John Peace Library & AET Library,
University of Texas at San Antonio

Introduction

The University of Texas at San Antonio (UTSA) is a doctoral-granting research institution in one of the nation's most populous cities, serving more than 32,000 students across two campuses. UTSA is the number one Hispanic-serving institution in the nation and ranks in the top 5 young universities (i.e. under fifty-years-old) nationally on the *Times Higher Education World University Rankings* and the top 75 worldwide. UTSA's cybersecurity program was ranked as the number one cybersecurity program in the United States according to an HP Enterprise Security sponsored research report.

With tens of thousands of students divided between two campuses, more than one library is a necessity. Located in the city's metropolitan center, the Institute of Texan Cultures (ITC) and Downtown Library (DTL) hold many of the libraries' special collections and serve academic programs based at the downtown campus, respectively. The main campus, located on the rapidly expanding northwest side of San Antonio, also has two dedicated libraries. John Peace Library (JPL), UTSA's main library is central to campus and houses the majority of UTSA Libraries' more than 800,000 physical books as well as the special collections. The Applied Engineering & Technology (AET) Library, a remote, bookless library, is located in a location convenient to science & engineering students. The AET Library will be further discussed later in this chapter.

UTSA Libraries employs a staff of just over a hundred but serves over 7,000 students per day, accounting for more than 1.7 million visits per year. Because the libraries are primarily

funded by student fees, spaces and services are focused on meeting needs of UTSA students. Meeting ever-evolving student needs demands the library to keep up with library trends and continually monitor student space and service use through user testing and anecdotal input. Dean Hendrix, Dean of Libraries at UTSA, frequently says that, "everything [at UTSA Libraries] is in constant beta," conveying the libraries' principal charge of being responsive to its students' needs.

Persistent focus on student needs has led to implementing many innovative technologies across the libraries, but especially at JPL. Some ideas inevitably fall short of expectations, but thanks to the flexibility of the 'constant beta' leadership stance, failures are viewed as opportunities to grow and better understand student needs.

Technology at JPL and DTL

JPL and DTL each offer common pieces of popular technology, such as laptop checkout, KIC scanners, device charging stations, and iMac design studios. In addition to common technology like laptops and calculators, both also offer multimedia equipment including DSLR, video, and GoPro cameras and accessories, AR/VR goggles, smartphone gimbal and video rig, and multimedia recorders, players, and projectors. Both libraries also employ a few innovative entry pieces to welcome patrons such as iPad podiums configured to allow students to instantly find and reserve study rooms in the library; this service is also available through the libraries' website. Additionally, strategically-placed Raspberry Pi connected monitors are used to display digital signage and convey to patrons how many computers are currently available and where in the library open computers are.

JPL is open 24 hours a day during the average work week and features two computer classrooms that can each be split in half using hideaway partitions. The Library Computer Classroom (LCC) and GroupSpot seat 50 and 100 students, respectively, and are equipped with laptops for each student, as well as two instructor laptops. The GroupSpot will discussed in more depth later in the chapter.

With all of the tech running at UTSA Libraries, it's fortuitous to have an embedded systems and informational technology department. In addition to a full systems staff available during normal business hours, Office of Information Technology staff are stationed at the information desk during all open hours to assist students, staff, and faculty with technology issues. Having OIT ever-present in the library alleviates student distress over finding urgent tech support, hastens issue resolution for library staff, and eases a fraction of the burden on campus OIT.

AET Library

In 2010, UTSA Libraries opened the doors to the AET Library. Dubbed "the nation's first completely bookless academic library", AET is located in the Applied Engineering & Technology building, central to other science and engineering buildings on campus. Rather than stacks, AET offers access to UTSA Libraries' quickly-growing collection of electronic resources, including over 90,000 e-journal subscriptions and nearly 1.7 million eBooks. The STEM Librarian holds weekly office hours in AET to provide research assistance and reference consultations. At just under 2,300 square feet and with a capacity of only 75, the diminutive library may have a small footprint but it nevertheless has a large impact on UTSA's STEM students.

Amenities at AET include eight all-in-one computers (AIOs), three group study rooms, a glass wall that can be written on with dry erase markers (available for checkout), and tech gear lending, including laptops, scientific and graphing calculators, headphones, chargers, and display adapters. The AIOs are maintained by the Engineering Department OIT and loaded with specialized software like Autodesk, ArcGIS, Matlab, SolidWorks, Visual Studio, and WMS, just to name a few. Each study room has space for up to six, dry erase board, writeable glass walls, and a 42" monitor that students can use to display their laptops for collaborative work.

