

The logo consists of the letters 'G', 'B', and 'N' in a white, sans-serif font, each contained within a white-outlined rectangular box. The boxes are arranged in a slightly staggered, overlapping fashion.

# NOURISHING BELONGING

Exploring the Impacts of Campus Dining Experience on College Students' Sense of Belonging  
by Shan Jiang, Stephen Mrdjenovich, and Zahra Daneshvar | 06.20.2024 | EDRA55 @ Portland, OR



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1. Research Context
2. Research Design and Implementation
3. Results and Findings
4. Design Implication
5. Q&A

# AGENDA

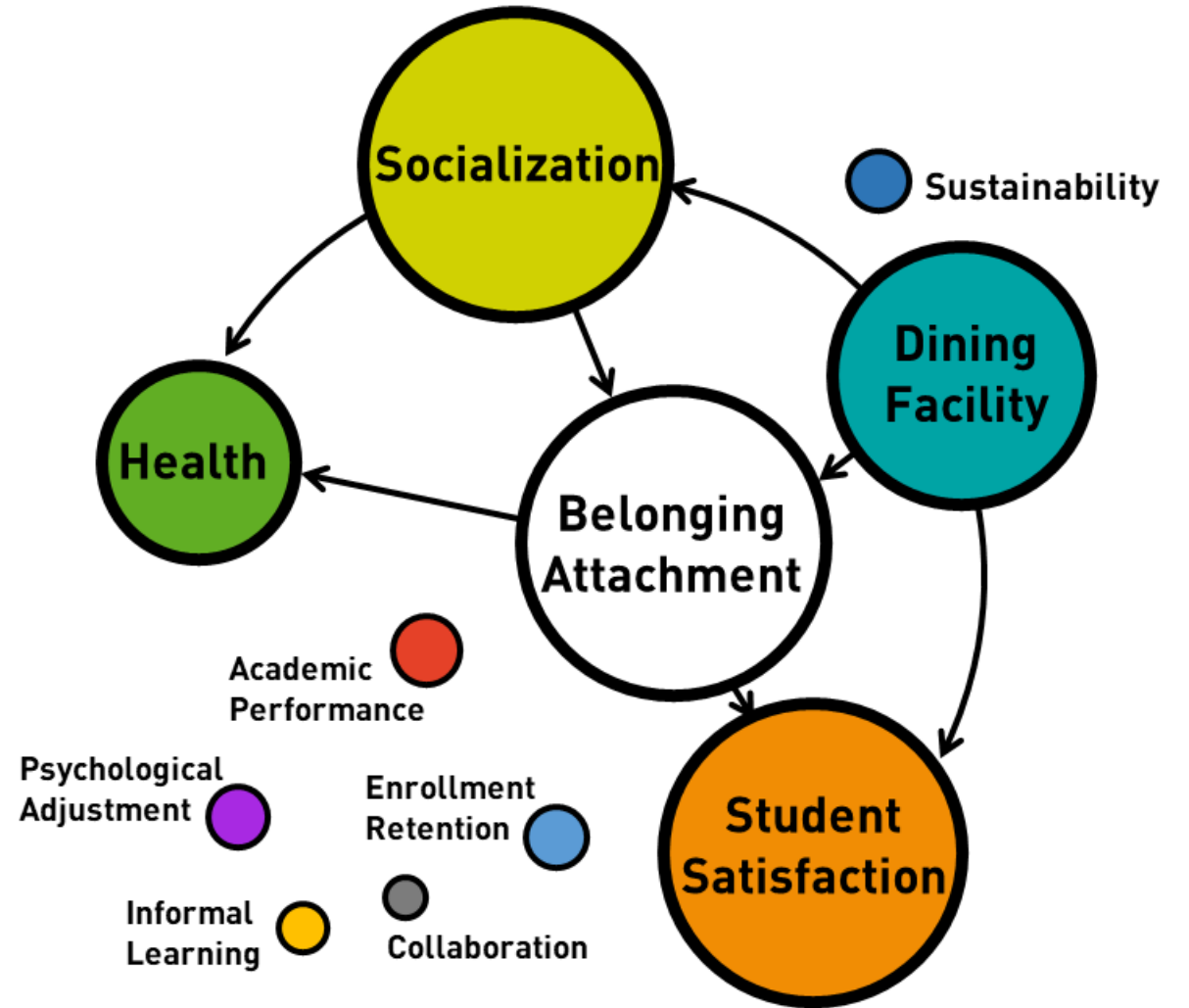




# RESEARCH CONTEXT

# CONCEPT MODEL

- Dining facilities as **social hubs** to cultivate sense of **belonging** and place attachment, leading to higher **satisfaction** and better outcomes among university students.



# RESEARCH QUESTIONS

1. How are students using the current food court at the case study college campus?  
What are the usage patterns?
2. How do students perceive the spatial design and food services of the current food court?
3. How does architectural design impact students' satisfaction with the food court?
4. What role might the sense of belonging play in food court spaces on a college campus?







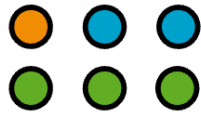
# RESEARCH DESIGN AND IMPLEMENTATION

# RESEARCH DESIGN



## Literature Review & Secondary Data

- 
- 55 peer-reviewed publications
  - Secondary data analysis



## Theoretical Foundation & Preliminary Implications

- 
- Findings from existing studies
  - Theoretical foundation



## Knowledge Gap & Research Questions

- 
- New research questions and hypotheses
  - Survey design



## User-Experience Study & Occupancy Evaluations

- 
- Food Court on the College Camps of a University in PA



## Knowledge Dissemination

- 
- Report
  - Presentation
  - Research artifact





# LITERATURE REVIEW

- Utilizing databases like Google Scholar and InfoKat Discovery, the review covered **57 peer-reviewed articles** and multiple **research reports**, including the nationwide RealCollege survey assessing university basic needs like housing and food on campus.

