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Undergraduate Research Day at Penn State Wilkes-Barre

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This article describes the first official Undergraduate Research Day at Penn State Wilkes-Barre, a small campus with approximately 550 undergraduate students and 8 four-year degree programs. In 2015, an informal planning committee, consisting of two librarians and two faculty members, embarked on a project to turn what had been an informal course assignment into a campus-wide research event. By remaining flexible, engaged, and open to collaboration, the committee made Undergraduate Research Day in April 2015 a success, and plans are underway to hold this event in subsequent years. The event energized and motivated students, faculty, and staff on campus and paved the way toward a unified organizational identity on campus.

Introduction

Penn State Wilkes-Barre is one of the smallest of Penn State's 24 campuses and currently has approximately 550 undergraduate commuter students, 35 full-time faculty and instructors, and approximately 20 adjuncts. The campus offers eight baccalaureate four-year degree programs: administration of justice, business, corporate communication, electrical engineering technology, English, information sciences and technology, rehabilitation and human services, and surveying engineering. There are also several associate's degree programs, however, many students take advantage of Penn State's 2+2 degree plan in which students spend the first two years of study at Penn State Wilkes-Barre and then transition to another Penn State campus for the remaining two years. Because of the small and mobile student body, students and faculty often have difficulty engaging academically with others outside the classroom.

At Penn State's University Park campus, the Office of Undergraduate Education hosts an annual Undergraduate Research Exhibition, which is open to all students, including those at the Commonwealth College

campuses. However, few of our students are willing or able to make the trip to attend, and we hoped to create a local exhibition that would bring together the local campus community.

Literature Review

Many universities showcase undergraduate research with events that may be campus-wide or limited to one or several departments or disciplines. At large universities, an entire department or center may be devoted to undergraduate research, and the library often appears as a collaborator or co-organizer. Yet, relatively little literature discusses how to conduct such events, how libraries might be involved, or the benefits of such collaborations. Chan and Hebblethwaite (2014) described one library's outreach to science faculty and students as providing a location to display the research contributions of science faculty and students within the library, however, their article focused on the library as a space rather than on the contributions of librarians as collaborators and instructors.

Altintas, Suer, Sari, and Ulker (2014) are only the most recent of many to discuss the use of poster projects in general as motivational and learning tools in a specific discipline, in their case managerial accounting courses. Not only do students seem to prefer poster projects to term papers, they feel that attending poster sessions contributes to their learning in a positive way. Others, such as Prichard and Ferreira (2014), have written about the effects of poster presentations on learners. Specifically, Prichard and Ferreira wrote about how poster presentations benefit English as a Second Language (ESL) students and that, by repeating information during the poster sessions, it enhanced their memory and recall of topics.

Research also exists on library awards for research. Tchangalova and Cossard (2015) demonstrated the positive impact of the Library Award for Undergraduate Research at the University of Maryland by describing a partnership that began in 2011 between the University of Maryland Libraries, the Maryland Center for Undergraduate Research, and Maryland's College of Information Studies. Ultimately, they merged the ceremony for the library award with the campus's Undergraduate Research Day, and this article provides a detailed roadmap for institutions to start their own program.

In 2003, Lane, Cadd, and Pollard praised events at William Jewell College in Missouri, which show the "positive effect an undergraduate colloquium can have on organizational identification. A campus-wide undergraduate research colloquium communicates to campus members the importance of the academic mission and the centrality of the undergraduate learning experience" (p. 106). Strategic elements are key to a successful event and encompass aspects such as values, symbols, heroes, and rituals. The positive effect described by Lane et al. at William Jewell College is analogous to the effect at Penn State Wilkes-Barre, in that, it appears to have "both increased the amount of undergraduate research activity on campus and revitalized the academic vision of the institution" (p. 107).