The library is extremely popular amongst science and engineering students, who fill the library to capacity and beyond during finals and other major exam and project weeks. Some use the modeling and mathematical software on the AIOs to create designs and simulations for class projects. Others reserve the study rooms, so they know the space will be waiting for them, then use the libraries' display adapters to connect to the 42" monitors in order to view informational videos, collaborate on papers, statistical analysis, modeling, and other various projects in which they can benefit from working together on a single screen. Many check out dry erase marker kits to write mathematical, physical, and chemical equations and diagrams across the glass walls around the library. And still others just use the moveable tables in the lobby area to assemble appropriate-sized work stations for their study groups, which can range from 2-3 up to 10 or more students, all working together towards a single goal.

Despite being well-liked AET, like everything else at UTSA, is also in 'constant beta'. One example of at the AET is e-reader lending; this was offered at the inception of AET and expected to be a hit. Unfortunately the cost of maintenance and repair combined with low circulation numbers and increasing laptop & tablet ownership among students led to abandoning

e-reader checkout. Even the physical space of the AET is beta. In 2017, the AET was moved to a lower level of the AET building in a more open and visible setting.

Group Spot

The most popular technology for UTSA Libraries is the GroupSpot classroom at the JPL Library. While the technology in GroupSpot is not extraordinary, when the classroom first opened in 2014, it was an immediate hit with students. Then, once the room was opened for instruction, it became equally popular with library instructors and other faculty.

The initial proposal for the space only specified that it would be used as a media lab. Fortunately, this not-fully-developed depiction was enough for the library to obtain funding from the Hearst Foundation in the form of a $150,000 grant. UTSA Libraries began investigating media labs in other academic libraries, looking for inspiration. After discovering the Student-Centered Active Learning Environment with Upside-down Pedagogies (SCALE-UP) concept from North Carolina State University, the planners decided that the principles of the SCALE-UP design would be the basis for the UTSA design.

The SCALE-UP concept was initially designed for physics classrooms consisting of 100 or more students, but the key components of the concept are transferrable across disciplines and equally applicable for smaller (but still large) class sizes. The most important characteristic for GroupSpot, taken from the SCALE-UP model, is the focus on a simple but versatile classroom design that promotes active learning and collaboration in an interactive learning environment.

While researching collaborative software to incorporate into the classroom, GroupSpot and TeamSpot software, by Tidebreak, were decided upon. It was with this decision that the room got its name - GroupSpot. When the classroom was first opened, there was no marketing.

Following the example of the Virginia Tech library's SCALE-UP launch, it was decided that there would be a soft opening to allow the library to observe student use of the space without policies or guidance in place. The only advertising came from a sign outside the propped opened doors and guides about the collaborative software placed on each table for direction. After the soft opening in April of 2014, it was clear that GroupSpot was a hit with the students.

The space was so popular that just before the fall semester rolled around, when the library closed off the classroom for instruction, students revolted. Following a two-week barrage of negative calls, emails, suggestion box comments, and complaints to library staff by students who wanted to use the room for study, it was decided that one side of the classroom would be left open for student use except in limited cases where the entirety of the space is required.

A grand opening event was held shortly after the start of the fall semester. The grand opening featured popcorn, music, dancing, a demo of databases on the new computers, and a t-shirt door prize for the first hundred students. Needless to say, there was a line of students looking for free t-shirts at the door 30 minutes before the event started.

At its core, GroupSpot is a large computer classroom with projection screens at both ends, a movable room divider with whiteboard surfaces, and twenty group workstations. The room layout, laptops for each student, and collaborative software are what make the space so sought after by instructors and students alike.

When divided, as it remains the majority of the time, each side of the room holds an instructor podium and laptop, two projection screens, and ten workstations. The workstations are each equipped with five laptops as well as a desktop CPU that is attached to a 46" table monitor. These CPUs, and their respective monitors, can be remotely accessed from the five laptops at

each workstation. Laptops were chosen over desktop computers so that patrons have greater space to use their own laptops or work on tasks that do not require a computer. In addition to displaying on the projection screens, the instructor laptop can also be displayed on the 46" monitors mounted at each workstation. This is helpful for both students with vision difficulties and for those following along with instructors on their laptop, trying to focus on a laptop screen and the instructor's demonstration at the same time.

