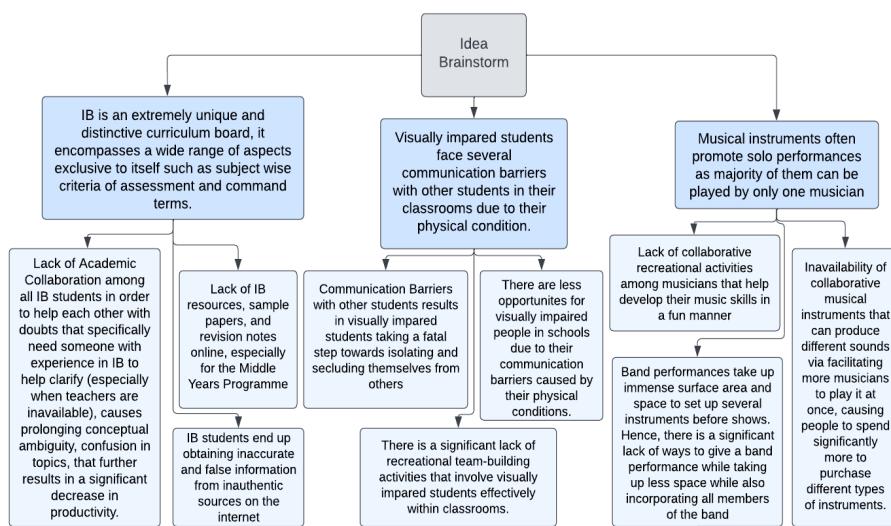


CRITERION A: INQUIRING AND ANALYSING

Strand 1- Explain and justify the need for a solution to a problem for a specified client/target audience

Brainstorming Ideas (Situations and Problems):

Decoding the unit plan (Appendix 1.1), I identified 3 different situations prevalent in today's world that I relate with or have noticed in my daily life. Furthermore, I identified a few problems for each of the situations.



Finally, I identified one of the problems based on the personal connect (how close the problem is to me), and the urgency to create a solution according to people⁴ (survey with MYP students that are the target audience of all problems), to work with in order to start creating a solution. According to my personal connect and the results, the problem of a lack of academic collaboration among all IB students from across the world was identified as the most crucial one that requires an effective solution on an urgent basis.

Design Situation: IB is an extremely unique and distinctive curriculum board, it encompasses a wide range of aspects exclusive to itself such as its unique syllabus, subject wise criteria of assessment and command terms. These aspects play an integral part in assessments and an IB student is expected to thoroughly familiarise with the same before appearing for an examination. However, whenever an IB student faces challenges in understanding concepts or answering IB questions that need to be solved with IB appropriate answers, he/she is often perplexed about where to get guidance and support from (especially when teachers are unavailable) since there is a major lack of IB specific answers and information online. Despite that, there are no platforms that are widely accessible, effective, and organized that provide academic support and facilitation to clarify the doubts of IB students accurately, resulting in causing persistent unclarity of topics.

Problem: IB students from across the world often lack a support system or a source they can turn to for guidance, especially post school hours, in situations where they encounter difficulties in navigating through the intricacies of the IB program, face challenges in subjects, and/or incur doubts that specifically require the knowledge of someone with experience in the program to help clarify. The problem stems from a severe lack of academic collaboration with one another, due to the unavailability of effective collaborative platforms, that causes prolonged conceptual ambiguity, and confusion in topics, further resulting in decreased productivity.

Target Audience: The target audience would be students from MYP 1 – 5 (School Community). This is because an IB student gets exposed to various IB exclusive aspects as soon as MYP starts. These aspects include a range of assessment criteria and command terms for every subject. Moreover, the students often face challenges/doubts in the same due to not having sources to obtain IB specific appropriate guidance from, especially post school hours. Hence, the student would be greatly benefited if he/she is able to gain deeper conceptual understanding and clear doubts easily by having a support system based on academic collaboration.

Client: My client is Ms. Tanwinder, an MYPC (Middle Years Programme Coordinator). She will assist me in understanding more about the problem considering that she has taught and worked with several students studying the IB MYP course. She has experience in working as an Individuals and Societies teacher as well which may assist me in further understanding the criteria of assessment and command terms among other IB aspects that students often require guidance in. Additionally, she also happens to be the mother of a current MYP student who has been studying in IB since several years. Therefore, she would also be able to provide constructive feedback to me throughout by sharing her points of view, specifically the requirements of an IB MYP student, such as the possible features and functions.

Initial Client Interaction: I connected with Ms. Tanwinder (Appendix 1.2) to gain a more comprehensive understanding of the problem I was working on. Our communication allowed me to fully understand the gravity of the problem and the urgency for a solution. Additionally, through my interaction with her, I confirmed that the problem existed in her workspace. Her expertise was incredibly valuable as she offered insightful suggestions on potential solutions.

Connection with the Unit Plan:

Global Context	Key Concept	Related Concept	Statement of Inquiry
Globalization and Sustainability	Communities	Collaboration	Effective collaboration can be enhanced through design in a highly interconnected world
The design problem is closely related to the global context as it focusses on how there is a lack of globalization , which can be referred to as the process of interaction and integration among people . Moreover, the solution we aim to develop is an effective way of promoting globalization among IB students.	The design problem talks about how a community of IB students is still non-existent and is required. A community can be referred to as a group of people having a characteristic in common , which needs to be established for IB students (online preferably) .	The design problem connects to the related concept as the problem is talking about how there is lack of collaboration between IB students and lack of mediums for the same . It also talks about how it's difficult to find platforms that connect IB students with one another online and how it would be advantageous for collaboration between the above mentioned groups.	The design problem connects to the statement of inquiry because if a platform could be created wherein the possibility to connect and interact with other IB students is prevalent, then it would be a giant leap towards creating a highly interconnected world wherein effective collaboration exists and is the key to progress. Moreover, if the design of the platform is efficient enough to interconnect people, collaboration can be significantly improved.

Need for Solution: The IB board (specifically the MYP curriculum) **varies significantly from other boards** due to the differences in its syllabus, methodologies, and other such aspects exclusive to itself such as criteria of **assessments** that have different expectations for each subject. Therefore, **IB students** often incur **several doubts** that make them attempt to search for answers to their questions in hope of **clearing them on the internet**. However, they are often hit with a **roadblock due to not finding appropriate answers to their questions**. This is firstly because IB programs are relatively new and not widely known, meaning that there are limited resources available online specifically tailored to the needs of IB students (Refer to the Figure on the Right). Additionally, it is also because there is a wealth of information available online, and not all of it is accurate, up-to-date, or even relevant to IB students. This can make it difficult for students to find answers to questions related to the IB curriculum, assessments, and other aspects of the program. Moreover, the same is caused because individuals, such as students on the internet who answer questions posted by IB students on forums are **extremely likely** to belong to some **other board**, thus having almost no knowledge about **IB examinations** results in **confusing/misleading IB students** even further. To top it all off, the forums that some IB students try using to get their doubts cleared, are extremely cluttered, face a lack of moderation, a lack of diversity of IB students resulting in a limited range of perspectives, inadequate participation among all users, and/or non-inclination towards academic endeavours. Additionally, IB offers its **educational programs** to more than a **million students studying MYP**, across **5,600 schools worldwide** (Bib. 2) with an ever-growing population. Hence, because IB students lack a support system or a source they can turn to for guidance, especially when **schoolteachers are unavailable**, it is **vital to bridge the gap between IB students via a platform that promotes learning, alongside facilitating doubt clearance by promoting academic collaboration**.

	Parameters	CBSE	Cambridge	IB	ICSE
School Coverage	No. of schools in India	24000+	400+	180+	2300+
	No. of schools globally	230+	10000+	5400+	10+

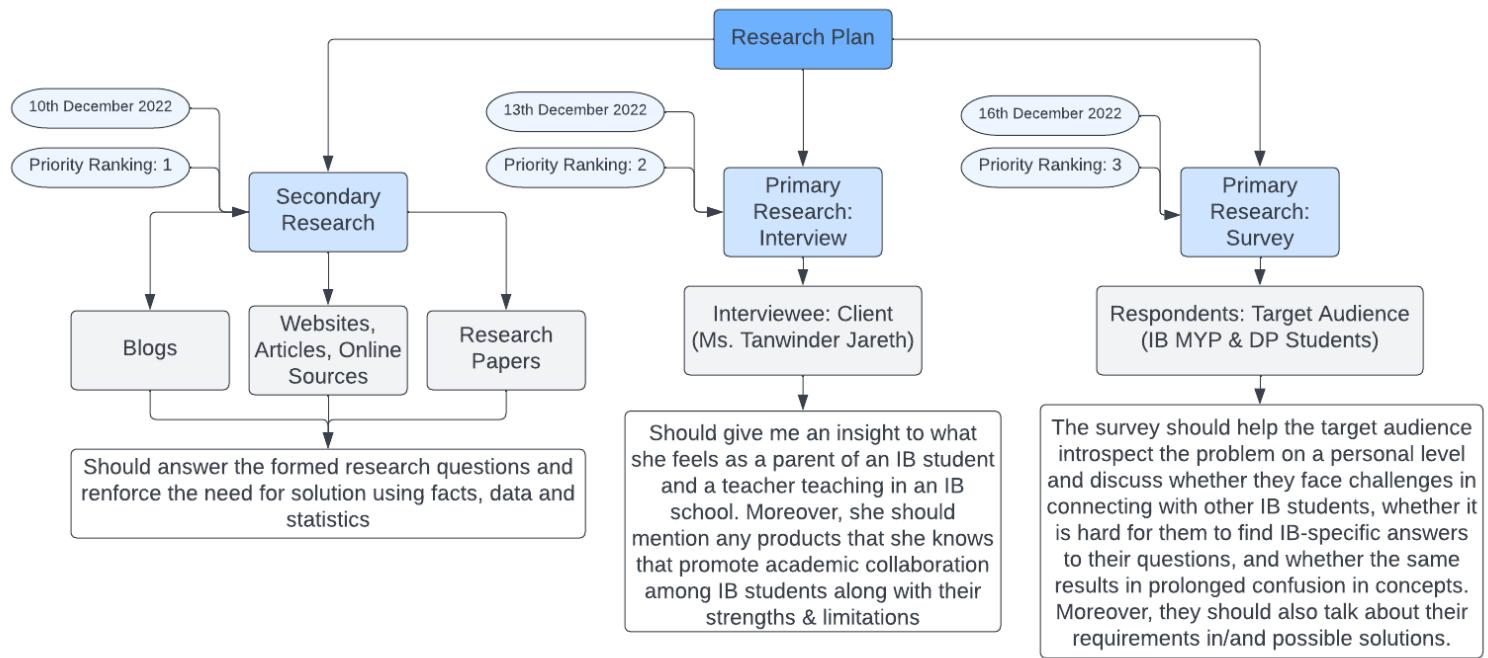
This outlines why there is lack of IB specific answers online: Because of IB's rarity compared to other boards. However, it also highlights the great number of people who study the IB curriculum who require collaborative platforms to connect with others.

Possible Solutions:

As brainstormed, an **academic collaborative platform** that connects all **IB students** effectively while also allowing them to **help each other** by providing **academic guidance/support** will be an appropriate **solution to address and curb the gap** between them (all **IB students**). Some **initial solutions** (Appendix 1.3) are:

- i. A **resource-sharing question-publishing and answer-posting platform for IB students**
- ii. A **notification and reminder app** for teachers to view a **list of doubts** each student has and **schedule meetings** with whenever needed
- iii. A **quiz site for IB students** to host **quizzes** of any subject while having a **friendly competitive nature**

Strand 2- Identify and prioritize primary and secondary research needed to develop a solution to the problem



Secondary Research (Priority 1) (Refer to Appendix 1.4)

Inquiry Questions	Why? (Relevance)	Justification for Priority	Summary of Results	Time Frame
<p>1. Do IB students face the problem of lack of academic collaboration with one another? (Debatable)</p> <p>2. What are the disadvantages of lack of academic collaboration among students? (Factual)</p> <p>3. To what extent can platforms that promote academic collaboration between students enhance their understanding of concepts and topics? (Conceptual)</p> <p>4. What are some possible ways or features to make a digital solution with the goal of promoting collaboration, interactive? (Factual)</p>	<ul style="list-style-type: none"> - This will help reinstate and reinforce the problem along with its extent. - This will help me affirmate whether the lack of academic collaboration among IB students pose many disadvantages to them. - This will help identify possible positive impacts of an academic collaborative platform on students. - This will help me start with the product ideation and layout its foundation plan. 	<p>This research will have the utmost priority as it will:</p> <ul style="list-style-type: none"> - Help me in understanding if the problem is valid. - Help me determine the negative impacts of the problem - Help determine whether a solution I aim to create will be impactful or not - Finalize the features of the solution only after analysing the problem. 	<p>The results highlighted a lack of platforms that promote academic collaboration among International Baccalaureate (IB) students. While IB communities exist on sites like Reddit, they often lack moderation and fail to address academic doubts. Moreover, it was deduced that the absence of academic collaboration can result in limited exposure to diverse perspectives and hinder the development of essential skills like communication, self-management, leadership, problem-solving, and critical thinking abilities. In contrast, academic collaboration among students can lead to increased knowledge retention, decreased pressure on cognitive abilities, reduced anxiety and stress, and provide ample opportunities for gaining clarity through various perspectives. Moreover, To create an interactive platform, factors such as search bars, navigation links, appealing graphics, and most importantly, user-generated content should be incorporated, and Social networking sites are an effective digital medium for academic collaboration due to features like the activity feed (Refer to Bib. 3)</p>	<p style="text-align: center;">10th December 2022</p> <p style="text-align: center;">to</p> <p style="text-align: center;">12th December 2022</p>

Primary Research: Interview (Priority 2)

Inquiry Questions	Why? (Relevance)	Justification	Summary of Results	Time
<p>1. As an IB teacher, and a mother of an IB student, do you think it is beneficial for IB students to connect with other IB students from around the world to obtain academic support? (Debatable)</p> <p>2. Are there any existing products that your students or your ward uses to connect with other IB students for any types of communication? (Factual)</p> <p>3. To what extent will IB students, including your own students and your ward, be benefited by a platform that serves as an efficient, quick and easily accessible way of connecting with other IB students to get academic support from? (Conceptual)</p> <p>4. If such a platform were to exist, which one of the following possible solutions with what color scheme fulfils the purpose the most? (Debatable)</p>	<ul style="list-style-type: none"> - This will help me understand whether connecting students worldwide can be beneficial, further helping the solution. - This will help me get to know pre-existing similar products and if they exist: their limitations/strengths. - This will help me get to know whether a solution will be helpful for IB students or not. - It will help me deduce whether it is needed and if it will be used. <p>This will finally help me finalise the fundamentals of the solution.</p>	<p>This research is the second priority as its helping me:</p> <ul style="list-style-type: none"> - Understand if the prevention of problem is important. - Get inspiration, and eliminate competition by ideating ideas - Understand if the basic goal of my solution sounds helpful to the audience and if my solution will be beneficial. - Know the preferred color palette 	<p>The results discussed that is beneficial to connect with other students as learning with others improves students' persistence, attitudes while also increasing motivation and developing skills. Moreover, there is no current or digital product that allows IB students from across the world to connect with each other, except IB's community on Reddit.</p> <p>Further, It will be beneficial if all IB students can collectively help other with doubts, questions and challenges resulting in helping the person who asked the question by clearing their doubt while also helping the person who answered by serving as a form of revision. And that a resource, question and answer-posting platform for IB students would be beneficial with a blue color scheme.</p>	13th Dec. 2022 20 minutes to take interview

Primary Research: Survey (Priority 3) (Refer to Appendix 1.5)

Inquiry Questions	Why? (Relevance)	Justification	Summary of Results	Time
<p>1. Do you think that it is helpful to be able to effectively connect and/or collaborate with IB students from all across the world? (Debatable)</p> <p>2. Do you often find yourself unable to clear doubts appropriately by obtaining answers that comply with IB expectations due to not having appropriate sources of information? (Factual)</p> <p>3. How closely do you relate yourself with the problem being addressed on a scale of 1-10? (1 being least relatable, 10 being most relatable) (Debatable)</p> <p>4. To what extent will you be benefited by a Q&A platform that promotes academic collaboration among all IB students? (Conceptual)</p> <p>5. If such a platform were to exist, what functions and features would you want to see in it? (Debatable)</p>	<ul style="list-style-type: none"> - This will help me understand whether connecting students worldwide can be beneficial / is needed - This will help me understand if my solution has the potential to curb students' confusion in topics and clearance of doubts. - This helps me understand the personal connect and relatability of the audience with the problem. - After finalising the basic idea of the solution from the client interview, I'll deduce if students want/need a Q&A site. <p>This will help me move towards the design brief, features, and other details</p>	<p>This is the third and last priority as it will help me:</p> <ul style="list-style-type: none"> - Know if the audience resonates with the goal of solution - Know if the audience resonates with the impact of the problem - Know the extent at which the audience resonates with the problem - Determine if one wants to use the solution decided in the interview (q.4) - Make the product as it takes suggestions for the solution: features & functions 	<p>95.3% of the people answered "Yes" and the rest(4.7%) answered "Maybe" to Q.1.</p> <p>88.9% of the people answered "Yes", 5.6% of the people answered "Maybe", and 5.5% answered "No" to Q.2</p> <p>The average rating of the people to Q.3 resulted in the value '8.9' meaning that the problem is severe.</p> <p>82.4% of the people answered "It will carry a major benefit to me".</p> <p>79.3%: Wanted the ability to connect with other IB students to clear doubts,</p> <p>69%: Wanted the ability to categorise all questions into IB criterions, subjects, their topics and grades⁵</p>	16th Dec. 2022 to 19th Dec. 2022

Strengths

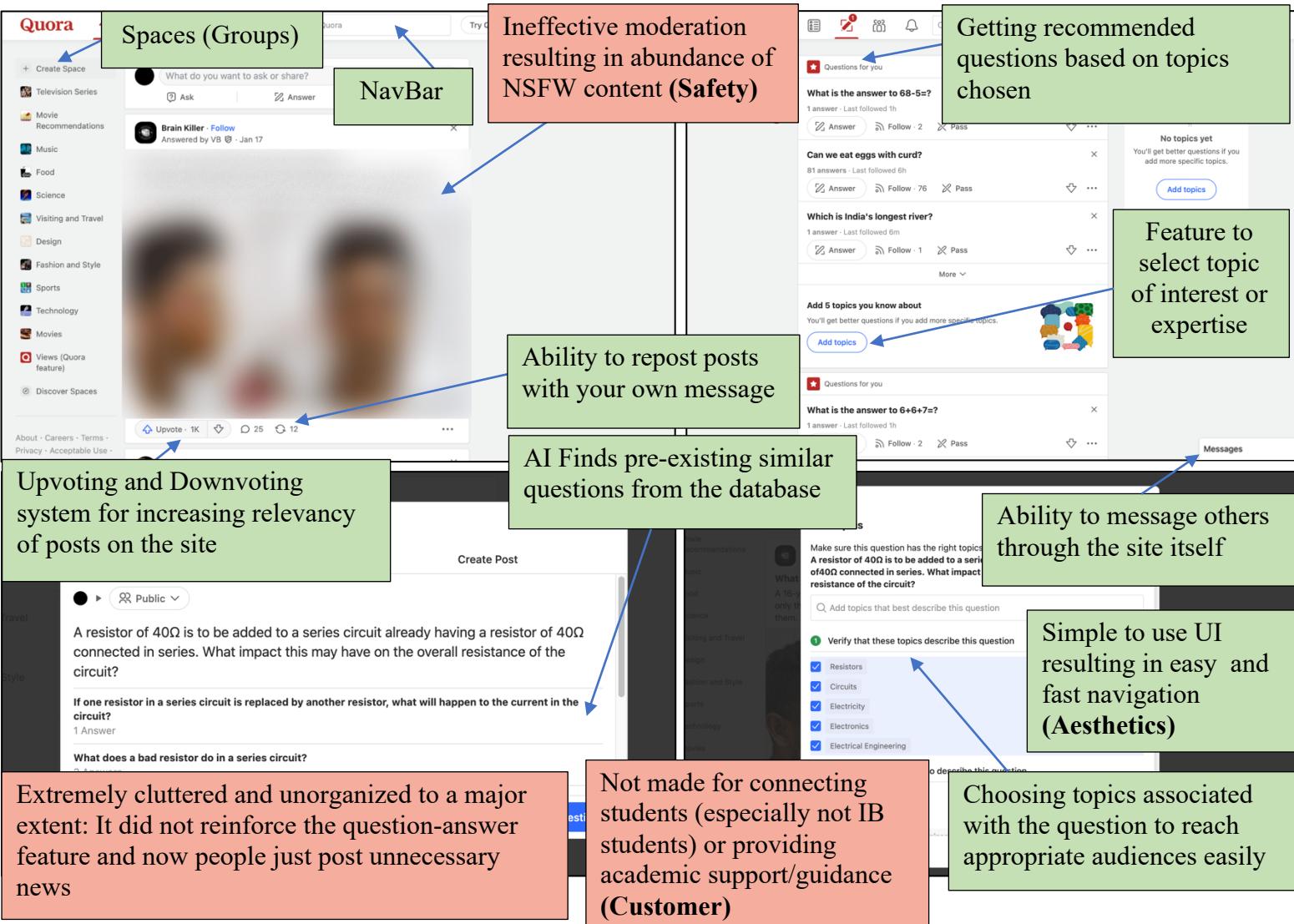
Limitations

Strand 3- Analyze a range of existing products that inspire a solution to the problem

1. Quora

Function: The main function of Quora is to provide answers and post questions. Published questions lead to threads that consist of several answers. It aims to connect everyone worldwide.

