

# CUSTOMIZED IN-HOUSE TRAINING WITH A SAS® TRAINER'S KIT

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## THE SITUATION

The Medical Group Information Services/Training Group at American Cyanamid had received a number of requests for basic SAS training and needed to determine how this could best be provided. In-house staff had the skills to teach the course, but not the time for the course development. There were at least 22 students, so sending them to an off-site course would have been an expensive option. Bringing in a trainer from outside the company would also have been costly because Cyanamid's geographically diverse site locations required that the class be taught several times. The best solution seemed to be to purchase a SAS® Trainer's Kit and have in-house personnel conduct the classes. Since Version 6 had just been installed and most of the prospective students had some computer proficiency, the SAS Fundamentals (Version 6) Kit was chosen. The kit served as the foundation of a customized course to which several additional topics were added, some of the Kit topics deleted, and a number of the exercises modified to fit the environment and needs of our students.

This paper will discuss the approach by which we customized the Kit, resulting in a course with a solid foundation and tailored to our specific needs at American Cyanamid.

## IDENTIFYING COURSE OBJECTIVES

In order to present a successful course, it is essential to determine exactly what the requirements of the training should be. What factors precipitated the request for SAS training to begin with? Has a specific department decided that the use of SAS software should be part of their strategic direction? Has a new version of the SAS system recently been installed? Or is the objective to promote the use of interactive SAS facilities among users who have used only the batch or non-interactive modes? Identifying these requirements is the first step in determining the scope of the course.

Two different levels of individuals - potential students and management staff - should be queried before setting the requirements of the course. Both provide different perspectives that are important to the success of the training. Management may have a strategic plan in which this training is designed to fit. Potential students, on the other hand, will be able to identify those specific tasks which require a better knowledge of the SAS system to accomplish.

The first individual with whom to discuss the objectives of the training may be, in many cases, the manager who initiated the request for training. Management objectives might include viewing the SAS system as a tool to distribute the analysis and reporting functions to the end-user, as opposed to having the end-user request this information from an applications programmer. Knowing what these objectives are is essential so that the training can be structured to address these needs.

From this discussion may also come the list of potential students who should be contacted to identify their needs. Their needs should be analyzed from two perspectives: understanding their current data analysis and reporting functions, and determining what skills are desired but not currently possessed.

We asked all prospective students to answer a questionnaire focusing on these needs:

- data processing & analysis needs
- data reporting requirements
- data storage requirements
- usage of SAS software and other selected software
- identification of students' hardware & operating system environments
- current skill levels.

We were interested in what their current data processing and reporting functions were, as well as identifying additional functionality they wished to acquire. Specific questions were asked covering such tasks as merging data, calculating expressions, subsetting data, and performing statistical analyses. We asked how their output was to be displayed - tables, data listings, graphs or charts. Was their data stored in flat files, SAS data sets, or ORACLE® tables? To determine their level of computer literacy, we wanted to know if they had experience with the SAS system or other common software used at Cyanamid such as Oracle or LOTUS 123. Finally, we requested information on their computing environment, and verified that they had access to an account on the computer on which they would use SAS products.

## EVALUATING KIT TOPICS RELEVANCE

Once the course objectives have been determined, then a comparison with the Trainer's Kit outlines can be made. Currently the SAS Institute offers six different kits, which provides a variety of options on which to base your in-house training. The SAS Institute can provide more detailed course descriptions than those that appear in the SAS Training® publications for your use in evaluating whether using a specific Trainer's Kit would fit your needs.

Reviewing the findings from our needs evaluation indicated that the course should be based on the following criteria:

- the impetus for the course came from the head of one of the research groups (a statistician) who wanted his staff to have more tools at their disposal.
- a need was indicated for data analysis, reporting and display, particularly graphics.
- some students had limited, basic experience with the SAS system; others had none.
- all had VAX® experience, could log-on, and use some of the utilities.
- the students were all end-users, a mix of research personnel and administrative staff.

