Learn how to drive in Nova Scotia

Report on survey results and Design Thinking workshop

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Executive Summary

Learning to drive in Nova Scotia can be complicated and very daunting to new comers due to language barriers, different rules and regulations, the licensing process and many other factors. As we aim to study, design and ultimately provide a simple and user-friendly means to help overcome some of these pain points and challenges; we've applied Design Thinking as the foundation step to guide the process.

This report summarizes our results and progress to date on this journey and how our team will continue to apply the right methods and principles with the user needs in mind to help address the problem. Key steps have been completed and summarized in this report including:

- Requirement gathering process completed using a well-crafted online survey with purposeful questions and logical flow
- Design Thinking Workshop and the process involved in defining our persona and their associated empathy map related to the study's problem statement
- Ideation and prioritizing of 'no brainers', 'utilities' and 'big bets' of the proposed ideas
- Sketches of the proposed design that consider the key findings and results of the requirement gathering, ideation and Design Thinking Workshop

Group 6

Survey questions and logic

To better understand the challenges of our user group and the potential features of most interest, our study will solicit feedback, ideas and gather the necessary user requirements to designing a needs-based and user-centric solution. The method of gathering information on our user group and their interests is through an online survey.

The table below lists the questions used in the survey and the rationale and information each question aims to collect. The diagram to the right depicts the logical flow of questions.

| #	Question	Rationale
1	Agreement with the consent form	Verify that the students have gone through and agree with all terms and conditions of the study
2	Email address	For identification and data cleansing purposes
3	International student status	Identify and stratify international students and make sure they are within our study population and target user group
4	Full driving license in Nova Scotia	Capture and filter out students who have a full driving license
5	Learner driving permit	Capture and filter out students who have a learner's permit
6	Interest in learning to drive via a virtual platform	Quantify our study population's interest using a virtual platform to learn driving in NS
7	Preferred mode of learning	Gather and prioritize the various modes of learning
8	Challenges faced in relation to learning driving in NS	Gather the challenges our study population faces or will likely face during the learning process
9	Features of interest and use in the learning platform	Gather and prioritize the various features to be included in the design, development and ultimately the final product/ solution
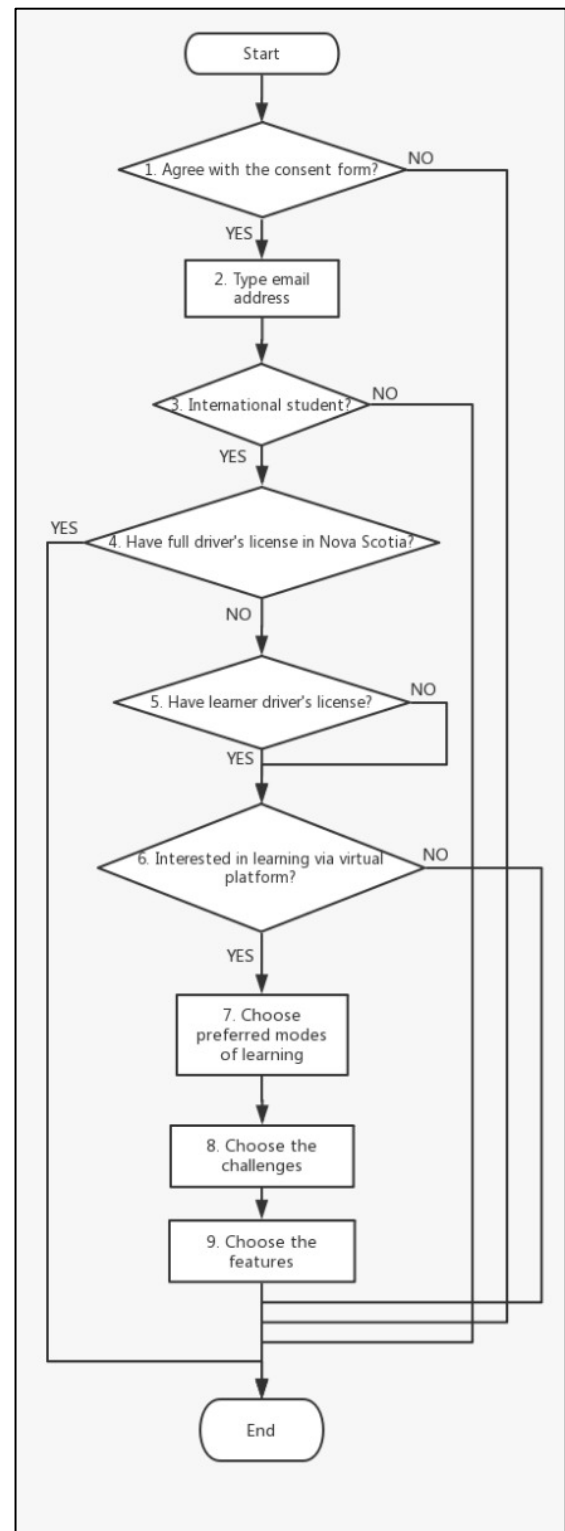
Survey results

