

RevAMP

**the Meal Experience at Imperial College London
Campus**

Members:

Afig Zeynalov 02675495

Srujan Patil 02682437

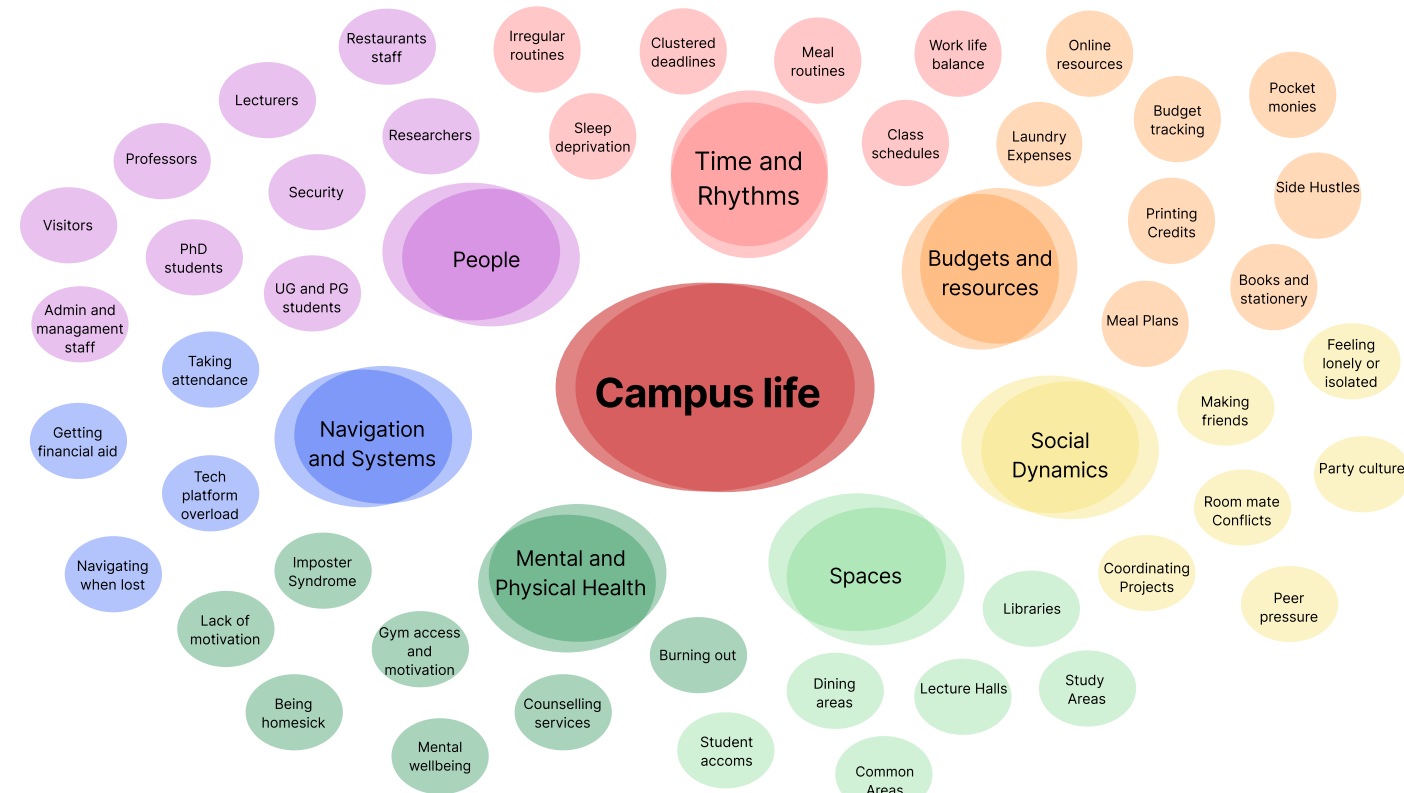
Zaki Dahimene 02717699

Kavi Arora 02712764

Carolyn Ng 02580029

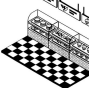
Redesigning Everyday Life on Campus

1. Campus Life: What Matters?



Initial exploration

We began our initial exploration based on our personal experiences, and by mapping what matters in campus life into seven key themes:

-  Time and Rhythms: focusing on **key struggles** imposed by work-life in university regarding **daily routine**
-  Budgets and Resources: identifies specific areas in which **finances are directed** whilst on campus
-  Social Dynamics: highlights areas of **social interaction** plus its **impact** on the individual
-  Spaces: lists spaces that tend to be occupied in a campus life;
-  Mental and Physical health: recognises **common health challenges** faced within a campus life
-  Navigation and Systems: Systems that **aid** in campus life for **living, education, technological and navigational circumstances**
-  People: Describes **all stakeholders** that are involved in campus life

31,000+

staff and students interact with facilities and services at Imperial¹

~ 83%

of adults fail to meet their daily nutritional requirements²

~20%

of Imperial College London community consists of professors³

4. User Groups

Identifying User Groups

Our initial observations of eating areas on campus revealed a mix of stakeholders interacting with the food infrastructure in very different ways. By mapping out their distinct behaviours, needs, and constraints, four main user groups were defined - students, professors, canteen staff, and managers.

Analysing needs of different user groups

Following research into different user groups, it was concluded that the current systems for food collection, delivery, customer service and nutrition all have clear room for improvement.

Our four user groups described food as a major source of stress:

- **Students** face disrupted routines and often end up with “poor-quality, high-cost, low-nutrient diets”, made worse by long queues, limited seating, unclear menus and high prices.
- **Professors** need reliable access to nutritious meals, but limited food variety and nutrition information make healthy choices harder to sustain.
- **Canteen staff** struggle to maintain high serving standards during their labour intensive, stressful work hours, partially due to workflows and serving areas being inefficient.
- **Canteen managers** must juggle affordability, menu accessibility, queue management, seating and waste reduction while still offering nutritious options.

Overall, improving campus food provision - making it more affordable, hygienic, clearly signposted, nutritionally transparent and served in comfortable eating environments - is essential to support the wellbeing and performance of everyone on campus.

2. Project motivation

Student experience extends far beyond teaching: it includes how we move around campus, access information, feel supported, and connect with each other day-to-day. Imperial's own strategies show that the College recognises this - projects such as The Digital Campus 2024–28 plan, Imperial Experience, and StudentShapers focuses on transitions, campus experience and widening participation beyond the classroom. As students, we are the people who **live the campus systems, spaces and rhythms every day**, so our insights can **surface hidden pain points, test new ideas in real contexts**, and help ensure that future changes genuinely match what students need to thrive.

3. Exploring potential improvements on campus

We carried out **observational studies** across various Imperial sites such as the Dyson and Huxley buildings, Sherfield walkway, the Library, the main entrance, study spaces, eating areas and lecture rooms — to understand how people actually use campus throughout the day. Across these settings, food kept emerging as a shared pressure point: we repeatedly saw **crowding, rushed meals, confused choices and visible stress around canteen spaces**. Because these issues cut across wellbeing, time pressure and social interaction for many stakeholders, we decided to narrow our **focus to the eating areas** as a critical lens for redesigning everyday campus life.



Professor

- Approximately **50% of professors are aged over 56**^[4] in UK
- Due to old age, **physical health worsens** and so **nutrition and social interactions** are important factors to be considered, becoming essential to maintaining their wellbeing



Student

- Face **Budget struggles, irregular sleep patterns** during exam season based on study routine
- **Stress** from team projects, deadlines for coursework and exam revision and results
- **Imposter syndrome** and **loneliness** are mental obstacles experienced



Canteen Staff worker

- Periods of **intense stress** and **increased multi-tasking** during periods of peak ordering times
- Mental health is impacted due to long-term stress
- **Social dynamics** and **potential conflicts** between customers and fellow staff workers
- **Long work routines** and **labour-intensive** activity



Manager

- Organising food waste, **monitoring waste collection**
- Ensures **staff safety** and **efficiency**
- Provide **proper equipment** such as trolleys, bins and compactors
- Focus more on **Navigation and Systems**, specifically **fresh food supply** in the morning and **transporting waste** away after

Research Timeline

3

Observations

- **Goal:** Understand how the **users interacted with canteen spaces** in real time (e.g. queues, payment processes, finding seats, then sitting down and eating).
- **What we did:** We conducted non-participant **observations** in the **JCR, SCR and Kokoro** over 45-minute intervals between 11:00 and 15:00, covering both peak and off-peak periods to reduce bias.
- **Output:** Recurring problems such as long queues, difficult access to seats, and unhygienic eating environments, forming **initial assumptions about key pain points** that we then tested and refined with later methods.

1



2



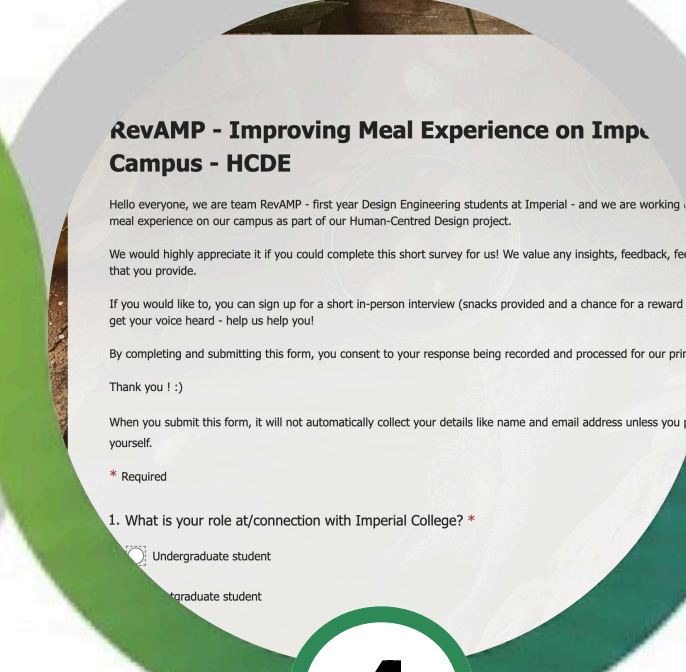
Secondary Research

- **Goal:** To situate our findings within a wider context, taking into account both **quantitative and qualitative information**.
- **What we did:** We reviewed **articles, blogs and reports** on university food provision, student nutrition, cost-of-living pressures and dietary requirements. We also looked at **demographic splits and dietary trends relevant to Imperial**.
- **Output:** The research allowed us to **confirm that many of the issues raised** locally (e.g. poor diet quality, financial strains etc) reflected broader national patterns, and it provided evidence-based angles such as the importance of nutrition for mental health, that shaped the framing and content of our survey.

3



4



Further Interviews

- **Goal:** To gain a deeper understanding and uncover key user groups' **detailed routines, decision-making processes and pain points** that could not be captured through surveys alone.
- **What we did:** We conducted in-depth interviews with three focal user groups: **students, professors and canteen staff**.
- Drawing on survey findings, we prepared open questions and encouraged participants to **"think aloud"** about how they choose where and what to eat, and how they experience time pressure, cost, eating environment and nutritional information.
- **Outcome:** These interviews provided rich narratives that **explained the patterns** seen in the survey data and sharpened our understanding of **specific pain points** along the food journey for each user group.

5



6



Initial Interviews

- **Goal:** To test our observational assumptions and **capture users' own perspectives** on campus meal experiences and the routines that form around them.
- **What we did:** We conducted short, **opportunity interviews** with people who had just finished lunch at the JCR, SCR, Kokoro, the Library café and other food spots.
- **Output:** This quick, in-context approach gave us valuable, qualitative insights — how users felt about cost, waiting times, cleanliness, ease of navigation around the area, and nutrition. This complemented what we had seen, and it **guided the themes we explored in subsequent secondary research and survey questions**.

Survey

- **Goal:** **Quantify how widespread particular issues** were and to compare priorities across demographics, while also recruiting volunteers for further research.
- **What we did:** Building on our qualitative insights, we **designed an online survey** combining multiple-choice, rankings and short-answer questions about queues, seating, affordability, menu accessibility, hygiene and nutrition. The survey was promoted via posters around campus and through WhatsApp group chats to reach a broad mix of students and staff.
- **Outcome:** The **survey results validated and prioritised themes identified earlier**, and respondents who opted in formed the pool for our in-depth interviews and co-ideation workshop.

Co-Ideation Workshop

- **Goal:** To synthesise insights from all previous research with users, and **collaboratively generate and prioritise concrete design opportunities**.
- **What we did:** Using journey mapping, thematic clustering, credibility testing and rapid ideation, we collectively reconstructed the user journey, highlighted the most critical pain points and **generated potential design directions**.
- **Outcome:** This workshop synthesised insights from observations, interviews, secondary research and the survey, turning a dispersed set of findings into a shared, **user-validated foundation for redesigning everyday food experiences on campus**.

Observations and Survey

4

1. Assumptions

From initial desk research and everyday experience, we came up with **starting assumptions** for canteen pain points as following:

- Users don't like waiting in lines
- Users want and care about nutritional information
- Accessibility of seats is important to users
- The payment process is not very streamlined

These assumptions guided **where** we focused our first observations.

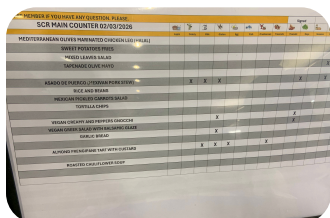
2. Observations

We then tested out assumptions by observing how **different stakeholders** interact with facilities and processes in JCR, SCR, Kokoro, the Library Cafe and other food spaces on campus.



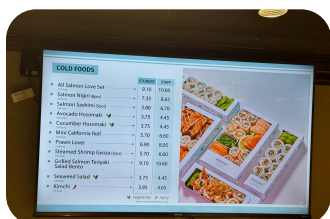
Food Display

- **Insight:** Users can see food but not always understand it
- Portion sizes and visuals are clear, functions as an **incentive** to purchase the meal.
- Nutritional information are only partially visible, thus limiting informed choice.



Allergen Information

- **Insight:** Allergen chart is visible but inefficient
- On average, 3 people approach the allergen chart every 2 minutes.
- The information layout requires cross-checking across the menu, making it inconvenient to use
- The allergen chart was placed between 2 sets of queues, creating a bottleneck, especially during peak hours.



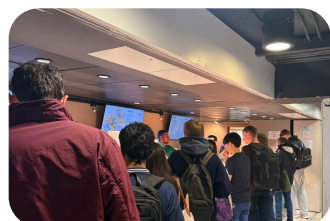
Affordability of meal prices

- **Insight:** Meal prices are competitive to London standards, but still too expensive to many
- Cost considerations can **significantly influence food choices**, often pushing some to choose less nutritious but cheaper food options **priority** over factors such as **health and nutritional value**.



Seating Arrangement

- **Insight:** Layout wastes space and fragment groups
- Students tend to form **small groups of 2-4 individuals**, often leaving 1-2 seats unoccupied between groups.
- Reconfiguring the layout could better **accommodate** both **group social interaction** and **individual seating**, improving overall **space utilisation** and **flexibility** within the canteen.



