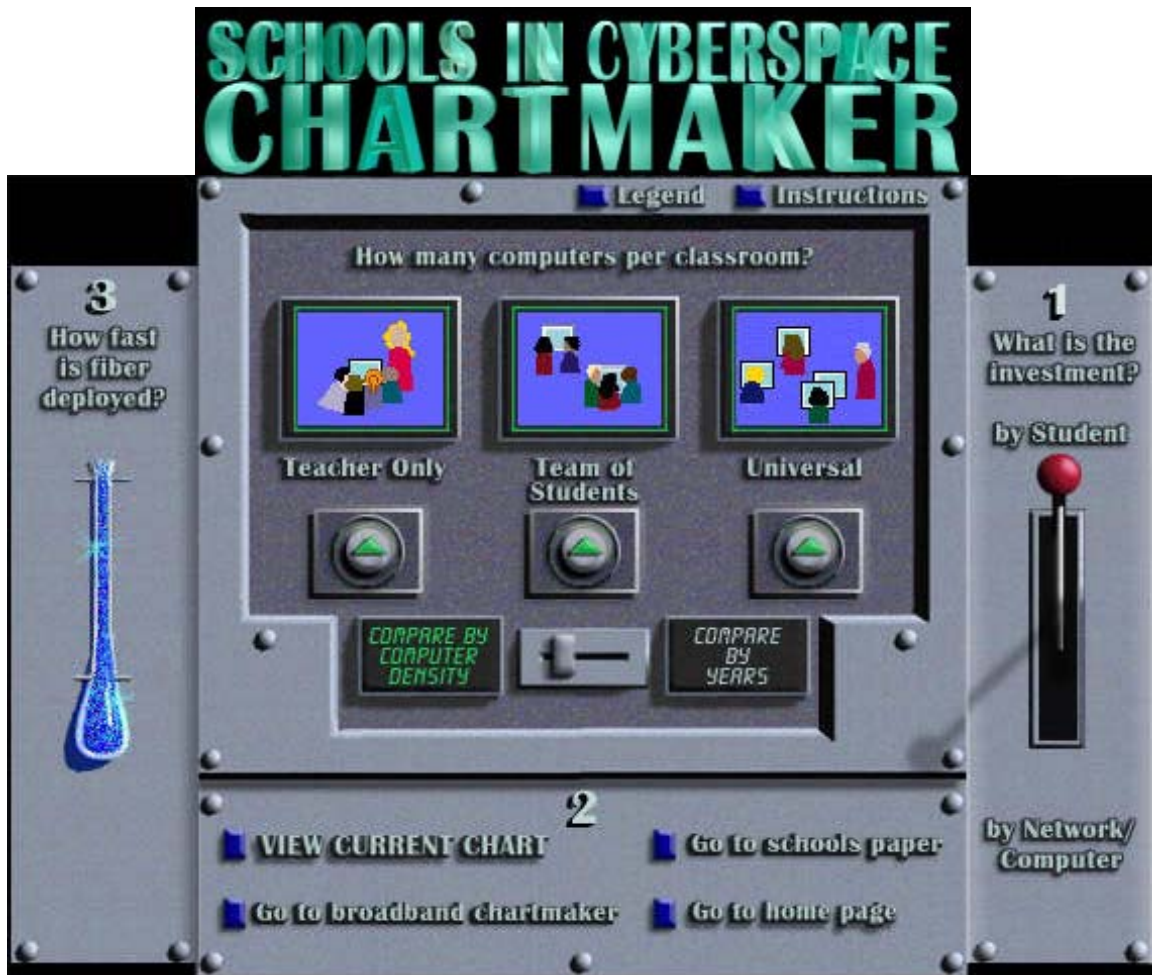




# CIRF

Converging Industries Research Foundation  
*Practical Solutions for Communications Policy*



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# Instructions

## Description

The Schools Chartmaker generates charts that describe the revenue requirements for broadband deployment to public schools, under assumptions selected by the viewer. The costing data is based on a software model, called the *New Technology Deployment Model: Broadband with Associated Depreciation and Overheads*.

The charts show two types of data:

1. Comparison of network investment to school investment and to school annual software and internet expenses; and
2. Incremental investment per student per year.

## Instructions button

Clicking on the button labeled "Instructions" located on the upper right-hand edge brings you to these instructions.

## Legend button

Clicking on the button labeled "Legend" located on the upper right-hand edge brings you to the Legend, which explains the underlying assumptions used to generate the charts and provides definitions of terms used on the chartmaker.

## Panel numbers

Each of the three panels has a numeral indicating the order for making your selections. Selections made in panel "1" on the right, determine the selections available on panel "2" and on panel "3". Selections made in panel "2", determine the selections available on panel "3".

## *What is the investment?*

The first step is to set the lever on panel "1" to either "by Student" or "by Network/Computer". Clicking on the red knob toggles the lever between the two choices. This choice affects the selections available on panel "2". The instructions below are different for the "by Student" and the "by Network/Computer" settings. The default is "by Student".

### ***How many computers per classroom? by Student?***

There is a small slider in the center panel ("2"), which can be set by either clicking on the slider, or by clicking on either "Compare by computer density" or "Compare by years". The selected text will turn green.

