as a result. We now integrate the curriculum in the subject areas of math, English, social studies, and science. Each year we have one project a quarter in which we integrate all of the curriculum.

Large parts of the school district's curriculum are brimming with new content and concepts in Hobson, Montana. An exciting part of the new curriculum implementation teaches students to telecommunicate with students in other states and nations. These learning experiences occur because of two teachers' membership in The Big Sky Telegraph network. Larry and Cynthia Denton have infused portions of the information and materials they received via telecommunications into their district's curriculum. A new addition to their classes requires their students to telecommunicate regularly with other students across the nation as well as with students in foreign nations including the former Soviet Union, Japan, New Zealand, and Australia.

My middle school science curriculum has completely changed because I'm a member of the network. We only have four middle school teachers and one-fourth of them belong to the network.
Bill Sherzer

As an illustration, the Dentons' students regularly telecommunicate with Boston, Massachusetts inner city middle school students. These experiences have proven to be culturally enriching for both groups of students who, incidentally, learn valuable telecommunication skills in the process. Cynthia Denton describes how she and her husband used some of the information they received through their network membership:

> We have been able to exchange some interesting information and form alliances with some of the Boston students. For example, the kids in Boston are very multi-national. I mean, they are every nationality, and every color. We are very homogenous here. We are almost all the same color and primarily two or three nationalities (of heritage) here. This has been a good lesson for our students.

High utility classroom materials and approaches. Teachers have found the network generated curriculum materials they use to be very practical and useful in their classrooms. They report that their peers' field testing and recommendation of materials or instructional approaches received through the network is very important. Their

colleagues' use and recommendation adds a level of professional credence and acceptance to materials they may not be too familiar with. Teachers stress that their colleagues' stamp of approval is a key element when they review new curriculum materials or instructional approaches. They realize that not everything their peers recommend always works for everybody, yet teachers feel it increases the likelihood that it may fit their needs very well. Pam Boldrin, a Washington teacher, succinctly describes the value of peer recommended curriculum materials.

Teachers stress that their colleagues' stamp of approval is a key element when they review new curriculum materials or instructional approaches.

> I think that is the only thing that has credibility. Teachers teaching teachers. I can say, 'I tried this yesterday in a classroom, don't do it this way.' Or, 'Try this, this worked for me.'

The latest in curriculum and instructional developments. Teachers in this study report that their network membership is an excellent mechanism that keeps them current with the latest in curriculum and instructional developments. These teachers are eager to learn and to share the latest approaches with their peers. One valuable activity network members engage in is to share relevant books, articles, methodologies, and skills with their co-members. In Idaho, the Foxfire Outreach sends out packets containing professional materials that the director and the regional representatives disseminate to their teacher-members. Teacher Kathy Pierce explains:

> ...you get to sharing with other teachers about what they are doing in their school and how sometimes we have to work our Foxfire methods around a particular curriculum or a way a school district has elected to develop or use their curriculum. I think I am ahead of other teachers I teach with in knowing about different curriculums. I find out a lot about what's the latest thing that they are doing in reading and math.

The Washington Council of Teachers of Mathematics regularly disseminates information on new mathematics curriculum and instructional developments. In addition, the network is currently assisting their members to infuse the new national mathematics

standards into their local district's curriculum. In an attempt to facilitate this new thrust, the WCTM has increased the number of inservice workshops in rural areas. They arrange for teacher-leaders to go to rural areas and conduct workshops in curriculum areas rural teachers have requested. Immediate past president Barbara Chamberlain describes the emphasis of these continuing education workshops.

> We conduct our training through the ESD's (education service districts) and the SPI's (Superintendent of Public Instruction's) Office. We put on what we call Math Education Issues Institutes. We try to arrange 25 teams of four people including an administrator. We want to educate the administrators. This year, we are also conducting nine, one in each region, one-day conferences. The focus for these conferences will the infusion of the national standards into local curriculum. There will be three levels: elementary, middle and high school.

Assisting local districts to meet state curriculum standards. Montana, Oregon, and Washington are the three Pacific Northwest states actively engaged in developing curriculum standards local districts are required to meet. Teacher networks in these states are taking an active role in assisting teachers and school districts to comply with the new standards. Participation in networks has helped teachers and their school districts to meet their respective state timelines. Teacher Brandy Howey of Big Sky Telegraph in Montana explains:

> We're now working on the communication arts curriculum standards. So, we're pretty much ahead of the communication arts because of these meetings that I've gone to. We've done a lot more than they (State Department of Education) thought. I leave the first week of June to help write the state's library curriculum. I ought to be able to use Big Sky a lot when I start writing that.

In Oregon, the 21st Century Education Reform Act is driving the implementation of all of the science and mathematics curriculum units. The Oregon Department of Education developed a set of Common Curriculum Goals (CCG's) for each curriculum area. School districts are required to indicate where these goals are implemented in their

curriculum and how they are taught. Lane County's Science and Mathematics Teachers' Cadre writes curriculum units with the state department's common curriculum goals infused in them. Meeting the new standards has occupied most of the network's time and resources. Gabriel Campo, teacher in Marcola, Oregon, explains:

Lane County's Science and Mathematics Teachers' Cadre writes curriculum units with the state department's common curriculum goals infused in them.

> The State Department Common Curriculum Goals are constantly being referred to. Kermit Horne (Project Director), constantly determines that our curriculum units are aligned with the CCG's. He is forever saying this unit fits with the CCG's. He helps us see how these things are connected. It is always referenced back to the CCG's.

Washington State Mathematics curriculum guidelines are closely aligned with the National Council of Mathematics Teachers' Standards. Because of this connection, The Washington Council of Teachers of Mathematics had an active role in training its members and other teachers to develop curriculum units that comply with the state standards. Much of this is familiar to network trainers because they know the national mathematics standards very well. Superintendent of Public Instruction (State Department of Education) staff depend on network trainers to help write the new standards and conduct some of the training workshops. Jean O'Connell, who was involved in this project explains the network's role.

> Teacher representatives from each of the educational service districts (ESDs) got together. There is quite a networking of teachers around the state because this was a major effort. I was on the final writing team and we met for a year. After that we organized workshops at each of the ESDs. We worked to disseminate that information among administrators and teachers. It is still going on.

Providing needed support and follow-up. The teacher networks investigated in these case studies provide essential support and follow-up to teachers employing new

network developed innovations in their classrooms. The fundamental nature of this support and follow-up was to assist teachers to implement the new changes. The opportunity to share knowledge, ideas, or frustrations, is crucial to teachers engrossed in changing the curriculum or the instructional delivery methods in their classes. The success of the new innovation may very well turn on how much support and follow-up is received by the teacher trying the change. Allison Gilmore, member of the Bitterroot Teachers' Network describes the importance of these elements.

The opportunity to share knowledge, ideas, or frustrations, is crucial to teachers engrossed in changing the curriculum or the instructional delivery methods in their classes.

> It helps to save you from the feeling that you're out there all alone. Even though I am the only teacher in my building who practices the Foxfire methodology, I can call teachers in Coeur D'Alene or Troy, Montana, or Spokane, or Boise and talk about things that have or haven't worked. It is so important to be able to get somebody on the phone or get a letter from someone who has experienced the frustration you have. It is crucial knowing that you are not alone with the problems you have.

Network Benefits

We have seen that most teachers join networks expecting their participation will expand their teaching repertoire and increase their body of professional knowledge to impact positively their classrooms. However, it is equally important to know whether membership continues to deliver the personal benefits teachers expected, as well as being beneficial for their buildings, and for their districts. In other words, do the networks continue to focus on teachers' needs?

Idaho teachers have seen new student enthusiasm and growth through the expanded dimension of student efficacy. They are rejuvenated when they witness their students becoming excited and actively engaged in determining their own educational experiences. Many of these teachers practice in conservative communities with traditional school settings where innovation is viewed with skepticism. Leading progressive

curriculum renewal efforts that actively involved their students with the community brought new meaning to their careers. Barbara and Cheryl describe their experiences in implementing Foxfire approaches.

> The students are excited because they do the planning and the organizing with the teacher. The students are the center of the lessons, the teacher isn't. It is great for the students. The district thought we were real daredevils for taking the Foxfire classes. Now that we have implemented the core practices, our principal thinks we are doing real innovative teaching. The district likes the contact with the community and the good public relations coming from that contact.

Belonging to a network also decreases rural teachers' isolation and greatly enhances their professional affiliation with their peers which reaffirms their own pedagogy. Telecommunications allows teachers who are separated by great distances, geographic barriers and sometimes inclement weather, to counsel, advise, and help one another. Friendships, collegial relationships, and collaboration serve to validate each others' practice and also to keep them abreast of new developments. Deanna, a teacher in the rural Alaskan village of Red Devil, describes the value of her membership in the Alaskan Teacher Researcher Network.

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> Friends in the network give me some materials I use with my students. Another way networking helps me is just knowing that I can call one of them (other member) and say, 'How's it going?' 'I'm having a problem with this' or 'I had a great day' or 'what's happening in the network statewide?' We keep each other up to date. We really don't talk to each other on any kind of regular basis, we just know that we can when we want to.

Jackie, a rural elementary teacher in Oregon, expands on the added benefits of securing professional affiliation with peers through membership in a network. Teachers

certainly may teach in rural schools, and be isolated from their colleagues, but they no longer have to be out of contact with one another. Jackie explains:

> The networking capability to me with other teachers is terrific because being in a small school I am the only third grade teacher. I have no other teachers to collaborate with and so the network provides me an opportunity to contact other elementary school teachers who say, 'I went to a neat workshop and picked up this. Here's a copy for you.' It's another person to collaborate with which doesn't exist in a small school.

Membership in a network can present unexpected opportunities which enrich students' classroom experiences. Larry and Cynthia Denton, teachers in Hobson Public Schools, Hobson, Montana, use their telecommunications connections through Big Sky Telegraph to enhance their students' learning activities. The computer and modem have literally opened the world to students in this rural Montana town of 260 residents. They have found that others, such as themselves, are eager for outside contact and news. High school students first received contact from a teacher and students in the Soviet Union seeking information on international monetary conversion rates. Later, when the Soviet Union was politically disintegrating, Larry Denton's high school classes received periodic local reports from their Russian contacts more current than those the national network news agencies reported. These events brought a new dimension to Denton's high school Social Studies curriculum. Denton explains:

Later, when the Soviet Union was politically disintegrating, Larry Denton's high school classes received periodic local reports from their Russian contacts more current than those the national network news agencies reported.

> ..., it has changed my economics class considerably because we got into entrepreneurship with Vladimir Korsikoff of what was the Soviet Union. Some Japanese investors wanted to build a resort and Korsikoff had no idea of what to charge. He knew the ruble was not convertible. My students told him to base his charges on the international gold conversion rate. Also we were communicating with people in Lithuania when the Soviet Union broke up. We had news from them more current than what CBS and NBC had. We still have communication with these people.

School districts also receive benefits from their teachers being members of networks. These individuals provide a district with a core group of intellectually curious and active people. They remain current with the latest developments, and are committed to improving their classrooms and to sharing with their peers. These are the teachers that often lead change efforts in their schools and districts. Their enthusiasm, and commitment for curriculum renewal motivates their peers to try new methods, new resources and new approaches. Tneir endorsement adds a level of authenticity other teachers accept which advances the professionalism of their peers within the district. For example, these teachers are the first ones to use computers and then to show their peers the value of them in their classrooms. Of equal importance, it is one of the least expensive curriculum renewal programs a district can promote. Annie Caulkins, an Alaska administrator, describes the value a group of teachers like this can have for a district.

> These are the people I know I can call when there are new ideas or questions and concerns from our Board of Directors. If there are occurrences on the national scene that you want some of your people involved in this is the group who will do it. I have this little core of front runners who help me with curriculum, instruction, evaluation and assessment. They do this because of the way they think about and look at their lives as teachers.

