

24 Hour Libraries: An Exploration of the Feasibility on UF Campus

Grace Shoemaker

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I. Abstract

Each year, graduating University of Florida students are encouraged to complete the “Student Experience in the Research University” (SERU) survey to discuss their educational experience. For many years, the survey has revealed that, according to students, the single most important thing their university could do to improve their educational experience was “improve study space.” Library research has primarily sought to increase certain features, such as availability to food and drink, transportation to and from the library, or even librarian resource accessibility. And yet, a more recent trend, due to student demand, has been the exploration of library hours extensions. This paper aims to assess current study habits of UF undergraduate students through self-reported survey data, while also exploring previous trends from 24 hour library systems. Through this assessment, this report also serves as a basis for finding the most practical and beneficial space for greater education. In particular, three study spaces are observed: Newell Hall, Library West, and Marston Science Library. Each is analyzed for the comfortability, study atmosphere, and security/safety. Newell Hall currently serves as a 24-hour space, but past student reservations calls such a choice into question. Findings indicated that a traditional library setting (Library West or Marston Science Library) are not only favored among students, but also provide the greatest sense of security and are most conducive for studying due to comfortability. That being said, an analysis of current study habits revealed that all three spaces could use improvements beyond hourly extensions, such as exercise equipment and better desks/chairs.

II. Introduction

As the University of Florida progresses in its national academic status and has begun welcoming a greater population of students through hybrid and online means, such as the PACE program [1] academic buildings, such as the libraries, have sought ways to accommodate students with a variety of services. Despite an increase in online and virtual resources, an increasingly popular initiative among students involves extending library hours to 24/7 access [2]. While such an appeal is highly requested, this report aims to observe trends in other schools which utilize 24-hour libraries to make a proper assessment based on available resources and usage. Overnight study hours may seem too inconvenient or unconventional to many, but part or full-time employed students, TAs, or students with rigorous daytime schedules may benefit greatly from such a change. Additionally, it has been shown that 24 hour library access increases students' perception of academic success and may also have a positive correlation to higher grade point averages, though this data is limited [3] [4].

In addition to exploring overnight usage, this report also entails current student satisfaction with library comfortability, addressing ergonomics. Using current comfortability and study habit reports from students not only reveals some of the best campus spaces for efficient studying, but also provides recommendations for future renovations or decision making within the library. Already, UF incorporates a 24-hour study space on campus. However, general dissatisfaction with the space [5], Newell Hall, presents interesting findings on what environments are most conducive for studying and also makes recommendations for its current hours. Since it is economically unfeasible to maintain two study spaces with 24-hour status, this study aims to decisively choose the ideal location for late night hours, while also exploring environmentally friendly solutions to minimize cost.

III. Literature Review

In 2015, UF Student Government conducted a survey among students to determine the appropriate space to provide 24/7 library hours. Students supported Marston Science Library, which, at the time, was unrenovated compared to the space today in 2022 [6]. In 2014, the busiest week of the year accounted for 42,783 students, while in 2019, the busiest week encompassed 80,885 students, representing a 89.06% increase in usage [1]. Related, the number of PaCE students has risen 10X from 2015 and the number of students enrolled overall has risen from 52,519 in 2015 to 61,112 in 2021, with the average acceptance rate decreasing each year and the average test scores of admitted students increasing [7]. All this has attributed greatly to UF's climb in ranking and overall, displaying a severe need for academic accommodation changes.

Similar to many other schools, University of Florida students have consistently beckoned for 24/7 library service, when it is not offered. For the past 20 or so years, the idea of 24 hour libraries has spread across the United States and many other countries in the forms of protests, petitions, student government initiatives, and collective library research. In 2018, students staged a sit-in at Delhi University, claiming to stay on the premises until the 24 hour demands were met [8]. In 2012, University of California Santa Barbara students protested and successfully implemented extended hours [9]. UC Berkeley and USF students are a couple others among many to demand these later hours, fighting for complete access to WiFi, technology, and, as a UC Berkeley student noted, "a quiet place to spend caffeine-filled night studying" [10] [11].

Furthermore, success with 24-hour libraries has already been achieved at the University of Denver [12]. The Penrose Library at the university allowed students to take advantage of the additional hours and access to the library as a 30% increase in gate counts were observed, study

rooms were being booked by students for longer times of the day, and a survey given to library patrons revealed that 47.5% of survey respondents were in the library for 5+ hours every night. The 24-hour access to the library made a positive impact, not only on the lives of the students, but also on library staff who made efforts to make the library more welcoming to provide quality service. In fact, several university studies on the extension of library hours and services have revealed that such hours improve student life [12], cater well to college study habits [13], and provide much-needed resources, such as stationary computers and printers [5].

Similar success could be observed if resources and money were spent to revamp Marston Science Library to improve its features and keep it open for all hours, seven days a week; ensuring that students are comfortable with their academic experience can play an integral role in their future success, as well as how it will reflect upon the prestige of the university and the values of the institution.