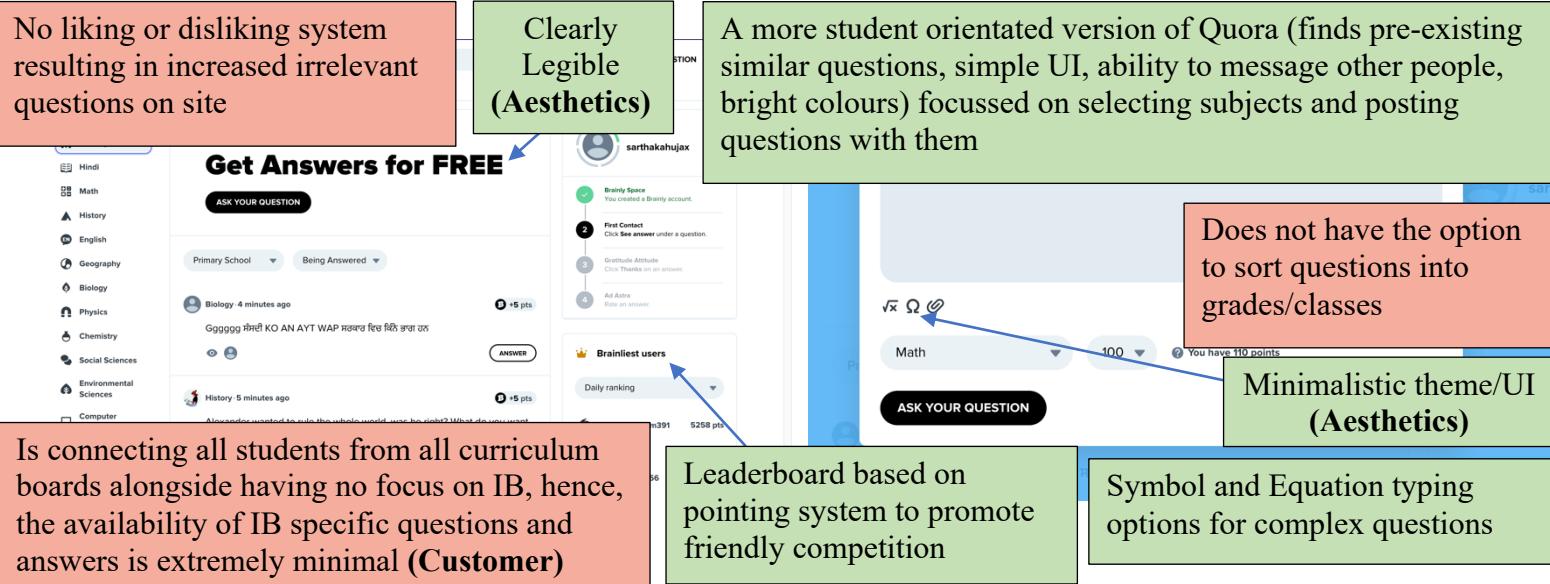
Customer: The customer/target audience of Quora is not specified, it includes just about everyone.



2. Brainly

Function: Brainly is a crowdsourced questions and answers site for students. They post their questions within a school subject, and other students and various subject experts answer them.

Customer: Mainly school students irrespective of their curriculum board or syllabus



3. Discord Server: International Baccalaureate

Function: The discord server aims to connect IB students and promotes social interaction between them (no focus on academic support or guidance)

Customer: IB students that have access to discord and are willing to join servers on the same

Connects all IB students (Customer)

Employment of a dark theme (Aesthetics)

Ability to follow and privately message members on request (Safety)

Not focussed on helping the IB students effectively help each other (academically) by providing support and guidance

Organized into channels to talk about different topics

Group Chat functionality: Highly Engaging, and Interactive

Call Feature

Member List

Contrasting text and buttons (as compared to the background) (Aesthetics)

Chat roles: Favourite Subjects, Grade, Moderator

4. Reddit Community: International Baccalaureate (r/IBO) Reddit ibo: "R/IBO." Reddit, <https://www.reddit.com/r/IBO/>.

Function: The reddit community aims to connect IB students and promotes social interaction between them to provide advice to each other (no focus on answering academic questions)

Customer: IB students that have access to reddit and are willing to join communities on the same

Not focussed on helping the IB students effectively help each other academically (Customer)

Voting system for Posts + Overall Vote Counter

Filtration system for feed

Users share memes, NSFW posts, and unnecessary content apart from mainly general advice and tips (Safety)

Ability to comment

Cannot specifically select subjects that you want to see content and posts from, resulting in loads of unnecessary content and clutter (Aesthetics)

Filter system to sort questions into IB subject groups

Ability to save posts

Member and online member count

5. Save my Exams

Function: Save my Exams aims to provide resources such as topic questions, revision notes and practice papers to students belonging to several boards such as GCSE, IGCSE and IB.

Customer: Students (of boards that are available on the site) who need resources for revision

Resources sorted into higher level and standard level for all available subjects

Detailed Answers for each quiz question

Only available for IB DP (grade 11 & 12) students, only for subjects; Maths, Sciences and Economics (Customer)

Doesn't connect students with each other or promote collaboration by social interaction (Customer)

SaveMyExams

Maths

Biology

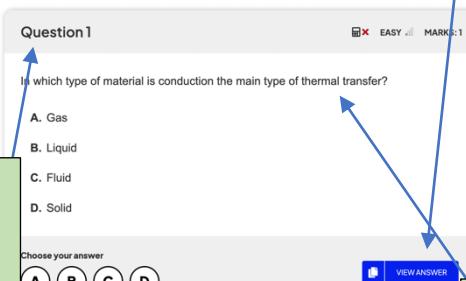
Chemistry

Physics

Economics

Provides IB specific resources such as summary notes, flashcards, and practice papers/questions

Quiz functionality with MCQs sorted into levels of difficulty (Easy, Medium, Hard)



Most features are unlocked by payment (Cost)

Resources sorted into topics

Simple & Legible Font (Aesthetics)

Minimalistic Theme (Aesthetics)

Key Takeaways

No.	Product	Key Takeaways (Functionalities and Features)	Key Takeaways (UI)
1	Quora	Functionalities such as users to join spaces (groups), liking/disliking system, sorting system of questions based on 'topics' (To help reach appropriate audiences), and finding similar pre-existing questions are beneficial.	
2	Brainly	Include friendly competition by perhaps employing the use of point rewarding system (when the user answers questions), and a functionality to easily put mathematical symbols/type equations.	
3	Discord Server: International Baccalaureate	May be beneficial to have a group chat functionality alongside the ability to follow/message members privately from the server, call users, give ranks/roles to users describing them, and employing the use of an all member list.	
4	Reddit Community: International Baccalaureate (r/IBO)	It is beneficial to include the ability to save posts (for viewing later), filtering the feed as per your requirement (top posts, new posts), ability to upvote and downvote posts as well as showing the overall votes of the tweet (Total no. of upvotes – Total no. of downvotes). Moreover, the user should be able to specifically select the content from a specific topic/subject to view in the feed.	
5	Save my Exams	It is advantageous to include resources such as topic questions, past papers and notes, alongside sorting them into the levels of the subject (exclusive to IB such as Higher Level and Standard Level). Moreover, it is also helpful to further divide the content into syllabus topics of each subject. Lastly, it is beneficial to have a quiz functionality to test the user and provide detailed answers to the questions for help if needed.	It is beneficial to have bright and vibrant colours/themes with buttons that are self-explanatory in terms of where they direct the user to. Moreover, the UI should be minimalistic so that it does not look cluttered and unorganized. Lastly, it should promote user-friendliness with convenience and easy/fast navigation.

Strand 4- Develop a detailed design brief which summarizes the analysis of relevant research.

Summary of Primary Research: Interview with Client and Survey with Target Audience:

According to the primary research conducted, it is interpreted that the solution should effectively be able to solve the issue of IB students not being able to academically collaborate with each other and not being able to easily obtain IB specific answers to their questions which results in prolonged unclarity in topics and confusion of topics. Possible functions aiding the same cause include: The ability to connect with other IB students to ask questions from each other (79.3%), ability to categorise those questions into IB criterions/subjects/grades (69%), ability to connect with IB specialised tutors (58.6%), and the ability to upload notes/resources (48.3%). Moreover, a function suggested by one of the person in the target audience is the ability to connect with past/graduated IB students.

Moreover, the same helps me deduce that IB students do believe that if they are able to connect with others, they will be helped significantly, especially academically. Additionally, they also think that finding IB specific answers to their questions is challenging and getting to know other IB students worldwide is not easily possible currently. And developing a solution which is able to solve all these issues collectively, will be extremely beneficial and widely used by all IB students.

Summary of Secondary Research: Understanding the technical requirements of the required functionalities, I was able to research and deduce that that most appropriate medium to fulfil most of these functionalities while also effectively solving the problem is a social website with features like an **activity feed**, **ability to follow or join topics/subjects**, **share questions**, **post answers**, **edit user profile**, have an **editable profile page** and maybe even allow users to **edit posts**. Moreover, this also guided me towards existing similar products that may inspire the solution such as Quora, and Brainly, of which the summary is written as a part of the next point. Furthermore, because this website would be made exclusively for IB students, a

recommended colour theme of the UI can possibly be **shades of blue** keeping in mind the branding docket of the IB. Other than that, I researched on the colour themes and got to know the 5 main colours that are often used to boost produced in classrooms, hence, apart from blue, I can use the other four as accents that complement the main colour scheme of the site.

Summary of Analysis of Existing Products-> Summary for the Design Brief: As mentioned in the secondary research, I was able to identify a range of products that incorporate the use of helpful features and employ several functions. I then analysed them and attempted to interpret their main takeaways to get inspiration for my solution: Quora, Brainly, IB Discord Server, IB Reddit Community, and SaveMyExams. Their functionalities included that Quora has the ability to repost and request answers from experts, Brainly allows easy posting of questions with symbols and has a point-rewarding system, IB Discord Server has group chat and role-assigning feature, IB Reddit has a score counter and ability to save posts, and SaveMyExams provides accurate study resources. These were the most distinguishable and unique features in all these apps that I was inspired by, which may help contribute to my design brief.

Connection to the Unit Plan:

A question and answer forum site for IB students from across the world aligns well with the unit plan's global context of globalization and sustainability. This platform provides an opportunity for students from different communities to collaborate and share their perspectives on various academic topics. By working together, students can develop effective collaboration skills and gain a better understanding of the interconnected world we live in. Additionally, the design of the forum site can enhance collaboration by providing easy navigation and search tools, encouraging user-generated content, and promoting respectful and inclusive communication. Overall, a question and answer forum site for IB students aligns well with the statement of inquiry, emphasizing how effective collaboration can be enhanced through design in a highly interconnected world.

Design Brief and Hypothetical Impact: I aim to create a social website/web app that allows IB students to share questions, give answers, spread resources, like/dislike posts to allow users to determine their relevancy (Refer to appendix 1.6), join/follow subjects to view subject-specific posts, a tagging system to tag posts based on their subjects/criterions/topics/grades, and the ability to follow others, among many others. Moreover, the user should be able to easily signup/login to the website using Email or Google Sign-In which will assign a username as well (which will be visible beside the time a question was posted). Other than that, the website should also incorporate a Search functionality for users to find posts, be extremely responsive (change based on screen dimensions), and show a list of most followed subjects.

If the website is made in the way imagined, then IB students from all over the world will rely on it while doing revisions, especially before assessments. A few benefits of the website will be as follows:

1. Peer support: This website could provide a space for students to ask questions and receive support from other IB students who are facing similar challenges. This could help students feel less isolated and more connected to a larger community.

2. Exchange of knowledge: By connecting with students who have different strengths and weaknesses, this website could provide an opportunity for students to exchange knowledge and learn from each other.

3. Improved problem-solving skills: By participating in such a website, students could develop their problem-solving skills and learn how to approach challenges in a more effective way.

DESIGN BRIEF (GRASP)	
Goal	My goal is to connect IB students from across the world and provide a platform for them to help each other academically by indulging in effective interactions. Moreover, the platform must be able to serve the needs of IB students by particularly focussing on specific IB aspects such as command terms and subject-wise criteria of assessment.
Role	My role is of an MYP 5 design student aiming to solve the problem of IB students not being able to connect with each other for academic support due to a severe lack of platforms that promote the same.
Audience	The audience would be IB students studying MYP (Middle Years Programme) and DP (Diploma Programme) (Grade 6 – Grade 12)
Situation	The situation is that IB students are currently not able to connect with one another for effectively gaining academic support and guidance due to a significant lack of platforms. Moreover, the platforms that provide accurate information about IB specific aspects are either inaccessible to most students (made for small groups), cluttered and/or unorganized, which causes prolonged unclarity of concepts, and confusion in topics, further resulting in a decrease in productivity
Product	The product which I aim to create will be a social website that allows IB students to share questions, post answers, like/dislike posts to allow users to determine their relevancy, join subjects to view subject-specific posts, a tagging system to tag posts based on their criterions/grades, etc.

CRITERION B: DEVELOPING IDEAS

Strand 1- Develop design specifications which clearly state the success criteria for the design of a solution

Colour and Font (Refer to Appendix 2.1)

Specification	Requirements + Justification	Research Used	Measure of Success
Colour Palette & Theme	<ul style="list-style-type: none"> i. The following blue colour palette to be used as a primary colour for all appealing aspects such as elements of the webpages ii. White and black should be used as the background and outlines of elements of the site respectively for a minimalistic theme 	Client Interaction + Analysis of Existing Products: Brainly and SaveMyExams	If the average rating from the target audience is ≥ 8 on a scale of 1(least)-10 (highest) for the color palette, design and theme of the website
Design of Icons and Buttons	<ul style="list-style-type: none"> i. All icons and buttons should be monochromatic (having or consisting of only one colour or hue) ii. All buttons and icons should call-to-action by being made of any contrasting colours to the background (refer to the image) 	Secondary Research + Analysis of Existing Products: Discord	If the average rating from the target audience is ≥ 8 on a scale of 1(least)-10(highest) for the design of all buttons and icons
Font	<ul style="list-style-type: none"> i. The primary and major colour for all text on the website should be black, and the sizing should vary between 5-20px depending on what the text signifies (title, subtitle, body content, etc) ii. The font used for all headings and titles should be Open Sans, Sans Serif, and the font used for all content on the website including posts, answers, buttons, etc should be either Open Sans, Sans Serif or similar variants. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> Open Sans Light Open Sans Regular Open Sans Semibold Open Sans Bold Open Sans Extra Bold </div>	Analysis of Existing Products: Brainly and SaveMyExams + Secondary Research	If the average rating from the target audience is ≥ 8 on a scale of 1-10 for the font style, and size If $\geq 80\%$ of the users prefer buttons/icons with rounded edges

User Interface and User Experience

Specification	Requirements + Justification	Research Used	Measure of Success
Responsive Nature	<ul style="list-style-type: none"> i. The elements on the website (i.e., texts, images, videos) should automatically adjust according to the dimensions of the device it is being viewed in. ii. If required, the on-screen elements should get added or get removed depending on the screen size (If the screen is smaller, unnecessary elements such as extra buttons/icons should get hidden and should unhide/show on bigger sizes) 	Secondary Research	If the average rating from the target audience is ≥ 8 on a scale of 1-10 for the size, spacing and formatting of all icons and other elements on screen

On-Screen Elements	<ul style="list-style-type: none"> i. There must be a sticky (fixed) navigation bar including a search bar, subject group navigator, profile icon with username (when logged in), login/signup/logout buttons, and the logo of the site at all times (UI mustn't be cluttered) ii. There should be a list of subjects to join on the homepage iii. There should be an “all-subject feed” on the homepage and a “subject-specific feed (of the selected subject)” on the subject group page. Both should be centred on the screen. iv. There should be a bar adjacent to the navigation bar to create new posts on the homepage page as well as the subject specific group page v. There should be a like, dislike, tags, delete and commenting button, with username of user and date posted on all posts vi. If a media source (picture, video) is posted, then there should be minimal focus on the text of a post, and more focus (greater size) on the media vii. There must be a header on all subject-specific group pages that must show the name of the subject, a thumbnail/image related to the subject, and a ‘Join’/‘Joined’ button 	Secondary Research + Analysis of Existing Products: Quora, Reddit, Brainly	<p>If ≥90% of the users will be able to understand the function of each on-screen element and use them effectively</p> <p>If ≥90% of the users believe that the on-screen elements are bringing out the purpose of the site and the site pages</p> <p>If ≥90% of the users are satisfied with the design and the interface of the posts</p>
Navigation	<ul style="list-style-type: none"> i. All pages and windows should be accessible within 3 clicks or less ii. The ability to go the home page using the logo of the website should be accessible from any page or window in the app within 1 click iii. The posted questions should be able to go full screen in one click and redirect to previous scroll position using back button (one click) iv. Clicking any tag used on posts should redirect you to a list of all posts posted with that specific tag (one click) v. In order to post a question, you should be able to navigate to the “question posting” page in a single click of the “create post” bar if you are on the subject-specific page. And if you are on the homepage, you must get an option to choose the subject specific group first 	Secondary Research + Analysis of Existing Products: Quora, Reddit, Brainly	<p>If ≥90% of the users will be able to easily locate and navigate between pages, and modal windows</p> <p>If ≥90% of the users believe that the reachability of the pages is not too far from one another, and all can be reached within 3 clicks</p>

Website Page Types and Modal Windows

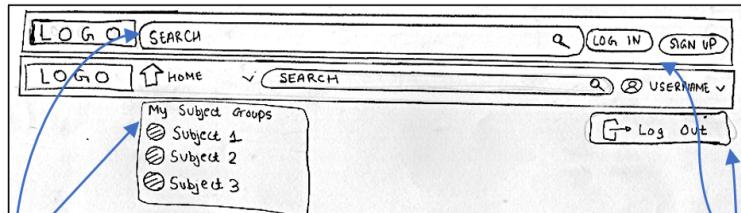
	Requirements + Justification	Research Used	Measure of Success
Website Pages	<ul style="list-style-type: none"> i. There should be a: <ul style="list-style-type: none"> - “Home Page” which opens as soon as the user logs in as the main page - “Subject-Specific Group Page” to see the posts and content of selected subjects - “Full-Screen Post Page” allowing you to comment and see the post in full screen - “Question-Posting Page” to post new questions 	Secondary Research + Analysis of Existing Products: Reddit, Brainly, Quora	If ≥90% the users will be able to access all pages easily and understand their purpose/function
Modal Windows	<ul style="list-style-type: none"> i. There should be modal windows for: <ul style="list-style-type: none"> - Authentication (login/signup/logout) - Navigating through subject-specific groups - Choosing tags/filters for posting questions 	Secondary Research + Analysis of Existing Products: Authentication windows of Reddit & Quora, Navigation Modal of Reddit & Discord and Tagging systems of Reddit, Brainly, & Quora	If ≥90% the users will be able to access modal windows and understand their purpose/function

Strand 2- Develop a range of feasible design ideas, using an appropriate medium(s) and detailed annotation, which can be correctly interpreted by others

I firstly made design ideas for the most crucial on-screen elements talked about in the specifications such as the navigation bar, subject list, posts, and the header for subject group pages. The ultimate aim is to improvise and further combine these different designs of the on-screen elements to come up with a total of 5 unique design ideas of the website as a whole.