Queue

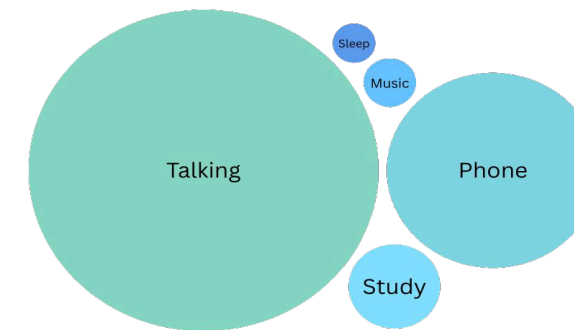
- **Insight:** Queue significantly contributes to the overall meal **experience**
- **Congestion** during peak hours can lead to longer wait times and reduced customer satisfaction.
- Optimising queue layout, improving service flow, and clearly communicating wait times could enhance the efficiency, thereby improving dining experience.

Observation outcome

Through carrying out observational research and collecting primary data, we confirmed how supported our assumptions were. **Queues, seating, visibility of food information, and price were the main friction points**, when we then modelled in the service system map and explored with users in the survey.

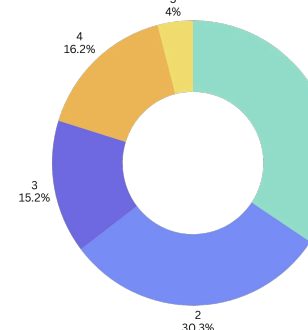
3. Quantitative Observations

Building upon our qualitative observations, we used simple quantitative measures to understand how people actually occupy the canteen space. By taking samples of people at certain times in JCR, SCR, and Kokoro, we confirmed that not only food and price, but also how layout, seating and atmosphere support everyday social interaction and comfort must be considered.



Activities people do while eating

- **Insight:** The canteen is primarily a social space, not just a eating spot.
- **Outcome:** Seating and noise management should support conversation and informal collaboration, not only quick solo meals.

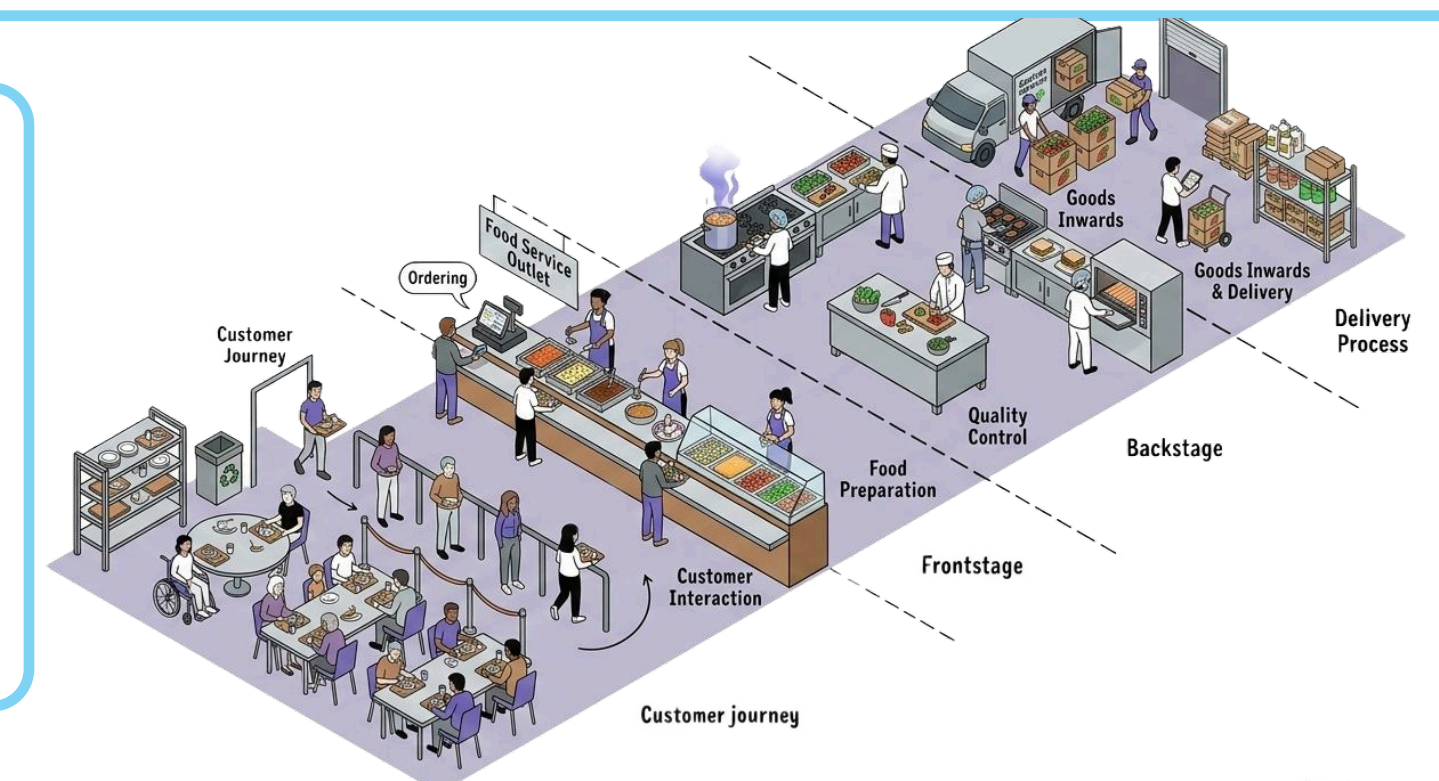


What are Group Sizes in the Canteen

- **Insight:** People most commonly visited the spaces individually, in pairs, or in small groups. Current table configurations lead to inefficient seat usage and "stranded" single seats.
- **Outcomes:** Reconfiguring into flexible 2-4 seat modules can improve capacity without expanding floor area.

4. Service system mapping

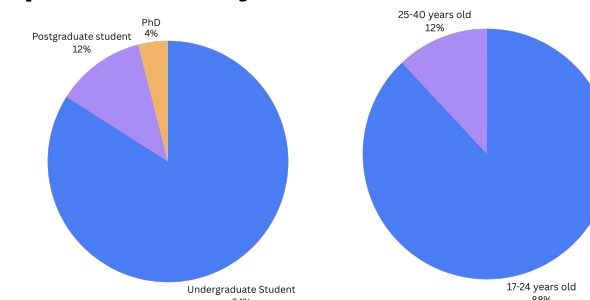
- Using our observations, we mapped the relevant processes as a service system map
- Shows how both **staff and users interact** with the canteen allowing for food to reach users
- **Key insight:** The map shows that a few backstage processes (tray return, food prep, information updating) directly affect front stage issues such as queue build-up, inconsistent menu information and staff workload. This highlighted where design changes could have the biggest impact (e.g. self-service info, re-routed flows).



5. Survey Results

We conducted a survey (QR Code below) in order to collect more **quantitative data** to better understand the significance of issues faced, we received a total of **25 responses** to our survey. We put up **posters** around campus in order to get people to the survey.

Demographic of survey takers



- **Insight:** Most respondents were undergraduate students.
- **Why it matters:** Our findings primarily reflect the student perspective, so later interviews with professors and staff were used to balance the picture.

Factors which are important to survey takers



- **Insight:** Users care about both **experience** (taste, environment, waiting time) and **health** (nutrition and hygiene).
- **Why it matters:** These factors became the **priority design criteria** for ideation and concept evaluation.

Key survey outcomes

- **Key insight:** The overall campus meal experience received an average rating of **5.95/10**, indicating that there is **clear room for improvement**.
- **Outcome:** Confirms the need and opportunity for redesigning rather than minor tweaks



Research Approach: Interviews

5

1. Interviews

Interviews were conducted with participants from each **identified user group** to identify **common trends, experiences**, and **shared challenges** within those groups. The data collected was then used to develop **realistic user personas**, whose behaviours, characteristics, and lifestyles **reflect patterns observed** in the responses from their **respective groups**.

The interview process consisted of two stages: **standard interviews** and **in-depth interviews**. The standard interviews focused on short, structured questions designed to gather **concise responses** from a larger number of participants. In contrast, the in-depth interviews explored participants' experiences in greater detail and its purpose was to better understand the **deeper motivations** and factors influencing **individual behaviours**. Overall, we were able to interview ~30 students (UG and PG), 4 professors at Dyson School and the Department of Physics, as well as one of the managers of the SCR and JCR. Thus, we were **analysing the dynamic** between these key **stakeholders**.

Students



- Students tend to prioritise cost-effective food, based on primarily price and portion size
- They experience difficulty in finding seats during peak hours and feel deterred from staying in the canteen due to it being a chaotic, crowded environment
- Responses suggest that students can choose food based on shortest queue so clear displays of the menu can improve user experience
- Students prioritise certain nutrition over others, particularly protein and vitamins

Staff



- Staff tend to prepare ingredients, set up the equipment, organise the kitchen space then after closing, disposing of waste and cleaning equipment
- They experience operational pressure before and during peak hours, due to sudden increase in demand
- Certain staff expressed personal motivation and pride in their work, which potentially helped them to handle the intense workload
- Clear communication with other staff members as well as customers was essential for fast-paced orders

Manager



- Managers at the canteen were responsible for coordinating the actions of the staff workers
- They have to dissolve conflicts experienced between staff workers, or challenges encountered during peak times
- Arrange the logistics for transporting waste from the canteen to a vehicle which takes it to a waste collection facility on a daily basis

Professors



- Professors tend to eat on campus daily, prioritising convenience, time efficiency and nutrition of each meal first
- Generally, food locations that are closest in proximity to them are chosen due to limited time between meetings and teaching lectures
- Nutritional quality, specifically a diverse balance of key vitamins and minerals to maintain strong bones, control blood sugar levels and support cognitive health

2. Customer - Provider Dynamics

We had an **in-depth, 15 minute interview** with one of the **managers of the JCR and SCR**, looking at how the members of staff operate throughout the day and learning how they manage their **daily tasks**. The following **key themes** were highlighted during the conversation.

1. System Organisation & Communication

- Each outlet has a radio; staff constantly share what they need / don't need.
- Manager posts daily waste figures to the team, noting the system has become "more organised" recently.
- Waste is tracked daily by outlet; typical staff-side waste is 5-20 kg/day for each food outlet.
- After 13:30 they stop ordering new food; outlets use radios to adjust production in real time.
- **Insight:** The catering operation already functions as a coordinated service network with real-time internal communication. Backstage operations are already data-driven and disciplined about waste
- **Design implication:** New tools (e.g. live menu/stock displays, queue indicators) can plug into these existing communication flows rather than creating new ones, thus building on and optimising the current design.

2. Staff Experience and Structural Constraints

- Biggest challenges: opening on time and coping with busy days (Mon/Thu; Thu/Fri in SCR).
- Staff shortages from last-minute sickness make peaks hard to manage.
- For staff, the hardest parts are prep under time pressure and busy days with short staffing.
- Staffing is limited by revenue – "If I'm getting £4, I can't invest £6.", one **improvement:** "more investment"
- **Insight:** Problems with queues and stress stem from under-resourcing, not disorganisation; labour hours are tightly capped.
- **Design implication:** Treat staff wellbeing as a design constraint. Improvements should simplify setup/closing and customer interactions, not add complexity.

This helped us better understand the **dynamics between the user groups** of customers (students and professors) with the the staff members who provide the service, and how **common issues are interlinked**.

Interviewing different user groups revealed shared behaviours and common pain points.

1. Decision Factors

- Users choose places mainly by **location, queue length and price**.
- Health and nutrition matter strongly to a subset (gym-goers, older staff), coming after convenience and cost.
- Professors prioritise efficiency and convenience over exploring new options.
- Allergen and nutrition info exists but is clunky to cross-check; health-conscious staff distrust hidden sugar/salt and want clearer, balanced options.
- Clearer food availability, nutritional information, and menu visibility could improve decision-making.

2. Queues, Flow and Layout

- Queues and congestion are the top complaint: Sheffield walkway queues feels chaotic and block movement.
- Staff confirm peak services run on minimal staffing and tight time windows, no room for extra steps.
- Simplifying the ordering and queue system would significantly improve the overall experience.

3. Seating and Atmosphere

- Hard to find seats at peak times; bench layouts create choke points and waste stranded single seats.
- Dining spaces are valued not only for food, but also for social interaction and informal meetings.
- Staff and professors prefer quieter, cleaner spaces for meeting and informal socialising.

3. How this information informed our next steps

Interviews provided qualitative data for each user group

Qualitative data is processed and analysed through the creation of Affinity, Empathy and Journey maps

Personas are created based on inferences made from Affinity, Empathy, and Journey maps.

Pain points from each persona will be made from which insights for each of the personas will be constructed

Insights will be used to collate How Might We ... questions, which are crucial for informing the criteria needed for Ideation

Research Approach: Co-Ideation Workshop

6

Activities Participants Did In The Workshop

1 Credibility Matrix

What participants did:

- Placed **coloured markers**, writing their names underneath, on a **matrix** comparing **canteen rating** and **frequency** of use.

Purpose:

- To compare **participants' rating** of the canteen to **how frequently** they use it ensuring the **credibility** of their opinions

Key Findings:

- There is a **large range** of people who use the canteen at various **different frequencies**
- The majority of individuals rated the canteen **quite highly**
- More frequent users, were more critical, repeated exposure to canteen reveals **pain points** over time

Design Insight:

- Canteen users would benefit from **improvements to current usability issues** rather than overall satisfaction
- Future improvements should **focus on convenience** for the frequent users
- Common pain points must be identified, within frequent users, then resolved



2 Journey Map

What participants did:

- Participants mapped their canteen journey from entering to leaving. Using **markers** on a **vertical scale**, they indicated how **positive** or **negative** their experience was at each **stage** (higher=more positive). **Sticky notes** were added to explain the **reasons** behind their ratings.

Purpose:

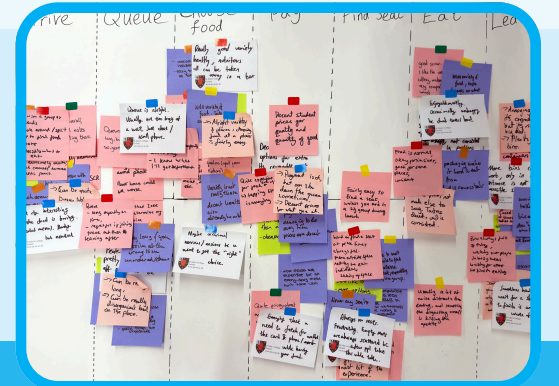
- To **decompose** the canteen experience for users into **stages** and identify at what stages users experience **pain points**

Key Findings:

- Points of negative experience are during **Queuing** and **Seating**
- Frustrating for users to wait in line, then once at till, decide what to order, meaning time is **not efficiently** used
- Choosing food was quite **favourable** with some reporting that taste was a appealing factor

Design Insight:

- Queue management needs **improvement**, as long **waiting times** are a major source of **frustration** during **peak hours**.
- Seating availability** should be addressed, as **difficulty** finding a place to sit disrupts the overall dining experience.
- More **interactive options** when choosing food, rather than just staring at a menu then ordering at the till, will **enhance** the meal experience



4 Co-Ideation

What participants did:

- Together everyone conceptualised ideas that will help improve meal experience through **annotated diagrams** on sticky notes.