IV. Methodology

Many recent 24-hour library studies have harped on the importance of multi-method analyses for determining the most cost-effective and beneficial library hours [4] [14] [15]. Oftentimes, this translates as part survey data and part observational data. In doing this, both student opinion and actual usage are accounted for. This is one limitation of our study, as we were only able to conduct survey-based data collection. Overall, this was the most practical solution in terms of time and resources. To combat this bias, survey questions purposefully avoided asking students if they desired later hours and rather focused questions on study habits and spaces.

Procedure:

Data collection was conducted via Google Forms, a platform which not only allows for ease of sharing, but also provides accommodating means for data analysis afterwards. Google forms also provides a variety of survey question options, such as ranking, short answer, multiple choice, and drop-down selections, all of which were used in this study. After establishing ten questions, the survey was distributed only to UF undergraduate students through a variety of virtual mediums including iMessage, GroupMe, Slack, Canvas, and Snapchat. Since our team consists of only engineering students, many of the group messaging and communication was limited to Engineering chats and discussions. That being said, 9/11 of the undergraduate departments were accounted for, along with five graduating years. The form was opened on May 29, 2022 at 9:30 p.m. and closed shortly after on June 1, 2022 at 4:15 p.m. In this timespan, 133 responses were recorded.

Survey Composition:

The survey was composed of nine mandatory questions and one optional short answer response. Additionally, questions were broken down into three categories: introductory information, study habits, and ranking. Only one question specifically asked students about library hour extensions, asking which space students would most prefer to see open 24/7. This question was intentionally placed at the end of the survey so as not to bias student ranking and study habit responses. The table below summarizes the layout of the survey.

Table 1 Layout of Survey Questions on Google Forms

Introductory	Study Habits	Ranking	Other
Year in college	What time of day do you normally complete schoolwork?	How important are these library features to you?	Which space would you prefer to be open 24/7?
What college are you in?	How long do you typically complete schoolwork for in ONE SITTING?	Rank the comfortability (1-3) of Marston, Newell, and Library West	Additional comments/concerns?
	How often did you stay until closing at a UF library/study space?	Rank the study atmosphere (1-3) of Marston, Newell, and Library West.	
		Rank the security/safety (1-3) of Marston, Newell, and Library West.	

Survey Limitations:

Most questions were composed as multiple choice or drop-down selections to encourage response rate. After closing the survey, it was noted that some students did not entirely follow the directions of the last three “ranking questions.” Each of these questions included capitalized wording to rank options “RELATIVE” to one another, where 3 was the least favorable option and 1 was the most favorable. For each of these questions, it was expected that only one study space would be ranked “1,” another “2,” and the remaining “3.” Some students accidentally selected a single number for all three options. Although this presents some concern for analysis,

responses revealed a clear trend for which was the most favored and least in every case. In the future, it is advised that responses are limited to one answer per column, a feature on google forms.

V. Results and Discussion:

Introductory Information

While many studies examine demographic differences between students using the libraries, this research has the intent to prove library hour extensions are genuinely necessary and equitable. For that reason, introductory questions asked students for their year in college (in the 2021-2022 school year) and their specific department at UF. Previous studies have found that freshman usage of the libraries has a positive impact on retention and GPA [16]. Others have shown that undergraduate students tend to use late night hours more than graduate students [2]. A study at the University of Florida revealed that the top three undergraduate colleges utilizing late night hours were Engineering, the College of Liberal Arts and Sciences, and the College of Business [17]. Figures 1 and 2 below summarize survey respondents' backgrounds.