The fist set of questions aims to ensure our study identifies our user base and excludes any unusable responses that may have not been captured through the logical survey flow. From the total number of 33 survey response, only 23 (70%) are considered usable based on the following conditions:
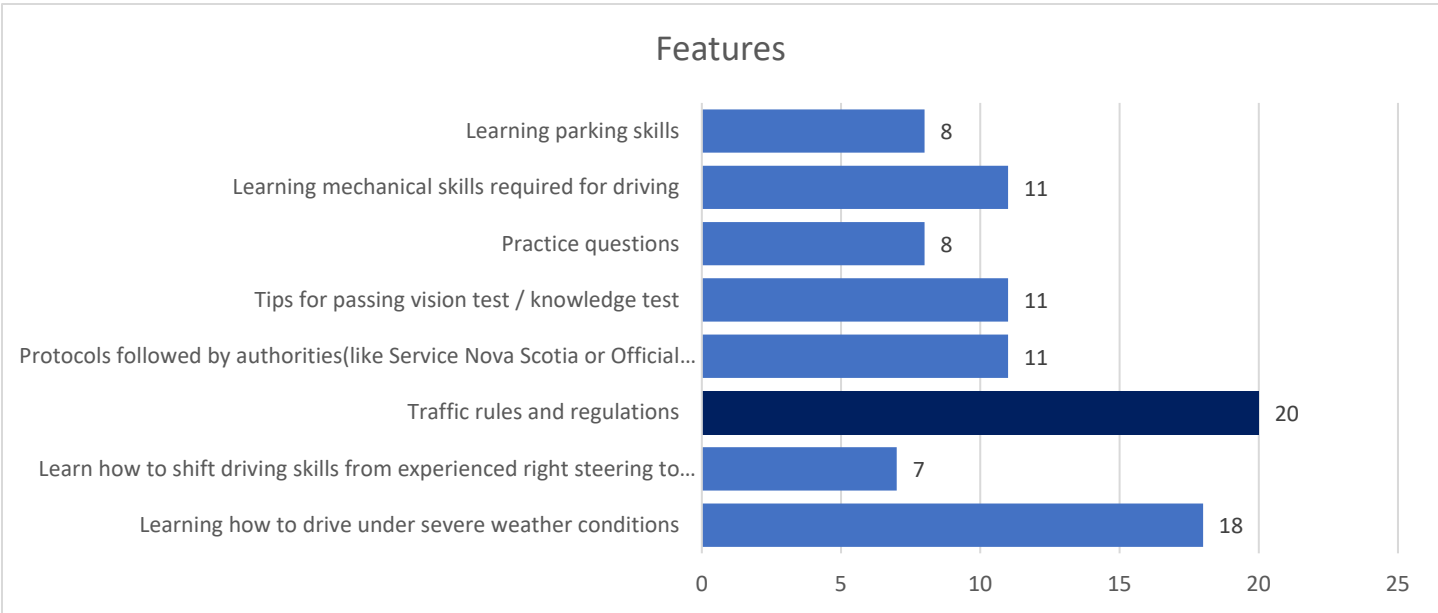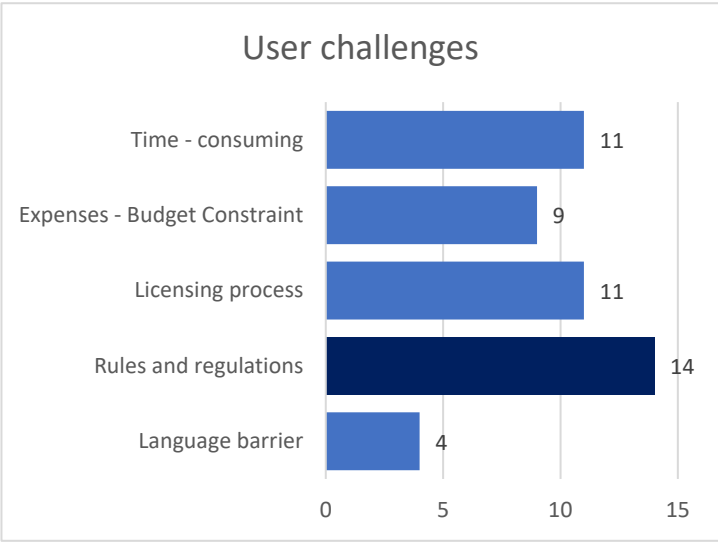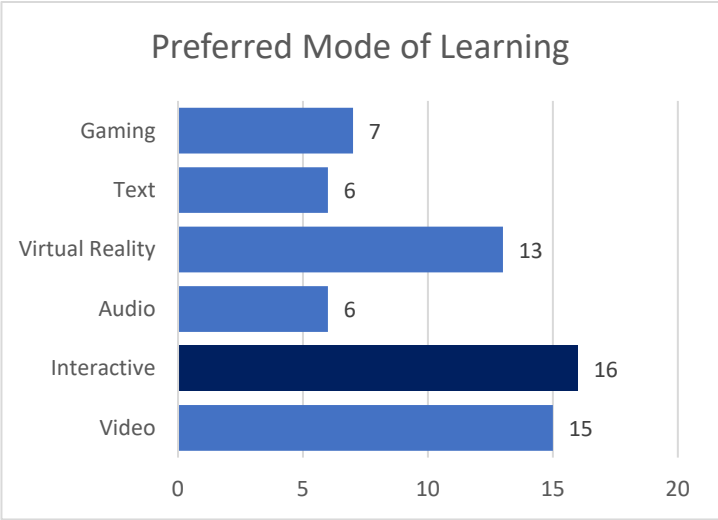
- International students
- Interest in learning to drive in Nova Scotia using a virtual platform

