

# THE INSTRUCTIONAL TELEVISION FIXED SERVICE, WIRELESS CABLE, AND THE LAST MILE

by

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Now, after forty plus years of promise and promises, television is finally achieving widespread recognition as an effective medium for teaching and learning. From pre-school through graduate and continuing education, the public and private sectors are turning to televised distance learning as a cost effective vehicle for accomplishing their educational goals. Ford's 4,000 dealership network is saving thousands of man hours once spent traveling to training. For the Postal Service distance learning is delivering quality training to its most remote rural offices. Distance learning's broadest opportunity, however, lies in providing educational programs to students and their teachers in America's elementary and secondary schools.

## **Instructional Television Fixed Service**

The local distance learning system created by the FCC for the exclusive use of educators is the Instructional Television Fixed Service (ITFS), twenty microwave channels with an effective range of about thirty-five miles. Those channels, have not, however, been well used by the educational community. The reasons vary. The lack of appropriate programming was one reason. Another was the unwillingness of school districts with growing classroom needs to budget the funds needed to construct the system. Finally, there was the ambivalence of many educators toward any form of distance learning.

More useful programming, better and less expensive technology, and growing recognition that distance learning is both effective and cost efficient are developments that should, now, focus the attention of school districts on ITFS.

To make the most effective use of televised distance learning, school districts need a local multi-channel pathway, a pathway that reaches learners, not only in schools, but at home and work as well. That electronic pathway needs to be responsive to the needs of the local district, accessible to learners when they are ready to learn, and have an affordable cost. The question is, "Which of the available technologies, or combination of technologies, will provide that multi-channel pathway?" **That is "the last mile" question.**

## **Last Mile Candidates**

Four of the candidates for best "last mile" include cable television, fiber-optic cable, various telephone company non-fiber technologies, and Direct Broadcast Satellite(DBS). The Instructional Television Fixed Service (ITFS) with its commercial partner, Wireless Cable is another alternative. In the future, the Local Multi-Point Distribution Service (LMDS) a short range multi-channel microwave technology and Public Television's Standard Definition Television

Channels (SDTV) created by digital technology could be useful for education.

In 1993 and 1994, both cable and the telephone industry announced that 500 channel interactive systems were just over the horizon. Those channels could have provided benefits to education. Within months the projects were being downsized or delayed as companies encountered technical problems and calculated the real costs of their proposals. The telephone companies concluded that, for community wide distribution, fiber systems that deliver video and interactivity will not be financially feasible until well into the 21st Century.

The cable industry, having settled on hybrid systems of fiber and coaxial cable, still faces the high costs and extended periods of time needed to refit systems that were not built to provide the signal quality required for 100 plus channels and interactivity. Cable's other negatives are its opposition to more than token free access for education, the high costs for leased access, and its low rates of penetration in industrial and business areas.

Other wired solutions developed for use on the existing telephone systems use less-than-fiber technologies, but, compared to fiber, broadcast, or satellite, they have inherent technological deficiencies. In addition, each requires special equipment at each learning station and has continuing costs that discourage widespread applications in homes, schools, and small businesses. Then, in most states, every telephone company service will be subject to tariffs unlikely to encourage their widespread use for distance education.

Direct broadcast satellite is a viable option for schools, but not for learners at home or at small business work sites. And DBS has another negative. It does not provide a ready or economic means for school districts to create their own schedules or to deliver unique local programming.

LMDS may have a future as a delivery system, but the FCC's current proposals make no provision for access by education. In addition, the proposed FCC auction insures that the buyers will be seeking to recover their investments as quickly as possible, and are, therefore, unlikely to volunteer access for education. Again, costs and access are obstacles. PTV's SDTV channels may be a long range "last mile" alternative, but not for several years during the transition to digital television.

With the assurance that digital compression will provide ITFS/ Wireless Cable with 140 or more channels, within the year at least two companies will begin construction of wireless cable systems in major urban areas. If those systems are successful, ITFS/Wireless Cable will become available in most communities.

### **Partnership Advantages**

What are the advantages to education of the partnership between non-profit ITFS and the commercial service "Wireless Cable." and why are ITFS and Wireless Cable of interest to school districts?

ITFS was originally a band of twenty-eight channels. ITFS was to be a low cost means for local educational agencies to deliver educational programming that would improve the quality and the variety of instruction. When educators were slow to license and use those channels, the FCC redesignated eight of the twenty-eight ITFS channels for commercial use as the Multi-Point Distribution Service(MMDS).

By taking these actions, the FCC had created "wireless cable," an over-the-air microwave system with up to thirty-three full-time and part-time channels for commercial entertainment programming. Many entrepreneurs believed that the new wireless cable, given the ability to charge lower subscriber fees by its much lower capital requirements, could become profitable, reaching less than 15% of local TV Households. Within months the FCC received thousands of ITFS applications from educators who had been solicited to join a partnership with a local wireless cable operator. In return for sharing the use of ITFS channels, wireless cable operators usually agree to construct and operate the system and to make regular cash payments that the FCC intended should be used to support educational program services. Still, only a minority of educational institutions used ITFS to its full capacity.

### **Educational Opportunity**

So, why is there now more reason for school districts to view ITFS as an important opportunity to expand and improve their educational services?

First, while a growing number of satellite learning services are delivering hundreds of instructional and enrichment courses plus training for teachers and administrators, most school systems are missing the opportunity to use these new and cost-effective educational services.

Second, federal legislation has insured that Wireless Cable will have access to the programming needed to compete with cable, DBS, and other wired technologies. That means that, in the foreseeable future, ITFS/Wireless Cable partnerships should be operating in most American communities. Those systems can carry instruction and continuing education to learners in homes, schools, and at their workplace.

Third, except in the unusual applications that require two-way video, the combination of ITFS and a standard telephone line can provide all the voice and data interactivity that research indicates has any proven value in instruction. There is, however, a technical proposal in development that would permit the reuse of ITFS frequencies to create a return path for voice and data interactivity.

Fourth, ITFS licensees can, if they will, retain program control of up to 40 hours per week per analog channel to deliver distance learning to homes, schools and work sites. For twenty channels per market that is a total of 800 hours per week to deliver educational programs - nearly five times as many hours as are available to PTV stations that broadcast twenty-four hours a day, seven days a week. In many communities there will be more channels and more hours available as wireless converts to digital compression. In digital, ITFS/wireless cable will continue to have the high levels of reliability and signal quality inherent in serving subscribers directly from the originating transmitter, the low capital costs, and the low continuing costs for operations.

Finally, initial returns from a survey conducted by the National ITFS Association indicate that most current ITFS licensees have channel time available that they are willing to share with other educational users and providers. That offers school districts that do not hold ITFS licenses the opportunity to obtain ITFS channel time from those local institutions that do hold the ITFS licenses in their communities.

### **Warning to Education**

However, the opportunity for school districts to use these microwave channels for instruction may well be lost if educators do not very soon move to protect their rights by demonstrating their interest in ITFS. In numerous instances, without realizing the value of ITFS, educational ITFS licensees are signing agreements with wireless cable companies that radically reduce the value of those frequencies to education. A second threat comes from possible FCC actions that would give greater preference to the commercial use of these valuable frequencies.

There is yet time for most school systems that plan to use distant learning to learn how they can use ITFS to serve their students and their communities. No other local electronic distribution system is so widely available. No other is so reliable or flexible - and, no other will avoid the high and continuing costs to school districts to deliver distance learning via any of the wired distribution systems. The non-profit National ITFS Association stands ready to work with educators to insure that ITFS can finally become America's best "last mile" for distance education.