Variables	Aspects / Keywords
Environmental Factors	Furniture layout, Ambient environment, Energy efficiency, Acoustics
Spaces	Higher education, University, College, Campus public spaces, Dining (hall), On-campus dining, Learning commons, Cafeteria, Canteen, Cafe, Food service
Outcomes	Student satisfaction, Psychological attachment, Place attachment, Belonging, Student identity, Placemaking, Social engagement, Social interaction, Student behavior, Collaboration, Informal learning, Student adjustment, Engagement



# LITERATURE REVIEW



Author (Year)	Smith et al., (2020)	El-Said & Fathy (2015)	Andaleeb & Caskey (2007)	Liang & Zhang (2009)	Elbaum (2010)	Nadzirah et al., (2013)	Ryu & (Shawn) Jang (2008)
Elements impacting student's satisfaction							
Ambiance, Atmosphere			●	●	●		●
Space			●				●
Food and beverage quality	●	●	●				
Service quality, Staff behavior	●	●	●	●			●
Price, value for money	●	●	●	●		●	
Menu options	●			●		●	
Speed of service							
Cleanliness			●	●		●	
Convenience				●		●	
Responsiveness			●				
Meal plans	●						
Hours of operation			●	●			
Waste management, Energy efficiency					●		
Lighting							●
Social factors							●

# SURVEY DEVELOPMENT

The survey questionnaire was developed based on the findings of the literature review:

1. Questions about the usage situation of campus dining facilities, focusing on frequency and purposes.
2. Questions related to perception and satisfaction regarding food services.
3. Questions assessing perception and satisfaction concerning the design parameters of the food court.
4. Questions addressing the students' sense of belonging.
5. Demographic questions and schooling status, covering factors such as on/off-campus residence, school years, and learning mode.

The image displays several overlapping pages from a survey questionnaire. The visible text includes:

- Page 1 (top):** Question 16: "Which race or ethnicity best describes you? (Please choose only one.)" with radio button options for "American Indian or Alaska Native", "Asian or Pacific Islander", and "Other".
- Page 2:** Question 8: "Using the following matrix, please indicate the level you agree or disagree with the following statements about the physical features of Tully's food court." with a Likert scale from "Strongly Disagree" to "Strongly Agree".
- Page 3:** Question 9: "Using the following matrix, please indicate the level you agree or disagree with the following statements about food and services provided at Tully's food court." with a Likert scale from "Disagree" to "Strongly Agree".
- Page 4 (middle):** "Survey Instruction" section. It states: "You are entering a survey by GREEN Architects and the Housing and Food Services at Penn State Berks. This survey aims to explore your dining experience at Tully's food court, located in the Perkins Student Center at Penn State Berks. This survey consists of 18 questions and will take about 6 minutes to complete. After completing the survey, you will qualify for a 1 of 3 chance to win a \$10 Amazon gift card. Thank you!" It includes questions 1, 2, 3, and 4 regarding student status, years at Penn State Berks, current living location, and travel distance to Penn State Berks.
- Page 5 (right):** "Sense of Belonging Survey Questions" section. It includes a "Likert Scale" and a list of 19 items related to student involvement, social acceptance, and involvement at the school.





# SURVEY IMPLEMENTATION

- Online survey timeframe: 10/20-12/8/2023



- Questionnaires about the food and services, design and architecture attributes, sense of belonging, and overall satisfaction about the food court.
- Random sampling (Flyers + QR code) and convenience sampling via a student advisory committee to the campus food and housing services.
- Survey sample size  **$N = 132$**  (The total meal plan subscriber is approximately 500 students).





# SELECTIVE RESULTS & FINDINGS

Enjoy A  
Refreshing  
Beverage!



*Differences Between On-Off-Campus Students: In-person visits remain the predominant mode of using the food court. Approximately 10% of on-campus students use mobile orders very frequently (multiple times per day).*

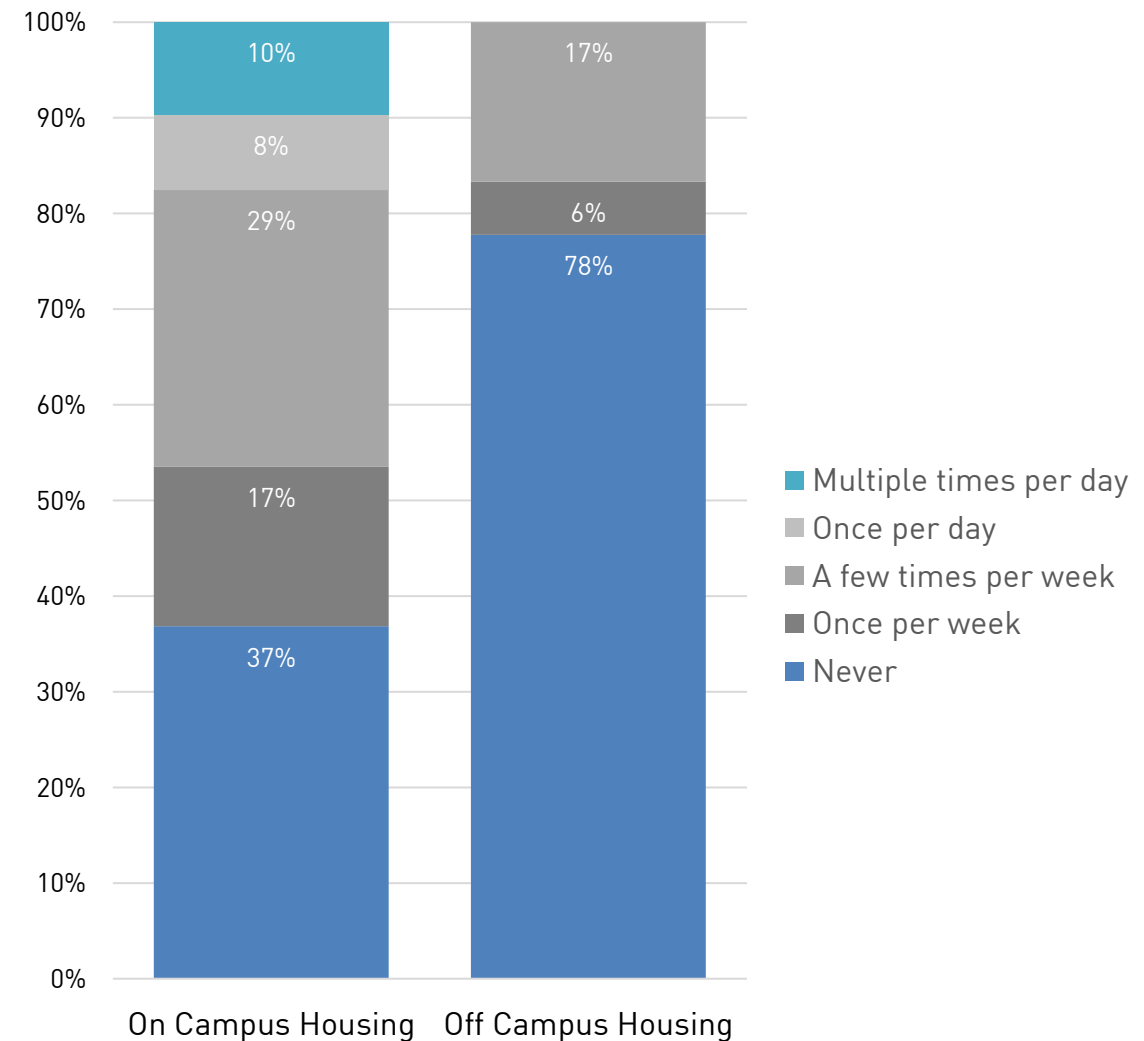
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Statistically significant difference regarding the median of visitation frequency to the food court ( $z = -5.11$ ;  $p < .001$ )