Study population stratification was attempted based on the respondent's current licensing characteristics. The majority of our study population (87%) does not have a full driving license or a learner permit to drive in Nova Scotia.
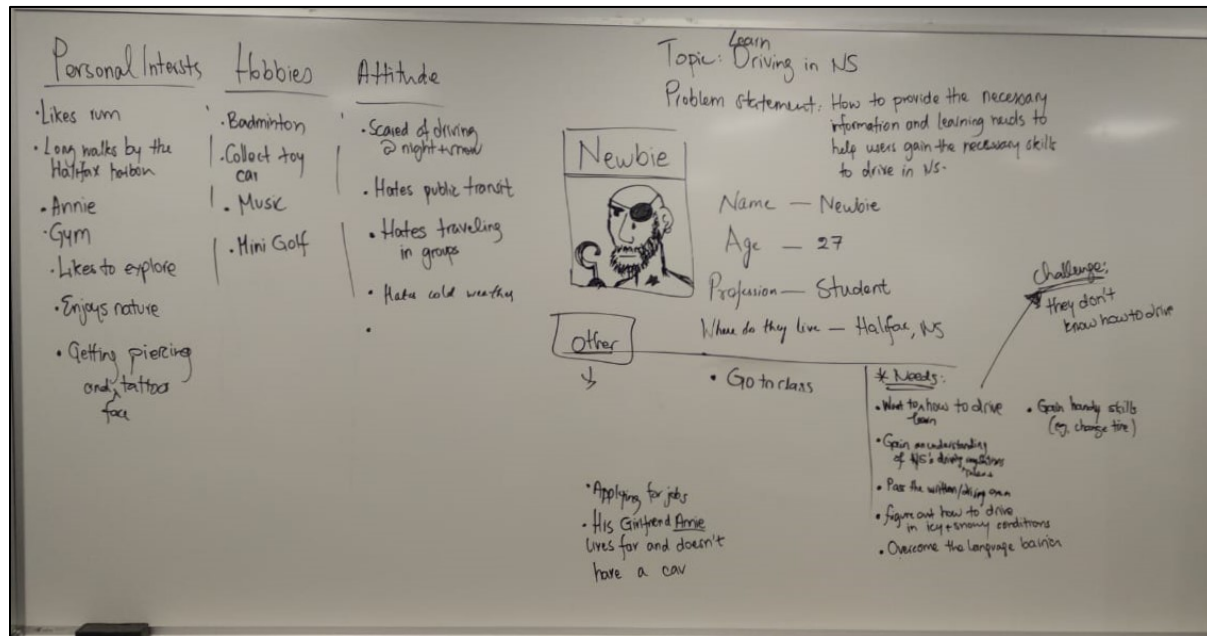
Number of responses and useable responses
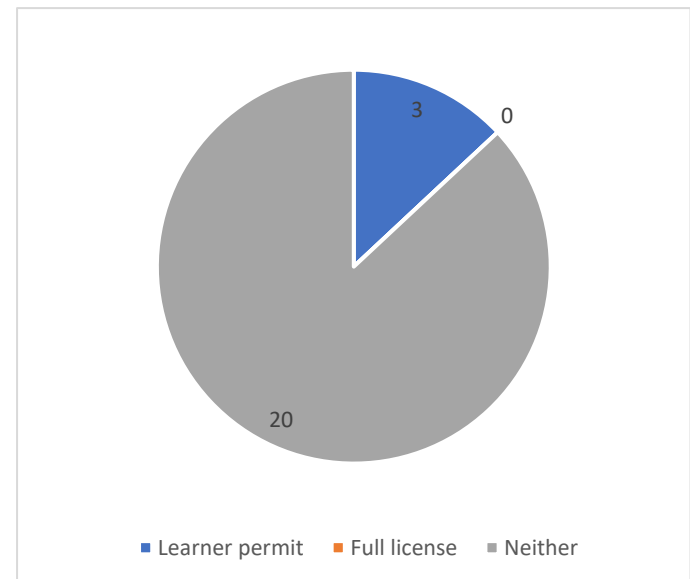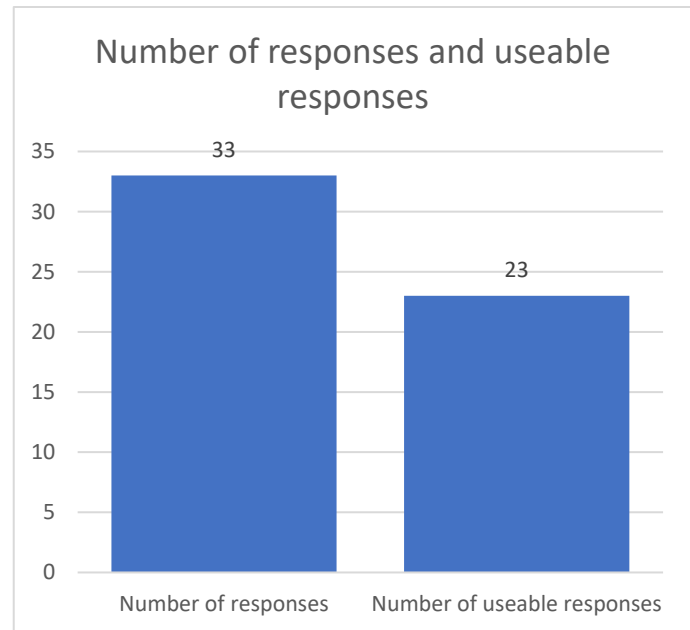
The following charts represents the preferred mode of learning, highlight the key and most revenant user challenges and the solution features that best fit our study population's needs and wants, respectively.

