

Need to develop your employees' SAS® Skills? A step by step framework

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ABSTRACT

SAS professionals come from a variety of educational and work backgrounds, requiring supervisors to craft personalized development plans for their employees. In addition, SAS runs on multiple platforms and offers multiple options to pull in data, to create and modify data, to perform data analysis, and to output and present the data. To top it all off, SAS offers numerous options for learning. The complexity of providing guidance to new and seasoned SAS professionals can seem overwhelming, even for experienced supervisors.

In this paper, a framework for crafting individualized development plans for SAS professionals is offered. The framework is grounded on research based principles and incorporates the concepts of andragogy, heutagogy, and formal/informal learning. The diverse learning options available for SAS are explored and suggestions for matching learner goals and learning options are provided. To conclude, a dozen development tips and a list of useful websites are presented.

INTRODUCTION

A manager has many tasks to deal with on a daily basis; one task that may get pushed to the side is planning for the professional development of employees. Professional development benefits both the employee and the employer (Half, 2017). Kloosterman (2014) stated that professional development offers employees opportunities to update their knowledge, skills, and abilities (KSAs) and to grow a professional network in addition to maintaining employees' interest in their job. According to Halvorson (2015), businesses stand to benefit by placing more emphasis on employee talent development for multiple reasons including the following:

- Attracting high quality candidates
- Engaging employees
- Retaining employees
- Creating promotion pipeline
- Saving money

The relationship between professional development and employee retention has reached general acceptance (Biro, 2018; Cloutier, 2015). A recent report by LinkedIn Learning (2018) supports the use of professional development to improve employee retention, stating that “94% of employees would stay at a company longer if it invested in their career development” (p. 8), “68% of employees prefer to learn at work” (p. 7), and “56% of employees say that they would spend more time learning if their manager suggested a course to improve skills” (p. 9).

According to the most recent reports from the US Bureau of Labor Statistics, median employee tenure is 4.2 years and median age for computer programmers (a proxy for SAS coders) is 42.7 years (2018, 2018a). As Figure 1a shows, employees' median tenure increases with age. The median tenure of employees between 35 and 44 years of age is 4.9 years. The percentage of employees with a tenure of 10 or more years also increases with employee age (Figure 1b). Approximately one-third of employees between 40 and 44 years of age have a tenure greater than or equal to 10 years. These labor statistics also support the use of planned professional development as a method to improve employee retention.

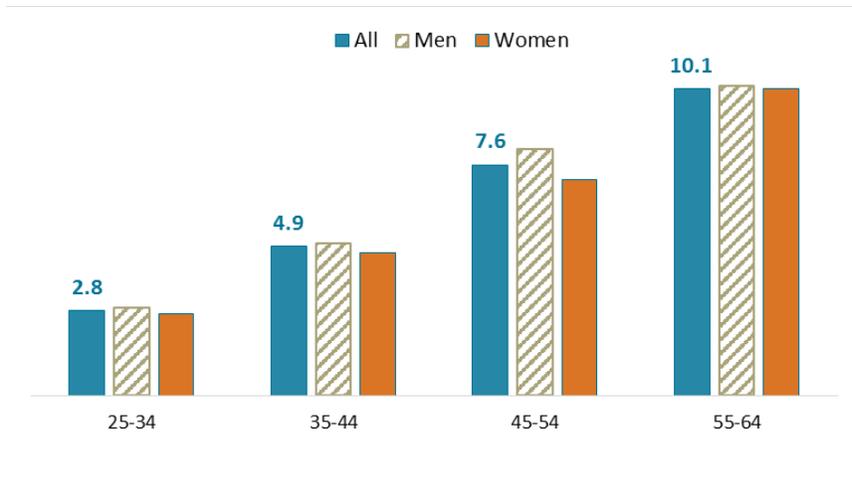


Figure 1a. Employee median tenure increases with employee age.

