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FREE STATE HIGH SCHOOL LEARNING COMMONS
POST-OCCUPANCY EVALUATION

Phase 1 & 2

Prepared: June 2023

multistudio

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Executive Summary

About This Report

The Learning Commons increases class success and school inclusion.

Researchers from the Multistudio Research Center collaborated with Lawrence Public Schools staff at Free State High School to look at how student usage of the newly renovated Learning Commons (formerly the library) helped students earn better grades.

We began by looking at the space's usage and students' performance data going back to 2010. Our analysis found that student usage statistically predicted student grades, and that more usage correlated to higher grades. We then held focus groups with students to learn why. The results show the Learning Commons helps students effectively use their independent time at school, especially for Autistic students.

About The Project

The Free State High School renovation project touched 47,000 sq.ft. across a public high school in Lawrence, Kansas. A major goal for the project was to re-imagine the library as a Learning Commons that served as a new heart of the school. Completed in 2019, the project created a centralized learning environment with a wide variety of options for where students could be, what they could do, and with whom they could do it.

The first phase of our research showed students who spent more time in the new Learning Commons were more likely to pass their classes. They were also more likely to earn top marks (A's) in their classes, revealing it helped both struggling students and those who were seeking challenge and enrichment.

In our second phase of study, we hosted focus groups to talk with students for whom the Learning Commons had produced a statistical impact. We found that the variety of options available in the Learning Commons were particularly valuable for Autistic students, that all students appreciated the spatial autonomy of the new space, and that we as designers can continue to learn from how the students are using the final design.
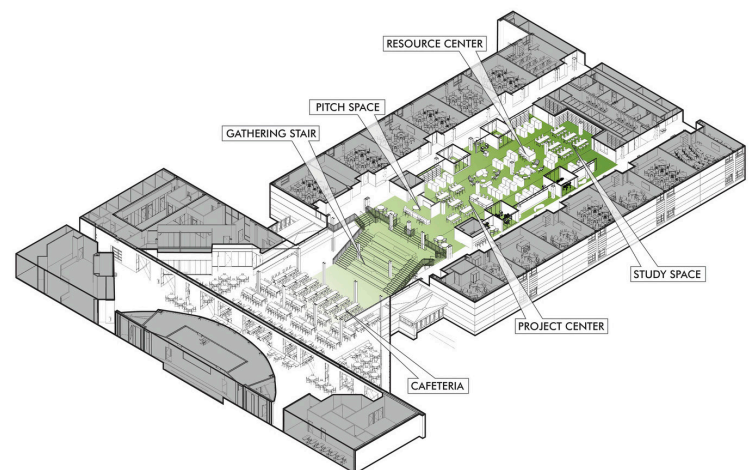
02

Phase 1 (Quantitative): Class Performance

Phase 1:
Key Findings

Library usage increased.

Free State High School's library utilization increased following the completion of the renovation. Student library engagement is up compared to prior years, as measured by both attendance (**Figure 1**) and book circulation (**Figure 2**). Space observations and faculty focus groups support this data, with qualitative notes indicating the variety of spaces are consistently being used throughout the day.

STUDENTS WHO ENGAGED WITH THE LIBRARY IN 2021

32%

68%

Approx. one-third checked in during Instructional Resource Time or checked out a book