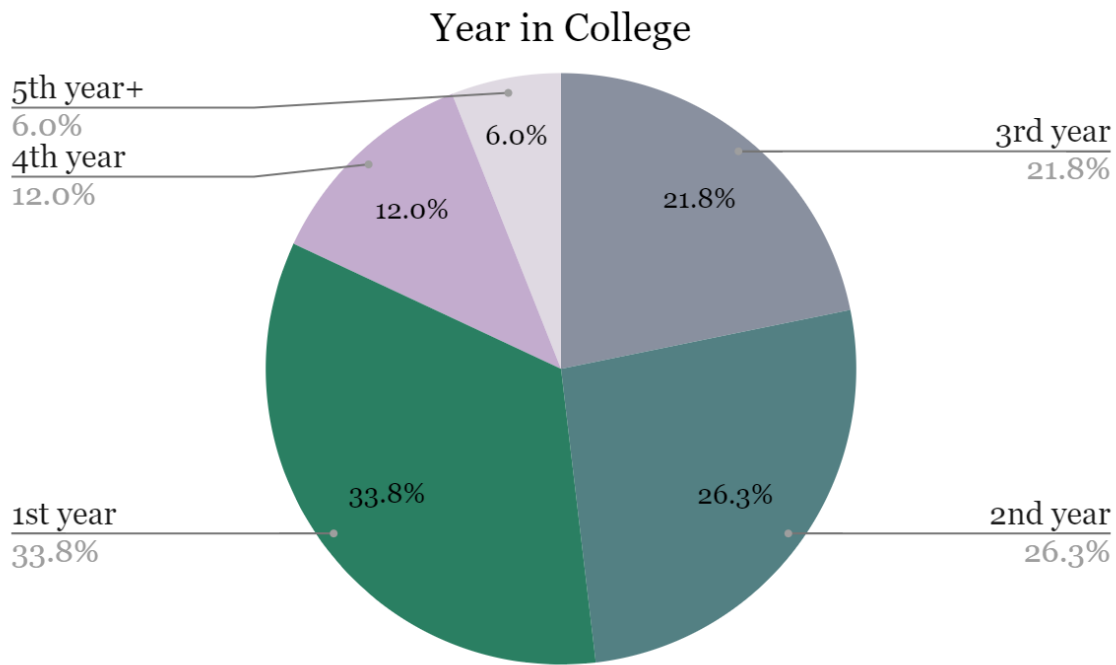


Figure 1 Percentage of Students Represented by their Year in College in the 21-22 School Year

One limitation to these results was the time constraint associated with distributing the survey.

Due to limited group chats, this data may be considered non-random. However, since this proposal relies on long-term usage, it is ideal that the highest group of respondents were first year students. Out of the 133 students who filled out the survey, 45 were first year students, of whom will be future users of library hours. An interesting pattern was observed: the percentage of students in each year decreases as the year increases. This is likely indicative of the composition of students in ENC3246, but such a trend is still helpful as students least impacted by library hour extensions (ie those graduating in a year or less) were the fewest representatives. One study of library users using observational data found that late night users included 30% 1st year students, 23% 2nd year, 20% 3rd year, 20% 4th year, and 8% 5th year+, a surprisingly very close distribution to the responders of this survey [2].

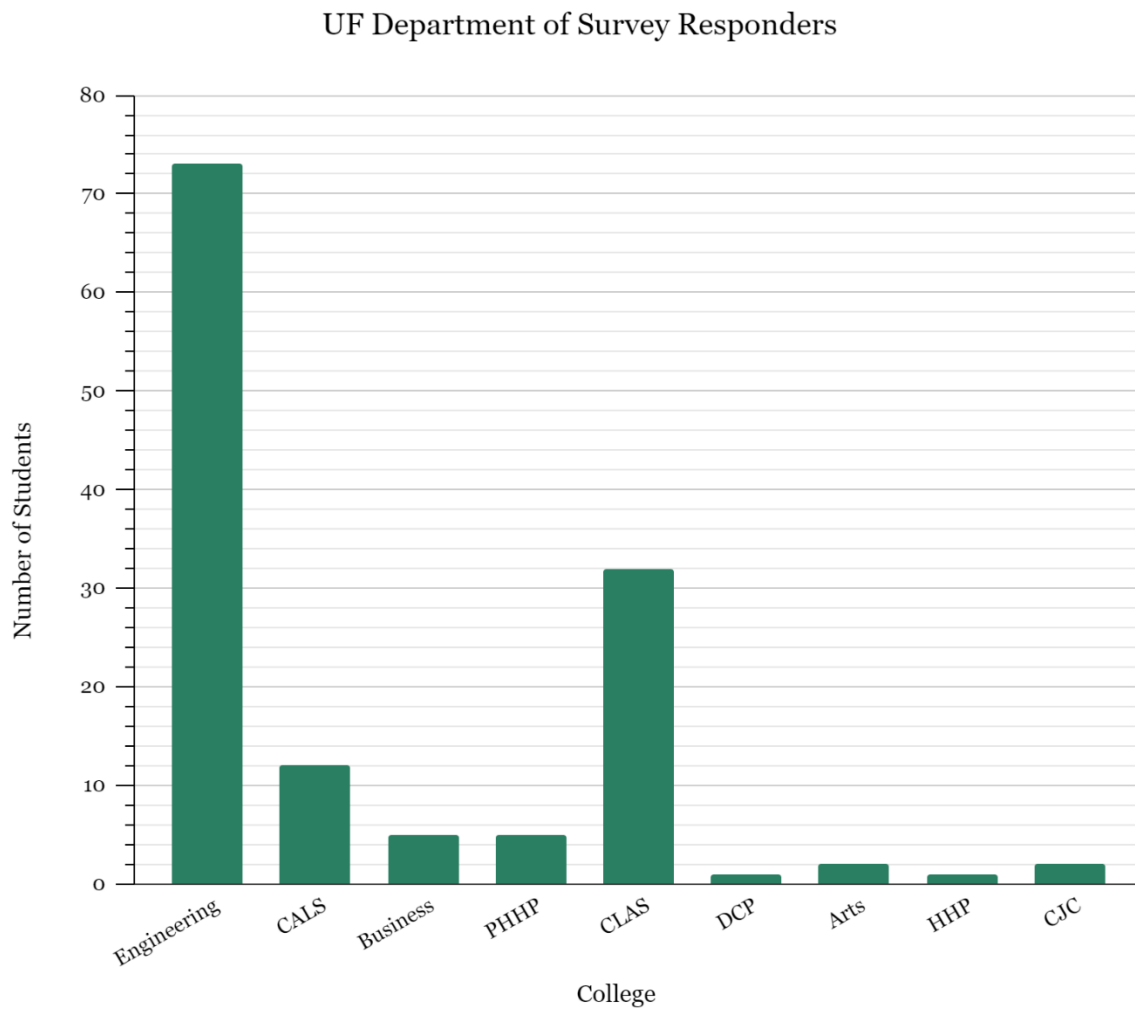


Figure 2 Number of Undergraduate Students Represented by College at UF

**CALS = College of Agricultural and Life Sciences, PHHP = Public Health and Health Professionals, CLAS = College of Liberal Arts and Sciences, DCP = Design, Construction, and Planning, HHP = Health and Human Performance, CJC = College of Journalism and Communication*

