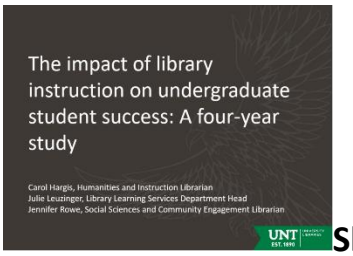


Slide 1: Intros

Slide 2: **Julie - Road map** --- Today we're going to discuss how our research project came to exist, what we've learned so far from our preliminary analysis of the four years of data collected and from our review of the literature on student success and library instruction. We will discuss the bureaucratic hurdles that we have had to navigate, in order to get access to the student data, and we will talk about what the results mean for us now and looking to the future, we will discuss some directions that we hope the research can go from here and hopefully get some feedback and start a conversation with you all as well.

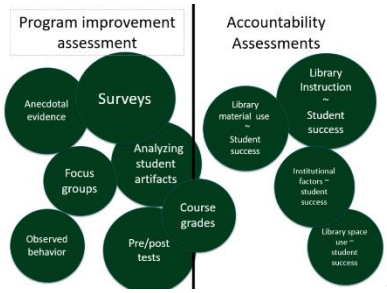
Slide 3: Carol --**Background of the project:** We all work at the University of North Texas libraries. UNT is a public research university located in Denton. Enrollment at UNT is now approaching 39,000 students. The libraries support the university's 38 doctoral degrees, 86 Master's, and 103 bachelor's degrees. Within the libraries, we have 24 subject liaisons serving the faculty and students and they are spread out throughout 4 of our 5 library buildings. All of the subject librarians do one-shot instruction sessions and some are embedded into online courses, in support of distance students. The current Humanities subject librarians, Carol (as her predecessor did before her), provides library instruction

one-shot sessions for the two English composition, core classes, of which at UNT there are over 71 sections per semester.

How and why we started this project. Our former colleague Gayla Byerly was the Instruction and Assessment librarian. She was the predecessor to Carol and she was also my boss when I worked as the graduate assistant for instruction and assessment (and Julie supervised Gayla). Gayla was subject librarian for the Department of English, which meant that she had the biggest instruction load of any librarian at UNT, as she taught one-shot sessions for a very large number of sections of core English composition classes.

Gayla used various methods to assess her teaching, but was inspired by Megan Oakleaf's 2010 report for ACRL on the value of academic libraries and she desperately wanted to find a way to help elucidate the value of libraries and library instruction to both internal library administrators and to university administration. She just knew that there would be a positive correlation between library instruction and student success and she hoped the eventual data could be used as a tool to demonstrate the contribution of the library to student success. She jumped on board with card swiping all the students who attended her instruction sessions, as soon as she learned that the technology to do it was available to the libraries, in 2012. The university had been collecting swipes at attendance at events for some time, but the library had not yet participated in any card swiping up to that point. So Gayla taught and card swiped over 3000 students during a four-year period between 2012-2016.

Gayla retired at the end of her data collection and passed the work of analyzing and interpreting the data and using the results to advocate, on to us. Since Gayla's initial choice to begin collecting card swipes, our library has acknowledged the importance of collecting this type of data and has implemented a policy that all library events and instruction sessions will include card swiping.



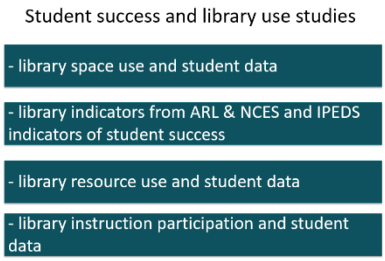
Slide 4: Jen Some context for our research project--

Before we start talking about our own data, We'd like to acknowledge that there is a rich history of library instruction assessment literature, and specifically note that there have already been several important studies that have attempted to measure library instruction's impact on student success. I'm using "student success" here to mean student retention, GPA, and graduation.