Teachers appreciate that networks continue to remain focused on their needs after they joined. This source of support and collaboration for classroom practice did not change. This has earned a high level of loyalty among teachers for their networks. They know they can get the information or materials they need from their colleagues on the network. As long as the networks remain focused on teacher-member needs and do not drift or become blurred, they will have their teachers' support. Washington teacher Jim Hill succinctly sums up the value of his network membership.

As long as the networks remain focused on teacher-member needs and do not drift or become blurred, they will have their teachers' support.

My most beneficial relationship between myself and the Council is the fact that it gives me people I can go to if I have a problem or if I run into curriculum I'm unhappy with. I can go to people who are Council members and see what they have done. It gives me some good people I can contact. It's basically a way of getting information.

Membership in networks has drawn some teachers into expanded staff development programs enhancing the continuing professionalization of rural teaching. Several rural Alaskan teachers, members of the Alaska Teacher Researcher Network (ATRN) are participating in the Breadloaf School of English at Middlebury College in Vermont. Breadloaf brings together each summer teachers and students on the Middlebury College Campus in Middlebury, Vermont. Here, distinguished faculty members from the United States and the United Kingdom teach graduate courses in theater, literature, and writing. Each year approximately 250 students come to study from throughout the United States and parts of Europe.

Several rural Alaskan teachers, members of ATRN, are participating in the Breadloaf School of English at Middlebury College in Vermont. Breadloaf brings together each summer teachers and students on the Middlebury College Campus in Middlebury, Vermont.

The Breadloaf School of English received a DeWitt Wallace-Reader's Digest Grant in 1993 to fund fellowships for rural teachers. Breadloaf was very interested in attracting members of ATRN to attend this year's summer session. The grant pays for the costs of these teachers' travel expenses, lodging and meals, tuition, and books. In addition, these teachers will become initial members of the Breadloaf Rural Teacher Network and given additional grant funding to conduct telecommunications projects during the regular school year. Scott Christian, member of the Alaskan Teacher Researcher Network, was selected to participate in the first summer session. He describes the added benefits he derives from his network membership.

> My participation in ATRN made this possible. I am very excited but the classes are quite rigorous. There are thirty participants and each of us will

return to school with a modem to participate in a series of tele-conferences this next year. Our students will have access to the rural network as well as the teachers. One of the neat things is that this original group of 30 and the faculty will determine our future direction with the grant.

Plans for the Future

Network members expressed numerous plans they hoped to realize by using the network approach to effect curriculum renewal. These aspirations come from members who have had time to reflect on their participation in their selected network. They differ somewhat from the reasons teachers expressed for first considering joining a network. After some time and experience as a network member, many of the aspirations reach beyond simply satisfying immediate personal growth needs. Experience in network operations demonstrated the power of this approach to effect change. Listed below are statements taken from teachers in each of the case study sites.

After some time and experience as a network member, many of the aspirations reach beyond simply satisfying immediate personal growth needs. Experience in network operations demonstrated the power of this approach to effect change.

> I think the major responsibility of the Washington Council is to educate everyone in the state on the national mathematics standards. We need to inform everybody involved in education, including government folks, of the necessity of implementing these new standards. It will take everyone's assistance. *Barney Erickson, Washington.*

> I'd like to see teachers teach more effectively. I'd also like to see kids more excited about learning and not go. 'Oh, school, yuck.' I want them to be prepared to go on learning which they have to be able to do. *Allison Gilmore, Idaho.*

> Well, I would like to get my kids more involved in foreign countries. I would like them to get more history done on it than just English. When my kids leave here, I want them to feel comfortable in the real world, because we're so small. I want them to be able to go out and say, 'Hey, I've done that.' *Brandy Howey, Idaho.*

> Fifty percent of the ranchers and farmers have lost their livelihood over the past decade. If they had known about modem communications, many of

them could have brought in a second income right from the ranch house and perhaps saved their homestead. If we learn to use this now and use common sense we can jump ahead and not have to wait 25 years for it to become part of the culture, as we did with the telephone. *Frank Odasz, Montana.*

What I would hope is that the Researcher Network will become its own self perpetuating entity that will continue to train teachers. I also hope that the network will continue to recognize teachers as the major influence in education. *Judith Entwife, Alaska.*

I want to use the network to assist my students to increase their own sense of efficacy. They already know a lot, but are hesitant to ask questions or to trust themselves about what they already know. I want to empower students to believe in themselves, to believe that, I can find information that I can benefit from. I want the curriculum to become student question-driven program. The teacher serves as a guide, the student is the center. *Gabriel Campo, Oregon.*

Joining a Network

Teachers interested in joining a network may wish to answer the questions itemized in the following checklist which is designed to help teachers assess the merits of a network they are considering joining. None of the questions are prioritized, but rather are elements teachers identified as critical to their membership. The checklist also provides sources teachers may contact for additional information. Appendix A contains worksheets teachers may use to record answers to the questions on the checklist.

Figure 1 illustrates the relationship of these elements.

Teacher network membership checklist

☐ What am I looking for?

- Professional Development
- Interaction with Peers
- Personal Interest(s)

☐ Who are some sources I may contact for information about networks?

- Peers and Colleagues
- Rural Education Centers
- Regional Educational Laboratories
- Administrators
- School Cooperatives and Consortia
- Literature and Journal Notices
- State Departments of Education
- Colleges of Education
- ESD's (when available)
- Workshop Presenters
- National and State Professional Associations

☐ Will this network meet my needs?

- Curriculum
- Enhance student achievement
- Pedagogy
- Fulfill district needs

☐ What are my responsibilities as a member?

- What resources are required
- Fees
- Time commitment
- Other resources

☐ What are the benefits of joining this network?

- Reduce isolation
- Enhance student achievement
- Peer coaching opportunities
- Remain current on topics of interest
- Validate current efforts
- Improve pedagogy
- Increase collegiality with peers
- Increase knowledge about technology applications

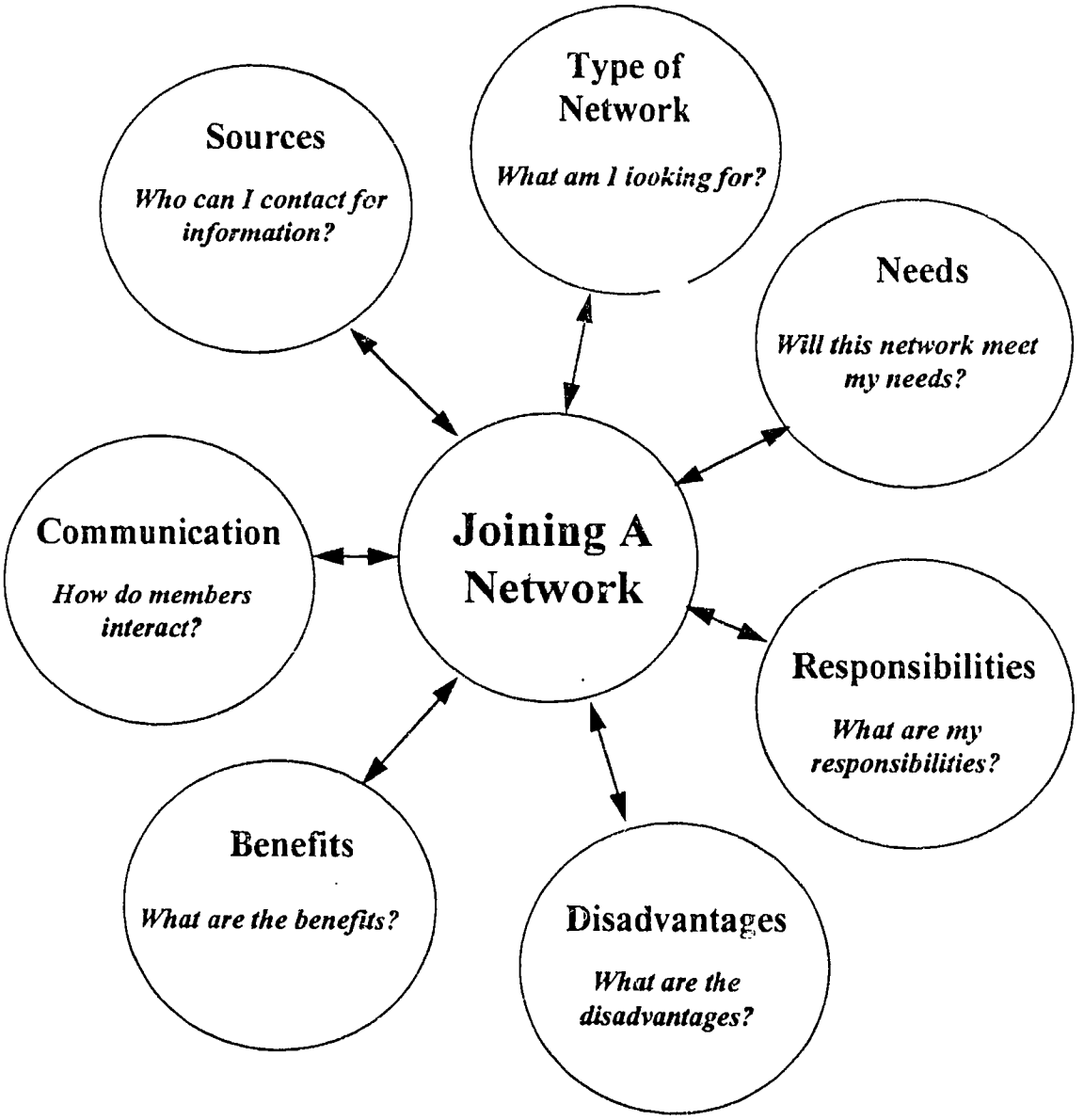
☐ How are members connected--How do they interact?

- Mail
- Telecommunications
- Telephone
- Meetings-Conferences

☐ What are the disadvantages of joining this network?

*See Appendix A for detailed worksheets to assist in profiling networks

Figure 1: Network Membership



*See Appendix A for detailed worksheets to assist in profiling networks

Summary

Rural teachers join networks for various professional and personal reasons. Some join after attending a class or a workshop that provides a connection with a network as a follow-up. Others join to reduce isolation and at the same time to increase their knowledge and instructional skills. Some teachers join networks which are professional associations important to their teaching. As members they meet new contacts with potential statewide and national affiliation(s). Teacher networks possess many attractive features for their members including: clear areas of emphasis, varieties of related activities, opportunities for personal empowerment, validation of the value of individual members' input, and leadership opportunities (Lieberman and McLaughlin, 1992).

Teachers in these case study sites reported that they joined networks to:

- Reduce isolation
- Gain new knowledge about classroom and teacher research
- Provide follow-up to workshops
- Learn better ways to teach science
- Satisfy an administrator's request
- Enhance student achievement
- Rejuvenate one's practice
- Improve curriculum materials
- Use telecommunications to communicate with other teachers
- Volunteer to serve on a county-wide curriculum cadre
- Satisfy a curiosity

Networks in this study have had a profound effect on rural teachers' involvement in local curriculum renewal efforts.

Networks in this study have had a profound effect on rural teachers' involvement in local curriculum renewal efforts. Respondents indicated significant positive impact in the following five areas of curriculum renewal: ability to provide local input and create a sense of ownership; development of materials and approaches that have high classroom utility; receiving resources that help them meet state curriculum standards; remaining

current with the latest curriculum and instructional developments; and, receiving meaningful support and follow-up for new innovations teachers are employing in their classrooms.

Of all of these areas noted above, the support and follow-up provided to members is particularly important to the success of curriculum renewal endeavors. These elements not only assist teachers and administrators to implement changes but, of equal importance, they increase the amount and quality of interaction among members. These factors also amplify the quality of curriculum knowledge among participants. The effect is to reduce isolation, to improve communication, and to develop trust and rapport which all strengthen the continuing professionalization of rural educators. This helps to create a locally skilled cadre which enables curriculum renewal to be undertaken with local expertise and resources.