Similar to Figure 1, Figure 2 is also severely limited by sample size and a non-random distribution. Given that all contributors to the study are engineering majors, it was unsurprising to see that 55% of respondents were from the College of Engineering. This was followed by students in the College of Liberal Arts and Sciences, representing 26% of the sample. 9% of

students came from the College of Agricultural and Life Sciences and the other six representing colleges had 5 or less students. Nonetheless, as previously mentioned, Engineering, CLAS, and Business students are the primary users of late-night hours, highlighting the usefulness of this particular sample of students. Additionally, 87.5% of 5th year+ students were engineering majors. While the sample size is small, engineering majors often take one to two extra semesters due to a higher number of mandatory credit hours. This indicates that one of the top three college users of the library also tend to stay the longest at the University. Such a trend is helpful when considering how long a UF library can sustain 24-hour access.

Study Habits

Due to the inability to use in-person observational data, survey questions were constructed to gauge self-reported student study habits in the most realistic way. Figure 3 captures data from the question: “What time(s) of day do you normally complete your schoolwork?” Many opinion surveys from other late-night library studies ask students more forward questions, such as “How late would you want library hours to remain open?” Using these questions, most have found that students have a great tendency to ask for the latest possible hours. Then, when taking observational data, few students use the hours they ask for. As shown in Figure 3, study time distribution was bell-shaped, peaking during “Evening” hours and decreasing towards overnight and morning hours.

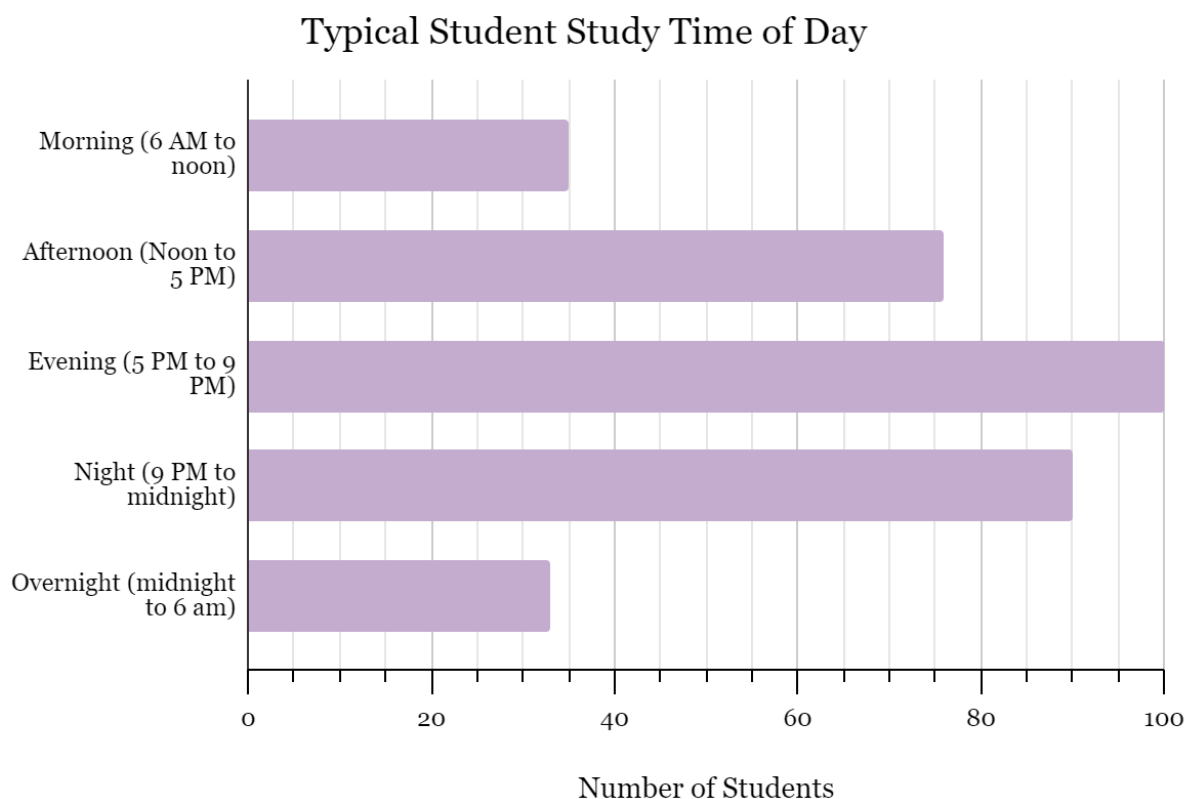


Figure 3 When Students Study: Covering 24 hours of Studying Times

Students were allowed to select multiple time slots – 10% of students chose only one time slot. Surprisingly, a greater number of students study between 9 PM – 6 AM than 6 AM – 5 PM. It appears that night hours are more favored for studying than morning and afternoon hours.

