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How might we design a product, service or system that will encourage health eating habits among Freshman students on campus dining facilities?

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The transition from high school to college represents a turning point during which health related habits have significantly impacted. Studies have shown significant weight gain among college freshman, often called the “freshman 15”; for the 15 pounds gained after entering college. The goal of this project was to design a product that promotes healthy eating on campus dining facilities. Although many students showed good eating habits and adequate knowledge of nutritional and Physical activities requirements, the need was discovered to “How might we design a product, service or system that help freshman students to eat healthy when they are using dining hall?”
From a life-course perspective, the time period when traditionally aged students (17-20 years) transition from high school to college represents a turning point during which health behavior paths be influenced. (Bryant and Dundes 2005; Wickrama et al. 2003).

The myriad stressors college freshmen face from homework, interpersonal relationships, altered sleep patterns and loneliness compound any potential for poor eating and exercise behaviors (Anderson, Shapiro, and Lundgren 2003).

This issue is all the more alarming with recent reports regarding growing levels of overweight and obesity among youth: Among children and adolescents aged 2 to 19 years, 17.1% were overweight in 2003 to 2004 (Ogden et al. 2006). At some point during their lifespan, the 31% of overweight children can likely expect to become part of the 67% of overweight adults in the United States (CDC 2006).

Results show that many students are caught in a negative cycle of food choices with notable social and environmental determinants impacting both their physical and emotional health.
Challenges faced by Freshman students

- Depression, Homesickness
- Health Condition
- Poor Time Management
- Pressure of high load study
- Financial Issues

Solutions:

All admitted first-year students are required to live on campus residence hall and enroll in meal plans provided by campus dining facilities. The goal is to help students manage their time and resources.
As first-year students, we have yet to establish meaningful in-person relationships with other students all over the campus.

One of the big requirements is to eat healthy and perform well in academic career and mental health as well.

Dining Halls

Only resources for freshman students who live in dorm.

Freshman Students

They are facing lots of problems and trying to adjust themselves.

Healthy Food

One of the big requirements is to eat healthy and perform well in academic career and mental health as well.

Management

Important behavior which most of the freshman students don’t know how to manage their tasks.
How might we design a product, service or system that will encourage health eating habits among Freshman students on campus dining facilities?
Research Framework

**USER**
- Interview
- Survey
- Journey map
- Persona
- Primary Research

**LITERATURE REVIEW**
- Secondary research
- Database Reference
- Eating habits

**TECHNOLOGY**
- Technology Analysis
- Image Recognition

**BUSINESS**
- Product Benchmark
- Product Matrix

**New tech System**
- What is new in the Labs

**Tracking Food**
- Scanning Food
- Testing Food

**Dining hall App**
- To manage
- Students preference

**Student's Habit**
- Student's lifestyle
- Students behaviors
Research Methods

Primary Research
- Semi-structured Interview (20)
- Contextual inquiry
- Survey (20)
- Journey Map
- Persona

Secondary Research
- Literature Review
- Mind Map
- Competitive Analysis
- Products Benchmarking
Discovery & Research

Literature Review
Barriers to Healthy Eating Among University Students

Time-Related Barriers

A main barrier to healthy eating that emerged from our qualitative interviews was lack of time due to university commitment. Students also felt that university life was so stressful that they hardly found time to eat.

Environmental Barriers

Several environmental barriers to healthy eating were also addressed. Eating at the university was named by many students as a barrier to healthy eating. Although several students noted that there are healthy meal options at the university, they often mentioned the bad taste or the low quality of these meals. Moreover, students also felt unsure about the ingredients and assumed that many meals contain a lot of flavor enhancers. Besides the higher costs of healthy meals at the university canteen, views about financial reasons as a general barrier to healthy eating differed.

