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UNFINISHED BUSINESS

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Editor's Note:

These two articles have been selected for simultaneous publication since one raises the question of what might be done to help finish the unfinished business of agricultural education while the second explores one of the alternatives for the future. While many alternatives need to be explored, certainly the use of electronic media is one with which we have had little experience. The staff of the Visitor invites your comments.

Some of the trends leading to the passage of the Putnam Act of 1909 in Minnesota prompted statements to the effect there was an increasing awareness of unsolved rural problems and the need for a change in educational concepts.

In 1907 A.M. Dunton, Superintendent of the McIntosh School wrote to the effect that continuous growing of wheat had exhausted the fertility of the soil and infested the fields with weeds. Also that livestock was inferior and not well cared for. "The trouble was not in the country but was the result of a wrong system of farming and the worst feature was the discouraged attitude of the people."¹ The question may be raised as to what the 1907 statement has to do with today's agriculture and education. It seems to me that a somewhat similar situation exists today. Perhaps a look at the solution to problems of the early 1900s might provide direction for the 1980s. Agriculture has gone through two wars and a series of evolutionary changes but **Rural America is still here**, altered by its evolution and currently suffering in a tremendous economic crisis. The 1985 Minnesota legislature views rural problems as important enough to consider urgent legislation to provide at least temporary relief to hard pressed farmers and other rural businesses.

As Superintendent Dunton said in 1907 "... the worst feature was the discouraged attitude of the people." The daily paper on January 22nd stated that 12000 farmers and rural business people from around the state descended on the State Capitol to dramatize rural Minnesota's difficulties. This terribly discouraged attitude of the people is certainly the worst feature of the 1980s, just as it was in 1907.

The 1909 Putnam Act was intended to improve the rural communities by providing **education especially applicable** to rural living. "Special emphasis in the adult program was given to the importance of rotating the crops and to the feeding of balanced rations to livestock."² The Putnam Act also recognized the need for qualified instructors and required that a B.S. degree would be a minimum requirement.

This early effort was the beginning of seventy-five (75) years of agricultural education conducted in rural areas for **rural problem solving**. This early recognition that education for the rural areas has unique requirements in addition to general education needs to be revived.

The successes of rural education designed to deal with those uniquely rural problems have been documented and lauded by vocational agriculture and agricultural extension, but — the **job is not done**. If we learn from history, we should recognize that the job of education will never be finished.

The unfinished business of rural education will require highly trained people with vision and a willingness to try innovative delivery methods.

Few would disagree with the contention that more cooperative efforts by farmers and rural communities could prove beneficial to long range planning in marketing and land use. Local planning and zoning efforts have demonstrated that communities can be improved for all persons in towns and on farms when problem solving is done cooperatively.

Educators should provide leadership and develop models to be tested for effectiveness. The FFA and 4-H methods to develop cooperation and leadership abilities should not be considered for **youth** only. Youth and adults learn pretty much in the same manner. The difference is the reference point from which they begin.

The problem solving technique is as valid today as it ever was even though the problems are much different and more complex. Applying the technique will require teaching which includes effective ways of working cooperatively in groups for the common good of all.

1. Northwest Agriculturalist, February 6, 1909
2. Vocational Training in Minnesota High Schools
McNally — 1952

Persons providing rural education may need a considerable different preparation and support system to deal with the complexities of the dynamic rural area. Agricultural education in rural America should not limit its targeted clientele to production agriculture and the persons living on the farms. The crisis occurring in the towns which are a part of the rural community is evidence that agricultural education must be broadened. Education programs need to consider cause and effect problems as they plan programs that impact on the total community.

Some changes in the way agricultural education is implemented and managed should be considered. Programs of the future will likely require more coordination and cooperation among agencies and individuals to utilize the expertise required to deal with such problems as stress, career counseling, etc. in addition to technical production and marketing and management information.

Unless there is some immediate and drastic change in agricultural policy and economic conditions, the rural community will no doubt continue to move toward larger farms on one hand and smaller farms on the other end of the continuum. For many the production activities of the farm will not occupy all of the farm families time. More part time off-the-farm employment and variations in agricultural production organizations should be considered. Some production variations should consider labor intensive speciality crops and livestock enterprises. Increasing the intensity of labor use and spreading labor use over a larger part of the year can assist farmers, particularly smaller ones, in increasing the productivity of all of their resources. If these suggestions point toward some diversification rather than one enterprise specializations the authors age may be reflected but many farmers are surviving today because of safety nets of one kind or the other — safety nets that spread risks and make fuller use of family resources.

What changes in the position of a vo-ag instructor will be necessary to meet the needs? There is no secondary school so small in Minnesota that they could not employ at least one well qualified vo-ag instructor. The need for this education is more apparent than ever when crisis hits the rural area. If the instructor assumes responsibility for agricultural education needs in the elementary school (a growing need) the secondary school, the adults and community there will be no need to worry about full time employment. The instructor's organizational responsibility means that he knows how to utilize the resources and expertise in the community to accomplish educational goals. He should be well prepared in effective teaching methods and how people of all ages learn.