#### ***Compare by computer density***

If the slider is set to "Compare by computer density", three buttons will appear above the small slider. The buttons refer to three scenarios: "Teacher-Only", "Team-of-Students", and "Universal". You may select one, two, or all three of these scenarios by clicking on the appropriate button(s). When a button is clicked, the arrow will become green. The default is "Compare by computer density" with all three buttons selected.

#### ***Compare by years***

If the slider is set to "Compare by years", then a larger slider will appear above the smaller slider. You can only choose one of the three scenarios. To select a scenario, click on the large slider, which will toggle among the three choices. The default is "Team-of-Students". Because "Compare by years" gives a comparison between "5 yrs" and "20 yrs", there is no need to set panel "3".

### ***How many computers per classroom? by Network/Computer?***

There is a large slider in the center panel ("2"), which allows you choose among three scenarios: "Teacher-Only", "Team-of-Students", and "Universal". To select a scenario, click on the large slider, which will toggle among the three choices. The default is "Team-of-Students". The default is "Team-of-Students".

### ***How fast is fiber deployed?***

Select a five-year or a twenty-year deployment of broadband to the schools by clicking on either the appropriate level on the test tube, or on the appropriate text. The liquid will rise or fall to the correct height. The default is "5 yrs".

## **VIEW CURRENT CHART**

Click on the button on the base of the chartmaker to display the chart based on the current selections. To return to the chartmaker from the chart, click on the "return to chartmaker" button in the upper left-hand corner. This will return you with the same settings as the current chart.

## Go to broadband chartmaker

Click on this button to go to the "Broadband Chartmaker".

## Go to schools paper

Click on this button to go to the background paper for the charts generated by this model. The paper, *Schools in Cyberspace: The Cost of Providing Broadband Services to Public Schools*, provides a detailed description of the model and its assumptions and caveats.

## Go to home page

Click on this button to return to the home page.

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# Legend

## Definition of broadband

Definition of broadband used in the model: A single "broadband" service is defined as one offered at data rates of 45 Mbps (megabits per second) or greater. The broadband service platform provides enough bandwidth for data transfer, faxing, voice communications, and two-way video services. The broadband deployment is based on the residential deployment for broadband developed in the *New Technology Deployment Model*, which is described in the *Overview of the New Technology Deployment Model* and the *1995 User Guide*.

## Description of four buttons on the base of the chartmaker

### VIEW CURRENT CHART

This button on the base of the chartmaker displays a chart based on the current selections.

## Go to broadband chartmaker

This button brings you to the page with the "Broadband Chartmaker".

## Go to schools paper

Click on this button to go to the background paper for the charts generated by this model. The paper, *Schools in Cyberspace: The Cost of Providing Broadband Services to Public Schools*, provides a detailed description of the model and its assumptions and caveats.

## Go to home page

This button brings you back to the home page.

## Description of the selections on the chartmaker

### *How fast is fiber deployed?*

By the end of the selected time frame, all the U.S. public schools (kindergarten through twelfth grade) have the capability of delivering broadband services (including broadband access and equipment) directly to students.

**20 Years:** This assumes that the deployment pattern in the schools matches the nationwide deployment pattern so that the schools receive access to the new technologies at the same rate as the rest of the nation.

**5 Years:** This is an accelerated deployment where the schools receive new access technologies long ahead of the entire nation. This deployment requires a special design and does not match the national deployment. School numbers include equipment and software costs for upgrades every five years. Modeling the costs out to 20 years allows comparison between the 5-year and the 20-year deployment scenarios.

### *How many computers per classroom?*

Common assumptions for all scenarios: two video instructional areas per school and each classroom has one teacher and twenty-five students and receives additional equipment (one telephone, one scanner, and one printer).

## *What is the Investment?*

*Teacher Only* By the end of the selected time frame, 100% of the technology is deployed.

*Access:*

*Team of Students* Seven computers per classroom.

*Access:*

*Universal* Every student and teacher has a computer.

*Access:*

The charts focus on installation costs. Therefore, prices (tariffed rates) for telephone services or enhanced broadband services are excluded from the costs. Ongoing expenses for maintenance and operations are also excluded from all costs.

*By Student:* Incremental investment per student per year is calculated by dividing the sum of costs calculated for that year and for all prior years by the total number of students that have been provided broadband network access and desktop equipment. Costs include annual expense for Internet access and usage based on current rates and projections.

*By Network/Computer:* The charts indicate total costs divided into the following three categories:

- Network Investment: Includes all local telephone company investment costs.
- School Investment: Includes costs for PCs and other equipment such as telephones, televisions, video equipment, scanners, printers, PBXs, and file servers, as well as training, school retrofitting for appropriate asbestos removal and air-conditioning and electrical upgrades, LAN interconnection and other wiring, and periodic equipment replacements.
- Annual School Software Expense and Internet Access Costs: Includes operational and educational software, Internet fees, and upgrading annual software expenses.

For a summary of these investment costs by category, scenario, and deployment, see Figure 2 in the [Schools in Cyberspace paper](#).

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