Other researchers have explored the relationship between academic libraries and undergraduate student retention. Hagel, Horn, Owen, and Currie (2012), studying academic libraries in Australia, recognized that "the quality of a library's collaborations with other institutional support areas may be influential in retention" and that "retention may be enhanced if students are provided with integrated and seamless support through collaborations between a library and other university functions and services" (p. 219). Murray (2014) studied the role of academic libraries in affecting student engagement and retention by examining how academic library deans and directors perceive the alignment between library services and resources with 10 high-impact practices (HIPs). HIPs go beyond the traditional uses of a library within the library space and include common intellectual experiences, collaborative assignments and projects, and undergraduate research. Murray notes, however, that the library profession has not yet developed adequate methods of assessing the success of this involvement.

What We Did

The first annual Undergraduate Research Day is an example of successful grassroots collaboration between librarians and faculty at a small campus. Six factors combined in spring 2015 at Penn State Wilkes-Barre that contributed to the success of the event. First, all of the organizers were relatively new to the campus, having mostly begun working there after 2010. Second, a new librarian began work on campus in 2015 with a charge to try new and innovative things to increase student engagement, and the existing library staff was willing and able to contribute. Third, the idea for the Undergraduate Research Day originated with the faculty, and through their enthusiasm, they were able to recruit and motivate many of their colleagues to participate. Fourth, many of the faculty were willing to give extra credit to students who participated in the event, and several made participation a class requirement. Fifth, the campus Technology Center owned an HP Designjet 500 42" plotter printer that was open for anyone to use. Lastly, the campus administration and the University Libraries joined in support of the endeavor, dividing costs and contributing awards for the event. Due to the flexibility of the organizers and the willingness to experiment and modify aspects of the event, the day was successful.

In late January 2015, a Penn State Wilkes-Barre biology professor approached two librarians to discuss instruction options for the upcoming semester. During that conversation, the professor mentioned she had held an informal poster session for her students the previous semester and had been speaking with an engineering professor about expanding it into something more formal in the late spring. The librarians embraced the idea and suggested that the library space might be an attractive venue for the event. Built in 2008, the Nesbitt Library is located on the second floor of the Abram Nesbitt III Academic Commons classroom building, and the space is modern and bright. They also volunteered to create a research guide and offer some training workshops. The motivating factor for the librarians was to encourage more people to visit Nesbitt Library and to demonstrate to faculty that we are effective collaborators. The faculty were motivated by the opportunity to provide students with experience conducting and presenting research. The team originally estimated that 15-20 students might participate.

By early February 2015, the librarians had created an attractive poster with Microsoft Word (Figure 1) and a draft of a website on Penn State's WordPress server. The website (sites.psu.edu/undergraduateresearchdaywb) served as a research guide, promotional tool, and place for logistical information about the event. Although many guides exist for how to create research posters, the aim here was to filter and simplify the information and to provide only a few links to the sites that we felt were most useful. We did not try or wish to be comprehensive.

The planning committee obtained a shared email address to use for Undergraduate Research Day for ease of communication, and the librarians prepared several web-based forms for students to submit poster proposals and files. Throughout the month of February the group gained formal support for the event. The librarians obtained support and permission to use funding from their operating budget, and the Director of Academic Affairs on the Wilkes-Barre campus formally encouraged all faculty to participate. The campus chancellor also provided his support by agreeing to speak and present the awards at the event.

The planning committee communicated primarily through email with several impromptu and short meetings throughout February and March. Students were asked to submit a proposal (basically an intent to participate) in early April to better estimate participation and to ensure that students could clearly define a research topic and abstract with enough time to create a poster. The librarians agreed to sort through the submissions and keep track of them. WordPress allowed us to export form submission data into a comma-separated values (CSV) file, which is easily manipulated in Microsoft Excel. We also decided to print posters for the students free-of-charge, using the printer in the Technology Center, because we felt it was more important for them to focus on researching and planning their poster rather than printing it, and we did not want anyone to feel discouraged due to technological or financial issues.

Original poster advertising Undergraduate Research Day. This poster was placed in prominent locations around campus and distributed via email to all faculty and staff

The date for Undergraduate Research Day was announced at a campus faculty senate meeting in February, and the Director of Academic Affairs emailed faculty and staff with encouragement. Several faculty members then contacted the librarians for more information. The two professors on the planning committee also heavily recruited their colleagues, mentioning the plans for the event at every opportunity. By March, faculty in English, math, and rehabilitation and human services had formally expressed intent to participate. One English professor made participation in Undergraduate Research Day a requirement for students in a course on technical writing. The librarians placed three full-size poster templates in prominent locations within the Nesbitt Library in order to give the students a sense of what we were asking them to produce. By the end of March, we estimated that up to 40 students might submit poster proposals.

