

Rapid Response With Spreadsheets

By Norman L. Weatherby and Martin E. Gorosh

With a customized spreadsheet, it takes only a few minutes to assess trainees' responses to a session. The results are more participation, improved communication between trainer and trainees, and better training programs.

If you could read trainees' minds, you wouldn't need to evaluate their responses to a training session. You would know within minutes their opinions on how worthwhile the session was, whether they needed the training in the first place, how actively they were able to participate, and how well the trainer did.

Even if you can't read minds, you can do an accurate, on-the-spot assessment of trainee responses. A customized spreadsheet makes it possible.

The spreadsheet approach we devised at Columbia University's Center for Population and Family Health permits immediate and ongoing monitoring of trainee response, trainer performance, and interaction between trainers and trainees.

Since 1980, the center has run an international training program in family planning, nutrition, and primary health care for the developing world. The program is geared to man-

agers and trainers in community-based health programs.

For years, we relied on hand calculations, a custom dBASE program, and then SPSS-PC to analyze data for evaluating training activities. As more and more training activities were scheduled in Africa and Asia, and as the use of desktop and laptop microcomputers in the field increased, spreadsheet software offered a simple way to process rapid-feedback evaluations. We began using a spreadsheet when we decided to analyze results from only four questions, each of which had five valid responses plus a code for missing data.

Why a spreadsheet?

Spreadsheets such as Lotus 1-2-3 and SuperCalc4 are used for analyses of numbers in the familiar rows-and-columns format of accounting and bookkeeping worksheets. One advantage of spreadsheets is that formulas may be entered to compute totals, counts, percents, and other data summaries. The results of the formulas are shown and answers are automatically recalculated if the input data change.

Another advantage is that the general design of a spreadsheet and the formulas used with it may be saved for future analyses. They can be reused simply by entering new data in the

rows and columns. A protection feature of the spreadsheet ensures that the design and formulas cannot accidentally be deleted or changed. Trainers can modify the text to change from English to other languages.

Finally, people without microcomputer experience can understand the general principles of entering and analyzing rows and columns of numbers in spreadsheets. Most spreadsheets even have built-in graphics programs that quickly arrange data summaries in graphs and print them for effective presentations of results.

We chose the spreadsheet SuperCalc4 for several reasons. Our training staff was familiar with the software, which we were already using for preparing budgets and financial plans for training programs. SuperCalc is also relatively inexpensive for educational institutions. Finally, SuperCalc produces graphs directly from the spreadsheet.

The rapid-feedback method

At the end of a training session, we distribute a simple questionnaire to participants (see figure 1, next page). Trainees are asked to respond to four key questions about the session:

- Was the training worthwhile?

Weatherby is an assistant professor of clinical public health and head of the computing activities unit at the Center for Population and Family Health, Columbia University School of Public Health, 60 Haven Avenue, B-3, New York, NY 10032. Gorosh is a clinical professor of public health and director of the international training program at the center.

- Did you need it?
- Were you able to participate actively?
- How well did the trainer or trainers do the job?

Trainees respond to the questions on a scale of one to five. Then they form small groups to enter the responses into a customized spreadsheet that quickly generates and prints a statistical analysis and graphs of the responses. After the trainees analyze the data, one member of each evaluation team is selected to report the findings to the entire group before the next session begins.

Teams conduct the analyses during the lunch break after a morning session or in the evening after an afternoon session. After entering the title of the session, they enter data from the rapid-feedback questionnaires into rows and columns on a spreadsheet. The spreadsheet has room for 70 participants' responses to four questions. Trainees can enter data for all 280 "cells," or spaces where data are stored, by using only the number and arrow keys. The spreadsheet adjusts automatically for

fewer than 70 respondents or fewer than four questions. With a little practice, it is possible to complete data entry for 30 to 40 participants in less than five minutes.

The results are presented in tabular form, showing means and percent distributions for the four questions (see figure 2, page 79). In the session on monitoring and supervision, the average response for question two, for example, ("How much did you need this session?") was 4.0. More than 39 percent of the participants answered that they "very much" needed the session (response 5 on the five-point scale).

The formulas that produced the results are described in the box, "Cell Calculations."

Visual display of the statistical information is an effective way to present the results of the evaluation. The spreadsheet's graphics function makes it possible to represent the distributions as bar charts (figure 3, page 79) that can be easily understood by every member of the group. Trainees can then use the charts to examine the

Cell calculations

Evaluation results are calculated using SuperCalc4's database and statistical formulas. Calculations for analyzing responses to the first question, "Do you think the session was worthwhile?" are shown in the figure on page 77.

The database formulas (beginning with "DCOUNT") are shown in cells J20 through J30. For example, cell J26 reports the number of participants that responded with a 4 to the first question, by counting the number of 4s, defined in cells H25 and H26, that are found in column B, cells 4 to 74.

