



MODULE 1 VIDEO 2A TRANSCRIPT: INTRODUCTION TO COST ANALYSIS

Hello and welcome to Module 1 Video 2, Introduction to Cost Analysis.

In this video, I'll briefly explain what cost analysis is and why we should do it. I'll cover some basics on how to do a cost analysis and why. I'll also review the results of one so you can see how costs may differ from expenditures in an educational context.

I'll end by showing where cost analysis fits in with different types of economic evaluation by walking you through decision flowcharts that will help you decide what kind of economic evaluation you should do.

Cost analysis is a form of economic evaluation in which you carefully document the type, quantity, and value of all resources needed to achieve or replicate a measured effect or outcome – whether or not there is an associated financial transaction.

In education research, we are often evaluating specific programs or interventions that are intended to produce improvements in student or teacher outcomes. Relevant cost analyses would identify what new and existing resources are needed to implement the program or intervention in order to produce those outcomes.

The established way of ascertaining the costs of a program is the ingredients method, developed by Henry Levin in 1975. The basic idea is to identify every resource or “ingredient” needed to implement a program, figure out how much you need of each one, and place a dollar value on it.

Using categories can help you capture all the different kinds of resources that are needed to implement a program. Common categories for educational programs include personnel, which often comprises 80% or more of the costs of educational programs, facilities, materials, and other inputs such as transportation.

You may already have an idea of the cost of a program you are evaluating – it might have a price attached like a license fee for software, or you may have used the program before and have a budget for it. That idea may in some cases be

pretty good! But it's not always the complete picture, and it's hard to know in advance whether or not budgets or expenditures are a good proxy for true economic costs.

Actual costs may differ from planned costs.

A program may have hidden costs that aren't captured in budgets or expenditures.

Or the economic cost may be *lower* than expenditures because it uses less resources than whatever you are comparing it to.

We use the concept of opportunity cost to capture the full economic cost – what is given up, or the value of the next best alternative use of every resource.

Some costs that would be missed looking at a budget include:

- Resources that are reallocated from other activities rather than being newly acquired specifically for the program you are evaluating
- Resources that are donated or provided in-kind
- Resources provided by organizations other than the school or district
- Resources contributed by program participants or their families
- Durable items like buildings or equipment which are capital expenditures that may be accounted for in a budget separate from the operational budget, or may not be captured at all in the budget every year
- Administrative overhead that wouldn't show up on the budget for a particular program because it's shared by many programs.

Now, you may be wondering, unless someone like a funder has asked you to do a cost analysis, why would you bother? It turns out, cost analysis is a useful addition to our analytical and decision-making toolkit, and for some reasons you might not expect.

First, it provides schools and districts with practical information about what it takes to implement a program, or to scale it up, or to replicate it in a different geographical location.

In turn, this information can help guide decisions about how to use limited resources most efficiently.

Cost analysis can also help clarify a program's theory of action – that is, how it is supposed to work - by uncovering what the program actually *is* in terms of inputs, activities, and outputs.

If you discover variations across schools or districts in how well a program works, cost analysis may help you figure out possible reasons for the unevenness by highlighting differences in activities and in the quality and quantity of resources used.

This, in turn, can uncover inequities in the distribution of resources whereby, for example, schools with the most struggling readers may not be getting an adequate share of interventionists.

To make all this concrete and demonstrate how economic costs differ from expenditures in practice, let's look at example of three digital math tools being considered by a K-8 school to supplement classroom math instruction: ASSISTments, eSpark, and LearnZillion Illustrative Math or IM.

First, let's see what things would look like with if we only consider expenditures.

For ASSISTments, there are fees for a coach to provide training and mentoring, plus some travel expenses for the coach. These add up to just over \$3,400 for the school.

For eSpark there is a license fee of \$8,125 for the school, plus training fees of \$5,000, for a total of \$13,125.

For LearnZillion IM, the license fee is \$6,175 and there are another \$7,500 in training fees. These sum to \$13,675.

So, it looks like, just based on expenditures, ASSISTments is the least costly, followed by eSpark, followed by LearnZillion IM.

However, when we look at true economic costs and not just expenditures, the picture changes dramatically. Now we are considering how resource use changes when implementing each tool compared with whatever the school was doing before – which, by the way, we often call “business as usual.” In this case, the school previously used no digital math tools at all and simply provided traditional classroom instruction.

ASSISTments requires some time for principals and teachers to participate in training, meaning that the \$3,400 for the coach's training fees and travel don't capture the full costs. There are also some costs associated with digital devices. Where things really start to look different, is that the costs of personnel time for training are offset by 2.5 hours per week of prep time saved for teachers. The net result is a substantial savings in personnel costs because, overall, time use is less than under business as usual conditions. This translates into overall costs that are actually \$9,000 lower than business as usual.

eSpark also requires substantial time from school personnel for training, and actually increases prep time compared to current instruction at the school. So, personnel time for training and additional prep costs just over \$30,000. Add this to the \$13,000 in training and license fees, plus device costs, and we get a total of almost \$44,500.

Finally, LearnZillion IM also provides some cost savings due to reduced planning time for teachers, but not enough to fully offset the licensing and training fees. It still costs \$9,400 overall.

So, when we considered full economic costs, which meant adding personnel time spent or saved to implement each digital math tool, and also a portion of the costs of equipment needed, the picture looked quite different. ASSISTments actually costs less than business as usual because of the time savings it creates and LearnZillion IM is substantially less costly than eSpark.

Hopefully, this demonstrates clearly the difference between expenditures and costs and shows you why it's important to consider both. Of course, to make a final decision about which program to implement, it would be wise to consider the practical and political feasibility of implementing each one and to weigh the costs against what you expect to gain in terms of outcomes for the students or educators. That's where additional types of economic analysis can help.

Some of the methods of economic evaluation only consider costs and resource requirements, others also look at the returns, that is, what you get out of the investment. Hopefully that'll be gains in some desirable outcome, but there may be losses too.