The dark blue bar in each chart represents the highest voted response from each domain. Next design iterations and workshops and specifically the proposed design sketches (refer to page 12) will focus on the modes, challenges and features mined from the study.

Preferred Mode of Learning

Mode	Votes
Gaming	7
Text	6
Virtual Reality	13
Audio	6
Interactive	16
Video	15

User challenges

Challenge	Votes
Time - consuming	11
Expenses - Budget Constraint	9
Licensing process	11
Rules and regulations	14
Language barrier	4

Features

Feature	Votes
Learning parking skills	8
Learning mechanical skills required for driving	11
Practice questions	8
Tips for passing vision test / knowledge test	11
Protocols followed by authorities(like Service Nova Scotia or Official…	11
Traffic rules and regulations	20
Learn how to shift driving skills from experienced right steering to…	7
Learning how to drive under severe weather conditions	18

Outcomes of the Design Thinking Workshop

1. Persona description

Our persona 'Newbie' is a 27-year-old originally from the Bahamas, currently living and studying in Halifax, Nova Scotia. His personal interests include drink rum, long walk by the Halifax harbour, exploring nature and different places. He lives a relatedly healthy lifestyle and frequents the gym. His other interests include getting piercing and tattoos.

His hobbies are to play badminton, collect toy cars, listening to music and playing mini golf. While his fears are driving at night and bad weather condition specifically during snow storms. He hates to travel using public transit and especially buses due to the long waits, congestion and waiting in cold weather. His preferred mode of transport is as a solo traveller.

He wants to learn how to drive and gain a better understanding of Nova Scotia's driving rules and regulations. He wants to pass the written and driving exam. Further to that, he wants to figure out and gain more confidence in how to drive in icy and snowy condition along with that he wants to overcome the language barrier and wants to gain handy skills (e.g. changing a tire).

2. Empathy map

Say: The top-left quadrant of the empathy map includes the phrases and quotes that Newbie would say regularly:

- How long do I have to wait for the bus?
- I am a solo traveller.
- Who conducts driving test in NS?
- When is my driving test?
- Winter is coming, more reliable mode of communication/ Transit is not reliable.
- What are winter tires?
- That place is too far, I cannot get there using public transport.
- Why all car mishaps happen after dark?
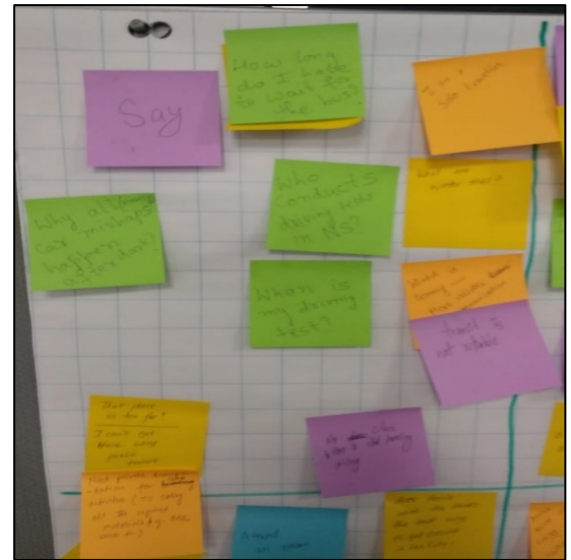
Think: The top-right quadrant includes the various thoughts and matters that grab Newbie's attention:

- This bus is so crowded (No space).
- I think driving school is costly/expensive.
- Thinking about the handy skills that need to be learn when car is broken in the middle of nowhere.
- I never drink too much.
- Do I need to take online course to study English?
- I think I know how to drive and park vehicle.
- I think learning rules and regulation is very easy.
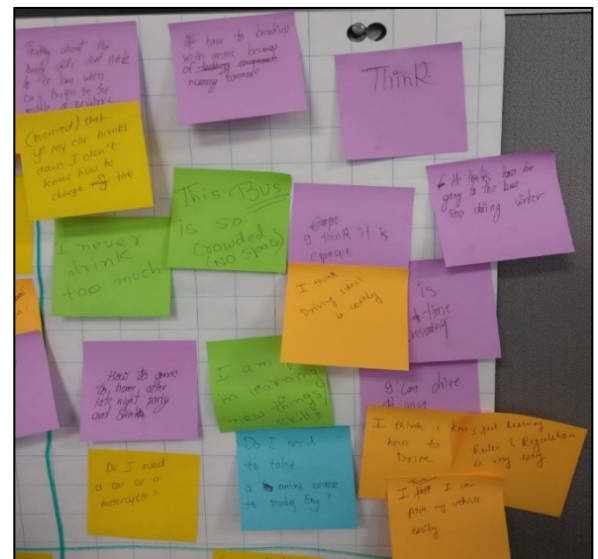
Doing: the bottom-right quadrant captures Newbie's actions:

- Attend a concert on weekend.
- Go different lakes around Halifax.
- Looking for a social event.
- Go to school and gym.
- Searching for jobs and cars.
- Browsing bus schedule.
- Play badminton after school.
- Long walk by harbour side for peace of mind.
- Looking for free music classes.
- Avoids traveling too far places.
- Looks the DMV website for details.
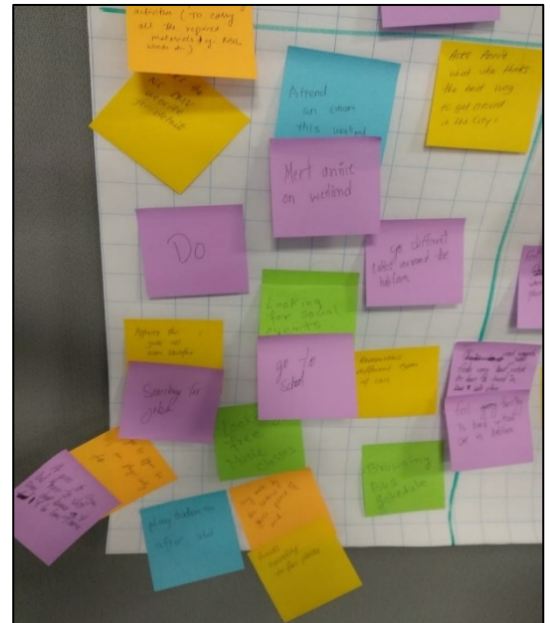
Feel: the bottom-left quadrant lists Newbie's feeling and inner emotional reactions to specific experiences and things:

- Stressed about the driving test.
- I feel driving in cold is hard/ anxious about driving in winter/ snow.
- Public transit smells funny.
- Excited to explore more of the city.
- Drinking makes me happy.
- Travelling is difficult without having own vehicle.
- Feeling tired after a long walk.
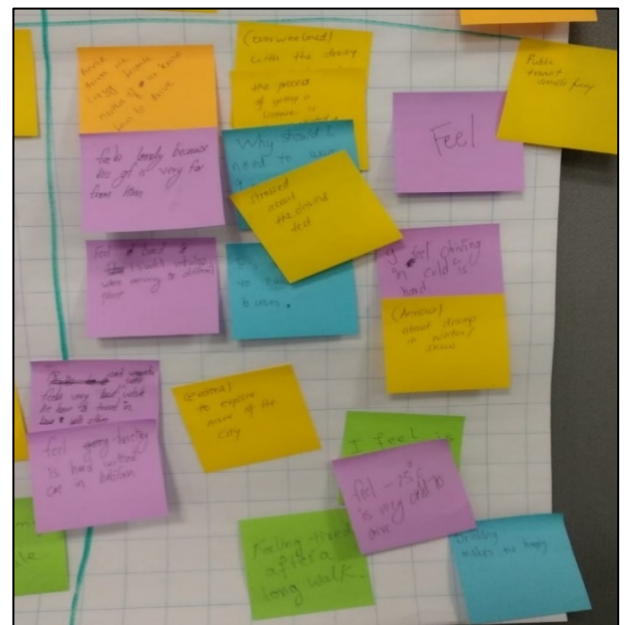
3. AS-IS Scenario

The AS-IS Scenario was created using the results of the empathy map. It shows what steps Newbie is doing, thinking and feeling while he completing the key steps:

- Commute back and forth from work or other places
- Social+ recreational activities that he engages in on daily or weekly basis
- Planning activities for getting a license, gathering the necessary materials to study, learn and navigate the system and licensing process
- Completing is daily work and study tasks