The planning committee required the students to submit their final poster proposals via the web form by April 6. On that date, there was a spike in library foot traffic and several students requested help using the form and guidance on how to write their abstract. By the time submissions closed at 5:00pm, over 100 students had submitted 60 poster proposals (many of the posters were presented by groups rather than individuals). On April 8 and 9, the librarians held two lunchtime workshops with pizza and drinks to talk to interested students about poster research and design. The objectives were to review logistics for Undergraduate Research Day, have students gain experience using the poster template, discuss elements of effective poster design, and to review the process of converting research to a poster.

In preparation for this workshop, the librarians went through the exercise themselves. One created a poster handout that illustrated the "Dos and Don'ts" of poster design while the other used an online article (theoatmeal.com/blog/google_self_driving_car) that describes the benefits of Google's self-driving car as a starting point for conceiving and designing a poster (Figures 2 & 3). This process assisted the librarians in a number of ways. First, it enabled us to use the PowerPoint templates we had provided to the students and better understand how they worked. We had to modify them prior to the workshops due to some formatting issues discovered during the poster creation process. Second, it helped us think about what kinds of tips and tricks we wanted to emphasize for our group of students. There are a number of excellent websites, writing guides, and research guides available about effective poster design. All of the suggestions are useful, but some of them are very advanced and overly-detailed.
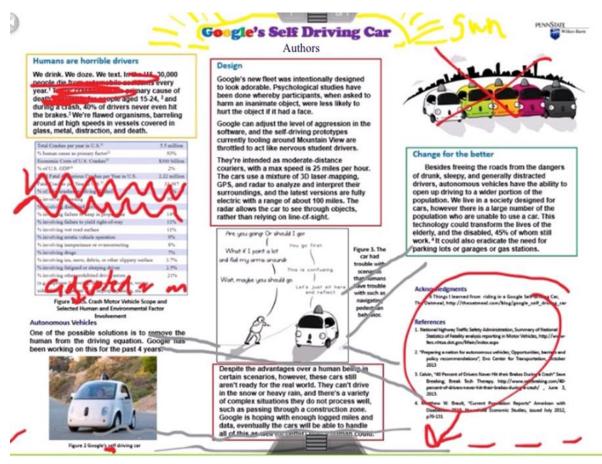

Figure 2

Draft of original "Google's Self-Driving Car" poster with markup that illustrates editorial decisions
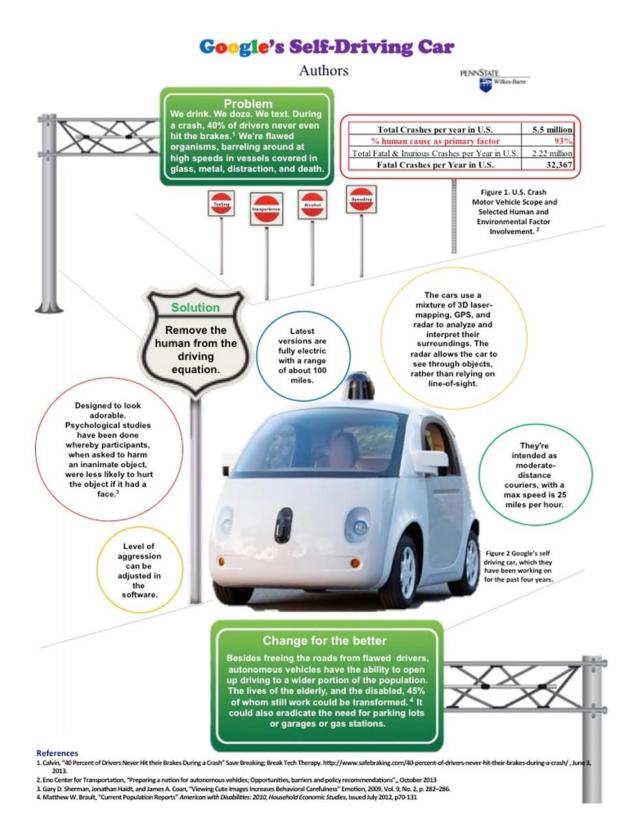
Figure 3

