

What Is Cost-Effectiveness Analysis?

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“It seems like a good program, but is it cost-effective?” is a question that is often asked about education programs. This article is designed to provide you with background information on cost-effectiveness analysis that may be helpful when responding to this question in relation to Reading Recovery or other program choices. Policy makers and administrators are concerned about being fiscally responsible for how dollars are spent on education programs and so they question costs; teachers are concerned about teaching programs that really have an impact on children’s academic performance, and so they question effectiveness. Bringing these two viewpoints together in resource allocation decision making can be difficult. Some programs are highly effective, but their costs appear to make them too expensive. At the same time, evaluations of a program’s effectiveness often focus on a narrow range of outcomes. Access to a full picture of a

program’s costs relative to the total scope of its outcomes would provide a stronger basis for decision making.

In this environment an evaluation tool like cost-effectiveness analysis would appear to have much to recommend it as an aid to decision making. Surprisingly however, the story of cost-effectiveness analysis of education programs in the United States is less than gripping. The following discussion clarifies what cost-effectiveness analysis involves, describes how cost-effectiveness analysis has been applied in other public service sectors, examines some of the constraints to using this evaluation tool in education, and considers how we can move forward in the application of cost-effectiveness analysis in resource allocation decision making.

What is cost-effectiveness analysis?

Cost-effectiveness analysis is an economic evaluation tool that can be used to compare two or more programs or interventions. The product of this kind of analysis is cost-effectiveness ratios that represent the trade-off between each program’s costs (measured in dollars) and each program’s outcomes (measured in appropriate units). The ratio will show for every dollar spent how much student achievement will be gained or retentions prevented, depending on the goals of the program. Levin (1983) and Levin and McEwan (2001) provide excellent examples of cost-effectiveness ratios and how to interpret them. It should be noted that programs can only be compared if they

have similar goals and use outcome measures that can be compared.

How widespread is the use of cost-effectiveness analysis in education?

Although there is considerable talk among policy makers about the need for cost-effectiveness analyses in education, there is only limited evidence that it is applied. In conducting an extensive review of the education research literature in the United States, we found a small number of cost-effectiveness studies that met appropriate evaluation standards (Hummel-Rossi & Ashdown, 2002). None of these studies addressed the cost-effectiveness of early literacy interventions.

What about other public service sectors?

The health and medical fields have made greater strides in the application of cost-effectiveness analysis as a tool to aid decision making than has education. For example, in 1993 the U.S. Public Health Service appointed a panel of 13 medical experts in cost-effectiveness to examine cost-effectiveness methodology as one tool that could contribute to decision making concerning improvements in national health. The panel made a series of important recommendations in 1996 that were directed at establishing standards for the conduct of cost-effectiveness analysis. Furthermore there is evidence that in the health and medical fields, cost-effectiveness studies have contributed to changes in practice, as in the use of cholesterol-



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reducing drugs for primary and secondary treatments of heart disease (Buerhaus, 1998).

There has been no comparable attention to criteria for the conduct and application of cost-effectiveness analysis in the field of education, although the work of Levin (1983) and Levin and McEwan (2001) among others has provided strong direction. School systems face similar problems as do other public service sectors, that is, pressure for effectiveness and accountability from a range of stakeholders including school administrators, school board members, parents, textbook companies, and taxpayers.

Why has cost-effectiveness analysis in education been applied less than in the public health arena?

There are a number of conceptual and measurement challenges that can be cited in response to this question. For example, although it might seem logical to use school budgets as a source of accurate information concerning the costs of an education program, these budgets are designed to show planned costs, not actual costs. Levin and McEwan (2001) recommend using interviews and questionnaires of

administrators and program implementers to check on the full range of ingredients associated with a program so these can be valued monetarily. This approach compensates for the limitations of school budgets as sources of information. For example, a program may rely on volunteer time from parents. This contributed time is a hidden cost to the program that will not be found in a school budget, but it is a cost that needs to be included in a thorough evaluation of a program's costs by, for example, valuing monetarily the alternative use of parents' time in paid employment.

School budgets have another limitation in that they are typically organized for only one year of a program's operation, although education programs and interventions are typically of multi-year duration. Heavy upfront costs, such as buying special equipment or investing in targeted teacher professional development, must be considered across the anticipated life of a program; otherwise, total first-year costs could be inappropriately used as a basis for selecting or rejecting a particular program or intervention.

Evaluating the full range of effects of an education program or intervention presents similar conceptual and measurement challenges to the identification and measurement of costs.

Comparing the impact on student learning of two alternative programs requires evidence that both programs, when properly implemented, reach the desired goals in terms of student achievement. However, some programs may not only achieve their primary goals but have secondary outcomes as well. In the cost-effectiveness studies we examined, little attention was paid to outcomes such as student

satisfaction, improvements in self-esteem that may arise from improvements in academic achievement, or to the degree of teacher satisfaction arising from participation in different programs. In an era of teacher shortages, recruiting and retaining good teachers as a secondary program outcome might be an important consideration in program adoption.

What are the purposes behind conducting cost-effectiveness analysis?

Cost-effectiveness analysis as an evaluation tool is not designed to be used as the sole basis for decision making. Information from such analyses should be incorporated into a specific decision-making framework. For example, Quinn, Van Mondfrans, and Worthen (1984) compared the cost-effectiveness of two mathematics programs for fifth-grade students, one a traditional textbook-based program, the other a program that focused more heavily on individualized instruction. The researchers took an important variable into account in their analysis: that is, the effectiveness of the program in schools serving students from different socio-economic groups. While the traditional textbook program was moderately more cost-effective for high socio-economic-status students, the program using greater individualized instruction was particularly successful at raising the achievement levels for students of low socio-economic status and was more cost-effective with this group of students.

The school system in the cost-effectiveness study described above was interested in program effectiveness as it helped reduce the achievement differences for students from

different socio-economic groups. That was the larger decision-making framework within which the district was operating. This is typical of resource allocation decisions that school systems currently face. School finance litigation has drawn attention to the extent to which education resources are distributed in a manner that achieves adequacy and equity of provision for all students, regardless of where they live, their background, or the type of school they attend.

What future direction should cost-effectiveness analysis take in education?

We have a number of recommendations that should be taken into account when planning to conduct such an analysis:

- Collecting cost and outcome information needs to reflect the broadest perspective and to include information from the widest range of stakeholders in the analysis. The ingredients approach advocated by

Levin (1983) and Levin and McEwan (2001) provides an organizational structure for accomplishing this.

- Evaluating outcomes should involve attention to both primary and secondary program effects.
- Cost-effectiveness analysis should not be confused with cost-cutting, and it should not be used to serve political agendas. It should be used within a larger decision-making framework that addresses significant educational goals.
- Conducting cost-effectiveness analysis is a complex process. If the findings are to be robust enough to add value to resource allocation decisions, the analysis must be a team effort and must pay particular attention to the decision-making framework and quality of data evaluation for the programs being compared.

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