One of the most important aspects of the space, from the planners' perspective, was to keep it simple. Ensuring that hardware and software operations are user-friendly helps prevent frustration which ultimately increases patron use and reduces burden on systems staff. Unfortunately the GroupSpot and TeamSpot software which were first used to enable the collaborative display, in addition to being costly, were found to be cumbersome. Using the software typically required a minimum 10-15 minutes of training for unacquainted users. Because of this, the programs were replaced with NetSupport School and TightVNC, respectively. NetSupport School, which was much more cost effective than GroupSpot, and the TightVNC freeware can be more easily explained via a tutorial document, short video, or a few minutes of hands-on training.

NetSupport School allows the instructor to communicate and share his or her screen with the monitors at each workstation. NetSupport offers many other learning and instructional features like messaging, monitoring student work, testing, and other assessment tools, but those features are used very infrequently if at all.

TightVNC is a remote desktop software that give patrons the ability to work collaboratively on the desktop CPU from the 5 individual laptops. TightVNC emulates the desktop CPU in a window on each connected laptop. Within this window, the patrons at a given

workstation can all simultaneously control the mouse and keyboard input for the desktop CPU and monitor. This set-up allows users to work collaboratively on assignments and research on the big screen for all to see, while performing individual research and minor tasks on their individual machines.

During weekdays, the partition is deployed to divide the room into two separate spaces for up to 50 students per side. Side A of the room is available around the clock (during open hours of course) for students to use as they please, while the other is reserved for instruction. Most evenings, weekends, and throughout finals week, the partition is opened and students are allowed to use the entirety of the classroom for individual or group study. Side B is reserved primarily for instruction.

The collaborative technology and versatile design of GroupSpot have made it just as popular with faculty as with students and library instructors. The popularity led to adoption of a policy that during the first nine weeks of the fall and spring semesters, the room is only open for librarians to reserve for library instruction. Starting the tenth week, faculty and staff from other departments may reserve Side B by contacting a subject-specialist librarian or completing a reservation request form. This policy ensures that subject librarians have access to the classroom during the first half of the semester, when library instruction tends to be heaviest. Occasionally exceptions are made for faculty use of the class during the first nine weeks as long as they are deemed to not interfere with library instruction, for instance during off hours or last minute reservations for hours that are still open. Currently the room is reserved via a Microsoft Outlook calendar but plans are in place to move to an institution-wide reservation system, 25Live, in 2019.

Library instruction in the room ranges from fairly typical computer classroom use, like demonstrating search techniques while allowing patrons to try out their own searches on the laptops, to more engaging information literacy group activities, like Library Jeopardy, citation round up, and think-pair-share activities. Since the majority of UTSA library classes are one-shot 50- to 85-minute classes, focused on introducing library resources and information literacy, it can be challenging to take full advantage of the collaborative technology that the room has to offer. The seating arrangement of the room contributes to student interaction, promoting group discussion and collaboration even at times when the space is being used as a traditional computer classroom.

A music marketing course that relies on OER materials uses the room and music librarian to introduce students to blogging. During the first class, students create accounts for the OER blog on a Humanities Commons platform and then work in groups to identify what makes a blog comment appealing. The students then list elements of comments that they consider successful or unsuccessful. The comments are then written on the whiteboards for all to see and discussed as a class in a conversation to demonstrate the grading rubric for the blog assignment, an ongoing assignment. The tech features of the room help students collaboratively browse and read blogs as well as making it easy for the instructor and students to provide help with registration and technical issues regarding the platform.

Despite more advanced tech features of the room, the whiteboard walls are one of the most used items by many librarians. For example, one librarian frequently uses activity prompts for students to review several peer-reviewed journals. The journals are laid upon each group's table and the students, after reviewing the journals, are to write a word or phrase on the dry erase wall that describes peer-reviewed literature based on what they see. These terms are then used,

along with the definition of peer-review, to convey to students what sets peer-review apart from popular or trade publications.

A recurrent freshman academic inquiry class taught in GroupSpot begins with demonstration of database searching and concepts that students can follow along with on their own laptops, and then ends with students putting together sources for their final group presentation. The students, seated with their respective groups and working together, first perform general searches about their overall topic to determine what facets of the topic each will cover. Following this format, each student spends a few minutes on his or her laptop looking for peer-reviewed sources that discuss the overall focus of the topic. Later in the class period, the big monitors are used to bring together the sources each student has found and the group creates a bibliography that will be used to form the basis of the essay.

