

Cost Models: a Study In Persuasion

selling your training to top management

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Are you able to justify your training programs in terms that have financial impact?

If your answer to this question is "no," the following article will provide you with a valuable tool for making believers out of corporate skeptics.

The cost model is a powerful tool of persuasion. It illustrates the economic feasibility of initiating a corporate training program; it predicts the cost of developing and maintaining such a program and it projects the savings generated by such a program.

This article defines the major elements of a cost model, discusses the function and importance of each of these elements, and illustrates the development and construction of a cost model through an analysis of the following hypothetical case.

Case Study: Speed Reading Course

Recently, you discovered that the managers within your company were spending far too much time reading memos, reports, bulletins, procedures and newspapers which regularly passed across their desks. Your research into this problem unearths the surprising fact that the average executive reads for approximately one-half of his working day.¹ To improve the efficiency of your management group, you decide to offer a training course in speed reading.

Your first step is to evaluate several speed reading programs offered by outside organizations. The objective of your evaluation is twofold: to determine the value of speed reading training, and to select the program best suited to

the needs and structure of your company.

As the coordinator of the evaluation, you pilot-test several courses. Your pilot uses the "Nelson-Denny Reading Test" to measure gains in speed and comprehension. Comparisons between experimental and control group test scores are made both before and after training. The Wilcoxon Matched-Pairs Signed Ranks test is used to analyze the raw data, and the Kruskal-Wallis one-way analysis of variance compares the average group scores among all groups.

An analysis of pre- and post-course reading speeds proves conclusively that the six-hour program offered by the ABC Reading Corporation is not only the best program overall, but it doubles the reading speed of all participants

with no loss of comprehension. You're now faced with the task of convincing top management to buy ABC Corporation's speed reading course. This is no small task, since the total cost for their program is substantial. Table I summarizes ABC's pricing structure.

volves the systematic offsetting of costs against potential savings. A typical cost model is composed of five major elements:

1. Fundamental Questions
2. Basic Assumptions
3. Anticipated Costs
4. Projected Savings

5. How long will the training last?
6. Who will train the in-house instructors?
7. Where will the instructor training take place?
8. How long will the instructor training last?
9. How much will the instructor training cost?
10. How much are outside royalty charges?

Table I.

Price per Student	Number of Students
\$40	100 or less
\$35	101 to 200
\$30	201 to 300
\$25	301 to 500
\$20	501 or more
Instructor Training	No charge

After doing your homework and coming up with some answers, illustrate your findings in a chart similar to Table II. One purpose of this chart is to help you focus your attention on those elements which will ultimately affect your direct and indirect costs.

You plan to select trainers from each of your regional offices and send them to ABC's Instructor Training Seminar. These trainers will then return to their offices and conduct regular in-house training sessions. The contract you have with ABC provides instructor training at no cost. ABC has also promised to supply you with a computerized report on the results of every reading class conducted by your trainers. This report not only keeps your organization honest, it gives you feedback on the quality of training conducted by your trainers.

ABC's Instructor Training Seminar lasts two days, and since it will be conducted in only four cities across the United States, it will involve travel, lodging, and per diem expenses for all your instructors.

The expenses for travel and lodging for the instructor training sessions, combined with ABC's per pupil charges, frame a rather depressing cost picture. To stress the economic advantages that would accrue to your company if top management bought ABC's reading program in spite of its high costs, you decide to construct a cost model.

Elements of a Cost Model

Developing a cost model in-

**5. Return on Investment
Formulating
Fundamental Questions**

To begin the development of a cost model for your speed reading program, you need answers to some basic questions. These questions will force you to consider the logistics of your training mission. Here are some of the questions you might want to ask.

Developing Basic Assumptions

With the answers to your questions firmly in mind, you're ready to begin developing a few basic assumptions. These assumptions define the parameters of your cost model and help you justify the conclusions you will ultimately reach regarding the savings generated by your speed reading program.

Table II.