Previous research has found similar trends, relating students' late night study habits to daytime jobs, classes, and overall busy schedules. Others have also found, through student opinion data, that night-time hours are more peaceful, quiet, and better for focusing [2] [14]. From this study, department/college is independent of study time of day, indicating that major does not have a large effect on when students study. Beyond study time, it was interesting to discover how long students typically study in one setting, demonstrated below in Figure 4.

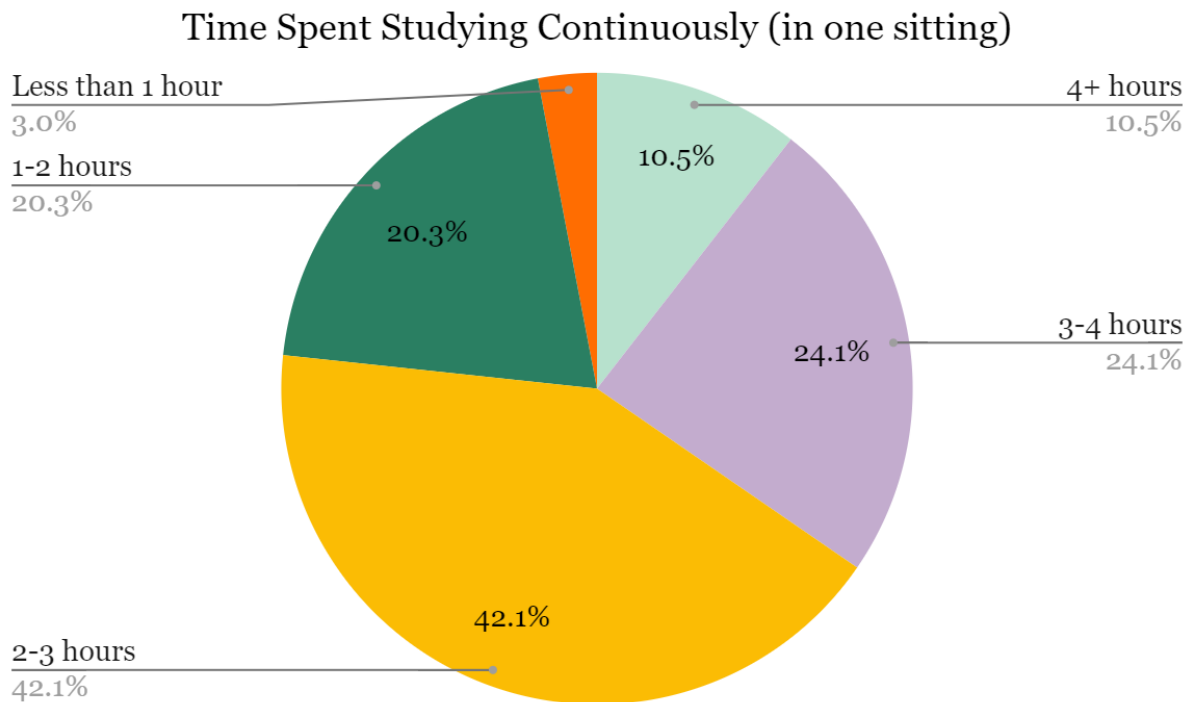


Figure 4 Percentage of Students Who Study Less than 1 hour, 1-2 hours, 2-3 hours, 3-4 hours, and 4+ hours at a Time

This data is most helpful for ergonomic considerations. Many studies have shown that study breaks should be taken hourly – such breaks increase energy, productivity, and improve focus [18]. Only 3% of students indicated studying for less than 1 hour at a time. The greatest percentage of students typically study for 2-3 hours, followed by 3-4 hours of continuous studying. Although longer studying provides reason for greater library hours, it also indicates unhealthy habits among students. Certain features incorporated in UF's Health Science Library, including nap pods, exercise equipment, and massage chairs could greatly improve student studying habits. Small exercise breaks have been shown to increase alertness and concentration [19]. Additionally, such long periods of time sitting indicate a need for comfortable seating. Similar to finding that major and study time of day are not highly correlated, major and time spent continuously studying are also independent.

Although, there is some dependence on year in college and time spent studying. Below, Figure 5 shows that 2nd year students tend to study for longer periods of time, being the majority of students studying for 3-4 hours. 1st, 2nd, and 3rd year students mainly spend 2-3 hours studying, while 4th year+ students tend to study for 1-2 hours. However, data on 4th year students and above is limited. Overall, it appears that a large sample size may show less dependence in every category.