Purpose:

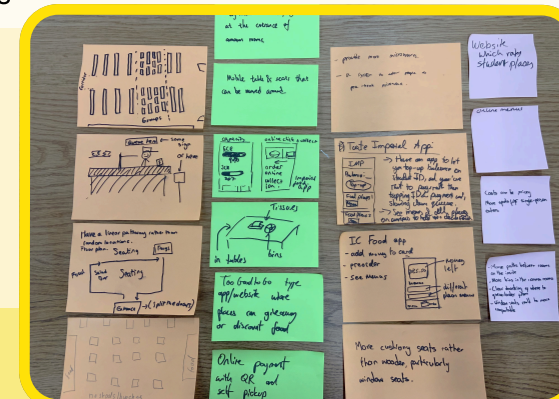
- To collaboratively generate potential **solutions** that respond directly to the clustered issues from the Affinity Maps

Key Findings:

- Participants constructed unique **seating arrangements**, or **ordering systems**
- Ordering systems included apps displaying food options, QR code scanning tools, software to book microwaves

Design Insight:

- Speed and efficiency of ordering needs to be improved, potentially like through self-service ordering interface
- Clearer visual display of free seating, helping canteen users to quickly locate space
- More accessible information about food options, reducing time wasted at the till when deciding what to order



Ethical Considerations in research

- All primary research was explained clearly and participation was **voluntary**, with the option to **withdraw** at any time without consequence
- We avoided collecting unnecessary personal data and did not record names in our analysis
- We were mindful of **potentially sensitive topics** such as financial stress, health and eating habits hence constructed questions in a **non-judgemental way** and allowed participants to skip them if desired
- All images used in the presentation were either self-taken with permission or sourced from institutional websites with **appropriate reference**, in line with Imperial college London's guidance

3 Affinity Mapping

What participants did:

- Participants wrote five key **frustrations** they experience in the canteen. These were then collaboratively grouped based on **similarities** and **emerging trends**.

Purpose:

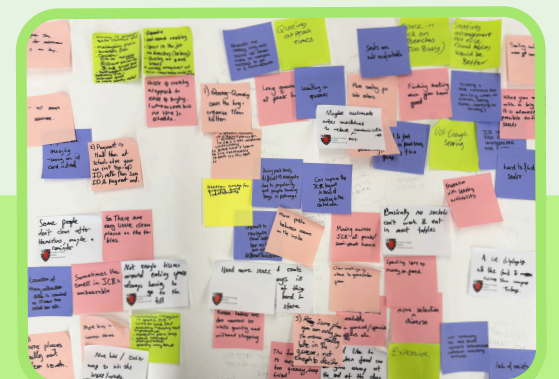
- To **organise** individual **pain points** into broader themes and identify **patterns** across participants.

Key Findings:

- Queues and waiting times were a major cluster, with participants highlighting **long waits**, **slow service**, and **congestion** during **peak hours**
- Limited space, many participants struggled to find seats during busy period
- Despite good food variety, seen in the Journey Map, food decision-making was challenging, due to **difficulty in comparing meals**

Design Insight:

- Food decision-making tools to filter for food most suitable for you
- Queues should be **optimised** to minimise waiting times
- Canteen space should be conserved through **ergonomic design** that accommodates for large number of students during peak hours



7

Why choose a food spot

Description of food spots

Problems faced

Trends

Why choose a food spot

Came here for sushi	Less Expensive	Fav food was Chinese place	Which queue is smallest	Lack of healthy options, menu too basic	Library cheaper and bigger portions	Chaotic for bubbly	Cramped for reason	Space with everyone	accessibility	Deal breaker is smell	Good but overpriced because of a pricey, low quality, menu	Not inclusive for other people	Wouldn't sit at two free seats	No difficulty in getting food	Usually great different types of choices
Like the food	Walk around to see what they have	Chosen food because of Macros	Chosen place based on habit	Students food lunch	Fun to come once in a while	Usually difficult to get seats	Don't feel disappointed any food	Real choice that I'm happy with and they have a variety of food	Search through tables of food	Good content easy flow	Chosen to go because of a table I sat at and got a good meal	Not for people who are not on campus because they don't have a table	Get there before 12:30	Have to have a plate of food in the front	Space with everyone
Kokoro because I recognize the name	which line is shortest	See what food they like most	Decides which place based on how well food is	For long Lagging portion	Difficult to navigate	Shit shit	Too much Fast food type stuff	Not for people of the time, just get food of the time	Choices are limited	Food tastes amazing but it's too overpowering	Food tastes good but it's not healthy and it's not for people who are not on campus	Facilities are OK	The prices are generally competitive	expensive	Sweet place for the food, but it's not healthy
Ate at Kimiko	Long queue restaurant line	restaurant just sit and wait a home cooked meal	Not feasible	Expensive small portions	Cheap, quick, healthy	Relaxing busy	Difficult to see what food there is	portions are not big enough	Expensive especially cause of inflation	Sometimes the food is not healthy and it's not for people who are not on campus	Not a customer there, so I don't know what to expect				
Portions in the library for breakfast is really good	It's expensive and it's not for people who are not on campus	It's not a home cooked meal, it's a restaurant meal		Sticky dirty messy	Crowded crowded small tables	Relaxing, friendly, good coffee	Sherfield M4 is great	Not a wide variety of food choices	Doesn't fit my diet plan either	Lack of green and healthy food for young people					
				No space to put down my stuff	Crowded even though it's not a restaurant	Chaotic busy	The kitchen price is great but it's not a restaurant	Not much variety in options	Limited in the medical school building	There are not enough options for the medical school					
				yummy and it's cheap	Not a restaurant, it's a cafe	The prices are generally competitive	It's also the same at the time which is just bad	Not a wide variety of food choices	Not a customer there, so I don't know what to expect	There are not enough options for the medical school					
				limited dining seats & tables	Overpriced, not a restaurant, it's a cafe	bad meal portions	relatively nice								
				Generally tastes nice and is good quality	wide variety of food to eat										

UG Students

PHD Students

Professors

One Day Visitors

Kitchen Staff

Affinity maps allowed us to group our data into **key themes** according to our street interviews and survey. The affinity map was **colour coded** according to the type of person that we met. There was a larger number of undergraduate students than any other demographic, this is because we interviewed based on who we were able to find. We organised the map into **four groups**, each referencing the four main points that we encountered during our interviews

Looking at the Affinity maps that were built according to our interviews and surveys, people chose food based on **taste** and **convenience**, we got mixed descriptions on our **food spots** however they tended more towards the negative. Issues faced include **price**, **variety** and **hygiene**. Trends that were seen include inclusivity issues and issues with space.

This showed us that our **design** should consider **solving issues** with **space** and **queue times**.

Although meals are **relatively affordable** compared to London prices, students still perceive them as **expensive**. This suggests value is primarily judged by **portion size**, rather than **price** only

Students who regularly eat on campus experience **menu fatigue** due to **limited options**. Without sufficient variety, users may seek **alternative food options** off campus.

Credibility matrix

How often do you use the Canteen

Rating of Canteen

Rating of Canteen	How often do you use the Canteen
4.5	8.5
5.5	8.5
6.5	8.5
5.5	6.5
6.5	6.5
7.5	5.5
8.5	4.5
9.5	6.5
4.5	2.5
5.5	1.5
6.5	2.5

The credibility matrix shows the rating of the canteen against the frequency of use. This data was obtained from the Co-Ideation workshop. This graph shows us that our user group was generally credible with their opinions due to the **high use** of the canteen. The scale goes from 0 to 10 with 0 being the worst and 10 being the best, a continuous scale was used (no numbers between 0 and 10) to reduce the **bias of users** putting themselves at an exact value, allowing, for example, comparison between values 7.2 and 7.3.

When you arrive with a big group, it's almost impossible to find seats	hard to find seats	Not enough seating	Seating arrangement not nice - round tables would be better	Seating could be more comfy	The comments between tables are too narrow so it's awkward to walk quickly and without tripping	Signs and maps are always in the way of things and hard to find	Clear markings of where to queue/benefit from
Seating that is used by one big group, while other groups sit at the bar, leaving some empty tables (e.g. during busy times, being early etc.)	JCR seating plan is unorganised and messy	Challenging to find seating once you have food	Spaces in JCR on benches is too busy	Basically no sockets, can't work and eat in most tables	Moving across the JCR at peak-times is difficult	Can improve the JCR layout in terms of seating in central area	During peak times, difficult to find a table and a sign to pathways
need more seats	Frustration with seating availability	Hard to find seats during peak times, especially if a group	Seats are not comfortable	Difficult to change menu table for people as going in different directions	section areas for groups and individuals		
Queueing at peak times	waiting in queues	long queues at peak hours	some places really don't clean sometimes	there are very little clean places on the tables	some people don't pick up their own litter, maybe a reminder	more bins/kiosk way to ban the bowls/waste	more bins/kiosk way to ban the bowls/waste
Queues are really long and really long on other areas so can't get to the bar	queueing can be long, organise them better	queue time for microwave is too long	location of tray collection area awkward as it near the salad bar etc.	not enough trolleys around getting plates always having to go to the kit	sometimes the JCR is unbearable		
						not enough microwave	loads of cooking as opposed to want to cook but no time schedule

During the Co-Ideation workshop, users wrote **pain points** and they were in charge of organising them into groups. This allowed us to see **new themes** in their insights from a different perspective such as microwave issues, issues with the **bins** and **seating layout** issues. This means that RevAMP should consider the unique themes that were discovered in the workshop.

[illegible]

Empathy maps were used to organise **qualitative interview** and **survey data** into **structured behavioural profiles**.

Identifying what users say, think, do, feel, along with their goals and pain points, allowed us to gain a deeper understanding of their campus food experience, but also allowed for comparison to other profiles, helping to collate **shared pain points and goals**. The purpose of **empathy maps** is that it illustrates the **inner thoughts and emotions** that **users experience** and helps to categorise them in order to determine the root cause of their **pain points** as well as their goals.

Comparing empathy maps across the main user groups revealed differences in their **motivations**, constraints faced and overall thought process when choosing food on campus.

The Canteen space was found to be **not inclusive** towards professors or one-day visitors, due to **short intervals** of **free time** between **meetings** and not **user-friendly** respectively. Undergraduate and Postgraduate students share the **same view** that portion sizes are too **small**, greater variety of meals was needed and that price, despite it being **cost-effective** relative to London, they still found the meals expensive, possibly due to budget constraints.

The current service model assumes users have time to browse, queue and sit down. However, professors and visitors often have **limited time** between commitments, meaning the experience does not support users who require **quick, frictionless food access**

Visitors reported difficulty navigating the space, indicating that **ordering** and **navigation** rely on **implicit familiarity**. This creates barriers for first-time users and highlights the need for **clearer guidance**.

While students are the dominant user group, professors and visitors have **different needs and behaviours**. The current setup does not fully accommodate these **differences**, suggesting a need for more **flexible service formats**.

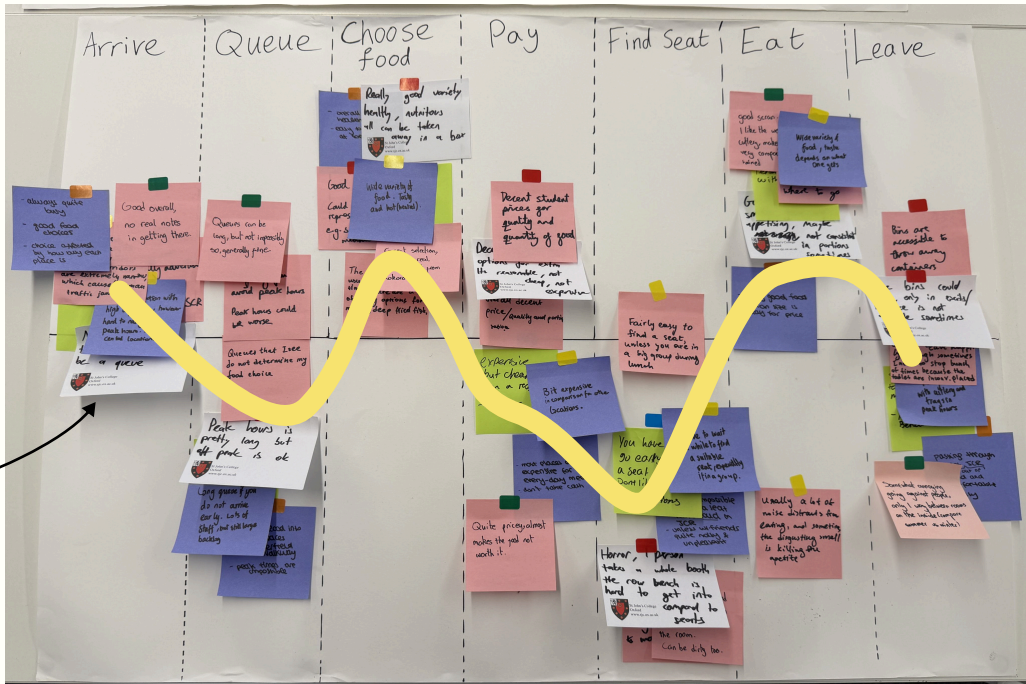
Journey Mapping

Initial desk map

From our interviews with students and professors, as well as our personal observations of the cafeterias' environment, we began drafting a line for the common **journey map**.

