

FINAL PRESENTATION

IE 4880

Group 3: Emma Mayes, Jake Parker, Thanh Pham,
Stephen Russell, Nicholas Ward, Benjamin Waters,
Morgon Kaufmann



PHASE 1 - INTRODUCTION

-Chosen mobile app: USDA's **"Start Simple with MyPlate"**

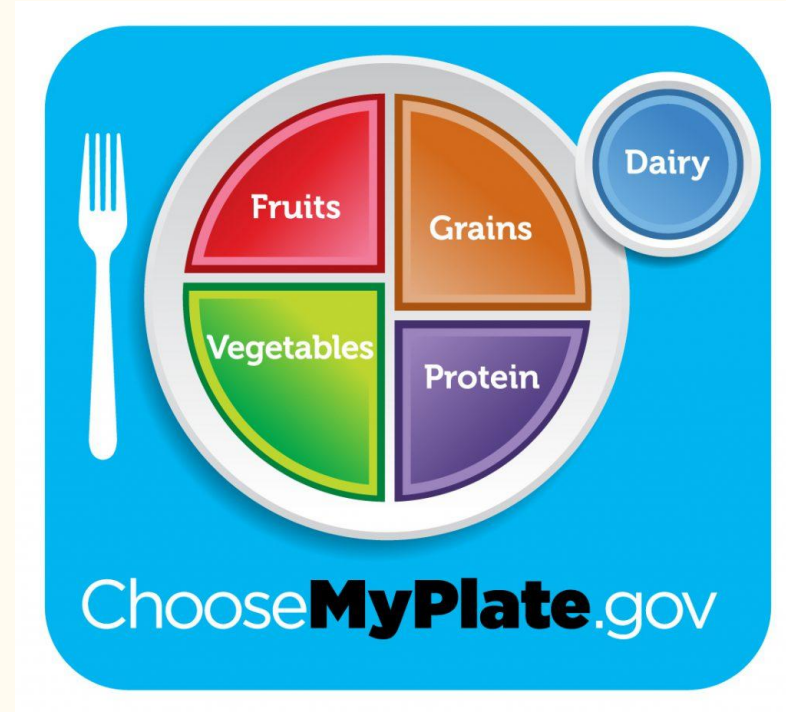
-Purposes of the app:

- Help Americans make healthy food choices.
- Help consumers set and track dietary nutrition goals.
- Reduce confusion surrounding healthy eating.
- Motivate users with challenges for each season.



PHASE 1 - METHODS

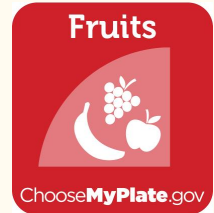
- Hierarchical task analysis (HTA)
- Heuristic evaluation (HE)



PHASE 1 - HIERARCHICAL TASK ANALYSIS

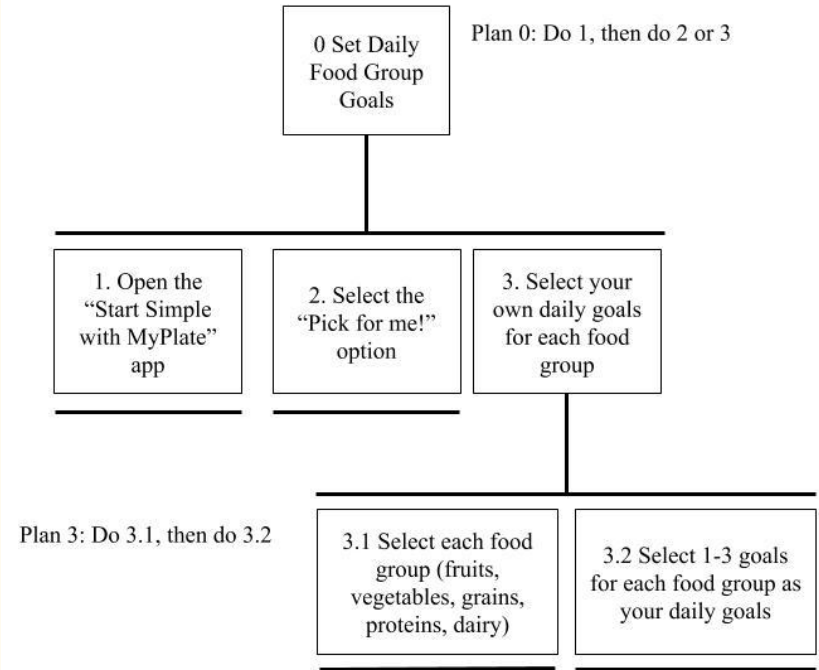
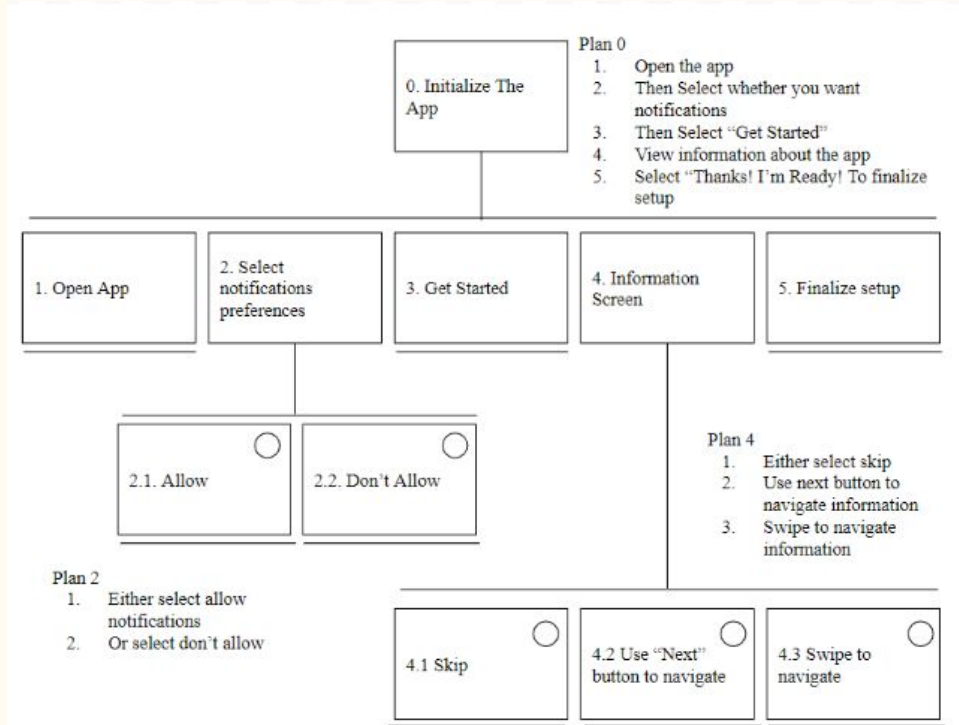
Eight tasks within the app are identified:

1. Initializing the app
2. Setting daily nutrition goals
3. Editing daily goals
4. Completing and checking off goals
5. Browsing badges
6. Learning more about food group (MyPlate 101)
7. Managing notifications
8. Using the support center

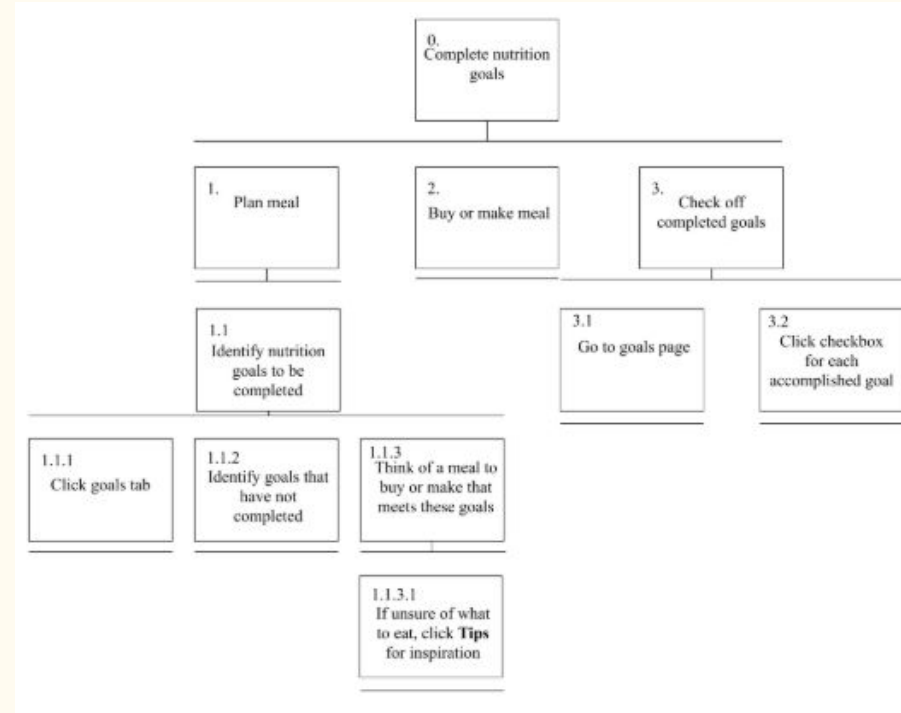
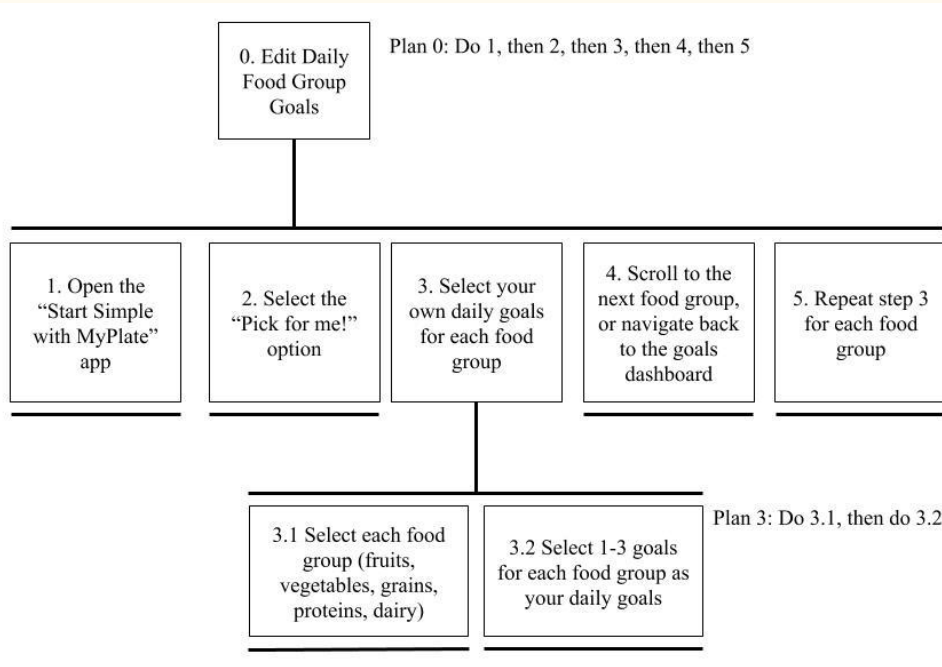


Each member evaluate a task with an HTA - create main tasks and subtasks.

A Few HTA Examples



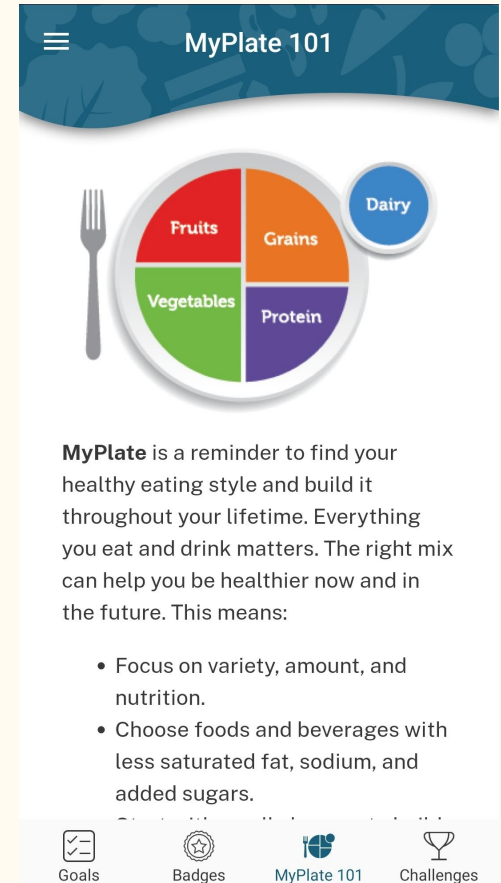
A Few HTA Examples



PHASE 1 - HEURISTIC EVALUATION

Ten heuristics are evaluated from 0 to 4:

1. Validity of system status
2. Match between system and the real world
3. User control and freedom
4. Consistency and standards
5. Help users recognize, diagnose and recover from errors
6. Error prevention
7. Recognition rather than recall
8. Flexibility and efficiency of use
9. Aesthetic and minimalist design
10. Help and documentation



Phase 1: What We Found

- Widespread issues with heuristic 3 (user control and freedom)
 - Goal setting was very restrictive, and navigation was a hassle
- Several issue with heuristic 8 (flexibility and efficiency)
 - This heuristic, in many ways, overlaps with heuristic 3, so we found a couple of instances where both were at play
- Issues with heuristics 5 and 6 (error prevention and error recovery)
 - These heuristics are also overlapping, and the problems with the first (5) are often followed by problems with the second (6)



<https://www.choosemyplate.gov/startsimpleapp>

An Example Heuristic Table

Task 8: Use the Support Center	Morgan Kaufmann	Emma Mayes	Jake Parker	Thanh Pham	Stephen Russell	Nicholas Ward	Benjamin Waters	AVG	ROUNDED AVG	MODE
H1: Validity of system status	2	2	3	2	1	2	0	1.714285714	2	2
H2: Match between system	0	1	0	0	1	0	0	0.2857142857	0	0
H3: User control and freedom	1	2	2	0	2	1	0	1.142857143	1	2
H4: Consistency and standards	2	2	0	2	1	2	0	1.285714286	1	2
H5: Help users recognize, diagnose, and recover from errors	0	1	1	0	1	1	0	0.5714285714	1	1
H6: Error prevention	2	2	2	2	1	2	2	1.857142857	2	2
H7: Recognition rather than recall	1	1	2	0	1	0	0	0.7142857143	1	1
H8: Flexibility and efficiency of use	0	2	1	0	1	1	0	0.7142857143	1	0
H9: Aesthetic and minimalist design?	1	1	1	0	1	2	0	0.8571428571	1	1
H10: Help and documentation	1	1	0	1	0	0	0	0.4285714286	0	0

Phase 2: Introduction

- The phase focuses on taking the information gathered in Phase 1 and implementing it into an updated user interface
 - Brainstorm ideas for changes to the interface
 - Create a list of specific changes. There should be at least one update per identified task
 - Prototype the “old” user interface
 - Prototype the updated interface according to the identified changes