Questions	Answers
1. Audience size?	1. 2,700 persons
2. Audience level?	2. Management personnel
3. Location of training?	3. Local (no travel)
4. Who conducts training?	4. In-company trainers
5. Length of training?	5. Six hours
6. Who will train the trainers?	6. ABC Corporation
7. Location of Instructor training?	7. New York, Atlanta, Chicago, San Francisco
8. Length of Instructor training?	8. Two days
9. Cost of Instructor	9. No charge
10. ABC's per pupil trainee cost?	10. \$20

1. How many persons will be trained?
2. Who are they?
3. Where will the training take place?
4. Who will do the training?

To develop your assumptions analyze the various factors that might affect the potential savings resulting from your program. This exercise has the positive effect of telegraphing to your audience and

would-be detractors the weakest areas of your analysis. In doing this you've shown that you have looked at your project from all angles — something very few trainers do. You've also created an atmosphere of refreshing honesty, and at the same time, denied your critics the opportunity of finding flaws in your work that you had not already pinpointed.

The basic assumptions involving the ABC Corporation speed reading program should include:

- *Assumption one* — that speed reading trainers will be appointed in all 27 offices of your company.
- *Assumption two* — that speed reading trainers will conduct at least one class of ten trainees per month.
- *Assumption three* — that the average manager in your company spends four hours a day in business oriented reading. (This figure is based on a study by Professor James I. Brown of the University of Minnesota. Although it can be disputed, it is useful in establishing a benchmark from which savings can be projected.)
- *Assumption four* — that doubling the reading speed of participants will result in their ability to read the same amount of materials in half the time.
- *Assumption five* — that gains in speed and comprehension are permanent — provided the new skills are practiced.

These five assumptions provide the framework from which you will be able to calculate and justify the savings generated by your speed reading program.

Calculating Anticipated Costs

Determining costs begins with the calculation of hourly salaries. Your personnel or payroll department may be able to supply you with the average hourly salaries of your trainees. But if your trainee audience consists primarily of management personnel, it's unlikely that hourly figures exist. Use the following formula for cal-

culating hourly salaries of management-types.

Step 1: Determine the number of trainees in each paygrade.

Step 2: Determine the total monthly compensation for each of these paygrades.

Step 3: Add these together to arrive at the total monthly compensation for all managers.

Step 4: Annualize the figure by multiplying by 12.

Step 5: Compute the average weekly compensation by dividing by 52.

Step 6: Calculate the per person compensation by dividing by the number of managers in the above paygrades.

Step 7: Determine the average hourly salary by dividing by the number of hours worked per week. (In the hypothetical ABC case this was 40.)

For the sake of simplicity, please assume that after following these instructions you discover the average hourly salary for management personnel in your company is \$10.

The next step in calculating anticipated costs is accomplished by breaking all costs into two major areas: direct and indirect. This helps insure that every major cost element in your speed reading program is accounted for. Generally, direct costs represent a specific dollar outlay, usually for materials.

Indirect costs represent compensation for the time students spend in training. (In any major training program, such as in our hypothetical speed reading course, indirect costs far outweigh direct costs.) Direct costs include such items as research and development, artwork, paper, ink, typesetting, printing, bindery work, distribution, production costs for films and video-tapes, travel and lodging for research and evaluation, and one-time royalty or rights charges.

Direct costs associated with ABC's speed reading course are easy to determine. First, under the terms of the contract you plan to sign, there will be no direct charge for training your in-house instructors.

Because they will be attending the two-day ABC Instructor Training Seminar, however, you will want to include travel, lodging and per diem expenses. Second, since all student training will take place on premises there will not be any travel, lodging or per diem expenses for the trainees.

Finally, the one-time charge of \$20 per student will cover both the rights for the course as well as the cost of all the materials supplied by the ABC Corporation. At this stage of the development of your cost model, your direct costs could be itemized as follows:

Table III.