- On-campus: Multiple times per day
- Off-campus: A few times per week

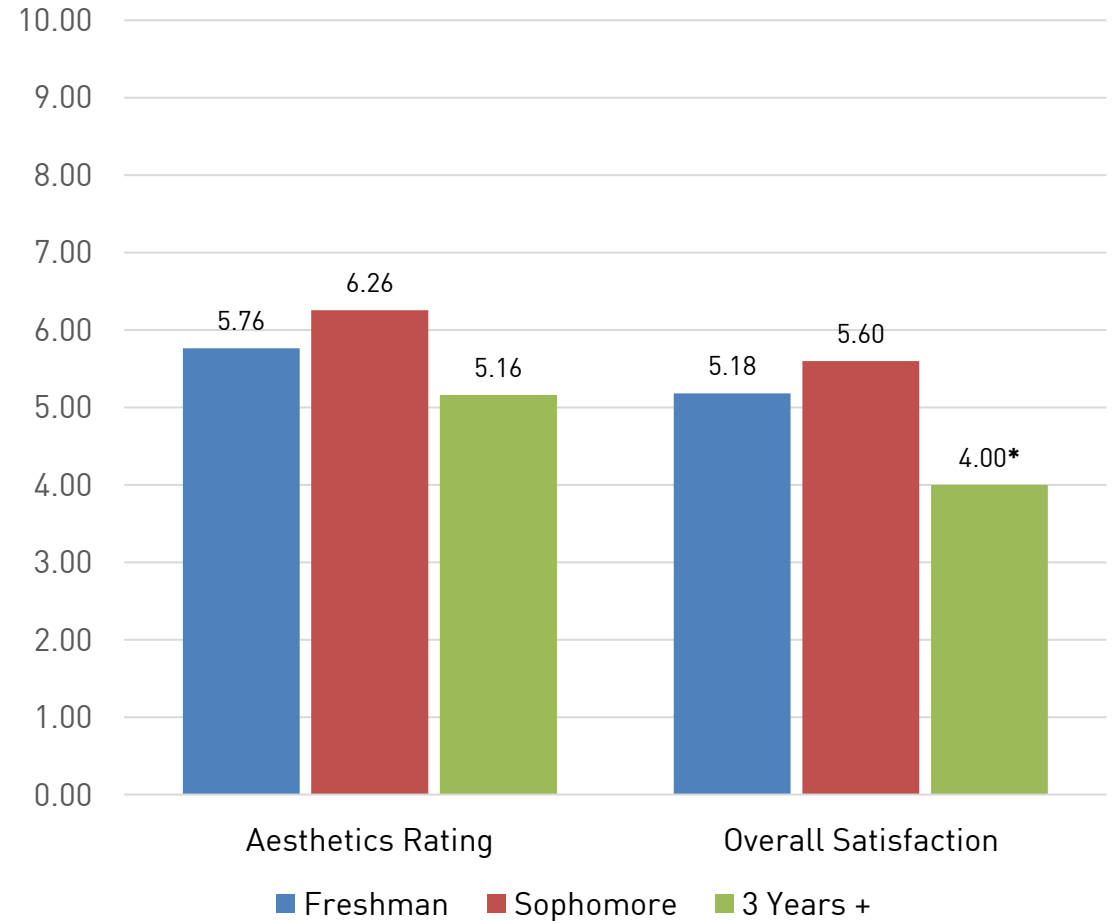
Statistically significant difference regarding the median of placing mobile orders ( $z = -2.97$ ;  $p = .003$ , at .05 significance level)

- On-campus: Once per week
- Off-campus: Never place mobile orders



*Housing Status and School Years May Impact Students' Perception on Design: Students who have resided on campus for three years or longer tend to rate the aesthetics of the current food court lower.*

- No statistically significant difference regarding the ratings about aesthetics/design features of the food court between on-campus ( $M = 5.79$ ) and off-campus ( $M = 5.72$ ) students;  $t(130) = .012, p = .91$ .
- A potential trend that students who have stayed for 3 years or longer have lower satisfaction and aesthetics rating, with Sophomore students gave the highest ratings.

