



# **Professional Development Needs of Science and Technology Librarians: Results of the 2012 SLA/PAM Professional Development Committee Survey**

**Nedelina Tchangalova**

Physical Sciences & Public Health Librarian  
Engineering and Physical Sciences Library  
University of Maryland  
College Park, Maryland  
[nedelina@umd.edu](mailto:nedelina@umd.edu)

**Margaret N. Lam**

Physical Sciences Liaison Librarian  
Fenwick Library  
George Mason University  
Fairfax, Virginia  
[mlam3@gmu.edu](mailto:mlam3@gmu.edu)

---

Copyright 2013, Nedelina Tchangalova and Margaret N. Lam. Used with permission.

---

## **Abstract**

This article reports and analyzes the survey results on the continuing education needs of librarians with current job responsibilities in the science, technology, and engineering subject fields. The intended purpose of the survey results is to assist conference coordinators in the development of a continuing education program at future Special Libraries Association (SLA) conferences. This survey is a follow-up on the early studies conducted by committee members of various library associations and provides a perspective on the continuing education needs for science and technology librarians in the 21st century. Upon analysis, the authors learned that online tutorials and webinars, as well as face-to-face workshops at conferences, are the best preferred approaches for professional development. In addition, the analysis of the survey responses provided topics of interest for the continuing education opportunities.

# Introduction

In January 2012, the Professional Development Committee for the Physics-Astronomy-Mathematics (PAM) Division of Special Libraries Association (SLA) was approached by one of the senior managers of a world-class publisher to discuss possible sponsorship opportunities with SLA. The publishing company was particularly interested in sponsoring continuing education events for SLA/PAM members and to ensure that these opportunities are continually made available in the future. To gain a better understanding of the continuing education needs of science and technology librarians over the years, a cursory scan of the available library literature was conducted. Upon review, a number of articles pertaining to the continuing education (CE) needs of science and technology (sci/tech) librarians was found ([Calzonetti & Crook 2009](#); [Desai, Christianson, & Burright 2004](#); [Spackman, et al. 2006](#)). Surveys on the continuing education needs for sci/tech librarians were found from as far back as 2001. The continuing education needs of sci/tech librarians have constantly shifted and expanded over the years. In 2002, the general main focuses in professional development were instruction and electronic resources ([Desai 2002](#)). In 2004, improving relations with faculty and knowledge of alternative scholarly communication were added to the presentation and teaching skills of instruction ([Desai et al. 2004](#)). In 2006, librarians indicated that it was a priority to keep current with the latest technologies, as well as be knowledgeable of the available institutional repositories/digital archives, and open access models ([Spackman et al. 2006](#)). In 2009, collaboration with faculty, evaluating existing services/developing new services and determining the future roles for libraries and librarianship have also gained more importance in the professional development of sci/tech librarians ([Calzonetti & Crook 2009](#)).

The goal of the survey in this article was to gather more contemporary data that will better inform conference coordinators on how to plan future educational programming that will be relevant to librarians in upcoming library conferences. In addition, this survey will be used to further assess the continuing education needs of sci/tech librarians and to identify which areas require additional knowledge and improved skill sets. In order to maintain the process of longitudinal data gathering, the survey design was based on the survey implemented by the Science Technology Section (STS) of the Association of College and Research Libraries (ACRL) ([Calzonetti & Crook 2009](#)). This survey is only an exploratory study, and it was not designed to draw conclusions about the continuing education needs of all librarians. The authors simply wanted to gather data and comments from the sci/tech librarian community to better inform the decision-making of the conference planners on offering CE classes or workshops at future library conferences.

With the rapid pace of the ever-changing academic environment, librarians must stay abreast on a number of areas in their profession, which includes, but not limited to collection development, instruction and research. In this technological age, what are the best options for librarians to gain new skills and professional knowledge? Which professional areas are more crucial for librarians to receive continuing education? After graduating with a library degree, when do science/technology librarians need to start expanding their knowledge and skills?

## Methods

### Survey Design

With the permission of Calzonetti and Crook, the authors replicated their previous research with the goal to maintain continuity in the selection of topics and to obtain longitudinal data about the trends in the continuing education interests and needs of science/technology librarians ([2009](#)). From an e-mail conversation with Calzonetti and Crook on September 28,

2012, the authors learned that another survey was administered in 2009, but the results were not published online. In addition, there is no information available on whether another survey had been administered in the consequent years.