Initial Design Ideas for Navigation Bar when Logged in and Logged out (Throughout the site):

Design Idea 1



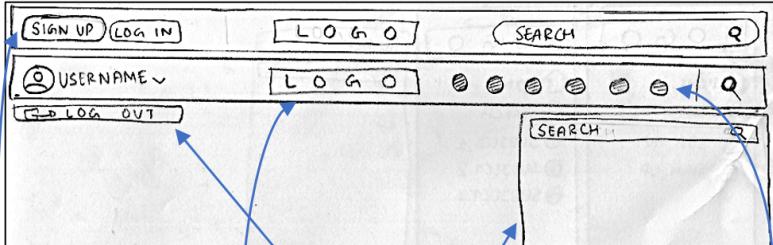
Modal window that navigates between users' subject groups

When Logged Out: Authentication buttons on the right side
When Logged In: Profile picture with username on the right

Features a wide search bar with the logo of the site

Modal window to log out

Design Idea 2



Logged Out: Authentication buttons on the left side
Logged In: Profile picture with username on the left

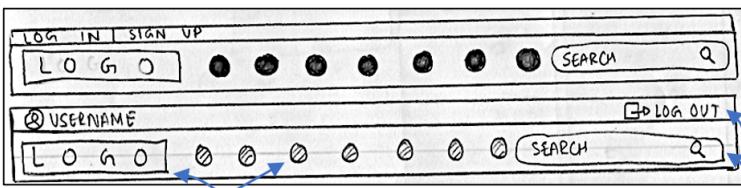
Modal to log out

Modal that opens to search for questions

Features the users' subject groups via their icons of the on the NavBar.

Logo of the site in center, and on the left of subject groups.

Design Idea 3



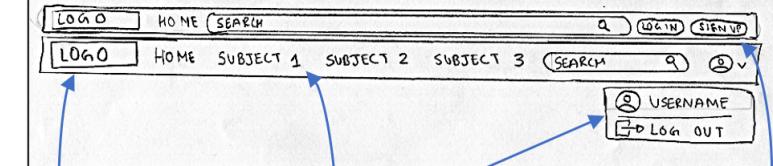
All the subjects (joined and free to join) are shown on the NavBar via their icon, and the icons are unclickable when not logged in

Features no Modal Windows

Features a top thin strip showcasing the user details and authentication

Logo of the site on the left, and a search bar on the right

Design Idea 4



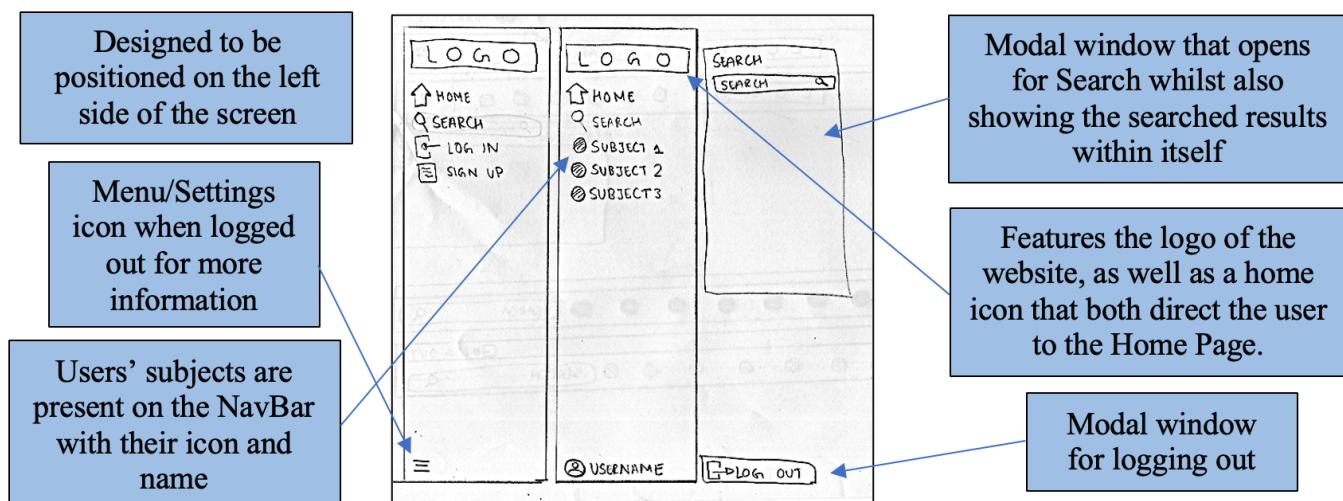
Has a Modal Window that displays username and log out option

Features a search bar and the website logo

Users' subjects on the NavBar via their name

When Logged Out: Authentication buttons on the right side
When Logged In: Profile picture on the right side

Design Idea 5



Initial Design Ideas for Subject List (Homepage):

Design Idea 1

Search Bar

Divided into subjects that have been 'joined' by the user and those that 'can be joined'

Icons of the subject next to its name

Design Idea 2

Has a cover image on top

Icons of subjects on the left

'Join'/'Joined' icon on the right of each subject

Design Idea 3

Has an 'All Subject' icon to redirect user to 'All Subject' Page

Search Bar

Doesn't show if user has joined any subject

Design Idea 4

All subjects have a cover image and text whilst being shaped like rectangular blocks

Doesn't show if user has joined any subject

Does not provide user with an option to join any subject directly

All subjects have a cover image and text whilst being shaped like circular blocks

Designed to heavily rely on the function of the scroll wheel

Doesn't show if user has joined any subject

Designed to heavily rely on the function of the scroll wheel

Does not provide user with an option to join any subject directly

Initial Design Ideas for Posts (Group Feed) (Mostly common in all: Username, date, subject, tags, and answer functionality):

Design Idea 1

No answer counter

All information except the username is in a single line

No like/dislike functionality

Design Idea 2

Information is displayed linguistically

'Approve' Counter but no dislike or score counter

No answer counter

Design Idea 3

Title space

No profile picture of user

'Approve' and 'Disapprove' buttons + score counter

Design Idea 4

'Upvote' and 'Downvote' buttons + score counter positioned on the left

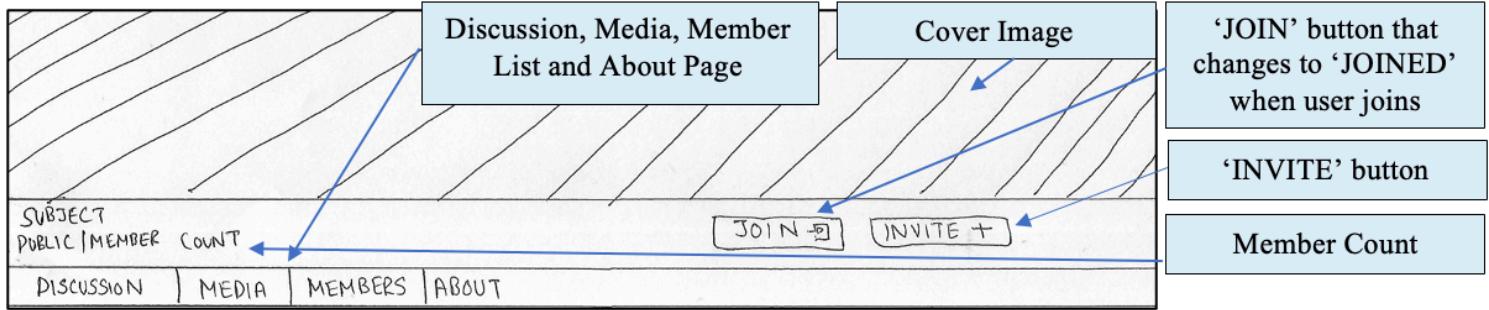
Design Idea 5

Has 'like' and 'dislike' buttons + score counter

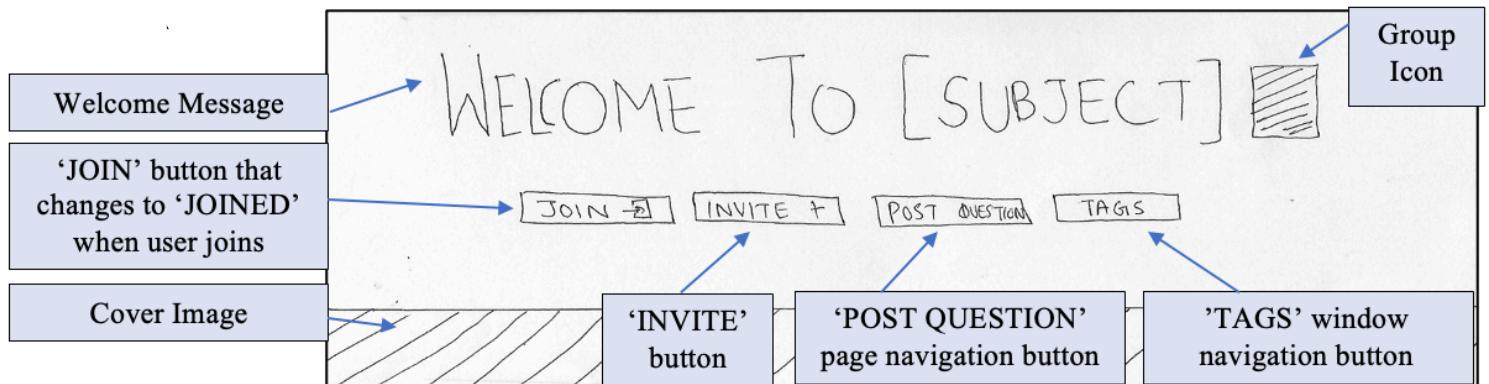
Doesn't specify subject

Initial Design Ideas for Subject Group Head (Subject Specific Page):

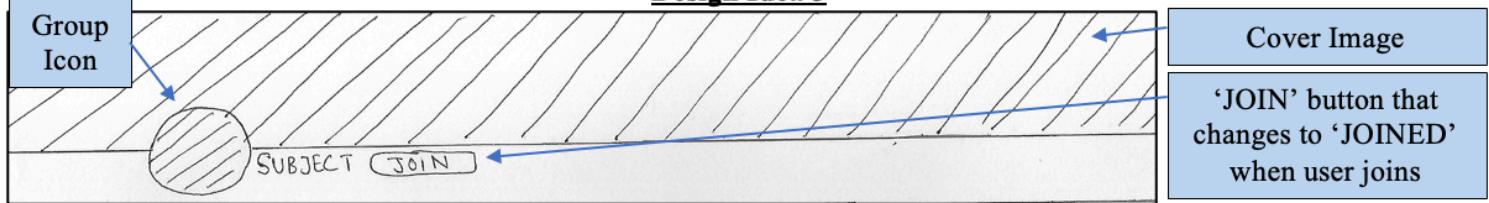
Design Idea 1



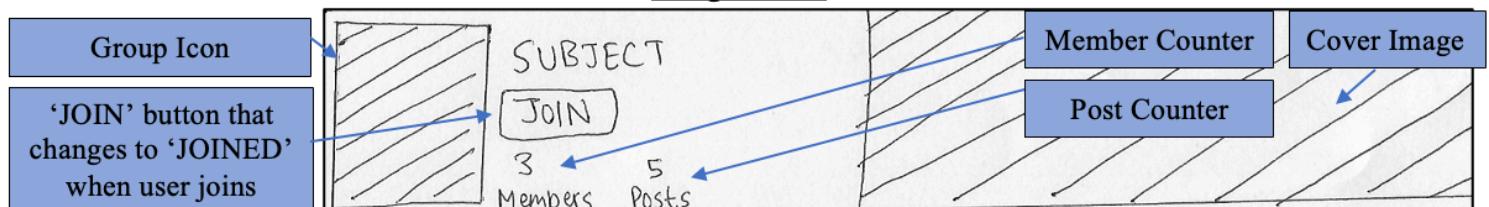
Design Idea 2



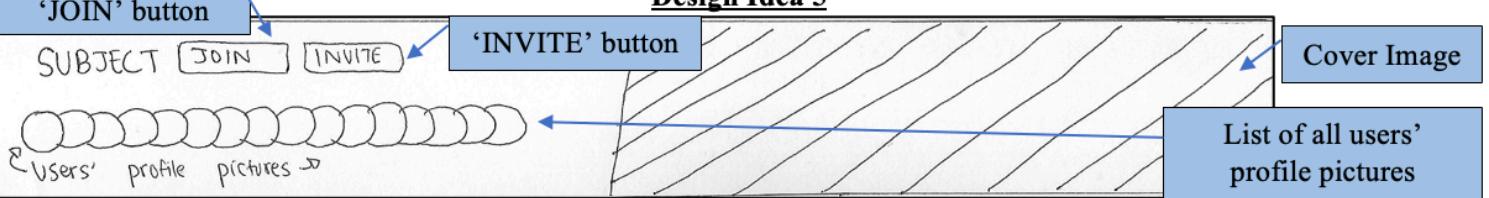
Design Idea 3



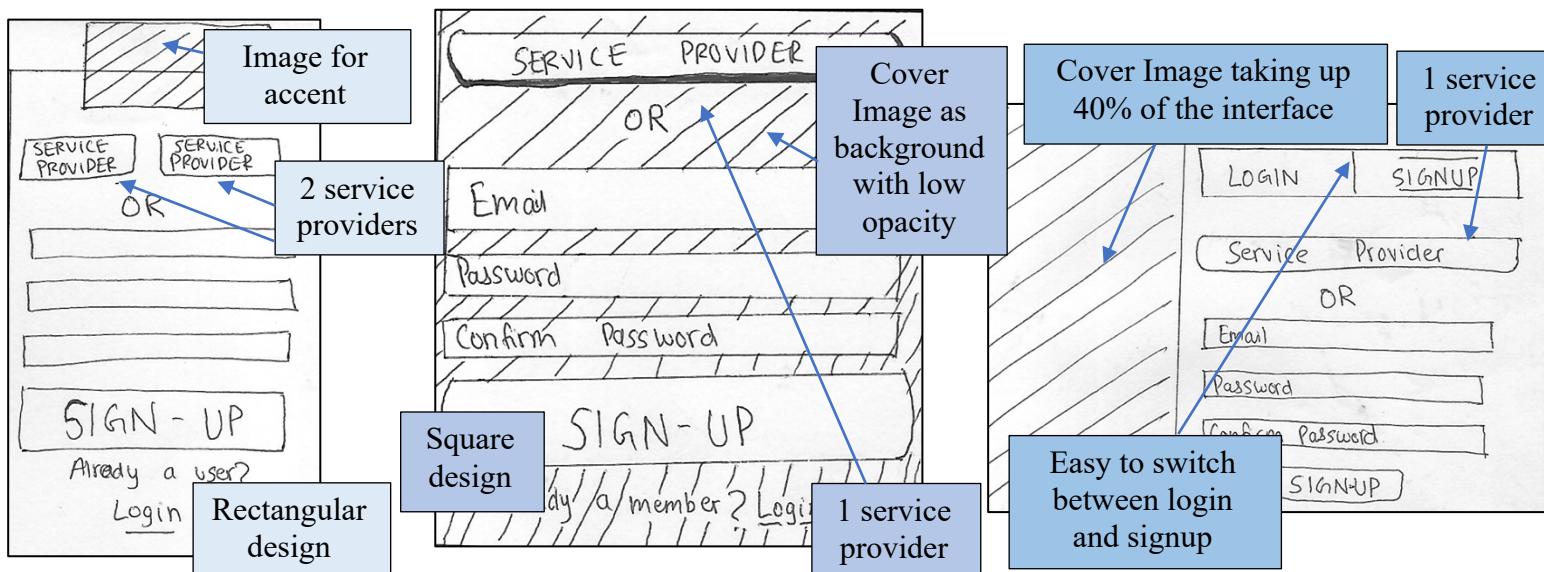
Design Idea 4



Design Idea 5



Initial Design Ideas for Authentication Window (Homepage):

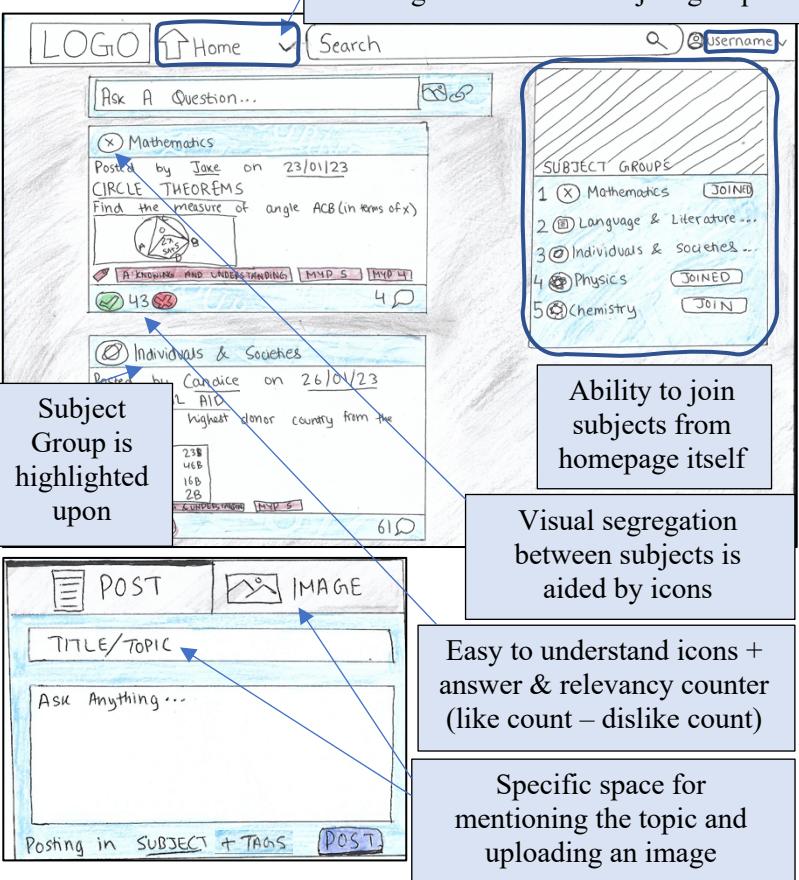


After creating 3-5 design ideas for each of the mentioned on-screen elements, I improvised them further and then started with the creation of 5 design ideas for the website. This process involved me mixing-and-matching all the on-screen element designs into 5 appealing website design ideas. Followed by the following, I will be choosing the 3 most appealing ideas (based on self-evaluation and a survey with the target audience) and will be then depicting them via an online medium.

Design Idea 1:

Highly user-friendly NavBar + Easy navigation between subject groups

 Elements will be removed or altered in size when screen dimensions are small



Subject Group is highlighted upon

Ability to join subjects from homepage itself

Visual segregation between subjects is aided by icons

Easy to understand icons + answer & relevancy counter (like count – dislike count)

Specific space for mentioning the topic and uploading an image

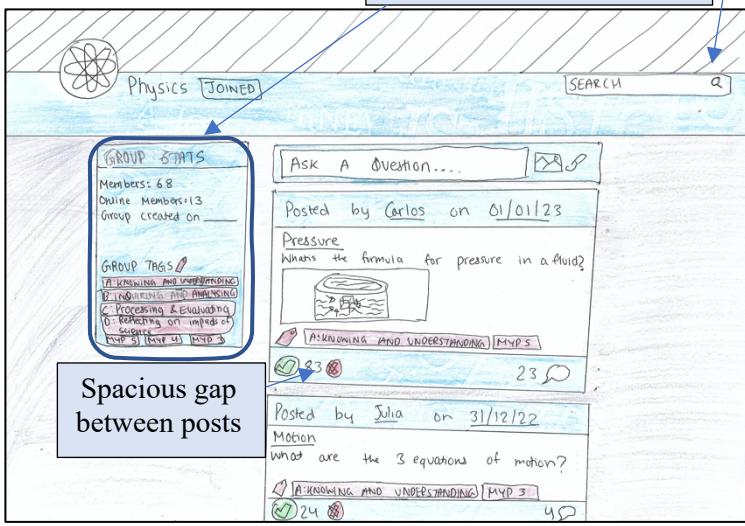


SERVICE PROVIDER
OR
Email
Password
Confirm Password
SIGN-UP
Already a member? Login

Minimalistic layout with a few colours making navigation intuitive

Search to find specific questions, topics or tags

Group Stats: Total Members and online members



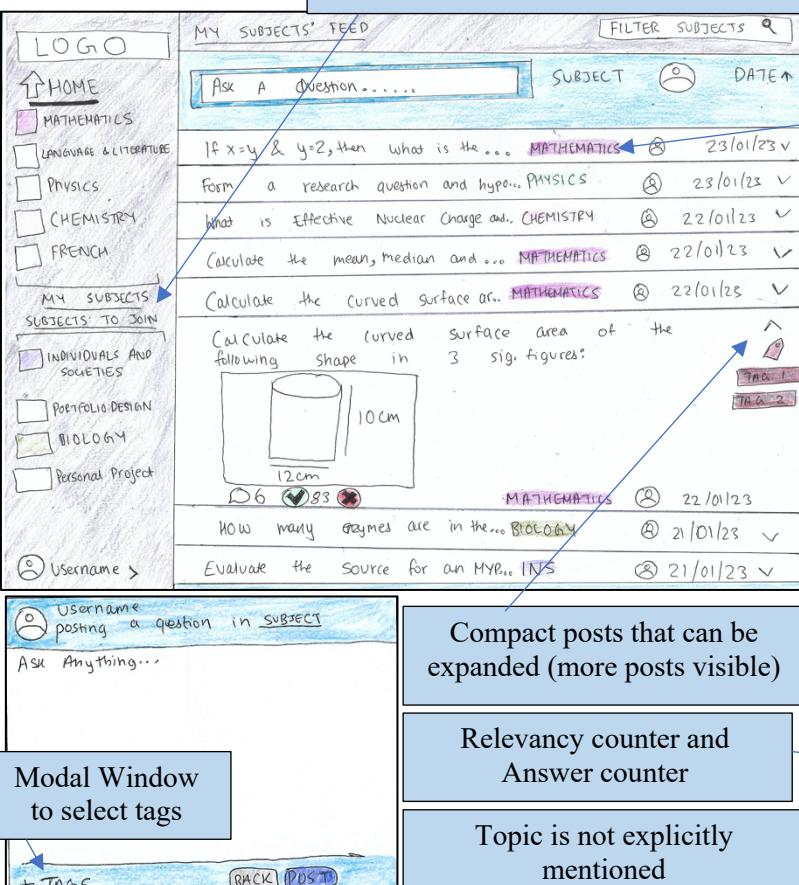
PHYSICS JOINED
GROUP STATS
Members: 68
Online Members: 13
Group created on...
GROUP TAGS
A: KNOWING AND UNDERSTANDING
P: PROBLEMS AND METHODS
C: READING & EVALUATING
D: WORKING OUT UNITS OF SCIENCE
MYP 3 (HAVE 43) MYP 5 (HAVE 43)
ASK A Question...
Posted by Carlos on 01/01/23
Pressure
What's the formula for pressure in a fluid?