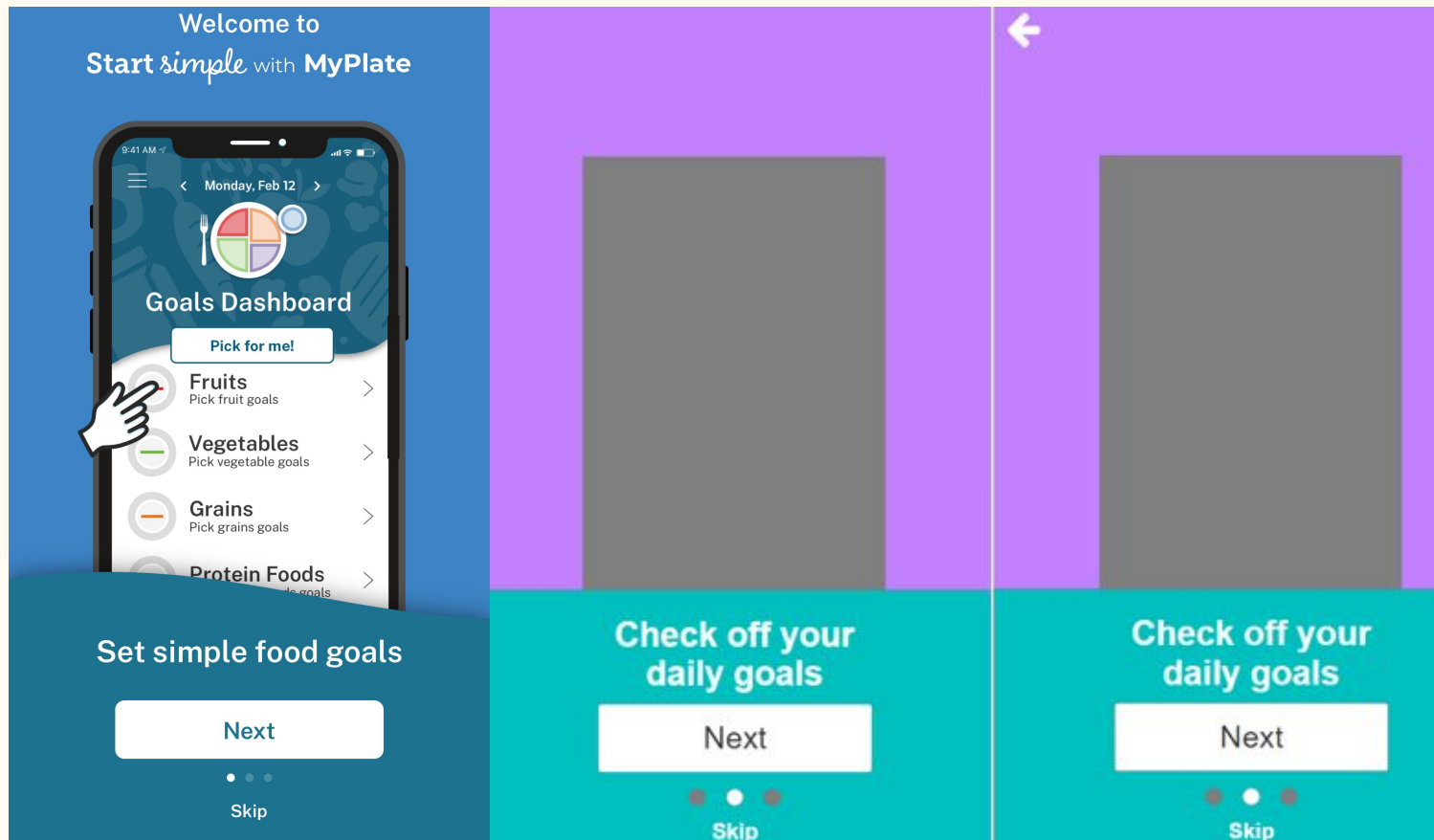


<https://apps.apple.com/us/app/start-simple-with-myplate/id1469064093>

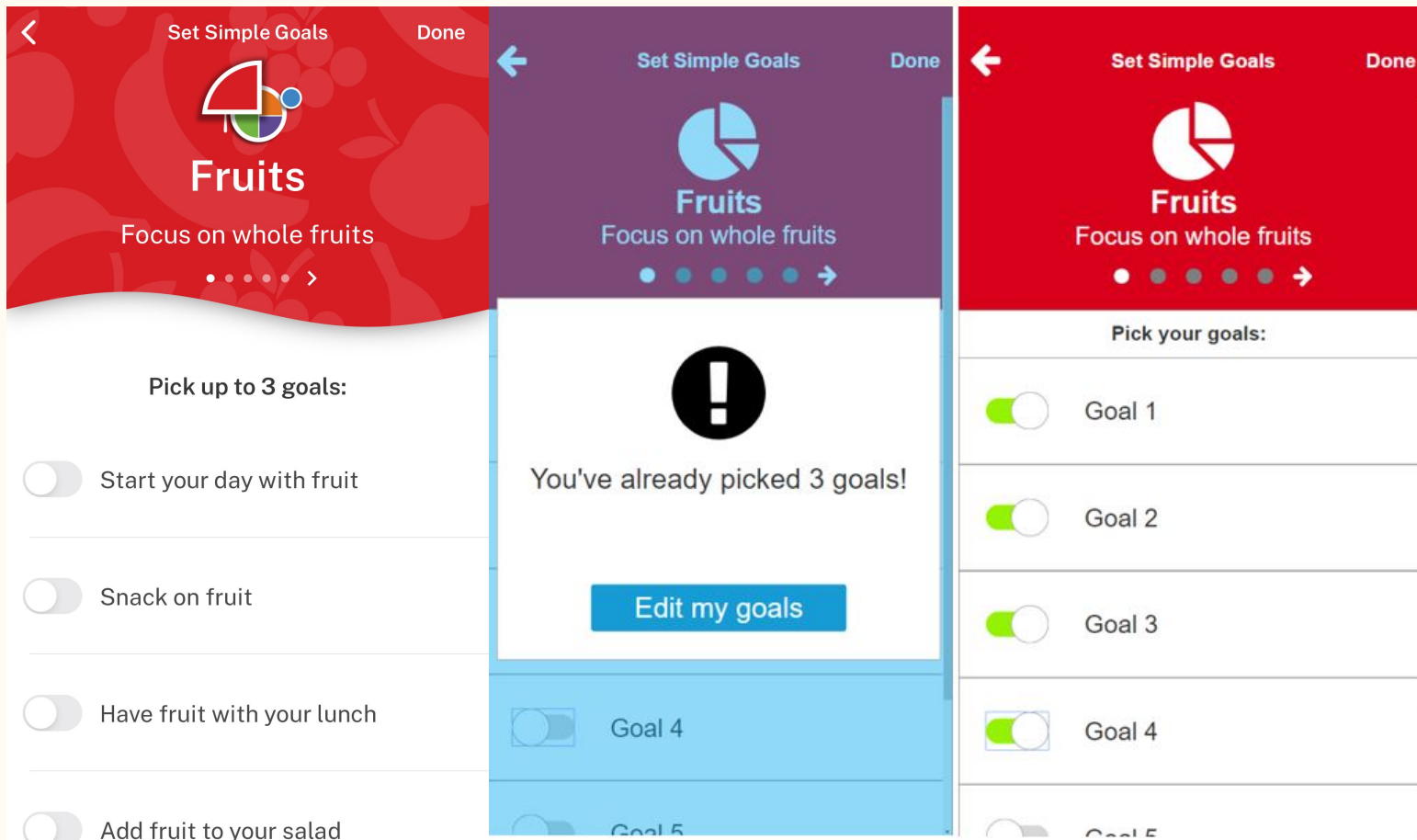
PHASE 2 - Changes We Made

- All screens have a back button (heuristics 5 & 3 - error recovery/user freedom)
- Increased modularity in goal selection (heuristic 3 - user freedom)
- Increased modularity in goal editing (heuristics 3 and 8 - user freedom/flexibility & efficiency)
- Consolidate the daily goals list (heuristics 3 and 7 - user freedom/recognition not recall)
- Include example “challenge badges”
- Include “Learn More” on the main page as well as the individual food groups page (heuristics 3 and 6 - user freedom/error prevention)
- Consolidate Notification Options (heuristics 3 and 4 - user freedom/consistency & standards)
- Consolidate the Support Center options and increase their ease of use (heuristics 6 and 8 - error prevention/flexibility & efficiency)