The survey in this article was developed using the online survey-building instrument in Google Forms (see [Appendix A](#)). The goal was to reach as many librarians as possible, and the target was to gather a random sample, not a representative sample, of data. For the STS 2007 survey, there was a monetary incentive of \$170 towards a professional conference registration to complete the survey ([Calzonetti & Crook 2009](#)). Due to the lack of funding at the time of survey distribution, no monetary incentive was offered to encourage participation for the 2012 survey. The 2007 survey goal was to increase the number of survey participants compared to previous years, whereas, the 2012 survey focused more on specific learning topics of relevant interest to librarians at future SLA conferences. This data will then be used to inform potential vendors or other presenters on the relevant topics that are expected to be covered at future conferences. Unedited answers from the open ended question "Did rating the pre-selected topics jog your memory about other topics of interest?" and category headings listing possible topics with a Likert scale were used in this survey ([Calzonetti & Crook 2009](#)).

## Survey Distribution

Librarians worldwide were recruited via e-mail from seven mailing lists that deal with sci/tech disciplines. The e-mail contained a request for participation and a URL link to the survey questions (see [Appendix B](#)). The total number of mailing list subscribers was 5,406 (see [Appendix C](#)). This total number may not reflect the actual number of subscribers. After contacting the moderators of each mailing list, various reasons for the inaccuracy of the numbers were provided, such as duplication of e-mails, unsubscribed members waiting to be approved, or e-mails that have bounced back.

The survey was available to any willing participant on the specified mailing lists. The survey was initially distributed to the mailing lists on June 19, 2012, and a reminder followed on July 10, 2012. The survey officially closed on July 31, 2012, after the 2012 SLA conference in Chicago, IL.

## Results

In the summer of 2012, a total of 132 librarians participated in the survey showing a great decrease, approximately 64% fewer participants, from the 2007 survey ([Calzonetti & Crook 2009](#)). One of the possible reasons for the decrease of participation is that the survey was distributed during the summer, which is a popular time when many librarians are away from work. In addition, there was no monetary incentive to complete the survey. Although the number of participants was low compared to previous surveys, the authors believe that the collected data from the survey results are reliable enough to answer the research questions.

## Demographics

The majority of the survey participants (64%) work in an academic library, which is followed by those who work in a corporate library (17%), and a government library (7%). The remaining number of survey participants (12%) identified themselves with one of the following employment area/status: consultant for various clients, hospital or for nonprofit institution, self-employed, unemployed, and retired.

The majority of the survey participants (65%) that expressed the need for continuing education were those who have worked in the libraries for more than 10 years. The second largest group

of survey participants was the recent graduates (14%) which were followed by those who worked 3-5 years (11%), and 5-10 years (8%) in the field.

There is no change in the gender representation of the librarian profession. The results of this survey continues to uphold the fact that this is, predominantly, a female profession (83% female, 14% male, and 2% other gender).

In terms of educational background, the survey data revealed that 18% of the survey participants have two or more majors/minors and/or Bachelor's degrees, in addition to the Master's degree in library science. The prevalent majors among the survey participants were biology and chemistry (8%). The remaining majors in descending order were: English (6%), Physics (5%), History (4%), Chemical Engineering, Education, Math, and Zoology (3%). Those who graduated with a Bachelor's degree in chemistry also completed a Master's (5%) or a Ph.D. degree (2%) in the same field.

The academic librarians who participated in this survey, which made up the majority (64%), indicated that they are still receiving funding for professional development. The survey results show that the number of librarians having \$1,000-\$1,499 in their professional development funds (23%) matches the number of those with an unknown budget (23%), followed by those having \$0-499 (20%), \$1,500 or more (18%), and \$500-999 (16%) in their professional development funds. It is likely that some librarians are unsure or are merely unaware of the available funds. Moreover, the funding for professional development is greatly dependent on the discretion of upper management. The high costs to attend conferences and other events of professional development are great deterrents to the interested parties who wish to attend them. It is imperative to make sure that those in upper management positions understand the benefits of sending their employees to such events and to provide the necessary funding to assist with the expenses. Understandably, the employee is less likely to attend a conference if s/he needs to pay for the expenses out of his/her own budget.

For the upcoming SLA conferences, 45% of the survey participants indicated they are likely to attend the conference, whereas 33% do not plan to attend the 2013 SLA conference in San Diego. The remaining 23% are hesitant due to workload, conflicting dates with other conferences, or being denied approval by their supervisors.

