

Expanding the Intellectual Property Knowledge Base at University Libraries: Collaborating with Patent and Trademark Resource Centers

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Abstract

Patent and Trademark Resource Centers are located in libraries throughout the U.S., with 43 being in academic libraries. With the importance of incorporating a knowledge of intellectual property (IP) and patent research in university curricula nationwide, this study developed and evaluated a partnership program to increase the understanding of IP and patent searching methods at universities that do not headquarter a PTRC. This article describes the methods for establishing those partnerships, summarizes their results, and offers a list of best-practices and lessons learned for establishing future partnerships.

Introduction

Patent and Trademark Resource Centers (PTRCs) are located in university, public, and state libraries throughout the United States to support the intellectual property needs of the public and provide assistance with patent and trademark research. Their work is designated and supported by the U.S. Patent and Trademark Office, and authorized by Title 35 Section 12 of the U.S. Code. At the time of this writing, there are 85 PTRCs in the U.S., with 43 in academic libraries and 42 in public, state, and other specialized libraries (PTRC 2017). Forty-eight states have at least one PTRC, and several states have as many as seven. The U.S. territory of Puerto Rico also has two PTRCs. Oregon and Virginia are the only two states lacking a PTRC.

PTRC librarians and staff receive training annually in the areas of patents, trademarks, and copyright on site at the U.S. Patent and Trademark Office (USPTO) in Alexandria, Virginia, in

order to fulfill their mission of disseminating patent and trademark information (Sneed, 2000). PTRCs located at universities have a broader scope, as they also develop a presence of intellectual property in curricula: familiarizing students and faculty with the importance of patents and trademarks in their research and how to search them, especially using the classification systems established by patent offices worldwide. Patents relay the development of new technologies and serve as a principal source of intellectual property in the STEM disciplines. They are a rich source of technical information not comprehensively indexed in the traditional literature of science and engineering and require use of USPTO (<https://www.uspto.gov/patents-application-process/search-patents>) and third-party online databases such as Google Patents (<https://www.google.com/?tbs=pts>), Espacenet (<https://worldwide.espacenet.com/>), and FreePatentsOnline (<http://www.freepatentsonline.com/>), which fall outside of the usual definition of standard research databases.

As librarians at universities without PTRCs may not receive regular training in the area of intellectual property, they may find themselves at a disadvantage when it comes to assisting students and faculty with IP-related research or informing students about the value of intellectual property in specific disciplines. Librarians at universities with PTRCs may see this as an opportunity for expanding their outreach by forming partnerships with librarians at non-PTRC universities.

The need for patent information literacy in academia has been well established. The literature includes a discussion of the benefits and necessity of incorporating patent information literacy into the undergraduate curriculum and some of the tools and methods being used. Baldwin (2008) lists five tips for including patent information in library instruction for STEM courses. Reinman (2013) outlines the benefits to science, business, and engineering students, and provides sample patent searching exercises. MacMillan and Thuna (2010) and MacMillan (2005) articulate the value of patent literature to life and health sciences students, and provide case studies about incorporating patent information into library instruction for biology classes. Church and Carpenter (2000) construct a model for introducing patent searching to students in biology and biotechnology courses. Garris (2001) argues that patent information literacy is essential to the engineering design curriculum and provides a case study for exposing engineering students to

patents. Engineering librarians regularly incorporate patent information into undergraduate library instruction (Roberts and Bhatt 2007; Morrow 2010; Strife et al. 2012, Phillips and Zwicky, 2017). Reinman (2011) describes ways to integrate patent searching into the scholarly literature review process, using a combination of freely available patent databases and commonly used academic subscription databases. Mok et al. (2010) conducted a conjoint analysis to derive the preferred pathway and educational conditions for scaffolding intellectual property education into a degree program.

Opportunities exist online for librarians to gain an understanding of intellectual property and patent research through webliographies and tutorials, including Meier (2015), Shackle (2009), and Kawakami (1998). There is even a six-week online course, Patent Searching for Librarians, that may be taken for continuing professional education credit (White 2017).

Unsurprisingly, the majority of the above-mentioned resources were written or created by seasoned PTRC librarians. Sneed (2000) gives an overview of the unique training opportunities provided by the USPTO to librarians at designated PTRCs through annual training seminars and a fellowship program. Harwell (1996) lists the myriad ways that PTRC librarians conduct outreach to their communities, including providing “Lectures, demonstrations, or other instruction given to students enrolled in courses or labs.” Neither Harwell’s study, nor any others, have captured data about PTRC librarians conducting lectures, demonstrations, or other instruction to other librarians or students outside their own institutions. We can see that there is opportunity for PTRC librarians to connect with colleagues at non-PTRC academic libraries to share knowledge about imbedding patent information instruction into their programs.