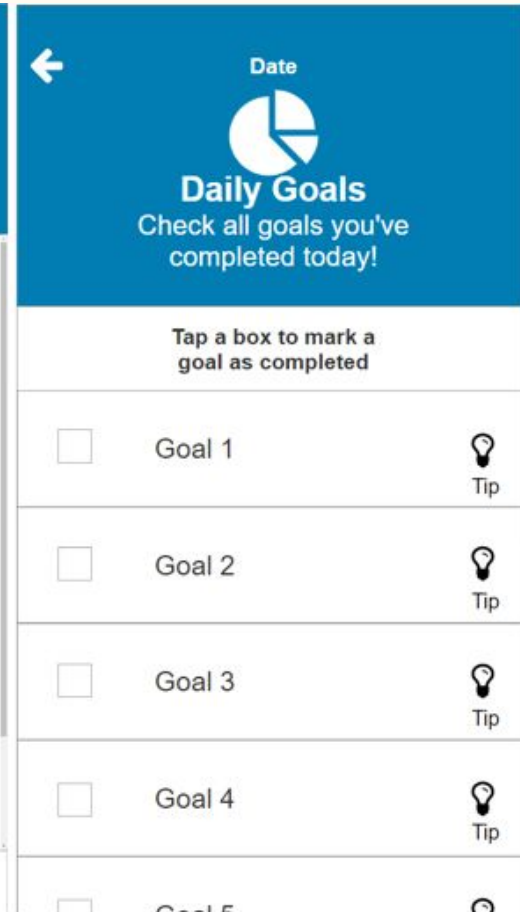
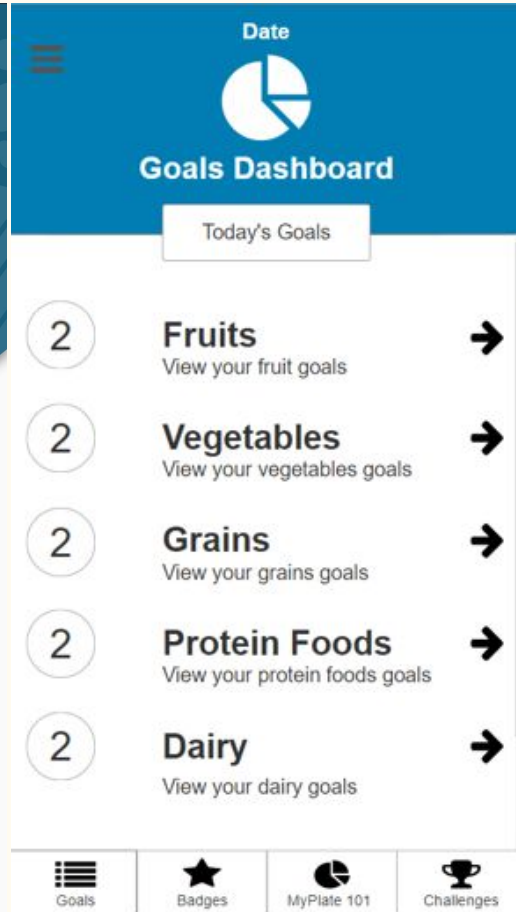
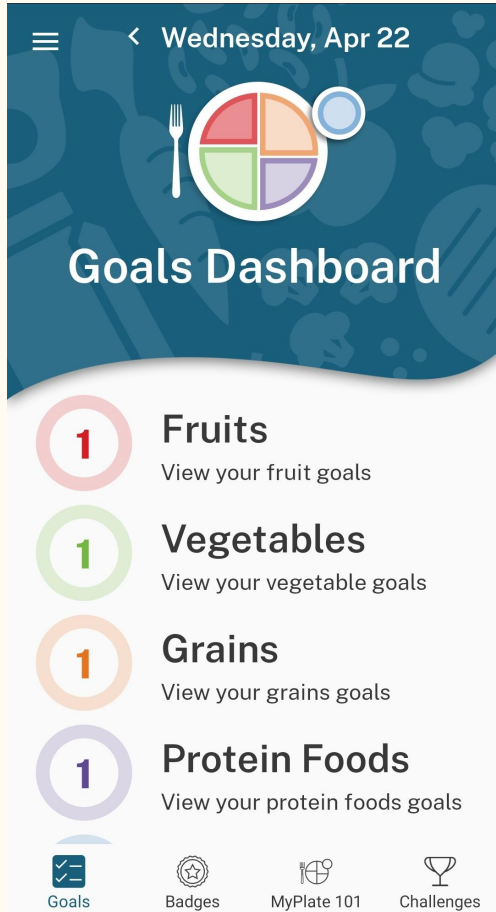
User Interface Before and After



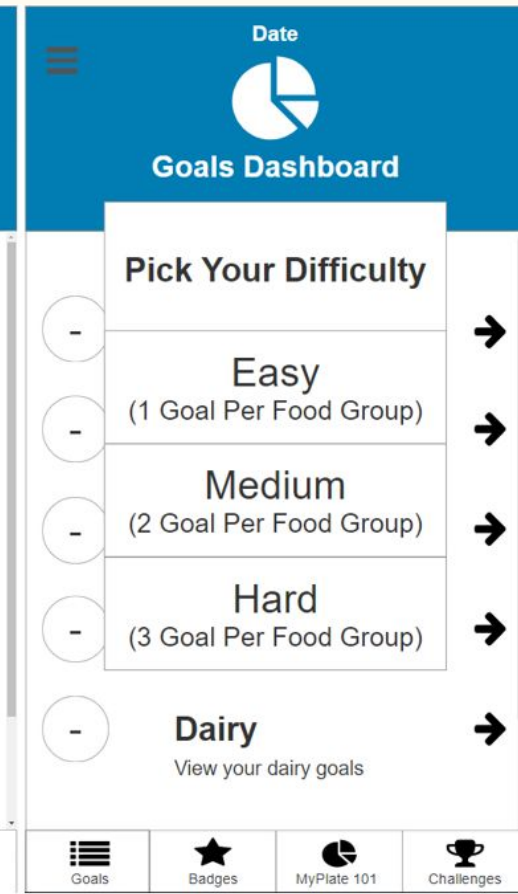
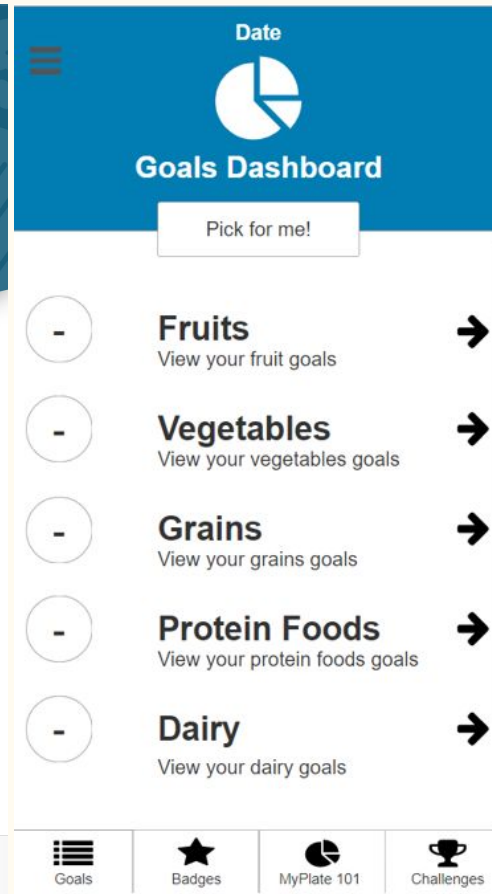
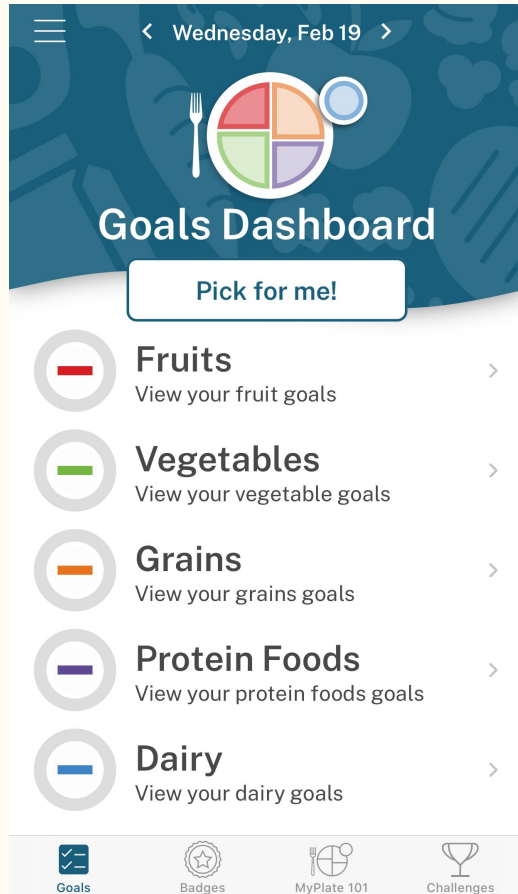
User Interface Before and After