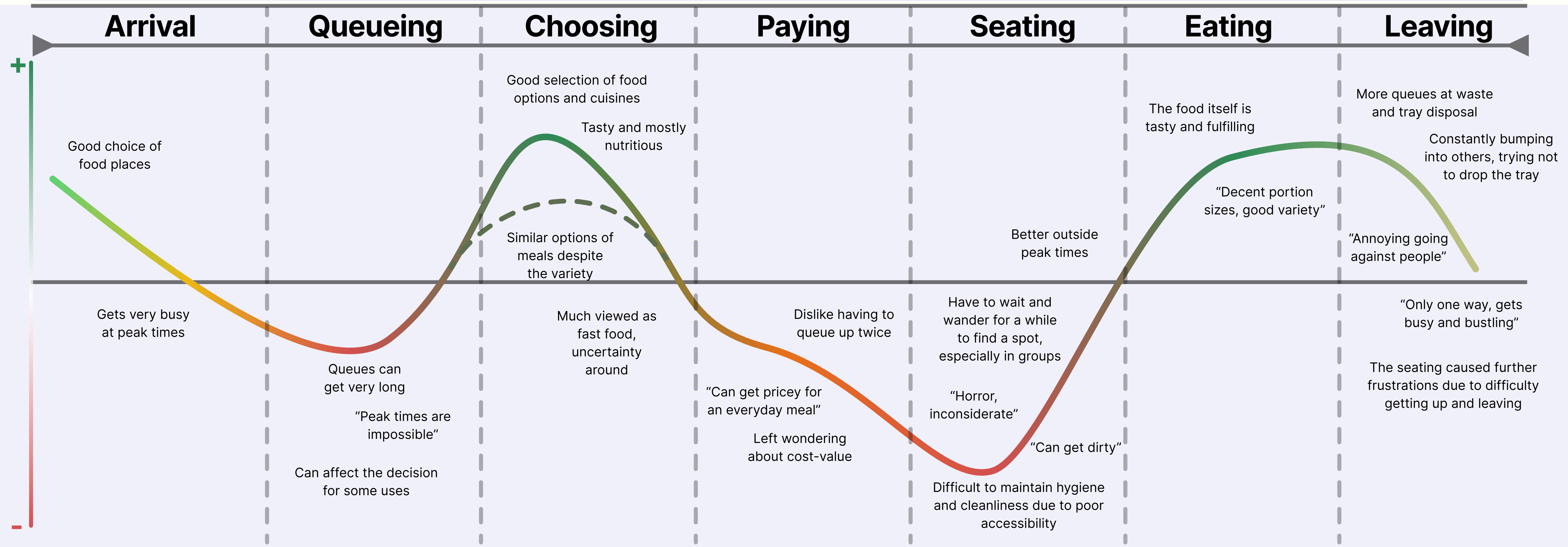
Workshop mapping

- We tested our assumptions during our **in-person workshops** with **12 undergraduate students** from different faculties as well as **in-depth interviews with 3 professors**, where we had the participants map out their **satisfaction levels** at consecutive points of their **journey** of acquiring food on university campus, providing an explanation for their **reasoning** for those plots on sticky notes.
- We saw a clear **trend** with some deviation throughout, which we were able to represent with a single **line graph**.
- These results were **consistent** across user groups of all ages and mostly coincided with the assumed trends.



New insights

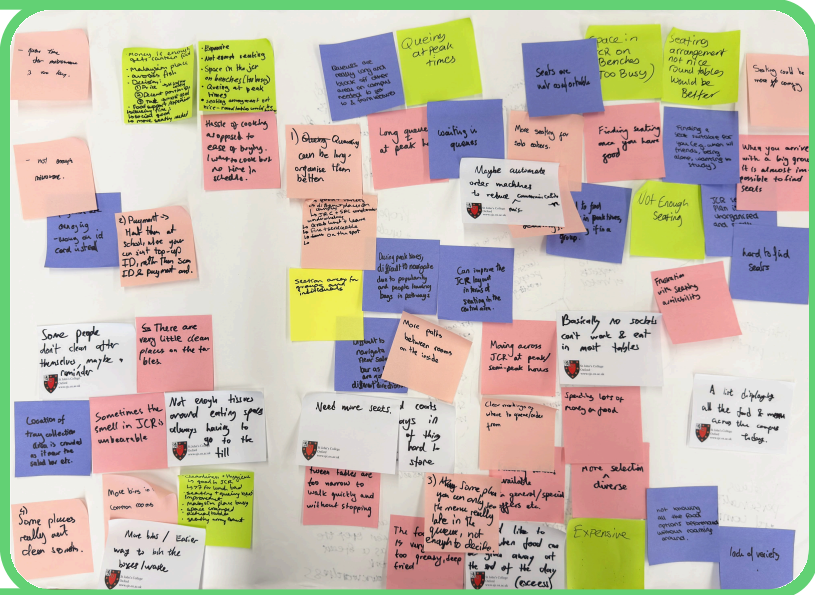
- There were some **outlying results** from the people who preferred to bring **packed lunch** were able to extract more key **insights**.
- The users with packed lunch were mostly **expenses-sensitive**, avoiding spending much money on campus food and preferring the **flexibility** of having home-made meals.
- The pain points observed, however, were that the difficulties didn't end there, as they still **struggled accessing seating and heating** their meals in the common room kitchens.



Thematic Coding & Behavioural Pattern Analysis

1. Developing workshop maps

During our co-ideation workshops with students and professors, they were tasked with marking their biggest pain points, as well as considering factors with opportunities to be improved. These were then arranged into clusters of what the users viewed as common themes and



2. Thematic Synthesis

Habit and Familiarity-Based Decisions

- “Came here for sushi”
- “Kokoro because I recognise the name”
- “Porridge in the library for breakfast is really good”
- “Favourite food is in the Chinese place”
- “Decide places based on mood, workload”

Repeated exposure and routine influence food outlet selection.

Nutritional Health

- “Not good for older people on campus due to unhealthy food”
- “Doesn't fit my diet plan, choose food based on macros”
- “Small variety of food choices available especially for vegetarians/vegans/specialised diets”

Users want healthier options and nutritional information in food.

Queue and Time Pressure

- “Which queue is smallest?”
- “Which line is shortest?”
- “Long queue inconvenient line”
- “Get there before 12:30”
- “Which queue is the shortest?”

Users prioritise queue lengths during peak periods.

Price Sensitivity

- Its expensive so I limit getting campus food
- Decent options with an alright price range
- Food tastes amazing but its too overpriced
- Sandwiches/paninis/wraps and salads are expensive
- Can sometimes be expensive and insubstantial

Affordability is important and limits campus food engagement.

Space, Seating and Congestion

- “Usually difficult to get seats”
- “Crowded, small tables
- “For some big table, one person will occupy the whole table”
- “Won't sit in two free seats”

Users find it hard to find seating in campus eateries.

Variety and Menu Visibility

- “Provide one type of food every single day”
- “Its the same all the time, I just get bored of them”
- “Difficult to see what food there is”
- “Limited options in medical school building”

Users are dissatisfied with poor variety and obscure menu.

Atmosphere and Emotional Experience

- “Chaotic maze, bubbly”
- “Enjoys the lively atmosphere”
- “Sticky, dirty, messy”
- “Deal breaker is smell”
- “Was in a rush to go to a meeting”
- “Closed environment and no light in Kokoro”
- “In general if a place isn't clean, I won't go”

Users mainly have a negative recount on their experience.

3. Motivation vs Friction

Habit & Familiarity

Nutritional Health

Atmosphere & Emotional Experience

Variety & Menu Visi...

Price Sensitivity

Queue & Time Pressure

Space, Seating & Congestion

This matrix maps the identified themes according to **user motivation** (desire to engage with the factor) and **friction** (difficulty in acting on it).

- Themes such as habit and familiarity and nutritional health show **high motivation** meaning users actively consider them when choosing where to eat.
- In contrast, factors like queue length, seating congestion, price sensitivity and menu visibility represent areas of **high friction**, where users experience difficulty navigating the eateries, leading to **low motivation**.
- This analysis highlights key opportunities for design interventions that could reduce friction and improve decision-making for users.

4. Persona Analysis

From our initial interviews, we developed **eight provisional personas** representing different user groups on campus. To prioritise which personas to explore further, we defined a set of **evaluation criteria** that balanced research value with practical feasibility:

- Research availability** (ability to recruit users),
- Observation availability** (whether we could observe them in context)
- Impact** (potential influence on the campus dining system)
- Accessibility** within project constraints
- Ability to **prototype** and **test solutions**
- Feasibility** of implementation
- Whether **specialised requirements** or **regulations** might limit the scope of interventions.

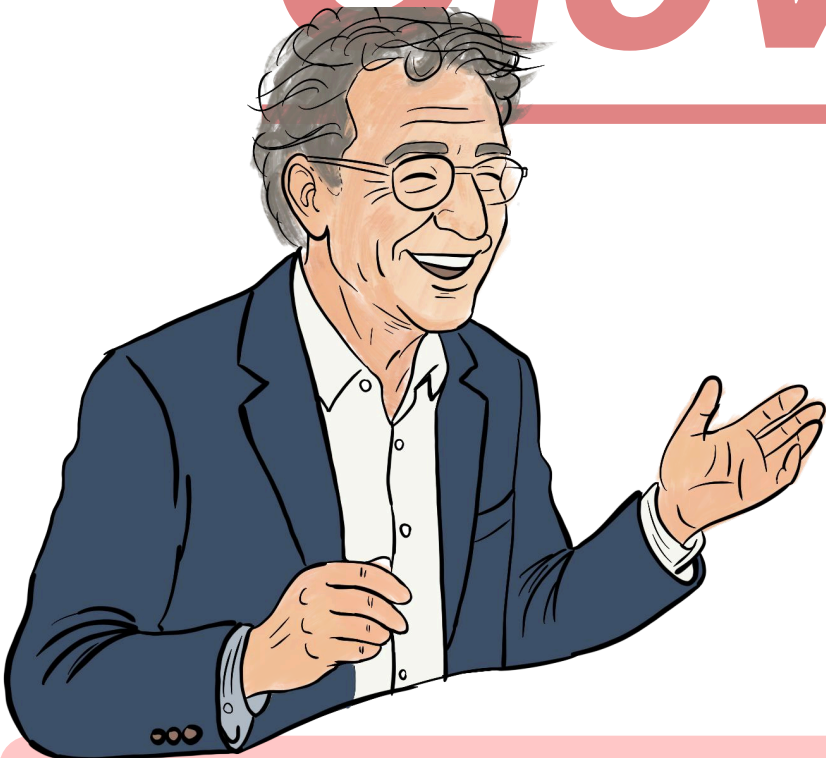
Each persona was then scored against these criteria, and the results were visualised using a **radar plot**. This process identified the three personas with the **strongest overall profiles**, which became the focus of our next round of interviews and design exploration. This also helped us tailor the user groups for our co-design workshops.

User Identification: Creating Personas

Persona Development

Personas were created by **analysing patterns identified** in the affinity map and empathy maps. Responses were grouped based on shared behaviours, daily routines, and common pain points across user groups such as students, professors, and visitors. These insights were translated into representative personas that reflect typical user motivations and constraints.

Giovanni



61 years old
Professor

Bio: Teaching Professor, Physics at Imperial College London.

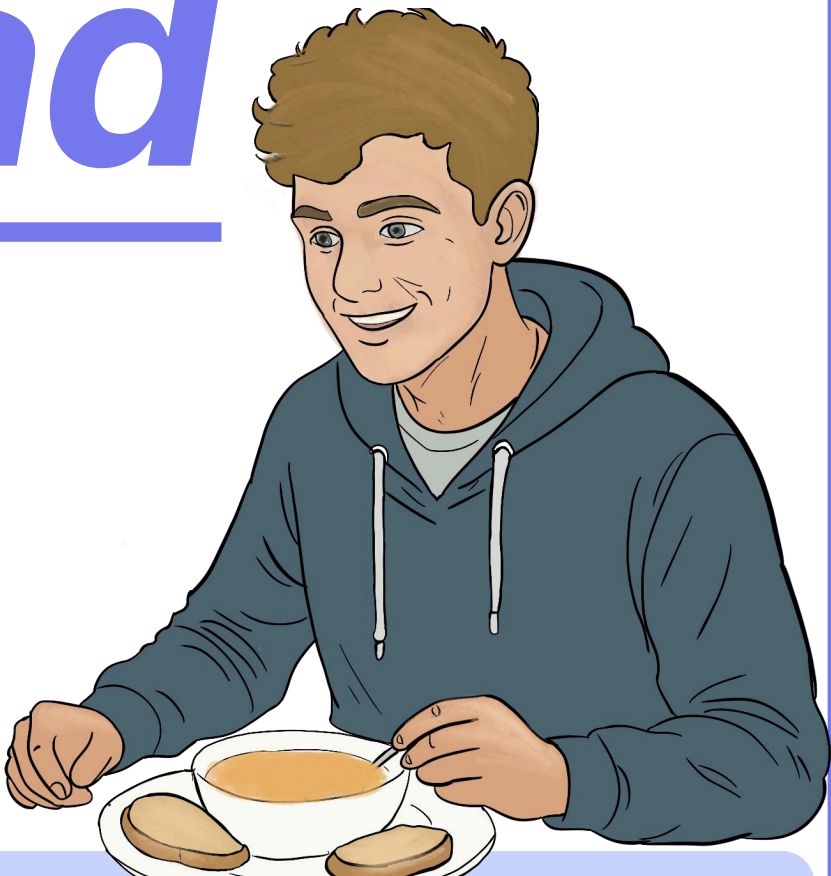
Typical Day:

- He is a social eater, preferring to spend his lunch time together with his colleagues and fellows.
- He is conscious of what he consumes, mostly due to his dietary requirements, opting for lower sugar, sodium (salt) and low-fat options to help maintain his glucose levels, blood pressure and cholesterol levels. Thus, he manages to stay healthy.
- However, he often feels concerned for his food intake on campus, as, despite there being many different food places, most serve similar meals and lack any indication of nutritional value.

Pain point:

- Such confusion and cautiousness often times leads him to feel a need to bring his own meals and makes him wary of trying something new without any information.
- Furthermore, he finds the customer experience in the Senior Common Room quite uninviting in its food purchasing system and unapproachable in seating experience, which overall leaves him feeling unappreciated.

Murad



19 years old
Student

Bio:

- 2nd Year Student, Chemical Engineering at Imperial College London.

Typical Day:

- He has a busy schedule, trying to balance his intense studies and finds time to eat during his lunch breaks.
- He sometimes goes to have lunch with friends and finds it a pain when they separate to queue at different spots and then meet again and find a seat in the extremely busy room.
- He is not a picky eater, but does care about the value for price, portion sizes and, of course, protein content in his food to help him with gym gains.

Pain point:

- Sometimes he brings prepared meals, especially when he needs to save up money (it can get expensive), but that does not save him from queues and long waiting times, as at peak times it is a struggle to find/get into an available seat and wait for the microwave to free up.

Hanna



38 years old
Staff Member

Bio:

- Staff Member, SCR & JCR at Imperial College London

Typical Day:

- Her daily work includes preparing the food stand upon receiving the batch of freshly cooked food, serving the food and finally cleaning up the kitchen and the common room.
- In the morning, she gets 30-40 minutes to get the place ready until a surge of students swarm the common room, hungry for food at noon.
- Until 2-3 o'clock, she serves food continuously, after which she closes down the stand and cleans the whole area, helping her colleagues around.

Pain point:

- She finds it difficult to balance her tasks throughout the day due to the large labour workload, causing her to multi-task at certain peak times.
- The hurry to prepare the food stand and clean the room after can be stressful.

Insights and Opportunities

Pain points

- Students disliked having their **time wasted** by **inefficient queueing systems** in food places in campus common rooms (queueing twice for paying and getting the food)
- Professors with dietary requirements are concerned for **long-term health** effects of campus food due it predominantly appearing as fast food, with a lack of variety in healthy options.
- Many pain points, especially in students, rooted from **inefficient seating and arrangement**, leading to difficulty finding and accessing a seat, as well as causing a struggle for staff members to maintain cleanliness of the area due to **poor accessibility**.
- Students complained about difficulty navigating around campus and the food spots, as well as deciding on the place to eat, leading to **frustrating, crowded environments** in the common rooms.
- Professors and senior customers are **dissatisfied** with the **customer service** in the campus canteens, feeling out of touch and unappreciated, especially due to the **lack of personalisation**
- Students who bring home-prepared meals are often frustrated from **long waiting times** and queues for microwaves in the busy kitchens during peak hours to reheat their lunch.
- Customers across the age groups disliked the tray, plates and cutlery return processes in the common rooms, as well as the food waste disposal due to the **long waiting times** and **labour**, often getting their hands dirty in the process. Meanwhile for the staff members, we saw that the process can be very **time consuming** and **labour-intensive** for staff as well, causing stress at time-pressured moments.

