Paper 206-2011

Making SAS® Training Stick

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ABSTRACT

Training is required to develop SAS® programmers. The knowledge and skills taught in class, however, are not always retained by students. This paper describes a five-step process for designing and delivering memorable SAS training: 1) assessing needs; 2) preparing for training; 3) delivering training; 4) transferring training; and 5) evaluating results. Best practices are identified and practical tips are supplied to help implement each step. This process helps to improve retention and to maximize the return on your SAS training investment.

INTRODUCTION

The following sections describe a five-step process for developing memorable SAS training, from assessing needs through evaluating results. This process is based on principles of adult learning. In short, adults want to learn things that are relevant and practical. They prefer interaction over lecture and want to share their experience. This process also incorporates some accelerated learning techniques, including preparing learners, connecting to their emotions, and facilitating their integration of information. Applying these principles and techniques will help make your training unforgettable.

STEP 1: ASSESSING NEEDS
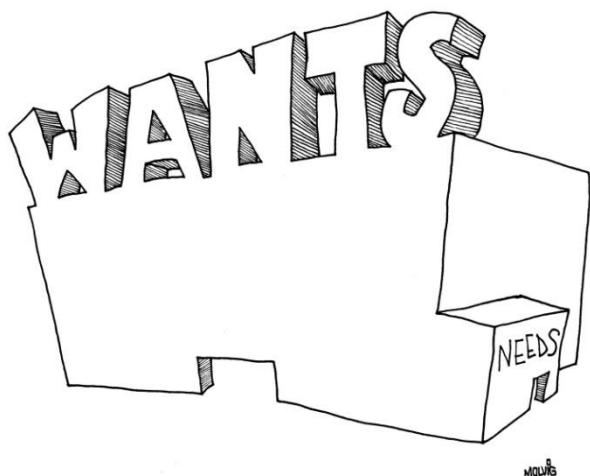
People remember things they need to know more than things that are just "nice to know." Assessing needs includes three components:

1. Talking to people

2. Gathering additional data

3. Specifying training goals

TALKING TO PEOPLE

People like training that is relevant to their work. Start by asking programmers about their training needs. They can often suggest topics they need to know more about and skills they need to improve. Talk to people who work with SAS programmers as well. Supervisors and in-house SAS experts can describe observed gaps. Targeting the most common needs will help make training more cost-effective.

Tips:

▪ Approach people privately, survey staff anonymously, or brainstorm ideas at your in-house SAS Users Group.

▪ Use e-mail, free websites such as surveymonkey.com, and even social networking sites to maximize feedback.

▪ Phrase questions in terms of "areas for development" so that training needs are not construed as weaknesses.

▪ Encourage suggestions but watch out for individual interests; training should always address a business need.

▪ Reward people for sharing ideas (e.g., e-mail a thank you with a cc: to their boss, recognize them publicly, etc.).

GATHERING ADDITIONAL DATA

Collect information from objective sources; for example, review programs and macros to discern areas for potential improvement. Assess institutional capacity vis-à-vis future needs as well; for example, if a new project will process much larger data sets than those to which staff are accustomed, they might need training in programming efficiency.

Tips:

- Review code written by newer programmers to help identify needs.

- Confer with your Help Desk about frequently asked SAS questions.

- Quiz students—anonymously—to gauge current knowledge levels.

- Talk with management about upcoming projects and training needs.

SPECIFYING TRAINING GOALS

Summarize the data compiled during the needs assessment and identify priorities. Order training in a logical sequence where topics build on each other where possible. Supplement with related topics as appropriate.

Tip: Always align a training goal with a business goal. For example, staff who write similar code repeatedly could benefit from training in the SAS macro language. This broad goal can be made specific; for example: "students will learn how to write SAS macros with keyword parameters to create reusable code and thereby improve efficiency."