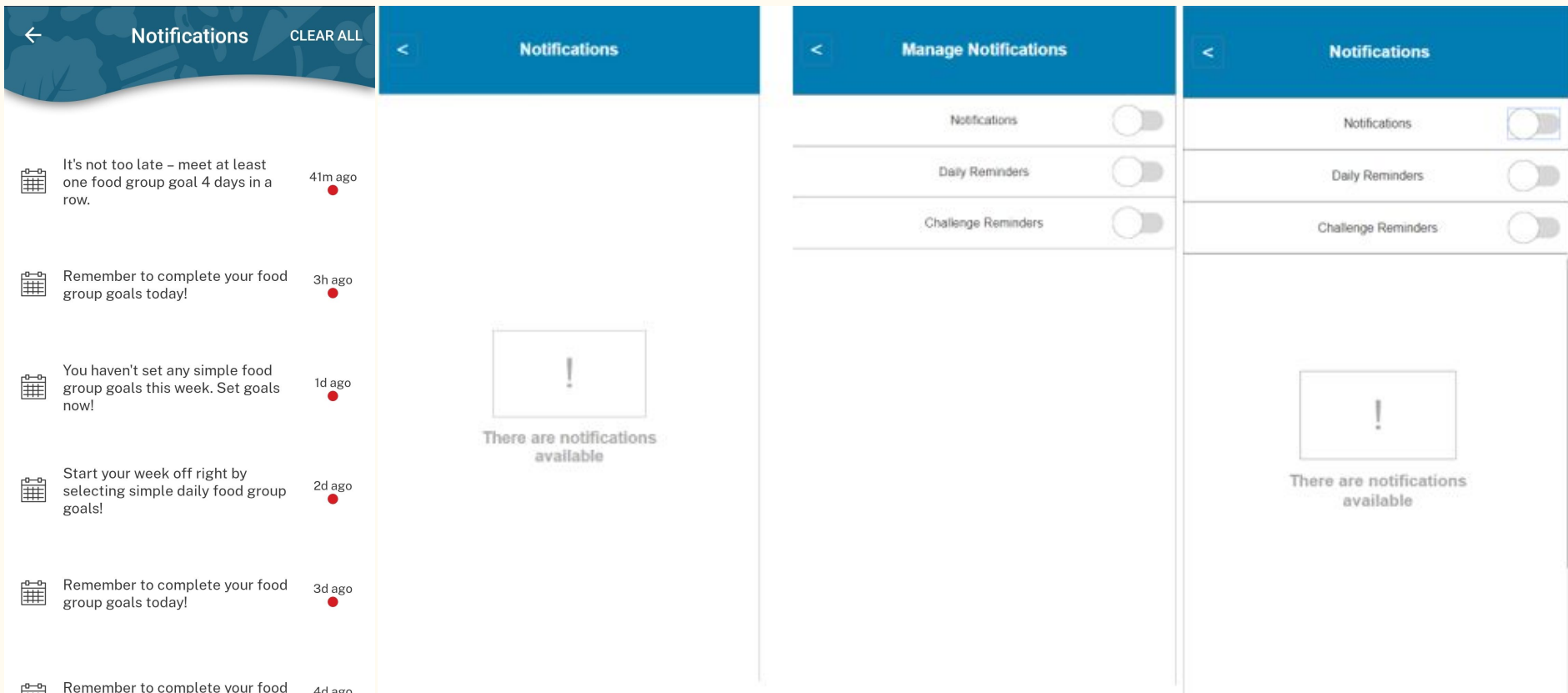
User Interface Before and After



User Interface Before and After

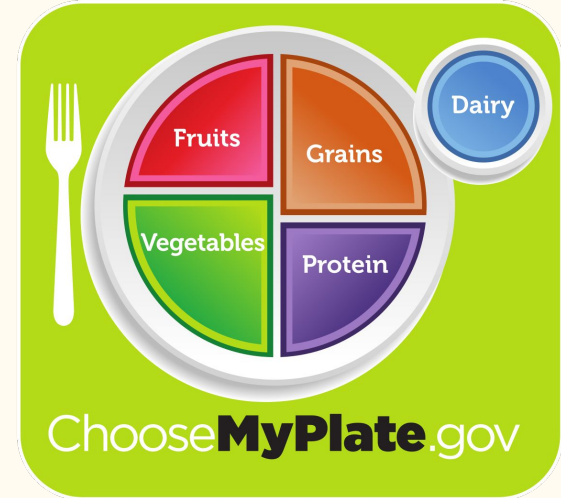


User Interface Before and After



PHASE 2 - Why We Think Theses Changes Work

- Issues with user control and freedom (heuristic 3) were frequently recurring.
 - The changes made address these issues across several tasks
- Several of our changes deal with heuristic 8: flexibility and efficiency of use (often overlapping with heuristic 3).
 - For example: allowing more goals per food group (addresses heuristics 3 and 8)
- Other recurring issues: heuristics 5 and 6 - error recovery and prevention.
- Navigation and menu selection deal with these heuristics simultaneously.
 - For example: adding back buttons to many screens allows for both error recovery and prevention.