Final draft of "Google's Self-Driving Car" poster with portrait orientation and less text

We chose not to focus too heavily on things like using serif vs. non-serif fonts, and instead, only mentioned font size. Rather than go into excessive detail about image manipulation and resolution, we focused instead on showing students how to effectively limit searches in Flickr and Google Images to only return images that might be a suitable size to use in their posters. In addition, we briefly discussed the meaning of the public domain and how to interpret Creative Commons licenses (creativecommons.org/licenses). Students particularly enjoyed the Google car exercise, which showed the editorial process, including markup, and the evolution of a poster through three distinct designs. Students heavily attended these lunchtime workshops, maxing out the capacity of the room both times. However, not all students who submitted poster proposals attended. Two students contacted the librarians separately to arrange individual training sessions.

Because the 60 poster proposals received in April exceeded the expected participation, the planning committee began to rethink some of the initial plans. First, we asked the marketing and communications specialist on campus to contact media outlets about the event. Second, we realized that we needed to reconsider the location of the event. Originally, it was to be held in the Student Commons building with overflow in the Nesbitt Library. Once we conducted a walk-through, however, we realized this plan would not work. The Student Commons space is relatively small, and very noisy. While it could provide the most exposure, it would have been very disruptive and not feasible to hold the event there. The Nesbitt Library is located on the second floor of the Academic Commons building, which is modern, bright, and airy. The library, however, contains stacks with books, which limits the flow of traffic throughout the space. We estimated that the event might have to take over the entire Academic Commons building and feared that might disrupt classes or other activities happening that day.

Only two other options exist on campus: the gymnasium and the Hayfield House. Though spacious, the gymnasium is not air-conditioned and is located at a far end of campus. Hayfield House is one of the campus's original buildings and was built in the early 1930s. It is the former summer mansion of John and Bertha Conyngham. Today, it houses the administrative offices, security and maintenance, and several faculty departments. The first floor features a grand entranceway that leads into a very large room (originally the living room) with ornate fireplaces and large windows as well as several smaller rooms (the former dining room and sun room), which are used for conferences and meetings. After much measuring and scoping, we decided that Hayfield House would be an ideal location for Undergraduate Research Day, since we could use the three large rooms and the lobbies. After finalizing the location, we updated the website and posters for Undergraduate Research Day with the new location. The planning committee's concentration turned toward judging methods and prizes. The Director of Academic Affairs agreed to supply four prizes in the form of Amazon gift cards: the largest was $50, and the three others were $25 each.

We allowed two weeks from the time of the poster proposal to the date of the final poster submission. In all cases, students had already been working on their research topics by the time of the poster proposal date. Students had to submit a PDF version of their PowerPoint-based poster via a web form by 5:00pm on Wednesday, April 22. The only required information was the student or team name, contact information, poster title, poster description, and faculty sponsor. Throughout those two weeks, there was a trickle of students working on their posters in the Nesbitt Library, often asking the librarians for assistance. Tuesday, April 20 and Wednesday, April 21, however, were unusually busy days where the library was filled with dozens of students trying to finalize their poster designs.

After the deadline for submissions, the librarians exported the data from WordPress into a CSV file and imported it into Excel for manipulation. We assigned sequential unique identifiers to each entry, and these numbers served a crucial role in manipulating the data and planning the rest of the event. For example, we used the numbers to uniquely name the PDF files and saved the files into a shared folder using Box at Penn State (Box is a secure, cloud-based, commercial file storage, sharing, and collaboration service). Storing the files there allowed us to easily

print and track them. We also used the spreadsheet data to create a mail merge judging sheet in Microsoft Word in order to give each judge personalized packets on the day of the event.