The benefits teachers gain from membership in networks are clearly professional. Networks focus on "what works" to enhance student achievement and to reduce many of the logistical requirements involved in traditional inservice approaches.

Teachers in this study turned to networks for their curriculum renewal needs because networks provided new avenues to expand their classroom expertise and instructional delivery skills. The benefits teachers gain from membership in networks are clearly professional. Networks focus on "what works" to enhance student achievement and to reduce many of the logistical requirements involved in traditional inservice approaches. Teachers share their needs, concerns, and goals with their peers and establish norms of collaboration to use in their newly expanded communities of teachers and learners (Lieberman and McLaughlin, 1992).

Network members engaged in curriculum renewal reported the following benefits from their network membership:

- Increased communication among members
- Improved trust and rapport among members
- Reduced isolation

- Established collegial relationships
- Focused attention on teachers' continuing classroom needs
- Offered building assistance to other teachers
- Created a powerful, yet inexpensive form of professional development
- Validated individual classroom practice
- Supplied field tested materials and information
- Became a district resource available to other teachers and administrators
- Provided access to additional professionalization opportunities

Rural teachers are joining networks in increasing numbers primarily because networks offer a level of professional development unavailable elsewhere. Networks are needs-based organizations created to be resources to assist their members. Each network investigated in this case study reported that it was purposely created to fill a professional development need identified by teachers working in the field.

Teachers value the effects networks bring to their continuing professionalization. These organizations give teachers new opportunities for career growth and reward their participants with a renewed sense of purpose and efficacy. Especially important are teacher recommended materials and approaches peers may adapt to meet their own rural school districts' and communities' unique needs. Many teachers use these new curriculum renewal materials to benefit their schools and communities and to truly challenge their students' interests, curiosities and abilities.

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NETWORK ORGANIZATION AND OPERATIONS

This section explains how the five teacher networks are organized and operate to facilitate curriculum renewal among their members. While there are general similarities in most network's organization, differences do exist in how each network implements its day-to-day operations in meeting its adopted goals. All of the networks investigated in this study stated that they were organized to provide service or assistance to their teacher-members. This is an organizational goal which each network operationalizes differently. Some networks' organizational structure is informal and loosely-coupled with little structure or guidelines. Others are much more formal, having elected officers, committees, task descriptions, and a structured operational system that, with some, even includes an organizational chart.

Regardless of a network's organizational structure, each requires adequate funding in order to operate and to provide services. Sufficient operating funds are necessary for their survival. The networks studied are all self-supporting organizations with little or no regular funding from school districts or their state education's general fund. Since funding is such an operational necessity, each network developed its own methods and procedures for securing an adequate budget. The most common funding sources are grants from foundations, corporations, and public agencies, dues, profits from special projects, dedicated U.S. Department of Education funds and combinations of these sources. Without exception, these networks were unable to begin operating until they had an adequate funding base. Funding came first; each network had to secure the funding before it could offer membership and professional development services to teachers.

The most common funding sources are grants from foundations, corporations, and public agencies, dues, profits from special projects, dedicated U.S. Department of Education funds and combinations of these sources.

Each network also has a director or an elected officer and an appointed committee responsible for securing and managing the funds. This responsibility is not taken lightly, regardless of whether the budget is large or small. The size of each of the network's annual budget varies greatly, ranging from $5,000 to $250,000. The individual revenue sources and expenditure allocations will be discussed in more detail in the sections about each network.

Washington State Council of Mathematics Teachers

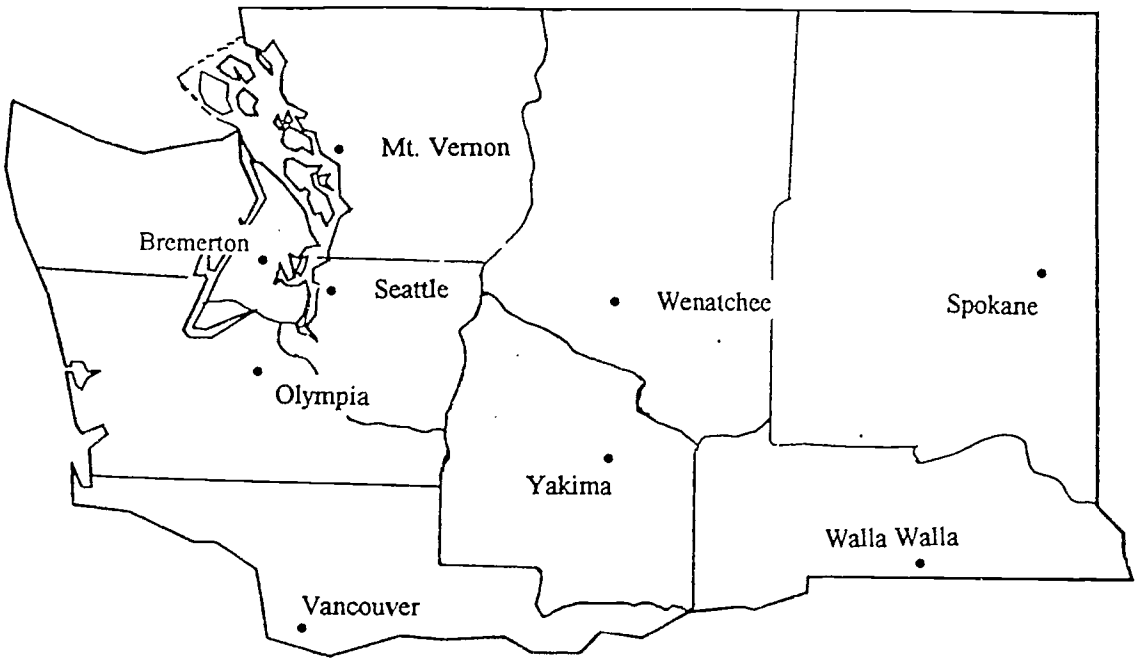
Washington Council of Teachers of Mathematics (WCTM) has a slate of statewide elected officers filling needed positions within the council as well as individuals representing geographic areas throughout the state. The council members elect a set of officers including a president, two vice-presidents, a secretary, a treasurer, and an inservice chair-person. The president serves a two-year term. Two vice-presidents are elected rather than one in order to represent both eastern and western Washington. This arrangement allows each to limit his/her service to whichever side of the Cascade Mountains (s)he represents. The vice-presidents are leadership positions which move into the presidency on a rotating basis. Each side of the state elects a president every other term. In addition, the state is divided into nine regions, based on the area each educational service district serves, each with a representative elected to a three-year term. These Regional Directors are the elected members who serve on the Executive Board of Directors for the Council. Figure 2 illustrates the council's regional divisions within the state.

The council members elect a set of officers including a president, two vice-presidents, a secretary, a treasurer, and an inservice chair-person.

Creating and managing the Council's operating budget is an important task the executive board attends to. It is very large for a volunteer organization, over $250,000 and requires considerable accounting knowledge and expertise to manage. The

membership fees pay for the costs of the mailings, materials distributions and for the production of the newsletter including the special topics issue. A large part of their funding comes from the Northwest Mathematics Conference serving teachers and administrators from British Columbia, Canada, Oregon, and Washington. The Washington Council hosts the conference every three years.

Figure 2: Washington State Council of Mathematics Teachers' Regional Divisions



All of the profits from the conference are turned over to the treasury which is carried over to provide three year's support to fund various council activities. The Executive Board of Directors makes the final decisions on budget amounts and allocations.

One of the most important tasks the Executive Board supervises is the network's curriculum renewal emphasis for the upcoming year. The Executive Board manages the overall direction of each year's efforts with the assistance of the Washington State Council's Inservice Committee. The Inservice Committee members are appointed to the Executive Board and have a substantial role in the implementation of each year's area of

One of the most important tasks the Executive Board supervises is the network's curriculum renewal emphasis for the upcoming year. The Executive Board manages the overall direction of each year's efforts with the assistance of the Washington State Council's Inservice Committee.

emphasis for curriculum renewal. Teachers tell inservice committee members or their regional directors what their training needs or goals are for the next year. The directors and inservice committee members take this information to the Executive Board meeting and the board members agree on the curriculum renewal area they will emphasize the next year.

Each Regional Director is responsible, with assistance from the Inservice Committee, to organize and facilitate the network activities within his/her region that the Executive Board authorizes. The formal activities are workshops, meetings, and institutes. In these sessions the presenters provide information, materials or training in new instructional delivery skills appropriate to meet teachers' curriculum renewal needs from kindergarten through college. The network attempts to offer teacher led curriculum renewal activities for every teacher of mathematics in each region regardless of grade level. Communications feedback is very important to the Executive Board which welcomes the teachers' assessment of the training sessions. They want their workshop and institutes to maintain high classroom utility.

Most new members have their initial networking contact with other members through the extensive workshop and meeting structure the Washington State Council conducts. Attending a meeting or a workshop is only the beginning of the networking opportunities members have available to them. Rural teachers contact each other in these sessions and make arrangements to communicate regularly following the workshops for support and follow-up. Although the network does not have a statewide telecommunications system, rural

Although the network does not have a statewide telecommunications system, rural teachers routinely telephone one another and exchange materials and approaches.

teachers routinely telephone one another and exchange materials and approaches. The contacts made in these meetings and workshops with the resulting follow-up are among the most valuable networking elements rural teachers employ to meet their curriculum renewal needs.

The Executive Board conducts workshops especially tailored to small, rural school district's needs. For most of the training sessions the WCTM sponsors, it requires that a minimum number of teachers from participating districts must attend and also stipulates that a total minimum number of teachers be in attendance. The Council establishes these minimum numbers to meet expenses. Often the minimum number required to attend from each district is four teachers including an administrator. Meeting this minimum number was very difficult for most small, rural school districts. Most of them do not have four mathematics teachers. In consideration of this, the Executive Board waived the minimum number of required attendees and authorized more Council funding support for the workshops for small, rural districts. This is a tremendous assistance which allows more mathematics teachers in these districts to attend the workshops.

The education service district (ESD) serving each region also fulfills a critical networking role for rural teachers. Many of the workshops and training sessions the network sponsors are coordinated through each ESD office. They circulate notices of workshop topics, meeting times, and locations in their regional newsletters. ESDs in rural areas also promote communication among members and the state council. Another function the ESD performs that benefits rural teachers is to make copies of relevant curriculum renewal materials and disseminate them on the courier delivery service to requesting rural teachers.

WCTM's newsletter is another valued part of their networking approaches. It is produced and distributed to members quarterly and contains numerous new curriculum renewal ideas, materials, and instructional delivery approaches. This newsletter is produced by teachers for teachers and contains classroom validated materials and ideas

rural teachers use. The newsletter exemplifies the importance the network places on looking inward and promoting teachers leading their peers in new curriculum renewal endeavors.

Washington teachers want their mathematics council board of directors to be available to them and to reflect state and local needs rather than to promote a national agenda. This is one of the reasons they have such a tight organizational structure. The teachers prefer to have their state board of directors easily accessible rather than to direct their needs through the national council of mathematics teachers' structure. The members feel it is important to inform non-member mathematics teachers that a viable state organization exists to help them. James Hill, mathematics teacher from a small, rural district, explains:

Washington teachers want their mathematics council board of directors to be available to them and to reflect state and local needs rather than to promote a national agenda. This is one of the reasons they have such a tight organizational structure.

> Unfortunately, I think that that's one of the biggest things we need to make sure is that more and more teachers in the state who are teaching mathematics know that there is a Washington State Mathematics Council. We're still not doing a good enough job informing non-member teachers.

Bitterroot Teachers' Network

The Bitterroot Teachers' Network is a local branch of the national Foxfire Teachers' Network. The Foxfire National Network originally had five networks and Bitterroot was the only one west of the Mississippi River. When it first became organized, Foxfire colleagues in Georgia wondered if a branch could survive so far away in Idaho. Some members even questioned whether it would be able to remain true to the Foxfire core practices. It has since become a stalwart of the original five networks and has been so successful that other western networks have since formed in California and in the Puget Sound area of Washington State.