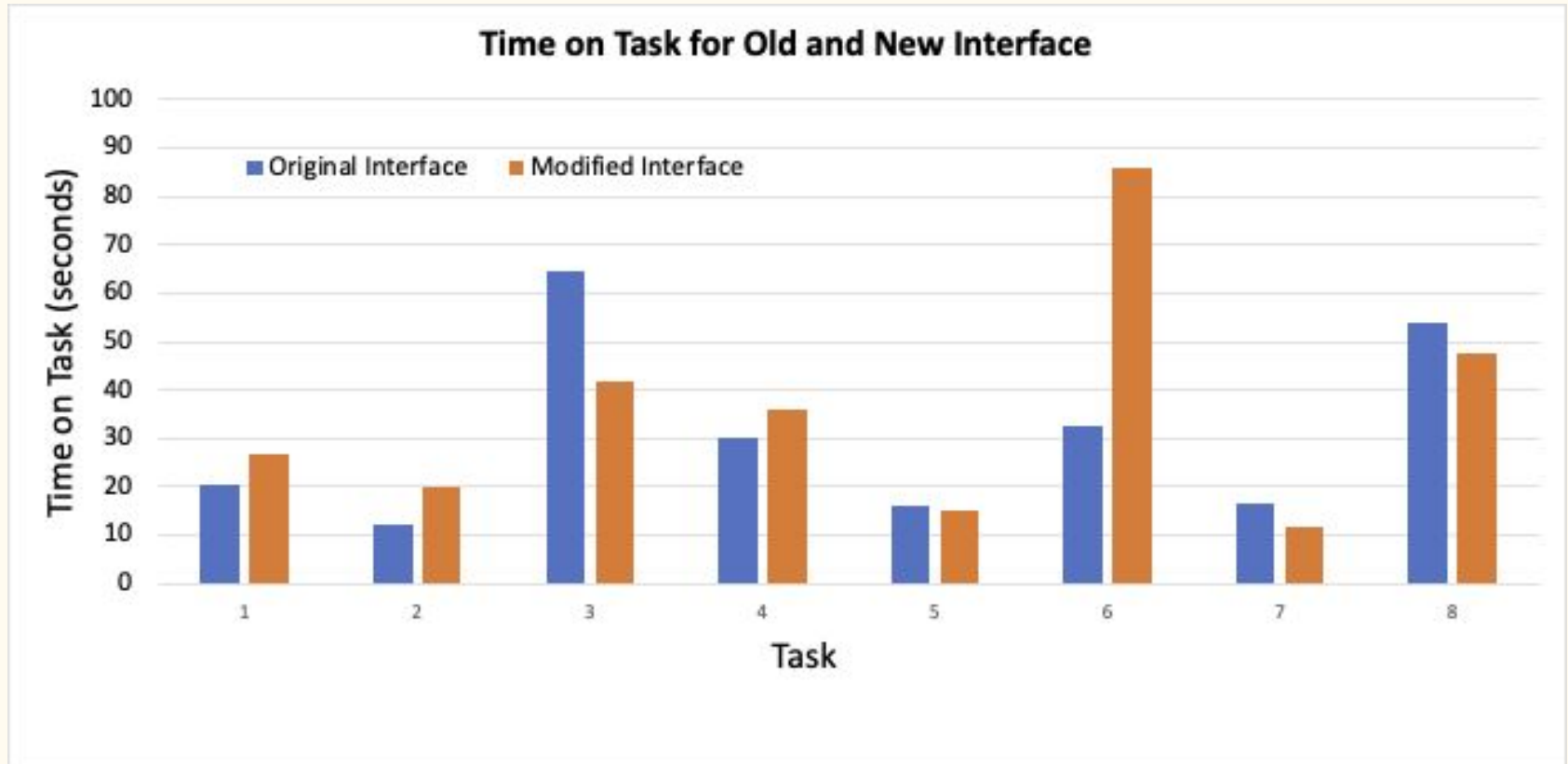


<https://en.wikipedia.org/wiki/MyPlate>

PHASE 3 - Iterative Prototyping

- The third phase is about testing the new design, and analyzing its performance relative to the original design in the hands of actual users.
 - Analysis is used to create future prototypes that addresses the shortcomings of the new design.
- Analysis is performed to determine the Time on Task, Task Completion, and Errors for each iteration of the design
- Data is collected using questionnaires like NASA's Total Workload, Mental Demand, and Frustration metrics, as well as the IBM CSUQ Usability Questionnaire.

Original vs Modified Design - Time on Task



Original vs Modified Design - Task Completion

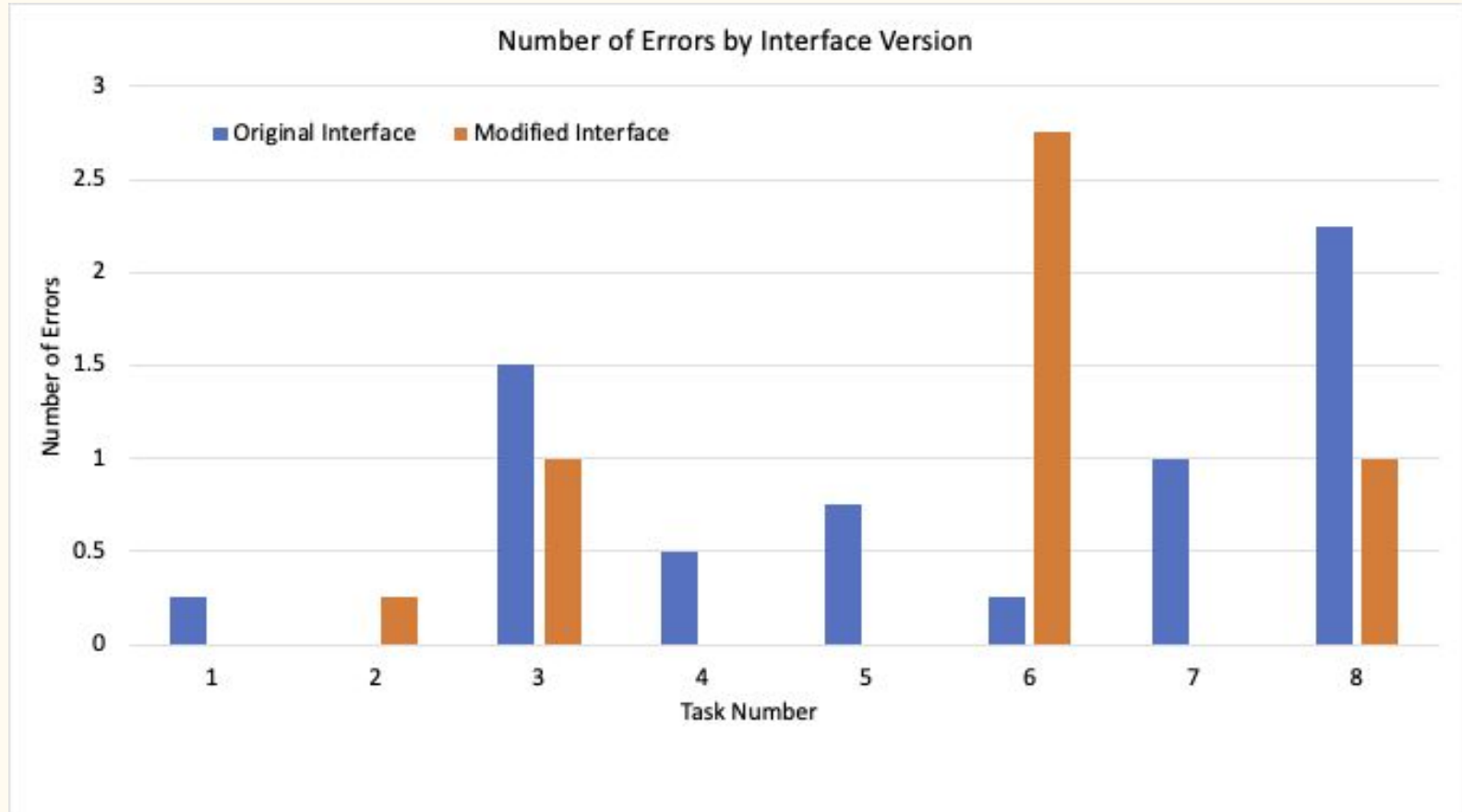
Task Completion Rates – Original Interface