The partnership program described here sought to partner PTRC librarians together with engineering librarians at non-PTRC academic libraries for training and continued contact, and to establish a nationwide mentoring and learning network. This has not been considered in a methodical, systematic way by the USPTO or the Patent and Trademark Resource Center Association. The results of this study may provide the bases for such a partnership program, and may be expanded beyond partnerships with engineering librarians into business, the arts and the sciences. Li (2009) suggests a systematic approach for identifying target academic departments at any given university for promoting these partnerships. Blau (2010) likewise suggests a

systematic approach to custom-tailored marketing for adding patent information instruction to specific target departments.

The goals of this study are to 1) determine if patent information is being incorporated into instruction for students and faculty in schools without a PTRC; 2) determine how engineering librarians at non-PTRC schools are being prepared for patent and IP instruction; 3) formalize partnerships between PTRC-bearing and non-PTRC academic libraries in order to collaborate in the areas of patents and IP research; 4) encourage the use of appropriate search tools and develop a foundation to learn the best methods for preliminary patent research; 5) evaluate outreach and training practices within these partnerships; and 6) derive a set of minimum best-practices for PTRCs wishing to form similar partnerships.

The investigators anticipated that participating librarians at non-PTRC schools who already provide high levels of instruction in patents would need fewer interactions with PTRCs, but would still benefit from their partnership by becoming aware of services provided by PTRCs and by filling gaps in their existing knowledge. Furthermore, we anticipated that participating librarians at non-PTRC schools who provide little or no instruction in patents would face larger barriers to incorporating patent information into their instruction, and PTRCs would provide more interventions to assist them. In addition to identifying best practices, we will provide analysis of interventions for both types, those that provide little or no patent instruction, and those that already provide high levels of patent instruction.

Method

A major goal of this study was to partner academic librarians who are PTRC representatives with academic librarians at universities that do not have PTRCs, furthering patents and IP instruction and outreach at non-PTRC universities. In order to keep the scope of the study manageable, we endeavored to work specifically with engineering librarians, pairing an academic library PTRC representative with another engineering librarian within geographic proximity.

In the fall of 2015 we distributed a 16-question survey to engineering librarians at universities nationwide, inquiring about patents and IP basics in their instruction programs on their campuses. The final question in the survey asked if the respondent would like to be partnered

with a PTRC librarian for further development of their patents and IP instruction programs. Thirty-three out of a total of 47 respondents indicated interest in participating in this pilot. (See Appendix A for the text of the outreach email and Appendix B for the actual survey questions.)

With the approval of the Patent and Trademark Resource Center Program Office at the USPTO, in the spring of 2016 an email was sent to the Patent and Trademark Resource Centers listserv (PTRCA-L), describing the project and stating that PTRCs closest to the respondents geographically would receive an email with information about their partner library (see Appendix C). We received many affirmative replies from PTRC representatives about this project.

We designed the partnerships using the map on the USPTO website showing the PTRC locations by state (PTRC 2017). Noting each respondent's location, we created a match by determining the academic PTRC nearest to their university. This posed some challenges, as a single PTRC often mapped to several interested universities, based only on its location. In cases such as these, the next-closest PTRC had to be selected. Most partnerships were not within driving distance.

We determined to include only academic library PTRCs, because they would more easily understand the language and needs of the academic environment, already have some suitable materials and resources for sharing, and because outreach would be more straightforward than using public library PTRCs, which tend to have a completely different mission, different user demographics, and less access to the instructional tools used in university settings. We made an exception for one PTRC representative working in a state library who had formerly worked in academia.

Once the participating libraries were matched, emails were sent to both the PTRC library (see Appendix D) and the partner library (see Appendix E). The PTRC received their partner's contact information and were asked to contact them by phone. PTRCs were asked to create their own outreach programs and resources, and to establish their own collaboration times and schedule. After one academic year they were to report back on their efforts and results, and each team would complete a self-assessment of the outcomes, benefits, and challenges, in order to determine best practices for continued outreach.

Most PTRC librarians were very enthusiastic and eager to begin this project. As they initiated their contact with their partner libraries, most of the responses received were positive. Several of the respondents, however, had changed jobs or stated that they were already working with IP on their campuses. These matches were eliminated. If the contact could not be reached and was from outside the engineering field, for example library directors or public health librarians, these were also not included. We also received several responses from the email contact stating that they did not recall responding to the original survey, or they were no longer interested. These potential partners were removed as well.