STEP 2: PREPARING FOR TRAINING
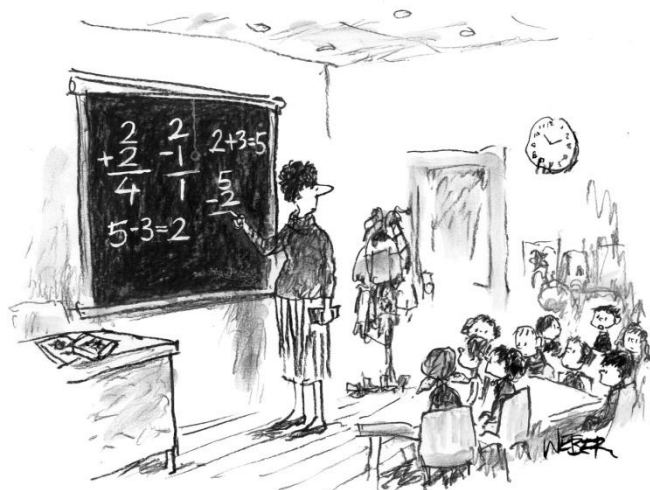
"Please, Ms. Sweeney, may I ask where you're going with all this?"

People retain more when learning is an ongoing process conducted in the right setting. Preparing for training includes two components:

1. Preparing the students

2. Preparing the environment

PREPARING THE STUDENTS

Start to engage learners *before* they come to training. Contact students via e-mail or phone to introduce yourself (i.e., if you are not acquainted) and to remind students what they will get out of training. Assign a short "pre-work" activity that models the upcoming training. Encourage students to submit questions before attending so you can emphasize or customize content. These techniques help prime students' thinking and start the learning process.

Tips:

- Supply a class outline that includes the time allocated for each topic.

- Provide access to the training materials in advance (upon request).

- Make "pre-work" assignments due before the class officially starts.

- Ask students to check-off questions as they are answered in class.

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PREPARING THE ENVIRONMENT

Certain environments are more conducive to learning than others. For example, a quiet space is recommended. Things like comfortable chairs and useful supplies (pens, highlighters, "flags," etc.), are sincerely appreciated by students. It is critical to ensure the technical environment is sound when training programmers. If computers are provided, double-check that all are working, set up the same way, have the same practice files available, etc.

Tips:

- Arrange the room to encourage exchange of information (e.g., tables for group activities instead of desks).

- Adjust the room's lighting, temperature, and décor to create a usable, comfortable, and welcoming space.

- Restrict e-mail and Web access on class computers and ban use of cell phones and "connected" devices.

- Have food, drinks, and snacks available in the room; hungry and/or thirsty students are easily distracted!

STEP 3: DELIVERING TRAINING

"I need a more interactive you."

People recall more when they are engaged and they see a personal use for the material. Delivering training includes three components:

1. Connecting students with material

2. Making training interactive

3. Reflecting and celebrating

CONNECTING STUDENTS WITH MATERIAL

Technical training typically starts by reviewing the agenda. There is nothing inherently wrong with this, but it is purely procedural. Students also have feelings about the subject matter; for example, they might feel interested or bored. Students also have beliefs about their own abilities; for example, some students might believe they are up to the challenge while others might doubt their potential.

Feelings and beliefs are rarely addressed in technical training, but all students have them. Feelings can motivate or discourage, and beliefs can enhance or limit learning. Instructors need to address both to increase retention.

You should still explain "what's in it for them." Describe how each topic will be useful on the job to make it "real." But acknowledging people's feelings makes them more open to learning. Helping people understand self-limiting beliefs can change their aspirations.

Tips:

- Create an "emotional hook" for your training as a whole and for each major section of training.

- Remind students that there is something for everyone (i.e., in longer sessions with many topics).

- Ask students how they feel about topics and to share personal challenges and success stories.

- Praise all students for their genuine contributions (i.e., not just the highest-performing ones).

MAKING TRAINING INTERACTIVE

Minimize lecture and maximize opportunities to practice applying new skills. Choose exercises and activities that simulate common scenarios. Use real-world examples and data—industry-specific, where applicable—to which students can relate. Make things as interactive as possible to increase retention and avoid "death by PowerPoint."

Individual exercises are valuable, especially if they include "hands-on" programming. Exercises done with pencil and paper are also valuable; for example, finding and correcting the mistakes in code without a computer can be challenging. Be sure to tell students the number of mistakes to find—it can be memorably maddening.

Include activities and games to get attendees really involved. Group exercises make students accountable to each other and encourage active participation. Paired activities such as explaining your solution to a partner are valuable to both. Games such as SAS Jeopardy have been known to inspire spirited competition, especially when SAS "swag" is the prize.