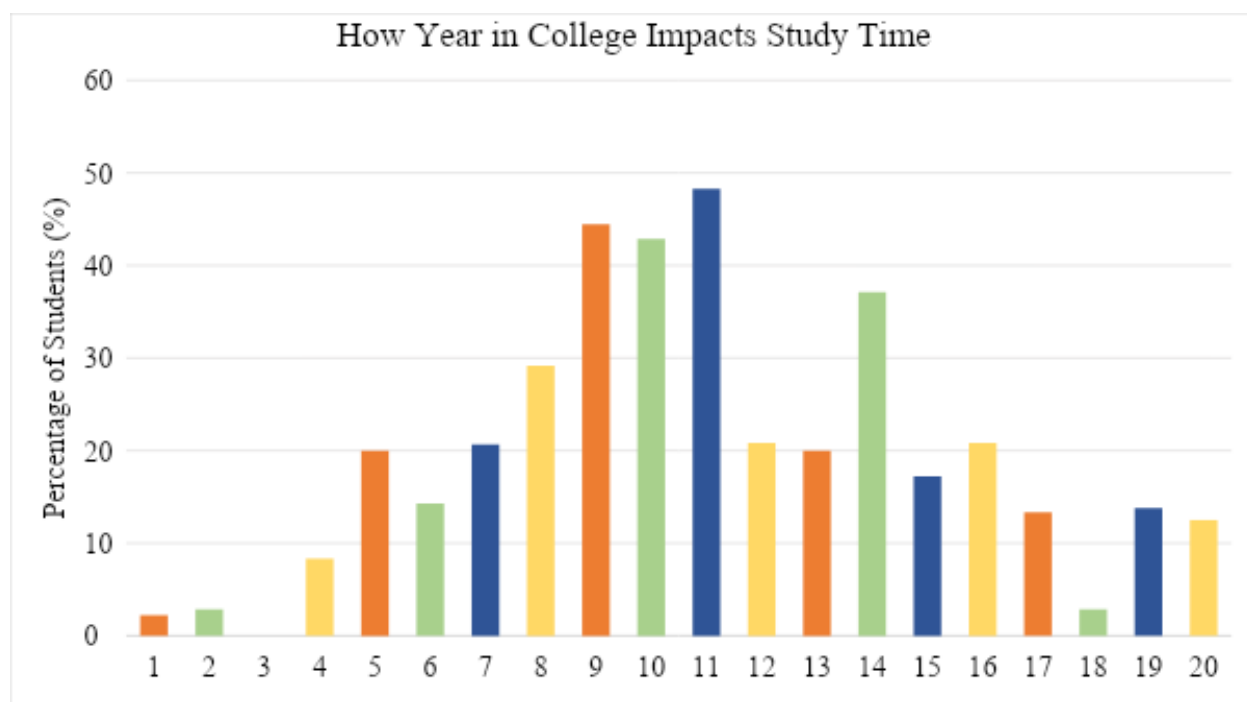


Figure 5 Observing How Year in College Impacts Study Habits, Specifically Time Spent Studying in One Sitting

The final question relating to study habits asked how often students stayed until a library closed. As far as self-reporting, this was a more difficult question to assess since students may have trouble remembering the exact number of times they stayed. Similar to studying times, it was noticed that of those who selected 5+ times staying till close, the majority were 2nd year students. Below, Figure 6 shows the distribution of the number of times staying till closing. Many who

selected between 1-4 times could have only used later hours for Midterms or Finals, of which this study does not ask. However, it was assumed that users who selected 5+ times were frequently in need of longer hours.

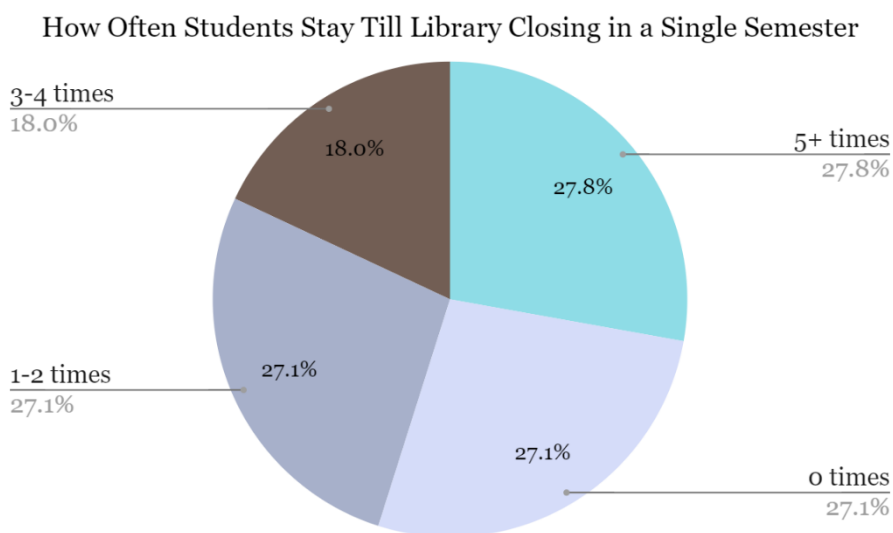


Figure 6 The Percentage of Students Who Utilize Library Hours Until Closing (Self-Reported for a Single Semester)

A very even distribution was noted and feedback from those taking the survey mentioned difficulty remembering or placing an exact number of times staying till closing. The largest percentage reported staying 5+ times and this was without knowledge of the survey's intent. Although a small sample size, this does indicate there is worthiness in furthering the study with observational data. Another option is to open libraries on a trial-based extended hour setting and track usage.