The Penn State University Libraries provided funding for large sheets of 3ft x 4ft foam core, stands, and binder clips to display the posters. On April 23 and 24, librarians began to assemble the foam core and stands, taking into account the number of posters that would be presented in a portrait and landscape orientation. Several students submitted posters late, and several had errors in their files, which was usually caused by migrating the PowerPoint format to PDF. The librarians assisted with these problems as much as possible.

The librarians also obtained measurements for each of the rooms in Hayfield House and began the complicated task of mapping out tables and assigning posters to locations so we could provide campus maintenance with a diagram for setup. In choosing the setup of the largest room, we were restricted to using mostly round tables, because an awards luncheon was being held the following day. We determined that 3-4 posters could fit on each round table. Rectangular tables were used in the other rooms and against the walls in the large rooms.
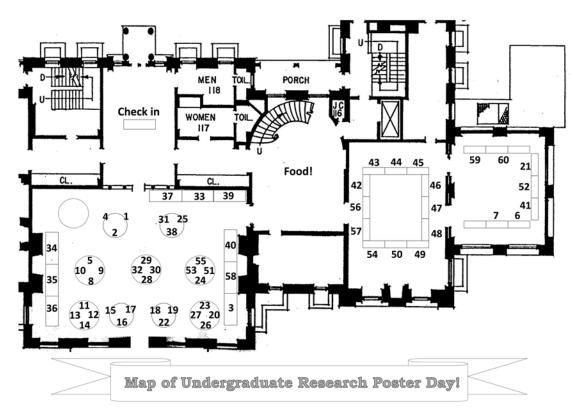

Figure 4

Map of poster locations for Undergraduate Research Day

The engineering instructor brought the final posters to the Nesbitt Library on the following Monday, April 27, and the librarians attached all of the posters to the boards using binder clips and organized the posters by number. They created a poster-sized list of all of the entries and their numbers as well as a map of their room location (Figure 4). Several handout-sized versions were printed for participants. The librarians also assigned judges to posters. There was a last minute scramble for additional judges, but by the late afternoon of Tuesday, April 28, the judge pool was set.

The Big Day

On the morning of April 29, 2015, the planning committee started working in Hayfield House at 9:00am, setting up posters according to the plans. The registration table, covered in a Penn State University Libraries tablecloth, stood in the lobby with Penn State University Libraries-branded water bottles as giveaways to all of the participants. We gave the house a festive atmosphere with blue and white balloons on the registration table and at the entrances to the rooms, two long Undergraduate Research Day banners on the columns outside, and larger Undergraduate Research Day posters inside each of the rooms. Pizza and drinks were placed in a lobby area between the living room and one of the conference rooms.

We asked the judges to arrive at 11:30am to receive instructions and their assigned posters. Students began to arrive at approximately 11:45am. The Director of Academic Affairs had permitted the planning committee to send an email to the campus community that asked faculty whose classes overlapped with the Undergraduate Research Day to consider excusing their students during that time so they may participate. Because the event was scheduled between noon and 1:30pm, there were relatively few scheduling conflicts.

All students signed in, received a name badge, and were directed to find their poster number in the directory and locate their poster on the map. We had not specified a dress code for Undergraduate Research Day, however, most students arrived dressed in business casual attire. The students were required to stand by their posters while the judges and other interested members of the community viewed them. The judges were asked to identify themselves to the students and ask the students to give a brief oral presentation on their research.

Although we had meticulously mapped out tables and poster locations, we had not expected such a large audience turnout of interested campus community members. All of the rooms, especially the large hall (Figure 5), were very crowded, which added a positive energy to the event. Students who were part of group poster projects took the time to wander the halls and talk to their cohorts. The Communications intern photographed the event, and the Chancellor and Director of Academic Affairs came to interact with the students.

Figure 5
Poster layout in the main room of Hayfield House

Because the event occurred during lunchtime, we organized food to be delivered. The first half of pizzas and the drinks arrived at 11:45am, and the remaining pizzas and celebratory sheet cake arrived at 12:30pm. The University Libraries funded the refreshments.

