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Navigating the SAS® Training Experience

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ABSTRACT

Is your manager asking you to create a SAS training plan for the new guy? Do you have a group of folks that need to learn the latest new thing in SAS? Perhaps it's just the annoying neighbor who's trying to get a job and keeps asking you for the best way to learn SAS. There are a lot of reasons people need training, and SAS offers a bewildering array of classes and types of training.

This paper presents the pros and cons of classroom versus live Web versus self-paced e-learning. What are the most common starting points and where do you go from there? How do the SAS Learning Edition and SAS Certification fit in? Where can you get more information and keep up-to-date?

INTRODUCTION

SAS is a large system—subsequently, there is a large variety of training offered to support it. When choosing the right training, you should take into account how you learn as well as what you need to learn.

LEARNING STYLES AND TRAINING STYLES

There are three main styles of training offered by SAS:

- **Instructor-based training**
Attend a class in a training center or a virtual class via live Web. The instructor leads you through topics and is there to help you work on exercises and answer questions.
- **Self-paced training**
Work through instructional material on your own over the Web. Self-paced e-learning material leads you through topics, offers quizzes, and suggests practices that you can do in your own SAS session. Webinars, e-lectures, and other on-demand offerings enable you to view recordings of experts discussing topics of interest.
- **Learn on your own**
Use resources that are available on the Web or for sale via the SAS Publishing bookstore, including documentation, usage guides, samples, FAQs, and papers.

Each style of training appeals to different types of learners.

INSTRUCTOR-BASED TRAINING

This style of training appeals to a wide range of learners because the material is presented in multiple ways. *Auditory learners*, who learn best by hearing material covered, like having the instructor explain the topics and direct their attention to the important points. *Visual learners*, who prefer to read or see material covered, like watching the presentation and following along with the instructor in the course notes. *Kinesthetic learners*, who prefer to incorporate movement in their learning or who learn by doing, like to take notes in their course notes and follow along on their computer as the instructor demonstrates software features. All learners need to practice what they learn, so the workshops that are part of each class are critical. And for adult learners in particular, the theory is that they can pay attention for only 20 to 40 minutes at a time, so frequent workshops and breaks are part of every course's design.

Classroom training is familiar to everyone. You show up at a classroom at an appointed time, take your seat behind a desk with a computer, and then listen to the instructor present topics using PowerPoint to illustrate concepts and software demonstrations to show features. After a topic is presented and you have had a chance to ask questions, you're given exercises to do on your computer so you can practice what you've learned. The instructor is available during the workshop for questions and one-on-one help, and you take breaks as you need them. Classes are typically from 9:00 to 5:00 with an hour break for lunch. You can take the course data with you if you want to do the exercises back at your office.

Live Web training is not as familiar to everyone, and many people are skeptical of it at first because most of us have had at least one if not many bad experiences with training “over the Web.” The main fear students have is that the training will not engage them enough—they’ll just sit there and listen to someone drone on to the point where they find themselves checking e-mail and not paying attention at all. That’s why SAS live Web courses, though covering the same content as classroom versions, are conducted as a series of half-day sessions (1:00 to 4:30 eastern time) and include elements like student polling and quizzes to keep students engaged. In all other aspects, live Web classes are the same as classroom classes. Students watch the presentation and demonstrations via their Web browser, listen to the instructor and ask questions via their phone, and do their exercises in the virtual lab environment. Classes are scheduled for specific times and class sizes are limited (typically to 20 students) so that the instructors can make sure to give everyone attention.

There are two instructors assigned to a class—one who talks and answers questions asked via the phone, and one who is behind the scenes answering questions submitted via text chat (a nice alternative for students who aren’t comfortable asking questions in front of others). The instructors usually take turns presenting so the students have some variety in listening to different voices. The instructors are also able to “look over the student’s shoulder” in the virtual lab if they need help with an exercise. Each session is recorded so students can view the recordings after class or before the next session if they need reinforcement on a topic or missed part of the presentation. The recordings are available for a week after class and a log of the text chat questions and answers is given to students after class, as well.