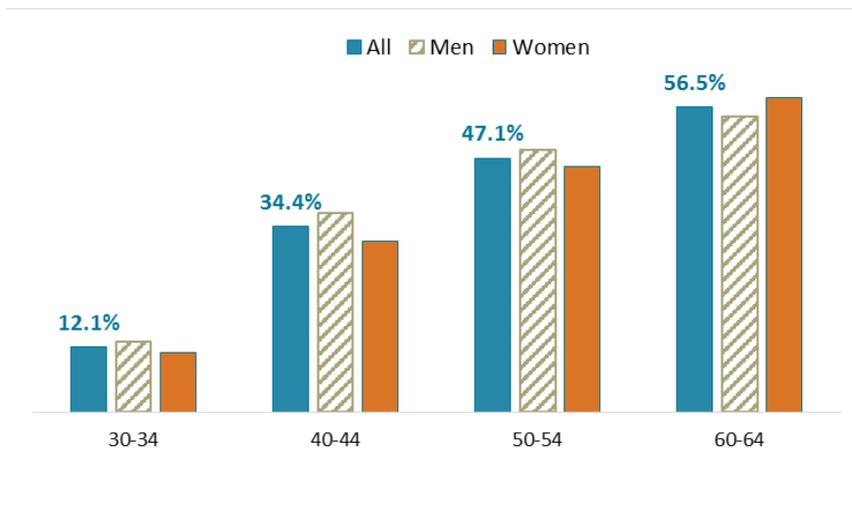


Figure 1b. Percentage of employees with tenure of 10+ years increases with employee age.

PROFESSIONAL DEVELOPMENT PLANNING

Crafting professional development plans for SAS coders can be difficult. SAS is used in many different fields including business, education, and pharmaceutical research. In addition, while some employees intentionally choose education programs that develop SAS knowledge and skills, other employees “fall into” SAS through job or career changes. In my own case, I did not enter the world of SAS until I started my third career. Luckily, skills from previous careers transferred over to working with SAS. At SASGF 2019, I presented a framework to help learners drive their own professional development (Smith, 2019). This framework was based on my experiences as an adult learner and on knowledge and skills gained from my doctorate in adult and community college education. Managers can use the same general framework to create professional development plans for their employees.

FRAMEWORK OVERVIEW

The Self-Determined Professional Development Cycle is presented in Figure 2. Andragogical and heutagogical theory provide the underpinnings for the SDPDC, which also incorporates the concepts of formal/informal learning. For a detailed explanation, please see the SASGF paper (Smith, 2019).