The five original networks decided to create a national Teacher Outreach Office to better coordinate their efforts. It is organized and managed by field practitioners and is truly teacher developed. Each network maintains weekly and sometimes daily contact via computer-modem and Facsimile (FAX) contact. Reva Luvass-Hess has been Bitterroot's only coordinator and she attributes Bitterroot's success to the commitment and strength of the teacher-members.

> I view that office as a professional collaboration that we teachers created that is truly democratic and was developed to improve what we are doing in the field. It is really a bottom-up organization and we are working together as a team. We have grown to be more business-like as we have evolved. But we have all evolved together.

The Teacher Outreach Office is located in Rabun Gap, Georgia and the Network Coordinators have established an Executive Committee which meets three times annually. They remain in computer and FAX contact between their meetings in September, February, and May. This close communication allows the networks to have exchanges and participate in each others' workshops and training sessions. Teacher-members from Tennessee or New York may come to Idaho and teach workshops and team with local teachers. The exchanging of colleagues maintains a high level of continuity and quality among all of the networks.

Teacher-members from Tennessee or New York may come to Idaho and teach workshops and team with local teachers. The exchanging of colleagues maintains a high level of continuity and quality among all of the networks.

Bitterroot depends on foundation grants for practically all of its operational revenues. The network was originally funded with a grant from the Steele Reese Corporation which provided the necessary revenue to get started. A significant part of Luvass-Hess' responsibilities is to write grant proposals for network funding. Seeking local, regional, and national grant sources is a constant search. Bitterroot, by itself, is not large enough to receive grant funds from some of the larger foundations. Being part of

the Foxfire Teacher Outreach helps considerably in this regard. Foxfire Teacher Outreach is large and nationally organized, and as such, applies for and receives the larger foundation grant monies. An important benefit of Bitterroot's affiliation with Teacher Outreach allows it to share some of these national foundation grant monies. This money from Teacher Outreach coordinated with locally raised grant funds provide the financial base for Bitterroot.

In addition to these funds, Luvass-Hess raises local grant funds that she uses to match with some of those received from the national Foxfire offices. The national Foxfire organization provides matching funds to local networks once they have raised an equal amount. Acquiring these monies has been difficult for the Bitterroot teachers, since none of them were trained in fund raising. Luvass-Hess describes some of the difficulties involved in this process.

The national Foxfire organization provides matching funds to local networks once they have raised an equal amount.

> Right now, for example, I have $25,000 at the national level waiting for our network this year if we can match it locally. It's been a very slow, hard building-up process to learn because most of us have not come into this with those skills. We are not business-like. We're very academic and we're not fund-raisers so there are a lot of roles we've had to pick up as coordinators that we didn't originally even anticipate.

The Bitterroot Teachers' Network's statewide organization is grouped into three regions. It is organized this way because Idaho is a large state and there are considerable distances between some teachers and members of the network. Idaho is mostly rural and spread over a geographic area that ranges 480 miles north-south and 305 miles east-west. There is only one two lane highway connecting the north to the south and one four lane highway linking the west to the east. This distance and isolation means that Idahoans are pretty much on their own which impedes their ability to meet as a network.

Luvass-Hess and some of the other teacher-members began to analyze how the network could survive in such a wide spread geographic region. They needed to minimize

the distances between teachers to maintain their grassroots approach and appeal. They discovered that there were groups of teachers clustered in areas no more than one-half an hour driving distance apart. The network subsequently appointed a contact leader in each area who works directly with regional coordinator Luvass-Hess. The area contact-leaders and Luvass-Hess grouped the network into four regions: Region I, the North Idaho Region; Region II, the North-Central Idaho Region; Region III, Southwest Idaho, and Region IV, the Central Region. The network has done little with Southeast Idaho primarily because it is too far from Bitterroot's regional headquarters at the University of Idaho in Moscow. Luvass-Hess describes the organizational structure of the Bitterroot Network.

We have, at this point, three active regions with regional reps and area contact leaders within each region. We pay them a small stipend for their jobs for which they have written job descriptions.
Reva Luvass-Hess

> We have, at this point, three active regions with regional reps and area contact leaders within each region. We pay them a small stipend for their jobs which they have written job descriptions for. Our regional representatives have job descriptions and we have developed a mission statement and goals. One other item which I think is very healthy, is that we are not locked into our structure. We have teachers who work at large yet do not participate much in their local area.

The network coordinator, regional representatives and the area contact leaders wrote job descriptions for their positions. They are listed below.

Regional Representative. The regional representative will act as liaison between the network coordinator and all area contact leaders in the designated region. Specific duties will include the following:

- Distribute information from coordinator
- Organize regional and network activities such as the fall conference and the spring showcase

- Oversee the ACL (Area Contact Leader) expense and work records--collect by deadline, review and pass on to coordinator so that reimbursements and stipends can be issued
- Maintain and submit the regional representative's work record and reimbursement request
- Attend summer/spring network executive meeting (1-2 day each)
- Contribute to network newsletter(s) and/or regional newsletter(s)
- Communicate regularly with the coordinator--e.g. 1/2 hour phone call monthly, computer linkup, time out together at a conference
- Attend appropriate area meetings

Area Contact Leader. The area contact leader will act as liaison between the regional representative and all area members. Specific duties will include the following:

- Distribute information from regional representative
- Survey area members and return information to regional representative as needed
- Submit area meeting minutes with work record
- Develop and/or maintain supportive area system as members deem necessary. This includes at least three annual area meetings
- Encourage attendance at regional/network meetings such as the Fall Conference and the Spring Showcase
- Act as member of regional program planning committee
- Maintain work records and receipts for reimbursement request

The network has also appointed an advisory board of directors composed of business leaders, parents, and other community members who are not teachers, yet are very interested in education. Luvass-Hess states Bitterroot Teachers' Network seeks board members who are genuinely interested in education and who have a broad range of different experiences and backgrounds. The diverse range of experiences the board members bring to the network are a valuable resource for the teacher-members.

The Bitterroot Network is well organized and structured with an operational organizational chart, a board of directors, and paid leadership positions with job descriptions. However, even with all of this structure, the teachers still make the decisions. An operational understanding is that the network members model the Foxfire approach which means the network takes the direction the teachers set. Allison, a teacher in rural Idaho describes the process.

> ....we model the Foxfire approach in our decision making. So it is very much a shared thing. When there are big decisions to make, we poll the membership as best we can. We would be hypocritical otherwise because a basic tenet of the Foxfire philosophy is democracy in action.

The teachers then tell Luvass-Hess and the Regional Representatives and Area Contact Leaders what their goals are for the next year. Following this, Luvass-Hess holds a meeting in August for Regional Representatives, and Area Contact Leaders to formally adopt the teachers' goals. This group is similar to an executive board of directors. Luvass-Hess explains:

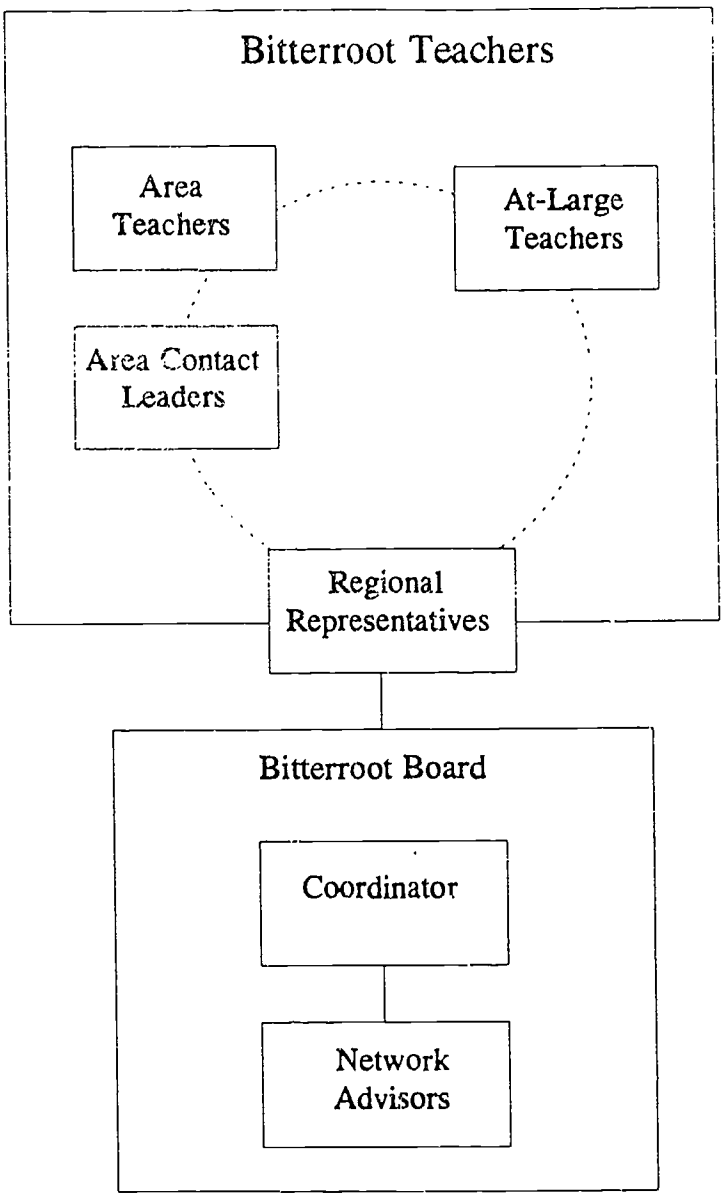
It works like this--the teachers are meeting and saying, "This is what we want." Then we get together and say, "How can we implement that for these teachers?"
Reva Luvass-Hess

> Regions will meet and decide what they want and th[illegible] those regional leaders will meet and the we'll set the goals for the year for the network. It works like this, the teachers are meeting and saying, 'This is what we want.' Then we get together and say, 'How can we implement that for these teachers?'

Figures 3 and 4 illustrate the network's organizational chart, mission statement, and map indicating its Idaho service area.

Teachers attracted to the Foxfire approach are often challenged to learn and implement the many intricacies of this new methodology. Foxfire is a student-centered approach grounded in John Dewey's philosophy and Elliot Wiggington's teaching in