Insights

- The queueing system in the cafeterias are **under-optimised**, getting very busy at peak hours, with many food spots featuring double-queueing system for buying the food, which causes **chaos**.
- There is a **lack of communication** between the customers and the food providers on campus, with little available or accessible information on nutritional value of the food, restricting any **personalised customer experience**.
- The table and seating in the common rooms, as well as their arrangement, are **under-optimised**, causing difficulties across user groups and their **dynamics**.
- There is **poor navigation system** around campus, which is not clear for new students and first-time visitors, causing **difficulty** in deciding on where and what to eat, causing **confusion**.
- The current design of campus canteen journey lacks a **feedback system** and appropriate customer service, leading to miscommunication between the **customers** and **staff members**.
- The kitchens in student common rooms on campus do not meet the **demand** for heating ovens for reheating packed lunch, causing the kitchens to get **busy** during **peak hours**.
- The post-meal cleaning up process can be improved for better ease of **disposal** and **waste management** for users and staff members, as the research showed that the process can cause **pressures and unease** in the **dynamic** between the groups.

How might we...

- How might we **reorganise** the **food-purchasing queueing system** for time-pressed students and staff, so they can navigate the checkout process efficiently without feeling rushed, thus **minimising stress**?
- How might we provide a more **transparent** and **personalized meal experience** for senior professors with strict dietary requirements, so they can safely enjoy on-campus dining, addressing the health effect concerns?
- How might we **optimise** the **seating layouts** in campus common rooms for student groups, so they can quickly find space to eat and socialise comfortably without **disrupting traffic flow** during peak hours?
- How might we **streamline** the daily food decision-making process for busy students, so they waste **less time**, instead spending more time enjoying their meal?
- How might we foster a more **welcoming environment** between common room staff and campus customers, so that the mealtime experience feels less like a **transactional queue** and more like a **connected campus community**?
- How might we improve access to **reheating facilities** and **comfortable eating spaces** for undergraduate students who bring their own lunches, so they can enjoy a warm meal efficiently without stress between classes?
- How might we **redesign** the **post-meal waste disposal** and tray-return process for common room cleaning staff, so they can maintain a **hygienic environment** more efficiently and with **less physical strain**?

Concept Ideation

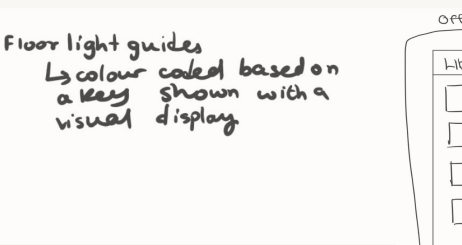
Group + Co-Ideation with sketches 47 incl co-ideation workshop

Offline food guides



Floor light guides

↳ colour coded based on a key shown with a visual display



offline display

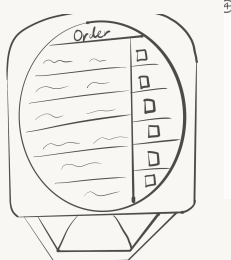
Library cafe

- Library menu
- Library menu
- Library menu
- Library menu

page 1/10



Order



Ticket system with waiting lobby

can check using an app on the phone manually

↳ if number of people waiting is high



one time for order collection

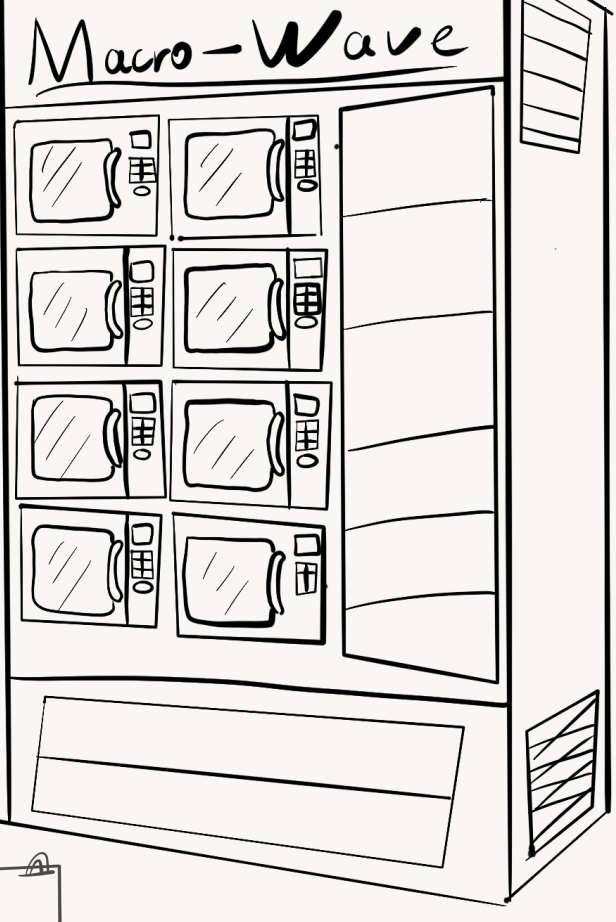
has receipt, individual gets to fill and waste off and pass it and waste off



menu board reorganises itself to show compatible meals



Macro-Wave



only one card to top up



webapp

Kakoro (using time on menu)

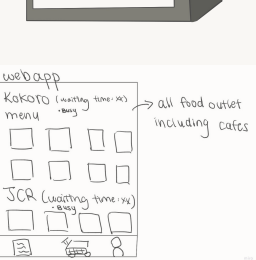
JCR (using time on menu)



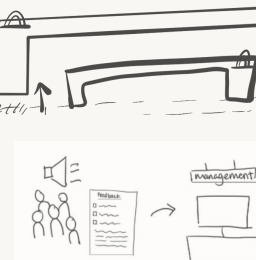
group seating

small grouped

individual seats



Macro check queue lines, uses phone GPS

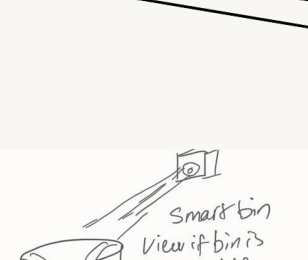


Thermal storage pods

insulated walls

keeps food warm/cool

retractable plan tables



TASTE IMPERIAL

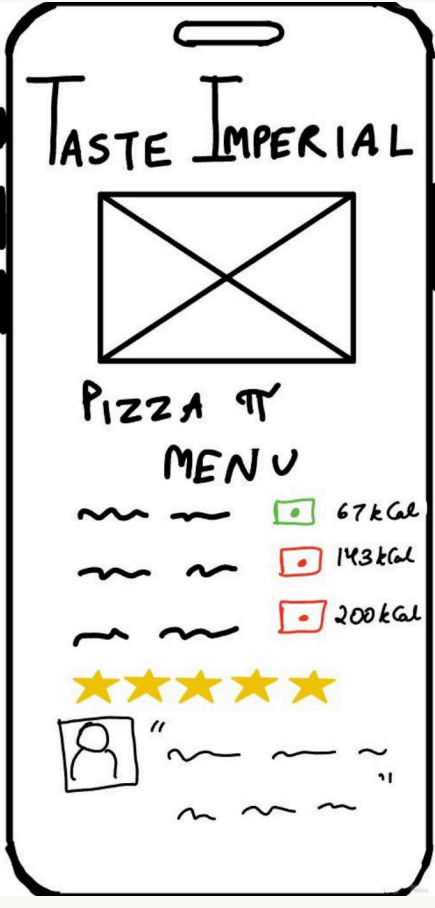
Pizza menu

67kcal

133kcal

200kcal

5 stars



Filter

Sort

La Cantina

JCR

Availability

Kororo

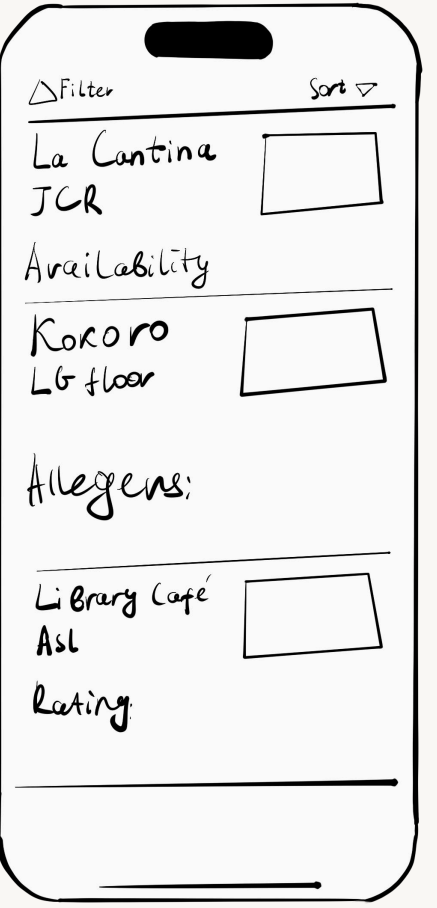
L6 floor

Allegens

Li Brary Cafe

Asl

Rating

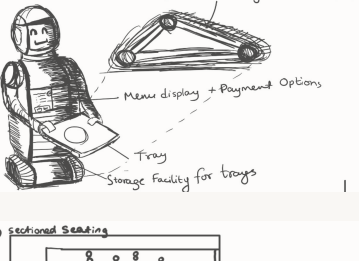


Robot servers

Tracks for agile movement

Menu display & Payment Options

Storage feeding for trays



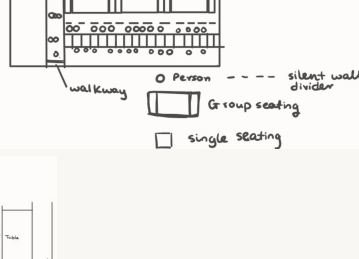
sectional Seating

walking

Person

Group seating

single Seating



Trailing to seat



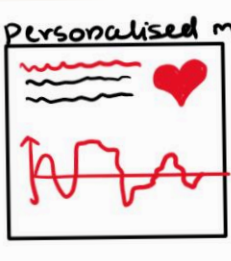
personalised meal experience through Digital fob

Digital fob ⇒ in built specific software for displaying nutritional info

⇒ Blood sugar levels

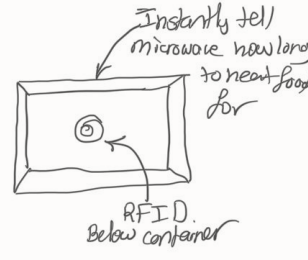
⇒ nutrition in deficiency

⇒ Suitable meals to reduce deficiency



Instantly tell Microwave how long to heat food for

RFID below container



online preordering

Kakoro

JCR



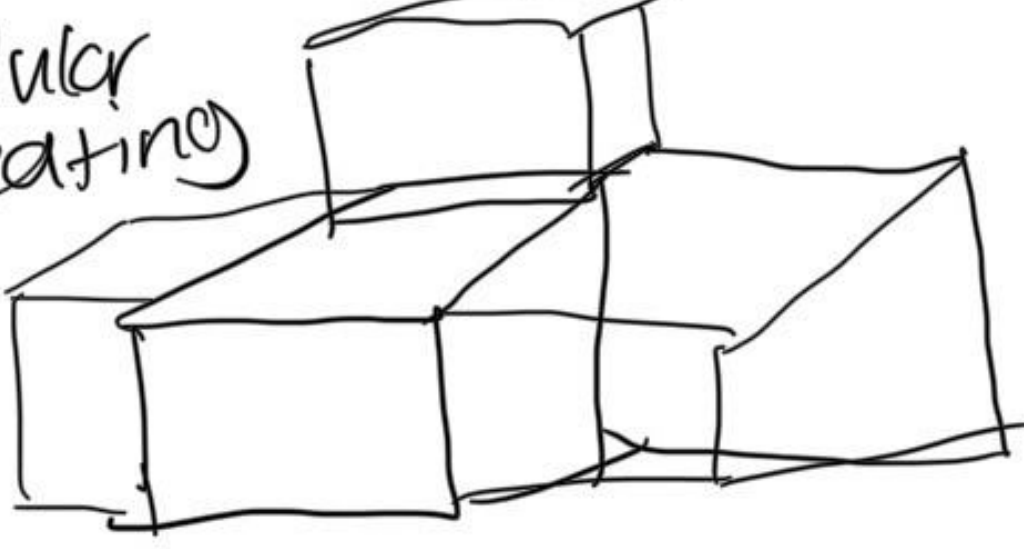
camera views queue and predicts wait time