Because the content and instructors are the same, the trade-offs between classroom and live Web center on travel and time away. Live Web does not require that you travel to a training center, and it allows you to spend half of each class day at work. These can be taken both as positives or negatives depending on your situation. Sometimes it’s nice to get away from the office—there are no distractions or interruptions. But travel budgets and work or family obligations are not always negotiable, so it’s good to have options.

SELF-PACED TRAINING

Self-paced e-learning appeals largely to visual learners and kinesthetic learners because the training is about reading topics and doing quizzes and practices. You license a product for a period of time and then have access to it 24/7. Each product is direct access—that is, there’s a table of contents as well as a bookmarking functionality that enables you to work sequentially through the material or skip around to the topics that interest you or that you want to review. You read a lesson and answer questions, and during the lesson you’re asked to bring up your own SAS session to practice. Because of its accessibility, self-paced e-learning appeals to students who cannot commit the time needed for an instructor-based class but who want to work at their own pace and on their own time.

Free SAS Webinars are offered on both www.sas.com and support.sas.com. Some are offered live and most are offered on demand. These are usually short topics of interest and are lecture-only so there’s little or no interaction. SAS Education is in the process of developing *e-lectures*, lectures recorded by instructors or other experts on topics of interest. Again, these are designed to be accessed when needed. The idea is to have an expert guide you through a process or feature of the software when you need it. These two products would be ideal for auditory learners.

LEARN ON YOUR OWN

When you have little or no training budget, or when formal training doesn’t exist for the topics you need, you can access a wealth of information on support.sas.com and from the hundreds of books for sale through SAS Publishing. This method is more effective for visual learners because reading is the activity. The SAS Publishing bookstore has a variety of great books designed to help walk you through a topic or feature. Documentation is designed more as a reference than as a step-by-step resource. Of course, SAS Global Forum papers are also available—many of these are step-oriented and provide good guidance. If you are a beginner with no access to SAS, see the information later in this paper about licensing SAS Learning Edition, which is a cost-effective way to gain experience.

COMPARING THE PROS AND CONS

Style	Pros	Cons
Instructor-based	<ul style="list-style-type: none"> - “forces” you to pay attention and do the work since you attend a scheduled class - you have an expert there to answer your questions and help you with problems - you leave class with a copy of the course notes for reference and course data to work with - you are provided a copy of SAS to work with during workshops 	<ul style="list-style-type: none"> - you have to commit to a specific time and be away from the office (or in the case of live Web, be unavailable for several hours) - content is presented linearly and the pace is determined by the instructor—you can go back over the material on your own only after class (or in the case of live Web, view recordings between or shortly after sessions)
Self-paced	<ul style="list-style-type: none"> - the material is available whenever you want to use it—24/7 - you can skip topics you don't need and go back over topics you want to work through again 	<ul style="list-style-type: none"> - you have to be motivated to make the time to work through the material - there is no one to answer your questions - the material is all online; once your license period expires, unless you've printed screens, you have no reference material - you must have a copy of SAS to be able to do the workshops
Learn on your own	<ul style="list-style-type: none"> - a wealth of information is available free of charge on the Web - you can focus on only the topics you care about 	<ul style="list-style-type: none"> - with the exception of some usage books, most material is not organized in a training flow—it's designed as reference - you have to be motivated to make the time to work through the material - there is no one to answer your questions

CONTENT

Figuring out what you need to know is of critical importance. What do you want to be able to do with SAS? What experience do you bring to the table? What software will you have access to?