By this point, 20 potential matches had been identified. The PTRC libraries continued to make purposeful outreach to their partner libraries. With more personalized contact, additional results about the potential partnerships became known. For example, several partners were interested in just having a contact for IP information/assistance and said they would be in touch with their PTRC if they had questions. For those from whom there was still no response, the authors attempted to make contact to establish a partnership. If this proved unsuccessful, these respondents were also excluded from the project.

At the end of this process, there were nine active partnerships in place. Collaborators were to report back about what they did over the course of the 2016-17 academic year: what resources they used, what worked well, what did not work well, etc. This could include site visits and on-site training for engineering librarians as well as on-site patent search training for engineering students, or any other type of collaboration where the PTRC representative is providing assistance to the engineering librarian at the non-PTRC library. Three of the nine partnerships did not return any useful data, not having the time to devote to the partnership due to other commitments. In the end, six partnerships returned useful data. The reports included how PTRC representatives made contact, materials that they shared, time involved, what they thought was successful, benefits and challenges, suggestions and recommendations.

Results

The following are summaries of the six partnerships that provided useful reports. In these summaries, “partner libraries” are the academic library partners that do not headquarter a PTRC,

and “PTRC libraries” are the PTRC-side of the partnerships. All partner libraries that participated in this study expressed their interest in collaborating with colleagues at PTRCs to learn the basics of intellectual property (IP) and preliminary patent research. A comparison chart of individual outreach and instruction practices provides an overview of these partnerships (Table 1).

Table 1. PTRC Partnerships Comparison

| | Partnership 1 | Partnership 2 | Partnership 3 | Partnership 4 | Partnership 5 | Partnership 6 |
|---|---------------|---------------|---------------|---------------|---------------|---------------|
| Prior patent search instruction activity at non-PTRC library | High | Low | High | Low | High | Low |
| Communicate by phone and/or teleconference | No | Yes | Yes | Yes | Yes | Yes |
| Total number of phone calls/teleconferences | NA | 1 | 1 | 9 | 1 | 2 |
| In-person training for librarians | No | Yes | Yes | No | No | Yes |
| Librarian training includes hands-on patent searching component | NA | Yes | Yes | NA | NA | No |
| In-person training for students | No | Yes | No | No | No | Yes |
| Student training includes hands-on patent searching component | NA | Yes | NA | NA | NA | No |
| Total Number of in-person meetings and training sessions | NA | 2 | 1 | NA | NA | 1 |
| Help with a specific engineering assignment | Yes | No | No | No | No | No |
| Referred to official USPTO/PTRC resources | Yes | Yes | Yes | Yes | Yes | Yes |
| Referred to non-USPTO/PTRC resources | Yes | Yes | Yes | Yes | Yes | Yes |
| PTRC provided reference assistance and/or follow-up consultations | No | Yes | Yes | Yes | Yes | Yes |
| Total number of reference questions and follow-up consultations | NA | 2 | 2 | ND | 1 | 1 |
| Stated intent to continue partnership | Yes | Yes | Yes | *No | *No | *No |

* The PTRC librarian in Partnership 4 was preparing for retirement and did not know if the partnership would continue. The PTRC librarians in Partnerships 5 and 6 moved to new jobs during the partnership period and would not be available to continue their partnerships after the study trial.

Partnership 1

Partner library #1 is an example of an engineering library that is already highly engaged with IP instruction. Two librarians at partner library #1 completed our survey, one of whom provided the following details about their IP instruction. It was encouraging to have two librarians from the same institution both (and possibly without each other's knowledge) voice their desire to work with us.

Partner library #1 offers workshops on finding and using IP including patents. Librarians there engage in self-training, webinars, and have previous training from other institutions. These librarians were aware of the PTRC program before taking our survey. Librarians and faculty collaboratively teach basic IP concepts, including trademarks and copyright.

Engineering faculty at partner library #1's institution find patents and patent searching relevant (and as we later discovered, assign projects requiring patent research). Patent searching is included in library instruction; instructors explain different types of patents and explore citations to find other relevant patents. They utilize USPTO databases and Google Patents. Searching is done primarily by classification number because "there are limitations to keyword as patents are not obviously described in their titles, and natural language is not the language of inventors or engineers."

Since partner library #1 is already highly engaged with IP instruction, we anticipated that this partnership would require minimal effort on the behalf of the PTRC collaborator, and that librarians at partner library #1 would need little help from a PTRC partner.

The second respondent, the one who did not provide much detail in the survey, became our primary collaborator at partner library #1. The partner library #1 librarian's original interest in the pilot and intellectual property resources stemmed from a class assignment where she used basic patent research instruction: find a patent, design improvements, and then research to make sure that no one else had a patent with that improvement. However, that class is no longer using that assignment, at least for this academic year, providing an example of how curriculum or syllabus changes can be challenging for library and information instruction outreach.