place → JCR • crowded ← status



modular Seating



queue prediction

macro wave

imperial app

reorganisable menu

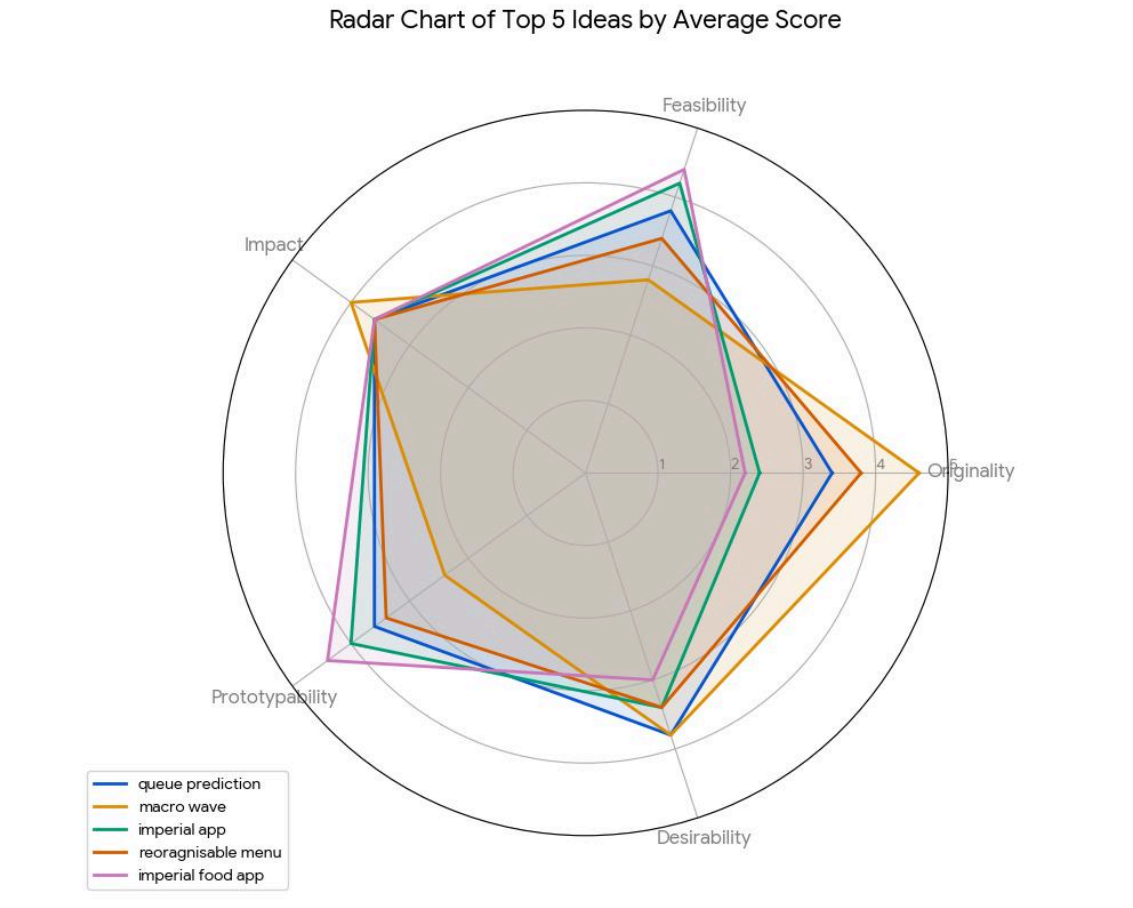
imperial food app



Voting on ideas

	floor light guides	sectioned seating plan with dividers	Digital fob idea	automatic trolley system on rails	ticket system with waiting lobby	retractable table
originality	3.8	2.4	3.2	4	2.2	2.6
feasibility	3.2	2.8	3	3.2	3.2	3
impact	2.8	3.6	2.6	3.4	2	2.6
how possible is it to prototype	3	2.8	3	2.6	2.6	2.8
desirability	1.6	3	1.8	2.6	2.2	2.8
average	2.88	2.92	2.72	2.96	2.44	2.76
	self checkout	seating plan u shaped	imperial app	solo pod	macro wave	Thermal storage pods
originality	2.4	2.8	2.4	2.8	4.6	3.4
feasibility	3.4	4.2	4.2	3.2	2.8	3.6
impact	3	3.4	3.6	2.6	4	2.4
how possible is it to prototype	3.8	3.2	4	2.6	2.4	2.8
desirability	2.6	2.4	3.4	3.4	3.8	3.2
average	3.04	3.2	3.52	2.92	3.52	3.08
	RFID container	imperial food app	seating plan grouped	modular seating	smart bin	queue prediction
originality	3.6	2.2	2	4	3.2	3.4
feasibility	2.8	4.4	3.6	3.6	2.8	3.8
impact	3.2	3.6	2.8	3	3	3.6
how possible is it to prototype	3.2	4.4	3.2	3.2	2.6	3.6
desirability	3	3	2.6	3.4	2.6	3.8
average	3.16	3.52	2.84	3.44	2.84	3.64
	reorganisable menu	Heat map of imperial	Cooking tiffin	Taste imperial app	channel to link student voices on Web based platform	
originality	3.8	3.4	3.6	2.2	2.4	
feasibility	3.4	3.2	2.8	3.8	3.2	3.8
impact	3.6	3.4	2.6	3.4	2.6	3.6
how possible is it to prototype	3.4	3	2.8	4	3	4
desirability	3.4	3.4	3.6	3	3	3.4
average	3.52	3.28	2.96	3.4	2.76	3.44
	top up imperial id card	real time monitoring of what place	online preordering app	display menu and price		
originality	2.4	3.4	2.6	2.6		
feasibility	3.4	2.8	3.4	3.8		
impact	4.2	4	3	2.2		
how possible is it to prototype	2.8	2.2	3.4	3.4		
desirability	4.2	4	3.8	2.6		
average	3.4	3.28	3.24	2.92		

As a group we voted on the ideas displayed to the left, according to 5 criteria: **originality** of the idea, **feasibility** of the idea, **impact** to individuals, **prototype possibility** and **desirability**. We then created the table shown above and averaged all the scores, with the highest rated ideas shown in the next slide.



A **radar plot** was created in order to compare ideas to each other. Displayed are the **five highest voted ideas**. This graph informed us of the ideas for which we were able to design and create prototypes.

Imperial Eats App

What is it

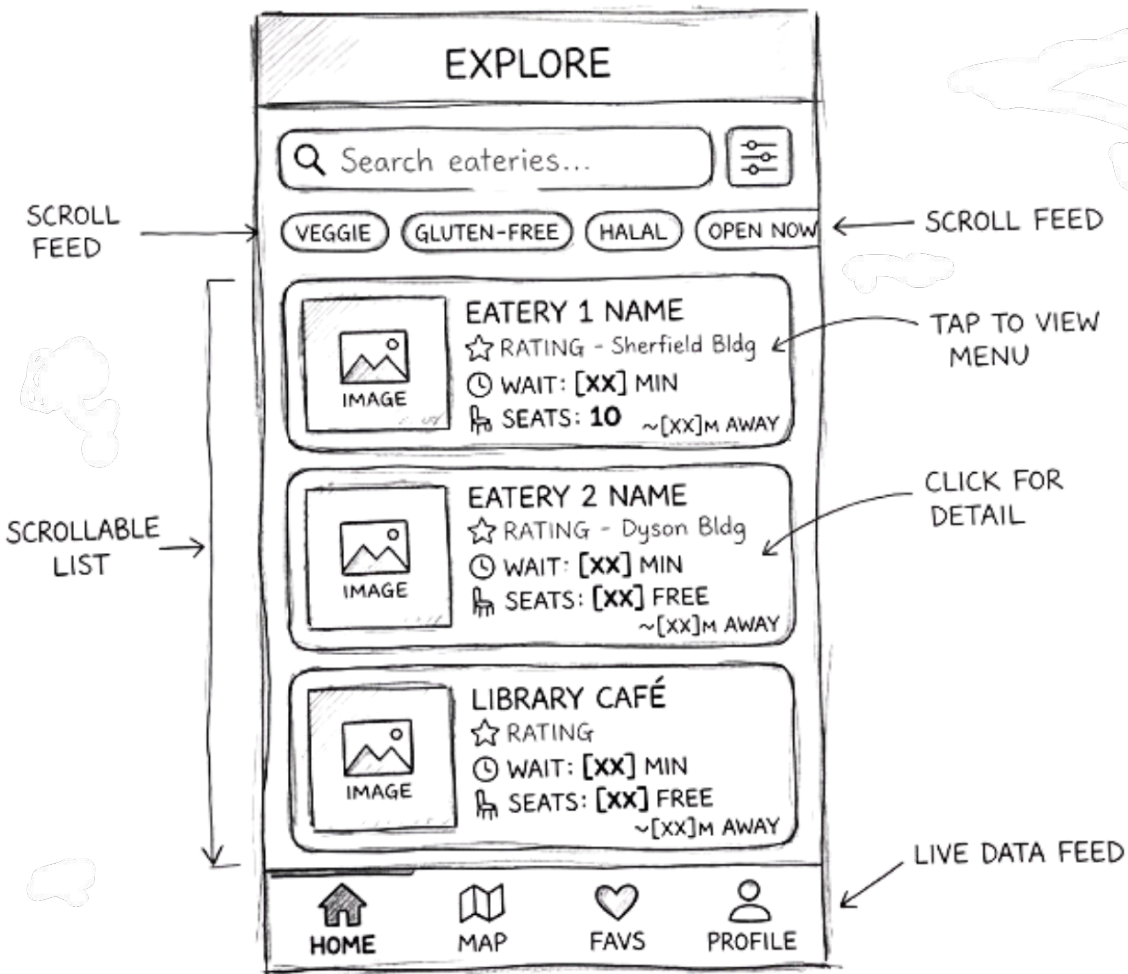
An app which connects Imperial students with key information on food places. The menu of food spots, rating and approximate space in each of the food spots. The app could also filter between the different food spots and meals according to dietary requirements.

Which How Might We

How might we provide a more transparent and personalized meal experience for those with strict dietary requirements, so they can safely enjoy on-campus dining with peace of mind, addressing the health effect concerns?

What pain point does it address

Those with dietary requirements are concerned for long term health effects of campus food due it predominantly appearing as fast food, with a lack of variety in healthy options.



Personalisable menu board

What is it

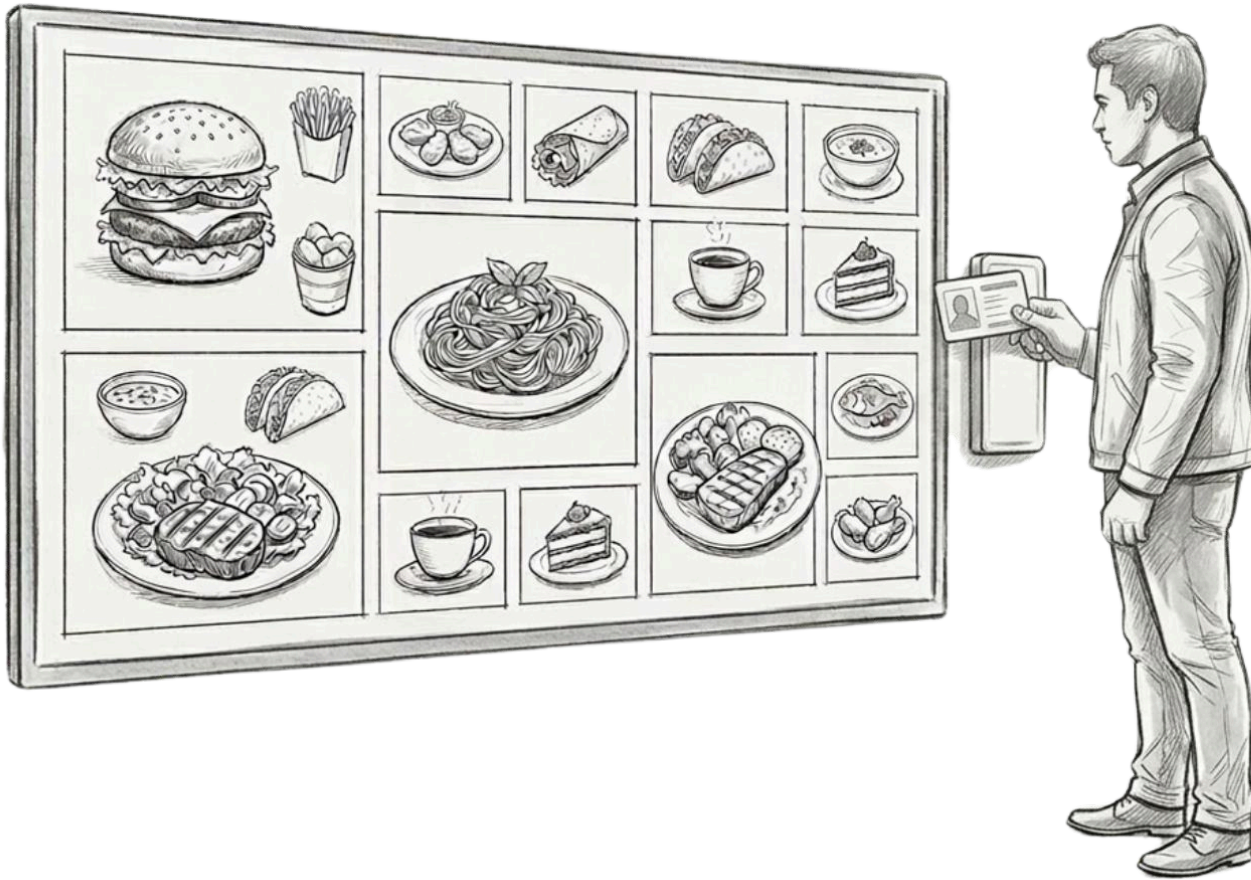
A re-organisable menu board, the individual would tap their card on the card reader next to the screen and according to their preferences, the food that they would prefer would dynamically resize and become larger. Food which does not fit their preferences will be seen as smaller. for example if a student was vegetarian, the vegetarian food will be shown larger than the meat based options

Which How Might We

How might we streamline the daily food decision-making process for busy students, so they spend less time wandering the campus and more time actually relaxing and enjoying their break?

What pain point does it address

Difficulty navigating around campus and the food spots, as well as deciding on the place to eat.



Modular Seating

What is it

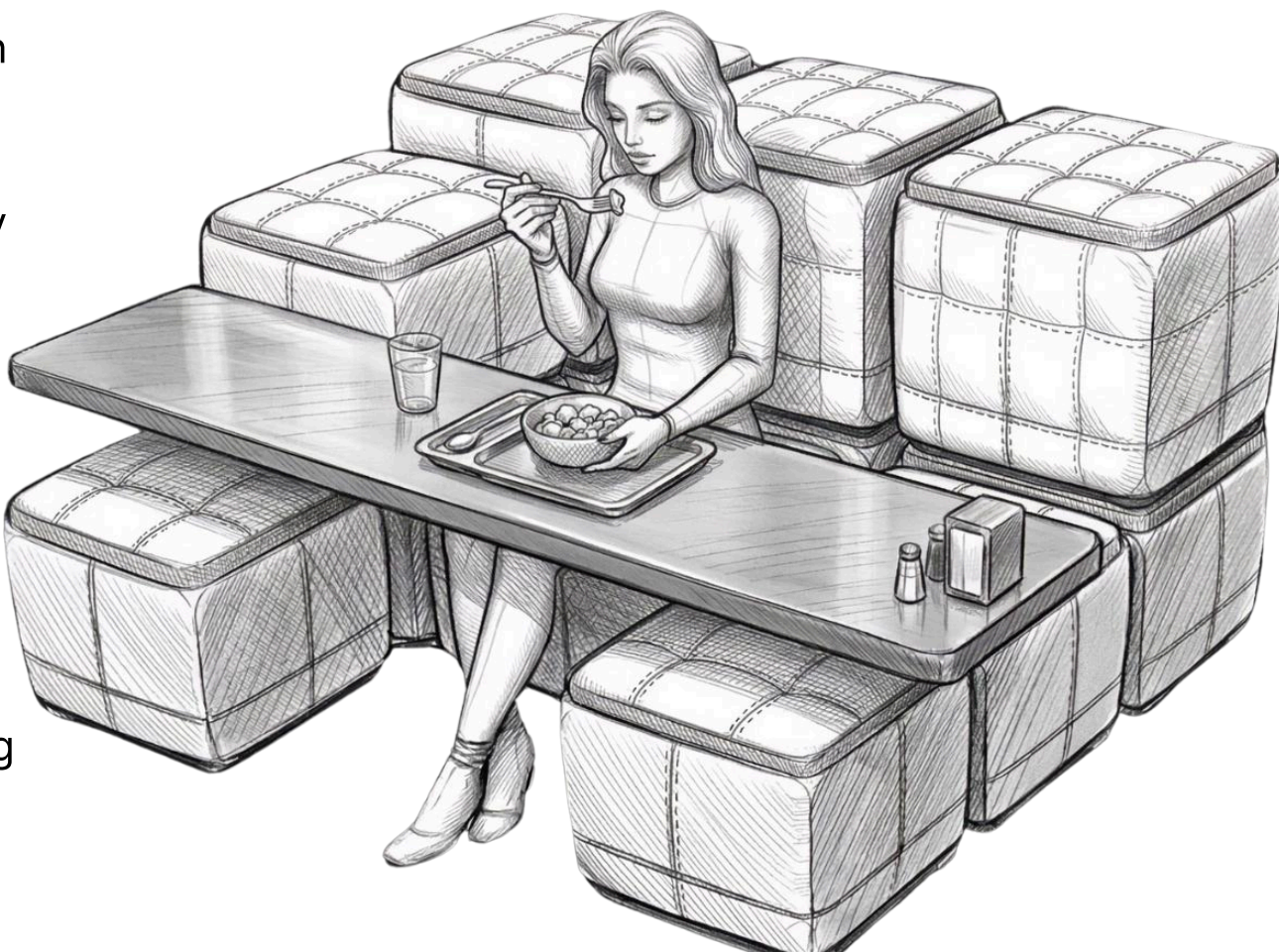
Modular seating that is able to move around to suit an individual's need. The seats are able to be rearranged and connected with each other. They can be rearranged in as many different ways as needed, they could be arranged in a circle for group seating or arranged as a throne for one person.