The specific mix of products licensed at a particular site is also a factor in determining if a Trainer's Kit is appropriate, and in choosing the Kit with the best fit. If a situation exists similar to that at Cyanamid, where we license different configurations of SAS products on various platforms, a Trainer's Kit can offer the flexibility to tailor each offering of the course to the machine on which the students will actually use the SAS system.

Since Version 6 of the SAS system had just been installed, we chose the SAS Fundamentals (Version 6) Kit which is designed to provide instruction in the basic concepts of the SAS system. This kit includes chapters on the SAS/ASSIST®, SAS/ACCESS®, SAS/FSP® and SAS/AF® products which were not licensed at all the sites at which the course was to be taught; these topics were not included in our curriculum.

Adding topics to the course relevant to your specific site requirements should also be considered. You may wish to further emphasize specific topics already in the curriculum such as various ways of reading in data because of the unusual source of your data. Other topics may be added as well, including operating system information and commands, coding and documentation standards, and reporting and presentation guidelines, especially if any of the output or analyses are to be sent to a regulating agency.

Although all the students at Cyanamid had some experience using the VAX (most having used ALLIN1®), many had limited understanding of the VMS® operating system which led to problems understanding file references, and storing programs and data sets. Although having this knowledge is a recommended prerequisite for this particular course, a section was nonetheless added covering VAX file structures and naming conventions. We also reviewed the system editor, and various approaches to submitting SAS jobs in the VAX environment, complete with handouts and exercises. A section was also included on the importance of good coding techniques and documentation.



## STRUCTURING THE COURSE

One of the advantages of using the Trainer's Kit is that it provides a sound foundation as a base for the course content. The instructor does not have to worry about the order of the topics or missing a key piece of information and can spend the time developing custom examples or adding additional material on topics that may be relevant. Although the instructor should have a good idea of the requirements from the evaluation process before agreeing to offer the course, some flexibility in the structure of the course should be built in. Groups of students vary so that a course which may have been very effective with one group may be a total failure with another. An instructor should be prepared to adjust to the needs of the students as the course progresses. Knowing that the curriculum can be easily adjusted, if needed, alleviates some of the stress involved in teaching a course.

We found that a two-tier approach to the course topics was our answer to the flexibility issue: basic material that was essential, and a second layer of topics that could be included or not, depending on the progress during the course. Although we had hoped to cover the chapter on PROC SQL, we excluded it during the course in light of spending more time on other topics for which the students expressed a need. This allowed us to spend an extra hour on file structures, naming conventions and reading in "real-life" input files in one class, and in the other reviewing the DATA step again, along with a discussion of efficiency issues. Our customized curriculum for Day 1 is illustrated below, with our optional topics indicated in italics.

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## Customized Curriculum - DAY 1

Introductions and Course Information	
Getting Started with SAS	Chapter 1
Display Manager	Chapter 2
<i>Using the Host Editor</i>	<i>Custom</i>
List Reports with Proc Print	Chapter 3
<i>Ad Hoc Queries with Proc SQL</i>	<i>Chapter 4</i>

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Selecting the optimal schedule is another benefit of conducting in-house training. Although the course is normally taught in three days, and we followed these guidelines, other options can be chosen. The course could meet each morning for six days, or for 2 hours a day, one day a week for 12 weeks. The course can easily be lengthened if additional material needs to be added. Follow-up training can also be incorporated into the schedule, perhaps holding another day of training several weeks later after the students have had an opportunity to try out their new skills.

## PREPARING FOR THE COURSE

A successful class depends on good preparation. Major issues that must be addressed once the course content has been finalized include:

- *determining class room facilities*
- *establishing student accounts*
- *setting up appropriate data files*
- *obtaining class materials*

A classroom that can accommodate both the lecture and workshop portions of the course is ideal. If terminals or PC's can be located in the room, then alternating between lecture and exercises can be more frequent and is an advantage in maintaining interest. Although students can return to their own work areas to try the exercises, having the students together for the exercises enhances the instructor's ability to monitor and respond to problems.