Participant	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8
1	√	√	√	√	√	√	√	√
2	√	√	√	√	√	√	√	√
3	√	√	√	√	√	√	√	√
4	√	√	√	√	√	√	√	√
Success	4	4	4	4	4	4	4	4
Completion Rates	100%	100%	100%	100%	100%	100%	100%	100%

Task Completion Rates – Modified Interface

Participant	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8
1	√	√	√	√	√	√	√	√
2	√	√	√	√	√	√	√	√
3	√	√	√	√	√	√	√	√
4	√	√	√	√	√	-	√	-
Success	4	4	4	4	4	3	4	3
Completion Rates	100%	100%	100%	100%	100%	75%	100%	75%

Original vs Modified Design - Errors



Original vs Modified Design- NASA-TLX Results

Total Workload

Participant	Original Interface	Modified Interface
1	61.67	18.33
2	32	15.67
3	44	42
4	52	31.67
Average	47.42	26.92
Standard Deviation	10.88	10.61

Mental Demand

Participant	Original Interface	Modified Interface
1	70	15
2	30	5
3	20	30
4	15	85
Average	33.75	33.75
Standard Deviation	21.61	30.89

Frustration

Participant	Original Interface	Modified Interface
1	40	5
2	45	5
3	50	45
4	75	25
Average	52.5	20
Standard Deviation	13.46	16.58

Usability Questionnaire

Original Interface

- Most participants (75%) of participants agreed that:
 - They were satisfied with the ease of the use of the system
 - It was easy to recover from a mistake
 - The organization of information on the app is clear
- None of the participants (0%) agreed that the system sent clear error messages to fix errors.
- Overall, only 50% of participants were satisfied with the system

Modified Interface

- For the revised version, all participants (100%) agreed that they:
 - Were satisfied with the ease of use of the system
 - Can efficiently complete their work with this system.
 - Can recover quickly from mistakes
 - The information provided was easy to understand.
- Only one participant (25%) agreed that the system sent clear error messages to fix errors.
- Overall, 100% were satisfied with the system.

Usability Questionnaire - Results

Overall

SysUse

InfoQual

InterQual

Participant	Original Interface	Modified Interface
1	5.11	3.12
2	2.37	3.74
3	2.68	2.47
4	4.32	2.21
Average	3.62	2.89
Standard Deviation	1.14	0.59

Participant	Original Interface	Modified Interface
1	5.00	3.75
2	2.00	3.13
3	2.88	2.13
4	4.50	2.00
Average	3.60	2.75
Standard Deviation	1.21	0.72

Participant	Original Interface	Modified Interface
1	5.14	3.14
2	3.00	4.14
3	2.29	2.43
4	4.86	2.57
Average	3.82	3.07
Standard Deviation	1.21	0.67

Participant	Original Interface	Modified Interface
1	4.33	1.75
2	2.00	4.67
3	3.00	3.33
4	4.00	2.00
Average	3.33	2.94
Standard Deviation	0.91	1.17

For overall satisfaction with the system, 100% of modified interface users agreed, compared to 50% agreement with the original interface

Likes, Dislikes, Participant Recommendations

Original Interface Feedback

In the old interface, participants most liked:

- The badge system that rewarded users for completing goals
- Checkbox method for completing goals

Participants least liked:

- The support center overall
- “Pick for Me” defaulted to 1 goal per day in each category

Modified Interface Feedback

In the new interface, participants most liked:

- Option to skip initializing dialogue boxes
- Tiers in the “Pick for Me”

Participants least liked:

- Inconvenient check-off mechanism of the “Today’s goals” page
- “Edit” button lost on “Goals” screen

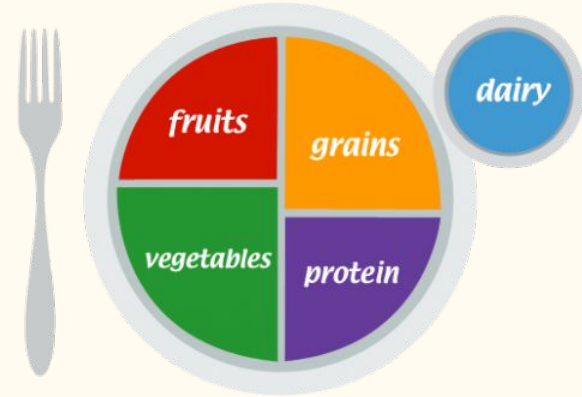
Overall Recommendations

Participants also provided many suggestions for improvement of the new interface including:

- Adding “Done” buttons on forms so that changes feel more permanent
- “Check All” buttons that allow users to mark off tasks faster
- Add a suggestion for number of goals to set when manually choosing goals
- Make category options a floating menu on “MyPlate101”

Conclusion

- Overall, modified interface proved more user-friendly
- User interviews highlighted which improvements were effective or not
 - EX: Original interface users wanted different “Pick for Me” options, and modified users noted this as one of their most liked features
 - EX: Made the edit button bigger on the “Edit Goals” pages, but making it even bigger/more noticeable was given as a recommendation from modified users
- Implement user recommendations in future iterations
 - Continue to iterate improvements until users are satisfied
 - Expand user interview groups to figure out the average user likes/dislikes/changes



<http://henrycolib.org/?q=node/418>

QUESTIONS?