Many of the survey participants are professional members in a wide variety of library associations; some are members of more than one. SLA/STD (45%) was the most popular. ALA (43%) and ACRL (39%) came in second and third place, while ACRL/STS (27%) and ASEE/ELD (16%) rounded out the top five. In addition to these associations, the survey participants are also involved in over 34 other professional associations (see [Appendix D](#)).

## **Continuing Education**

In this age of advancing technologies, the majority of the survey participants mostly prefer to keep up with their profession through online tutorials and webinars (49%) rather than taking credit courses online (15%) or face-to-face or blended (9%). However, if there is an opportunity to attend face-to-face workshops, the most preferred location for such an event is at a conference (33%).

## **Pre-Selected Topics**

The survey included pre-selected topics for the participants to indicate their level of preference and the results are displayed in [Appendix E](#). The pre-selected topics were taken from the open-ended questions results listed by Calzonetti and Crook (2009). The aim was to identify specific topics that conference guest speakers and workshop lecturers could address at future

conferences.

**Collections.** When asked which aspects surrounding library collections would be the most interested to learn, 52% of the survey participants stated that they are most interested in e-science and data acquisitions/curation. This was followed by assessment and statistics (43%), scholarly communication (40%) and collection development (26%). Several survey participants indicated interest in the following areas:

- E-books and academic libraries
- Vendor's roundtables
- Collaboration for storing print
- Current projects on maintaining everything in electronic

**Collaboration.** For the question regarding collaboration, 54% of the survey participants stated that they are most interested in learning about working with faculty, and 31% are looking for ways on collaboration among libraries. The latter percentage about creating productive partnerships among libraries is supported by 55% of the survey participants.

**Information Services Management.** Two topics emerged under this category: fostering innovation in the library (58%) and cost/benefits of information services (42%).

**Marketing and Outreach.** Approximately half of the survey participants showed a great interest in marketing library services (55%), expanding library awareness to administration and staff (53%), and outreach opportunities (50%).

**Professional Development.** The categories within this topic received the lowest interest from the survey participants compared to the other topics listed in [Appendix E](#). The survey participants were only somewhat interested in learning about leadership (48%) and communication, conflict resolution, negotiation, interpersonal skills, supervisory skills (47%). With these mixed results, it was difficult to extract the strongest interest in the area of professional development among the survey participants. It is important to note, however, that one survey participant expressed the need for education opportunities to Library Information Science (LIS) students to be more accessible.

**Reference and User Services.** The survey results are almost evenly spread out between both rankings (somewhat and most interested) in the following topics: encouraging scientific literacy/designing effective assignments, quizzes and exams, new approaches for individuals to learn information literacy skills in order to work independently, and finding patents, technical reports, standards and/or conference proceedings.

**Subject-Specific Resources and Issues.** Forty percent (40%) of the survey participants indicated a strong interest in learning about strategies for changing subject specialties/getting proficient in the new area, followed by 37% of survey participants who are interested in developing core collections to meet needs of new programs.

**Technology.** Forty eight percent (48%) are most interested in learning new technology applications. Information visualization (37%) and archiving born digital materials (28%) rounded out the top three topics in technology.

## Discussion

The goal of this survey was to obtain relevant data to better inform future decision-makers on the type of continuing education opportunities to offer sci/tech librarians at local and national library conferences. The following information gathered from the survey may be useful in

understanding the potential audience for future programs at the library conferences.

**Demographics.** Librarianship is still a female-dominated profession. Given the specific nature of the work, subject-liaison librarians are more likely to work in an academic or a corporate library. Stillings and Hutchinson (2006) define continuing education (CE) as "[a] formal training or education activities that may result in certification, perhaps a degree, and/or continuing education credits to meet specific job requirements or demonstrate competency in a particular area." New sci/tech librarians will mostly benefit from mentoring (Desai 2002; Howe 2012) and acquiring subject-related expertise (Winston 2000). Those who have been in the profession for more than 10 years, which made up the majority of the survey participants (65%), felt that there is a great need to further their skills and refresh their knowledge in the field.

There has been much discussion in the literature on whether it is imperative to have a dual degree or not in order to be a successful science/technology librarian (Angell 2009; Beaubien 2006; Brown 2006; Tchangelova 2009; Winston 2000). One may be a successful science/technology librarian without an educational background in the science/technology field; it is naturally assumed that the majority of them most likely have a science background. The survey results revealed that subject-oriented workshops are not necessarily required for the majority of survey participants. If a librarian does not have the educational background in the science/technology field, the authors believe that being involved in professional or subject-related associations can assist in developing essential skills. Many of the survey participants are members of more than one professional organization, so professional memberships are considered important for professional development.