Let's start with the complete beginner. The first question is, how are you going to use SAS? Are you planning on pointing and clicking to get what you want, or are you expecting to write SAS code? Point-and-click is typically a quick way to get up to speed, but coding will give you the most flexibility in the long run. If point-and-click is appealing, then you need to make sure you have access to a product like SAS[®] Enterprise Guide[®]. If you've decided to learn SAS programming, do you already have some experience using software, or are you completely new to computers? This will determine what level you should begin with. A third category is users who have access to the SAS[®] Intelligence Platform. If this is set up for them, then they might only need to learn how to access a SAS add-in to Excel or pull reports from SAS[®] Web Report Studio.

What if you already have some SAS experience either through prior training or just by working on your own? Then you're ready to specialize. Perhaps you jump right into reporting and analysis, or perhaps you want to learn more about manipulating data or making your work more efficient.

Let's take a few of the most common personas and see what the options would be for each.

THE POINT-AND-CLICK BEGINNER

SAS Enterprise Guide is the point-and-click interface taught in the SAS curriculum for data management, reporting, and analysis. SAS[®] Enterprise Miner[™] is the point-and-click interface taught for data mining and predictive modeling. Neither product requires prior SAS knowledge so you can jump straight into their respective curricula.

For SAS Enterprise Guide, “Querying and Reporting Using SAS Enterprise Guide” is the starting point for instructor-based training. It’s available in training centers and via live Web. From there, you can delve into the Query Builder or statistics with SAS Enterprise Guide. There are several lessons available in the self-paced e-learning catalog as well as the free Getting Started with SAS Enterprise Guide tutorial that’s built into the software and available on the Web.

For SAS Enterprise Miner, “Introduction to SAS Enterprise Miner” is a live Web course designed to introduce both the software and the concepts of data mining. If you already have experience with predictive modeling and statistics, then the “Applied Analytics Using SAS Enterprise Miner 5” classroom course is the place to start (a self-paced e-learning version of this course is under development). The data mining and predictive modeling curriculum goes from there to more robust analysis with SAS Enterprise Miner. There is also a selection of Business Knowledge Series courses on these topics. As with SAS Enterprise Guide, a Getting Started tutorial for SAS Enterprise Miner is built into the software and available free on the Web.

THE PROGRAMMING BEGINNER

“SAS Programming I: Essentials” is the starting point of the programming curriculum and gives beginning SAS programmers the foundation they need in accessing data from multiple sources, manipulating data (including subsetting, transforming, and merging), and basic reporting and analysis. This class is offered in all types—classroom, live Web, and self-paced e-learning. It is the prerequisite course for almost all other courses in the SAS curriculum. The only question to ask here is about the skill set and confidence level of the student. Programming I assumes no SAS experience but a level of comfort with basic computer terminology—for example, the student understands what a file or a variable is but not how to create them in SAS. If there are students who are new to computers or who feel intimidated by the Programming I outline, then “Introduction to Programming Concepts Using SAS Software” will help them get ready for Programming I. The Introduction to Programming course is offered in the classroom and live Web and is a subset of Programming I covered more slowly and with the computer terms defined.

THE SAS INTELLIGENCE PLATFORM USER

If the SAS[®]9 Intelligence Platform has been implemented at your organization, then there could be a set of users who will need to know very little SAS. They might access some SAS functionality via an add-in to Excel or some other Microsoft product, or they might just need to use SAS Web Report Studio for their reporting. These users can take advantage of the courses listed at support.sas.com/training/bi. A chart on this Web page describes the training offerings available for users, SAS programmers, and platform architects. Most of the training is available as instructor-based and self-paced e-learning. If this technology is completely new to you and you want to see what it’s all about, a free flash demonstration is available from this page.

THE SEASONED SAS PROGRAMMER

Once you have the basics down, you can then turn your attention to specializing. The easiest way to see what’s available by specialty area is the curriculum paths at support.sas.com/ustraining/paths. For SAS programmers who are tasked with data manipulation, “SAS Programming II: Manipulating Data with the DATA Step” or “SQL Processing with SAS” are popular choices. “SAS Macro Language” attracts students who want to reduce the effort it takes to maintain their code. “SAS Programming III: Advanced Techniques and Efficiencies” provides insight into how to effectively handle large data sets and improve program performance.