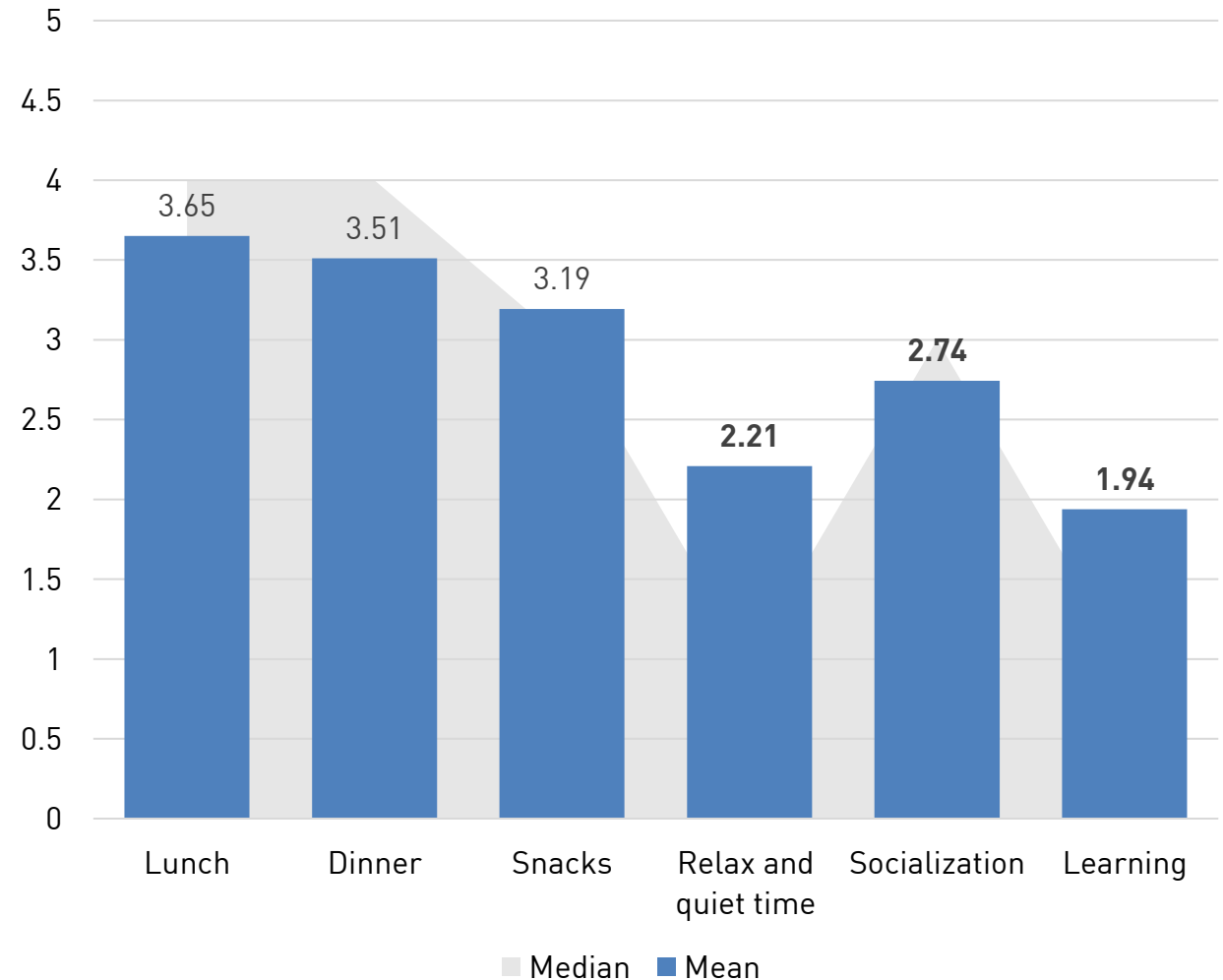


\*All based on a 1-10 rating scale; missing data excluded



## Frequency of Visiting the Food Court based on Different Purposes

- In current design status, the following features gained comparably **lower ratings**:
  - Relax and quiet time
  - Socialization
  - Class projects, meetings, and learning activities
- The ANOVA revealed significant differences of rating scores on various design considerations,  $F(6, 735) = 26.31, p < .001$ .

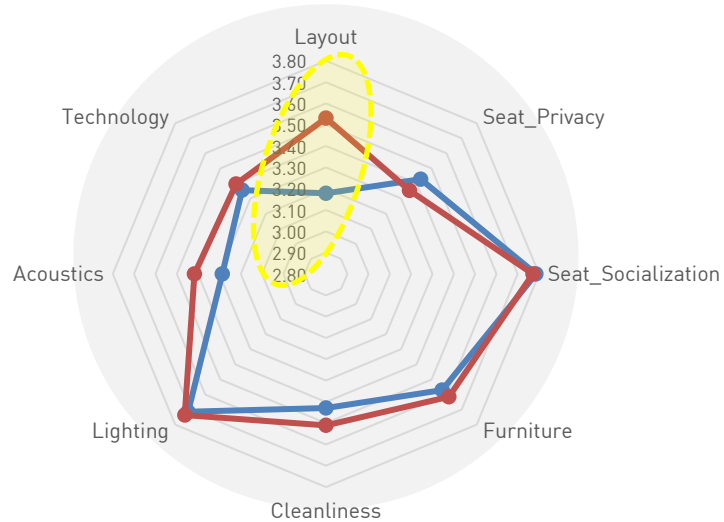




# Differences of Ratings on Design Features between Occasional and Frequent Visitors

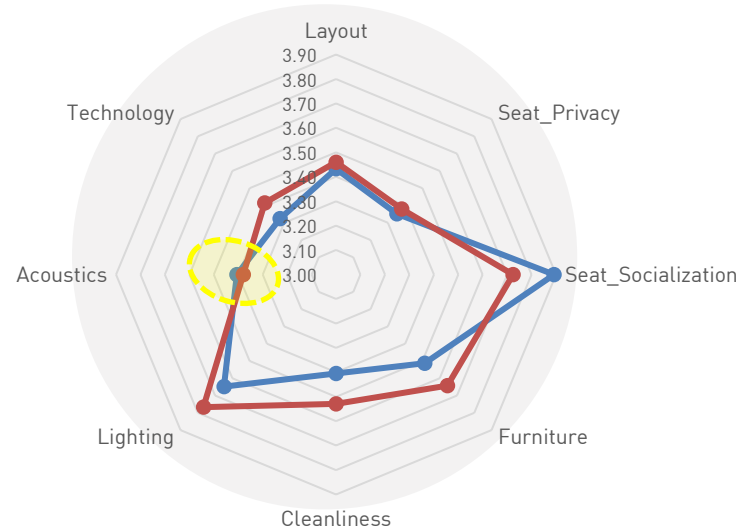
—●— Occasional Visitor  
—●— Frequent Visitor  
(at least once per day)