Student Library Engagement

Used

Did Not Use
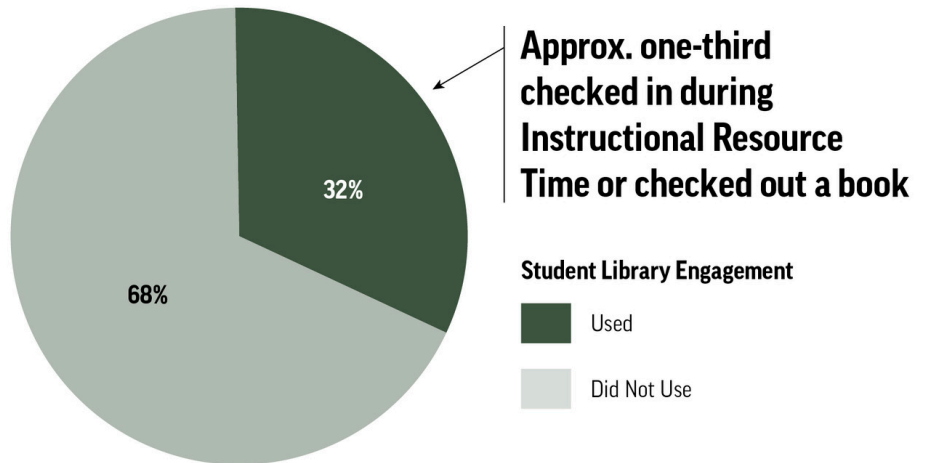
Figure 1

LIBRARY BOOKS CHECKED OUT FROM 2010-2021

Total Number of Books

2,761
3,525
4,166
4,188
4,271
3,653
3,369
3,847
2,539
1,555
211
1,626

4.6% more books checked out

Pre-pandemic level of book circulation

4000
3000
2000
1000
0

2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021

Year

● Project Completion   Pandemic
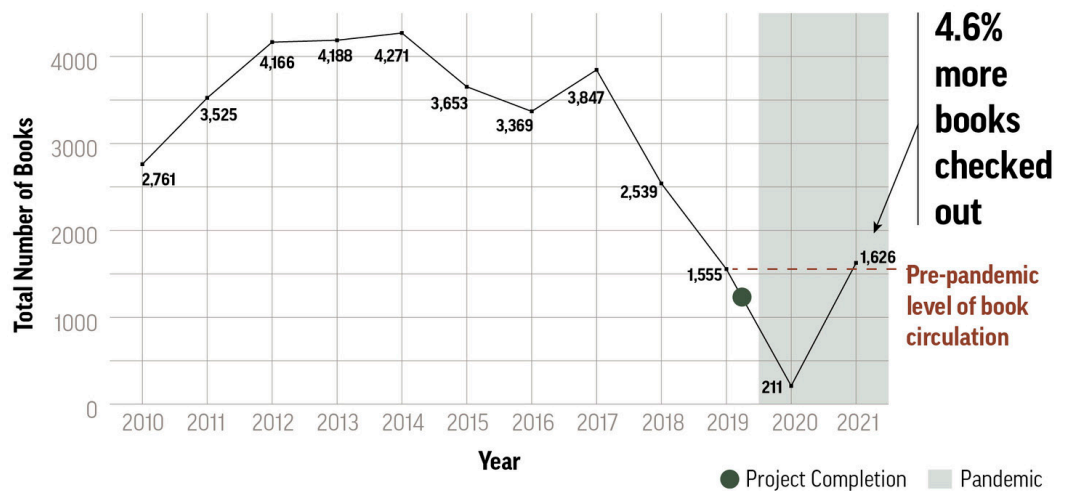
Figure 2

Library usage predicts passing classes.

We built a statistical model for student library usage. Students with higher scores in this model earned significantly fewer F's and significantly more A's compared to students with lower engagement scores. These predictions remained, even after controlled for past student performance.

Engagement Connected to Success

Students with only limited engagement (often a single visit or book checkout) averaged ~50% less failed classes compared to students with zero library engagement. **Figure 3**

Using student success data from 2019 & 2021, we conducted additional analysis that found media center engagement was connected to increased student success even after controlling for past student performance in 2019.