A: KNOWING AND UNDERSTANDING MYP 5
43
Posted by Julia on 31/12/22
Motion
What are the 3 equations of motion?
A: KNOWING AND UNDERSTANDING MYP 3
24
42

Spacious gap between posts

Design Idea 2:

Subject list is divided into 2 categories



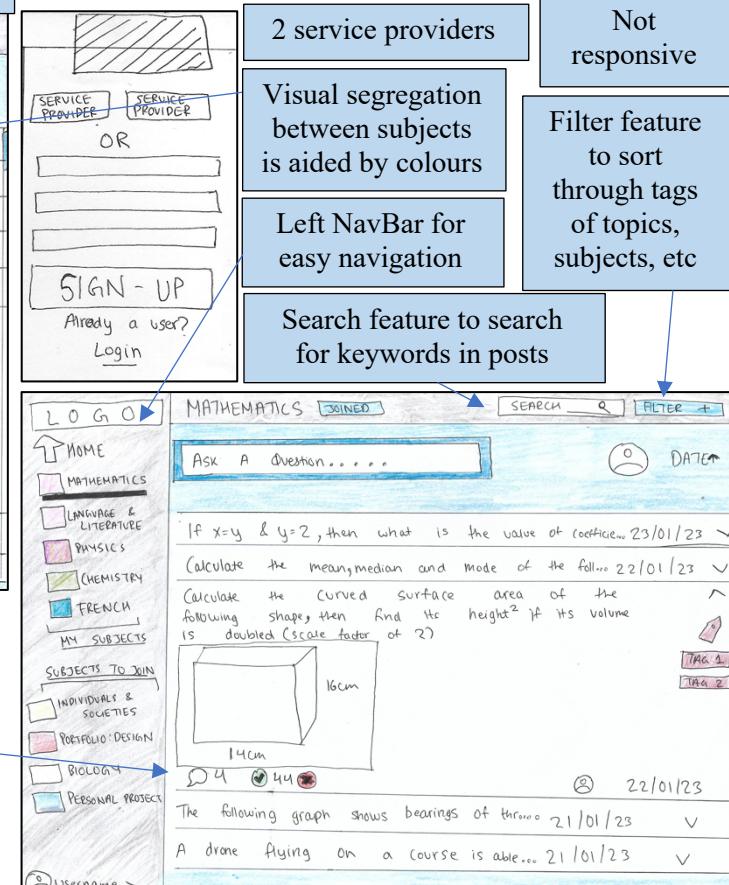
LOGO
HOME
MATHEMATICS
LANGUAGE & LITERATURE
PHYSICS
CHEMISTRY
FRENCH
MY SUBJECTS
SUBJECTS TO JOIN
INDIVIDUALS AND SOCIETIES
PORTFOLIO DESIGN
BIOLOGY
Personal Project
Username >
Username posting a question in SUBJECT
Ask Anything...
+ TAGS BACK POST

MY SUBJECTS' FEED
FILTER SUBJECTS
Ask A Question....
If $x=y$ & $y=2$, then what is the ... MATHEMATICS 23/01/23 ✓
Form a research question and hypo... PHYSICS 23/01/23 ✓
What is effective Nuclear Charge add... CHEMISTRY 22/01/23 ✓
Calculate the mean, median and ... MATHEMATICS 22/01/23 ✓
Calculate the curved surface ar... MATHEMATICS 22/01/23 ✓
Calculate the curved shape in ... MATHEMATICS 22/01/23 ✓
How many grymes are in the... BIOLOGY 21/01/23 ✓
Evaluate the source for an MYP... INS 21/01/23 ✓

Compact posts that can be expanded (more posts visible)

Relevancy counter and Answer counter

Topic is not explicitly mentioned



LOGO
HOME
MATHEMATICS JOINED
SEARCH FILTER DATE
SERVICE PROVIDER
OR
SIGN-UP
Already a user? Login
LOGO
HOME
MATHEMATICS JOINED
SEARCH FILTER DATE
If $x=y$ & $y=2$, then what is the value of coefficient... 23/01/23 ✓
Calculate the mean, median and mode of the foll... 22/01/23 ✓
Calculate the curved surface area of the following shape, then find its height² if its volume is doubled (scale factor of 2) 22/01/23 ✓
The following graph shows bearings of thr... 21/01/23 ✓
A drone flying on a course is able... 21/01/23 ✓

2 service providers

Not responsive

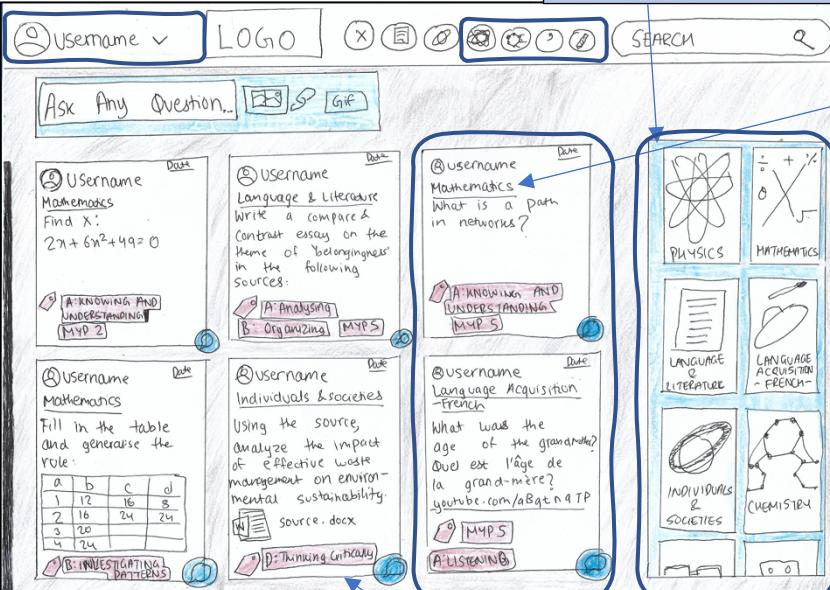
Visual segregation between subjects is aided by colours

Left NavBar for easy navigation

Search feature to search for keywords in posts

Design Idea 3:

Subject List has assorted subjects
(Joined and yet to be joined)



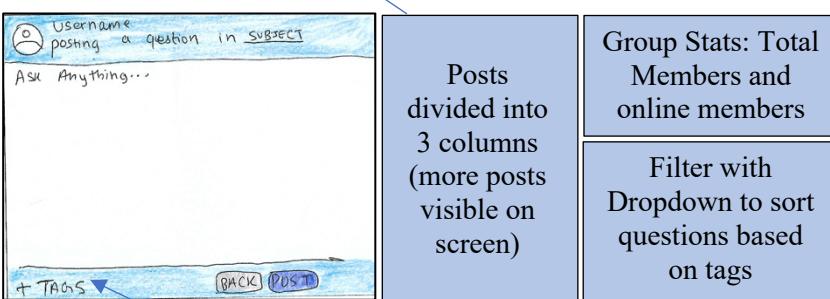
Only the subjects' name is mentioned on the post with no color or icon (No Visual Segregation)

Topic of the question is not explicitly mentioned

Cover Image on Authentication Window + 1 service provider

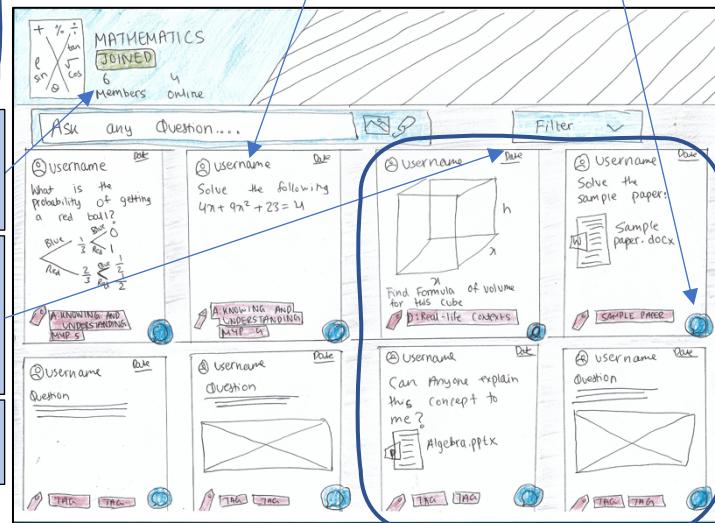
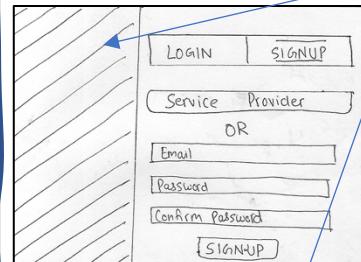
Username is highlighted upon

Ability to only answer (with no counter) and disability to vote on relevancy of posts



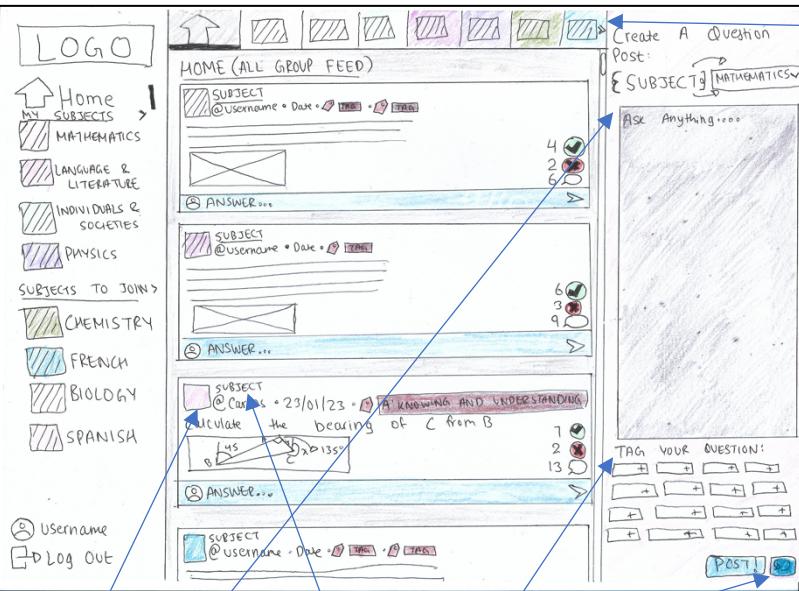
Group Stats: Total Members and online members

Filter with Dropdown to sort questions based on tags



Tags can be assigned from a modal window that opens when the user wants to select tags

Design Idea 4:



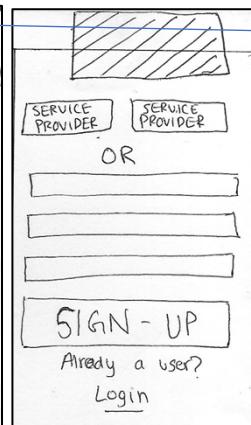
Sticky (Fixed) posting page for effortless and less time consuming method of posting questions or doubts

Easy selection of tags

Reset button to clear text

Individual approval, disapproval and answers counter

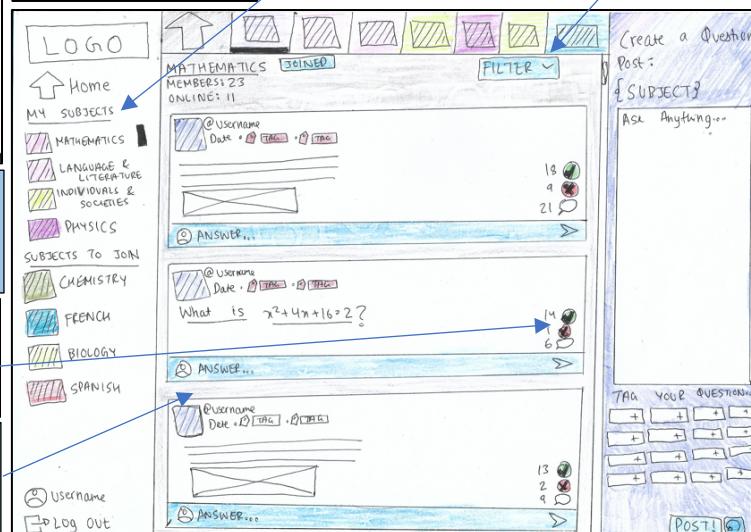
Subject is main heading of posts (highlighted upon)



Instead of navigating through pages, this design idea is based on the functionality of selecting the subject and changing the feed to that on screen (You can easily scroll through feeds of different subjects).

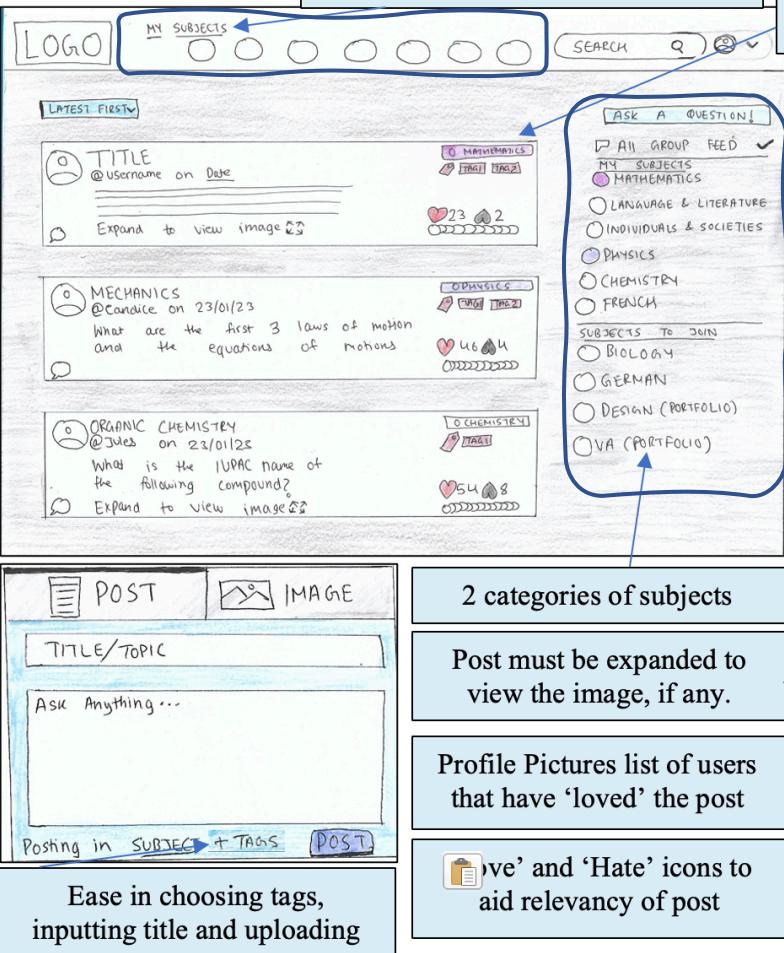
Filter with Dropdown to sort questions based on tags

Subject list is divided into 2 categories

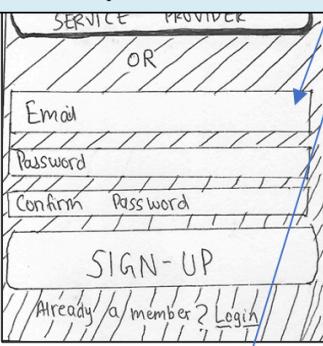


Design Idea 5:

Users' subjects are available on NavBar (top) for easy navigation



Visual segregation between subjects is aided by colours

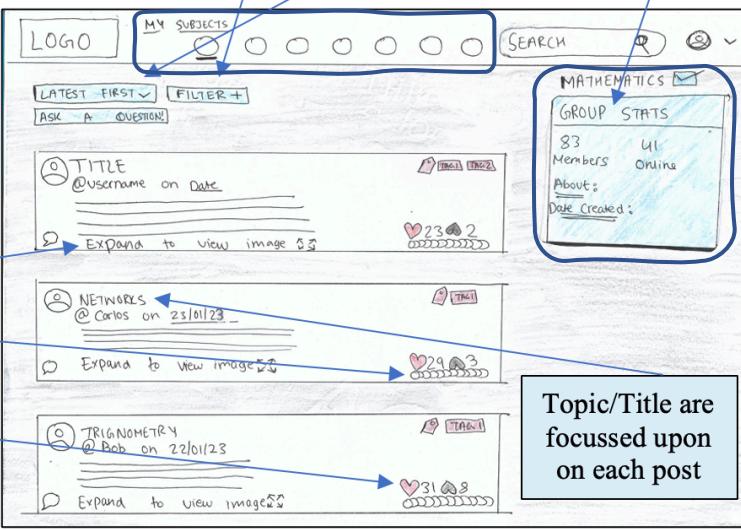


Cover Image on Authentication Window

Ability to filter posts and sort feed based on tags

Group States: About, Date Created, Members and Online Members

Ability to sort the feed based on the time the post was

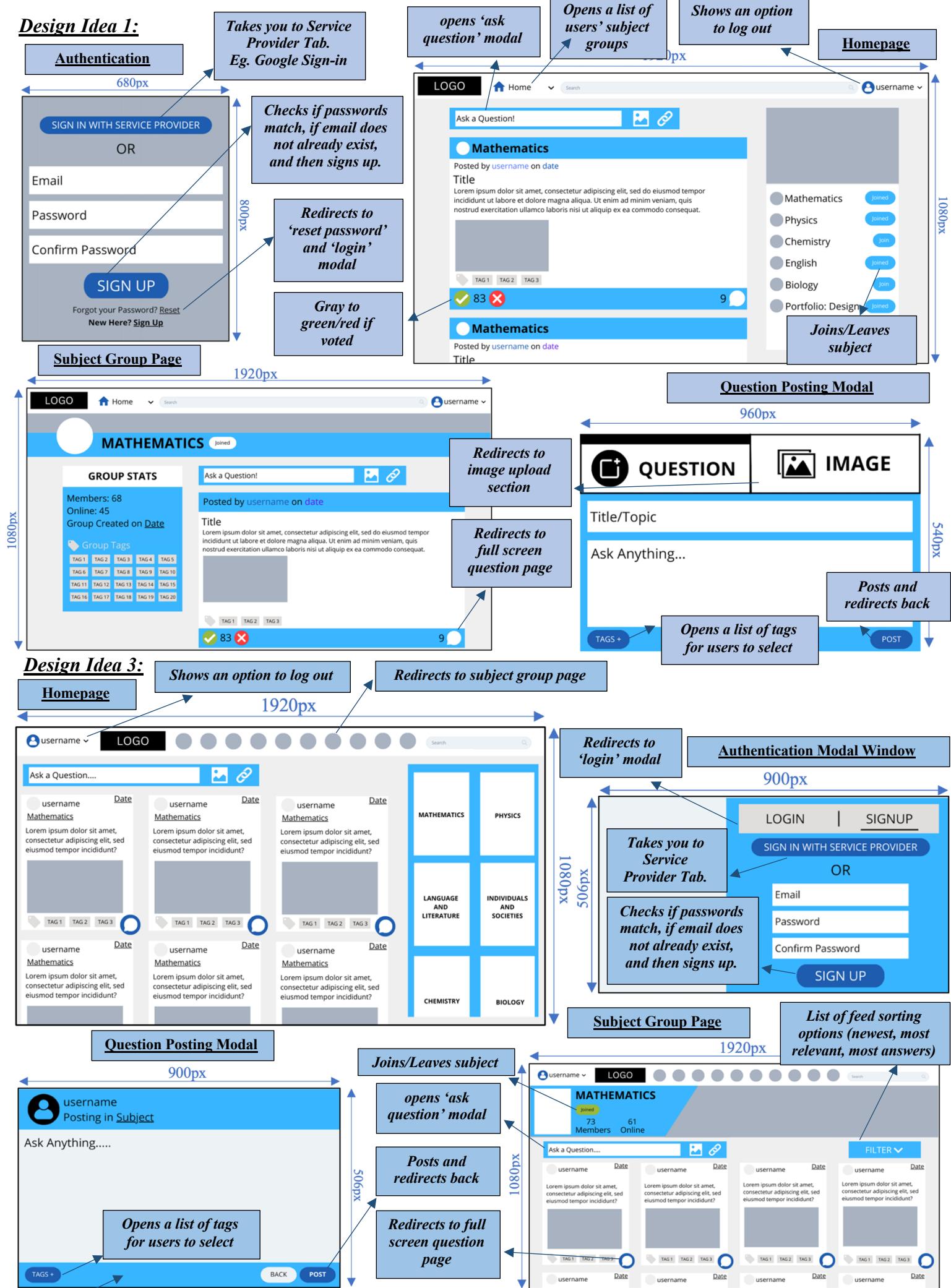


Topic/Title are focussed upon on each post

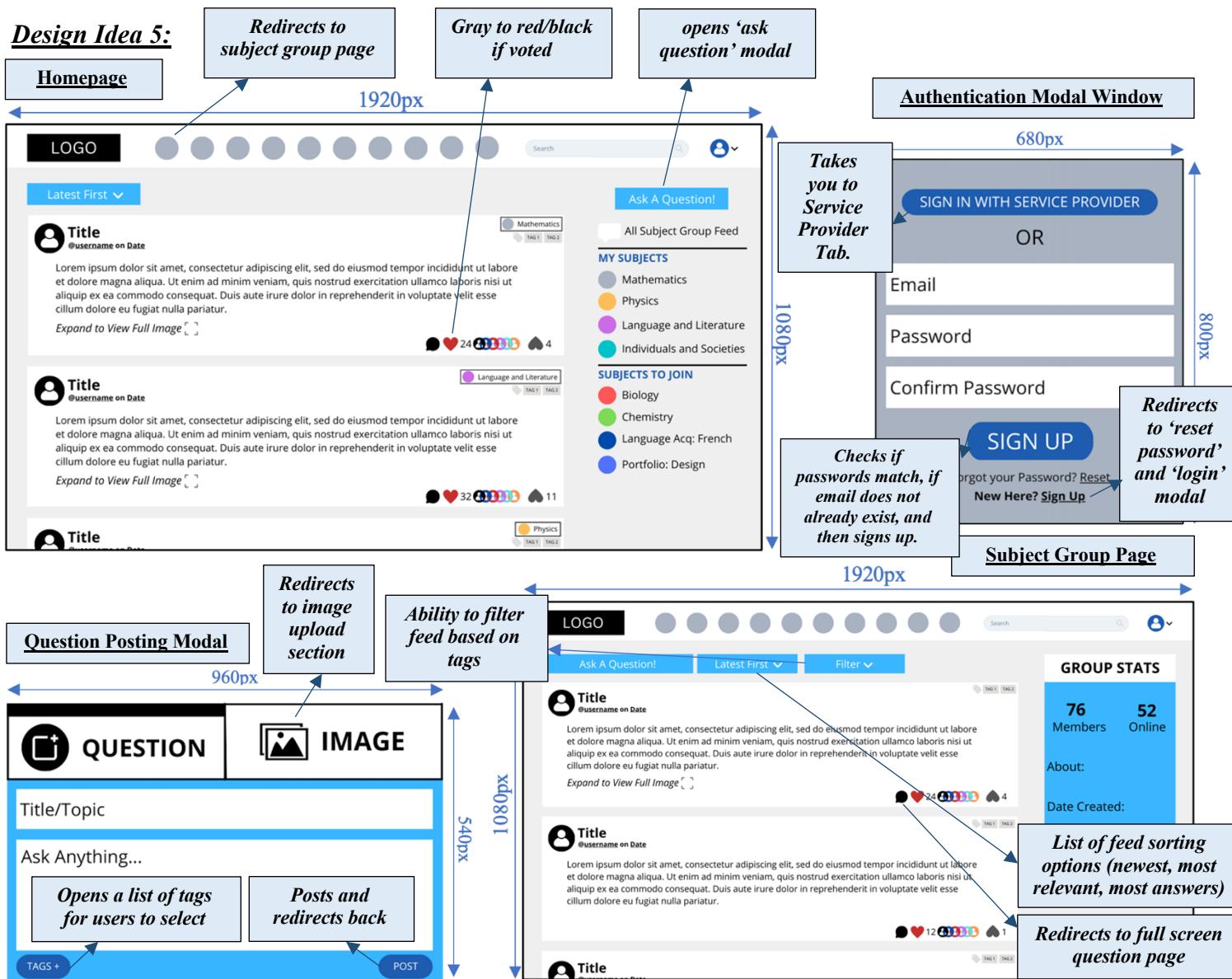
After this, I connected with the client (Appendix 2.2) to finalize and create the top three design ideas online while incorporating the feedback from the client and employing her most preferred features and layout:

Specification	Design Idea 1	Design Idea 2	Design Idea 3	Design Idea 4	Design Idea 5
Colour Palette & Theme /2	2 as primary color is blue and outline is black/white	2 as primary color is blue and outline is black/white	2 as primary color is blue and outline is black/white	1 as there is no primary focus on blue	2 as primary color is blue and outline is black/white
Design of Icons and Buttons /2	2 as all icons are monochromatic and contrasting	1 as all colours of subjects may not be contrasting	2 as all icons are monochromatic and contrasting	2 as all icons are monochromatic and contrasting	2 as all icons are monochromatic and contrasting
Font /2	2 as all text elements' sizing is based on what they signify and font will be open sans	1 as a similar size is used throughout despite where the text element is placed	2 as all text elements' sizing is based on what they signify and font will be open sans	1 as a similar size is used throughout despite where the text element is placed	2 as all text elements' sizing is based on what they signify and font will be open sans
Responsive Nature /2	2 as appropriate elements will be hidden in a small size	0 as it is not responsive	2 as appropriate elements will be hidden in a small size	0 as it is not responsive	2 as appropriate elements will be hidden in a small size
On-Screen Elements /7	7 as all on-screen elements are present and visible	5 as bad header and posts need to be clicked on to see image	6 as it does not have an option to like or dislike posts	6 as image is not focussed upon	6 as the post must be expanded to view the image
Navigation /5	5 as all navigation matches specifications	5 as all navigation matches specifications	5 as all navigation matches specifications	5 as all navigation matches specifications	5 as all navigation matches specifications
Website Pages /4	4 as all website pages are present	3 as there is no full screen post page	4 as all website pages are present	4 as all website pages are present	4 as all website pages are present
Modal Windows /3	3 as all modal windows are present	3 as all modal windows are present	3 as all modal windows are present	3 as all modal windows are present	3 as all modal windows are present
Average overall rating from target audience /3	3 but can be improved by reduction of white space	2 as it is "not user-friendly", "cluttered", and "aesthetics" can be improved	2 as it is "cluttered to an extent", and doesn't have voting abilities or counters	2 as it is "cluttered to an extent", and "extremely colourful"	2 but can be improved by having different icons for like and dislike functionalities
Total /30	30/30	22/30	28/30	24/30	28/30

We can analyze that Design Idea 1, 3 and 5 were awarded the greatest number of points, hence, I will be now converting them into digital designs at this step with the help of 'Canva':



Design Idea 5:



For the last step, I connected the design ideas with the target audience, unit plan and design specifications. This further helped me finalise the final design idea that will be presented in strand B.3 on the following page.

Design Idea	Connection To Target Audience (2 points)	Connection To Unit Details (2 points)	Connection To Design Specifications (2 points)	Total
Design Idea 1	This connects with the target audience as it allows the users to post questions and answers, while also being able to join groups and navigate easily. Moreover, the UI is appealing with vibrant theme color and minimalistic approach. (2/2)	This connects with the unit plan as it aims to promote academic collaboration effectively. (2/2)	It fulfils all design specifications successfully, with minimal scope of improvement. (2/2)	6/6
Design Idea 3	This connects with the target audience as it allows the users to post questions and answers, while also being able to join groups. However, navigating is a little tricky as there a limited number of subjects that can come on the NavBar, decreasing user-friendliness (1/2)	This connects with the unit plan as it aims to promote academic collaboration effectively. (2/2)	This design idea fulfils most design specifications successfully, however, does not have an option to like/dislike posts and does not show the answer counter. (1.5/2)	4.5/6
Design Idea 5	This connects with the target audience slightly as instead of having images as icons, it has colors to color code groups. And because the target audience prefers images to depict visual differences, this is not quite apt for them. (1/2)	This connects with the unit plan as it aims to promote academic collaboration effectively. (2/2)	This design fulfils almost all design specifications successfully, however, this too does not have an answer counter for users to know whether a question has answers. Moreover, there is scope of improving the UI. (1/2)	4/6

Strand 3- Present the chosen design and fully and critically justify its selection with detailed reference to the design specification

After creating a range of several design ideas and evaluating them from various sources through two stages, I finally decided to select the final design idea. Here is a table incorporating the evaluation process of all final design ideas, clearly depicting and justifying the reason for the chosen design:

Design Idea	Design Idea 1	Design Idea 2	Design Idea 3	Design Idea 4	Design Idea 5
Stage 1: Self Evaluation and Survey with Target Audience	30/30 ✓	22/30 ✗	28/30 ✓	24/30 ✗	28/30 ✓
Stage 2: Evaluation by Client and Self-Evaluation	14/15 ✓	NA	11/15 ✗	NA	10/15 ✗
Total	Final Design	Cancelled	Cancelled	Cancelled	Cancelled

Hence, I decided to present the final design with incorporated feedback from the client that I will be following to create my final solution:

Summary of Feedback that I incorporated: Reduced blank space by elongating the on-screen elements, making it more modern by rounding the edges of the on-screen elements, and reducing brightness of colours by changing shade of blue, ultimately making it look more professional for the target audience.

Final Website Design with outlined Navigation and a Handful of Tentative Graphics :

HOME PAGE

AUTHENTICATION

SUBJECT GROUP

QUESTION-POSTING WINDOW

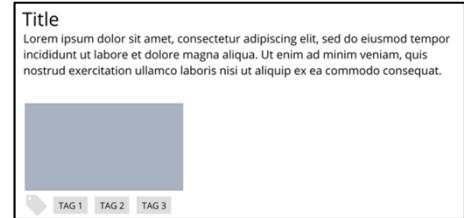
ANSWERING QUESTIONS

Justification of Chosen Design:

The following are the reasons that this design has been chosen:

1. Fonts used are legible, pleasant, and appealing

- The client was extremely happy with the font and believed that it is appealing for the target audience
- The target audience themselves conveyed through the results of the survey that they prefer the font as it is easy to read quickly alongside being appealing and professional looking
- The font size is based on the significance of what it is representing



2. Design of icons and on-screen elements are appealing & colours are contrasting to the background

- This helps make these elements call-to-action, meaning that they are extremely visible and they can easily be spotted by the user
- The client also prefers the colours chosen for the all on-screen elements such as icons
- The icons and all other on-screen elements have rounded edges making the design appealing and appearing modern



3. Organized and Uncluttered Pages & Windows (Homepage and Subject Group Page)

- Layout is extremely appealing geometrically as it is made with the assistance of ratio and proportion
- There are 2-3 posts at max that are visible per scroll making users pay focus on them efficiently
- The client and the target audience feel that the layout / structure of the pages is appealing
- All modal windows are minimalistic helping the user understand its function and features easily

4. Navigation Bar is extremely evident and is highly efficient for navigation

- There is a modal window that opens from the navigation bar to navigate between subject groups
- Navigation bar easily helps the user search for posts, view their username, log out as well as redirect to the home page with the use of the site's logo

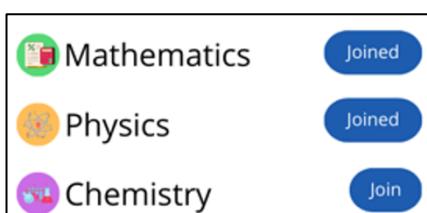
5. Easy to use authentication window

- Authentication Window is extremely minimalistic and professional, making the design intuitive
- Allows the user to easily switch between "Login" and "Signup" views as per their choice

6. Interactive, and well-designed layout of Posts

- All posts (On the Homepage) focus on the subject making it extremely easy for users to find questions from the homepage itself
- Options of 'approving', 'disapproving' and 'answering' posts extremely easily. Moreover, each of the functionality has a counter to help users know if the post is relevant or not. The counters are a relevancy counter (calculated by number of approvals – number of disapprovals) and an answer counter (calculated by total number of answers/replies given on a post)
- Shows tags assigned on a post, date posted, username of the user that posted, subject with icon (on homepage feed), as well as showing a highly legible topic/title of the question
- Helps the users see the image (if any) of a post easily without the need of zooming in

7. Interactive Subject List on Homepage



- Allows users to join subjects from the homepage itself making it extremely convenient and time-saving
- Subject List has a cover image and all individuals subjects have an icon making it extremely graphically appealing
- The client and target audience believe that the design of the subject list invite the user to join them

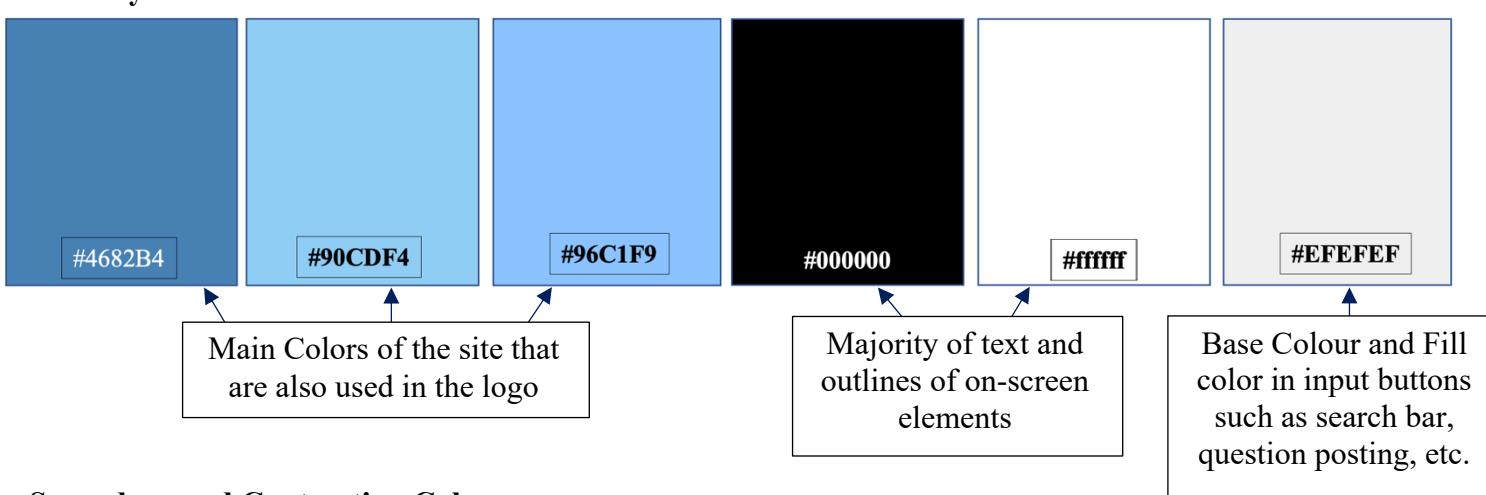
Strand 4- Develop accurate and detailed planning drawings/diagrams and outline requirements for the creation of the chosen solution.

Technical Requirements for the Creation of the Website:

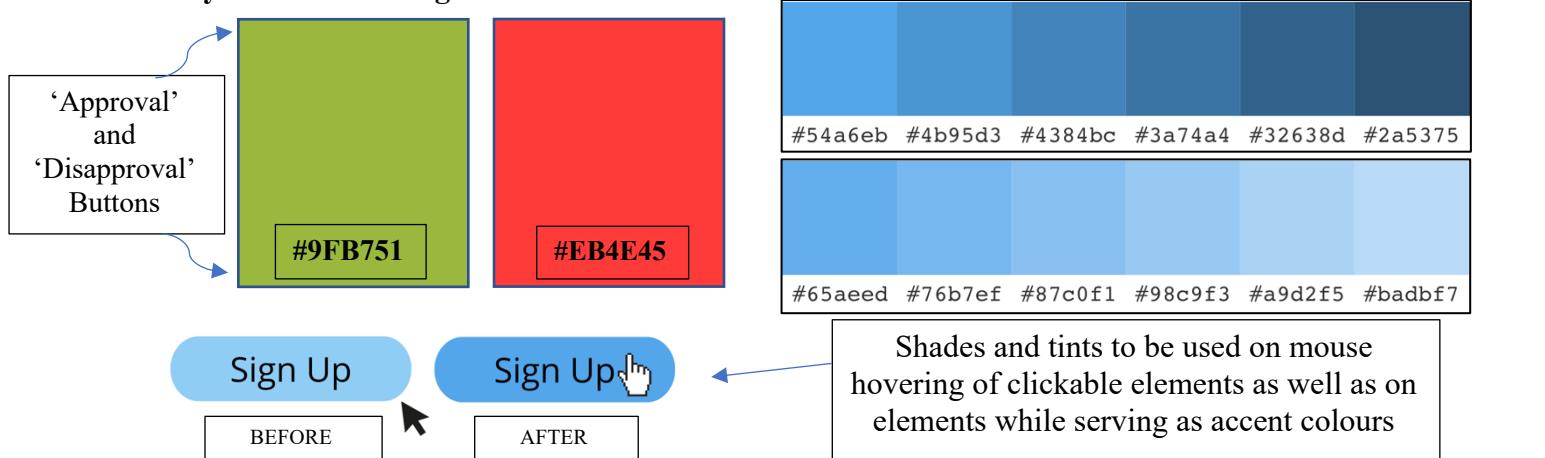
Technology Stack	Tools
Graphics and Layout Assistance	Adobe Photoshop, Adobe XD, Canva, React Icons
Frameworks, Software and Programming Languages	Next.js, Chakra UI, TypeScript, VSCode
Authentication and Database	Firebase
State Management for Authentication	Recoil
Tentative Deployment/Hosting	Vercel

Branding Requirements:

Primary Colors-



Secondary and Contrasting Colors:



Font Requirements:

Open Sans, Sans Serif-

Headers: 40px, 42px

MATHEMATICS

Sub-Headers: 28px, 30px

Title GROUP STATS Posted by username on date

Regular Text: 20px, 22px

Lore ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

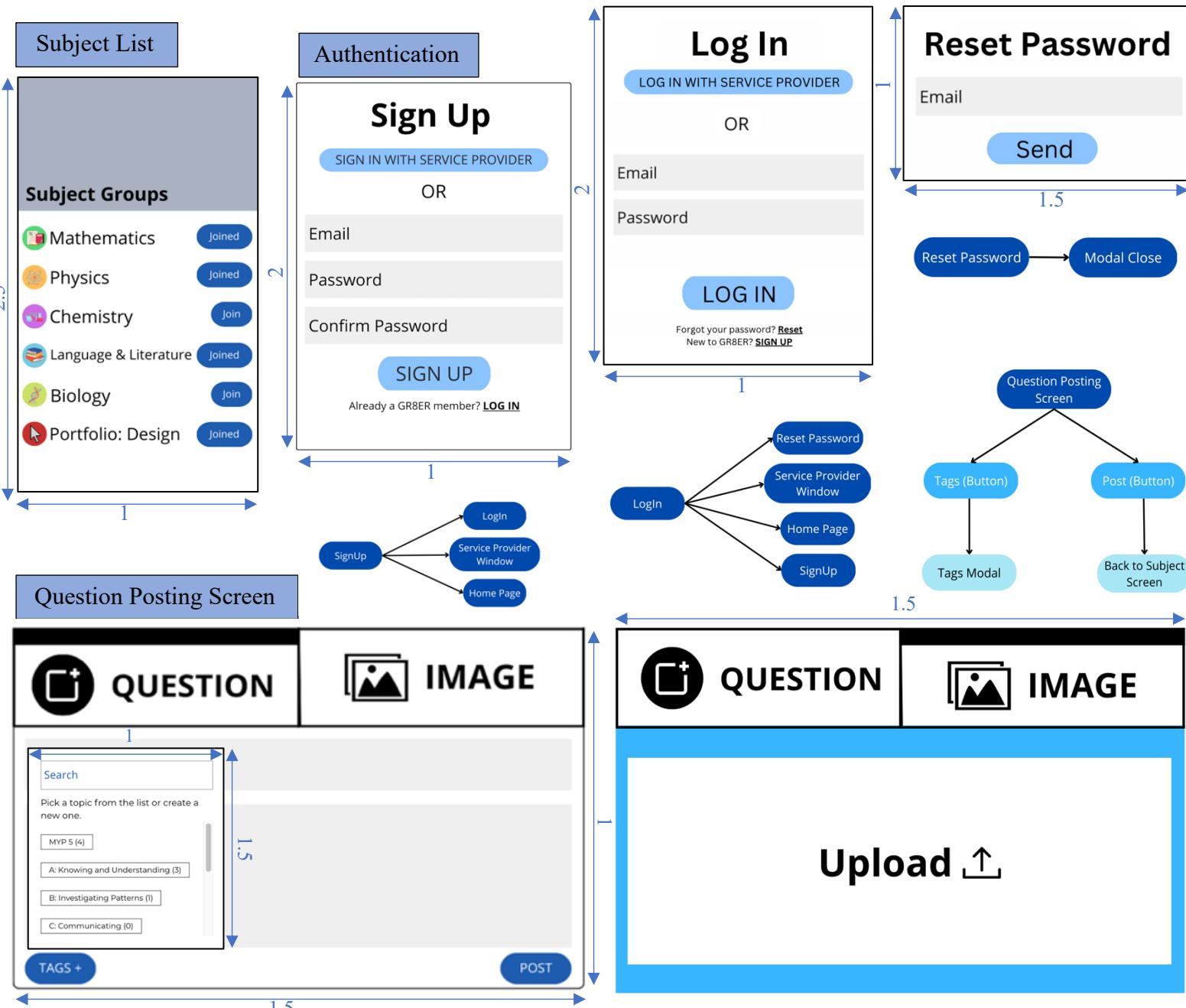
TAG 1 TAG 2 TAG 3

Production Plan:

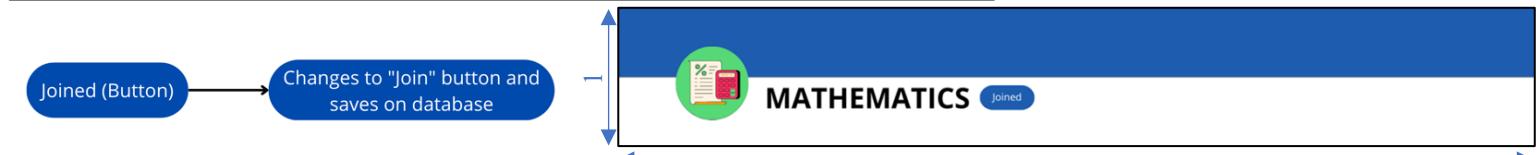
Stage	Steps + Requirements	External Frameworks	Approximate Time
Beginning Project	Installing dependencies, frameworks, and other technology stack components, running the code on local host	Terminal	30 minutes
Creation of NavBar + Authentication	NavBar structure, Search Input Component, Authentication Buttons/Modal, State Management Setup, User Dropdown Menu, Subject Group Directory	Firebase, Recoil, Chakra UI	3 hours
Creation of Subject Groups	Structure of Subject groups with header, Body of subject groups (input, character count), joining & leaving subject group functionalities, linking users' joined subject group list to navbar directory, Subject Specific Group Feed	Chakra UI, Firebase	5 hours
Creation of Posts and functionalities	Post layout (Title, Body, Buttons, Image Upload Component), Post interactions (Approval, Disapproval, and Answers), Post Tags, Answering functionality, Saving Post Data to Database, Deleting Posts	Firebase	8 hours
Creation of All Subject List on Homepage	Creating numbered Subject List with buttons allowing user to Join + Functionality to Navigate towards Subject Group Page + Additional Supporting Components	Firebase, Recoil	1 hour
Deployment	Deployment with Vercel	Vercel	30 minutes

Creating a Front-End Prototype of the Web App:

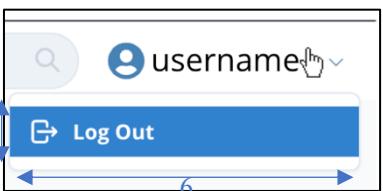
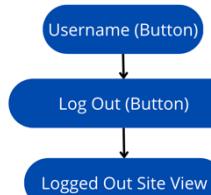
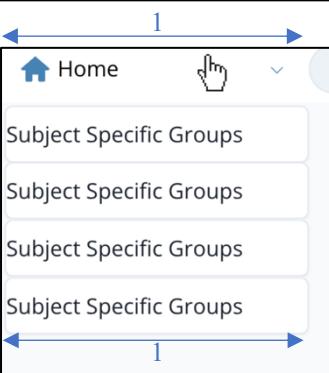
Outlining the basic requirements for the front end of the website and creating a basic outline of the website via a no-code platform; Adobe XD and showing navigation diagrams:



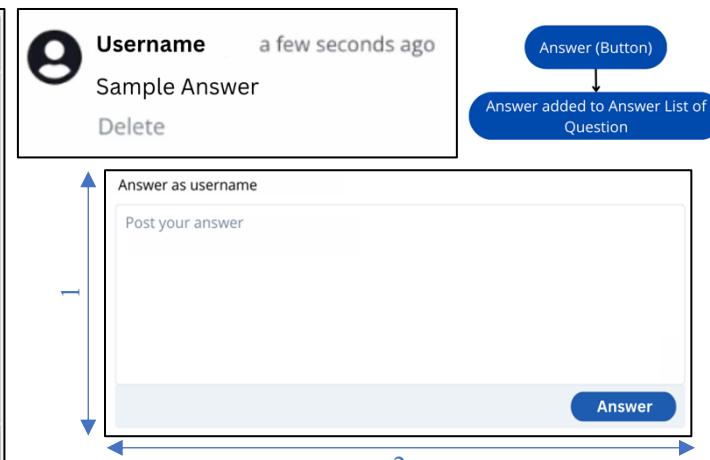
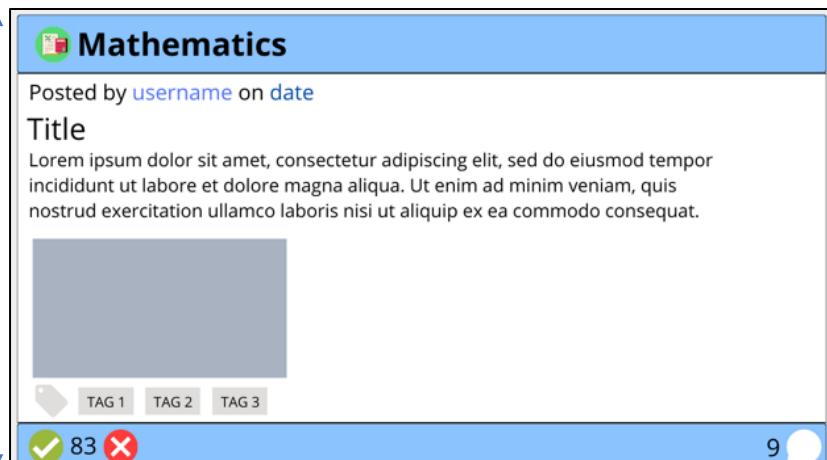
Subject Headers



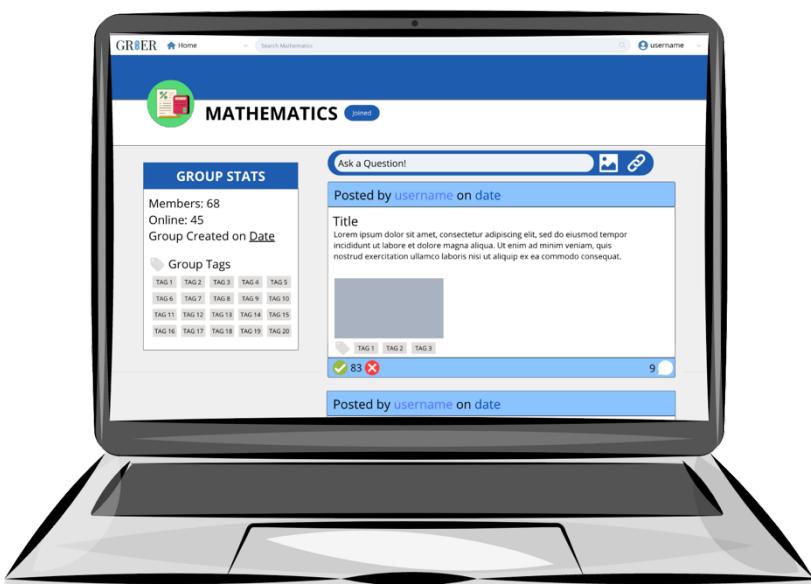
Navigation Bar



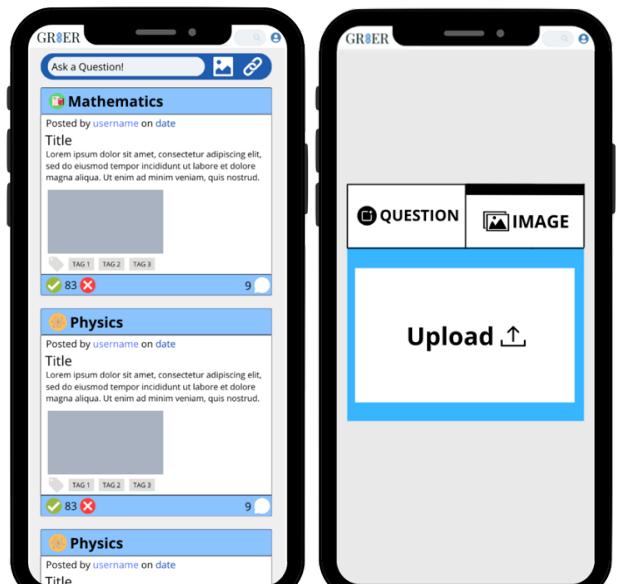
Post Layout



Preview on Big Screen Sizes/Laptops



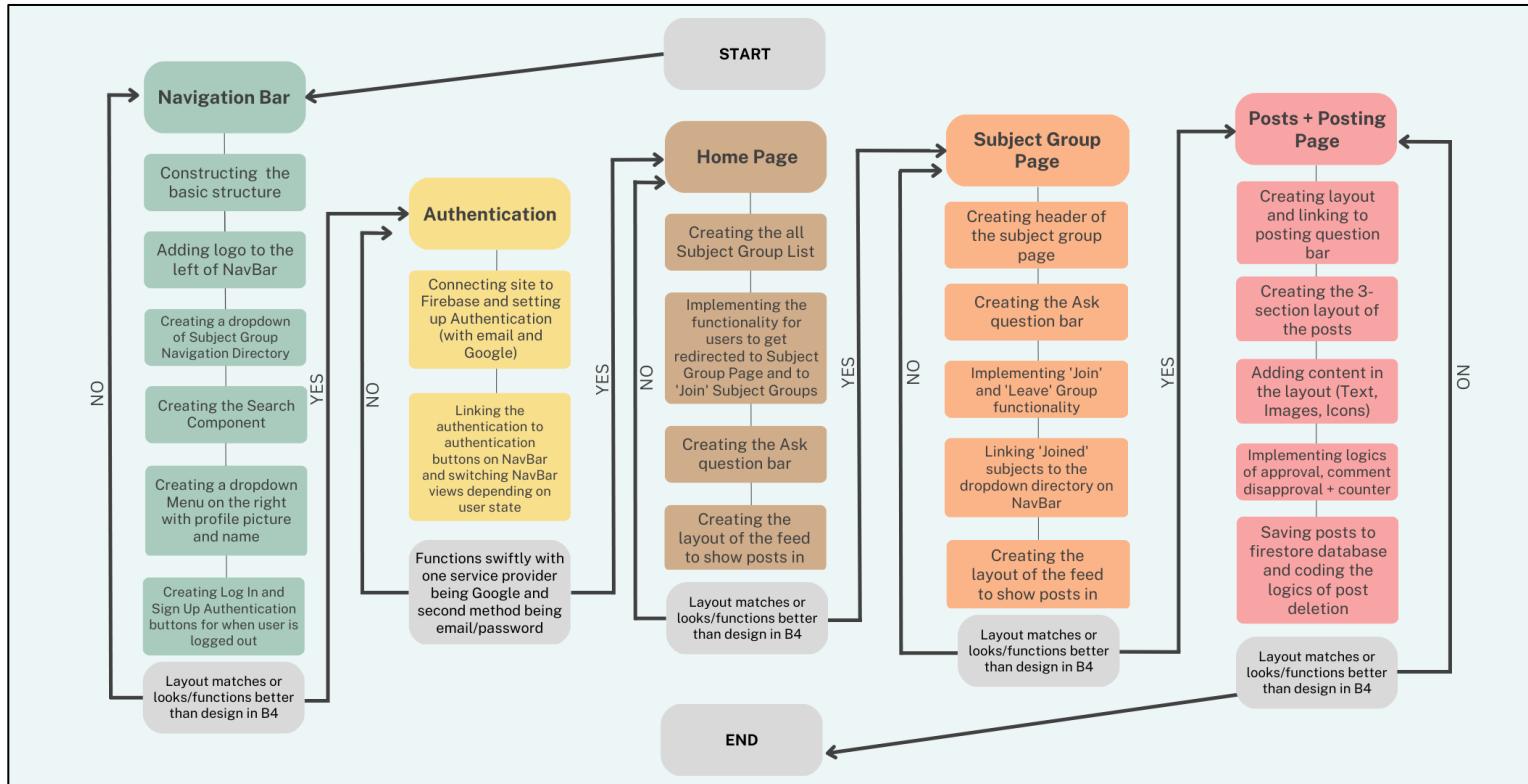
Preview on Small Screen Sizes/Phones



CRITERION C: CREATING THE SOLUTION

Strand 1- Construct a detailed and logical plan, which describes the efficient use of time and resources, sufficient for peers to be able to follow to create the solution

Flowchart depicting the overview of the Production Plan:



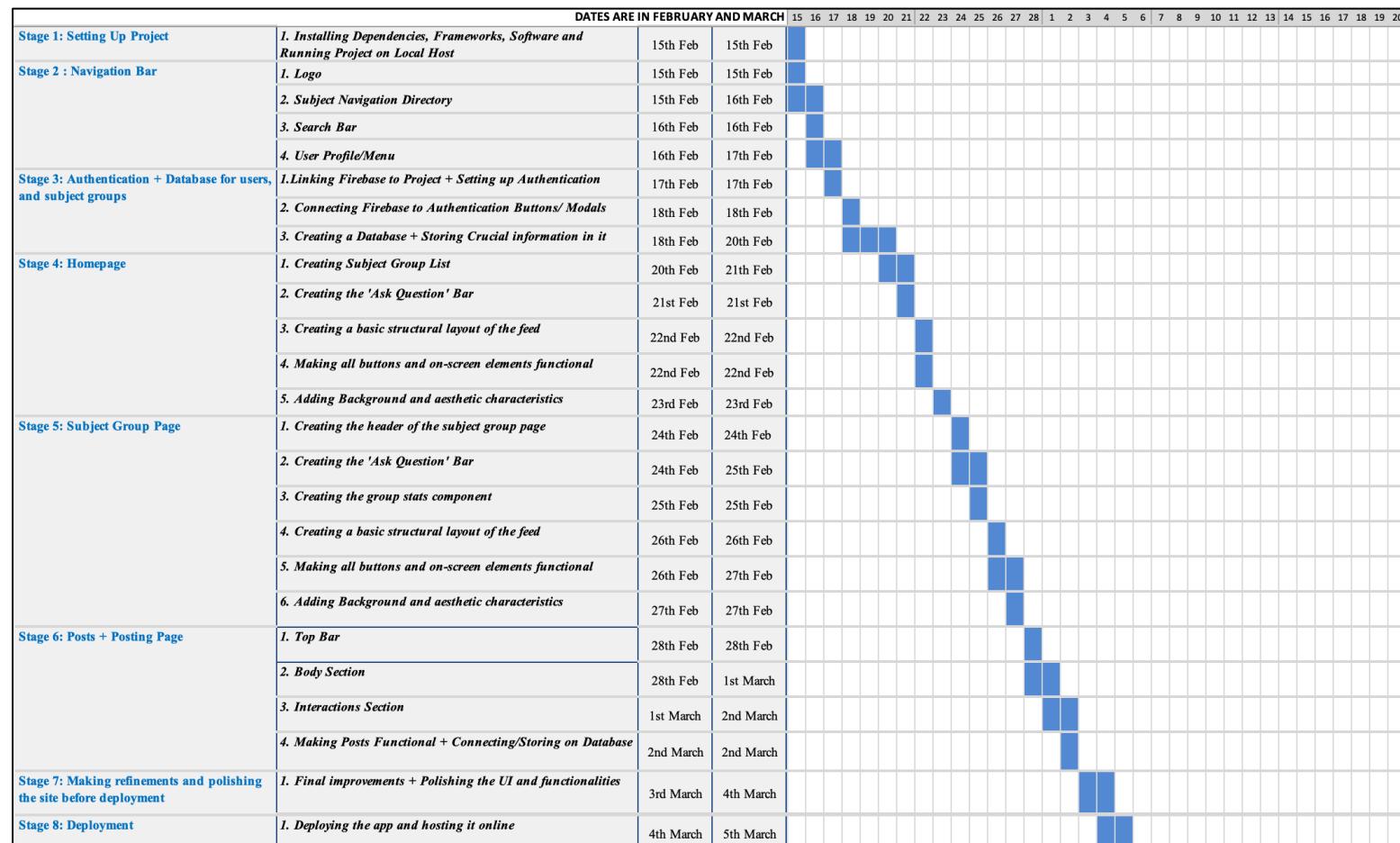
Final Logical Production Plan:

S.No	Stage	Tasks and Details	Software Required	Time Constraint	Quality Control
1	Setting Up Project	Installing Dependencies, Frameworks, Software and Running Project on Local Host	Next.JS, Recoil, Chakra UI, Terminal	30 minutes	Making sure I download latest versions of all technology stacks
2	Navigation Bar	<p>Creating the Basic Structure: Dividing the NavBar into 4 segments from left to right:</p> <ul style="list-style-type: none"> - Logo: Importing the logo and making its click redirect to homepage - Subject Navigation Directory: Making a dropdown with a list of all users' subjects that redirect to subject group page (Will be fully implemented in stage 3) - Search Bar: Adding background colour, search functionality, search icon, placeholder text - User Profile: Adding a user profile and username component, dropdown to 'Log Out' 	Next.JS, Chakra UI, Recoil, React Icons	3 hours	Making sure that the NavBar (layout, dimensions, colours, fonts etc), matches or looks/functions better than the design in criteria B4

3	Authentication + Database for users, and subject groups	<p>Linking Firebase to project and Setting up Authentication with Google and Email/Password</p> <p>Connecting Firebase to Sign up and Login modal windows using Firebase Hooks</p> <p>Creating a database on Firebase that will store user data, users' subjects, all subjects and all posts (+ finishing navigation directory of NavBar with firebase transactions)</p>	Firebase, Firebase Hooks, React Icons	1.5 hours	Making sure the authentication on site is smooth and connects to firebase client easily without any delay
4	Homepage	<p>Creating the all Subject Group List on the right side of the Homepage with a cover image, numbering, subjects, subject icons, and buttons to join/leave subjects.</p> <p>Creating the ask question bar below the navigation bar with an input function, image icon to directly upload images, and a link icon to directly attach links</p> <p>Creating a basic structural layout of the feed</p> <p>Making all buttons and elements functional</p> <p>Adding Background</p>	Next.JS, Chakra UI, React Icons, Recoil	4 hours	Making sure that the Homepage (layout, dimensions, colours, fonts etc), matches or looks/functions better than the design in criteria B4
5	Subject Group Page	<p>Creating the header of the subject group page encompassing a subject icon, name, join button and 2 cover colours.</p> <p>Creating the ask question bar below the navigation bar with an input function, image icon to directly upload images, and a link icon to directly attach links</p> <p>Creating the group stats component with the total member count, online member count, date the group was created, and a list of all tags on the group that have the ability to filter out all posts posted with the tags chosen</p>	Next.JS, Chakra UI, React Icons, Recoil	4 hours	Making sure that the Subject Group Page (layout, dimensions, colours, fonts etc), matches or looks/functions better than the design in criteria B4