Engineering courses are precisely programmed by departments due to ABET requirements and curricular pressures, especially in an academic quarter system.

The collaborators plan to continue conversations over the summer of 2017. There is still interest in learning more about PTRC resources and how to tap into online patent and intellectual property resources, as well as any tools that the PTRC librarian can recommend or share that will improve their ability to assist with future assignments or research questions. In addition to the PTRC librarian's PTRC LibGuide, she shared a link to an IP LibGuide created for a course in the institution's MLIS program.

Both institutions in this partnership are moving to establish strong entrepreneurship programs on their respective campuses. The PTRC librarian is currently developing a third LibGuide for that initiative that will again emphasize the role that patents and IP play in the entrepreneurship cycle. Once completed, the PTRC librarian will share that resource with the librarians at partner library #1.

PTRC librarian #1 stated that the primary challenge for this collaboration has been time, but sees this as just a starting point – the beginning of the conversation. A great benefit is establishing connections with other academic institutions in the region that have similar interests and service needs. She might try to meet in person or virtually with partner library #1, to enable more brainstorming and sharing.

Partnership 2

The survey respondent from Partner library #2 indicated that their library does not provide instruction in patents or trademarks, and was not aware of faculty who found patents or patent searching relevant to their curriculum. The respondent had not heard of the PTRC program before completing the survey.

Since partner library #2 is not engaged with IP instruction, we anticipated that this partnership would require a much greater effort on the behalf of the PTRC collaborator, and that librarians at partner library #2 would most benefit from the help of a PTRC partner. The PTRC partner in this case was from a state library, not an academic library. This program started with a face-to-

face meeting at partner library #2. The idea for this collaboration had been percolating before the intervention of our study solicitation, and just happened to be perfect timing.

In the fall of 2016, PTRC librarian #2 conducted an hour-long training session on IP basics and patent searching for technical information that was open to all engineering students, faculty and staff at partner library #2's institution. The training was conducted in one of the Engineering Department's computer labs, enabling participants the ability to conduct hands-on exercises.

Attendee response was quite positive and resulted in several follow-up interactions with participants who had additional questions. This was the first time that partner library #2 and the State Library's PTRC collaborated on a training program. Recent budget and staff cuts across the state's libraries have increased the awareness and necessity of seeking ways that librarians across the state can support each other's programs, thus increasing service to citizens.

As a result of this presentation, several students subsequently contacted PTRC library #2 for further patent searching help. PTRC librarian #2 stated that this was a great opportunity to create an ongoing partnership with the STEM Liaison Librarian at partner library #2 for future trainings. Annual fall semester training sessions are being scheduled. In addition, PTRC librarian #2 provided suggestions for partner librarian #2's LibGuide on patents. PTRC librarian #2 has had one follow-up reference question since the initial presentation from one of the engineering students who attended.

Partnership 3

Partner library #3 is another example of an engineering library that is already highly engaged with IP instruction. Their librarians learn by trial and error for the most part. They were not aware of the PTRC program before taking our survey. Engineering faculty there find patents and patent searching relevant. Patent searching is included in library instruction primarily through hands-on activities in engineering classes. They have had students find a specific patent, search for patents on a particular topic, and evaluate the sources found in the patent literature. Librarians also provide instruction on trademarks and copyright.

Since partner library #3 is already highly engaged with patents and IP instruction, we anticipated that this partnership would require minimal effort from the PTRC collaborator, and that librarians at partner library #3 would need little help from a PTRC partner.

PTRC librarian #3 was invited to meet with six librarians from partner library #3, representing Engineering, Science, Business, Art, and Distributed Learning. Although PTRC librarian #3's presentation was tailored more to Business and Science, the librarians associated with Art and Distributed Learning had many copyright and fair use questions. The presentation covered business, engineering, and science topics related to patents, as well as the PTRC network and introductory patent searching instruction that utilized the seven-step process with [Cooperative Patent Classification \(CPC\)](#) for umbrellas. PTRC librarian #3 demonstrated Espacenet for advanced patent searching; and [PatentScope \(WIPO\)](#) and PubWEST (patent search tool at USPTO and PTRCs) for patent landscape competitive data.

Training materials included a customized slideshow covering patent searching CPC basics, and how to locate patent landscape competitive data, a customized Intellectual Property Awareness Center brochure and USPTO patent and trademark basics booklets.

There was only an initial planning phone conference to assist in PTRC librarian #3's preparation for librarian training session at partner library #3. No other phone consultations or reference interviews were requested. An engineering student from partner library #3's institution visited PTRC library #3 twice for PubEAST searching. This partnership is expected to continue.