Figure 3: Bitterroot Teachers' Network Flow Chart



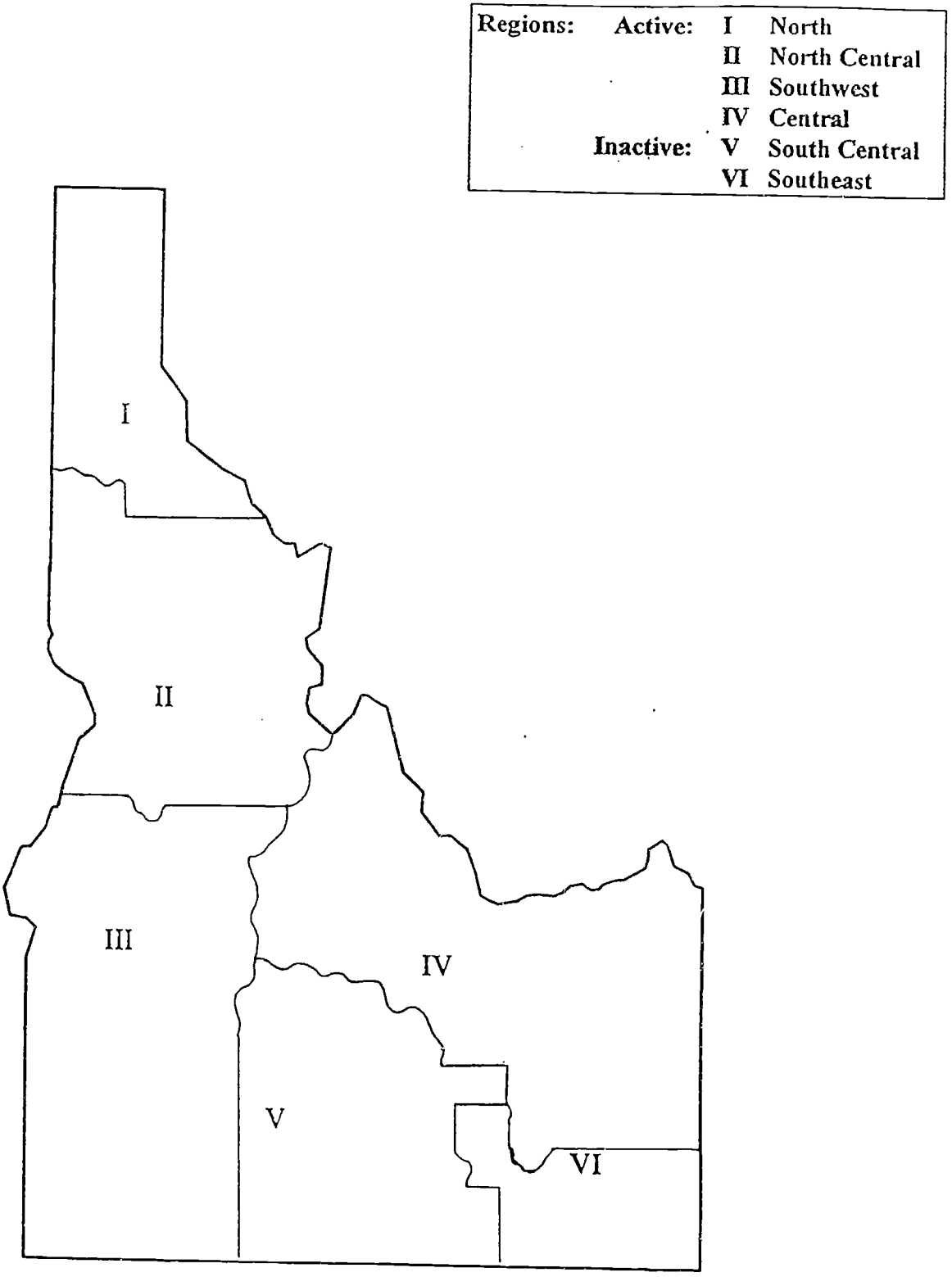
Bitterroot Mission Statement

The Bitterroot Network is a teacher-centered organization dedicated to promoting the Core Practices of the Foxfire approach among students and educational personnel.

The Core Practices suggest a process through which students develop democratic attitudes and values.

The Bitterroot Network works to provide teachers with information, all avenues for sharing curriculum and philosophy, professional growth, financial assistance, research and evaluation.

Figure 4: Idaho's Bitterroot Teachers' Network Service Regions



Appalachian culture journalism. Teachers describe it as, "a way to create learner-centered classrooms closely involved with their communities whose activities light the faces of their students and teachers." The following 11 core practices form Foxfire's pedagogy: active, experiential learning, student choice, teacher as facilitator and coach, peer teaching and small group work, academic integrity, audiences beyond the classroom and teacher, real world connections, ongoing reflection, new activities spiraling gracefully out of the old, and authentic assessment. See Appendix B for a more complete listing of these core practices.

The Foxfire approach appeals to teachers because they feel it builds their students' efficacy. Although teachers can be excited about implementing new Foxfire practices, they still critically need curriculum renewal activities that support, provide needed materials, communication, and follow-up to their new efforts. Teachers want to talk to each other about what is happening in their classrooms to them and to their students. They want to share successes and failures, to collaborate, and to work through problems together with some assistance. The Bitterroot Teachers' Network supports, encourages, and assists these teachers to bring change to their professional lives and classrooms. It is the curriculum renewal agent that facilitates the teachers' and students' transformation.

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Network members meet monthly in each region and one or more teachers will give demonstration lessons on the implementation of one of Foxfire's eleven core practices. They also connect informally in face-to-face meetings, over the telephone, or via telecommunications as follow-up. The teachers take materials and information from these meetings and infuse applicable parts of them into their own curriculum and classroom practices. Carol Tregasser, middle school Language Arts Teacher describes the impact the Foxfire approach has on her curriculum.

> The curriculum I have developed in the classroom is a result of Foxfire. We have a literary magazine that impacts the entire school. The whole school backs the magazine. We received many more student and teacher submissions this year than last. I took what I learned from Foxfire and use it with the magazine. The entire school is proud of the magazine.

Big Sky Telegraph

The Big Sky Telegraph Teacher Network is housed on the campus of Western Montana College in Dillon and operates through the offices of the Rural Education Center. The network was created through a grant from the M.J. Murdock Charitable Trust in April, 1987, and it formally went on-line January 1, 1988. Project Director Frank Odasz works with Claudette Morton, Director of the Rural Education Center. Its operations focus on providing service, skills, and knowledge to its rural, small-school teacher-members and students via the telecommunications hook-ups it has with schools, communities, and the college. Odasz felt that rural educators would be more inclined to communicate with each other in a micro-computer telecommunication bulletin board environment than they might in one connected to a more complicated main frame computer.

Big Sky Telegraph is a local network not formally affiliated with any state or national organization. Odasz first directed the system part time while he taught full time at Western Montana College. He created re-certification classes on micro-computer telecommunications set ups which he offered to teachers lesson by lesson throughout each term. Two years later Western Montana College received a $280,000 grant from U.S. West Educational Initiative which allowed Odasz to expand the network and become its full-time project director. The campus office is the center or hub of the network which processes all of the messages from the field. Odasz employs two full-time staff to attend to the requests and to provide technical assistance to teachers in the field.

Big Sky initially paid for two incoming 800 lines for teachers to use for any bulletin board service the network provided. This included the on-line classes as well as access to the rural itinerant library. Use of the 800 lines as well as Director Odasz' penchant to make these learning experiences pleasant and enjoyable helped to expand the use of telecommunications in rural Montana. When the network first began in 1988, rural Montana teachers knew little about telecommunications. Indeed, most of these beginning "users" were neophytes in computer telecommunication applications. Odasz taught and emphasized the value of computer communications for social interaction as much as he did for the value of professional development. He accomplished this without patronizing the teachers which increased their willingness to learn and to take risks with new technology. This is important because word soon spread and other teachers who also knew little about computer communications joined the network. Currently, there are 650 network members throughout the system. The computer hardware, software telephone lines, and knowledge of telecommunications were the mechanisms that overcame Montana's vast distances. Despite the need for sophisticated telecommunication equipment, the members clearly feel that people are the system and that technology is the tool that brings them together.

When the network first began in 1988, rural Montana teachers knew little about telecommunications.

Odasz taught and emphasized the value of computer communications for social interaction as much as he did for the value of professional development.

Odasz carefully laid the groundwork for bringing teachers into Big Sky Telegraph. He knew if he could demonstrate technology's utility in the classroom it would be attractive. With that in mind, he sent a letter to all "one room" Montana school teachers offering them a free modem, an on-line course, and temporary use of an 800 telephone number. The network also offered to teach these rural educators how to use the rural software loan library, and provided access to the Western Montana College librarians, to

resource persons, peers and to on-line text files for curriculum guidelines and lesson plans. Odasz provided on-line assistance to teachers throughout the installation period until they were comfortable with the software and could communicate effectively with the host computer at Western. Teachers then began lesson one of the on-line course and continued until it was completed and they graduated.

Odasz carefully laid the groundwork for bringing teachers into Big Sky Telegraph. He knew if he could demonstrate technology's utility in the classroom it would be attractive.

School districts using the system are spread throughout the state. Any school district is welcome to call in for assistance, and no one is denied access. Odasz notes:

> We have an open policy, and any school is welcomed to call in. We do have an optional $50.00 annual subscription charge per teacher which make the costs minimal. The challenge of the project has been to demonstrate as broadly as possible as many different uses this technology has which support education. Rural educators are often the information specialists in a rural community and we have been able to diversify for them as broadly as their demand requires. We can provide the rural educator with information on all aspects of rural community life.

The Rural Education Center at Western Montana College is a nationally known center that develops model rural education programs. Since the Rural Education Center trains teachers specifically for work in rural locations, it is a very good test site for a network such as Big Sky Telegraph. Western has a reputation as a rural teachers' college that also serves as a resource center for rural school districts. The Rural Education Center has access to innovations unavailable to most small, rural districts in Montana. Odasz explains how the rural itinerant library is one such service that benefits rural schools and teachers.

> We have the itinerant library network and the library here has been very supportive of rural schools. I believe that we are one of only three libraries in the nation that allow on-line direct ordering of books and print materials.

Teachers can leave messages and Odasz's staff will go on the Western Library Network and scan catalogs of hundreds of libraries. Big Sky has ERIC on CD ROM which allows it to do unlimited free ERIC searching which it can then send to the teachers in the field in an electronic mail file. Since Big Sky Telegraph's network is statewide, it makes this service available for any school in Montana.

Big Sky has ERIC on CD ROM which allows it to do unlimited free ERIC searching which it can then send to the teachers in the field in an electronic mail file.

One rural high school librarian uses the Western Library Network connection with Big Sky to locate and secure books and sources for her students who are writing term papers. Most rural high school libraries are small with limited resources and reference materials. Using Big Sky Telegraph allows the teachers or librarians to send the title of a magazine or the magazine article title, page numbers and date, and the itinerant library services locates the information and sends it to the schools. This service greatly expands the materials and references schools can make available for their students. Brandy Howey, Librarian at Hinsdale, Montana, High School explains:

> I just send in the title of the magazine or the magazine article title, the page number, and the date and they will find that information for me. They then send it directly to me and I disperse it to my students. And if the students need a novel that I don't happen to have, and I don't have the funds to buy it at the time, I just get on line and they will send it to me. We have a two week borrowing period. I am able to build my vertical file through the magazine articles they send me, because they never want anything back. So I'm getting two things at once.

And if the students need a novel that I don't happen to have, and I don't have the funds to buy it at the time, I just get on line and they will send it to me.
Brandy Howey

Ms. Howey also uses the on-line library services to locate and secure books community members check out and read. The community

members ask Brandy and she goes on-line and requests the book through the Western Library Network. Thus far, she has been able to locate any book her patrons request.

The network's second expansion phase began in late 1989 with new grant funding which paid for the purchase of 104 additional modems. The additional funding was sufficient to provide a statewide grassroots training program. Anyone living in a rural community with access to a computer, a modem, and a telephone line could volunteer for the position of Community Telegrapher. This position was created to be a resource for isolated communities that provided needed telecommunications services for its citizens. Appointed volunteers were asked to meet the following requirements:

- Complete 10 on line computer lessons
- Make short weekly calls to the computer at Dillon for at least six months
- Demonstrate Big Sky Telegraph publicly to community members and inform them that the Telegrapher will forward messages for any community members
- Record the information needs the Telegrapher met for the community

The new funding also paid for circuit riders appointed to train the new telegraphers in the rural communities. Big Sky Telegraph hired seven teachers as circuit riders equipped with a laptop computer, an overhead projector, and an LCD panel display system. They were paid $100 a day and provided individualized training sessions or group community demonstrations. Onsite training in modem basics was free and available to anyone in Montana who requested it. Cynthia Denton was a circuit rider and described how this training operated.

> We would go to different communities, and different schools, whatever group wanted us and we would present Big Sky Telegraph. We did inservice workshops and tried to show the purpose of the network and what resources were available. We were paid for our time and mileage.

The network has conducted over 300 community demonstrations and training visits. This outreach resulted in 122 of 546 incorporated Montana communities (22 percent of all Montana communities) having trained community telegraphers and being part of the network. There were also over 100 schools on line and over 300 modems distributed throughout the state. Big Sky Telegraph's grass roots call to action prompted a strong response. Over 500 people from all over Montana were using Big Sky Telegraph on a regular basis. Most of these were educators. Odasz explained how widespread the service had become.