And based on the distinction that higher education scholars like Victor Borden have made between academic assessments that measure student learning outcomes versus those that academies use for accountability and advocacy, I'm separating library assessment into two categories: those assessments that help improve instruction and programs and those that help connect the library to measures of student success. Although there are some assessment methods that have the potential to both provide meaningful ways to improve programs and to demonstrate the library's relationship with student success, there is an inherent conflict between the two types of assessments. Information learned from program improvement assessment usually does not aggregate for public messaging and information from accountability assessment does not provide meaningful program level evaluation.

Due to increasing pressure to demonstrate value and to show the libraries contribution to student success, many libraries have in recent years embarked on studies that demonstrate impact of academic library space use, material use, and library instruction on student retention, GPA and graduation. Simply reporting counts of student through the doors, items circulated, usage of services is no longer enough to show that the library positively influences student retention and graduation. University administrators increasingly want to see data that shows return on investment for library expenses and to know that the library is contributing to the retention of students. With Oakleaf's ACRL Value of Academic Libraries report in mind, many librarians, just like us have been inspired to engage

in research that has the potential to persuade administrators that library expenditures are well justified.



Slide 5: **Jen** - There have been studies in the higher education literature linking use of campus facilities and spaces, including library spaces to student retention and graduation.

There have also been many studies from the recent library literature in which authors have taken library indicators from ARL, ACRL, and used data about student retention and graduation from the Integrated PostSecondary Education Data System via the National Center for Education Statistics. Some of those studies have found a relationship between higher spending on libraries and higher number of professional staff in the library and better student success outcomes

Many studies have linked student use of library resources, including books, media items, and electronic resources to student success: higher GPAs, better retention rate and graduation. These types of studies date back to the sixties when two early studies were conducted that analyzed student use of library materials and variables for retention and GPA, both showing correlations between the variables. More recently, Librarians at University of Minnesota and at Indiana University have combined library use data from their libraries service points and electronic resources and compared that with student data to draw positive correlations between library use and student success. Researchers at Hong Kong Baptist University were also able to make a positive correlation between student cumulative GPA and books and media checkouts.

Studies that focus on the use of the library resources related to student success seem to provide more evidence for a correlation between library use and student success. Studies that focus on library instruction and student success appear to

have mixed results and overall provide less evidence for correlation between instruction and student success.

In 2011, researchers at the Hong Kong Baptist University that I just mentioned completed another study with data for over 8000 students in which they used cumulative GPA and number of library workshops attended as their independent variables. They found that attendance at a greater number of library workshops had a positive correlation with GPA.

In a 2012 study by librarians at Middle Tennessee State University, *library instruction* was the focus and was compared with student GPA and retention. The librarians analyzed data for first-time freshman who were enrolled in a class that received library one-shot instruction. They used data for a control group who did not attend library instruction for comparison. Their analysis showed no correlation between students attending library instruction and retention, but they did report a small correlation between students attending library instruction and higher GPA. These researchers recommend card swiping, to account for students who were enrolled in classes that received library instruction but did not attend class.

None of these studies claim causality but they all provide valuable talking points that can be used to advocate on behalf of the library, to university administration. One other valuable contribution of several of these studies I just mentioned is that they have been able to identify, demographically, which students tend to use the library and which students do not. Since it's been shown that students who use the library tend to have better outcomes in college, libraries may be able to use this type of demographic information to strategically target and promote to library non-users.

Slide 6: **Jen –Criticism of using large scale indicators** -- Some authors in the library literature are very critical of these correlation studies that use large-scale indicators. Badke in 2014 suggests moving away from