Partnership 4

The survey respondent from Partner Library #4 indicated that they do not provide instruction in patents or trademarks, and was not aware of faculty who found patents or patent searching relevant to their curriculum. The respondent had not heard of the PTRC program before completing the survey.

This partnership comprised nine monthly teleconferences between partner librarian #4 and PTRC librarian #4. In each they discussed timely issues, including copyright and engineering students' use of images, institutional repositories, and other topics. PTRC librarian #4 shared a draft scope

statement he wrote for his library's IP service, and they discussed services provided by the San Jose USPTO Regional Office. They didn't discuss patents or trademarks in depth, but each topic they discussed had strong IP elements.

Training materials shared by the PTRC librarian #4 for the purposes of this partnership included a LibGuide, the draft scope statement, and a slide presentation for partner librarian #4 to use in her instruction sessions.

Both collaborators found their discussions useful, but because of PTRC librarian #4's pending retirement, this partnership will not continue, and both collaborators agreed that networking with programs offered by the San Jose USPTO Regional Office may be more suitable for partner librarian #4, since the regional office is closer to her geographically.

Partnership 5

Partner library #5 is an example of an engineering library that is already highly engaged with IP instruction. Engineering faculty there find patents and patent searching relevant. Patent searching is included in library instruction through their Chemical Information Research course (taught in the Chemistry department by the Chemical Sciences Librarian), and in some one-shot lectures for various engineering courses. In the Chemistry course the librarian describes the differences between patents and other types of intellectual property; what makes an invention patentable; the information content of a patent document and its uses (legal, competitive intelligence, technical information); and how to search for patents. Librarians also provide instruction in trademarks and copyright. Prior to taking the survey, the respondent had not heard of the PTRC program.

Librarians themselves at partner library #5 learn from workshops and support materials provided by vendors (e.g. Chemical Abstracts Service, Thomson Reuters).

USPTO, Google Patents, Espacenet, SciFinder, and Derwent Innovations Index are all utilized; keyword searching is mostly used for mechanical and electrical patents, but chemical nomenclature, structures and Markush structures are used for searching chemical patents. They do not, however, rely on the USPTO website for classification based-searching. The survey respondent noted that "Obviously, keyword searches are limited by the nomenclature used by

patent writers, which may be very different from that commonly used by researchers. Chemical patent searching with keywords alone is especially futile.” Partner librarian #5 had many years of experience and asked very specific questions regarding patents and available resources. He was interested in the types of programming offered by PTRC academic libraries. PTRC librarian #5 responded with links to the PTRC pages, LibGuides from various PTRCs, Trademark Videos from the USPTO website, and the Inventor & Entrepreneur Resources on the USPTO website. Both parties stated that they benefited from this partnership.

Partnership 6

The survey respondent from Partner library #6 indicated that their library does provide instruction in patents but not trademarks or copyright; however, the respondent didn't provide detailed information about this instruction. The respondent was not aware of faculty who found patents or patent searching relevant to their curriculum. The respondent had heard of the PTRC program before completing the survey.

Partner librarian #6 was not the same person who answered the initial survey, but rather a new engineering librarian with many questions regarding patent prosecution, online resources, and USPTO resources. Partner librarian #6 was interested in the types of programming offered by PTRC academic libraries. PTRC librarian #6 responded via email and telephone calls, and sent a box of booklets: *General Information Concerning Patents*, *Guide to Filing a Utility Patent*, *Guide to Filing a Provisional Patent*, and *Protecting Your Trademark*.

PTRC librarian #6 helped organize a visit by the director of the San Jose Regional USPTO office to present a “Patents 101” program at partner library #6.

This partnership afforded an opportunity for PTRC librarian #6 to share knowledge and resources gleaned from PTRC Program annual training, day-to-day consultations with PTRC customers, and PTRCA networking with library colleagues that don't have as much accessibility to IP resources and training.

Discussion

As listed in the introduction, the goals of this study were to 1) determine if patent information is being incorporated into instruction for students and faculty in schools without a PTRC; 2) determine how engineering librarians at non-PTRC schools are being prepared for patent and IP instruction; 3) formalize partnerships between PTRC-bearing and non-PTRC academic libraries in order to collaborate in the areas of patents and IP research; 4) encourage the use of appropriate search tools and develop a foundation to learn the best methods for preliminary patent research; 5) evaluate outreach and training practices within these partnerships; and 6) derive a set of minimal best-practices for PTRCs wishing to form similar partnerships. Goals 1 and 2 were accomplished via our initial survey and discussed above. Goals 3 and 4 were accomplished during the partnerships, also discussed above. The following represents a general evaluation of outreach and training practices conducted by PTRC librarians with their partners (goal 5), and followed by a list of best practices for forming similar partnerships in the future (goal 6). We conclude with lessons learned and next steps.

