

more teletype channels. It seems to us that simple logic and economy require that transmission channels be used fully.

It must be observed, however, that this approach is at variance with the traditional tariffs of major common carriers.

By and large, the carrier does not lease facilities; he provides a specific service, such as telephone or teletype or facsimile or television or data transmission, although the carrier himself may well carry these separate services on a common transmission system.

The educational communications system approach, in effect, is to ask carriers to provide transmission capacity in bulk form, to be used in a number of alternate modes which are under the customer's control.

There are various other anomalies in the traditional common carrier tariffs, and they should eventually be worked out. The key restriction, however—the provision of multipurpose circuits under control of the educational user—could be addressed by this subcommittee.

It may be recalled that a similar step was taken in the Public Broadcasting Act, a portion of which specifies that preferential rates may be provided to educational broadcasters under common carrier networking tariffs.

Thus far, I have pointed out that the logic of the Networks for Knowledge Act goes beyond those items that are specified in the wording. While recognizing that the present act has reference only to higher education, we should point out that networks for knowledge must eventually include elementary and secondary education as well.

It is to this area that most instructional broadcasting is addressed; it is in these schools that major instructional uses of computers are being explored; it is in elementary and secondary classrooms that the most crucial problems of American education are found.

The networks for knowledge idea has great application to elementary and secondary education, and in the long run should not be artificially restricted to higher education.

Similarly, the principle extends beyond our national borders, as the President and Mr. Marks both stressed in their introduction to the concept.

I should comment briefly on section 801(c), which contains restrictions on the use of project grant funds. The gist of this section is to provide that the costs of terminal hardware at participating institutions shall not qualify for project grants.

The idea that the individual institution should have a material commitment and financial stake is a good one, and terminal equipment is generally a good place to attach such a proviso.

Some thought should be given, however, to the fact that we are dealing with techniques that are just now being explored. It is not always obvious what constitutes terminal equipment, and there may be times when unusual and valuable projects should include terminal equipment.

To write the present restrictions into the bill may well hamper some future development. It seems to us that it would be better to include such principle in the legislative history and future administrative guidelines, so that specific adjustments may be made more readily to accommodate changes in the state of the art. This is an area which is changing very rapidly.