Self-Determined Professional Development Cycle

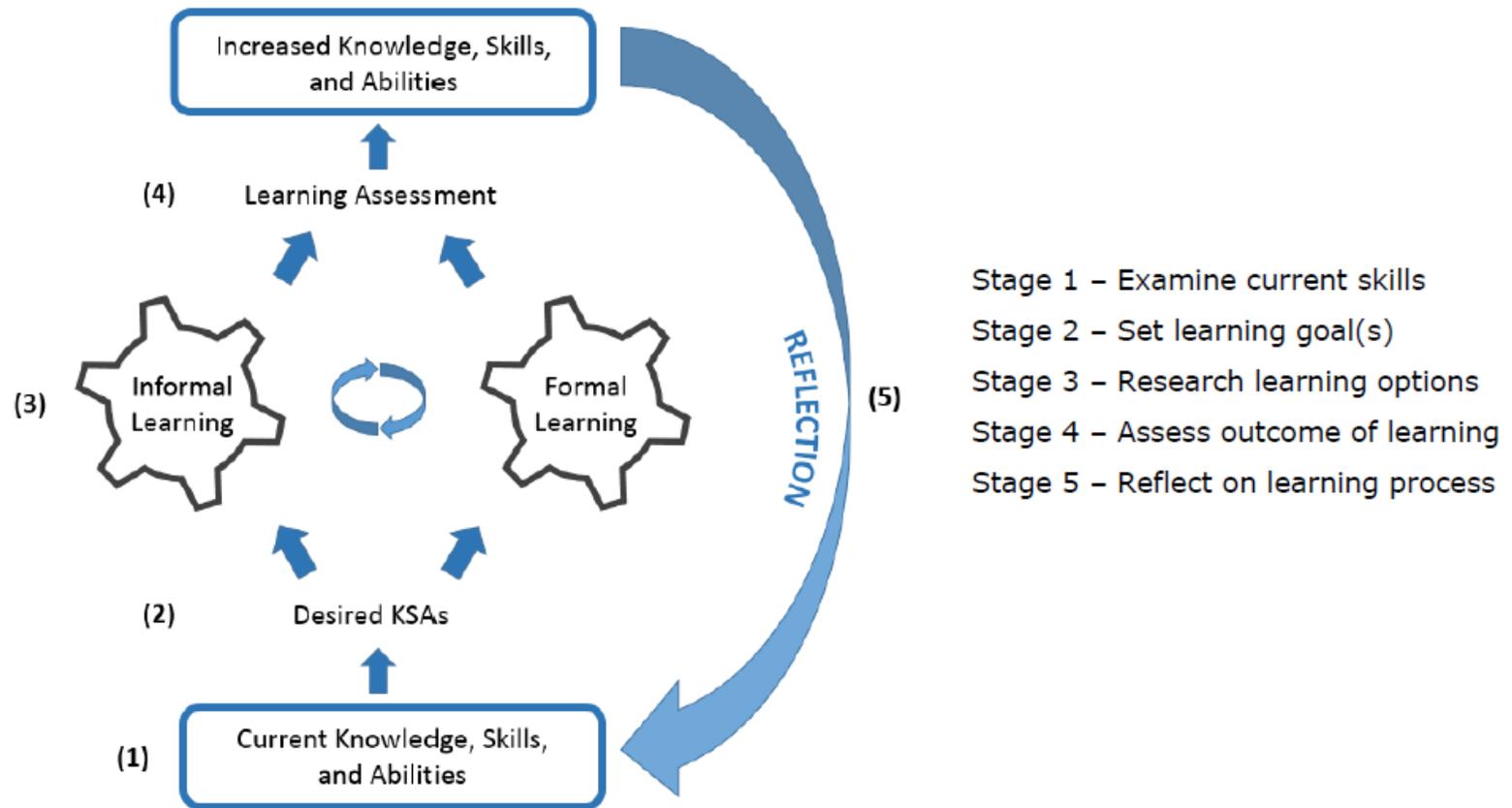


Figure 2. SDPDC (Smith, 2019).

Under the SDPDC framework, professional development is seen as a repeated, ongoing process with the primary goals of competency and capability. These goals are based on the principles of andragogy and heutagogy, with the distinction best described by Blaschke (2012, p. 60):

When learners are competent, they demonstrate the acquisition of knowledge and skills; skills can be repeated and knowledge retrieved. When learners are capable, skills and knowledge can be reproduced in *unfamiliar situations* [emphasis added]. Capability is then the extension of one's own competence, and without competency there cannot be capability.

Employees who are both competent and capable are best suited to handling the complexities of a quickly evolving work environment (Blaschke & Hase, 2016).

CREATE INDIVIDUALIZED PLANS

Bramblett and Broderick (2018) focused on professional development in institutional research but their thoughts provide guidance for all workplaces. Two key takeaways stand out from their work: “an educated, informed workforce, in any setting, is the key to successful practice” (p. 135) and “opportunities for professional development are key to growing a staff that is skilled, knowledgeable, and competent” (p. 142). The authors also emphasized the importance of individualized growth plans:

... developing a training and professional development plan for each employee serves two purposes: (1) it sends a message to them that their continuing education is important enough to invest in and (2) it enables them to sharpen their skills in a variety of areas that will make the IR function stronger and more valuable to the institution. By developing a plan with their staff, IR leaders can better position relevant training and projects. Understanding where individual IR staff members want to be professionally over the next three to five years will enable the manager to align opportunities for growth and development, leading to a richer experience for both the staff and the leadership. (p. 147)

While crafting individualized plans takes time, the time spent can be justified in terms of improved employee engagement and retention.

APPLYING THE FRAMEWORK

In the original development of the SDPDC, the manager's role was limited to the first two stages as the employee was responsible for crafting their own development plan. When using the SDPDC as a guide for creating individualized development plans, the manager necessarily takes a more active role in the process.

STAGE ONE

The primary purpose of stage one is to establish an employee's current job role and KSAs. A good starting point for a discussion with the employee is the official job description for the job title. The following questions can be used to develop the conversation further:

- Do day-to-day tasks reflect the job description, or has the employee's role expanded over time?
- What was their experience level with SAS when hired, and how has their proficiency developed?
- Are they working independently or as part of a team?
- Are they using prewritten SAS code or creating new code?
- Do they have R, Python, or other language skills that can be incorporated into SAS?

Most likely, a discussion of current KSAs will lead naturally into the second stage of the cycle, where desired KSAs are considered.

STAGE TWO

When discussing desired KSAs with the employee, the conversation needs to be a two-way street. Provide the employee with the opportunity to discuss their short and long term goals in addition to

your thoughts about future possibilities. Short term goals should focus on the next few months; long term goals should focus primarily on the next 1 to 2 years. Not only will you learn more about the employee but you may be able to expose them to new career path opportunities. Conversations of this type with employees will can form the basis for a promotion pipeline, which is beneficial for you as a manager and for the larger institution. The discussion should conclude with an agreed upon set of short and long term learning goals.