Figure 3

Data Sources

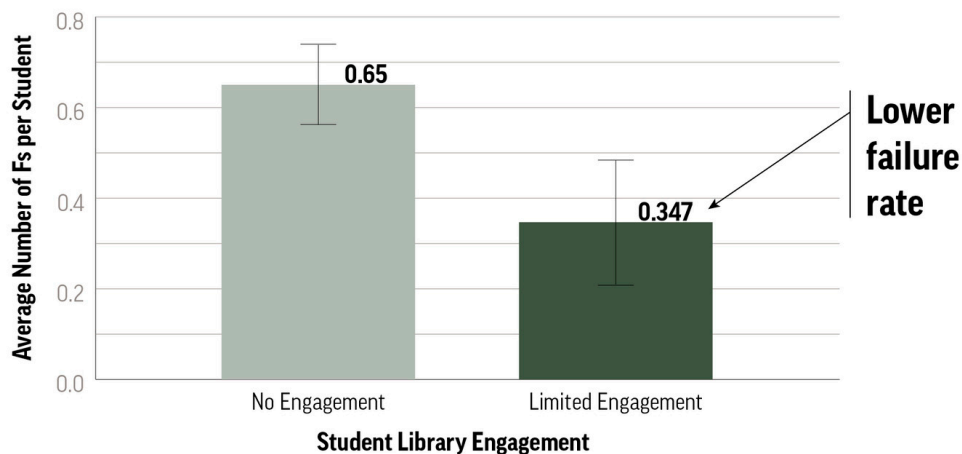## Sample Characteristics

- **Anonymized student course data was aggregated from 1,725 students enrolled at the school in the fall of 2021.**
  - **Data included only grade-level (≈age) demographic information.**
  - **Data included only total count for whole letter grades (ex: 3 B's).**
  - **Data included 2019 grades for the current juniors and seniors (who were freshman and sophmores in 2019).**

Analysis Overview

Modeling Library Engagement
Rasch Rating Scale Model (RSM)

We used monthly library attendance and book checkouts to create a Rasch model of "library engagement" estimates for each student. This analytical technique generated a Wright Map (Figure 4).
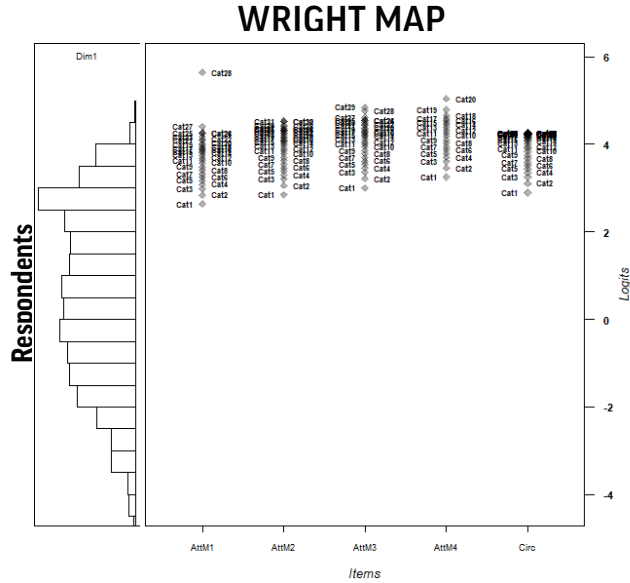

Figure 4

This is the Wright Map for "library engagement". The EAP reliability for this model was 0.588. We used this model to output logit estimates of engagement (and the standard error) for each student.

Visualized Linear Modeling

We determined how much library engagement predicts 2021 student performance after controlling for student performance in 2019 using multiple regression. Library engagement had a model coefficient of -0.115 (p<0.001) predicting fewer future F's after controlling for past performance. That is a significant effect with a medium-small effect size.

EFFECTS OF INCREASED LIBRARY ENGAGEMENT

Library engagement reducing number of courses failed
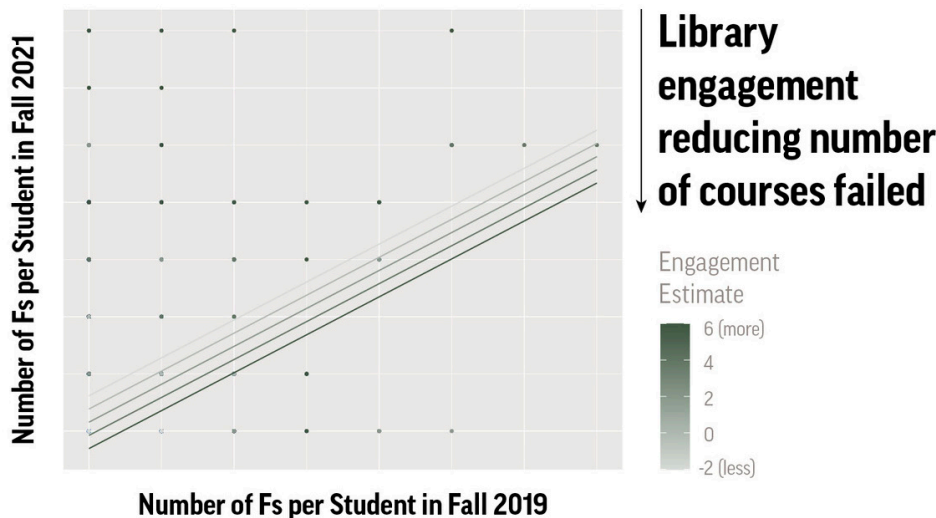
Engagement Estimate
6 (more)
4
2
0
-2 (less)

Figure 5

Notice how the line for medium and high engagement is lower than the term for low to no engagement, showing improved class success.