The network has conducted over 300 community demonstrations and training visits. This outreach resulted in 122 of 546 incorporated Montana communities (22% of all Montana communities) having trained community telegraphers and being part of the network.

> County extension people, retired librarians, teachers, women's center directors, economic developers and others were regularly using the network. They brought a wide diversity and a sense of 'on-line community' that identified how each group benefited from their participation.

Community telegraphers created five local community *Fidonet* networks in the summer of 1990 to study the potential use bulletin board systems have in schools and communities. These five smaller networks were connected directly to the main Big Sky Telegraph's 386 computer at Dillon. This connection enabled these systems to share global messages at a minimum cost through the use of low-cost, high-speed night telephone messages among the computers.

The addition of telecommunications has expanded rural school districts' curriculum offerings at all grade levels. In Hobson, Montana, population 260, the *Fidonet* is named Russell Country BBS (Bulletin Board System). Cynthia and Larry Denton, Hobson teachers since 1969, own and operate the local network. They installed the bulletin board system in this very rural part of Montana in October 1990. The Dentons have incorporated the power of telecommunications into their curriculum. Their students,

starting in the third grade, use technology skills to telecommunicate nationally and internationally with other schools and students. They currently have contacted and regularly telecommunicate with schools in Massachusetts, Australia, and in the former Soviet Union. This expansion of telecommunications has become a very popular method of teaching students the intricacies of technological applications enfused within what we once thought of as traditional classroom offerings. Curriculum has been enriched significantly in business, language, and the various social studies class offerings by adding new content the students learn from student peers in the network into existing class curricula. Writing skills, economics, and Native American and urban culture are some of the new areas that have enhanced students' classroom experiences.

Curriculum has been enriched significantly in business, language, and the various social studies class offerings by adding new content the students learn from student peers in the network into existing class curricula.

The Dentons also provide numerous different services and sources of information their community members may use. They have prepared an on-line catalog of Montana Made Products, including some products produced in Hobson. They also make available a daily listing of the bills and hearings from the Montana Legislature. They provide an educational information service they named, *Educational Echoes*, which has an international distribution. This service keeps their teachers and students current on state, national, and international issues. Their philosophy is that it is most important to give their youth the opportunity to correspond with their peers throughout the world. They feel this better prepares their students to be productive citizens in today's global economy.

The Russell Country BBS began displaying the Native American Share-Art Gallery. Numerous Native American artists display Native American designs representing the Sioux, Assiniboine, Crow, Chippewa-Cree, and Navajo. This service includes an on-line catalog of Native American goods and products. Included with these services will be a comprehensive listing of the activities occurring on Montana's seven Indian

Reservations. The Dentons believe that disseminating this information will attract tourists eager to experience culturally diverse and enlightening vacations. They expect increased tourism will have a positive impact on the community and local economy.

Big Sky Telegraph does not have an governance structure similar to Bitterroot Teachers' Network's or Washington State Council of Mathematics Teachers. Instead, for Big Sky participants, the hardware, software, large and small networks, and the services they provide, keep the teachers connected. Employing user friendly technological advances such as electronic mail greatly reduce the need of an organizational infrastructure for daily operations. The hardware and software applications complete many tasks which teachers in other networks have to do. This innovation eliminates the need for teachers to personally be involved in many of these time consuming activities. For example, when someone needs to contact 15 colleagues, (s)he need only send one Electronic (E)-Mail message and the software routes it to each person, a considerable time savings. This process still maintains personal contact and collegiality, yet greatly reduces the isolation educators encounter when they teach in rural Montana schools. In essence, technology and telecommunications have become the network's organizational infrastructure.

Figures 5 and 6 illustrate the connections among rural Montana teacher-members of the Big Sky Telegraph and their national connections around the nation and the world.

Figure 5: Big Sky Telegraph State Connections

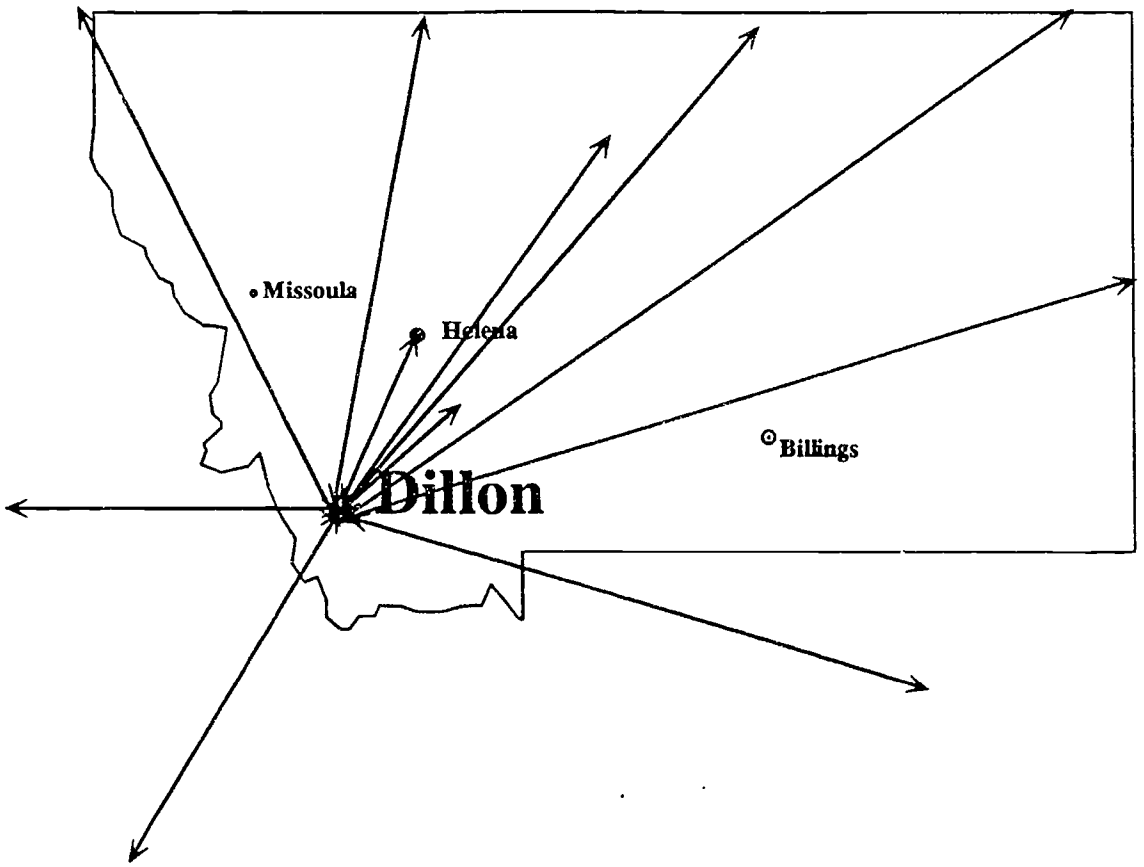
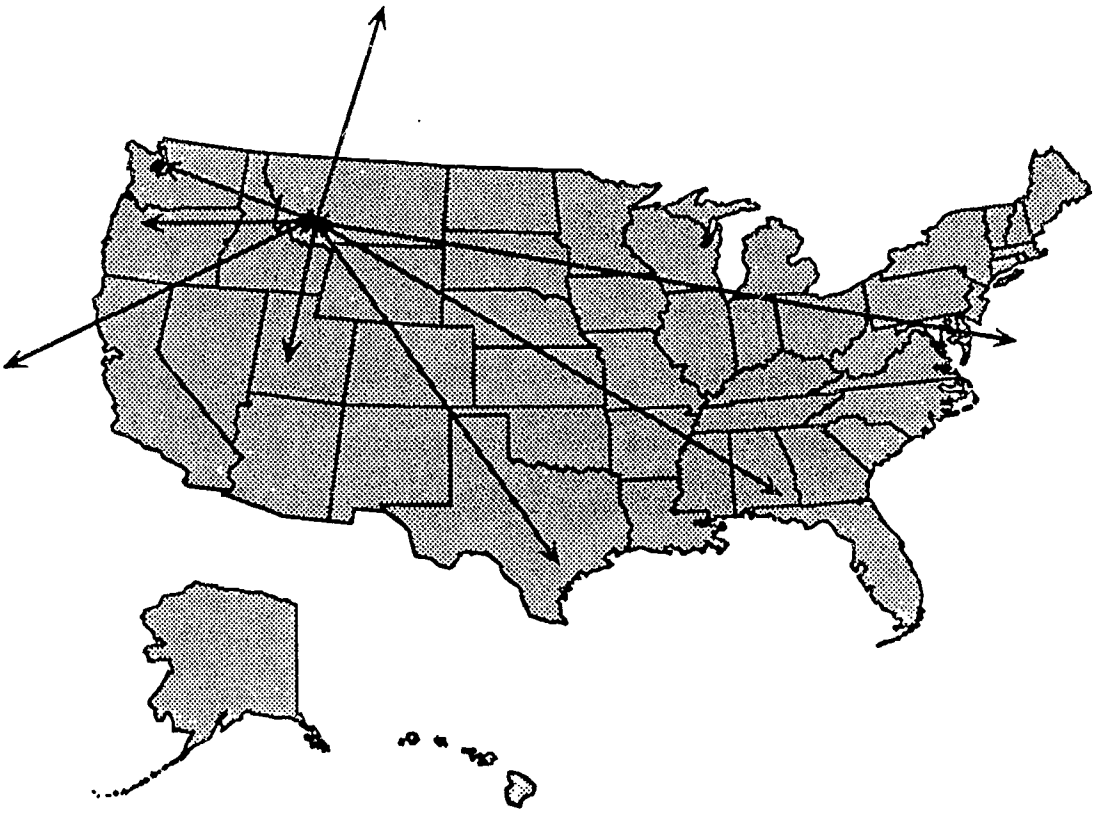


Figure 6: Big Sky National Connections



Lane County Science and Mathematics Teachers' Cadre

The Lane County Science and Math Teachers' Cadre is located at the Lane Educational Service District's (ESD) offices in Eugene, Oregon. Lane County, Oregon has 16 school districts, eight of which are small and rural. This network is an informal, yet very collaborative and collegial group of teachers and administrators committed to improving mathematics and science curriculum and instruction for their students. Since the small, rural districts' Eisenhower Mathematics and Science Grant Funds are quite

small, they pool them and coordinate their activities through the ESD. Kermit Horne, Lane County ESD science and mathematics staff development specialist, directs the network's activities.

This network is an informal, yet very collaborative and collegial group of teachers and administrators committed to improving mathematics and science curriculum and instruction for their students.

Each school district in the county appoints a representative as a member of a science-mathematics teacher council. This council works with Horne and consensually decides which specific project or projects they want to undertake during the next school year. Horne next takes this recommendation to the curriculum directors for each district who make the final decision relative to allocation of funds. The majority of the funds are Eisenhower grants but at times, the ESD will commit local resolution funds to science-mathematics professional development projects. Horne works with the district administrators and coordinates the projects' activities. The process works in the following manner. The council of teachers make recommendations for the network's projects or areas of emphasis for each year. The teacher-specialists then forward their proposals to the district administrators for approval, who also may make modifications. The district administrators then return the approved projects to the council of teachers for implementation through the network.

The teachers have a considerable say in the topic and scope of network projects. Director Horne describes the teachers' decision making role.

> So far, in the last two or three years, the network pretty much has run itself. The teachers have been empowered, like they said, to make the decisions. Their recommendations go to the various decision making groups and they relied upon them (network members) to make the decisions about what the needs are.

The network members meet monthly during the school year and their grant funding pays for substitute teachers for their release time. The teachers receive no additional

compensation for participation. Providing for release time, however, became a special attraction to the participants. Most teachers said they do not have enough energy to devote to network activities after a full day of teaching. They found they are much more productive when business is conducted during the regular work day. Teacher Bill Sherzer explains:

> ....we'd get going about 12:30, the meetings would go to 5:00, and I'd be so pumped up by 5:00. I go home and I'd tell my wife all these things that are going on and tell her about these neat people who are doing things. I'd be more alive then than if I had put in a whole day at school. ...the time off to me is extremely important. To me that's just kind of like recognition of being a professional and that my advice is being used, sort of thing. It's kind of a neat bonus, if you will.