Because the DCOUNT function skips blank cells, the spreadsheet can be used with fewer than 70 participants. To ensure accurate counts of the responses, a 9 rather than a blank must be entered when a participant does not answer a question. More than 70 participants may be studied by extending the spreadsheet's data-entry matrix and changing the DCOUNT functions to include the row for the last participant.

The subtotals shown in cells J21, J23, J25, J27, and J29 multiply the counts by the value of the respective responses. For example, if 15 people answered 4 to the first question, the result of cell J27 would be 60. The total counts for responses 1 through 5, and 9; valid counts for responses 1 through 5; and valid totals appear in cells J32 to J34. The number of participants is determined in cell J2. Cells J6 through J15 provide the mean for the first question and the percent of trainees that gave each response.

Cells H36 to H51 contain information used to graph the results of the first question—values for the X and Y axes, labels, and the text of the question and its responses. The text may be altered when necessary to change wording of and responses to the questions. Changes may include translation from English to another language.

All computation cells, variable labels, and graph-plotting commands in the spreadsheet are "protected" to prevent accidental changes or deletions. Only the data-

Figure 1 — Rapid-feedback questionnaire

Title of the session: _____

The purposes of this rapid-feedback evaluation are to find out how you are doing, to find out how we are doing as facilitators of your learning experience, and to get your opinions about the content of the course and the training methods we are using together.

Please circle the number on the 1-5-point scale that best expresses your opinion for each question.

	No, waste of time		It was useful		Yes, very worthwhile
1. Do you think that this session was worthwhile?	1	2	3	4	5
	Not at all		It was useful		Very much
2. How much did you personally need this session?	1	2	3	4	5
	Not at all		To some degree		Completely
3. To what extent were you able to participate actively in the learning experience?	1	2	3	4	5
	Poorly		Well		Very Well
4. How well did the trainer(s) do the job?	1	2	3	4	5

5. What did you like most about this session?

6. What did you like least, and how could we improve?

7. Do you have any comments or suggestions?

entry section (columns B through E, rows 5 through 74) is used during the processing of rapid-feedback responses. Those familiar with

spreadsheets may "unprotect" such sections as the text of the questions and responses when changes are necessary. It is also possible to add

questions, expanding the data-entry part of the spreadsheet and adding commands for formulas and graphics.

**SuperCalc4 cell calculations for the first rapid feedback question:
"Do you think the session was worthwhile?"**

	A	B	F	G	H	I	J
1	(title of session)						(title of session)
2						N=	Max (J32:M32)
3	Participant	Answer 1					Ques. 1
4							J34/J33
5	1	5					J20+J22+J24+J26+J28
6	2	3					(J20/J32)*100
7	3	3					(J22/J32)*100
8	4	5					(J24/J32)*100
9	5	2					(J26/J32)*100
10	6	3					(J28/J32)*100
11	7	5					(J30/J32)*100
12	8	4					
13	9	1					
14	10	5					
15	11	5					
16	12	5					
17	13	5					
18	14	3					
19	15	4					
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34	30	5					
35	31	5					
36	32	5					
37	33	4					
38	34						
39	35						
40	36						
41	37						
42	38						
43	39						
44	40						
45	41						
46	42						
47	43						
48	44						
49	45						
50	46						
51	47						

Means for valid Responses (1-5)		
# Valid responses		J20+J22+J24+J26+J28
% Answering "1"		(J20/J32)*100
% Answering "2"		(J22/J32)*100
% Answering "3"		(J24/J32)*100
% Answering "4"		(J26/J32)*100
% Answering "5"		(J28/J32)*100
% Did not answer		(J30/J32)*100

Response	Question 1
1	Count DCOUNT (B4:B74,0,H19:H20) Subtotal H20*J22
2	Count DCOUNT (B4:B74,0,H21:H22) Subtotal H22*J22
3	Count DCOUNT (B4:B74,0,H23:H24) Subtotal H24*J24
4	Count DCOUNT (B4:B74,0,H25:H26) Subtotal H26*J26
5	Count DCOUNT (B4:B74,0,H27:H28) Subtotal H28*J28
9	Count DCOUNT (B4:B74,0,H29:H30)
Total Count	J20+J22+J24+J26+J28+J30
Valid Count	J20+J22+J24+J26+J28
Valid Total	J21+J23+J25+J27+J29
	Minimum 0 Maximum 9
X Axis	0
Y Axis	0
100% Y Axis	Round (Max (J10:M15), +10) 100
Labels for the axes:	
Percent	
Response	
No. 1	Question 1: (text for question 1) 1=(text for response 1) 2=(text for response 2) 3=(text for response 3) 4=(text for response 4) 5=(text for response 5) 9=No response

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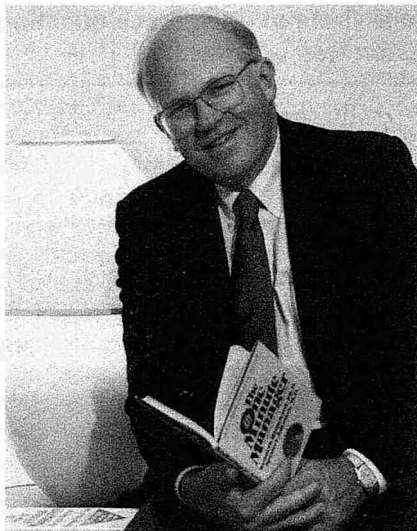
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distributions and averages of responses to questions, and discuss the results. Participants experience the benefits of rapid feedback— better communication and improved training.