## Relax/Quiet Time



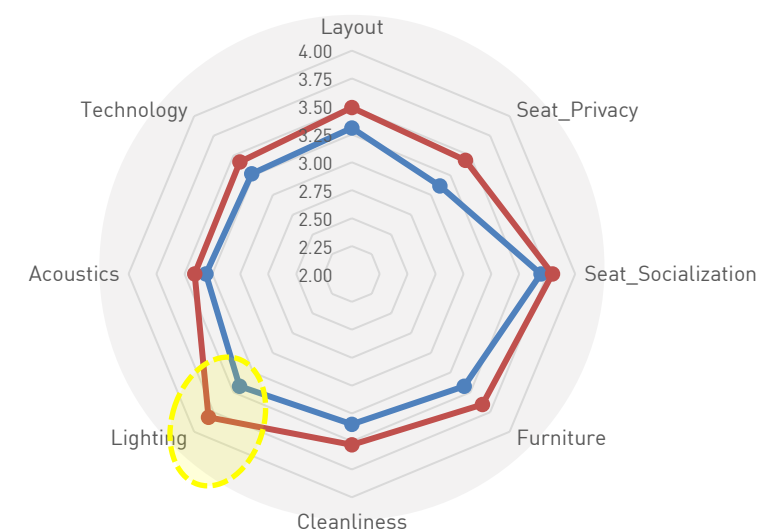
**Relax/Quiet Time:** Frequent visitors for relax/quiet time rated lower scores on spatial layout than occasional visitors.