Ranking Questions

Following study habit questions, the survey was directed towards ranking library features (Figure 7), followed by ranking three study spaces for their comfort, atmosphere, and security (Figure 8). In this questionnaire, the only study spaces included were Library West, Newell Hall, and

Marston Science Library. The order of which these libraries were presented to students in the survey was random and the three were chosen based on current or previous status as a 24/7 study space.

In Figure 7, students were asked to rate importance of study space features on a scale of 1 to 5 where 5 was “Very Important” and 1 was “Not at all.” Student responses were averaged to give a final measure of “importance,” where numbers closer to 5 are of higher importance.

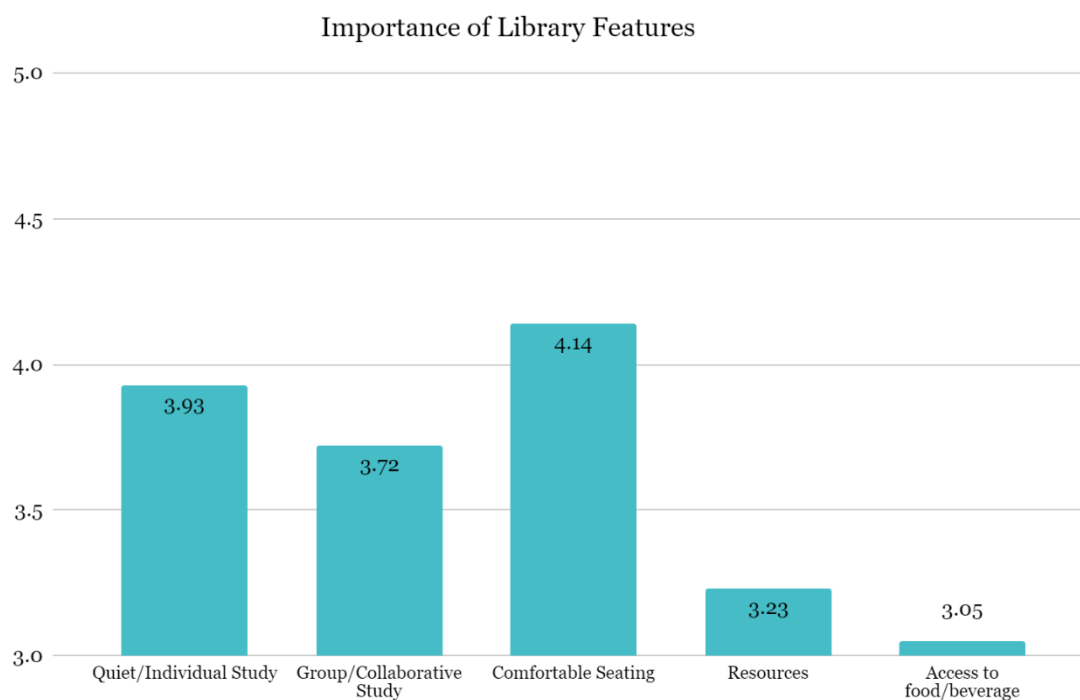


Figure 7 Student Ratings of Various Library Features Weighted for 133 Responses. A score closer to 5 is equivalent to being highly important while a score closer to 1 is less important.

After averaging answers, most scores lied between 3 and 4. Clearly, comfortable seating is very valuable for students in a study space, even more than resources offered (printers, scanners, plotters) and access to food and beverage. In the past, students have made complaints about the

noisiness of Newell Hall and this type of disturbance is obviously important to students, with quiet study ranked as the 2nd most important feature.

As described in the methodology, one severe limitation to the data presented in Figure 8 was misreading of the survey questions. Noticeably, students who ranked improperly most often selected “2” for every study space. Therefore, after averaging, scores converge towards 2. That being said, there was still a very clear trend for which space is most favored in comfortability, atmosphere, and security/safety. In all three questions, Marston Science Library received the most “1” scores, Library West received the most “2” scores, and Newell Hall received the most “3” scores, where 1 was equivalent to the best and 3, the worst. Additionally, Newell Hall received the most “N/A” answers. About 23% of students answered N/A for Newell Hall ranking, supposedly an indication that they have not utilized the space. Contrarily, Marston received only about 3.8% N/A responses and Library West had around 7.5%.

	Comfortability	Study Atmosphere	Security/Safety
Marston	1.88	1.84	1.87
Library West	1.89	1.90	1.93
Newell Hall	2.05	2.21	2.13

Figure 8 Weighted Average of Students' Ranking of Three Study Spaces on UF Campus: Library West, Newell Hall, and Marston Science Library. A score closer to 1 equates to the best and 3 represents the worst.