Social Inclusion and Social Support-Related Barriers

Students felt that “somehow it’s not worth cooking for just one person” and that they “have to eat healthy when they are together with others” suggesting that cooking and eating alone were also barriers to healthy eating. In contrast, other students named social inclusion as a barrier to healthy eating. For example, students mentioned going to university dining to “be among people and talk to [their] friends” and “going out to eat with friends, for example, a pizza, instead of cooking a healthy meal at home alone”. However, several students emphasized that support from friends and family was helpful for them to follow a healthy diet. One student stated: “What really helps me [to follow a healthy diet] is my environment, my friends which pay a lot of attention to what they eat. I cook a lot with my best friend, she has a really big influence on me.”
Motivational and Attitudinal Barriers

Motivational/attitudinal barriers were also addressed during our interviews with several students reporting difficulties in “overcoming the inner temptation” and “a lack of resilience”. Other students mentioned “being too lazy” as one barrier to healthy eating and found it “easier just to get something [to eat] along the way instead of cooking” or stated that “after finishing all their tasks for university, [being] already hungry and no longer motivated to […] go grocery shopping or to cook something”. This indicates that motivational barriers might be related to time-related barriers. Another motivational barrier that emerged was a lack of awareness of the importance of a healthy. For example, one student emphasized that “if you don’t have severe weight problems you do not pay so much attention to it [healthy eating], even though you should. I mean, I don’t want to get diabetes or something like that later”.

Knowledge and Information-Related Barriers

In addition, knowledge and information related barriers were identified. For example, several students stated to have a lack of knowledge about healthy eating. Students mentioned that it is difficult to evaluate their dietary behavior due to “not having a particularly in depth knowledge on nutrition”. Students realized just during the interview that “I do not know what is healthy, and what I have to do to be able to say ‘I’m following a healthy diet’.” Other students mentioned a “lack of information” or the need to “inform [oneself] a bit more about what contributes to a healthy diet”. In addition, another student emphasized that “nutritional information on food packages are often difficult to read and you have no motivation or time to study all these in order to find out how much sugar or other things it contains”.

Transition-Related Barriers

Some additional transition-related barriers got obvious. For example, a missing routine in everyday life got obvious with one student mentioning: “Every week, every day being more or less different over and over again, and having no structured procedures. Students emphasized in contrast to extended and relaxed family meals, when eating alone at the student’s flat was “something that is usually done while doing something else. For example, I read something and eat while doing that […] It [eating] is something that needs to be done but not really something that you can enjoy” indicating that the value of eating has changed since the transition to university.
Factors affecting student eating decision during the first year of school?

Deliens et al.: Determinants of eating behaviour in university students: a qualitative study using focus group discussions (2014)
Students’ Factors Influencing Eating Behaviors

**Individual Factors**
- Healthy eating meaning, perception, consequence
- Eating habits
- Food preferences
- Time and cost
- Food preparation and knowledge
- Healthy activities
- State of mind

**Social Factors**
- Parental feeding behavior
- Diet at home, school, and eating out
- Friends and media pressure

**University Characteristics**
- University Lifestyle

Summary of Literature Review

Social Inclusion and Social Support-Related Barriers

Motivational and Attitudinal Barriers

Knowledge and Information-Related Barriers
01
Discovery & Research
User Research
5W+H Questions

This basically means you should be asking **when, what, where, which who and how**. If any questions made of these can be answered effectively then you will be getting a pretty good response from the users of your product. The 5W+H framework is designed to capture different aspects of the problem.
I created Empathy Maps to get a deeper understanding about freshman students' lifestyle, preferences and eating challenges.

Empathy map helped me to gain deeper understanding and insight into students' life. Understanding the context, psychological and emotional needs of students using dining halls was critical in framing goals for the project and developing concepts.
Target Users Analysis

HEALTH

- Students who care about their health when using this service.
- Students who do not care about their health when using this service.

SOCIAL

- Students who care about the social aspect of this service.
- Students who are freshmen and feel that it is kind of scary.

WHY?