Steps	Commute	Social + recreational activities	Plan (license + learning Info)	Work + study
Doing	1. Browsing bus schedule. 2. If late, takes cab (expensive). 3. Public transport is time consuming.	1. Play badminton after school. 2. Looking for free nearby music classes. 3. Go different lakes around Halifax 4. Attend a concert this weekend.	1. Researches different types of cars. 2. Checks the DMV website for details (authorized website).	1. Searching for Jobs. 2. Go to school.
Thinking	1. This bus is so crowded. 2. Do I need a car or motorcycle. 3. I can't drive at any condition. 4. Why all car mishaps happen after dark? 5. He finds it difficult to go to bus stop during winter.	1. How to come home after late night parties and drink? 2. I never drink too much.	1.Taking driving school is costly and time consuming. 2. Thinks learning rules and regulation is easy. 3. I think I need to watch online videos.	1. Do I need to take online course to learn English?
Feeling	1. Public Transit is not reliable. 2. feel difficult to travel in public transit.	1. To explore parts of the city. 2. Feel tired after a long walk. 3. Drinking makes me happy.	1. Why should I need to wait 9months for getting my Driving license? 2. Anxious about driving in winter and snow. 3. stressed about the driving test. 4. Find difficulty when traveling to different place.	Anxious about driving in winter/snow.

4. Ideas mapped based on feasibility and pain points

No-Brainers:

- Mock Driving Exams (to help prepare, build confidence)
- Show various winter driving scenarios and how to handle and manage the situation safely
- Rules & regulation materials (specific to NS) in multiple languages
- Provide list of resources for all/most driving /licensing needs and handy skills
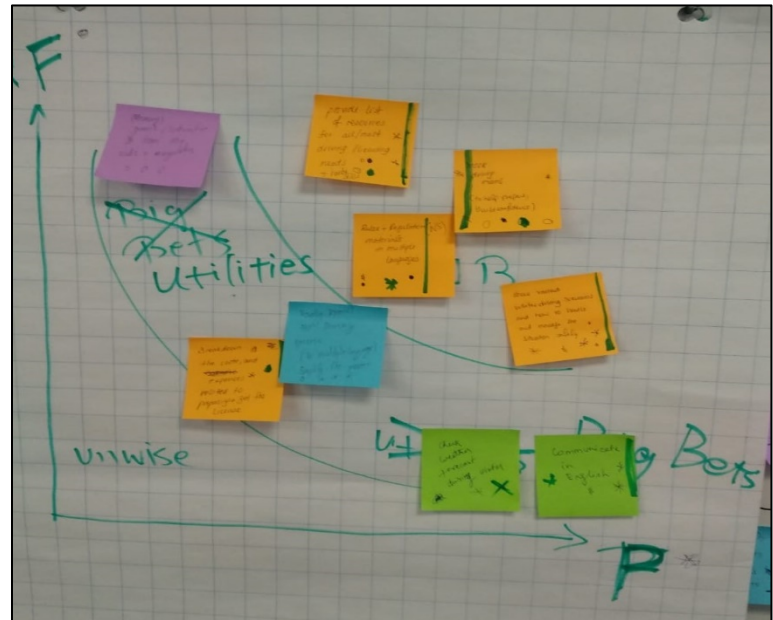

Utilities:

- Breakdown the costs and expenses related to preparing and get the license
- Visually represent the licensing process (in multiple languages) to simplify the process
- Memory games and other modes to learn rules and regulations interactively

Big-Bets:

- Check weather forecast during winter
- Communicate in English

Summary of proposed design sketches

For initial sketches, we have hand drawn four screens as discussed below:
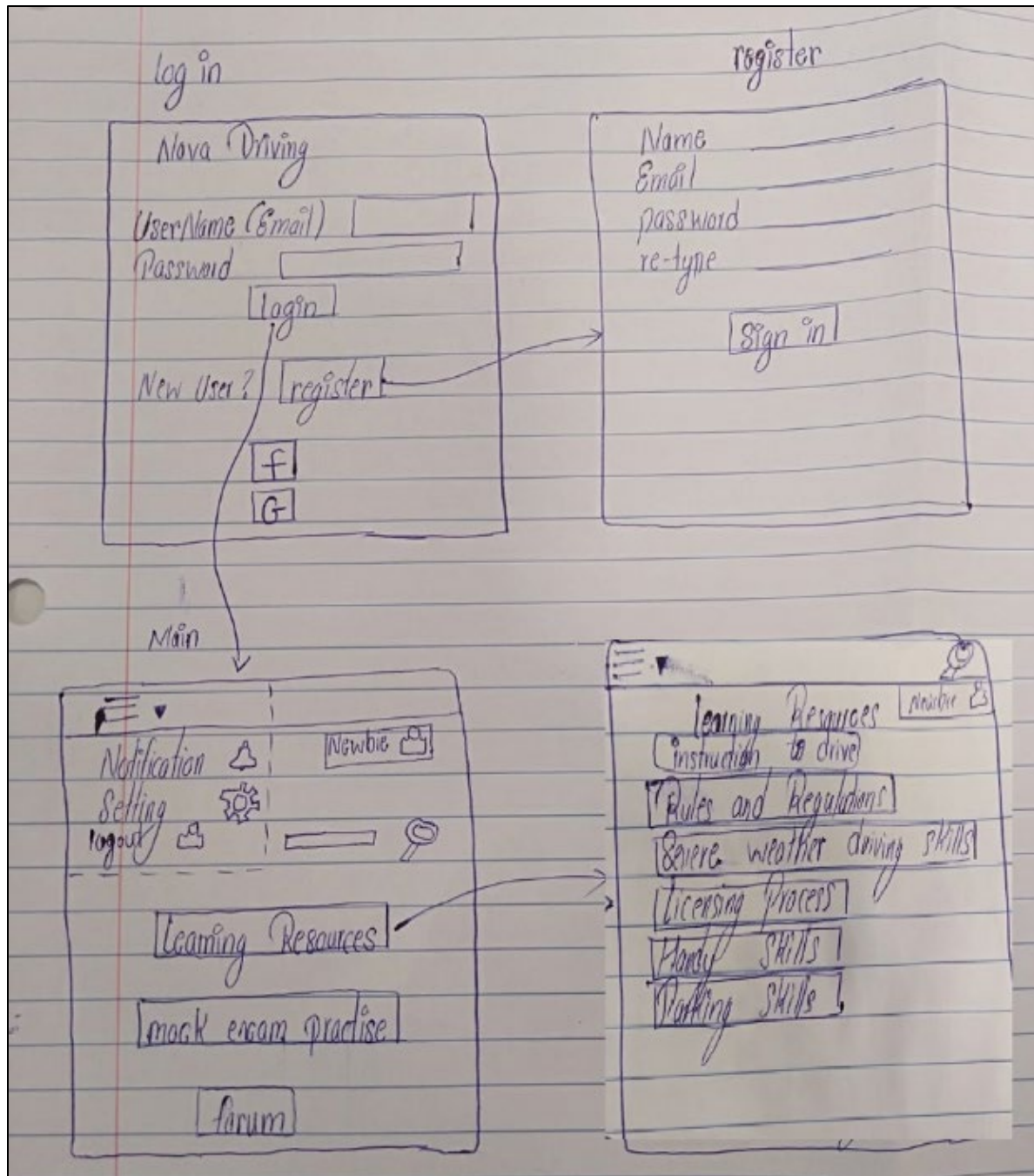
The arrows shown in the mapping of screens describes the flow of navigation across the 4 screens.

1) Login

The app is named as "NOVA Driving". The screen displays the login screen. The username and password textboxes are given for the user to provide their credentials and get into the system. The big question is – why an user needs to log into the app for its usage?

Once the user logs in, the system can store the identification and the progress level of an user in the system. The state preservation will help us classifying the users as novice, intermediate or experienced. As per the category, the system can look ahead and provide suitable services to the user. Also from the user's perspective, he/she will get the feeling of ownership for holding an account once logged in. If the user is a first-time user then he/she can register with the system for which the user has to click on the "Register" button. This will navigate the user to the Registration screen (2).

In addition to these, we are also providing the features like login through Facebook (button quoting F) or Google (button quoting G), again through which user can login. In case user do not follow Facebook and Google, there is always an option to register with our system explicitly.
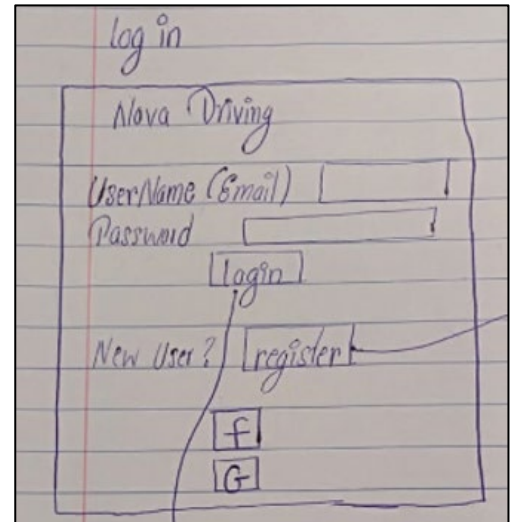
2) Register

On this screen, the user must provide name, email address, password and retype password for registering the user with our app. The email address will be the user id for login. Once the user logs in, the user will be addressed with the given name. The retype password option is given so that user does not do mistake typing his/her password and remember it while typing it second time. Registering with password is an important process and the system restricts the user from handling it callously.
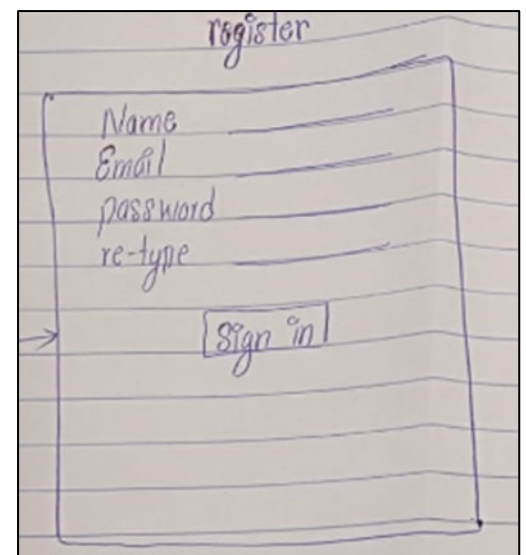
3) Main and First Screen after login

Once the user logs in, the first screen looks like this. On the top left, a menu is designed with 3 options - User id (name provided while registration or registered with Facebook or Google), Notifications, Settings and Logout.