A dedicated classroom should also have facilities to display information on SAS products, applications and even exercise results from class. We had the SAS Institute send us brochures on many of their products so that the students could see what the capabilities of the SAS system are. Also available in the classroom were SAS reference guides, copies of SAS *Communications*®, the SAS *Training*® publication, and SUGI Proceedings.

Prior to the class all students must have accounts, either using their own system accounts or a special student account. The SAS Trainer's Kit provides a data tape for the accompanying exercises, and additional exercises customized to the students' applications should also be developed. The students must have access to these data files either by placing exercise data files in each student's account or setting up a master account to which all the students have access.

Prepare the students for the class by distributing a course outline or syllabus prior to the class. We also requested that they bring to the class an application that they had developed or wished to develop using the SAS system. This was the most effective motivator we found in teaching this course. For one course, a student-supplied application was used as an in-class example; in another, their own applications replaced an exercise in the course guide.

In order to accommodate the additions and deletions to the Trainer's Kit curriculum, we ordered an additional instructor's guide which we tore apart and inserted into a loose-leaf binder. This allowed us to add our own notes on custom topics in exactly the place we wished. The original guide remained intact for reference purposes.

Other administrative details include ordering sufficient course guides (15 are provided with each kit), additional reference materials (such as the SAS Language and Procedures Guides, and the host Companion), and incentives for the class. We ordered SAS T-shirts to be given each day as a door prize, matching the T-shirt to the topics for the day and using them on the walls to plug that topic. (Attendance in class each day was required to be eligible to win!) At the end of the course we issued certificates and 'BAR NONE' candy bars, for "being hardworking students, bar none!"

The bottom line on whether the training is effective depends on whether the students use the SAS system. Good follow-up can be invaluable in ensuring that this happens. Plan your follow-up details before the course begins.

Class evaluations can be useful to the follow-up process. These results, especially if they can be compared with the pre-course questionnaires, can provide an instructor with appropriately motivating suggestions for each student. A note following the class, thanking the student for attending and suggesting some action items using the SAS system. The subject of the follow-up might be suggestions on improving a SAS application, if the student provided one, or additional sources to explore regarding a technique that the student expressed an interest in. We sent memos a couple of months after each class to each student focusing on their particular interest.

Last but not least, do a postmortem on the class and make some notes on improvements for the next time.

## CONCLUSIONS

We found the use of a SAS Trainer's Kit to be the key in providing quality training for our in-house SAS users. Our costs, both monetarily and time-wise, support our decision.



Would we recommend  
this approach to others?

## ALTERNATIVE COSTS

### Public Course

22 students @ \$575 + expenses	\$12,650+
Total	\$12,650+

### On-site Instructor Based

2 different sites @ \$4950/3 days+expenses	\$9,800+
Total	\$9,800+

### In-House Developed Course

5 hours development per instruction hour	\$7,200
120 hours development time	
6 days instruction time+expenses	\$2,880+
Total	\$10,080+

### Trainer's Kit

Trainer's Kit + 1 extra Instructors Guide	\$2,840
3 days review of kit and customization	\$1,440
6 days instruction time + expenses (actual expenses \$1,600)	\$2,880+
Total	\$7,160+

The Trainer's Kit option proved to be the most cost-effective choice even without taking into account other less-measurable benefits such as having the in-house trainer available to the students after the course, or being prepared to teach the course again, which in fact we are preparing to do this Spring.

Deciding whether to use a SAS Trainer's Kit depends on several factors: the availability of in-house staff capable of conducting the training, the number of students needing training, and how well one of the Trainer's Kits will meet the objectives of the training. As we found at American Cyanamid, a Trainer's Kit can provide an excellent foundation for a course that can be custom-designed to meet the needs of your particular training situation.

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