- Fast Food
- Healthy lifestyle diet is too expensive
- Vending machines also offer not healthy options.

Convenience

- Need to eat something fast.
- Health is important.
- Easy and convenient.

Money

- Vending machines are expensive.
- Beauty and convenience.

Time

- Important to save time.
- More time for other tasks.

Money

- Expensive.
- Vending machines are not the cheapest option.

Time

- Time consuming.
- Needs to be fast and efficient.

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Target Users Analysis

Primary Users:
- Caring to eat with their friends in dinning hall
- Caring about their Health and Body shape
- Having little motivation to handle it due to a lot of work to do
- Having a little healthy eating Knowledge

Secondary Users:
- Caring about the nutrition
- Having some healthy eating knowledge Preferring saving time
- Do not care to use dining hall as a social place
- Have little food-management skills
- Lazy and want everything prepared
The biaxial map shows four different user types. I decided to focus on the “Friendly Students” who are social eaters but lack healthy eating habits due to lack of motivation and knowledge.
**Selected Persona-“Friendly Students”**

**Bio and demographics**
- Freshman student
- at Iowa state University
- Age: 18
- Major: Industrial Design
- Live in Ames, Iowa
- From China

outside of the school, Chloe is a blogger. she loves trying new things and learning about other cultures. She does have her own cat.

**Stories and scenarios**
- She spends her time all at school
- She is really cares about her health.
- She busy with her school works.
- she is working as a part time job on campus.
- she needs to save money.
- She lives at dorm.
- She barely can find to go to Gym.

she usually get up at 7 am. she does not usually have time to have breakfast, so she skips the breakfast at dining. she usually have coffee..

**Behaviors**
- She is Extroverted
- She into the Fasion
- She is shy.

Chloe is always on the go and accesses all her important documents on her phone. she likes to organize and plan everything ahead time.

**Brands**
- Apple
- Anthelia

**Apps**
- 31
- Bumble
- VSco

**Goals and Needs**
- Doing well at school
- Make friends
- Having a healthy lifestyle
- Being in shape
- Every time she uses dining hall be efficient according to her time.
“I was finding it easy to get off track,” he said, “with all the food options they have at school.”

“Students come in, and they have no idea what they should be eating for breakfast, lunch, and dinner,”

“After just having a free-for-all when it comes to eating, they realize that they’re not feeling so well, and they can maybe use some advice”.

where a nutritionist is available for consultations and the dining halls offer local and organic foods, many students still find themselves struggling to eat right.

While many students need to be educated about healthy eating, said Delinsky, colleges championing nutrition should be mindful of students who have eating or believe they need to diet when disorders or believe they need to diet when they don’t.
I used Affinity Diagram to group key themes and ideas discussed by students. The goal was to organize information learned from semi-structured interviews into key themes.
A journey map helps to identify key moments of students' experience at the dining hall; from entry to ordering food, dining experience and exiting the space.
From user research, multiple categories emerged, including lack of knowledge, motivation and social company of friends during meals.
Converging Interview Themes

**Social Aspect:**
- Cause Overeating.
- Not choosing the right thing because of the friends’ habits.

“I do not want to eat by myself, I consider dining hall as a social place, when I eat with my friend I eat more”.

**Accessibility:**
- No balanced diet: No variety in their diet.
- No limitation for eating.

“I can not control myself, I will go with the same food for one week, I don’t know how to handle the abundance of food choices, according to nutrition specialists.”

**Motivation:**
- No motivation for eating healthy.

“I have a busy schedule for my school, I do not care about healthy eating, I am going to dining hall just to eat”.