## Socialization



**Socialization:** Both occasional and frequent visitors rate the acoustic environment poor for socialization.

## Learning

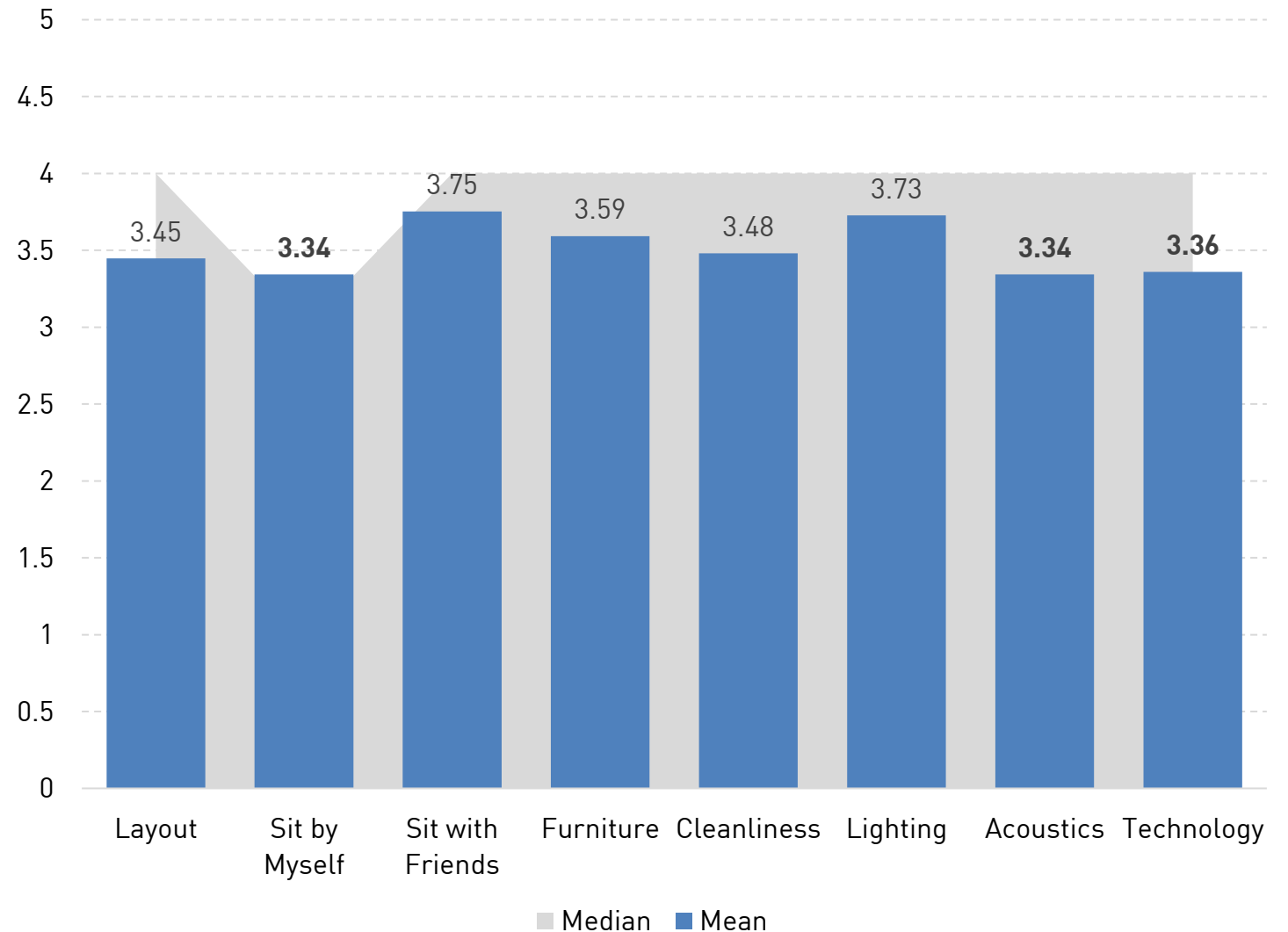


**Learning:** Frequent visitors for learning rated lower score about the lighting condition than occasional visitors.



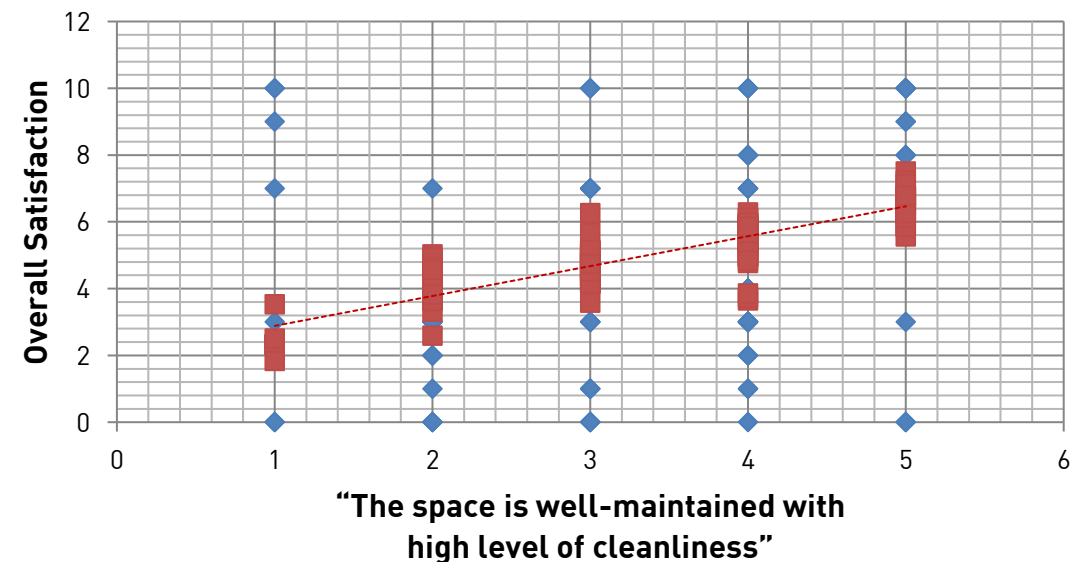
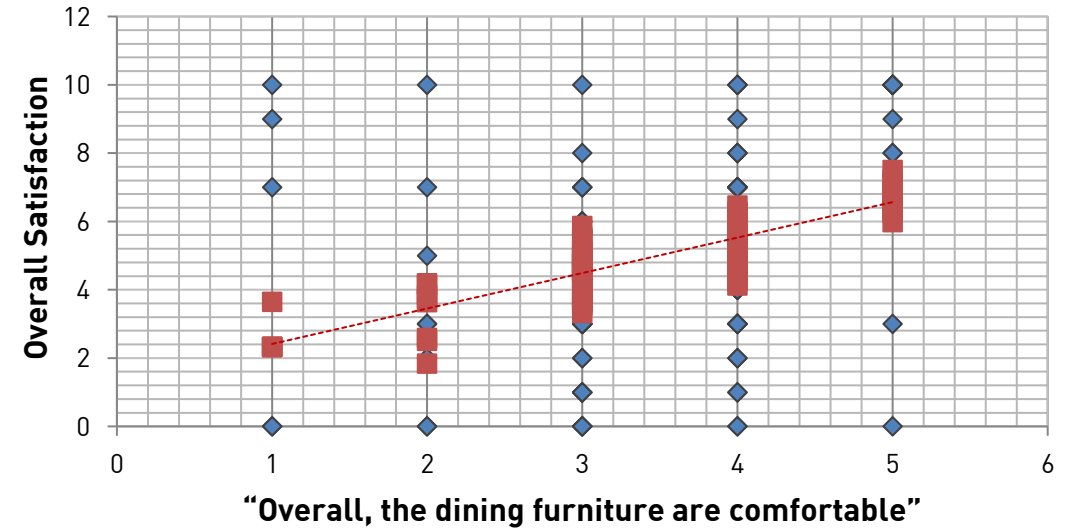
*Ratings to Various Design Considerations: Students rated lower scores on the opportunity to sit by oneself, acoustics, and technology support at current food court.*

- In current design status, the following features gained comparably lower ratings:
  - Sit by oneself
  - Acoustics
  - Technology support