Which How Might We

How might we foster a more welcoming physical and social environment between campus customers, so that the mealtime experience feels more like a connected campus community?

What pain point does it address

Students find difficulty in finding seats and connecting as a group. Furthermore it addresses the fact that canteen chairs are uncomfortable



MacroWave

What is it

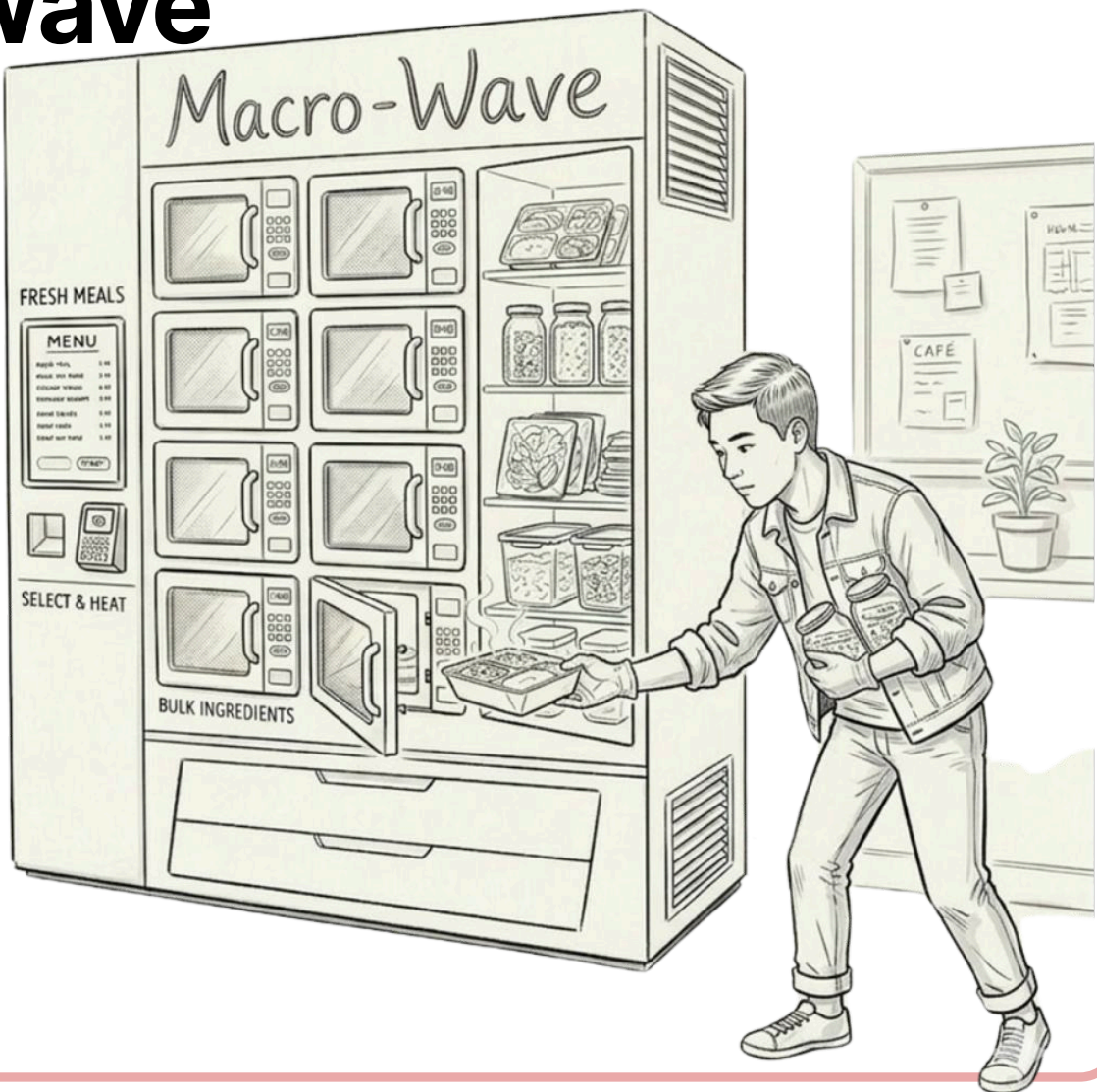
A vending machine which has microwaves stacked on top of each other so that individuals can heat their food up efficiently. It also contains a section for food which can be purchased if the individual does not have any food to heat up.

Which How Might We

How might we improve access to reheating facilities and comfortable eating spaces for undergraduate students who bring their own lunches, so they can enjoy a warm meal efficiently and without stress between classes?

What pain point does it address

Students who bring home-prepared meals are often frustrated from long waiting times and queues for microwaves in the busy kitchens during peak hours to reheat their lunch.



Macro-Wave



The prototype of the “MacroWave” was **designed as a CAD model** on Autodesk Fusion 360.

This is designed as a “vending machine” style and size unit with multiple available heating units, used for quick and easy reheating of multiple meals at once, as well as a storage compartment.

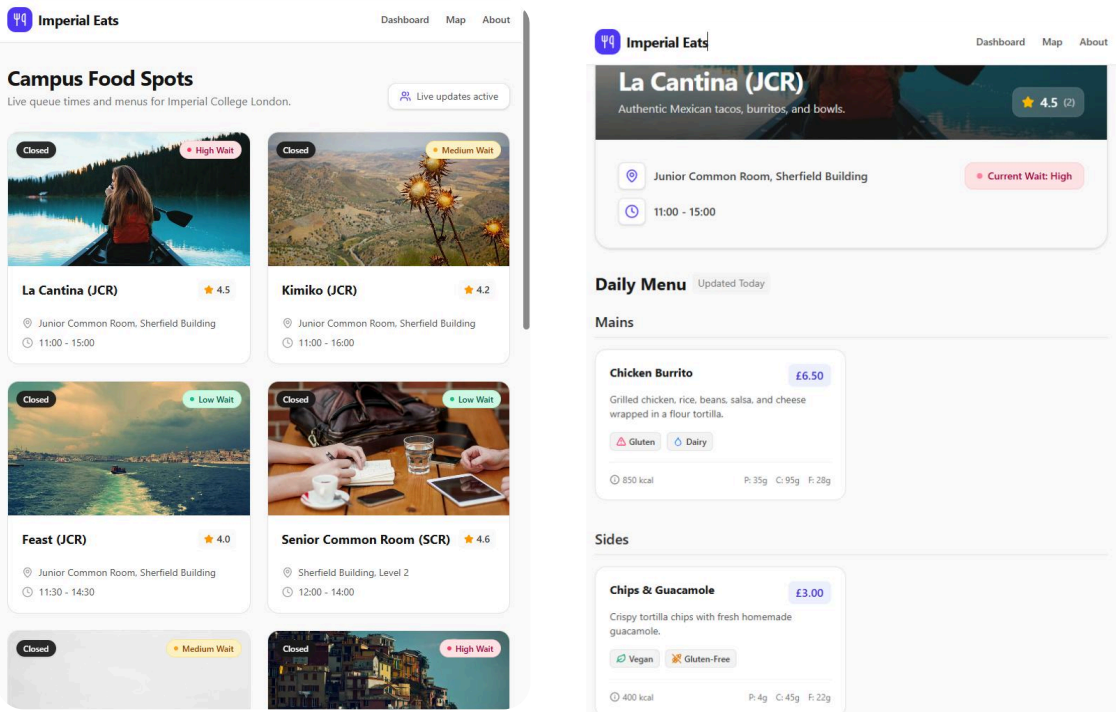


This design was then 3D printed in PLA at 1:40 scale to **test the sizing** as compared to a human mini-figure.

This concept was deemed **feasible and desirable**, as suggested by user feedback at our workshops. However, such product would be expensive and energy intensive to manufacture and use, considering that the demand for the “MacroWave” would only be during lunch time peak hours.

This taught us to **think of concept with better reliability and a consistent, long-lasting impact.**

Imperial Eats App



The prototype of the “Imperial Eats” app was created with the use of Google Gemini and Google AI Studio. A prompt was given which included details of all the **screens, buttons and navigation methods.**

It is designed to **centralise information** about eateries across campus, allowing users to view menus, dietary information, queue lengths, wait times and seating availability, along with helping them to locate the eateries. It enables users to **quickly compare** various food spots based on their **specific needs**, thereby providing a more personalised user experience.

We wanted to test how the app would look like after being generated with AI including all the features incorporated into the screens which display **sample generated data** about food items, wait times and nutritional content.

This prototype taught us that an app can be an **effective solution** and information provider for the users. However, some user feedback suggested a **lack of enthusiasm** or **desire to download** and use a “one more app” for a the given cause, and would rather prefer a simple, **locally accessible solution.**

This taught us to think of concepts with a simple, “on the spot” solution, rather than a fix with extra steps for the user.

Modular Seating



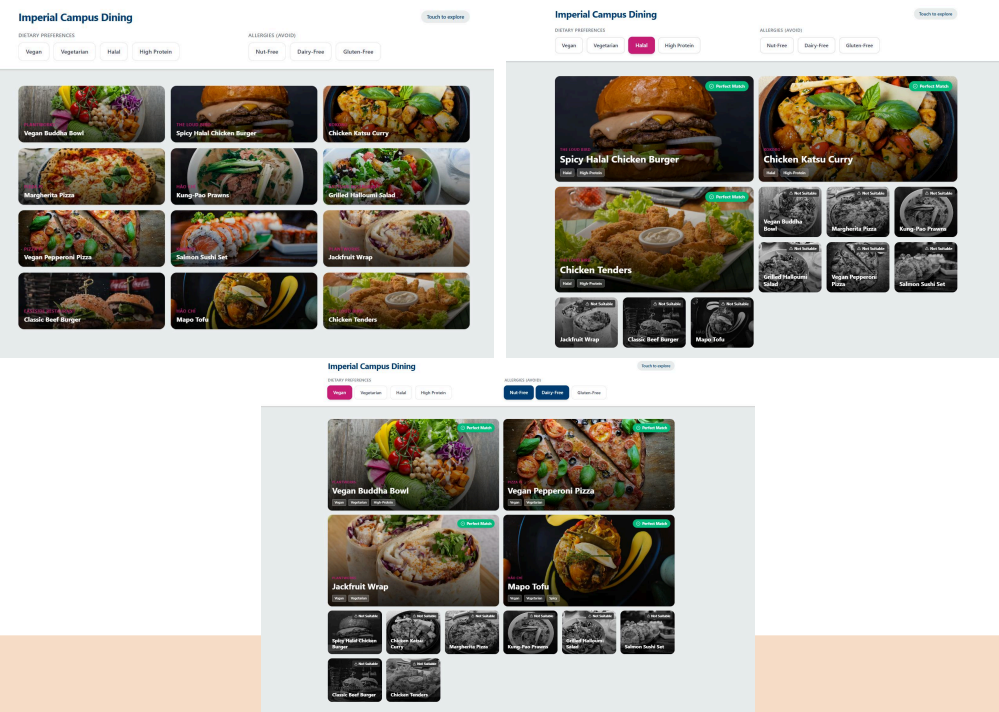
We created a **scaled down model** using cardboard, foam and wood for each individual seat. We were able to rearrange the prototypes around to gain a better picture of the **different combinations** of **possible configurations.**

We tested the functionality of the model, specifically the **combinations** for the connected seats as well as **strength of the pins** and the **optimal slit widths** to hold the **pin**. This was to better test the **modularity** of the design and how users will be able to interact with the seats and whether they encourage conversation.

Various combinations could be made such as **seats** for individuals as well as **group seating spaces**, when arranging the modular seats. The pins were replicated using wooden strips that **interlocked** with slits cut within the sides of the modular seat. For ease of connection between each seat, we focused on ensuring that the seats were able to **securely fixed together**, for the safety and comfort of the users.

This prototype taught us that the current design requires **further refinement** in connection stability and ease of assembly. While the **pin-and-slot system** enabled multiple seating configurations, some connections lacked **rigidity** and would require more **precise tolerances** in a **full-scale design.**

Re-organisable menu board



We created a model of the Re-organisable menu board. We did this by creating a website using the AI Software Google Studio AI. We decided to create a website in order to effectively articulate how the menu would be on a screen.

We tested the **dynamic sizing mechanism** as shown above by the **different filters** showing the most preferable food. Where food which is more preferable to the user’s dietary requirements is larger than food which is not.

According to the **user’s dietary requirement** the meals were able to be resized in a satisfying animation. This effectively allowed us to look at the user interaction with the menu and how to better model it.

Whilst the initial idea of the prototype showed a card reader, we decided to **abstract** it as we wanted to focus solely on the menu and its presentation

This prototype taught us that the interaction with the menu is quite important. This idea addresses **pain points** and seems to be **quite desirable.** This idea could be improved by adding a **interactive touchscreen element.**



This project demonstrated how Human-centred methods (interviews, empathy and affinity mapping, thematic coding, journey mapping and co-design workshops) helped reveal hidden friction points in the food experience on campus.



What we Learned about Users

- Food spaces are a **central social hub** on campus, but the current system creates **friction** during peak hours.
 - Students prioritise speed, affordability and convenience, often needing **quick meals** between lectures.
 - Professors require efficient, seamless service, as they have **limited time** between lectures.
 - Across user groups, recurring issues included long queues, unclear menus, limited variety, and difficulty finding seating.
 - Even when **meals are relatively affordable**, users are discouraged to purchase them due to **small portion size** and **limited satisfaction**.



Challenges and Limitations

- The **limited number of interviews** and workshop participants restricted the breadth of primary research.
 - Some findings relied on **observations** and **assumptions** about campus behaviour, which would benefit from further validation.
 - Due to time constraints, the concepts were explored at a **low-fidelity prototyping level**, meaning structural and technical feasibility was not fully tested.
 - Features such as **real-time queue tracking** or seating availability remain conceptual and would require **technical integration** with campus systems.



Next Steps

- Conduct **larger-scale user testing** to validate the proposed solutions with a **wider range** of campus users.
 - Refine the prototype concepts through **iterative prototyping** and **usability testing**.
 - Explore the technical feasibility of digital features such as queue length detection and live seating data.
 - Collaborate with campus food services to test how the concepts could be implemented within existing infrastructure.