Patent information instruction in non-PTRC university settings is sporadic and variable. Faculty see the teaching of patents as important to the curriculum, but librarians acquire relevant knowledge in many different ways. Over half of the respondents to the initial survey indicated that they were not aware of the PTRC program. Patent searching is mostly keyword-based. Some librarians use the classification systems and the USPTO website, but the quality of instruction on these tools is yet to be determined.

All six of the successful partnerships indicated that they used email to communicate. Five of the six also used phone calls and/or teleconferencing to communicate. One of the partnerships established regularly scheduled teleconferences to set aside time for training.

All six PTRC representatives indicated that they referred their partner librarian to both official and non-official USPTO/PTRC resources for patents and IP instruction and for patent searching. These included but were not limited to customized training materials such as PowerPoint presentations and handouts, both USPTO and non-USPTO databases such as Espacenet, Google

Patents, Free Patents Online, PubWEST, PubEAST, and PatFT, and additional training materials and resources located on the PTRCA website and various library LibGuides.

As expected and intended, partner libraries that were not already providing patents and IP instruction to their engineering programs (or that were providing minimal amounts) received the largest amount of assistance, time, and resources from their PTRC partners. In one case, the partners scheduled nine teleconferences in lieu of site visits. Another conducted on-site training to both librarians and engineering students, and the third helped organize patent instruction from a USPTO official that was open to both librarians and engineering students.

For partner libraries that were already providing a higher level of patent and IP instruction to their engineering programs, we found that their librarians were interested in more specific problems surrounding patents and IP, and in one case they requested help designing instruction for a specific assignment. In these interactions, the PTRC partners say they also benefited and learned more from their respective non-PTRC partners, especially in the case where the partner librarian also taught a course on chemical information.

Best Practices

For other PTRC representatives who wish to provide outreach and instruction to other institutions within their geographic proximity, we offer the following advice for best practices.

1. Begin by using email and then a follow up phone call. In your earliest correspondence, find out how much, if any, patent and IP instruction your potential partner already provides their students. This will help you determine whether the potential partner library will require a low or high level of mediation on your behalf, and help you plan accordingly.
2. Take into account how far away your potential partner is. You may decide early on that scheduled teleconferencing is more suitable, especially if the travel would require more than half a day of driving. There are many free products available that allow teaching at a distance, including Zoom, Google Hangouts, and Skype.
3. There is no universal recommendation for which resources to utilize in your outreach and instruction. We advise teaching to the need and using what you're already familiar with.

For partner librarians who have little or no knowledge of patents and IP, utilize basic resources and the easiest-to-learn databases. Google Patents and Espacenet tend to be the predominant go-to databases and are fairly uncomplicated to teach and learn. A discussion of patent classification is still required however. The PTRCA website has a wide range of teaching resources for all levels, but this too requires explanation and guidance.

4. For partner librarians who have more knowledge and a lower barrier to entry, we recommend focusing the efforts more directly on Cooperative Patent Classification (CPC) searching, an international system that the United States is also now using as of 2016. You may be able to familiarize even the most experienced non-PTRC patent searchers with this system. The U.S. Classification system is no longer being used, but it is still important to review and understand. It may be taught in conjunction with CPC so that searchers may use one or both systems to find relevant patents. Also ask if they routinely provide instruction for specific engineering assignments and offer suggestions for improvement. For example, what can be done satisfactorily in a one-hour session?
5. Strive to schedule at least one visit for on-site, hands-on training for conducting patent research. Alternately, work to organize a visit by a regional USPTO official if a commute is not possible. For the less-experienced partner librarians this is highly recommended, but even seasoned partner librarians will find this very helpful. The regional offices are likely to have time, travel funds, and expert trainers who incorporate this type of contact into their outreach.
6. As mentioned, we endeavored to work specifically with engineering librarians. We believe however that the best practices are suitable for librarians in any subject, as well as for non-academic libraries. This could potentially be expanded to within state and public libraries, and involve all PTRCs.

Lessons Learned

The initial survey was distributed in the fall of 2015 and the first contacts were made in the spring of 2016. In hindsight, the time lag between the survey and the initial outreach was too long. As noted above, too many changes can occur in this time period affecting the response and outcome.

The survey (Appendix D) should have been attached when the responders were initially contacted, allowing them to recall their response and initial interest. A number of respondents could not recall the survey or were no longer interested in participating.

More personal contact would have been beneficial with both the PTRC representatives and the responders to the survey. We primarily used email; we should have followed up each contact with a phone call.

