

Value of Investment in Technology: Simple Questions, Difficult to Answer

“Do we need all those computer support people when we really need more teachers?”

“We bought 50 new computers last year; why aren’t our kids any smarter?”

“Why don’t we just let each school do its own thing with technology and do away with the overhead at the district?”

The answers to questions concerning technology costs and value can be complex. You’ll be better prepared to answer those kinds of questions and to make informed decisions by increasing your knowledge about technology and its costs.

Questions about technology costs and value fall into two major categories: *total cost of ownership* for the current

technology infrastructure and *value of investment* for specific proposed or installed technology projects.

Total Cost of Ownership

Total cost of ownership (TCO) considers all the costs associated with the installed technology infrastructure, including budgeted costs and unbudgeted costs. Although this concept may seem simple, the data, if available, are spread among several departments, making it more difficult for school business officials to get a handle on TCO. These costs can be divided into technology, direct labor, and indirect labor.

Technology includes computers, networks, servers, printers, software, and external services. These costs should be



By Rich Kaestner

amortized over the useful life of the asset (up to five years) to better reflect and average out purchase costs.

Direct labor is the full-time equivalent of all people who have responsibility for the management, planning, purchase, implementation, and ongoing support of the technology. These people may not be part of the computer services department, but they all have at least some responsibility for the “care and feeding” of the technology. Direct labor cost then involves calculating the burdened salary times the full-time equivalent of these people.

The cost of *indirect labor* encompasses the time spent by the technology users, those without support responsibilities, in self-support, peer support, training, and lost time due to system or network downtime. Although indirect labor is not a budget line item, it typically represents over half the total cost of ownership and constitutes a real and significant cost to the school district. The best way to measure indirect labor is with a user survey. As with direct labor cost calculations, the cost of indirect labor uses the burdened salary for the time spent by users in training or dealing with system issues.

Answering the Questions—TCO

You are now ready to address some potential questions from the uninformed. An important point to keep in mind is that attempts to cut costs in one category just increases costs in another. The key is to balance these categories for the best efficiencies.

Q: If we were to eliminate some of the computer services support staff, could we save money, hire teachers, and meet the potential 65% classroom funding initiative?

A: You are asking whether you could reduce the direct labor component of your technology costs. That will shift some of the burden of support from professional support staff to higher-paid teachers who are not trained in technology problem resolution. This loss of teacher productivity is a real cost to you and will result in a higher net cost.

Q: XYZ Company is donating a bunch of old computers to us. Isn't that great?

A: This attempt to save money on technology will likely increase direct and indirect labor costs. If the old computers don't meet the technology standards for the district, they will be expensive and difficult to support. If they're old enough to be maintenance problems, direct labor and indirect labor costs will rise. There is also the issue of disposal and planning for replacement.

Q: If we moved to site-based management of technology, would users have more freedom over administrative and student computing and could we do away with much of the costly centralized support organization?

A: The cost of integrating disparate data formats and integrating networks will become a nightmare. Software licensing and related costs for the increased number of different applications designed to perform the same function will be much higher, as will technology costs that now enjoy volume discounts.

TCO Categories

- Technology:
Hardware, software, service providers
- Direct labor:
Computer services and other support personnel
- Indirect labor:
End-user time in training or with system issues

TCO needs to be understood so that technology, direct labor, and indirect labor costs can be optimized. This is not necessarily an easy task, and few businesspeople or computer services people understand these costs completely. Fortunately, there is a free Web-based TCO tool to help. Although the data collection effort is significant, it is well worth it. Developed by the Consortium for School Networking (CoSN) and Gartner, this tool is available at <http://www.classroomtco.org>.

Value of Investment

With a better understanding of the costs related to the computer technology infrastructure, we can now turn our attention to better understanding VOI—the value of investment in specific technology projects. The best time to look at VOI is during the decision-making process for proposed projects.

You can look at VOI as a sort of return on investment (ROI) for schools, where costs and benefits of a proposed project are evaluated. Calculating ROI is a relatively straightforward process, as the benefits are measured in dollars to the top or bottom line of the business. But schools are not in business to make money and do not measure success in terms of dollars. The business of schools is education. Schools need to understand their educational goals and how technology will support their goals—something a TCO analysis and VOI project analysis help clarify. Technology or other projects that save money are still worthwhile, of course, because they allow the savings to be applied to meeting these goals.

Table 1 may help you categorize projects and understand some areas in which to look for benefits. As you can see, a business-focused ROI works in many cases, but in others (notably community outreach, teacher computing, and student computing), the benefits may be more focused on the school mission and related goals and mandates.