In regards to the availability of funds to offset the costs associated with attending a library conference, the survey results show that some funding is still available for most of the survey participants. The provided funds might not always be sufficient to cover the conference expenses in full. Some survey participants shared with the authors different scenarios regarding the funding for professional development. One fortunate scenario is funding is made available upon request. Another scenario was more pragmatic, where the institution had established limits on the number of conferences that can be attended per fiscal year. Then there are those who are still unsure due to the uncertainty of the next fiscal year budget.

**Continuing Education.** The survey participants were not interested in taking credit courses online, but would rather participate in webinars or self-educate themselves with online tutorials. Despite the abundance of online learning opportunities, a high percentage of sci/tech librarians welcomed continuing education opportunities in face-to-face workshops. Conference coordinators may want to take this detail into account during the planning process.

**Pre-Selected Topics.** To delve further for possible topics of strong interest at future conferences or webinars, the following topics can be put under serious consideration (see [Appendix F](#)):

1. Fostering innovation in the library (58%)
2. Marketing library services (55%)
3. Working with faculty (54%)
4. Data acquisitions and curation, e-science (52%)

## Future Research

Developing a meaningful survey is a daunting task for researchers, and time is the most cited reason for any unsuccessful project. Making this survey shorter will benefit future researchers to obtain a higher level of participation from librarians. A crucial role to increased participation

of a survey is to seriously consider the time of the year to distribute the survey.

In hindsight, including a question about the geographical work location of the participant will probably benefit local chapters of library associations in developing continuing education opportunities. In addition, linking the demographics to the survey results to show the relationship between the level of a librarian's work experience to his/her continuing education needs and interests would have provided a better insight on what is professionally needed as one proceeds in his/her career as a librarian. From the literature, it is evident that new librarians will benefit from mentoring (Desai 2002; Howe 2012) or an increased competency in a particular subject area (Stillings & Hutchinson 2006), whereas more experienced librarians will need professional development activities that will refresh their skills and knowledge on the job (Winston 2000).

The authors found it very beneficial to keep the same selection of topics of previous surveys. By doing so, it continues the longitudinal data trends in the continuing education needs of librarians. Some of the topics (e.g. weeding) should be eliminated to make new relevant topics (e.g. data management) available. The recommendation of the authors is to distribute this survey every 5 years, instead of every year. In addition, future surveys should include more specific inquiries on the recent technology trends.

## References

**Angell, K.** 2009. Squeezing out specialists: questioning the need for a second graduate degree. *American Libraries* 40(5), 39-39.

**Beaubien, A.K.** 2006. Recruiting science librarians: a call to action! *Science & Technology Libraries* 27(1-2), 5-9. doi: [10.1300/J122v27n01\\_02](https://doi.org/10.1300/J122v27n01_02)

**Brown, C.** 2006. Recruiting the best. *Science & Technology Libraries* 27(1-2), 41-53. doi: [10.1300/J122v27n01\\_04](https://doi.org/10.1300/J122v27n01_04)

**Calzonetti, J.A. & Crook, L.** 2009. The 2007 STS continuing education survey: continuing education needs of science/technology librarians. *Issues in Science & Technology Librarianship* 57. [Internet]. [Cited June 12, 2013]. Available from <http://www.istl.org/09-spring/sts.html>

**Desai, C., Christianson, M., & Burright, M.** 2004. STS continuing education survey 2003: results. [Internet]. [Cited June 12, 2013]. Available from <http://www.lib.auburn.edu/scitech/resguide/forestry/STSSurvey2003.htm>

**Desai, C.M.** 2002. Continuing education needs of science and technology librarians: results of the 2001 STS Continuing Education Committee survey. *Issues in Science and Technology Librarianship* 34. [Internet]. [Cited June 12, 2013]. Available from: <http://www.istl.org/02-spring/article5.html>

**Howe, C.D.** 2012. Novice academic librarians provide insight into choosing their careers, graduate school education, and first years on the job. *Evidence Based Library and Information Practice* 7(4), 99-101.