STAGE THREE

Once the learning goals have been set, both the manager and the employee should examine available learning options. Questions for the manager to consider include:

- What sort of training or development is available within the workplace?
- Would a formal or informal mentorship be an appropriate option?
- How many employees will need off site development?
- What is the training budget?
- What is the travel budget?

The employee should primarily focus on the type of learning that best suits them; however, a sensitivity to budget and travel issues should not be forgotten:

- Would informal or formal learning be better suited for the learning goal?
- Would an eLearning or face-to-face format be more effective?
- Is an intensive, short-term course or a less intensive long-term course a better choice?

Detailed information about SAS learning options was covered at SASGF (Smith, 2019): Table 1 contains useful hyperlinks for SAS training. The manager and employee should work together to determine the best learning option for each goal based on the time required, training cost, and employee learning preferences.

STAGE FOUR

The primary goals of professional development are competency and capability. The manager's role in this stage is not as an examiner or interrogator but as an advisor or mentor. When possible, the manager should create opportunities for an employee to demonstrate increased competency and capability. Providing these opportunities reinforces both the manager's and the institution's commitment to employee development.

Formal learning sessions typically include intermediate and/or final assessments to establish competency through quizzes, exercises, or tests; establishing competency from informal learning may require more creativity in developing a method of assessment. Presentations by an employee to a work team or larger unit offers all employees the chance to expand and verify their own competency in addition to the presenter's, as do more informal discussion settings. Competency is more easily demonstrated than capability since capability requires the application of knowledge and skills to new contexts. Capability becomes apparent as an employee's competency is extended to new projects and challenges. A preliminary approach to evaluating capability could be the recreation of prior projects through the use of new knowledge and skills.

Website Description / Name	Hyperlinked Website URL
"SAS Customer Support"	https://support.sas.com/en/support-home.html
"Learn How to Use SAS"	https://www.sas.com/en_us/learn.html
" How To Tutorials"	https://video.sas.com/category/videos/how-to-tutorials
"SAS Books"	https://support.sas.com/en/books.html
"Free SAS E-Books"	https://support.sas.com/en/books/free-books.html
"SAS Webinars"	https://www.sas.com/en_us/webinars.html
"SAS Documentation"	https://support.sas.com/en/documentation.html
"SAS Support Communities"	https://communities.sas.com/
"SAS Training in the United States"	https://support.sas.com/edu/coursesaz.html?productType=course&ctry=us
"Free e-learning to get you started"	https://support.sas.com/edu/elearning.html?ctry=us&productType=library
"SAS Starter Kit"	https://www.sas.com/en_us/sas-starter-kit.html
"SAS Academic Programs"	https://www.sas.com/en_us/learn/academic-programs.html
SAS Joint Certificates Programs	https://www.sas.com/content/dam/SAS/documents/technical/education/en/joint-certificate-program.pdf
SAS Focused Masters Programs	https://www.sas.com/en_us/learn/academic-programs.html
"SAS University Edition"	https://www.sas.com/en_us/software/university-edition.html

Table 1. Hyperlinks to SAS learning resources (Smith, 2019, Table 4, p.11)

STAGE FIVE

The reflective process of stage 5 may be incorporated into the assessment of competency and capability in stage 4. Both the manager and employee should reflect on the learning process that just occurred:

- Was the learning goal achieved?
- Was the choice of learning options appropriate for the goal?
- Was competency achieved?
- Is there preliminary evidence of capability?
- How has the learning experience impacted the employee?
- Has there been a change in employee or manager goals as a result of the learning experience?

The reflective process brings the cycle back to stage 1, where the new level of KSAs can be evaluated in preparation for the next learning or career goal.

TWELVE DEVELOPMENT TIPS

Managers can encourage employees to take simple steps to move their professional development forward in an intentional manner. The following suggestions were generated from a survey of experienced SAS professionals in a number of fields. Simple steps for employees to take include (adapted from Smith, 2019):

- Explore and read – www.lexjansen.com can be a good place to start.
- Take notes, and review notes periodically to check for long-term clarity.
- Create a professional library of useful reference materials.
- Practice new skills frequently; recreate old reports with new skills.
- Thoroughly annotate code for others who may use it in the future. Include explanation of SAS function choices, if key to the success of the code.
- Work through code written by more experienced SAS users; ask questions about the design (logic map) and choice of SAS functions.
- Save snippets of useful code for later use. Be sure to annotate the code.
- Tackle new platforms at work or by downloading University Edition.
- Join a SAS community. Learn by asking and answering questions. Share knowledge and learn from other SAS users by attending a conference and presenting a paper or e-poster.
- Make learning a recurring appointment in the calendar (mark those times as “busy”). Start with 30 minutes twice a week. Plan ahead by pulling links to short articles or tutorials.
- Set up an accountability plan. External accountability partners can help keep professional development on track. Accountability plans should include learning goals and an anticipated timeline for completion.
- Look past the current work role. Explore the use of SAS in other fields, get involved with summer coding programs for teens, or find another way to push past current boundaries.