**Knowledge:**
- Lack of knowledge about Nutritional values.
- Not educated about healthy eating.

“I do not know hot to eat healthy, There is no information out there that you can follow, there should be more sources for students, “I come in, and I have no idea what I should be eating for breakfast, lunch, and dinner”.”
Summary User Research

Finding:

**Behavior:**
- Overeating in group
- Changing behavior
- Bad eating habits in group
- Free decisions making for food

**Restriction:**
- Lacked of management ability
- Limited knowledge of nutrition
- Peer's food choices influence
- Bad eating habits

**Students attitudes:**
- Lacked of knowledge of healthy eating, healthy lifestyle for college students
- Limited knowledge of nutrition
- Lacked of management ability
- Students willing to eat health
- State of mind, body shape and weight are the healthy reference for them

Insights:

- Getting the healthy eating knowledge
- Saving time but eat well
- Saving cost but shop healthy food
- Balancing nutrition and healthy eating
- Managing food and planning meals
- Getting more cooking skills
- Helping user choose good place to eat
- Making good choices or decisions of eating (Not impact by other’s bad habits)
03
Discovery & Research
Business & Technology
knowing people around you. Like state gym which uses students as a way to better visualization for better competition between members.

Product Benchmark

<table>
<thead>
<tr>
<th>MyPlate Calorie Counter</th>
<th>Carb Manager - Keto Diet</th>
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<tbody>
<tr>
<td><strong>Pros</strong></td>
<td><strong>Cons</strong></td>
</tr>
<tr>
<td>Joins the keto community</td>
<td>Doesn’t have the progress feature</td>
</tr>
<tr>
<td>They work with industry leaders like Whole Foods Market</td>
<td>You should subscribe the app for more detailed information.</td>
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</tbody>
</table>

All we need is providing the service for ISU students which can personalize their healthy lifestyle information and connect this information to each other. Like the dining hall with the health center and state gym.

There are lots of applications out there, we need our application specificity for Iowa state, to provide everything relate to students health in it.

There is a lot of information online from bloggers and people that kind of claim to know a lot about nutrition, but a lot of what they share is not science-based and is more about selling something or maybe following a trend.

Like state gym which use students as a mentor or instructor.

Better visualization for better undrasaiting for students.

Use the nutritionist graduate or phd students to help student to have a ideal plan routin.

Value the chefs who has some healthy recipe. Comment and star them.

Provide different plan according different body style and needs by supervising the nutritionist and coaches at ISU.
Product Opportunity Gap
Summary Tech & Business

Finding:
No Nutrition Content
No sharing-enabled with others
No personilization for diets
No motivational aspects to keep being healthy
No Role Model
No Nutrition Content
No sharing-enabled with others
No personilization for diets
No motivational aspects to keep being healthy
No Role Model
No plan for balanced diet
No pre-Knowledge

Insights:
Personalized diet plans and helping to learn healthy eating
Manage meals plan based on the current eating situation
Suggesting healthy eating choices and tracking the eating information, let the App managing dynamically
Simplify the Apps' operating and Input the eating information
Reduce the App operating time
Good feeling about eating
Transition to Design criteria
## Insight Transition to Design Criteria

### Literature

**Healthy Eating**
- Balanced nutrition
- Meet nutrients and energy for person’s needs
- Eating variety of food such as, fruits and vegetable

**Internal Factors**
- General healthy life attitude
- Healthy eating knowledge
- Eating habits, Food preferences (taste)
- Time, cost, and convenience
- Eating habits

**Insights**
- Personalizing the eating advises
- Changing student’s attitude of healthy eating
- Focusing on students self-management skills
- Integrate social-ecological aspects and individual factors
- Using social media facilitates the interaction

### User

**Behaviors**
- Overeating in group changing behavior
- Bad eating habits in group
- Free decisions making for food

**Restrictions**
- Lacked of management ability
- Limited knowledge of nutrition
- Peer’s food choices influence
- Bad eating habits

**Insights**
- Getting the healthy eating knowledge
- Saving time but eat well
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- Helping user choose good place to eat
- Making good choices or decisions of eating (Not impact by other’s bad habits)

### Tech & Business

- No Nutrition Content
- No sharing-enabled with others
- No personalization for diets
- No motivational aspects to keep being healthy
- No Role Model

**Insights**
- Personalized diet plans and helping to learn healthy eating
- Manage meals plan based on the current eating situation
- Suggesting healthy eating choices and tracking the eating information, let the App managing dynamically
- Simplify the Apps’ operating and input the eating information
- Reduce the App operating time
- Good feeling about eating
HMW design a product/service to provide knowledge and motivation about nutrition diet and dining facilities?