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**Phase 2 (Qualitative):
Student Voices**

Phase 2:
Key Findings

How do students use the Learning Commons?

In Spring 2022, Multistudio researchers invited students to participate in research focus groups, specifically students who showed an impact in course performance from their use of the Learning Commons.[1] Focus groups were held within a meeting room in the new Learning Commons and through these conversations respondents shared how and why they used the Learning Commons.

The research team analyzed transcripts from the conversations and identified three important themes in what students shared:

1. **Affordances for Autistic Students**

    During the focus groups, approximately 30% of the students spontaneously self-identified as Autistic. Autistic students felt more at ease with the visual and auditory stimuli in the Learning Commons. The space also provided comfortable and safe opportunities to engage their peers (or not) in the flexible shared spaces.

2. **Student Spatial Autonomy**

    The Learning Commons had quickly become a heart for the school, meeting a major project goal in the renovation. Students and staff engaged the space for a wide variety academic, extracurricular, and social reasons. The mix of activities often resulted in students finding unexpected opportunities for new activities in the ever-changing communal environment.

3. **Unexpected Usage Patterns**

    The Learning Commons project completed in Fall 2019, which meant it was occupied amid multiple major changes in how the school operated, such as COVID-19 disruptions and the Flex-Mod schedule adoption. Through the post occupancy evaluation, we identified ways the space was being used that surprised the project designers. By learning from these surprises, we can apply this knowledge when designing future projects.

[1] Read more about purposeful sampling methods from **Palinkas et al., 2015**.

1. Affordances for Autistic Students[2]

Sensory Safety

Students reported the new space's organization and scale are better suited for student movement fostering a welcoming and open atmosphere for learners.

They described a more accommodating atmosphere created by the movable furniture, the calming color palette, and a quieter acoustic profile.

The learning commons successfully mitigated harsh sounds with auditory barriers, even during times of high traffic use and passing periods.

"I get really stressed out if anything feels claustrophobic."
—Free State High School Student

"It's very quiet… It really is good with noise."
—Free State High School Student

Social Comfort

The Learning Commons provided a platform to pursue personal interests under the guidance of school faculty. For example, one Autistic student worked on building a computer with the IT professional who desks in the Learning Commons.

Students commented on the new ability to engage the Learning Commons faculty and work "alone together" with peers. Unlike the previous library, students could now exist in the space without an implicit expectation to socialize with staff or peers

"[My friends and I] make our own pins… just send us a picture design and make it."
—Free State High School Student

"I'm pretty shy…. sometimes I'll bring in baked goods and give it to library staff. And that's the only interaction I have."
—Free State High School Student

[2] **About Our Work with Autistic Students**
 Read more about our approach to researching data from Autistic students and our choices in how we've written about it in this report in Appendix 1.

2. Student Spacial Atonomy

The Learning Commons functions as the heart of the school by supporting a wide variety of uses for diverse student needs. Some students sought a place for academics such as studying spaces or group work, while others sought comfortable, social spaces for reading, media consumption, or casual meeting. Spatial flexibility supported the various student needs concurrently.

Autonomy-Supportive Space Design

Each student's learning pathway is both personal and contextual, which means the environment must be designed for student variability. The Learning Commons offered a wide range of options for students beyond what was available within their programmed classrooms. The Learning Commons is distinctly self-guided. It operates without the direct linkage of an assigned class or a specific teacher. The fluidity of teachers and students coming and going into the space leads to a power dynamic where students have more agency and ownership. The architecture recognizes unique student preferences by providing differing privacy zones.

"I live with a lot of people. Also, like, it's very... always bustling... But [home is] more like a relaxed setting. I don't feel like always reading, and so going to the library kind of helps me get work done."

–Free State High School Student

"I prefer to do all the school stuff at school and not home."

–Free State High School Student

"You have like a lot of these personal rooms where if you need to have a tutor or anything, or if you just want to be alone to study, there's a lot of choices. There's live work versus the TV."

–Free State High School Student

"I appreciate this is more flexible for everybody. Look at us, we all fit in here really easily. It was easy to carry chairs in here. I like it a lot."