While all the tips are useful, the last three are particularly recommended (learning appointments, accountability, and expanding horizons). Managers can encourage employees by setting a good example. Employees are more likely to follow through if they see managers incorporating these simple steps in their own professional development process.

CONCLUSION

The SDPDC was originally developed to help individual employees create their own personalized professional development plans. Managers can adapt the framework to draft development plans individualized to each employee's interest and needs. Individualized development plans are especially important for SAS coders due to the variety of backgrounds and experience each coder brings to their job role. Thoughtful application of the cycle benefits employee, manager, and institution. Employees receive personalized growth plans, managers can improve employee engagement in addition to creating a promotion pipeline, and the institution benefits in terms of employee retention and productivity. Consequently, the use of the SDPDC benefits the business bottom line.

REFERENCES

- Biro, M. M. (2018, July 23). Developing your employees is the key to retention – Here are 4 smart ways to start. Retrieved from <https://www.forbes.com/sites/meghanbiro/2018/07/23/developing-your-employees-is-the-key-to-retention-here-are-4-smart-ways-to-start/#c7aad4537344>
- Blaschke, L. M. (2012, January). Heutagogy and lifelong learning: A review of heutagogical practice and self-determined learning. *The International Review of Research in Open and Distance Learning*, 13(1), 56-69. Available at <https://doi.org/10.19173/irrodl.v13i1.1076>
- Blaschke, L. M., & Hase S. (2016). Heutagogy: A holistic framework for creating twenty-first-century self-determined learners. In B. Gros, Kinshuk, & M. Maina (Eds.) *The future of ubiquitous learning: Learning designs for emerging pedagogy* (pp 25-40). Heidelberg: Springer.
- Bramblett, S., & Broderick, M. (2018). Professional development for the institutional research (IR) professional: Institutional research and decision support in the United States and Canada. In K. L. Webber (Ed.) *Building capacity in institutional research and decision support in higher education* (pp. 135-151). Knowledge Studies in Higher Education, 4.
- Cloutier, O., Felusiak, L., Hill, C., & Pemberton-Jones, E. J. (2015). The importance of developing strategies for employee retention. *Journal of Leadership, Accountability and Ethics*, 12(2), 119-129. Available at: http://www.m.www.na-businesspress.com/JLAE/Pemberton-JonesEJ_Web12_2_.pdf
- Gould, T. (2016, July 29). Professional development positively effects engagement and retention, study says. Retrieved from <https://www.hrmorning.com/articles/professional-development-positively-effects-engagement-and-retention-study-says/>
- Half, R. (2017, February 23). Professional development training: A win for the entire team [Blog post]. Retrieved from <https://www.roberthalf.com/blog/management-tips/professional-development-training-a-win-for-the-entire-team>
- Halvorson, C. (2015, August 18). Five reasons you should be investing in employee development. Retrieved from <https://www.inc.com/chad-halvorson/5-reasons-you-should-be-investing-in-employee-development.html>
- Kloosterman, V. (2014). The importance of continuing professional development. Retrieved from <https://continuingprofessionaldevelopment.org/why-is-cpd-important/>
- LinkedIn Learning (2018). 2018 Workplace learning report: The rise and responsibility of talent development in the new labor market. Retrieved from <https://learning.linkedin.com/resources/workplace-learning-report-2018>
- Moschetto, J. (2019, January 24). Focusing on employee development can improve retention [Blog post]. Retrieved from <https://www.amanet.org/articles/focusing-on-employee-development-can-improve-retention/>
- Smith, K. D. (2019, April). *New to SAS®? Helpful hints for developing your own professional development plan*. Paper presented at the SAS Global Forum 2019, Houston, Texas.

U.S. Department of Labor, Bureau of Labor Statistics. (2018). *Employee tenure 2018*. Retrieved from <https://www.bls.gov/news.release/pdf/tenure.pdf>

U.S. Department of Labor, Bureau of Labor Statistics (2018a). *Median age of workers by occupation and industry*. Retrieved from <https://www.bls.gov/cps/demographics.htm#age>

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