Tips:

- Switch from lecture to an activity every 10-20 minutes.
- Encourage students to help each other out in activities.
- Use short quizzes, polls, and questions as appropriate.
- Have students teach back what they learn to the class.

REFLECTING AND CELEBRATING

Learning does not stop when the instructor finishes the last module or a student completes the final exercise. Allow time for reflection and celebration at the end of formal training. Revisit expectations and goals from the beginning of class. Remind students how much they have learned and what they are now empowered to do.

Tips:

- Recap the multiple topics learned to remind everyone how much they have grown.
- Describe your sincere appreciation for students' questions and active participation.
- Acknowledge the most significant individual, group, and class accomplishments.
- Use food, prizes, music, etc. to make it a true celebration and help bring closure.

STEP 4: TRANSFERRING TRAINING

"Big day, Haskins. The training wheels come off."

People remember more when they practice applying new material on the job. Transferring training includes three components:

1. Supplying job aids

2. Creating action plans

3. Continuing to communicate

SUPPLYING JOBS AIDS

Students need to integrate new knowledge and skills into their day-to-day work. Course notes and PowerPoint slides are useful reference materials, but students need to be able to readily find information after training in order to use it.

Provide job aids (also known as quick references, "cheat sheets," etc.) with essential information to which students can refer. For example, a one-page summary of the most common syntax and/or techniques that a student can post above her desk upon returning to work can promote retention through regular use.

Tips:

- Prepare job aids in advance that include the most important material.

- Have students prepare individual job aids while training is ongoing.

- Make creating job aids a group activity toward the end of training.

CREATING ACTION PLANS

It is common for students to return to business as usual (i.e., the same way of doing things) after a class. Trying out new things requires time to review, to experiment, and to step outside one's comfort zone. Preparation is required.

Have students create an action plan as part of the class. An action plan is a personalized learning program prepared by the student during training and implemented after training. Students plan to apply their new knowledge and skills to specific tasks on the job within a specific time frame. The more they use the new material, the more they remember it.

Tips:

- Create an action plan at the end, or create and update action plans during training.

- Develop goals that are specific, realistic, and achievable in the time period allotted.

- Include something to do in the next hour, day, week, and month to ensure progress.

CONTINUING TO COMMUNICATE

Learning occurs before, during, and after training. Continue to communicate with students via phone, e-mail, and in-person as appropriate. Encourage them to ask questions as they try things out. Your continued interest will help students follow through on action plans. It adds accountability and sets an expectation that learning will be applied.

Tips:

- Make yourself available to answer students' questions as they arise on the job.

- Supply names and contact information for fellow attendees to promote knowledge sharing.

- Encourage supervisors to provide time for students to practice applying new skills to their work.

STEP 5: EVALUATING RESULTS
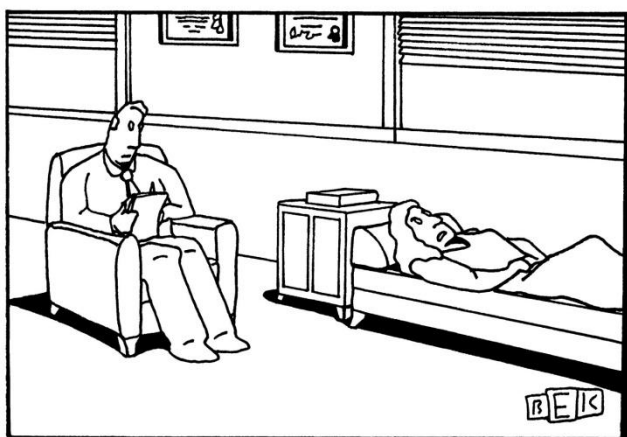
"Well, I do have this recurring dream that one day I might see some results."

People retain different amounts of information depending on the topics and techniques used. Evaluating results includes three components:

1. Talking to people (again)

2. Gathering additional data (again)

3. Revising training

TALKING TO PEOPLE (AGAIN)

Continuing communication is not just to answer questions. Ask people what they learned in training. Approach them privately, send e-mail, or invite them to a follow-up session. Probe for specific examples of ways they have applied what they learned in class to their work.

Tips:

- Note the material being used rather than opinions or reactions to training.
- Survey students 1-2 months after training to see what has been retained.
- Compile their Top Ten Takeaways from training and note what is missing.