**Spackman, E., Freedman, T., Gabaldón, C., Baldwin, V., & Powell, P.** 2006. The 2005 continuing education survey: what science librarians want to know. *Issues in Science & Technology Librarianship* 48. [Internet]. [Cited June 12, 2013]. Available from <http://www.istl.org/06-fall/sts.html>

**Stillings, C. & Hutchinson, D.** 2006. Professional development. In: Tucker, C. & Sinha, R. editors. *New Librarian, New Job* Lanham, MD: The Scarecrow Press, Inc. p.137-148.

**Tchangelova, N.** 2009. Jumping onto the bandwagon: new librarians navigating the science/technology librarianship. *Electronic Journal of Academic and Special Librarianship* 10(3). [Internet]. [Cited June 12, 2013]. Available from: [http://southernlibrarianship.icaap.org/content/v10n03/tchangelova\\_n01.html](http://southernlibrarianship.icaap.org/content/v10n03/tchangelova_n01.html)

**Winston, M.D.** 2000. Academic science and engineering librarians: a research study of demographics, educational backgrounds, and professional activities. *Science & Technology Libraries* 19(2), 3-24. doi: [10.1300/J122v19n02\\_02](https://doi.org/10.1300/J122v19n02_02)

---

## **Appendices**

### **Appendix A**

#### **[The Survey Instrument in Google Docs \(PDF\)](#)**

### **Appendix B**

#### **The E-mail Call for Participation**

*Please pardon the cross-posting.*

Greetings Colleagues,

The SLA/PAM Professional Development Committee is seeking your comments and ideas as we are planning future programming for the SLA 2013 conference.

Please take a few minutes to answer these quick questions NOW.

**Survey:**

<https://docs.google.com/spreadsheet/viewform?pli=1&formkey=dGJiQ1RQT3AwamZzNUVVcVNaSmluMnc6MQ#gid=0>

If you, the participant, choose to continue and complete the survey, there is a possibility that there will be a use of your quotes in publications, and we, the authors, reserve the right to use these quotes anonymously.

Thanks,

Nedelina Tchangelova, Chair  
Margaret Lam, Chair-elect

SLA/PAM Professional Development Committee



## Appendix C

### Sci/Tech Related Mailing List E-mail Addresses and Their Corresponding Number of Subscribers

Mailing List Name	Mailing List E-mail	Members
ACRL Science & Technology Section Discussion List	sts-l@ala.org	1,525
ASEE Engineering Libraries Division	eldnet-l@u.washington.edu	608
Chemical Information Sources Discussion List	chminf-l@listserv.indiana.edu	1,433
SLA Engineering Division	sla-deng@sla.lyris.net	409
SLA MD Chapter	sla-cmd@sla.lyris.net	274
SLA Physics-Astronomy-Mathematics Division (PAM)	PAMnet@listserv.nd.edu	638
SLA Science-Technology Division	sla-dst@sla.lyris.net	519
		Total: 5,406

## Appendix D

### Memberships in Professional Organizations

1. Aerospace Industries Association (AERO)
2. American Association for the Advancement of Science (AAAS)
3. American Association of Law Libraries (AALL)
4. American Chemical Society (ACS)
5. American Library Association (ALA)
6. American Medical Informatics Association (AMIA)
7. American Society for Engineering Education (ASEE)
8. American Society for Information Science and Technology (ASIS&T)
9. American Society of Cell Biology (ASCB)
10. ARMA International
11. Association for Computing Machinery (ACM)
12. Association of College & Research Libraries (ACRL)
13. Association of Independent Information Professionals (AIIP)
14. British Columbia Library Association (BCLA)
15. California Library Association (CLA)
16. Canadian Federation of Independent Business (CFIB)
17. Council on Undergraduate Research (CUR)
18. Florida Library Association (FLA)
19. Geoscience Information Society (GIS)
20. Institute of Electrical and Electronics Engineers (IEEE)
21. International Association of Aquatic and Marine Science Libraries and Information

Centers (IAMSLIC)

22. International Society for Pharmaceutical Engineering (ISPE)
23. International Astronomical Union (IAU)
24. Library Leadership and Management Association (LLAMA)
25. Maryland Library Association (MLA)
26. Medical Libraries Association (MLA)
27. Natural Resources Information Council (NRIC)
28. New York Metropolitan Library Council (NYMLC)
29. Patent Information Users Group (PIUG)
30. Project Management Institute (PMI)
31. Royal Society of Chemistry (RSC)
32. Sigma Xi, International Honor Society of Science and Engineering
33. South Carolina Library Association (SCLA)
34. Special Libraries Association (SLA)

## **Appendix E**

### **[Pre-Selected Topics \(PDF\)](#)**