–Free State High School Student

3. Unexpected Usage Patterns

We designed the Learning Commons without knowledge of what the future held. This is true of every project, however this project had big surprises in store!

One surprise was the Learning Commons opened for service during a new school-wide implementation of Flex-Mod scheduling. Neither Multistudio designers nor school personnel knew the school would move forward with this shift during design, but it dramatically influenced how students used the Learning Commons upon opening.

Additionally, there was the unfortunate surprise of COVID-19, which affected students and educators alike. Societal disruptions from the COVID-19 pandemic began shortly after completing renovations.

Flex-Mod[3] Meant New Circulation Needs

The high volume of student foot traffic resulting from Flex-Mod schedule patterns strained the faculty's ability to safely supervise the space. As a result, school personnel decided to use the security gates at times the designers had not expected: during the school day.

Remembering the Old Library

The previous library was in a more discrete location, making access more challenging. Consequently, the students who frequented the old library expressed missing a less trafficked space. The Learning Commons is now a highly trafficked, central part of the school. Therefore, more private spaces may be needed to accommodate the higher usage.

"People sign up [to use the library] and more people come in that are not signed up. And that's kind of irritating."
–Free State High School Student

"There's one thing I would change: I would have the gates open."
–Free State High School Student

"This one's more of a study place, less of a library... I prefer the old libraries."
–Free State High School Student

[3] **About Flex-Mod**
  Read more information about Flex-Mod in Appendix 2.

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Appendices

Appendix 1:
About Our Work with Autistic Students

Positionality

The Multistudio research team strives to engage in our practice with reflexivity, and we acknowledge each researcher who contributed to this study is not Autistic. The research team has reflected on how our lived experience is different than those with autism, and sought input from those with focused expertise working with Autistic students in an educational context (see below). Throughout this work we strove to amplify the voices of Autistic students in an effort to advocate for learning environments that better support them and all students who may be neurodivergent in any way. This reflection was guided by the Social Identity Map tool (Jacobson & Mustafa, 2019).

Identity-First & Person-First Language

Throughout this report we have written "Autistic person" using the Identity-First convention. We have made this style choice in alignment with recommendations from the Autistic Self Advocacy Network (ASAN), but we recognize individual Autistic people may have different preferences for their own self-reference (Kenny et al., 2015; Buijsman et al., 2022). Even among the students who disclosed their identities in our focus groups, they each made their self-references in different formats. Both in recognition of the variability in their own choices for reference, and to further protect student identities (ie: mask identifiable speech patterns) we have implemented this Identity-First language uniformly.

Methodological Review

Our study design was not intended to surface findings specific to Autistic students. When we identified this theme as potentially important in our findings, we sought external review of our methods to ensure we were handling student data and and reporting findings in safe and ethical ways for this population.

We requested a methodology review from Dr. Gretchen Scheibel, who had not been involved in the study nor with the partner school prior to her review. Dr. Scheibel is an expert in working with Autistic students; she works as a research professor at Juniper Gardens Children's Project and earned her PhD in Special Education from the University of Kansas with a focus on evidence-based practices. She has over 15 years of experience supporting children on the autism spectrum.

Dr. Scheibel's review was narrowly focused on our method of generating the data related to our theme of "Affordances for Autistic Students." She advised our analysis to be ethically appropriate, and her full consultation memo is available upon request.

Appendix 2: About Flex-Mod[4]

Since project completion, a key school initiative was the shift to a Flex-Mod scheduling approach. This strategy breaks student schedules into much smaller units of time, with the goal of offering more options and greater student agency in their day.

The redesigned learning commons has played an important role in the shifting schedule to offer safe, open space for students to gather and work in groups outside of formal class periods. It has also offered a place for individual students to both work independently and to rest and regroup throughout the day.