Analysts who need to be able to perform robust statistical analysis but who haven’t touched regression since college will benefit from “Statistics I: Introduction to ANOVA, Regression, and Logistic Regression.” Practicing statisticians can skip straight to the more advanced course for their area. Statistics courses at SAS are taught by statisticians with either masters or doctorate degrees who cover not only how to use the software to perform the analysis but also the statistical theory behind it.

GROUP TRAINING

Everything we’ve talked about so far in terms of training an individual can be scaled up for a larger group. For all types of training, discounts exist for multiple students from the same organization who buy training together. For instructor-based training, if the group is sufficiently large, it’s more economical to schedule a private class at your organization or one of the training centers. For geographically diverse groups, private live Web classes can be scheduled. The advantage to private classes is that content can be drawn from multiple classes to fit the unique needs of the students. Further customization can be done for an added charge.

SAS CERTIFICATION

Few of us enjoy being tested. However, it’s often important to be able to prove you know something beyond asserting it yourself. Earning a SAS certification might be a job requirement or a way to improve your resume. Some people use certification as a goal to motivate themselves to learn something new, while others already have the knowledge

and get certified as recognition. Although there are several credentials available, the most popular are the SAS Certified Base Programmer Credential for SAS^{®9} and the SAS Certified Advanced Programmer Credential for SAS^{®9}. The full descriptions are available at support.sas.com/certify, but in a nutshell, the Base Programmer tests basic-to-intermediate DATA step and Base PROC knowledge while the Advanced Programmer adds macro, SQL, and efficiencies to the mix.

If you think you already know the topics that will be on an exam, then you can schedule an appointment to take the exam at your local Thomson Prometric testing center. If you'd like to be a little surer, each exam has a practice exam for sale on the Web. You can find them in the self-paced e-learning catalog or on the certification exam preparation page. The practice exams give you a chance to work through real questions (yes, the answers are included), so you can get a better idea of the test format and how topics are tested.

If you need to learn some or all of the topics, you can study on your own or use preparation materials available from SAS. You can take instructor-based classes or certification-oriented self-paced e-learning (which includes the practice exam) or get a hard-copy book that covers the topics. There are also packages that bundle together different options with a voucher to take an exam. There's an excellent summary chart in the exam preparation section of the certification Web site.

THE SAS LEARNING EDITION

We've spent a lot of time talking about learning SAS, but everyone knows if you don't use it, you lose it. If you have access to SAS through work or school, then you have a way to practice what you've learned and apply your new skills to your own data and situation. However, if you don't have access to a copy of SAS, it's only a matter of time before you start to forget what you've learned. The SAS Learning Edition is an individual copy of SAS that is an ideal companion to training for people who don't have access to SAS or who want a copy of SAS at home so they can practice on their own time. The SAS Learning Edition comes with SAS Enterprise Guide as the default application, but you can easily create a shortcut to open the traditional SAS programming windows. It comes with a book oriented to SAS Enterprise Guide and has quite a bit of SAS functionality (see www.sas.com/LE for complete information). It's a student edition of the software because it has limited capability for how much data it can process, but it can easily handle the volume of data used in training examples.

If you are trying to advise someone who is completely new to SAS and whose goal is to get a job using SAS, the SAS Learning Edition is the best place to begin the conversation. From there, certification is usually the logical next thing to mention because the certification products are attractive to people who are on a tight budget and want something (like a credential) to show for their efforts.

CONCLUSION

Like SAS software itself, SAS training offers a wide range of choices to meet lots of different needs. Your best and most up-to-date source of information is the Web (support.sas.com/ustraining). You can subscribe there to the monthly training newsletter to stay up-to-date. Don't hesitate to e-mail or call us with questions or suggestions at training@sas.com and 1-800-333-7660. We'd love to hear from you!

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