GATHERING ADDITIONAL DATA (AGAIN)

Compile objective metrics that demonstrate knowledge is being retained and applied. If you have access to SAS job data, for example, you might analyze the number of runs, average run times, etc. to see if they are now lower.

Another way to evaluate retention is to test students. A pre- and post-test can help demonstrate what was learned. Less tangible, but probably at least as useful, are qualitative measures. Are supervisors assigning more advanced work in which students apply what they learned? Are students volunteering to take on more challenging tasks? Are students sharing information and techniques with their team?

Tips:

- Make tests fun (e.g., give a surprise quiz with a reward for passing).
- Use performance-based tests (e.g., a SAS programming assignment).
- Interview supervisors, Help Desk staff, and others about recent changes.

REVISING TRAINING

Technology is constantly changing. The content and format of SAS training, therefore, are also constantly changing. Training can always be improved, and every class should be continuously refined. You can always do something to make SAS training more memorable.

Tips:

- Have students evaluate the class while it is still in progress (i.e., while there is still time to add or change things).
- Adjust training based on feedback, focusing on any knowledge or skills that are not being retained and applied.
- Preview the revised class with reviewers who will respectfully challenge you and offer constructive suggestions.

CONCLUSIONS

"What does he know, and how long will he know it?"

This paper described a five-step process for making SAS training memorable. Best practices were highlighted and tips were supplied for each step.

The key elements are to understand the needs of your students, to prepare them, to involve them, to help them transfer knowledge and skills, and to confirm results.

Try out these techniques in your own classes and see how they make SAS training stick!

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CONTACT INFORMATION

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Making SAS® Training Stick   *Quick Reference*

1. Assessing needs

Talking to people
- Ask programmers
- Ask supervisors
- Ask Subject Matter Experts [SMEs]

Gathering additional data
- Review SAS programs
- Talk with Help Desk
- Quiz students [anonymously]
- Assess future needs/upcoming work

Specifying training goals
- Summarize and prioritize goals
- Order training in a logical sequence
- Align training goals : business goals

2. Preparing for training

Preparing the students
- Contact students before training
- Give short "pre-work" assignments
- Ask for questions in advance

Preparing the environment
- Make it comfortable
- Check all computers!
- Provide food and drinks

3. Delivering training

Connecting students with material
- Explain "what's in it for them"
- Acknowledge feelings and beliefs
- Share challenges and successes
- Create an "emotional hook"

Making training interactive
- Minimize lecture
- Practice with hands-on exercises
- Provide opportunities for discussion
- Include small group activities

Reflecting and celebrating
- Recap how much was learned
- Thank students for contributions
- Acknowledge accomplishments
- Have food, prizes, music, etc.

4. Transferring training

Supplying job aids
- Prepare one-page "quick references"
- Have students prepare their job aids
- Make creating job aids a group activity

Creating action plans
- Have students create personal plans
- Update plans throughout training
- Develop goals that are specific, realistic, and doable in time period
- Include something to do in the next hour, day, week, and month

Continuing to communicate
- Contact via e-mail, phone, in-person
- Encourage questions as they try out
- Supply contact info for other students
- Ask supervisors to allow time for practice

5. Evaluating results

Talking to people [again]
- Send a training feedback form
- Ask for specific examples of how training was applied on the job
- Compile Top Ten Takeaways

Gathering additional data [again]
- Analyze job data if possible
- Use pre-tests and post-tests
- Collect "qualitative" data

Revising training
- Do a course evaluation while ongoing
- Change content and format as needed
- Preview revisions with right audience

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Making SAS® Training Stick   *Action Plan*

Step	Action		Date
1. Assessing needs	*Talking to people*		
	Gathering additional data		
	Specifying training goals		
2. Preparing for training	*Preparing the students*		
	Preparing the environment		
3. Delivering training	*Connecting students with material*		
	Making training interactive		

Step		Action	Date
	Reflecting and celebrating		
4. Transferring training	*Supplying job aids*		
	Creating action plans		
	Continuing to communicate		
5. Evaluating results	*Talking to people [again]*		
	Gathering additional data [again]		
	Revising training		

Additional Notes

Identify something you will do in the next hour, day, week, and month.