Historical Information from USD 497

The Flex-Mod approach fosters a number of benefits for both students and staff:

- Increased teacher-led collaborative planning time
- Exposure to post-secondary learning environments, including lectures, recitations, and student-led study groups
- Additional one-on-one time between teachers and students during the school day
- Enhanced student collaborative learning experiences
- Stronger peer-to-peer and peer-to-staff relationships because of time during the school day
- Improved interventions and learning support for struggling learners
- Wider use of best practices and blended learning techniques
- Development of soft skills, including communication, organization, and time management
- Greater access to community resources during the school day

		Phase A - 63-63-63-42		Phase B - 84-84-63							
		Lunch 3 hour		Lunch 4 hour		Lunch 5 hour		Lunch 2 hour		Lunch 4 hour	
MODs	Times	Mon A	Mon B	Tues A	Tues B	Wed A	Wed B	Thur A	Thur B	Friday A	Friday B
1	8:00 - 8:21	1A	1B	1A	1B	4A	4B	1A	1B	1A	
2	8:21 - 8:42	1A	1B	1A	1B	4A	4B	1A	1B	1A	3B
3	8:42 - 9:03	1A	1B	1A	1B	4A	4B	1A	1B	3A	3B
4	9:03 - 9:24		1B	2A	2B	3A	3B	3A	1B	3A	3B
5	9:24 - 9:45	2A	2B	2A	2B	3A	3B	3A		3A	3B
6	9:45 - 10:06	2A	2B	2A	2B	3A	3B	4A			4B
7	10:06 - 10:29	2A	2B		2B	2A	3B	4A		4A	4B
8	10:29 - 10:54	3A	3B	4A	4B	2A	5B	2A	2B	4A	4B
9	10:54 -11:19	3A	3B	4A	4B	5A	5B	2A	2B	4A	4B
10	11:19- 11:44	3A	3B	4A	4B	5A	5B	2A	2B	4A	4B
11	11:44 -12:09	3A	3B	4A	4B	5A	5B	2A	2B	6A	6B
12	12:09 - 12:34	5A		6A	4B	5A	5B		2B	6A	6B
13	12:34 - 12:55	5A	6B	6A		6A	6B	5A	5B	6A	6B
14	12:55 - 1:16	6A	6B	5A	5B	6A	6B	5A	5B		7B
15	1:16 - 1:37	6A	6B	5A	5B	6A	6B	5A	5B	7A	7B
16	1:37 - 1:58	6A	6B	5A	5B	7A	6B	7A	5B	7A	7B
17	1:58 - 2:19		7B		8B	7A	7B	7A	8B	7A	7B
18	2:19 - 2:40	7A	7B	8A	8B	7A	7B	8A	8B	8A	8B
19	2:40 - 3:01	7A	7B	8A	8B	8A	7B	8A	8B	8A	8B
20	3:01 - 3:22	7A	7B	8A	8B	8A		8A	8B	8A	8B

Figure 6: Free State High School Flex-Mod Schedule
Source: USD 497

[4] **About Flex-Mod**

Note: Since completion of this study, Free State High School has discontinued use of the Flex-Mod approach.

Appendix 3:
Additional Quotes

Theme 1: Affordances for Autistic Students

"I get really stressed out if anything feels claustrophobic. And I felt like the last one it was closing in on me a little bit [...] you had to scramble around and everything. It just didn't feel great."

"I feel like I have more motivation if other people around me are also working, and sort of like more of a social setting where you can kind of do whatever you want."

"It's very quiet. Here we are in the middle of a class transition right now. And I bet the microphones can't even pick up that noise [here in a breakout room right now]. It really is good with noise."

"[My friends and I] make our own pins... just send us a picture design and make it. [The Learning Commons faculty] offered to just research about what would be on the pin or button to help advertise it. It was surprising and almost, like, comforting."

"Sometimes I'll actually sit at the desk where the librarians like, you know, working on their computers and stuff. So that's a nice place to sit because there's always a couple [of] people there."

"It is very difficult for me to talk to people, unless they talk to me first, which is much more ideal."

Theme 2: Student Spatial Autonomy

"I prefer to do all the school stuff at school and not home."

"It's just so lovely that they care so much about the vibes that are going on in here."

"Can use the time while I'm here to do my physics. And my physics teacher's right next to the library, so it really works out."

"I might be the only person that does [specific program combination]. So, I've been told that when I walk into the library I do not need to sign up for ILT [Independent Learning Time]. Any time of the day I can walk in and stay there for as long as I don't have a class or something to do. And that's usually, on some days, hours."

Theme 3: Unexpected Usage Patterns

"There's one thing I would change: I would have the gates open... You can only come into the back part of the library. I wish they would open those up."

"There's actually a library class at that spot, so I wouldn't sit there."