Marston received the best weighted average ranking for all three factors; although, Library West was close behind for comfortability. Notably, of all factor-level combinations, the best and worst

ratings were the study atmosphere of Marston and Newell Hall respectively. For Library West, security is considered its worst feature, likely due to its location on University Avenue, but still, Newell ranked worse in safety. This is an interesting finding as Marston and Newell Hall are within 500 feet of one another. Nonetheless, students perceive Newell Hall to be less safe.

Other

Finally, students were asked which study space would be preferred as 24/7 operations. Currently, Newell Hall offers 24/7 service, while Marston and Library West have been funded for service sporadically at student request.

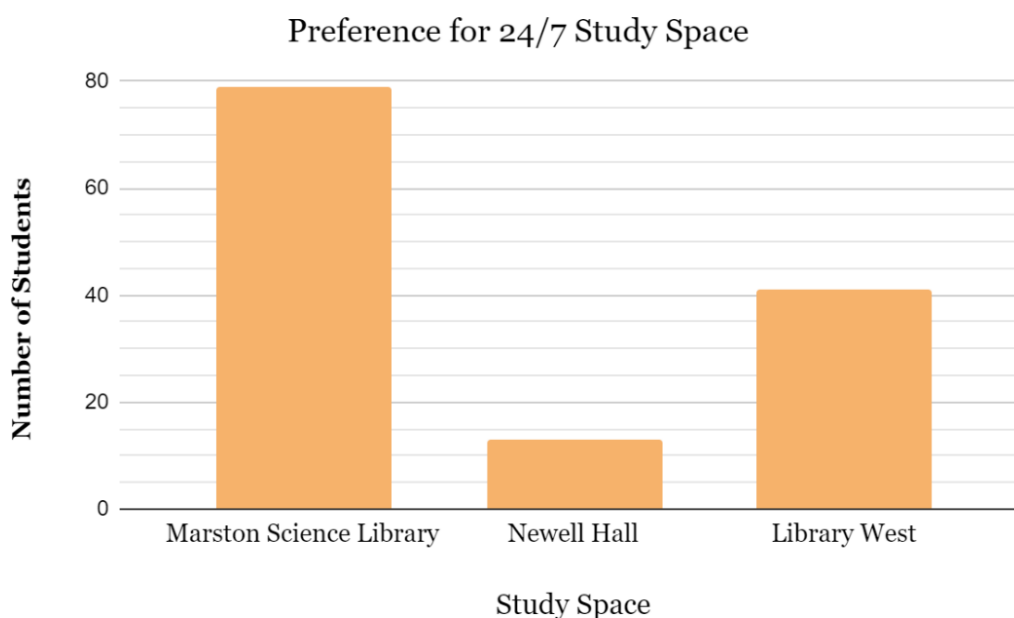


Figure 9 Students Preference for a 24/7 Study Space Indicates a Greater Preference for a Traditional Library Setting

After viewing ranking in Figure 8, it was expected that Marston would have the highest preference for 24 hour service. Nearly 60% of students favored Marston, 31% Library West, and

9% favored Newell Hall. Such results heavily imply changes to current study space hours would be supported.

VI. Conclusions

A google forms was sent out for two days in order to gauge student opinion on study habits and library features. A total of 133 responses were accounted for, with the majority being Engineering or CLAS students in their 1st-3rd year of college. It was found that students mostly study between 12-5 pm, but a great majority also study into the evening and overnight hours. Most study for fairly long periods of time in one setting, usually between 2-3 hours underscoring a need for comfortable sitting and even exercise equipment within the libraries.

Previous acquired data from 2017 which compared Newell Hall to Library West showed that students preferred a traditional library setting by 6 to 1 [5]. Our data showed an even higher preference for the traditional library setting by 9 to 1. Spears' study comparing Newell Hall and Library West also cited the most common reasons for not using a certain study space. For Newell Hall, two of the top three reasons included "space not conducive for studying" and "too noisy" [5]. Consistently, our data showed that Newell Hall ranked at the lowest of the three study areas for comfortability and study atmosphere. Additionally, our survey respondents placed "quiet/individual study" and "comfortable seating" at the top of their priorities in a study space in Figure 7. Overall, this helped us conclude that Newell Hall is not a conducive environment for studying overnight.

VII. Budget

The main components for funding extended library hours are staff, cleaning, and security salaries. According to the Dean of Libraries, Judith Russell, and Dean of Scholarly Resources, Marston Science Library will cost \$131,887 per year to remain open 24/4, already adjusting for

inflation and an increased minimum wage [20]. Of this, \$90,447.20 will be used to hire two TEAMS staff employees, \$16,521.40 towards student assistants, \$4,100 for additional custodian services, and the remaining \$20,788.40 towards OPS Security. With additional funding from the Provost, greater possibilities arise for larger salaries for overnight employees, more extensions on days depending on usage, and more robust security measures.

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