The VOI Process

To measure the value of investment in technology, you need to understand the costs, risks, and benefits of the proposed project. Following successful implementation, the results can be validated against the projected cost and benefit values. The following steps will help you through this process:

1. Estimate project TCO,

Table 1. Ways to Categorize Benefits of Proposed Projects

1. Technology infrastructure improvement—cost savings, with computer services staff and/or user efficiencies reducing costs and/or providing better service
2. Administrative computing applications—applications, such as accounting and SIS, providing reduced administrative costs
3. Community outreach—Internet-based applications to communicate with parents, students, and the community at large, which may have some cost-saving benefit, but with more value related to community image and student performance
4. Teacher computing—teacher productivity and teaching tools designed to make teachers more productive and effective, saving costs and providing information toward enhancing student achievement
5. Student computing—focused on improving student achievement, with potential personnel cost savings

2. Assess risk: probability of success,
3. Subtract dollar savings,
4. Determine and score measurable qualitative benefits toward district goals,
5. Analyze net cost versus qualitative benefits, and
6. Evaluate results.

Projected costs should be a part of the process. It's important to understand budgeted initial and ongoing costs from a cash flow perspective. But when determining whether a project is worth doing, you should calculate the annualized project TCO. Essentially, TCO is the amortized initial costs plus annual ongoing costs plus the unbudgeted indirect labor cost. To help with this process, CoSN provides a free cost estimator at <http://www.classroomtco.org>.

Assess risk by collaboratively projecting the proposed project's probability of success. That is, what is the probability that the project will be successful in accomplishing its stated goals as viewed by those who understand the goals and stated solution? Divide the projected costs by the probability of success for a risk-weighted cost. Although risk is not a true dollar cost, it needs to be considered when evaluating proposed projects.

Dollar savings can be in the form of reduced spending, enhanced productivity, cost avoidance, or increased revenue. Identifying all savings can require some thought. If the project focuses more on attaining district goals or meeting mandates, the savings may be smaller than the costs and you will need to address the qualitative benefits separately.

$$\text{net risk-weighted cost} = \frac{\text{Projected TCO}}{\text{Probability of Success}} - \text{dollar savings}$$

Measurable qualitative benefits now need to be determined and scored. For projects that are not justified on dollar savings alone, you need to understand how they relate to the school or district mission, goals, and mandates. Indicating

that the objective is to increase math scores or to provide better community communications is not enough. State objectives in quantifiable terms so that they can be measured. For instance, "Increase eighth-grade standardized math scores from 58 to 63 by 2008," or "Increase parent awareness of school performance from 23% to over 50% as measured by survey." We now have a way to measure and compare proposed projects and to go back to evaluate the project's success.

A chart for a pilot student laptop program is useful in actually scoring proposed or planned projects (see Table 2). A spreadsheet is also available to help you identify potential benefits. You can access this spreadsheet by clicking on the VOI link <http://www.classroomtco.org>. The spreadsheet, which is not an all-inclusive list, includes the related district goals and mandates along with the relative importance of these district goals. Mapped to those district goals and mandates are the specific measurable benefits expected for the proposed project and the relative effect or influence those benefits will have on the respective district goals.

When evaluating multiple projects, it may help to calculate an overall score for each by multiplying the importance of the district goal or mandate by the effect that the project has on that goal or mandate and then totaling the scores.

Value of investment can now be determined for projects competing for the same dollars by comparing the net risk-weighted cost with the total project score for each project under consideration.

When you have projected costs and specific measurable benefits, it is a relatively simple task to go back after the benefits were projected to have been realized and *measure the success* of the project. Simply, were the costs in line with what was anticipated and were the projected benefits realized?

Answering the Questions—VOI

We are now ready to respond to technology project-oriented questions.

Q: We bought 50 new computers last year; why aren't our kids any smarter?

A: Those computers were purchased as a part of improving your middle school math curriculum. We expect that this project will move us from 56 to 63 as measured by eighth-grade standardized average test score. That will take us from "meets" to "exceeds" on the state assessment, which is a major goal for our district.

Q: How can you justify the cost of putting all those computers in the library?

A: The library computer project was implemented to ensure that each student who graduates has the skills necessary to function in today's college and work environment. Course work includes assignments that require students to have computer skills in presentation graphics, multimedia, word processing, spreadsheets, Web research, and publishing. Since some students don't have computers at home, we provide access to computers in the library and are meeting important district goals of providing student equity and 21st-century skills.

Simple Questions, Difficult to Answer

It is vitally important to understand your computing environment costs (TCO) and thoroughly evaluate proposed projects (VOI). When you do, you will have answers to those simple questions.

Thankfully, there is help. The CoSN-Gartner K-12 Web-based TCO tool has been available for over three years and has been used by more than 1,600 schools, districts, and related state agencies. Although the data collection aspect of providing input for this tool requires time and effort, the overwhelming consensus has been that it is well worth it. As organizations repeat the process regularly (recommended annually), this task becomes much easier.

The VOI process described earlier is not necessarily a new concept. For major projects, most schools and districts already conduct some sort of projected cost-benefit analysis, maybe informally and without real measurements tied to school goals. For projects focused on saving money, value

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analysis can stop at risk-weighted cost. However, for projects focused on the mission of educating our children, the VOI approach adds structure, rigor, and consistency to the process; helps answer those simple questions; and is

aided by tools and support that CoSN provides. ■

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