DIRECT COSTS OF THE ABC COURSE	
Instructors Training	No charge
Instructor Travel	\$ 8,100
(54 Trainers @ \$150)	
Lodging	2,160
(54 Trainers @ 20 per night for 2 nights)	
Per Diem	1,188
(54 Trainers @ \$11 per day for 2 days)	
Student Training	54,000
(2700 Trainees @ \$20)	
Total Direct Cost	\$65,448

Indirect costs, however, are much more difficult to determine. The big money item, of course, is the compensation paid to the trainees during the time they are in class. Trainer compensation is equally problematic, particularly in the case of the ABC speed reading course. The indirect costs for trainer compensation must include the salary paid to the trainer during the two-day ABC Instructor Training Seminar, as well as the compensation paid to him or her during the time he or she is conducting speed reading classes within your company.

After calculating these indirect costs, your cost model should look something like this:

breaking the total cost picture into direct and indirect categories should now be apparent. There is a strong temptation among trainers to disregard indirect costs since they are normally three times as great as direct costs. Failure to include indirect costs results in an incomplete and unfair accounting of the true cost of your training program. Although indirect costs must be calculated, it's often advisable to emphasize the direct out-of-pocket costs while minimizing the costs paid out in compensation. The logic for this is that salaries are paid regardless of whether or not the employees are involved in training.

task is to calculate the savings which would theoretically be generated by your speed reading course.

When projecting the savings that may be generated by a particular training program, you have to rely heavily on the basic assumptions developed in Step Two. These assumptions indicate your intentions for conducting the training course, and the closer you adhere to your original game plan the more accurate your cost model remains. Let's re-examine these basic assumptions in light of our desire to project savings.

1. There will be a speed reading trainer in all 27 offices of the company.

2. The trainer will conduct one class of ten trainees per month.

3. The average manager reads four hours a day.

4. The manager who doubles his reading speed will read the same amount of material in half the time.

5. Gains in speed and comprehension are permanent provided the new skills are practiced.

If these assumptions are adhered to, your company will train 270 managers per month once the program is operational. Thus, in 10 months all 2,700 management personnel will have been trained. If the typical manager who makes \$10 an hour, saves two hours a day by doubling his or her reading speed, ABC's speed reading course will save your company \$20 in *management time* per day. Multiply \$20 times 2,700 managers, and your daily savings amounts to \$54,000. Based on a 252 day work-year, this comes to \$13,608,000 annually.

The \$13 million figure is accurate, however, only after your program is in full swing, for during the first year of operation your savings in management time will not be based on 2,700 employees.

The following chart illustrates the cumulative savings your speed reading program could generate during its first year of operation.

Table IV.

DIRECT COSTS OF THE ABC COURSE	
Instructors Training	No charge
Instructor Travel	\$ 8,100
(54 Trainers @ \$150)	
Lodging	2,160
(54 Trainers @ \$20 per night for 2 nights)	
Per Diem	1,188
(54 Trainers @ \$11 per day for 2 days)	
Student Training	54,000
(2700 Trainees @ \$20)	
Total Direct Cost	\$ 65,448
INDIRECT COSTS OF THE ABC COURSE	
Instructors Training	\$ 4,817
(54 Trainers @ \$44.60 per day for 2 days)	
Classroom Trainer Cost	18,630
(54 Trainers @ \$5.75 per hour for 60 hours)	
Student Training	162,000
(2700 Trainees @ \$10 per hour for 6 hours)	
Total Indirect Cost	\$185,447
TOTAL DIRECT AND INDIRECT COST	\$250,895

This completes your breakdown of the costs for introducing and maintaining your proposed speed reading course. The importance of

Analyzing Projected Savings

Since the figures outlined in Table IV represent only half of a complete cost model, your next

Table V.