Improved training

This speedy, easy-to-use method of obtaining results produces findings that can be applied to monitor trainer performance and improve current training activity. At the Center for Population and Family Health, we are able to detect communication problems quickly and to correct our approach when evaluation results show that participants were critical of a particular session. With repeated use of the method, we can monitor responses to the same four questions over time, within and across groups of participants. The results show us where to modify our training as changes occur in course content and in participants' general knowledge and skills.

If necessary, trainers may change the text or meaning of the four questions, including translation into other languages, to make the rapid-feedback approach applicable to a broad range of training topics and situations.

The spreadsheet approach demonstrates to everyone the use and effectiveness of assessing a training session. Trainees enjoy participating in and contributing to their learning experience. They are involved in the evaluation process as they enter responses into the spreadsheet, produce the tables and graphs, and report findings to the group. After one or two feedback sessions, they begin to appreciate the evaluations, because they learn that their responses can make a difference in the quality of training. They can see the value and impact of quick, simple evaluations in their own programs.

Finally, the spreadsheet approach enables participants who have not had hands-on experience with microcomputers to become familiar with the technology and applications.

New assessment opportunities

Participant reaction during training is one of the four levels of training evaluation covered in the 1987 report, "Management Training Strategies for Developing Countries," by Kerrigan and Luke. Of course, a comprehensive assessment of a training program requires all four levels. The other three levels—learning, behavior change, and

organizational performance—address important intermediate and long-term outcome issues.

But the measurement of trainee reaction is an important component of the overall evaluation of a training


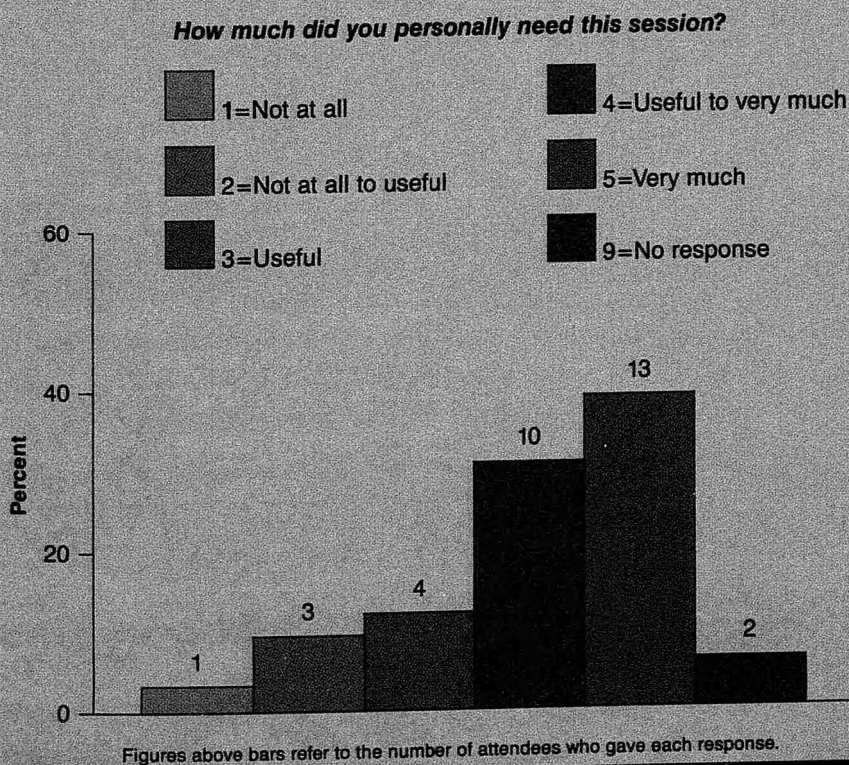
program. The use of rapid feedback, using a microcomputer and customized spreadsheet, offers new opportunities for simple and quick assessments that involve participants in the process. 

Figure 2 — Results for rapid-feedback questionnaire

Session: Monitoring and Supervision N = 33				
	Question 1	Question 2	Question 3	Question 4
Means for valid responses (1-5)	4.09	4.00	3.82	4.06
Number of valid responses	33	31	33	33
Percent answering "1"	3.03	3.03	3.03	3.03
Percent answering "2"	3.03	9.09	6.06	3.03
Percent answering "3"	21.21	12.12	30.30	21.21
Percent answering "4"	27.27	30.30	27.27	30.30
Percent answering "5"	45.45	39.39	33.33	42.42
Percent who did not answer	.00	6.06	.00	.00

Figure 3 — Responses to question 2 for Monitoring and Supervision session



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