At the end of the event we recruited more than a dozen students to help take down posters and walk them across the road to the Nesbitt Library. The top twelve scoring posters would be on display in the Nesbitt Library through the end of the fall 2015 semester. Other students could pick up their posters from the library if desired.

Total measurable costs for the event (not counting staff time) were under $1,200. That included supplies, such as the foam core and stands and food for the instruction sessions and main event, as well as odds and ends, such as name badges, and prizes. The library provided the bulk of the cash expenses and the campus supplied in-kind effort, such as building space, maintenance, and setup. Because many of the supplies can be reused, we anticipate that the costs for subsequent years may decrease.

Judging

Identifying judges and determining judging criteria turned out to be one of the more complex aspects of this entire project. The biology professor adapted a form that she had used previously and it delineated three main categories for judging: content, display, and oral presentation. Each section had a list of components for judging and a possible score of 1 to 5, with 5 being the highest score. The committee discussed judging based on topic or category (best overall, best science and technology, best humanities) but ultimately decided that for this first year, all of the posters would be judged as one large group. In our early discussions, we assumed that only three or four volunteers would be needed to judge the posters. With over 60 posters, we needed at least 10, but preferably 12-15, volunteers to judge.

Due to the proportion of judges to posters, we broke the judging down into three rounds. On the first round, individual judges were assigned four or five posters to visit and score. As the judges turned in their score sheets, the librarians tallied the results in a spreadsheet. The highest possible score was 15, and 12 out of the 63 posters received this rating. At 1:00pm, the librarians created four groups of judges and assigned each group three of the top scoring posters. The groups were told to rank their three posters as first, second, and third place. At 1:15pm, the first place posters chosen by each of the four groups were reviewed by all the judges into the overall first, second, and third place winners, and at 1:25pm, the Chancellor made a brief speech and presented the awards.

Lessons Learned

Faculty, staff, and students provided overwhelmingly positive feedback regarding Undergraduate Research Day. Several people commented that they had never seen so much participation and collaboration on campus before. However, the planning committee met the week after Undergraduate Research Day and debriefed on the whole event, the feedback, and approaches for the upcoming year.

One of the most complicated and controversial aspects of the event was the existence and method of judging. Faculty in both the sciences and humanities expressed concern that the judges or public might not understand their students' poster, which placed them at a disadvantage. This concern was not unfounded. Because we wanted impartial judges, we excluded any faculty whose students were participating in Undergraduate Research Day. Therefore, most of the judges were administrative staff and tutors. Three of the four winning posters dealt with beautification projects for the campus itself. They may have won because many judges could relate to this topic. Our judging methods may also have played a role. Any system that involves judging will be subject to some level of bias.

All of our judges were enthusiastic and expressed how impressed they were with the submissions. The judges made efforts to talk with the students about their posters.

Nonetheless, the planning committee decided to try a different approach next year. We hope to use the category approach by offering different prizes for different categories. Also, we will explore other opportunities besides posters for presenting research. We will encourage faculty to present their own prizes, as one member of the planning committee did for her students this year. The library may also present a prize based on research methods and use of sources. At least one faculty member suggested that there should be no prizes.

In one of the English classes that participated in Undergraduate Research Day, the professor had students create a poster based on their final creative writing assignment. While the committee felt that this assignment lent itself particularly well to creativity, in truth, students struggled. They had already expended a great deal of creative energy to create the stories, and then, it was unclear whether they should create a poster that advertised and described their story or that explained certain literary elements of the story. The latter might have been more appropriate for an Undergraduate Research Day presentation, but several people remarked that it might not have been fair to compare the English story posters to those based on scientific research. We are adding a humanities-based faculty member to the planning committee for 2016 in order to provide more balance to our criteria.

Because the 2015 Undergraduate Research Day evolved on a daily basis, our timeline was not ideal. The planning committee is already working on the 2016 Undergraduate Research Day, and the Chancellor requested that the event in 2016 coincide with the campus Board of Advisors meeting. We will meet with campus faculty late in the fall 2015 semester to discuss integrating Undergraduate Research Day into their classes. We plan to make the gap between the proposal and the final poster submission longer by at least a week and add an additional poster training workshop. While participation in Undergraduate Research Day in 2015 served as a mechanism for extra credit in 2015, we would like to see participation more closely integrated into class assignments when possible.