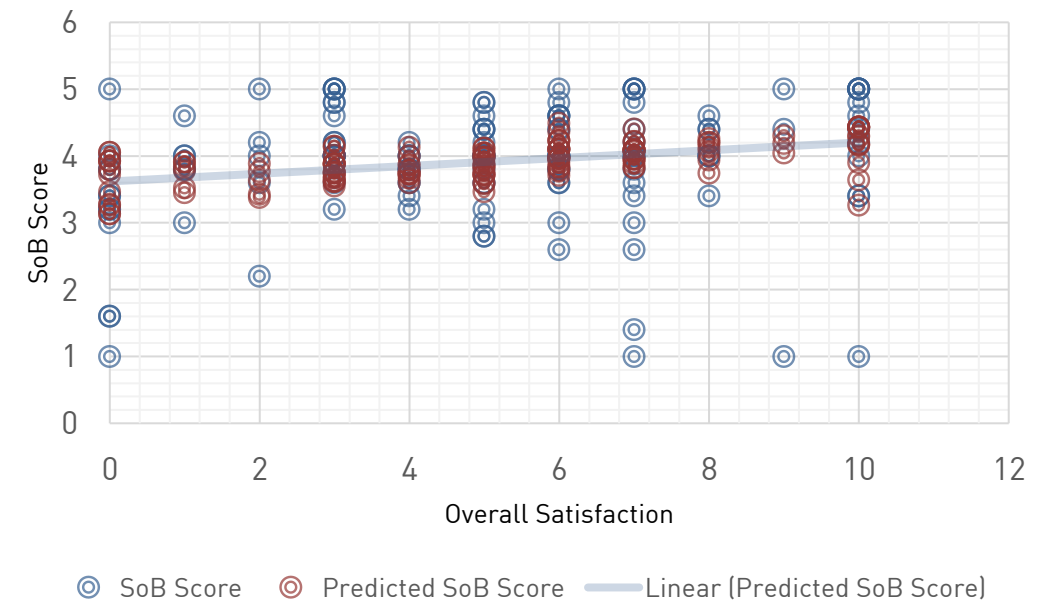
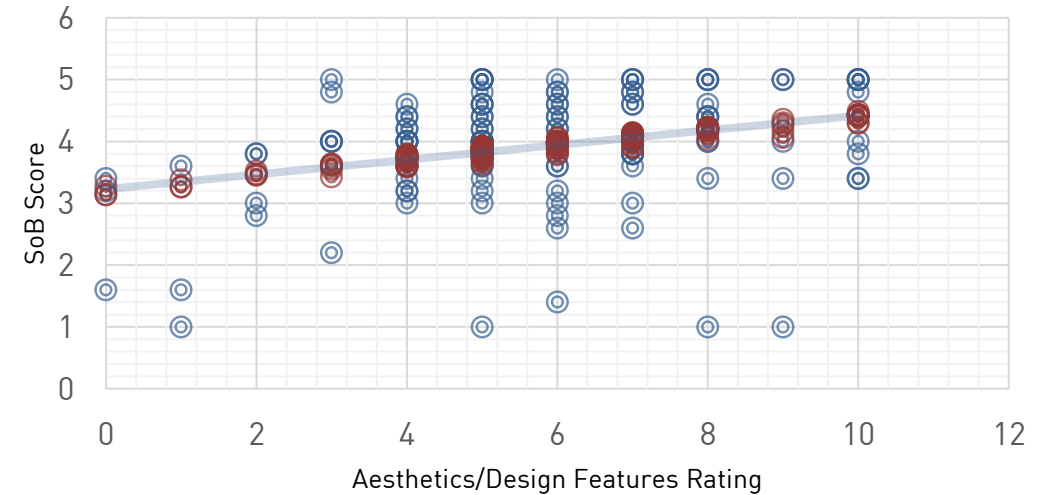
# Impact of Different Design Considerations on Students' Satisfaction

- The multiple linear regression analyses indicated **furniture and cleanliness significantly impact students' overall satisfaction** about the food court.
- The overall model was statistically significant,  $F(8, 116) = 2.61, p = 0.012, r\text{-square} = .15$ .
- Furniture ( $p = .088$ ) and cleanliness are marginally significant at .1 level.
- Based on a 5-point rating scale.



*The rating of the aesthetics and design features of the dining facility is a significant factor that predicts university students' sense of belonging.*

- The multiple linear regression model indicated a significant relationship between students' frequency of visit, aesthetic ratings, and the overall satisfaction with the food court (independent variables) and students perceived sense of belonging (dependent variables).  $F(3, 127) = 4.59, p = .004$  (at .05 significance level).
- **The rating of the aesthetics and design features is a significant factor that predicts students' sense of belonging ( $p = .006$ ).**





*Please use 5 keywords to describe your perception of the current food court (open ended question)*

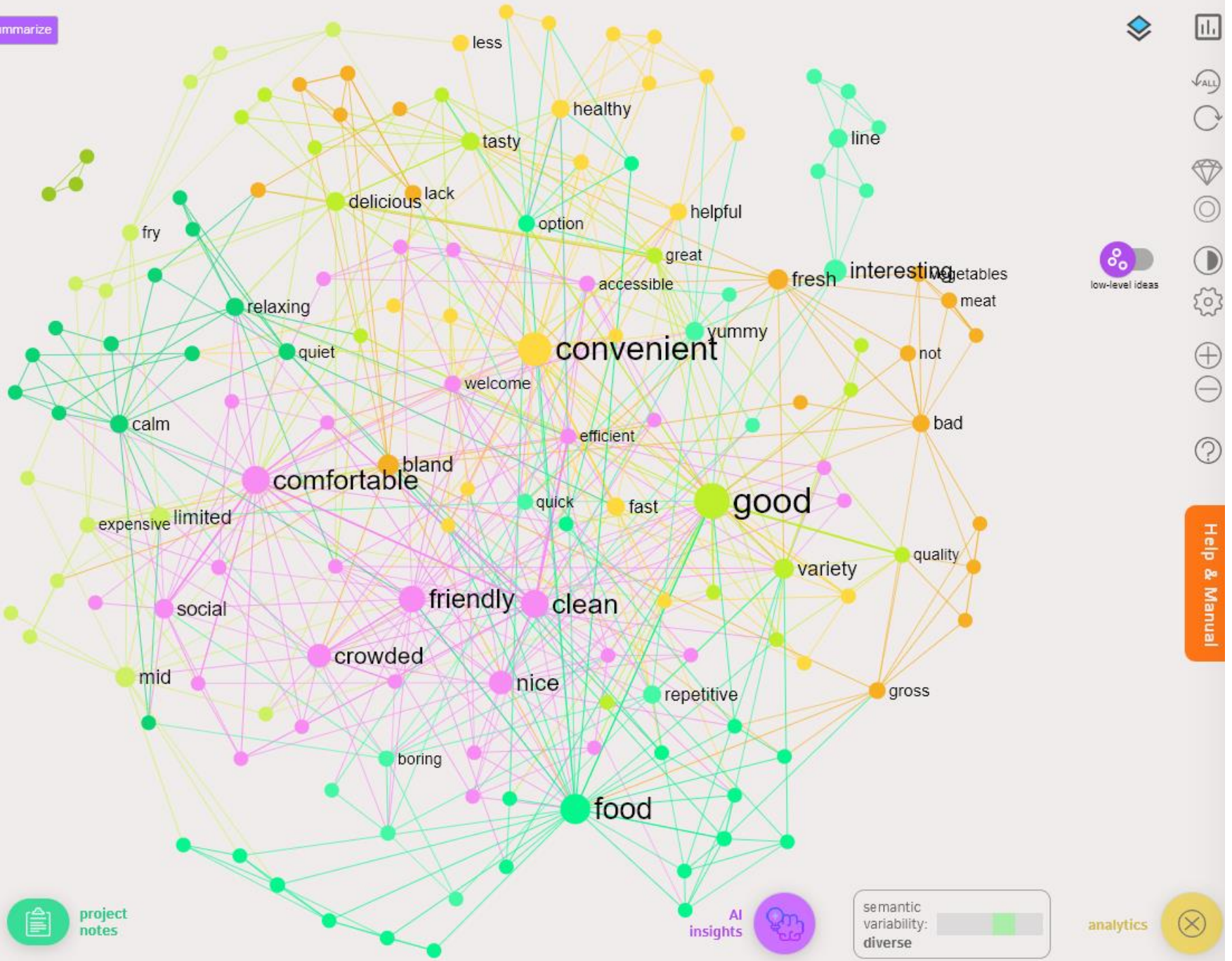
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The responses characterized various aspects of the food court environments as **efficient, friendly, and welcoming**, highlighting the significance of **cleanliness, good service, and convenience**. Students describe the food court as a communal and social establishment offering comfortable and clean accommodations, though it tends to be crowded, busy and noisy. Food options range from basic and bland to healthy, delicious, and filling, but tends to lack diversity and varieties. Food service is generally helpful but may have limitations or long wait times.