There is also a search button on the top so that user can find the feature in the shortest possible time and jump in right to his needs. The menu and the search button will be consistent through out the app with its fixed positions.

Once the user logs into the app, he/she can view the services under 3 groups – Learning resources, Mock exam practice and Forum.
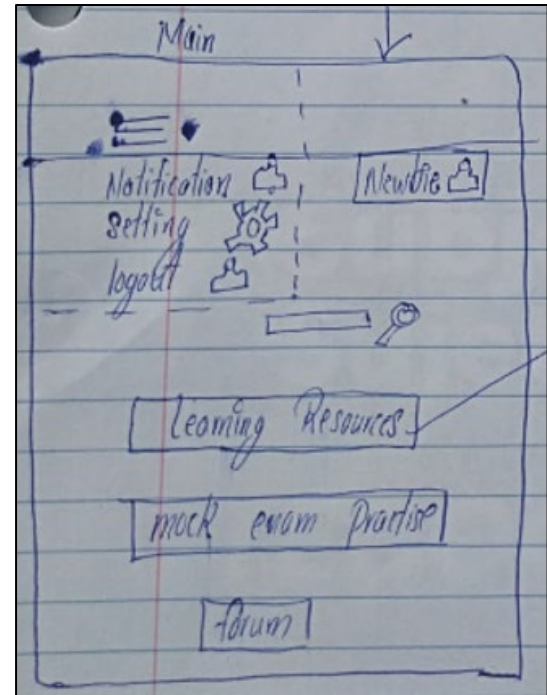
- Under **learning resources**, the user can receive all the information regarding driving in Nova Scotia. These will be classified on further screens.
- Under **Mock exam practice**, the user will have an interactive platform where he/she can test the knowledge received via the learning resources and obtain feedback from the system.
- Under **Discussion Forum**, one user can interact with multiple users and share knowledge regarding the learning process. App administrators can monitor and intervene into discussions where the guidance is required. This will encourage users to participate as a follower as well as a mentor. Definitely, the human intervention will create a homely environment for every user. Thus, the system helps user not to feel as alien with his limited driving skills but a learner like other users.

4) Screen (first branching) from the button "learning resources" (on screen 3)

As per our survey data analysis, we have a priority list of demand of features that interested users have shown interest to:
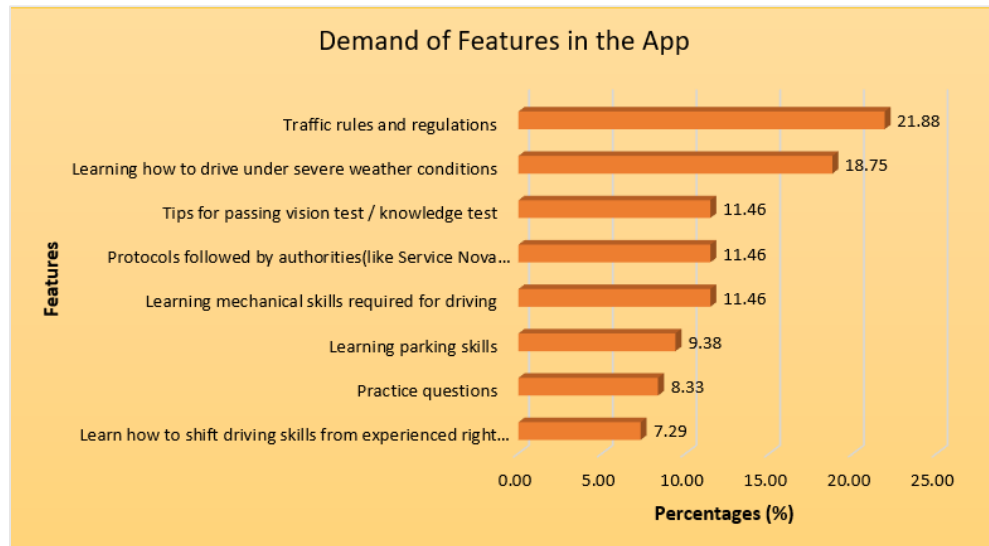
The interface is designed to display all the features that the learning app provides to the user. The interface is designed to display all the features that the learning app provides to the user. The priority order is maintained as per the demand as shown in the graph above.

The features are as listed below:

- Instructions to drive – This is the first and foremost feature the system is providing. Since this is the basic service, it was not listed in the survey.
- Rules and Regulations
- Severe weather driving skills
- Licensing Process
- Handy Skills
- Parking Skills