		Creating a basic structural layout of the feed			
		Making all buttons and elements functional			
		Adding Background			
6	Posts + Posting Page	Creating the layout of posts with 3 sections: <ul style="list-style-type: none"> - Top Bar: Displaying Subject Name and Icon on Homepage and Post (Post Details when on Subject Group Page) - Body Section: Post Body (Title, Text, Tags, image, and post info (only on homepage)) - Interactions Section: Approval, Disapproval, Answer + Counters 	Next.JS, Chakra UI, Firebase, Recoil, React Icons	3 hours	Making sure that the Posts (layout, dimensions, colours, fonts etc), matches or looks/functions better than the design in criteria B4
		Connecting Posts to Database			
7	Making refinements and polishing the site before deployment	Final improvements + Polishing the UI and functionalities	Next.JS, Chakra UI	1 hour	Making sure everything complies with the design specifications and removing/adding elements to make the site better
8	Deployment	Deploying the app and hosting it online	Firebase, Vercel	1 hour	Making sure the site functions as intended

Production Plan - Gantt Chart:



Strand 2 and 3- Demonstrate excellent technical skills when making the solution and follow the plan to create a solution, which functions as intended

Technical Skills

Stage 1 (Setting Up Project) (15th Feb 2023) :

Step 1 (15th Feb 2023): For the first step, I created a new app using next.js ‘npx’ commands and then downloaded fonts + other necessary packages that I will be using throughout the course of my app

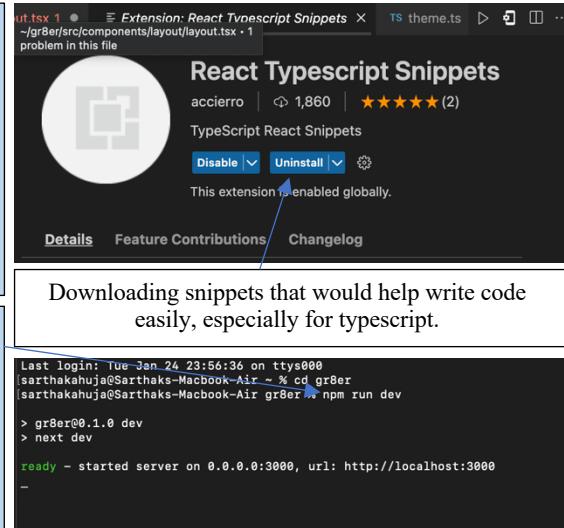
```
Last login: Tue Jan 24 23:56:11 on ttys000
sarthakahuja@Sarthaks-Macbook-Air ~ % npx create-next-app@latest
What is your project named? gr8er
Would you like to use TypeScript with this project? No / Yes
Would you like to use ESLint with this project? No / Yes
Would you like to use 'src/' directory with this project? No / Yes
Would you like to use experimental 'app/' directory with this project? No / Yes
What import alias would you like configured? /*/
Creating a new Next.js app in /Users/sarthakahuja/gr8er.

Using npm.

Installing dependencies:
- react
- react-dom
- next
- @next/font
- typescript
- @types/react
- @types/node
- @types/react-dom

[...] reify:caniuse-lite: timing reifyNode:node_modules/css-type Completed in 909ms
sarthakahuja@Sarthaks-Macbook-Air gr8er % npm install @fontsource/open-sans
added 1 package, and audited 334 packages in 6s
sarthakahuja@Sarthaks-Macbook-Air gr8er % npm i @chakra-ui/react
[...] idealTree:gr8er: sill idealTree buildDeps
[...] recoil:gr8er: sill idealTree buildDeps
```

The command ‘npm’ is used to download JavaScript packages from Node Package Manager and execute commands. The command ‘npx’ is used to mainly start new projects.



Downloading snippets that would help write code easily, especially for typescript.

Step 2 (15th Feb 2023): Updating brand colours, creating styling variants for buttons (in Chakra UI theme file) and wrapping main layout in Chakra UI Provider

Outline of Data Flow: All UI styling such as the brand colour, fonts and background colour has been written in theme.ts file. The styling for the buttons with variants has been written in button.ts file, that is further called within theme.ts which is ultimately called in the main _app.tsx file with the Chakra Provider Component.

```
src > chakra > ts theme.ts > theme > styles
1 // 1. Import `extendTheme`
2 import '@fontsource/open-sans/300.css'
3 import '@fontsource/open-sans/400.css'
4 import '@fontsource/open-sans/700.css'
5 import { extendTheme } from "@chakra-
6 import { Button } from './button'
7
8 // 2. Call `extendTheme` and pass your
9 export const theme = extendTheme({
10   colors: {
11     brand: {
12       100: "#4682B4",
13     },
14   },
15   fonts: {
```

```
src > pages > ts _app.tsx > ...
1 // import '@styles/globals.css'
2 import { ChakraProvider } from '@chakra-ui/react'
3 import type { AppProps } from 'next/app'
4 import { theme } from '../chakra/theme'
5 import Layout from '@components/Layout/layout'
6 import { RecoilRoot } from 'recoil'
7
8 function App({ Component, pageProps }: AppProps) {
9   return (
10     <ChakraProvider theme={theme}>
11       <Layout>
12         <Component {...pageProps}/>
13       </Layout>
14     </ChakraProvider>
15   )
16 }
```

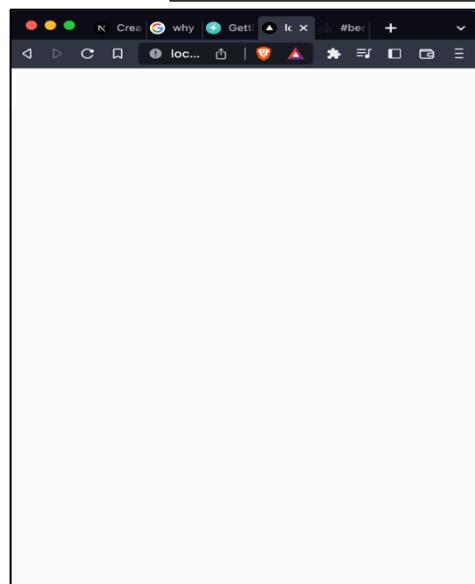
Providing the theme as a prop of the Chakra Provider for the entire web app’s design (layout).

Current Site Preview

```
src > chakra > ts button.ts > ...
1 import type { ComponentStyleConfig } from '@chakra-
2
3 export const Button: ComponentStyleConfig = {
4   baseStyle: {
5     borderRadius: "60px",
6     fontSize: "10pt",
7     fontWeight: 700,
8     _focus: {
9       boxShadow: "none",
10     },
11   },
12   sizes: {
13     sm: {
14       fontSize: "8pt",
15     },
16     md: {
17       fontSize: "10pt",
18       // height: "28px",
19     },
20   },
21   variants: {
```

Defining the main brand color and font as well as the background color to be implemented throughout the project.

Creating a default (baseStyle) for buttons, further defining their size depending on the screen size to make them responsive, and providing different variants of the buttons (solid and outline)



Stage 2 (Navigation Bar) (16th Feb 2023) :

Step 1: Creating NavBar File, adding the Logo of the site on the left of the NavBar and making it responsive

```
rc > components > Navbar > ts Navbar.tsx > navbar > md
```

```
1 import React from 'react';
2 import { Flex, Image } from '@chakra-ui/react';
3
4
5 const navbar:React.FC = () => {
6   return <Flex bg='white' height='44px' padding='6px 12px' >
7     <Flex align="center">
8       <Image src="/images/gr8er.png" height="37px" display={{ base: 'unset', md: 'none' }}>
9         <Image src="/images/gr8er logo.png" height="37px" display={{ base: 'none', md: 'block' }}>
10        </Flex>
11      </Flex>
12    </Flex>
```

Importing necessary components from Chakra UI Library: Flex & Image

Styling the icons and the Navbar x

Deciding which logo to show for medium and small screen sizes

NavBar Preview

Uploading the images in the public/src folder to use lateron as graphics throughout the site.

Step 2 (16th Feb 2023) : Creating the Search Bar by creating Searchinput.tsx file that is called within the Navbar.tsx file.

```
return (
<Flex flexGrow={1} maxWidth={user ? "auto" : "1500px"} mr={3} a>
  <InputGroup>
    <Input placeholder='Search GR8ER'
      fontSize='10pt'
      _placeholder={{ color: "gray.500" }}
      _hover={{ bg: "white",
        border: "1px solid",
        borderColor: "blue.500",
      }}
      _focus={{ outline: "none",
        border: "1px solid",
        borderColor: "blue.500",
      }}
      height= "36px"
      bg= "gray.100"
      borderRadius="50px"
    />
    <InputRightElement
      pointerEvents='none'
      children=<SearchIcon color='gray.300' mb="5px"/>
    />
  </InputGroup>
</Flex>
```

Creating a bar for user to enter text using the 'Input' Chakra UI component with a placeholder and normal + hover styling.

```
const navbar:React.FC = () => {
  const [user, loading, error] = useAuthState(auth);

  return [
    <Flex bg='white' height='50px' padding='6px 10px' >
      <Flex align="center">
        <Image src="/images/gr8er.png" ml={3} height="45px" display={{ base: 'block', md: 'none' }}>
          <Image src="/images/gr8er logo.png" height="44px" mb="1px" display={{ base: 'none', md: 'block' }}>
        </Flex>
      <Searchinput user={user}/>
    </Flex>
  ];
};

export default navbar;
```

Calling the Searchinput.tsx within the Navbar.tsx to display it on the Navbar beside the logo

Current Site Preview

Initialization of Stage 3 (Database + Authentication) (17th Feb 2023):

Step 3: Creating Authentication Buttons, Modal Window and Connecting Firebase Authentication

```
1 import { atom } from "recoil";
2
3 export interface AuthModalState{
4   open: boolean;
5   view: 'login' | 'signup' | 'resetPassword';
6 }
7
8 const defaultModalState: AuthModalState = {
9   open: false,
10  view: 'login'
11 }
12
13 export const AuthModalState = atom<AuthModalState>({
14   key: "authModalState",
15   default: defaultModalState,
16 });
```

Creating Recoil State for authentication views that will open once buttons are clicked

```
<Button
  variant="outline"
  height="33px"
  display={{ base: "none", sm: "flex" }}
  width= {{ base: "70px", md: "110px" }}
  onClick={() => setAuthModalState({ open: true, view: "login" })}
  mr={2} >
  Log In
</Button>
<Button
  height="33px"
  display={{ base: "none", sm: "flex" }}
  width= {{ base: "70px", md: "110px" }}
  onClick={() => setAuthModalState({ open: true, view: "signup" })}>
  Sign Up
</Button>
```

Creating the authentication buttons for when user is logged out.

Current NavBar Preview

Search GR8ER

Log In

Sign Up

Connecting Firebase to Site and setting up Authentication with Google and Email

2 Add Firebase SDK

Use npm Use a <script> tag

If you're already using NPM and a module bundler such as webpack or Rollup, you can run the following command to install the latest SDK (Learn more):

\$ npm install firebase

```
12 const firebaseConfig = {
13   apiKey: process.env.NEXT_PUBLIC_FIREBASE_API_KEY,
14   authDomain: process.env.NEXT_PUBLIC_FIREBASE_AUTH_DOMAIN,
15   projectId: process.env.NEXT_PUBLIC_FIREBASE_PROJECT_ID,
16   storageBucket: process.env.NEXT_PUBLIC_FIREBASE_STORAGE_BUCKET,
17   messagingSenderId: process.env.NEXT_PUBLIC_FIREBASE_MESSAGING_SENDER_ID,
18   appId: process.env.NEXT_PUBLIC_FIREBASE_APP_ID,
19   measurementId: process.env.NEXT_PUBLIC_FIREBASE_MEASUREMENT_ID,
20 };
21
22 // Initialize Firebase for server side rendering
23 const app = !getApps().length ? initializeApp(firebaseConfig) : getApp();
24 const firestore = getFirestore(app);
25 const auth = getAuth(app);
26 const storage = getStorage(app);
27
28 export { app, firestore, auth, storage};
```

Creating Signup and Login Modal and making them functional

Signup.tsx

```
const SignUp:React.FC = () => {
  const setAuthModalState = useSetRecoilState(AuthModalState);
  const [signUpForm, setSignUpForm] = useState({
    email: "",
    password: "",
    confirmPassword: "",
  });
  const [error, setError] = useState('');
  const [
    createUserWithEmailAndPassword,
    userCred,
    loading,
    userError
  ] = useCreateUserWithEmailAndPassword(auth);

  const onSubmit = (event: React.FormEvent<HTMLFormElement>) => {
    event.preventDefault();
    if (error) setError('');
    if (signUpForm.password !== signUpForm.confirmPassword){
      setError("Passwords do not match")
      return;
    }
    createUserWithEmailAndPassword(signUpForm.email, signUpForm);
  };

  const onChange = (event: React.ChangeEvent<HTMLInputElement>) =>
    // update form state
}
```

The component defines an onSubmit function that is called when the user submits the signup form. It checks certain aspects and if all checks pass, it calls the createUserWithEmailAndPassword function from Firebase.

The component also defines a createUserDocument function that is responsible for creating a new user document in the Firestore database with the user's information, and it is called whenever a new user is successfully created.

It also has an onChange function that is called when the user changes the input fields in the login form.

Login.tsx

```
const Login:React.FC<LoginProps> = () => {
  const setAuthModalState = useSetRecoilState(AuthModalState);
  const [loginForm, setLoginForm] = useState({
    email: "",
    password: "",
  });
  const [
    signInWithEmailAndPassword,
    user,
    loading,
    error,
  ] = useSignInWithEmailAndPassword(auth);

  const onSubmit = (event: React.FormEvent<HTMLFormElement>) => {
    event.preventDefault();
    signInWithEmailAndPassword(loginForm.email, loginForm.password);
  };

  const onChange = (event: React.ChangeEvent<HTMLInputElement>) =>
    // update form state
    setLoginForm(prev => ({
```

The Login page uses the 'useSignInWithEmailAndPassword' hook from Firebase to create four variables: signInWithEmailAndPassword, user, loading, and error. These variables will be used later to handle user authentication.

The onSubmit function is triggered when the user submits the login form.

The onChange function is called when the user changes the input fields in the login form.

resetPassword.tsx

```
const setAuthModalState = useSetRecoilState(AuthModalState);
const [email, setEmail] = useState('');
const [success, setSuccess] = useState(false);
const [sendPasswordResetEmail, sending, error] = useSendPasswordResetEmail(auth);

const onSubmit = async (event: React.FormEvent<HTMLFormElement>) => {
  event.preventDefault();
  await sendPasswordResetEmail(email);
  setSuccess(true);
};
```



Reset your password

Enter the email associated with your account and we will send you a reset link

Reset Password

LOGIN · SIGN UP

Code written for all Input fields.

```
<Input
  required
  name="email"
  placeholder='Email'
  type="email"
  mb={2}
  onChange={onChange}
  fontSizE="10pt"
  _placeholder={{ color: 'gray.500' }}
  _hover={{ bg: "white", border: "1px solid", borderColor: "#4682B4" }}
  _focus={{ outline: "1px solid #4682B4" }}
```

Code written for all buttons and subtext.

```
<Button width="100%" height="36px" mt={2} mb={2} type="submit" isLoading={loading}>
  Sign Up
</Button>

<Flex justifyContent="center">
  <Text mr={1}> Already a GR8ER member? </Text>
  <Text
    textColor="#4682B4"
    fontWeight={700}
    cursor="pointer"
    onClick={() => setAuthModalState(prev => ({ ...prev, view: "login" }))}
  > LOG IN </Text>
</Flex>
```

Sign Up

Continue with Google

OR

Email
Password
Confirm Password
Sign Up
Already a GR8ER member? [LOG IN](#)

Login

Continue with Google

OR

Email
password
Log In
Forgot your password? [Reset](#)
New here? [SIGN UP](#)

Code for displaying username and profile icon from firebase as a replacement to Authentication Buttons when user is logged in:

```
<MenuButton cursor="pointer" padding="0px 6px" borderRadius={4} _hover={{ outline: "1px solid", outlineColor: "gray.200" }}>
  <Flex align="center">
    <Icon fontSize={24} as={FaUserCircle} mr={1} color="brand.100"/>
    <Text mr={2} display={{ base: 'none', md: 'unset' }}>
      {user?.displayName || user?.email?.split("@")[0]}
    </Text>
    <Icon fontSize={11} as={BsChevronDown} mt={0.5} mr={1} color="brand.100"/>
  </Flex>
</MenuButton>
```

```
<Flex justify="center" align="center">
  <User user={user}>
    <UserMenu user={user} />
  </User>
  <AuthButtons />
</Flex>
```

Step 4 (19th Feb 2023): Creating Directory between Search Input and Site Logo

Dropdown Menu icon (similar to other icons, it is from React Icons)

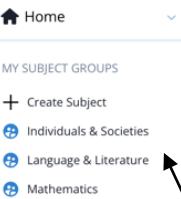
```
<Flex align="center" justify="space-between" width={base: 'none', md: "200px"}>
  <Flex align="center">
    {directoryState.selectedMenuItem.imageURL ? (
      <Image src={directoryState.selectedMenuItem.imageURL} borderRadius="full" boxSize="24px" mr={2} />
    ) : (
      <Icon fontSize={24} as={directoryState.selectedMenuItem.icon} mr={1} ml={base: 1, md: 'none'} mb={0} />
    )}
  </Flex>
  <Text color="black" mr={3} mt={0} display={base: 'none', md: 'unset'}>
    {directoryState.selectedMenuItem.displayName}
  </Text>
  <Flex>
    <Icon fontSize={11} as={BsChevronDown} mt={0.5} color="brand.100"/>
  </Flex>
</Flex>
```

If image exists, then image shows, but if not, then default icon shows

Current NavBar Preview

```
return [
  <Flex bg="white" height="50px" padding="6px 10px">
    <Flex align="center" cursor="pointer" onClick={handleClick}>
      <Image src="/images/gr8er.png" mr={3} height="40px" />
      <Image src="/images/gr8er logo.png" height="40px" />
    </Flex>
    {user && <Directory/>}
    <SearchInput user={user}/>
    <RightContent user={user}/>
  </Flex>
]
```

Image, Directory (only if user is logged in), Search Input, Authentication Buttons/Menu in order from left to right on the Navbar



Stage 4 (Subject Group Page (I decided to do this before homepage which I will be justifying later on)):

Step 1 (20th Feb 2023): Create Subject Modal for Moderators and storing new Subjects on Firestore

```
type CreateSubjectModalProps = {
  open: boolean;
  handleClose: () => void;
  userId: string;
};

const CreateSubjectModal:React.FC<CreateSubjectModalProps> = ({ open, handleClose, userId }) => {
  const [name, setName] = useState('');
  const router = useRouter();
  const [loading, setLoading] = useState(false);
  const handleChange = (event: React.ChangeEvent<HTMLInputElement>) => {
    if (event.target.value.length > 31) return;
    setName(event.target.value);
  };

  const handleCreateSubject = async () => {
    const subjectDocRef = doc(firestore, 'subjects', name);

    await runTransaction(firestore, async (transaction) => {
      const subjectDoc = await transaction.get(subjectDocRef);
      if (subjectDoc.exists()) {
        throw new Error('Sorry, Subject Group Already Exists')
      }
      transaction.set(subjectDocRef, {
        creatorId: userId,
        createdAt: serverTimestamp(),
        numberofMembers: 1
      });

      transaction.set(doc(firestore, `users/${userId}/subjectSnippets`, name), {
        subjectId: name,
        isModerator: true,
      })
    });
    handleClose();
  };
}
```

Reaching the database and storing a new subject in 'subjects' collection

```
<Modal isOpen={open} onClose={handleClose}>
  <ModalOverlay />
  <ModalContent>
    <ModalHeader display='flex' flexDirection='column'>Create a Subject Group</ModalHeader>
    <Box>
      <ModalCloseButton />
      <ModalBody display='flex' flexDirection='column'>
        <Text fontWeight={600} fontSize={15}>Name</Text>
        <Input name="name" value={name} size='sm' onChange={handleChange} type="text" />
      </ModalBody>
    </Box>
  <ModalFooter>
    <Button colorScheme='blue' mr={3} onClick={handleClose}>Close</Button>
    <Button variant='ghost' onClick={handleCreateSubject} isLoading={loading}>Create Subject Group</Button>
  </ModalFooter>
</Modal>
```