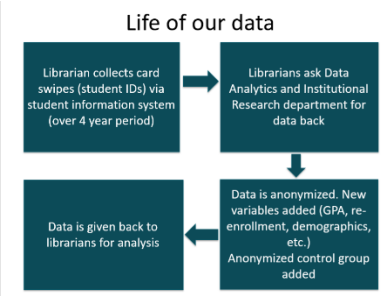
attempts to correlate instruction with GPA and instead suggests using indicators that are more likely to allow for causal relationships between the measured variable and the instruction. And in a recent article librarians at Virginia Commonwealth University, after the authors collected and analyzed data but found no statistically significant relationship between library instruction and GPA, they argue that GPA and re-enrollment are not sensitive enough variables for understanding the library' effect on student success. In other words, a student's GPA is a very large-scale indicator and there are a great many things that potentially influence GPA. Expecting that the library instruction sessions attended will exert measurable control over a student's GPA, given the many and complex variables that affect a GPA, is unreasonable. The authors liken "sensitivity of variables" to scales. A bathroom scale is not sensitive enough to measure small items like coins. You can pile coins on the bathroom scale and it may appear that the weight has not increased at all. The bathroom scale is just not sensitive enough (not to scale) to measure the weight of individual coins; instead you would need a scale that is more sensitive, like a kitchen scale.

They recommend choosing variables that are at the appropriate scale. Researchers/librarians are encouraged to measure factors that are more likely to show the effects library instruction: a standardized measure of information literacy, evaluating quality of students' writing products, etc. The authors do acknowledge that library research using GPA and retention as variables can be useful for: creating more questions for research to answer and providing evidence to library or university administration.

This same critical sentiment is noted by the authors of one of the earliest library studies to attempt to measure effects of library instruction on student success variables- Selegean, Thomas, and Richman, back in 1983 caution that library instruction efforts need to be evaluated by variables that are more "sensitive" than the large-scale indicators. The lack of sensitivity means that the methodology does not provide a meaningful way to assess components of the instruction or to help librarians improve their process.

I would definitely like to stress that the assessment project that we are describing is best used for advocating to administration about the importance of the library and not for improving library instruction.

Given all the research that has already been done: What makes our study unique from the rest of these other studies is that we focus only on library instruction and we collected card swipe data, meaning we captured IDs only for student who actually attended library instruction (not all students who were registered for a class that received instruction) and we collected data over a period of four years so we have a very large data set. We also are looking at data only for student who received introductory library instruction. The library instruction provided to English composition classes is very basic and is kind-of a welcome to the library—here's how you find articles, books, and how you can get help from a librarian type of instruction session, with information literacy elements built in. So our study includes only data for that one English class, which also eliminates any potential variances in library instruction content and instructors.



Slide 7: Julie --How we got the data. Before the data collection began in 2012, Gayla first got approval from the UNT Institutional Review Board. The data set we used was anonymized even before it reached us. For this reason, we were not required to obtain informed consent from each student whose data was used in the study.

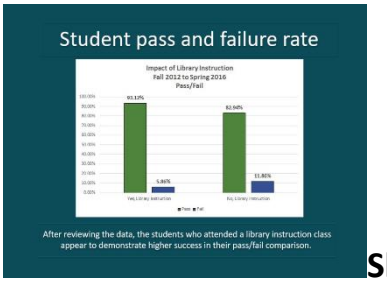
- Participation in a library instruction session was entirely voluntary for the English composition section instructors. Some instructors brought their classes to the library for one-shot bibliographic instruction and some chose not to. The data Gayla collected was just a student ID number that was recorded when the student swiped their ID card through a card reader. The swipes were organized into groups in the Student Information system that were labeled with the semester and year (in order to tag the students' instruction participation to a point in time). These card swipes were collected for over 3000 students who attended Gayla's English Composition library instruction sessions. We were also later able to get the data for the additional over 6000 students who were enrolled in an English composition course but did not attend library instruction sessions (either because their section instructor did

not schedule a library instruction session or because the student missed class that day) during the same 4-year time period. In total, we have almost 10,000 students in our data set. Having the data for students who did not attend library instruction allows us to have a control group to which to compare our original data for students who did attend library instruction.