To keep agricultural education in smaller schools or schools with sharply declining

enrollments attention will have to be given to some alternative ways of organizing to provide instruction. Some of the old ideas of one instructor/one program may have to be re-examined. Research into alternative delivery systems as recently completed by Drs. Peterson and Thomas may provide important clues as to the factors that should be considered in choosing an alternative method of delivery. With the new technologies of tele-communication available, agriculture should be a leader rather than a follower in trying some innovative ways to keep access to agricultural education available in all of the agricultural regions of the state.

Teaching in two neighboring districts is now being done and perhaps this method of delivery may need to be expanded. Certainly in times when the past neglect in agricultural education becomes apparent as it is today we should not consider dropping the instruction in any school.

The business of agricultural education is unfinished. There have never been more opportunities to provide it nor a greater demand for it than in the 1980s. Highly qualified, dedicated and, yes, well paid instructors can help communities now in the depths of severe distress, build programs of instruction that can insure that the opportunities will exist to ward off any repeat of economic distress that might have been caused by a lack of access to quality instruction in agriculture.

ALTERNATIVE INSTRUCTIONAL DELIVERY SYSTEM: IMPLICATIONS FOR VOCATIONAL EDUCATION

By Jay Dean

When Arthur C. Clarke wrote in 1947 about the possibility of geosynchronous communications satellites, most dismissed it as self-indulgent science fiction. In the early 70's a presenter at a White House conference shocked the audience when it was suggested that by the year 2000, all significant learning from the elementary grades through college and adult education could take place in the home through interactive (two-way) cable, fiber optics, and satellite delivery.

By next fall, learners in some Minnesota schools will be receiving information and training on a consistent basis using these and other technologies. Going the "last mile," bringing interactive instruction directly into the home, is just around the corner.

The implications that the new communications technologies have for vocational education are profound. Yes, we will be able to achieve some significant efficiencies by sharing some instructional and administrative personnel. We will even be able to improve the quality of our instruction. But by far the most important feature is the

capability to reach new learners with our programs.

With the ability to bring interactive instruction to the home, factory, prison, library, or community center, comes the potential to reach a new client base. Vocational educators will be able to reach those who cannot or will not attend our institutions during normal weekday hours. Mothers at home with their young children, employed workers who want to retrain, learners who were traumatized by traditional education, the incarcerated, and the homebound are all candidates.

Emerging Trends

Minnesota is developing an educationally-oriented telecommunications infrastructure. Rural schools were the first to realize the role that telecommunications might play in the instructional and administrative areas. Driven by hard economic times and declining student populations, while at the same time encouraged by financial support from public and private sources, regional telecommunications clusters are developing throughout the state.

Regional telecommunications clusters as they are developing in Minnesota include varying combinations of K-12 schools, area vocational-technical institutions (AVTI's), community colleges, state universities, cable companies, and public broadcasting stations. Depending upon local conditions, they may contain a combination of broadcast television, low power television, directional or omnidirectional microwave, satellite reception, fiber optics and/or cable technologies.

There are currently over twenty regional telecommunications clusters in various stages of planning and development throughout the state. Clusters contain between four and nineteen schools.

They are a response to declining student enrollments, the related lack of teacher availability, and the relative losses in funding sources that accompany a depressed rural economy. The technology offers school systems an alternative to closing schools. Teachers can be shared among schools in the cluster. Their interactive nature of the technology allows instructors to simultaneously teach students at one or more remote sites. Both students and teacher can hear and see each other.

In clusters where the local cable company is an active participant, courses will be transmitted via microwave or cable to the company's control center where the signal will be fed out on public access channels. A telephone will provide the necessary feedback.

In some instances, the telecommunications cluster will also provide entertainment. The system will carry educational and informational programming to schools during the day but may carry pay-for-view entertainment to homes in the evening.

The investment in the telecommunications clusters is considerable. They are be-

ing built with NTIA construction grants and funding from the public and private sectors. Minnesota's Technology & Educational Improvement funding is being invested in some of the sites.

ITFS — Gold or Fool's Gold?

ITFS (Instructional Television Fixed Service) is one of the key components in many of the regional telecommunications systems. It is representative of the challenges and the potential that face education today.

ITFS is a television broadcast technology. It utilizes high frequency, omnidirectional microwave transmission. Microwave frequencies reserved by the Federal Communications Commission (FCC) for ITFS require special transmitting and receiving equipment not used in UHF or VHF broadcasting. Voice, data, and video are transmitted from an origination point to a receiver within its line-of-sight. Because it is one-way, interactivity is accomplished by inserting a return link (usually telephone or point-to-point microwave) from the viewing site to the broadcast origination studio.