	Time Pressed student	Health Focused User	Social Eater	Routine Follower	Food Vendor/staff	Athlete	Elderly	Person with Disability
How feasible is it to get access to them	3.8	3.4	4	3.4	3.4	3.4	3	2
How easy is it to get a hold of the user	3.6	3	3.4	3.2	2.2	3.8	2.4	2
How strongly does this group experience the problem?	4.4	3.6	2	3	4	4	4.4	4
Can I easily access this group for interviews or testing?	3.6	3.4	3.6	3.4	2.6	3.6	2.8	1.6
Can I observe them using or struggling with current solutions?	4.4	3	3	3	3.4	3.4	3	4
Can I realistically design for this group within my skills and tools?	4	4	2.4	2.8	3	3.4	4	2.6
Does this group require specialised regulation or safety standards?	1.8	2.6	2	2.2	3.4	3.2	4.2	4.6
Can I test whether my design works for them?	3.6	3.4	2.6	3.2	3.2	3.4	3	2.8
Total	30.6	26.2	24	24.8	23.4	26.8	23.4	19.4

We used a Google form in order to vote on which persona is the best. Above is the results of the survey colour coded and placed on to a spreadsheet to easily see which persona is voted for. The values that are colour coded are the average score according to the rank we gave each one of the questions. The total below is the total of each persona. This allowed us to vote on which persona we thought to work on.

The user groups which we wanted to look at. These are the user groups who use the canteen and therefore our main area of research.

```
1 import matplotlib.pyplot as plt
2 import numpy as np
3
4 # 1. Define the categories and data from the table
5 categories = [
6     'Feasibility/Accessibility',
7     'Impact',
8     'Research Availability',
9     'Observation Availability',
10    'Feasibility of Solutions',
11    'Specialized Requirements/Regulations',
12    'Testing Ability'
13 ]
14 N = len(categories)
15
16 student = [3.7, 4.4, 3.6, 4.4, 4.0, 1.8, 3.6]
17 professor = [3.2, 3.7, 3.1, 2.8, 2.9, 3.0, 2.7]
18 staff = [3.4, 2.4, 4.0, 2.2, 3.5, 3.4, 3.2]
19
20 # 2. Append the first value to the end to close the circular graph
21 student += student[:1]
22 professor += professor[:1]
23 staff += staff[:1]
24
25 # 3. Calculate the angle for each category
26 angles = [n / float(N) * 2 * np.pi for n in range(N)]
27 angles += angles[:1]
28
29 # 4. Initialize the radar plot
30 fig, ax = plt.subplots(figsize=(8, 8), subplot_kw=dict(polar=True))
31
32 # 5. Draw the axes and labels
33 plt.xticks(angles[:-1], categories, size=10)
34 ax.set_rlabel_position(0)
35 plt.yticks([1, 2, 3, 4], ["1", "2", "3", "4"], color="grey", size=8)
36 plt.ylim(0, 5)
37
38 # 6. Plot and fill the data for each group
39 ax.plot(angles, student, linewidth=2, linestyle='solid', label='Student')
40 ax.fill(angles, student, alpha=0.1)
41
42 ax.plot(angles, professor, linewidth=2, linestyle='solid', label='Senior professor')
43 ax.fill(angles, professor, alpha=0.1)
44
45 ax.plot(angles, staff, linewidth=2, linestyle='solid', label='Common room staff member')
46 ax.fill(angles, staff, alpha=0.1)
47
48 # 7. Add a legend and title
49 plt.legend(loc='upper right', bbox_to_anchor=(1.3, 1.1))
50 plt.title('Evaluation Metrics by Role', size=15, y=1.1)
51
52 # 8. Display the plot
53 plt.tight_layout()
54 plt.show()
```

Code to create the radar plot. This was done using python and plotting in the data points. We used Matplotlib to generate the radar plot with different colours for each radar for clear visualisation.



Images of the different locations at Imperial that were explored, specifically related to food (e.g. Junior Common Room, Library cafe). This was part of the initial ideation, we looked at specific loactions around campus.

Appendix

4P - Improving Meal Experience on Imperial College Campus - HCDE

Hi, we are from YouAMP - first year Design Engineering students at Imperial - and we are working on improving the meal experience on our campus. We are currently in the 'Define' phase of our Design Thinking project.

We highly appreciate it if you could complete this short survey for us! We value any insights, feedback, feelings and information that you provide. We will provide free snacks and sweets as we highly appreciate any given feedback and information.

Like to, you can sign up for a short in-person interview (snacks provided and a chance for a reward at the end) to help get your voice heard - helping and submitting this form, you consent to your response being recorded and processed for our primary research.

Your role at/connection with Imperial College? *

Undergraduate student
Postgraduate student
PhD
Staff member
Other

What age range are you in? *

17-24 years old
25-40 years old
41-60 years old
60+ years old
Other

How often do you eat campus food? *

Daily (when on campus)
>4 times a week
Once a week
Rarely, prefer eating elsewhere
Never

Is your <honest> rating of meal experience on Imperial campus? *

0 1 2 3 4 5 6 7 8 9

You give a short explanation of your reasoning for the given rating? *

Your answer

Would you order the importance of the following factors on your choice of food spot? (top - most important) *

Cleanliness and hygiene
Nutritional information (macros, healthiness)
Queue time
Ambiance
Price
Seating availability / arrangement

7. Feel free to share anything else you would like to mention regarding this topic:

Enter your answer

8. Would you like to share more about your meal experience on campus in an interview with us? (We will provide free snacks and sweets as we highly appreciate any given feedback and information) *

☐ Yes, count me in!
☐ No.

9. If you agreed to help us further with an interview, could you please provide your contact details? (e.g. your email address, phone number, etc.) (We will not share your contact details with anyone else.) *

Enter your answer

Survey questions sent out to users in order to collect more quantitative data on issues which students face.

Responses Overview

Active

Responses: 25

Average Time: 02:42

1. What is your role at/connection with Imperial College?

Undergraduate student: 21
Postgraduate student: 3
PhD: 1
Staff member: 0
Other: 0

2. What age range are you in?

17-24 years old: 22
25-40 years old: 3
41-60 years old: 0
60+ years old: 0
Other: 0

3. How often do you eat campus food?

Daily (when on campus): 8
2-4 times a week: 9
Once a week: 4
Rarely, prefer eating elsewhere: 2
Never: 2

4. What is your <honest> rating of meal experience on Imperial campus?

Promoters: 0
Passives: 13
Detractors: 12

7. Feel free to share anything else you would like to mention regarding this topic:

4 Responses

8. Would you like to share more about your meal experience on campus in an interview with us? (We will provide free snacks and sweets as we highly appreciate any given feedback and information)

Yes, count me in!: 3
No.: 22

Survey results based on what we gave out, some questions are omitted due to being seen elsewhere in the presentation or containing sensitive info.



1. Canteen Rating Matrix

How often do you use the canteen

Rating of canteen

2. Journey Map

Arrive, Queue, Choose food, Pay, Find seat, Eat

3. Affinity Map

4. Co-design Solution

The images shown above were the canteen rating matrix, journey map, Affinity map and Co-design respectively that were constructed used to collect data from the participants in the Co-design workshop

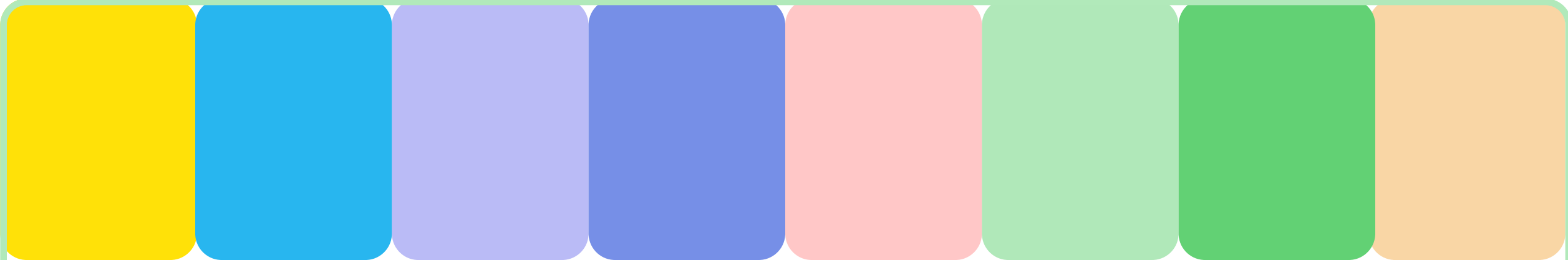
Journey Map

We collated all the information our participants wrote on the sticky notes in order to better see common pain points.

We averaged out all the journey mapping post notes stickers in order to create an average of the students' options at each section.

Age at Snapshot	Undergraduate						Postgraduate															Grand Total
	UG					Undergraduate Total	PGT				PGRM				PGR						Postgraduate Total	
	Female	Male	Non-binary or third gender	Other gender not listed	UG Total		Female	Male	Non-binary or third gender	PGT Total	Female	Male	Non-binary or third gender	PGRM Total	Female	Male	Information not received	Non-binary or third gender	Other gender not listed	PGR Total		
16	*	*			*	*															*	
17	20	30			50	50															50	
18	745	1045	*		1790	1790															1790	
19	1045	1480	*		2525	2525	*			*										*	2530	
20	1115	1560	*		2675	2675	10	10		20	*	*		*		*				*	2700	
21	760	1340	*		2105	2105	290	270		560	50	40	*	90	*	5				10	660	2765
22	395	725	*		1120	1120	865	820		1685	130	85		215	45	70				115	2020	3135
23	220	340	*		560	560	535	575	*	1110	70	65		130	140	215		*		360	1600	2160
24	105	190		*	295	295	260	305	*	565	20	30		50	180	315		*		495	1110	1405
25-29	60	85			145	145	520	530	*	1050	30	30		60	835	1440		*	*	2280	3390	3535
30 or over	5	10	*		15	15	535	755		1290	10	10		20	435	610	*	*		1045	2355	2375
Grand Total	4470	6800	15	*	11285	11285	3015	3265	*	6280	315	260	*	575	1640	2655	*	5	*	4305	11160	22445

According to a table from 2021, that displays the exact numbers of each age group in Imperial, there are 15 Undergraduates older than 30, and 2355 Postgraduates. This age group was most closely linked to professors and so comprises of a small minority of the total population of individuals at Imperial. The majority of undergraduates were spread from the 18-22 age group with 20 having the highest at 2675. This group is more associated with the young students, in terms of the user personas constructed.



The colour scheme we used in order to plan out the colour of our slides

We used Miro in order to organise our thoughts and ideate on solutions - https://miro.com/app/board/uXjVGOGI9OU=/?share_link_id=149332157113

We also used Notion in order to keep notes - <https://www.notion.so/Human-Centred-Design-Engineering-268cf0ec357c806187cdde11a3638ed5>

We acknowledge the use of Google Gemini (Google AI) and Google AI Studio (Google AI) to support with sketching and prototyping and to support editing and improve clarity of writing. All research, analysis, insights, and concepts presented in this report are our own work.

References:

[1]“Our People in Numbers.” Imperial College London, 2024, www.imperial.ac.uk/finance/annual-report/imperial-in-202425/our-environment/our-people-in-numbers/. Accessed 5 Mar. 2026.

[2] “Delivering Value through the Student Experience.” Imperial College London, 2024, www.imperial.ac.uk/finance/annual-report/imperial-in-202425/student-experience/delivering-value-through-the-student-experience/. Accessed 3 Mar. 2026.

[3] “Fee Status Home.” Imperial College London. <https://www.imperial.ac.uk/media/imperial-college/administration-and-support-services/planning/public/statistics-guides/23-24-Stats-Guide-FINAL.pdf>

[4] <https://www.imperial.ac.uk/finance/annual-report/imperial-in-202425/student-experience/delivering-value-through-the-student-experience/#:~:text=We%20know%20there%20is%20more,start%20to%20their%20future%20careers.>

[5] “StudentShapers.” Imperial College London, 2026, www.imperial.ac.uk/students/studentshapers/. Accessed 4 Mar. 2026.

[6] Our Miro Board https://miro.com/app/board/uXjVGOGI9OU=

[7] Our Primary Research data is in our group Notion: <https://www.notion.so/Human-Centred-Design-Engineering-268cf0ec357c806187cdde11a3638ed5>

[8] <https://www.imperial.ac.uk/media/imperial-college/administration-and-support-services/planning/public/statistics-guides/21-11-Stats-Guide.pdf>

[9](Annual Report and Accounts 2024-25)

[10] “Imperial in Numbers | Research | Imperial College London.” Imperial.ac.uk, Imperial College London, 2017, www.imperial.ac.uk/research-and-innovation/about-imperial-research/enduring-excellence-in-research/imperial-in-numbers/. Accessed 2 Mar. 2026.

[11] <https://www.imperial.ac.uk/media/imperial-college/administration-and-support-services/planning/public/statistics-guides/23-24-Stats-Guide-FINAL.pdf>

[12] “Student Statistics (Public) 2020-2021.” Imperial College London, 2020, www.imperial.ac.uk/student-records-and-data/for-staff/student-statistics-public/2020-2021/. Accessed 1 Mar. 2026.

Images and pictures:

© [Christian ezra] / Adobe Stock. Empty Dining Hall With City Sunset View, Blurred Background. https://stock.adobe.com/uk/images/empty-dining-hall-with-city-sunset-view-blurred-background/1631927206?prev_url=detail

© Thomas Angus, Imperial College London

<https://www.imperial.ac.uk/news/245817/abdus-salam-library-named-honour-leading/>

<https://www.imperial.ac.uk/study/visit/undergraduate/open-days/campus-map/>

<https://commons.wikimedia.org/wiki/User:Shadowssettle>

<https://blogs.imperial.ac.uk/photography/2019/11/15/shadow-campus/>

<https://www.imperial.ac.uk/study/visit/undergraduate/open-days/campus-map/>

https://commons.wikimedia.org/wiki/File:Dyson_Building_from_across_Imperial_College_Road.jpg

<https://www.facebook.com/imperialcollegelondon/posts/we-miss-you-yes-even-the-sherfield-walkway/10158187139366838/>

Omar Shahpo. Accessed on: https://commons.wikimedia.org/wiki/File:Huxley_Building,_Imperial_College.jpg

https://commons.wikimedia.org/wiki/File:Roderic_Hill_Building,_Prince_Consort_Road_in_snow.jpg

Images on slide 3 and 6 of Student, Professor, Manager and Staff worker accessed using Canva. <https://www.bing.com/search?q=canva.com&pg=canva&cvid=64A137233BD6428B8EAFB6324FFB4928&FORM=QBRE&q=RS&sc=3-5&sp=14&lq=0>

The Journey Map on slide 5 was generated using Canva and Google Gemini.

The radar plot on slides 6 and 13 were visualised on VSCode, the code was written using Google Gemini.

The sketches on slide 14 were initially hand-drawn and rendered to higher quality and detailed sketches using Google Gemini

The prototype apps and websites for concepts 2 and 4 were developed with a prompt in Google Gemini and created using Google AI Studio.