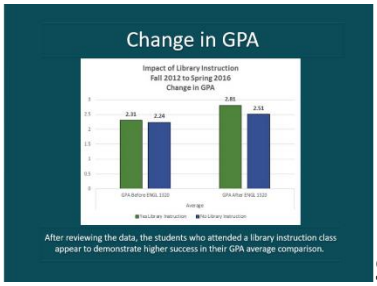
- For all of the 10,000 students, we were given back anonymized information about grades in the English comp. class, the semester GPA (for the semester they participated in the library instruction session), their final GPA, graduation (if applicable), we got information about whether or not they re-enrolled in classes the semester following their library instruction session, and information for many of the students about whether or not they were first generation college students, their gender, and their ethnicity, among other variables. To get this data we had to work with Data Analytics and Institutional Research (DAIR) office on campus and they had to assign new fake ID numbers to each student, they had to pull all the relevant GPA, retention, and demographic information and collate that information with the new fake student IDs. Then they gave us the data back, for us to use for our analysis. The entire process from our initial request for the data, to finally receiving back the anonymized data, took over a year, because of some internal restructuring in the DAIR office and changes to policies and tools. It has been challenging working with these different campus partners because it's not always clear who does what (especially in a very large university like ours) and sometimes we have been at the mercy of these other offices' schedules and workloads.

- We have read that at some universities, librarians doing large-scale correlation studies have received intensive assistance from campus institutional research or assessment professionals on the actual statistical analysis. At UNT, we are aware that these types of campus partners will advise us should we have questions about our statistical analysis, but we have not yet found that the level of support that we require is available to us on campus. As a result, our rigorous statistical analysis is on hold while we explore other options, such as contracting with a professional or hiring a skilled graduate student to do that part of the project. So although we have not yet run complex statistical analysis on the data, we have used Excel to organize and compare the variables, in order to share some very preliminary findings with you. When we

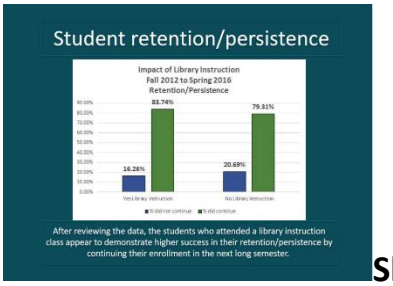
started looking at the data, we had a very basic research question: Is there a relationship between library instruction and student success?



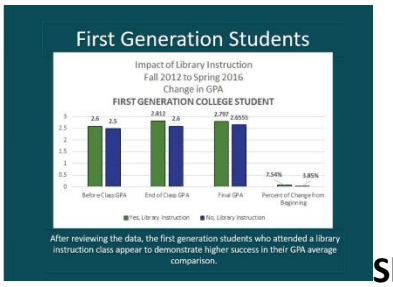
Slide 8: Carol – Overall, it looks as though there is a positive correlation to student success when individuals attended a library instruction session, given the higher percentage of students who attended instruction sessions and passed the course, compared to the pass rate for students who did not attend an instruction session. An alternate explanation is that the ENGL 1320 instructors who bring their classes to the library are more engaged with their students, thus their students have better outcomes than their peers in sections with less engaged instructors who do not bring their students to the library.



Slide 9: Carol – Comparing GPAs from the beginning of the semester with the GPAs at the end of the semester, for both groups (students who attended library instruction and those who did not attend) there is an overall increase in student GPAs. An alternate explanation for the GPA increase is that that the English 1320 course may be the students' first exposure to research skills. However, given there was a 21.65% increase in GPA when the student attended library instruction as opposed to only a 12.05% increase in GPA for students who did not attend library instruction, it is likely that attending the library instruction session had a positive impact on the GPA. This increase, coupled with the higher pass rate for students in courses that participated in library instruction, provide increasing evidence that attending library instruction contributes to student success.



Slide 10: Carol – For this study, we defined retention and persistence as continued enrollment in the following long semester. Looking at student retention and persistence, it appears there is a greater likelihood of students re-enrolling in classes the following long semester when they attended a library instruction session. While participating in library instruction may not be solely responsible for the higher student retention and persistence rate, when considered alongside the higher pass rates and increased GPA, it is very compelling evidence to suggest a relationship between library instruction and student success.