The network has engaged in many productive projects to assist their ESD service area colleagues. One year the network members created a series of different science and mathematics workshops for teachers around the county. The workshops were developed in areas that teachers in the county or network members had expressed an interest in learning more. The network tailor made a workshop for a group of teachers who requested it. The members also developed broad curriculum theme areas, such as middle school math and science integration, and members also brainstormed ideas for workshops. Once workshop topics were agreed on, then the teachers developed the workshops and advertised to present them to interested teachers around the county. They were designed as a teacher-to-teacher outreach. This series of workshops was taught for two years as well as for two summer sessions at the University of Oregon. Individual network members have a directory for each member and either telephone each other or utilize the ESD courier service to contact each other. Teacher Jill Board described one promising practice the network conducted.

To me that's just kind of like recognition of being a professional and that my advice is being used, sort of thing. It's kind of a neat bonus, if you will.
Bill Sherzer

> All of us met at one time last year and had a share-fair where we each brought a curriculum activity and we invited all county teachers. It was just a little mini-share fair in which we each had 30 minutes to share our activity with teachers. It was a wonderful way to get together and share curriculum and instructional ideas and all be together.

Horne sent out a list to each of the schools asking for volunteers to join the science-mathematics network. Attached to this request was a form on which teachers could indicate their interests and ability levels. This last year the network members agreed to work on three curriculum renewal areas. One group is developing assessment techniques including the application of Wiggins' model of authentic assessment to science and mathematics. Another group is developing integrated curriculum units for grades K-12. The third group has the task of developing science concept-based curriculum units. These materials are subsequently made available and distributed to teachers throughout the county.

All of us met at one time last year and had a share-fair where we each brought a curriculum activity and we invited all county teachers.
Jill Board

Another advantage the network affords its members is the contact and information and materials sharing they provide each other. The members routinely work across districts in sharing materials. Kermit Horne distributes a directory of network members' names, schools, addresses and telephone numbers to each participant. When requesting information or materials and there is not a pressing timeline, most teachers use the ESD courier service. This service is very simple and efficient. If the need is more urgent, then people telephone. Network members share with all county teachers--a major goal is to disseminate information and materials that improve student achievement. Teacher Fred Board explains:

It was a wonderful way to get together and share curriculum and instructional ideas and all be together.
Jill Board

> ...so there is a lot of sharing and that is excellent. I don't think it would be nearly as good if we had not had the first year to establish a communications system, and some commonalties that make sharing really

meaningful. Then you can tell others, 'I got this from a meeting', and because of our common background it makes the sharing very rich.

For those who have read Handbook Two in this series, *The Use of Consortia to Engage in Curriculum Renewal,* the fundamental difference between teacher networks and consortia for curriculum renewal is the role of the teacher. In consortia operations school boards and district administrators have a much larger role than they do in teacher networks. Administrators and school boards make practically all of the policy and administrative decisions in consortia. With networks, teachers are clearly the decision makers. Indeed, networks are organized to actively solicit teachers' input. Networks feel this is critical to their existence because it keeps their operations continually reflecting teachers' classroom needs.

The Alaska Teacher Researcher Network

The Alaska Teacher Researcher Network (ATRN) was created as an extension of the Alaskan Writing Consortium which financially supports it. In addition, when the network was first established in 1988, the Alaskan State Department of Education awarded it a $30,000 Chapter II discretionary block grant to provide a solid financial base. Although these funds provided a solid beginning, ATRN today depends on the Alaskan Writing Consortium for its funding. In an effort to develop more diversified sources of revenue, it is applying to private grants for additional funding.

ATRN's stated purpose is to encourage Alaskan teachers to use classroom-based research as a means of examining and improving their own teaching practices.

ATRN's stated purpose is to encourage Alaskan teachers to use classroom-based research as a means of examining and improving their own teaching practices. Members of the Consortium felt that for teachers to adequately teach composition they must write themselves and, when possible, publish their writings. To that end, ATRN encourages teachers to manage their professional development and to share their knowledge and

findings. The network provides its teachers with the training and the opportunity to conduct research based on their own practice and then to publish the results. Although sponsored by the Consortium, ATRN has been able to establish and maintain its own identity.

One of the first items of business the ATRN attended to was to appoint two teacher coordinators to organize future activities. Jack and Claire, two teacher members, agreed to coordinate ATRN'S efforts the first year. Annie Caulkins, describes one of Claire's objectives.

> Claire's concern was that here in Alaska we should be doing our own research instead of having people from the Lab (Northwest Regional Educational Laboratory), or University of Washington anthropologists coming up here and doing our research. Claire really wanted something that would enable Alaskan Teachers to conduct their own research on their classroom curriculum and instruction experiences.

The network made a commitment and used some of the funds the Alaskan Writing Consortium provided to pay for consultants to come to Alaska and conduct workshops on the efficacy of teacher research. The teachers invited Mary Anne Moore from the Northern Virginia Writing Project to conduct the first workshop. Moore is well published on teacher research and she agreed to conduct the first summer designed to motivate teachers into beginning research on their own classroom practice.

The organization is completely teacher-directed.

The organization is completely teacher-directed. From the very beginning, the group felt they must establish and maintain their own identity to avoid being considered a small division of the Alaskan Writing Consortium. It is organized and governed by teachers; members elect their board of directors (all teachers) as their decision making body. This board represents the teacher-members and recommend goals and set activities for the network to follow. The teachers

It is organized and governed by teachers; members elect their board of directors (all teachers) as their decision making body.

choose the guest presenters and facilitators, and the dates of the workshops. ATRN includes both urban and rural teacher researchers from across Alaska who teach at the primary, intermediate, and secondary levels. The network has a collaborative structure which supports systematic investigation and reflection of its members' teaching practices.

Clearly, ATRN is organized, directed, and managed to assist their teachers in the field. One of the network's basic belief's is that their organization is created by teachers for the benefit of teachers, e.g. teachers teaching teachers. The network holds a summer seminar the first week of August as well as a two-day winter meeting during the third weekend in January. It also publishes its own teacher research journal, ***The Far Vision, The Close Look***, in which teachers may publish their writings and research findings.

Teacher-members maintain contact throughout the school year via electronic mail. Some of the teachers are in very remote areas and this contact is one the few they have that reduces isolation and allows for contact with their peers. Deanna Cole, teacher at Red Devil, located two hours air flight north of Bethel uses her computer modem to contact other members for feedback on her own research project. She described the process.

> When I want some input or feedback on my project, I get on the computer and contact another teacher-researcher and ask her/him to review what I have completed. This is a big help because I can get assistance when I really need it.

ATRN contributes significantly to its teacher-members' curriculum renewal needs. First, the network encourages its members to increase the use of available resources and to become more involved professionally. The teachers realize they are in an excellent position to watch attentively their classroom interactions with their students, to learn from these experiences and to describe them in a manner which

These teachers provide valuable research that validates the efficacy of classroom inquiry which they share with their peers. They are the horizon scanners who advance the professionalism of their network member-peers.

benefits their colleagues. These teachers provide valuable research that validates the efficacy of classroom inquiry which they share with their peers. They are the horizon scanners who advance the professionalism of their network member-peers.

Participation in ATRN motivates its members to read current research and determine its applicability to their own practice. Armed with the combination of new readings and the observations of their classrooms, they collaborate with other teachers committed to improving teaching. Network members become rejuvenated and form a community of interested professionals who regularly discuss critical issues facing education. These teachers are valued resources who give their peers research validated curriculum renewal approaches unavailable anywhere else. ATRN members stress that teachers know their students and classrooms as no others can. These connections are bringing change to small, rural, Alaskan schools.

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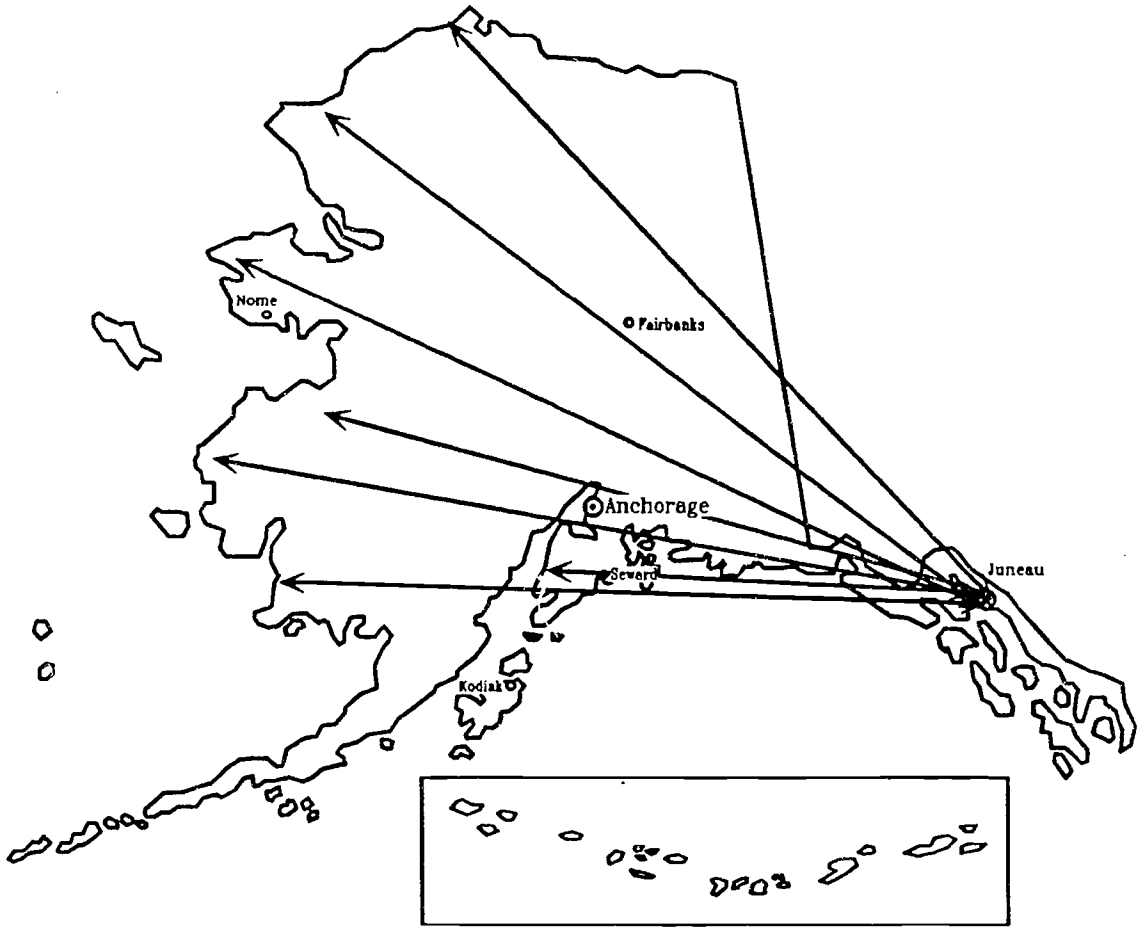
Figure 7 illustrates the connections ATRN members maintain around the state of Alaska.

Figure 7: Alaska Teacher Researcher Network Contact Locations



Summary

Networks are organizations created to fill the professional development vacuum of teachers' and school districts' curriculum renewal needs. Teachers are attracted because membership in a network provides them access to new information, materials, and professional alliances. They also can receive training which gives them new skills they cannot easily obtain elsewhere, or, in some cases, are unable to obtain at all. Network members in this study are committed professional educators; the teachers interviewed for these case studies exemplify life-long learners. They are involved, busy, and dedicated to their profession. They are not about to waste time on something they perceive as being of little value, or as being ineffective.