SCHEDULE OF SAVINGS AS PROGRAM DEVELOPS			
Months	Cumulative Number of Graduates	Reading hrs. saved Per month @ 2 hrs. per day	Cumulative Compensation Saved @ \$10 per hr.
Jan.	270	11,880	\$ 118,800
Feb.	540	23,760	237,600
Mar.	810	35,640	356,400
Apr.	1080	47,520	475,200
May	1350	59,400	594,000
Jun.	1620	71,280	712,800
Jul.	1890	83,160	831,600
Aug.	2160	95,040	950,400
Sep.	2430	106,920	1,069,200
Oct.	2700	118,800	1,188,000
Nov.	2700	118,800	1,188,000
Dec.	2700	118,800	1,188,000
		TOTAL	\$8,910,000

Now your cost model is practically complete. All you have to do is drive home the significance of the savings in management time of \$8,910,000 by computing the return on your investment.

Computing Return on Investment

To compute the return on your investment simply divide your total costs into your savings. The primary purpose for computing return on investment is to highlight the economic feasibility of adopting your proposed program. With this in mind, the narrative covering this section of your cost model should have a crescendo effect. In your hypothetical speed reading program, you might want to summarize your savings in this fashion:

Savings for the first year of operation will amount to \$8,910,000 in management time provided our company trains 2,700 management employees during the next twelve months.

Savings in management time for the second year and each subsequent year thereafter will total 14 million annually. Taking into consideration the total cost of

\$250,895 for the speed reading course, the first year's savings represents a return of 35 times the original investment. By the end of the second year of operation, savings in management time will have increased to \$22,518,000.

Thus, for every dollar invested in a speed reading course in 1973, our company will receive \$88 worth of additional management time by the end of the second year of operation. This amounts to an annual return of \$44 for every dollar invested.

There is, of course, no end to the observations you can draw once you have computed your costs and potential savings. Each comparison you make should strengthen the logic for adopting your proposed program. If your program has genuine value, and if you illustrate this value in terms that have financial impact, you will have constructed a powerful tool of persuasion that will command the attention of top management.

Final Word of Caution

One final word of caution. Not all training programs lend themselves to the clean development of a cost

model. If the behavior change resulting from your training program cannot be related in any way to dollars earned or saved, any attempt to develop a cost model will be unsuccessful.

To determine whether or not your program lends itself to the development of a cost model, look for answers to the following questions.

1. How many employees will be trained?
2. How long will it take to train them?
3. What will it cost to train them?
4. How will their new knowledge or improved performance save the company money?
5. How much money will be saved over that period of time?

If you feel that you can develop answers to these questions, a cost

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model will help enhance your entire proposal and illustrate the economic value of your program.

New programs, like new ideas, can seldom exist in a vacuum; nor can they be sold by their novelty alone. New programs need to be supported with facts and figures, and the cost model is one of the best vehicles for organizing and presenting the hard data you need in order to sell a program to top management.

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REFERENCES

1. Studies by Professor James I. Brown of the University of Minnesota confirm the fact that the average executive spends about four hours a day in business-oriented reading. James I. Brown, "Diagnosing Your Reading Problem," *Modern Medicine* (March 10, 1969), pp. 18-21.

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Training and Development Clinic, another ASTD member service, invites training and development questions of general interest from readers. Address questions to: Training and Development Clinic ASTD, P.O. Box 5307, Madison, Wis. 53705. Only questions chosen for publication can be answered.

Q.—I have always left my slide projector's cooling fan running after the lamp was turned off. I have recently heard that I could be doing the wrong thing. Is this true?

A.—*Performance* newsletter reports that, several years ago, Kodak suggested that the fan be turned off as soon as the lamp is extinguished. Kodak's reasons for this advice were related to the design of their own projectors.

Kodak pointed out that a projector fan never cools *only* the bulb — it cools the whole optical system as well, and such rapid cooling could introduce strains in the glass of the heat absorber lens,

making it susceptible to shattering when handled at a later date.

Another reason for Kodak's suggestion was that cooling fans can be forgotten and left running for hours, thus causing early motor failure. Yet, Kodak engineers claim these differences are so subtle that they see no harm in keeping the fan going to cool off a burned-out lamp, so that lamp replacement can be done more quickly.