HMW design a product/service to inform students about healthy nutrition based diet/food at dining facilities?

HMW teach students to create balanced Nutrition diet that is personalized for their health?

HMW teach students make personalized healthy meal from available resources at dining hall?
HMW design a product/service that is personalize, connected to different context of students healthy life?

HMW design a product/service which create a structure for monitoring and role modeling for students motivation?

HMW design a product/service to be visually informative and provide daily motivation for students to be healthy?
05 Development
Ideation | Exploration
Design Criteria

Primary Criteria

- Motivation
  - Reminder
  - Comparison via App
  - Competition
  - Bonus

- Balanced Diet
  - Variety in Diet
  - Set some restriction and boundary

- Personalization
  - Diet plan, or personal info
  - Customizable based on your body type and your diet

- Knowledge
  - Basic knowledge about how to eat healthy
  - Manage their healthy diet by their own

- Social aspect
  - Role modeling
  - Sharing, Enable
  - Social Media
  - Expert people | Successful people
Convergence
For Product Opportunity Gaps (POG)

- HMW Design a product/service to provide knowledge and motivation based on different context of students healthy-life?

- HMW Teach students to create balanced Nutrition diet that is personalized for their health based on available resources at dining hall?

- HMW Design a product/service which create a structure for monitoring and role modeling for students motivation?
HMW Design a product/service to provide knowledge and motivation based on different context of students' healthy-life?
HMW Teach students to create balanced Nutrition diet that is personalized for their health based on available resources at dinning hall?
HMW Design a product/service which create a structure for monitoring and role modeling for students' motivation?
## Evaluation | Rating

Ranking the ideas based on insight & criteria

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<th>KNOWLEDGEABLE</th>
<th>BALANCED DET</th>
<th>PERSONALIZATION</th>
<th>MOTIVATIVE</th>
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<td><strong>LIMIT</strong></td>
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### Pitch

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### A/B Plans

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Advantages, disadvantages, and any unique qualities were assessed for various concepts. This allowed for potential positive features to be pursued in a later iteration, while avoiding possible pitfalls.
In order to make the design criteria actionable, different modalities were considered. For example, content delivery may have been accomplished via screens. Similarly, other modalities were considered for each requisite function.
Design Criteria

Primary Criteria

Motivation
- Reminder
- Comparison via app
- Competition
- Bonus

Social aspect
- Role modeling
- Sharing
- Enable
- Social media
- Expert people: successful people

Personalization
- Diet plan, personal info
- Customizable: based on your body type and your diet

Knowledge
- Basic knowledge about how to eat healthy
- Manage their healthy diet by their own

Balanced Diet
- Variety in diet
- Set some restriction and boundary

Criteria
Prototype
Low-Fidelity Wireframe
This process helps in figuring out the complete navigational structure of the application, from the information collected from the functional map and card sorting procedures. I had finalised the features of the app and arranged them in logical order.
Prototype

High-Fidelity Wireframe
“How might we design the app to help freshman students to eat healthy at dining hall facilities?”
On-Boarding Process
Main Features
Major Application Features

- Balanced-Diet
- Community
- Motivation
- Provide knowledge
Nutrition

Calories intake
Average per day: 1476 kcal
Daily goal: 1200-1800 kcal

Graph showing daily calorie intake from 20 Mar to 26 Mar.
Plan

Balanced Diet

Variety in Diet
Set some Restriction
have Boundries
get rewarded for your success
lots of fun and motivating
THANK YOU SO MUCH...
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