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Interview data indicate that these networks have two forms of organizational structure. Two of the networks (WCTM and the Bitterroot Teachers' Network) have a more tightly defined structure than do the other three. WCTM and the Bitterroot Network also both have elected officers, project chairs, and a dues system which provides additional funding stability. In addition, these two networks have regularly scheduled yearly activities, operational procedures for disseminating information, for contacting members, and for attending the various functions they sponsor.

The other three networks are organized in a much less formal manner. Although the Alaskan Teacher Researcher Network has an advisory board of directors, they still do not operate as formally as do the WCTM and Bitterroot. They have an annual seminar in which individual teachers take a lead role in providing information, materials, or instructional tips. Individual members in these three networks regularly contact each other via telecommunications, telephone, or by service district courier delivery. One difference from this example is Big Sky Telegraph, whose organizational structure, operations, and very existence pivots around regular telecommunications among its many far-flung

members. The need and use of these types of telecommunication exchanges is the primary reason it was developed. The continued use and expansion of its services has become a significant part of its organizational structure because of the distances between its members. With WCTM and Bitterroot, the members are a significant part of their organizational structure; in Big Sky Telegraph, technological equipment and members' knowledge and skills provide this structure.

Funding is an operational necessity to provide requested network services to its members. For some, such as the Washington Council of Teachers of Mathematics, a majority of its funding comes from the fall mathematics conference and from members' dues. Others such as the Bitterroot continually search for private and public grants to fund their operating budgets. Still others use a combination of dues, private and public grant funds, and indirect support received from colleges or universities to fund their operations. Table 1 illustrates each network's organizational structure.

The networks in this study began operation by first analyzing the need for their services in their geographic areas. This analysis helped them to develop several organizational principles to guide them in their early operational phases. Listed below are guidelines these networks effectively employed when they first organized their service operations:

- Determine that a professional teaching need exists that the network will be able to address
- Secure adequate operational funding
- Develop an organizational structure operated by teachers
- Allow for ample teacher input when setting goals, objectives, activities and network direction
- Maintain a focus based on teacher needs; don't allow the focus to drift
- Establish an effective communications system

Table 1: NETWORK ORGANIZATIONAL STRUCTURE

Network	Management Structure	Funding Sources	Membership	Focus (Purpose)	Network Medium	Curriculum Renewal Relationship
Washington Council of Teachers of Mathematics	Elected officers; elected board of directors, appointed project chairs	Northwest Mathematics Conference; Members' fees; some event fees	300	To implement the national mathematics goals	Meetings, conferences, institutes; tele-communications	Provides framework for curriculum articulation
Bitterroot Teachers' Network	Project Coordinator with elected board of directors	Local and national foundation grants, small membership fee	60	Support implementation of Foxfire Approach	Meetings and tele-communications	Provides new materials and redirects instructional emphasis
Alaskan Teacher Researchers Network	Elected board of directors, limited number of project chairs	Chapter II discretionary Block Grant; Alaskan Writing Consortium	60	Facilitate teachers becoming researchers	Face to face and tele-communications	Validates efficacy of classroom inquiry
Lane County Science and Mathematics Cadre	Project Director	Eisenhower Funds, some local resolution funds	40	Develop local science and mathematics' leadership	Face to face meetings	Provides framework for curriculum articulation
Big Sky Telegraph	Project Director	Foundation grants	650	Demonstrate how technology benefits education	Telecommunications	Provides access to framework, resources, and materials

- Advertise among teachers the network's existence, goals, and benefits it will provide to members.

Regardless of the type of organizational structure networks operate within, teachers clearly are the decision makers. Each network deliberately designed its operations to solicit and include teacher input. Whether a network is organized to reflect its teachers' input directly or is organized more formally with elected representatives, chairs, and a committee structure, teachers' opinions and votes count. This is very important, because it keeps the networks' goals, operations and activities continually reflecting teachers' needs which they employ to improve their classroom practice. The goal of the classroom changes is to enhance student achievement.

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CONCLUSIONS

The professional teacher networks studied for this handbook are effective models which assist teachers in small, isolated, rural school districts to meet their curriculum renewal needs. Networks incorporate several mechanisms that facilitate curriculum renewal for teachers in these districts. First, teachers clearly make all of the major operational decisions for their respective networks. Each network is operated in a manner that solicits and employs its teacher-members' input. Second, each network has an excellent communications system that efficiently engages teachers within and across districts. For most rural teachers this communication is across districts. Whether it be in meetings, in conferences, on the telephone, or by telecommunications, network members communicate more and regularly share their successes, failures, frustrations, and aspirations. Third, teachers join new collaborative communities in which they form strong bonds sustaining their continuing professionalization. Teachers teaching teachers is an understood operational guideline. Fourth, within these networks the value of each individual is stressed and no classroom need is considered insignificant, members diligently strive to assist each other. Networks are teacher directed and teacher organized to meet their curriculum renewal needs. They look inward and allow teachers to use their knowledge, skills, and training to assist their peers.

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Teachers accordingly reported that networks were particularly effective by providing assistance in the five areas of curriculum renewal listed below:

- Allows for local input and ownership
- Develops materials and approaches with high classroom utility
- Provides assistance and even leadership in meeting new state curriculum standards

- Keeps members current with the latest curriculum and instructional developments
- Provides vital follow-up and support for the new innovations they employ in their classrooms

There are numerous reasons why these professional relationships with peers produce successful curriculum renewal results. Teachers are accepted from the outset as the professionals best suited to determine their classroom needs and also to determine the best means of meeting these needs. Teachers know from the beginning of their membership that they are an active part of the process. This acceptance and inclusion develops a strong sense of ownership on the teachers' part and increases their willingness to become involved. Improved communications among teachers with similar assignments and in similar locations greatly reduces professional isolation and the sense that one must solve classroom problems alone. Of equal importance, network participation validates teachers' practice in their classrooms and affirms their professional efficacy. Rural teachers seldom have opportunities to engage in peer review and to exchange professional critiques of each others' curriculum resources and instructional delivery techniques. The interactions provided by network membership greatly enhances this important dimension of professional growth. Promoting approaches that are classroom validated by peers adds greatly to the authenticity and acceptance of network endorsed curriculum renewal resources.

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Networks are a powerful yet inexpensive model for teachers and school districts to consider for meeting their curriculum renewal needs. Since teachers are the primary network organizers, school districts often have little direct expenses involved in network operations. School districts may invest occasional release time funds to allow some of their teachers to attend network conferences or other functions. However, this occurs

infrequently because most network functions and activities are scheduled outside of the regular teaching day. As an added benefit, if release time was needed, some of the networks secured grant funding that reimbursed school districts for their expenses.

The teacher networks studied for this handbook are successful advocates of teachers joining networks to meet their curriculum renewal needs. The curriculum renewal activities the teachers engaged in were significant tasks they would have found difficult to accomplish alone. Use of the teacher network approach described in this handbook brought about the change(s) the teachers from these small, rural, isolated, school districts sought. The lessons offered in this handbook helped these teachers and their school districts be successful in their curriculum renewal efforts. They are offered with the thought that they may assist other rural schools and teachers to avoid some pitfalls and successfully meet their curriculum renewal needs.

Teacher membership in networks is very much determined by personal needs and may or may not contribute to a district's overall curriculum articulation. School boards and district superintendents need to recognize the value of networks and use their teacher-members as district resources for curriculum renewal.

However, professional teacher networks do have limitations. While participation in networks leads to more efficacy among members, a word of caution must be given. Teacher membership in networks is very much determined by personal needs and may or may not contribute to a district's overall curriculum articulation. School boards and district superintendents need to recognize the value of networks and use their teacher-members as district resources for curriculum renewal. School district boards and administrators are urged to support those teachers involved in networks because they can provide their districts with resources unavailable elsewhere. Teachers may well be engaged in network activities that could be very beneficial to a school district's curriculum renewal needs. But since teachers usually join networks on their own volition, districts may not be aware of their participation. District administrators should be alert for those

teachers who belong to networks and first approach them with offers of support in their network endeavors. It is a connection with potential to provide leadership in articulating a district's curriculum. If administrators are unaware, they may lose the resources teachers can bring to their district.

This handbook is written for those teachers and districts considering the use of networks to effect their curriculum renewal efforts. It has been developed to accompany Handbook One, *Curriculum Renewal: What is Involved for Small, Rural Schools*, and Handbook Two, *The Use of Consortia to Engage in Curriculum Renewal*, of this series. For those teachers and districts who feel the teacher network or consortia model may not be the best approach for them, an additional curriculum renewal handbook will follow in the summer of 1994. Handbook Four, *Community-Based Support to Effect Curriculum Renewal*, will describe how this model employs the use of community members to maximize the human resources available for curriculum renewal efforts.

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APPENDICES

APPENDIX A: TEACHER NETWORK MEMBERSHIP CHECKLIST WORKSHEETS

QUESTIONS	NOTES
1. WHAT AM I LOOKING FOR?	
• **Professional Development**	
• **Interaction with Peers**	
• **Personal Interests**	

QUESTIONS	NOTES

2. WHO ARE SOME SOURCES I MAY CONTACT?

- **Peers and Colleagues**
- **Rural Education Centers**
- **Regional Educational Laboratories**
- **Administrators**

QUESTIONS	NOTES
• School Cooperatives and Consortia	
• State Departments of Education	
• Colleges of Education	
• Educational Service Districts	

87

QUESTIONS	NOTES
• Workshop Presenters	
• National and State Professional Associations	
• Literature and Journal Notices	

QUESTIONS	NOTES

3. WILL THIS NETWORK MEET MY NEEDS?

- **Curriculum**
- **Enhance Student Achievement**
- **Pedagogy**
- **Fulfill District Needs**

QUESTIONS	NOTES

4. WHAT ARE MY RESPONSIBILITIES AS A MEMBER?

• **What Resources are Required?**	
• **Time Commitment**	
• **Fees**	
• **Other Resources**	

QUESTIONS	NOTES
5. WHAT ARE THE BENEFITS OF JOINING THIS NETWORK?	
• Reduce Isolation	
• Enhance Student Achievement	
• Peer Coaching Opportunities	
• Validate Current Efforts	

QUESTIONS	NOTES
• Improve Pedagogy	
• Increase Collegiality with Peers	
• Increase Knowledge About Technology Applications	
• Remain Current on Topics of Interest	

QUESTIONS	NOTES

6. HOW ARE MEMBERS CONNECTED--HOW DO THEY INTERACT?

• Mail	
• Telecommunications	
• Telephone	
• Meetings--Conferences	

QUESTIONS	NOTES

7. WHAT ARE THE DISADVANTAGES OF JOINING THIS NETWORK?

-

QUESTIONS	NOTES

8. OTHER CONSIDERATIONS

- Costs?
- Hardware requirements, if any?
- Training?

APPENDIX B: FOXFIRE CORE PRACTICES

1. All work teachers and students do together must flow from student desire, student concerns.

2. The role of the teacher must be that of collaborator and team leader and guide rather than boss.

3. The academic integrity of the work must be absolutely clear. Each teacher should embrace state or local-mandated skill content lists as "givens" for student mastery.

4. The work is characterized by student action rather than passive receipt of processed information.

5. A constant emphasis of the process is its emphasis on peer teaching, small group work and teamwork.

6. Connections between the classroom work and surrounding communities and the real world outside the classroom are clear. The content of all courses is connected to the world in which the students live.

7. There must be an audience beyond the teacher for student work.

8. As the year progresses, new activities should spiral out of the old, incorporating lessons learned from past experiences, building on skills and understandings that can be amplified.

9. As teachers we must acknowledge the worth of aesthetic experience, and model that attitude with students and resist the momentum of policies and practices that deprive students of the chance to use their imaginations.

10. Reflection--some conscious, thoughtful time to stand apart from the work itself--is an essential activity that must take place at key points throughout the work.

11. The work must include unstintingly honest, ongoing evaluation for skills and content, and changes in student attitude.