Faculty use of the room is much more variable as they prefer to utilize GroupSpot for focused, specific class sessions which often work better for incorporating the room's tech functionality. Simple classes like library research sessions and resume writing workshops are most common, but the room also sees a variety of other class styles.

In the arts & humanities, the room has been used for rhetoric classes where each table served as a station to work on individual speeches, with students moving from table to table until each group had analyzed every speech. Art classes have been conducted where Google Docs were collectively built for social protest artists using the TightVNC software.

"Imagine the Possibilities," is another innovative class held in GroupSpot by education department faculty. The purpose of the class is to introduce prospective teachers to innovative technology that can be used for learning, for instance Google Cardboard and augmented reality

books. Students are divided into groups, each seated at a table with a different technology item that could be used in teaching. The students watch an informational video about their technology on the big monitors, then experiment with the tech, using the laptops for some modules, and discuss how it could be implemented in an educational environment. After the buzzer sounds the students rotate, a la musical chairs, to the next table to try out the next tech item.

One of the more entertaining activities in the room came from an engineering lesson on developing schematics. Students were divided into groups of five, then assigned to a station. Each station served as a lab bench where students worked in groups to disassemble items and create schematics for the items using TightVNC so that all could view results on the large monitors. The circular seating arrangement, large viewing screen for the group's schematic, and ability to push some of the laptops out of the way all contribute to the success of this lab.

A math instructor uses the room for an Excel class wherein student groups work on the large monitor to create spreadsheets with integrated statistical formulas. The monitor and collaborative software obviously worked great for the task, but the instructor said the reason she chooses to reserve GroupSpot for this class is the arrangement of seats around the central monitor that, "work a lot better than the other labs where [students] seem isolated and would not communicate as much."

Aside from the instructional use, student use of the room also varies greatly, from individual students looking for a less quiet place to use a library computer or study with friends to chemistry students using the collaborative software and whiteboards to virtually build molecules or draw electron configuration diagrams. The space continues to be so popular that occasionally students still wander into the instruction side for individual and group study… even while instructors are actively using the space for library instruction or standard course classes.

While the room is very popular and fairly user-friendly, as with any design, there are a few points to keep in mind for other libraries considering implementing a similar space. The room requires a bit more regular maintenance by both systems and custodial staff. Although the computers restart with a clean image after each reboot, they still perform slowly if not properly maintained. Because library staff are less available and visible in the GroupSpot classrooms, students are often more prone to be physically careless with the laptops and other movable items. This is less of a problem at UTSA where the library houses its own OIT support staff but could be taxing for many libraries.

Further, the side of the class that is left open for students can be quite loud at times. Fortunately the information desk is just outside of the room at UTSA so the volume can be monitored by staff at the desk. It's often purported that the loudness of the room is due to the initial soft-opening during which students were given free reign and the grand opening which was more akin to a social party than a library event. The two biggest drawbacks could potentially be reduced by eliminating individual study in the space, but that would likely result in a second student revolt.

Future Directions at UTSA Libraries

UTSA Libraries' constant beta stance means that while the current arrangement and state of technology may be appropriate and successful, there is also opportunity to revise.

An excellent example of such a modification was the abandonment of TeamSpot over the course of this chapter being written. TeamSpot was a small computer lab that was opened concurrently with GroupSpot and offered some similar collaborative technology to promote group work. In observing how students used the TeamSpot space, it became obvious that

students preferred the less conspicuous location and quieter study area for individual or group quiet study. In TeamSpot, the collaborative technology was rarely, if ever, used. To provide the students with the space they truly wanted and alleviate concerns with further maintenance and tech support needs, the collaborative technology pieces were removed from the room. Large monitors connected to a single laptop were left at each work station, but the other library laptops were removed and replaced with engineering department computers that allow for more engineering study and provide additional software choices for others students.

Beyond the current composition, plans are also in the works to reconfigure the third floor at JPL, where the majority of UTSA open stacks are located. Although no formal plans have been developed, the groundwork is currently being laid for a substantial renovation that would decrease onsite holdings in order to provide an adaptable, reconfigurable study space offering more innovative study tools and resources. Some of the pieces being assessed for this space include virtual and augmented reality tools, 3D printing and other maker technology, and multimedia content creation and production tools.