Regardless of all of the planning, little can probably be done about the number of students who will attempt to create posters at the last minute. This year, we were ill-prepared to accommodate their requests. Next year, we will have librarians free to help students with their posters three days prior to the submission deadline, and we intend to recruit campus tutors and other helpers to make the last-minute drive for poster completion more effective. This initiative will tie into a related program that the library is launching in 2015 called "Get it Done," which is an attempt to identify crucial course assignments across campus and designate dates, times, and spaces in the library for study halls.

We also intend to modify our poster template. We adapted, with permission, poster templates created by Michael Alley from a website at Penn State University devoted to scientific and engineering posters (www.writing.engr.psu.edu/posters.html). We liked the templates not only because they used Microsoft PowerPoint, a program most students and faculty feel comfortable manipulating, but also because they spelled out information about fonts and graphics that we felt was appealing. However, many of the students adopted the template quite literally, opting for the same three-column format and placement of graphics. This may have in some ways limited creativity, and we are currently working on a stripped-down version of the template that can work more as a general guide and leave less of an impression with regards to layout.

Our location will need to change for future events. The only other space on campus large enough to accommodate this event is our gymnasium. With 63 posters and over 100 students participating, Hayfield House was filled to capacity. The main concern with using the gymnasium is its location, which is less central on campus, however, we hope that adequate advertising and participation will minimize the effects of the location.

The planning committee was disappointed by the lack of coverage of the event by local press. Although we had alerted the campus marketing and communications specialist several weeks before the event, we learned at the last minute that several key local media outlets were not planning to attend and that messages had been missed.

Members of the committee ended up using their own personal contacts and created a press kit, however, by the time we discovered the oversight, it was too late. In the end, the planning committee disseminated the formal post-event report to campus and university news outlets.

Next year's Undergraduate Research Day will coincide with a meeting of the campus's Advisory Board. In 2015, several board members did attend, and in at least one case, a very successful networking interaction occurred between a board member and a student that related to a poster topic. Involving more community members might be a way to illustrate to students the power of networking and making contacts, especially relating to finding internships or jobs after graduation.

There are numerous minor tweaks that we need to consider for future years. Surprisingly, we ordered too much pizza but not enough water and canned beverages. Many of our supplies (binder clips, foam core, poster stands) can be reused several more times, making the overall cost of the event less expensive. The awards to students were appreciated; however, since many students conducted group projects, the money probably did not stretch very far. As mentioned, we would like to encourage faculty to develop their own meaningful (not necessarily financial) awards, and in future, we should look for some sort of small endowment or fund set up specifically to finance this annual event.

Finally, the planning committee did not attempt to formally assess the success of the event in any meaningful way. In addition to user-reported feedback, gathering data comparing involvement in Undergraduate Research Day to other types of data (retention, grades, etc.) may be an area for future research.

Conclusion

Penn State Wilkes-Barre's 2015 Undergraduate Research Day is an example of a successful grass roots effort to motivate students and energize a small commuter campus. Originating from an informal discussion between librarians and faculty, it developed from an idea to a full-fledged event with over 100 participants in less than four months. Using existing resources, such as a WordPress blog and a large format printer, along with in-house skills for advertising and outreach, the planning committee mobilized the campus to participate with enthusiasm. Through organized instruction sessions, the librarians emphasized the principles of effective poster design, and the process of conveying research in a visual way. The financial cost of the event was minimal, with costs covered through existing operating budgets. It is also an example of a successful collaboration between librarians and teaching faculty. By remaining flexible and open to experimentation, the planning committee developed an event that encouraged use of the library and helped to illustrate the value of research to students. Many campus faculty participated in the event, either as judges or mentors, and provided valuable feedback and suggestions for improvements in the future, for example, modifications to judging methods. The 2015 Undergraduate Research Day was so successful that the 2016 event will be held in conjunction with a meeting of the campus's Board of Advisors.

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