Slide 11: Carol -- The graph indicates that students who participated in library instruction continue to maintain slightly higher performance throughout the study. Usually as students' progress through their four-year college experience, class difficulty increases, and many students struggle to maintain consistent, positive class performance. I would infer that the instruction class was beneficial based on the rise in GPA at the end of the class and positive percentage of change overall.

Slide 12: **Jen** -- We also want to mention the myriad other factors that are thought to exert influence over college student retention,

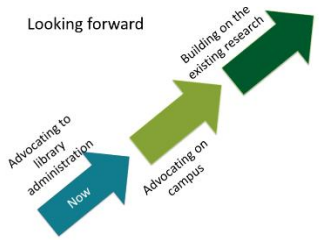
GPA, and graduation. Based on the literature on higher education and student retention, all of the following factors are thought to positively or negatively impact student success--

- First we have student characteristics, student background, and previous experiences that can affect student success. Things in this category are:
    - Pre-college academic experience, the student's self esteem, emotional dysregulation and test anxiety, whether or not the student is a first generation college student, the level of family support that the student receives (economic and other), past sexual or other violent victimization, whether or not the student has his or her own children
- Structural characteristics of the university/college are known to impact student success–
    - Size of the institution, mission of the institution (whether it's a teaching or research focused institution), class size and student to faculty ratio, the level of faculty engagement
    - A welcoming and inclusive environment on campus is also tied to student retention and persistence.(Emmons)
    - Specific to the the Library -- staffing, spending per student and collection size have also been correlated with better student success indicators like retention and graduation rates.
- And then student behaviors, for example:
    - Alcohol use may have a negative impact on student success
    - The amount of effort and attention the student devotes to academics and the student's class attendance
    - Engagement –interacting with faculty, using the library, attending extracurricular activities, using the recreational facilities on campus.
    - Their time management strategies

Can you all think of other factors that we did not include?

All of these complex factors could have influenced the student success indicators that we looked at in our research. It is not be possible to establish a causal relationship between participation in library instruction and student GPA or retention because of these confounding variables. However, we do believe we

will be able to establish a correlation between the library instruction and student success. And with that in mind, we will discuss the future of this project.



Slide 13: **Julie, Carol, Jen** -- **Future:**

Julie: We have written and submitted a white paper to our internal library administrators. We also are looking into ways to get the data analyzed in a more rigorous manner, by someone with more expertise than we have. The problem for us has been that we are public services librarians and do not have the time to invest in learning a whole new skill set for the statistical analysis. But we hope to get that done in the very near future. And we have a new Dean who is just starting this week actually- we hope to be able to take the results to her and allow her to use this information in her conversations with university administration.

Carol: This study brings to light the importance of library instruction for undergraduate students and illuminates the positive outcomes of library instruction. By giving the students a positive step up in research we allow them the time to focus on their research content including:

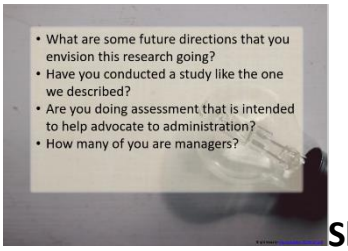
- Synthesis
- critical thinking
- bias (understanding of information found or their own beliefs)
- analysis and consideration for multi-faceted arguments

They are not spending lots of time trying to find and organize their information, but instead, joining the academic conversation and contributing to constructive outcomes. The next step for this study should include discussion/collaboration with UNT's administration.

Jen: In the future, I'm interested in the libraries becoming more integrated into the university-wide student analytic data conversation and I'd like our library to be in a position to contribute to interventions for students who are at risk in their academics. Student analytics are those data points that are available through the use of course management systems and they can provide indicators that students

are struggling with their grades, that they are missing assignments, or that they are not participating.

Being involved in data analytics on campus would require the library to be included at the university level in conversations about student analytics data uses. One of the ways we can get a seat at the table for these conversations is by demonstrating our value to the university administration with results of studies like the one we just shared with you.



Slide 14: **Carol --** Questions for you

Slide 15: Questions for us