"I just stay in the library and do my homework because I know somebody else needs help in a quiet space, so I prefer to leave the space free for other people."

"Nobody would bother me. It was like, everyone does their own thing. But in here, people just feel the need to just annoy you and your room."
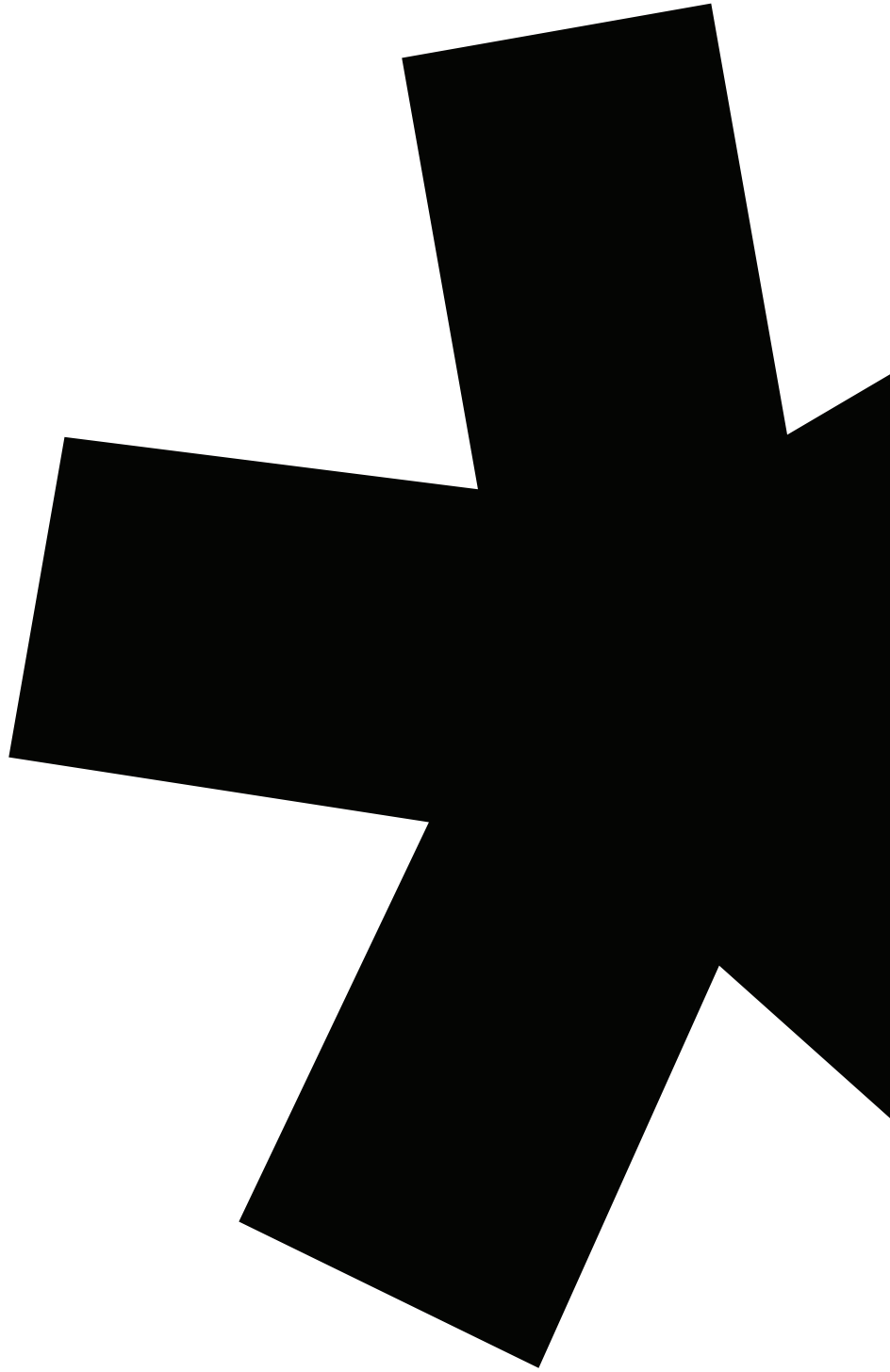
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If you're interested in an impact study or Post Occupancy Evaluation for your project, please contact EducationDesign@Multi.studio.