*N* = 658 words



Summarize



- 
- 
- 
- 
- 
- 
- 
- 
- 
- 
- 

**Main Topics** ? full table

- 29% | 29: comfortable  clean  friendly
- 16% | 16: good  variety  delicious
- 14% | 21: convenient  fast  healthy
- 10% | 16: interesting  line  yummy

+ save to notes ↓ Reveal High-Level Ideas

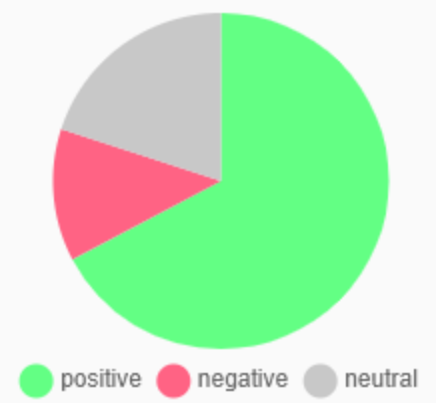
**Most Influential Concepts** ?

- good  convenient  food  comfortable

save to notes ↓ Reveal Underlying Ideas

**Sentiment Analysis**  
 using standard model (EN only, faster)  
 total statements analyzed: 55  
**positive: 67%** | **negative: 13%** | **neutral: 20%**

reset filter ↓ ?



Help & Manual

project notes

AI insights

semantic variability:  diverse

analytics





# DESIGN IMPLICATIONS





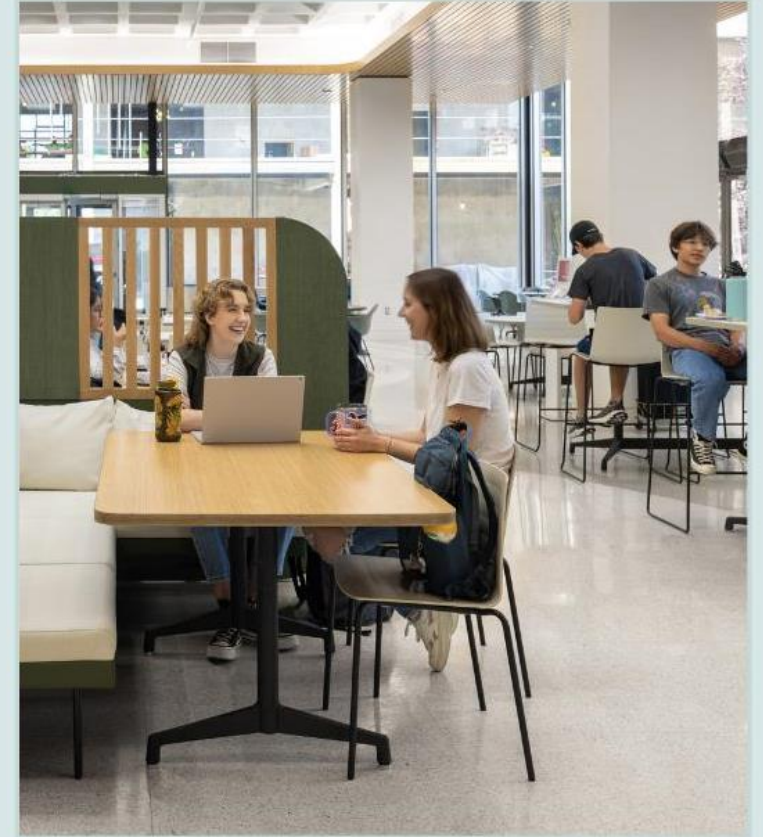
### **NEW IDENTITY**

A re-imaged dining hall to further strengthen student's sense of pride and belonging to the college.



### **INTUITIVE WAYFINDING**

Using materiality to create clear sight lines, paths of travel and designated seating zones.



### **NOURISH SOUL & BODY**

Empowering students to craft their own communities using food as a connector, amplified by biophilic design & the environmental cues of natural light, materiality, color, and a variety of seating postures.





DESIGN EXCELLENCE

## VISION

**CREATING A SENSE OF BELONGING & COMMUNITY**



PROJECT

## GOALS

**NEW IDENTITY**

**INTUITIVE WAYFINDING**

**NOURISH SOUL & BODY**



DESIGN

## PRINCIPLES

**UNIFIED DINING  
EXPERIENCE**

**CREATE HIERARCHY &  
SENSE OF PLACE**

**BIOPHILIA,  
COMMUNITY BUILDING  
& EMPOWER CHOICE**



DESIGN

## STRATEGIES

**CONSISTENT DESIGN  
LANGUAGE & MATERIALS**

**CLEAR SIGHT LINES,  
PATHWAYS & DINING ZONES**

**CONNECTION TO NATURE,  
NATURAL LIGHT/MATERIALS  
& VARIETY OF SEATING**



**POSITIVELY AFFECTING  
PEOPLE IS THE MOST  
IMPORTANT THING WE DO.**

**G B B N**