With PTRCs, all appeared to be enthusiastic about participating in this project and we considered all as equal, but we may have considered additional factors, including:

- How much time they had to commit to this project
- How long they had been with their PTRC/how much experience with IP they had
- How much long-distance contact their particular settings or universities were equipped to include

Additional information should have been gathered from those who responded to the survey initially but then later were no longer interested. This happened in several cases, and we were surprised that the initial response to the survey was so different from the follow-up contact.

We also should have gathered more information from the survey respondents who stated that they were already working with patents at their institutions. For example, where or from whom did they learn this information? Were they working through preliminary patent research correctly? Were they using CPC or U.S. classifications systems for more complete research? Would they reach out to PTRCs in the future?

Next Steps

This project was an approach to connect information professionals at Patent and Trademark Resource Centers with library professionals in engineering or similar curriculums to advance the knowledge of intellectual property in instruction and outreach on college and university campuses. PTRC and non-PTRC libraries were matched based on geography, resulting in six successful partnerships.

From the responses to the survey and from the reports from the partnerships, there is evidence that partnering PTRC libraries with librarians at non-PTRC universities can result in the increased awareness of IP, searching of patents more comprehensively using the appropriate search tools, a more uniform approach to the teaching of IP and patent searching, and a greater awareness of the PTRC program.

Librarians can continue and expand this collaboration:

- PTRCs can reach out to academic and public libraries within their states; some of these collaborations already exist.
- Expand collaborations to include disciplines beyond engineering, such as business and entrepreneurship, any design classes on campus, tech transfer, and other IP offices on campuses.
- Expand PTRC collaborations to include public libraries.
- Encourage the Patent and Trademark Resource Center Program Office at the USPTO to develop a program matching PTRC libraries with other libraries in their region to carry out similar collaborations, and that the Office promotes that librarians and staff from universities and libraries in close proximity attend the nationwide programming that the Office offers at PTRC libraries.

Patent and Trademark Resource Centers are important contacts for libraries nationwide. It is our hope that the partnerships established through this pilot will continue to grow and that the other contacts made will also continue and benefit those libraries involved.

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Judy Pasek, University of Wyoming
Christie Peters, University of Kentucky
Patrick Ragains, University of Nevada, Reno
John Schlipp, Northern Kentucky University

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Appendix A: Survey Invitation Email

Dear Librarians:

Patent and Trademark Resource Centers (PTRCs), organized by the U.S. Patent and Trademark Office, are located in university and public libraries throughout the United States. PTRC librarians receive training in the area of patents and trademarks from the USPTO. Overlapping strongly into the STEM disciplines, patents relay the development of new technologies and serve as a principal source of intellectual property. Patents are a rich source of technical information not comprehensively indexed in the traditional literature of science and engineering.

Suzanne Reinman (Oklahoma State University) and I are conducting a survey to assess the needs of academic, non-PTRC libraries in providing instruction on patents to their clientele. This survey is in preparation of designing a pilot project that will match PTRC Libraries with non-PTRC libraries to assist with outreach and instruction regarding the patent literature.

If you are a librarian at an academic library, and your library does NOT headquarter a PTRC, please take a few minutes to complete our survey.

[Survey URL Removed]

We thank you in advance.

Appendix B: Intellectual Property (IP) Services at University Libraries [Survey]

Dear Engineering and STEM Librarians,

If you would please take 10-15 minutes to answer the following questions we would be very appreciative.

Patent and Trademark Resource Centers (PTRCs), organized by the U.S. Patent and Trademark Office, are located in university libraries throughout the United States. PTRC librarians receive training in the area of patents, trademarks, and copyright from the USPTO. Patents are a rich source of technical information not comprehensively indexed in the traditional literature of science and engineering. Overlapping strongly into the STEM disciplines, patents relay the development of new technologies and serve as a principal source of intellectual property.

This study is to determine:

- a) If in the university environment, patent information is being incorporated into outreach and instructional sessions for students and faculty in schools without a PTRC,
- b) And/or how engineering librarians and other information specialists in non-PTRC schools are being equipped for patent/intellectual property instruction.

A goal of this study is to potentially partner PTRC and non-PTRC schools in order to collaborate in the area of intellectual property basics and research.

Information will be kept confidential. If you have any questions about this survey, please contact Suzanne Reinman at suzanne.reinman@okstate.edu.

Questions:

1. How many students are at your institution?
2. Are patents included in your library instruction program?
3. Do faculty at your institution see the teaching of patents and patent searching as relevant to the curriculum?
4. How are patents incorporated into your library's instruction programs?
5. How do the librarians at your institution learn about patents and how to search them?
6. Please describe briefly the content of the patent instruction provided by your institution.
7. Which websites are being utilized at your library for searching patents?
8. Do librarians at your institution search for patents primarily by keyword? Are there any limitations to this search strategy? If "yes" what are they?
9. Classification-based searching is required for good preliminary patent searching. Do librarians at your institution explain/teach this skill?