This technology has been an exclusive option of education for over twenty years but it has been grossly underutilized. Recently, it has drawn the attention of both the public and private sectors. Deregulation and the pro business climate in Washington prompted the FCC to release 8 of the 28 available frequencies to the private sector in all service areas. These privately held frequencies are typically being used for pay-for-view broadcasting. That 18" dish antenna on your neighbor's rooftop is probably bringing in one of these services.

Last spring the FCC further opened the door to the private sector by saying that educational license holders could lease excess capacity of their ITFS facilities. Temporary guidelines state that they only have to broadcast 15 hours of educational programming each week. The private sector saw this as a chance to turn a profit. Some educators, in turn, viewed ITFS as an opportunity to expand the delivery of educational services in a cost-effective manner and perhaps make a little money in the bargain. As a result, ITFS has become "electronic real estate."

The amount and nature of the financial incentives, the length of the contract, the number of frequencies available, the access hours, the nature of the entertainment content, and a number of other factors vary according to the motivation and sophistication of the partners. This is generating concern on several levels. Are the interests of the entire community being adequately met? Will post-secondary education suffer if evening hours are turned over to entertainment? If the evening fare is of questionable moral worth, does this reflect badly on the school system? Does entering into profit generating relationships with the private sector undermine education's argument that it must receive special treatment from the FCC? In the rush to take advantage of

the current situation are we "selling a birth right?"

The problem is best demonstrated by the worst case example of Contemporary Communications Corporation and Columbia University. They established a partnership to take advantage of the new climate in Washington. They filed for available licenses throughout the country. An uproar from the educational community forced Columbia to withdraw from the effort.

The Wisconsin educational community picked up early on the trends described above. They applied for and received ITFS licenses for 86 channels at 13 locations throughout the state. They are now going to the legislature for 2½ million dollars to construct the system.

No one knows whether or not it has been worth the effort. It has been a huge undertaking. Paul Norton, Executive Director of Wisconsin Educational Radio and Television Networks, characterizes the quandary as not knowing if they have "gold or fool's gold."

Implications for Vocational Technical Education

ITFS is a scarce commodity. There are only 20 frequencies available in any particular location. Once those are allocated, they are gone.

In locations where AVTI's are in proximity to community colleges, ITFS is an attractive way of linking the systems together to share instructional and administrative personnel.

ITFS also creates the opportunity to take parts of courses or, in some cases, complete courses directly to the home or factory. The signal can be received by anyone within line-of-sight of the transmitter. A small rooftop antenna and a converter are all that are needed to pull in the signal. The cost of the equipment runs between \$300 to \$500. While the FCC has not given final approval for this kind of arrangement, they are clearly leaning in this direction.

Other Technologies

Satellites have also caught the imagination of educators. The concept is simple. A signal is sent from a ground transmission facility on an uplink frequency to any one of a number of communications satellites out in space. There, one of a dozen or more transponders amplifies and converts the signal to a different frequency for retransmission to receiving dishes on Earth. The signal may be voice, data, or video. It can take the form of a telephone conversation, a stream of computer data, a videoconference, or a variety of other things.

The technology can be seen at work in a number of areas. Whether it's your local news anchor talking live with a reporter at the scene of an air crash or Ted Koppel in Washington interviewing Margaret Thatcher in England, the use of satellite delivery is becoming increasingly commonplace.

Broadcast and cable companies now receive most of their programming direct from the satellites. Many of the new long distance providers use the satellites to relay phone conversations from one part of the country to another. Individual companies are connecting their offices by proprietary networks of transmission and receiving facilities that utilize leased space on the satellites. Hotels, libraries, schools, and a number of pay-for-services providers are putting videoconferencing facilities in place.

Some emerging trends are causing education to take a renewed look at satellite delivery. Satellites are increasing in sophistication. The trend is towards greater power and higher frequency which allow the use of smaller and less expensive receiving dishes. The original C-band satellites that operate in the 6/4 GHz frequency range are being superceded by Ku-band satellites that operate in the 14/12 GHz range. Considerable research is presently underway into the utilization of Ka-band (30/20 GHz) and DBS (direct broadcast satellite).

The battle of the late 80's will revolve around the struggle to bring video signals directly to the rooftops of homes. While the Americans have been concentrating on the very pricey high frequency/high power/high technology of DBS, the Canadians have focused on improving their transmission and reception of signals coming from more conventional intermediate power satellites.

Applications to Vocational Education

Satellite delivery should be viewed as an interim method of connecting together our AVTI's (and regional telecommunications clusters) into a statewide network. Administratively, the technology makes it possible to share resource personnel among institutions and reduce travel time by holding meetings "on the air." It is also an effective method of delivering short term, intermittent education and training.

In summary, telecommunications is a cornerstone of the "Information Age." It promises to improve both the efficiency and the quality our instructional and administrative efforts. More importantly, it offers an opportunity to reach a new client base.

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