10. Do librarians at your institution rely on the USPTO website for classification based-searching?
11. Do library patrons learn about trademarks or copyright at your institution?
12. Is there collaboration with other library faculty or staff to teach basic intellectual property concepts?
13. Does your library headquarter a Patent and Trademark Resource Center?
14. Were you aware of the PTRC Program before taking this survey?
15. Would you be interested in collaborating with colleagues at other institutions that have a Patent and Trademark Resource Center to learn the basics of IP and preliminary patent research?
16. Please provide your email address and/or phone number so that we may follow up with you.

[Appendix C: Solicitation Email to All PTRC Representatives](#)

Dear PTRCA,

Hoping it has been a good summer!

Recently as a librarian at a PTRC I was asked to assist librarians at another university with basics of IP and preliminary patent research. Martin has done outreach teaching classes on patents virtually. This led to the idea of possibly partnering universities with a PTRC to universities without a PTRC to incorporate more widely this knowledge that is so important to students and faculty at research institutions.

Martin and I sent out a survey on several engineering listservs asking librarians at universities without a PTRC if they would be interested in partnering with a school with a PTRC, so that they could learn some of the basic concepts and incorporate these at their own institutions.

We had thirty three responses from schools who were interested, so we matched geographically the respondents to a PTRC at a university nearest to them.

We are in the process of sending emails with the contact information to the PTRCs and will be following up with a phone call, with the hope that they will be interested in the partnership with the school that is close to them. The PTRC will be able to schedule their own collaboration times, and use their own programs and resources. There will be one academic year (fall and spring) to report back on their efforts and the results, and they will be a co-investigator in the project.

We have checked with Rob Berry and Chris Kitchens at the PTRC progra and this outreach has been approved by them.

With appreciation everyone for your consideration and help with this. Hopefully we may be able to expand it to other PTRCs in the near future!

With kind regards,

Appendix D: Email Template to PTRC RepresentativeDear [PTRC Librarian],

We recently sent out the survey *Intellectual Property (IP) Services at University Libraries* to several STEM librarian email lists to determine the interest of librarians at universities that do not have a Patent and Trademark Resource Center in learning more about IP and preliminary patent research to incorporate into instructional sessions on their campuses.

Thirty three librarians responded who were interested in partnering with colleagues at institutions that have a PTRC to better instruct their students in the basics of intellectual property and preliminary patent research.

- In this pilot project, we have matched geographically the respondents with the PTRC closest to them. The [Name of Partner Institution] is one of the interested universities and is closest to your PTRC at the [Name of PTRC's Institution].
- We hope that you will consider working with [Name of Engineering Librarian at Partner Institution] using your own programs and resources (LibGuides, PowerPoint slides, USPTO resources, site visits or online training, etc.) to help [him/her] increase [him/her] outreach and instruction to students in the basics of intellectual property and preliminary patent research.
- You will be able to schedule your own collaboration times, and there will be one academic year (fall and spring) to report back on your efforts and the results. You will be acknowledged in this study, the outcome of which we hope to publish next year.
- At the end of the year, we will distribute a self-assessment to each team to determine the outcomes, benefits, and challenges to determine best practices for continued outreach.

[Name of Engineering Librarian at Partner Institution] contact information: [email address and phone number of Engineering Librarian at Partner Institution]. We will be following up with you by phone in the next week or so and will be reaching out to [Name of Engineering Librarian at Partner Institution] as well.

Thank you so much for your consideration with this project.

With kind regards,

Appendix E: Email Template to Non-PTRC Partner Librarian

We recently sent out a survey on several engineering Listservs asking librarians if they would be interested in partnering with a librarian at a school with a Patent and Trademark Resource Center (PTRC), so that they could cover some of the basics of intellectual property and preliminary patent research and incorporate this at their own institutions.

We had thirty three responses from schools who were interested, so we matched geographically the respondents to a university with a PTRC nearest to them.

The [Name of PTRC's Institution] is the PTRC closest to you. [PTRC Librarian's Name] is the patent librarian, and she/he will be in touch with you. You will be able to schedule your own collaboration times, using some of [PTRC Librarian's Name]'s programs and resources, by email, phone, etc. [PTRC Librarian's Name] will report back at the end of this academic year on the outcome and benefits.

If you have any questions please let me know. We hope that you will find this useful and you will be able to share what you learn as this knowledge is so important to students and faculty at research institutions.

With kind regards,