'handleChange': Easily type in the input

'handleClose': Close the modal once subject is created

'handleCreateSubject': Store in database

Create a Subject Group

Name

Close

Create Subject Group

Create a Subject Group Modal

Step 2 (23rd Feb 2023): Creating the Header

```
const Header:React.FC<HeaderProps> = ({ subjectData }) => {
  const { subjectStateValue, onJoinOrLeaveSubject, loading } = useSubjectData();
  const isJoined = !subjectStateValue.mySnippets.find((item) => item.subjectId === subjectData.id)
```

```
<Flex direction="column" width="100%" height="146px">
  <Box height="50%" bg="blue.400" />
  <Flex justify="center" bg="white" flexGrow={1}>
    <Flex width="95%" maxWidth="1000px" align="center" >
      {subjectData?.imageURL ? (
        <Image
          borderRadius="full"
          boxSize="75px"
          src={subjectData?.imageURL}
          alt="Dan Abramov"
          align="center"
          mt={1}
          mb={1}
        />
      ) : (
        <Icon
          as={RiGroup2Fill}
          mt={1}
        />
      )}
    </Flex>
  </Flex>
</Flex>
```

If Subject Image exists, then show the image and if it doesn't, show the default group icon

Different variants for Join and Joined buttons respectively and ability to join and leave subject on click

```
<Flex padding="10px 16px">
  <Flex direction="column" mr={6} justifyContent="center">
    <Text fontWeight={800} fontSize="22px">{subjectData.id}</Text>
    <Text fontWeight={600} fontSize="13px" color="gray.400" ml={0}>Subject Group</Text>
  </Flex>
  <Button variant={isJoined ? "outline" : "solid"} height="30px" justifyContent="center" pr={6} pl={6} mt={3} isLoading={loading} onClick={() => onJoinOrLeaveSubject(subjectData, isJoined)}>
    {isJoined ? "Joined" : "Join"}
  </Button>
</Flex>
```

Code connecting to the database to determine if the user has joined a subject



Step 3 (24th Feb 2023): Dividing the screen into 2 sections and creating the 'Ask a Question' Input Bar

```
return (
  <Flex justify='center' p="16px 0px" >
    <Flex width="95%" justify='center' maxWidth='1200px' >
      {/* {LHS} */} ←
      <Flex
        direction='column'
        display={base: "none", md: "flex"}
        flexGrow={1}
        >{ children && children [0 as keyof typeof children] </Flex>
        {/* {RHS} */}
        <Flex
          direction='column'
          width={base: "100%", md: "75%"}}
          ml={base: 0, md: 6}
        >{ children && children [1 as keyof typeof children] </Flex>
      </Flex>
    </Flex>
```

```
const CreatePostLink: React.FC = () => {
  const router = useRouter();
  const [user] = useAuthState(auth);
  const setAuthModalState = useSetRecoilState(AuthModalState);
  const {toggleMenuOpen} = useDirectory()

  const onClick = () => {
    if (!user) {
      setAuthModalState({ open: true, view: "login" });
      return;
    }
    const { subjectId } = router.query;

    if (subjectId) {
      router.push(`/subject/${subjectId}/submit`);
      return;
    }

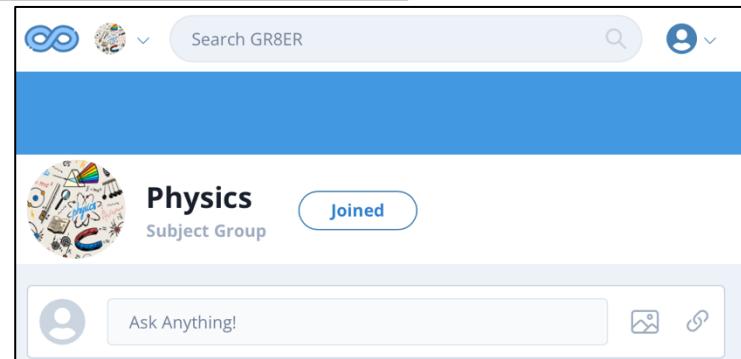
    toggleMenuOpen();
  }
}
```

Dividing the screen into LHS and RHS using 'pageContent.tsx' doc and importing that into the layout of subject group page

```
return (
  <>
  <Header subjectData={subjectData} />
  <PageContent>
    <>
    | /* <About subjectData={subjectData} /> */
    </>
    <>
    <div> <CreatePostLink/> </div>
    /* <Posts subjectData={subjectData} /> */
    </>
  </PageContent>
  </>
)
```

LHS will have about section and below the question posting bar there will be posts on the RHS

Using Router to redirect user to NewPostForm page which will be created in the subsequent step.



Stage 5 Posts + Posting Posts Screen

Step 1 (25th Feb 2023): Creating Question-Posting Screen that is reached from the Ask Question Bar

```
const NewPostForm: React.FC<NewPostFormProps> = ({ user, subjectImageURL }) => {
  const router = useRouter();
  const [selectedTab, setSelectedTab] = useState<FormTabs[0].title>
  const [textInputs, setTextInputs] = useState<{
    title: '',
    body: ''
  }>;
  const [selectedFile, setSelectedFile, onSelectFile] = useSelectFile()
  // const [selectedFile, setSelectedFile] = useState<File>()
  const selectFileRef = useRef<HTMLInputElement>(null);
  const [loading, setLoading] = useState(false)
  const [error, setError] = useState(false)

  const handleCreatePost = async () => {
    const { subjectId } = router.query;
    // create new question object == type post
    const newPost: Post = {
      subjectId: subject as string,
      subjectImageURL: subjectImageURL || '',
      creatorId: user.uid,
      creatorName: user.displayName! || user.email.split('@')[0],
      title: textInputs.title,
      body: textInputs.body,
      numberofAnswers: 0,
      voteStatus: 0,
      createdAt: serverTimestamp() as Timestamp,
      id: '',
      tags: ''
    }
  }

  setLoading(true)
  try {
    // store the question in firestore database
    const postDocRef = await addDoc(
      collection(
        firestore, 'posts'), newPost)

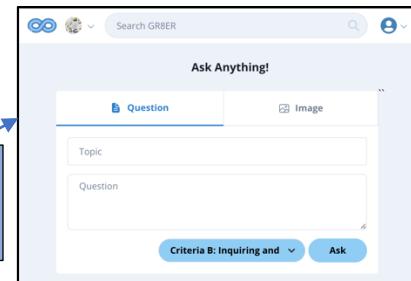
    // check if user has decided to include image or tag
    if (selectedFile) {
      // if image is there, store in storage == get download URL
      const imageRef = ref(storage, `posts/${postDocRef.id}/image`);
      await uploadString(imageRef, selectedFile, 'data_url');
      const downloadURL = await getDownloadURL(imageRef);

      // update question doc
      await updateDoc(postDocRef, {
        imageURL: downloadURL
      })
    }
    router.back();
  } catch (error: any) {
    console.log('handleCreatePost error', error.message)
    setError(true);
  }
  setLoading(false)
}
```

handleCreatePost function that is responsible for defining the values of each variable such as subjectId, creatorId

postDocRef function that is responsible for uploading all the defined variables to the firestore database that would then get used to show to the users

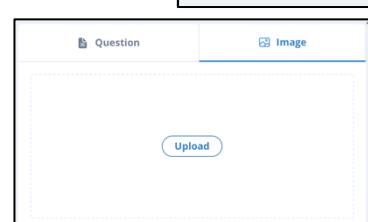
Main Question Section



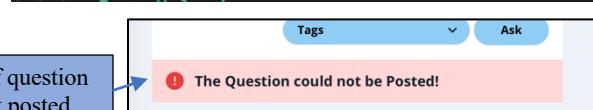
```
<Flex direction="column" bg="white" borderRadius={4}>
<Flex>
  {formTabs.map((item, index) => (
    <TabItem key={item.title} item={item} selected={item.title === selectedTab} setSelectedTab={setSelectedTab} />
  ))}
</Flex>
<Flex p={4} >
  {selectedTab === "Question" && (
    <TextInputs
      textInputs={textInputs}
      onChange={onTextChange}
      handleCreatePost={handleCreatePost}
      loading={loading}
    />
  )}
  {selectedTab === "Image" && (
    <ImageInput
      selectedFile={selectedFile}
      setSelectedFile={setSelectedFile}
      selectFileRef={selectFileRef}
      loading={loading}
    />
  )}

```

Image Upload Section



Alert if question is not posted



Step 2: Creating Post Layout with data from the database and showing them on the subject group page

```
const handleDelete = async () => {
  try {
    const success = await onDeletePost(post);
    if (!success) {
      throw new Error("Failed to delete post");
    }
    console.log("Post was Successfully Deleted")
  } catch (error: any) {
    setError(error.message);
  }
}
```

handleDelete function that will be called on click of the delete icon with a parameter of user so that the poster can only delete their posted question

Top: Using 'moment' to show time and extracting other info from database

```
<Flex direction="row" align="center" bg="blue.100" p={2}>
  <Stack direction="row" spacing={0.6}>
    < /> //Homepage check </>
    <HomePage && (
      <post.subjectImageURL ? <Image src={post.subjectImageURL} mr={1} mt={1} borderRadius="full" boxSize="18px"/>
    ) : (
      <Icon as={RiGroup2Fill} fontSize="18pt" mr={1} color="blue.500"/>
    )
  </Stack>
  <Link href={"subject/${post.subjectId}"}>
    <Text fontWeight="700" mr={3} _hover={{textDecoration:"underline"}} onClick={(event) => event.stopPropagation()}>
      > ${`$ {post.subjectId}`}</Text>
  </Link>
</>
)
```

```
<Text>
  Asked by <span style={{ color: "#2c75b9" }}>{post.creator.displayName}</span>
  <span>{moment(new Date(post.createdAt.seconds * 1000)).fromNow()}</span>
</Text>
</Stack>

{userIsCreator && (
  <Flex align="center" p="8px 10px" borderRadius="singlePostPage ? "0" : "10px" _hover={{bg:"blue.200"}} cursor="pointer" ml={2} onClick={handleDelete}>
    <Icon as={AiOutlineDelete} />
  </Flex>
)}
```

Bottom: Icons and counters that update with users votes (database)

```
<Flex direction="row" bg="blue.100" p={2}>
  <Flex align="center" justify="center">
    <Icon as={AiFillLike} color={userVoteValue === 1 ? " #9FB751" : "gray.500"} onClick={() => onVote(post, 1, post.subjectId)} cursor="pointer" mr={0.5}>
    <Text as="span" color="gray.500" fontSize="11pt"><post.voteStatus>/</post>

```

Middle: Extracting title, body, image (if any), tags and other supporting info from database

```
<Flex direction="column" align="left" p={2} bg="white" cursor="singlePostPage ? "unset" : "pointer" onClick={() => onSelectPost && onSelectPost(post)}>
  <Text fontSize="13pt" fontWight="600" mb={1}> {post.title} </Text>
  <Text fontSize="11pt" mb={1}> {post.body} </Text>
  {post.imageURL && (
    <Flex mt={4} justify="center" align="center">
      <Image src={post.imageURL} maxHeight="350px" alt="post image"/>
    </Flex>
  )}
  <Icon as={AiFillTags} mt={5} fontSize={20}/>
</Flex>
```

Calling the PostItem.tsx in subject group layout

```
<Stack>
  {postStateValue.posts.map((post) => (
    <PostItem key={post.id} post={post} onSelectPost={onSelectPost} onDeletePost={onDeletePost} onVote={onVote} userVoteValue={
      postStateValue.postVotes.find(
        (item) => item.postId === post.id
      )?.voteValue
    } userIsCreator={user?.uid === post.creatorId} homepage />
  )))
</Stack>
```

Using props for getting info for all PostItem components such as votes, and delete functionality

Asked by Sarthak Ahuja, 2 hours ago

question

here is another question but with an image

15. The percentage composition of sodium phosphate an determined by analysis to be 42.1% sodium, 14.0% phosphorus and 39% oxygen. Find the empirical formula of the compound (work upto two decimal places).
[H = 1, N = 14, O = 16, Na = 23, P = 31, Cl = 35.5, Rn = 105]

16. Determine the empirical formula of the compound whose composition by mass is 42% nitrogen, 48% oxygen and 9% hydrogen. [N = 14, O = 16, H = 1]

4 Marks Questions

17. A metal X contains 4.8% carbon and 95.2% bromine by mass.
(i) Determine the empirical formula of this compound (rounding correct to one decimal place). [C = 12, Br = 80]
(ii) If the vapour density of the compound is 252, what is the molecular formula of the compound?

18. A metal M forms a volatile chloride containing 65.3% chlorine. If the density of the chloride relative to hydrogen is 162.5, find the molecular formula of the chloride. [M = 56, Cl = 35.5]

Final Post Layout

Division of Firebase Console (Divided into answers, posts, subjects, and answers)

Step 3 (27th Feb 2023): Making 'About' Component (Posting + Subject Page)

```
<Flex width="100%" p={2} fontWight="600" fontSiz="10pt">
  <Flex direction="column" flexGrow={1} align="center">
    <Text>
      {subjectData.numberOfMembers.toLocaleString()}
    </Text>
    <Text>Members</Text>
  </Flex>
  <Flex direction="column" flexGrow={1} align="center">
    <Text> {subjectData.numberOfOnlineMembers.toLocaleString()}</Text>
    <Text>Online</Text>
  </Flex>
</Flex>
```

Obtaining subject info from database

```
{onCreatePage && (
  <Link href={`${router.query.subject}/submit`}>
    <Button mt={3} height="30px" width="250px">
      Ask Anything!
    </Button>
  </Link>
)}
//!!!ADDED AT THE VERY END!!! INITIALLY DOES NOT WORK
```

Displaying selected file or existing subject image

Step 4: Making 'Post' Full Screen Page

```
<Box mr={2}>
  <Icon as={FaUserCircle} fontSize={30} color="gray.900" />
</Box>
<Stack spacing={1}>
  <Stack direction="row" align="center" fontSiz="8pt">
    <Text fontWight="700" > {answer.creator.displayName} </Text>
    <Text color="gray.600">
      {moment(new Date(answer.createdAt.seconds * 1000)).fromNow()}
    </Text>
    <LoadingDelete && <Spinner size="sm" />
  </Stack>
  <Text fontSiz="10pt"> {answer.text}</Text>
  <Stack direction="row" align="center" cursor="pointer" color="gray.500">
    {userId === answer.creatorId && (
      <Text
        fontSize="9pt"
        _hover={{ color: "blue.500" }}
        onClick={() => onDeleteAnswer(answer)}>
        Delete
      </Text>
    )}
  </Stack>
</>
```

Making Answer Layout

```
<Text mb={1}>
  Answer as {" "}
  <span style={{ color: "#2c75b9" }}>
    {user!.displayName! || user!.email!.split("@")![0]}
  </span>
</Text>
<Textarea value={answerText} onChange={(event) => setAnswerText(event.target.value)} placeholder="What is the Answer to this Question?" fontSiz="10pt" borderRadius={4} minHeight="160px" pb={10} _placeholder={{ color: "gray.500" }} _focus={{ outline: "none", border: "1px solid black", bg: "white" }} />
```

Making Answer Input Box

About Subject Group Component

10 Members 1 Online

Created on Feb 22, 2023

Ask Anything!

Admin

Change Image



Using Layout of Post

```
<postStateValue.selectedPost && (
  <PostItem key={postStateValue.selectedPost.id} post={postStateValue.selectedPost} onVote={onVote} onDeletePost={onDeletePost} userVoteValue={postStateValue.postVotes.find((item) => item.postId === postStateValue.selectedPost.id)?.voteValue} userIsCreator={user?.uid === postStateValue.selectedPost.creatorId} />
)
<Answers user={user as User} selectedPost={postStateValue.selectedPost} subjectId={postStateValue.selectedPost.subjectId as string} />
```

Answer as Sarthak Ahuja

What is the Answer to this Question?

Sarthak Ahuja a few seconds ago

trial answer

Delete

Answer

Stage 6 (Home Page (I decided to do this after subject page which I will be justifying later on)):

Step 1 (28th Feb 2023): Putting the postItem (that already has a defined ability to show the subject name and icon when on homescreen) and the 'Ask a Question' bar component on the homescreen:

Using Layout of Post

```

    <Content>
      <Stack spacing={5}>
        {/* <Recommendations /> */}
      </Stack>
    <>
      <CreatePostLink />
      {loading ? (
        <PostLoader />
      ) : (
        <Stack>
          {postStateValue.posts.map((post) => (
            <PostItem
              key={post.id}
              post={post}
              onSelectPost={onSelectPost}
              onDeletePost={onDeletePost}
              onVote={onVote}
              userVoteValue={postStateValue.postVotes.find(
                (item) => item.postId === post.id
              )?.voteValue}
            />
          ))
        </Stack>
      )}
    </>
  </PageContent>
);

```

Planning to put Top Subject Groups at the LHS

Step 2 (1st March 2023): Making the top subject groups tab to allow users to join new groups

Obtaining subject groups in order of most members to show in the top subject groups section

```

const getSubjectRecommendations = async () => {
  setLoading(true);
  try {
    const subjectQuery = query(
      collection(firestore, "subjects"),
      orderBy("numberOfMembers", "desc"),
      limit(15)
    );
    const subjectDocs = await getDocs(subjectQuery);
    const subjects = subjectDocs.docs.map((doc) => ({
      id: doc.id,
      ...doc.data(),
    }));
    setSubjects(subjects as Subject[]);
  } catch (error) {
    console.log("getSubjectsRecommendations error", error);
  }
  setLoading(false);
};

useEffect(() => {
  getSubjectRecommendations();
}, [ ]);

```

```

return [
  <Link key={item.id} href={`/subject/${item.id}`}>
    <Flex
      position="relative"
      align="center"
      fontSize="10pt"
      borderBottom="1px solid"
      borderColor="gray.200"
      p="10px 12px"
    >
      <Flex width="80%" align="center">
        <Flex width="15%">
          <Text>{index + 1}</Text>
        </Flex>
        <Flex align="center" width="80%">
          {item.imageURL ? (
            <Image
              src={item.imageURL}
              borderRadius="full"
              boxSize="28px"
              mr={2}
            />
          ) : (
            <Icon
              as={RiGroup2Fill}
              fontSize={30}
              color="brand.100"
              mr={2}
            />
          )}
        </Flex>
      </Flex>
    </Flex>
  </Link>
]

```

Cover image design of top subject groups section

Stage 8 (Deployment) (3rd March 2023):

Waiting for Build to Finish...

Seeing Preview on site and making final changes

Exporting project file to vercel using vercel CPI (npm i -g vercel)

Getting automated domain

Top Subject Groups

1 Chemistry Joined

Top Subject Group

Sharing the file with people for measuring the success (which will be shown in crit.D)

Final Site:

Homepage: /

Top Subject Groups

- 1 Visual Arts (Portfolio)
- 2 Standard Mathe...
- 3 Spanish (Language)
- 4 Physics
- 5 Personal Project
- 6 PHE (Portfolio)
- 7 Music (Portfolio)
- 8 Language & Liter...
- 9 Individuals & Soci...
- 10 German (Language)
- 11 Extended Mathe...
- 12 Drama (Portfolio)
- 13 Design (Portfolio)
- 14 Biology

Physics Asked by Sarthak Ahuja, 9 hours ago

question trial

A. Knowing and Understanding

15. The percentage composition of sodium phosphate anhydride was determined by analysis of the compound (work up to two decimal places). $[H = 1, N = 14, O = 16, Na = 23, P = 31, Cl = 35.5, Pt = 195]$

16. Determine the empirical formula of the compound whose composition by mass is 42% nitrogen, 48% oxygen and 9% hydrogen. $[H = 1, N = 14, O = 16, Cl = 35.5]$

4 Marks Questions

17. A compound contains 4.8% carbon and 95.2% bromine by mass. (i) Determine the empirical formula of this compound with respect to one decimal place. $[C = 12, Br = 80]$

(ii) If the vapour density of the compound is 252, what is the molecular formula of the compound?

18. A neutral M forms a volatile chloride containing 65.3% chlorine. If the density of the chloride relative to hydrogen is 162.5, find the molecular formula of the chloride. $[M = 56, Cl = 35.5]$

Subject Group Page: /subject/[subject name]

Physics Subject Group Joined

About Subject Group

10 Members 1 Online

Created on Feb 22, 2023

Ask Anything!

Admin Change Image

Physics Asked by Sarthak Ahuja, 8 hours ago

question trial

A. Knowing and Understanding

15. The percentage composition of sodium phosphate anhydride was determined by analysis of the compound (work up to two decimal places). $[H = 1, N = 14, O = 16, Na = 23, P = 31, Cl = 35.5, Pt = 195]$

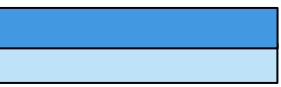
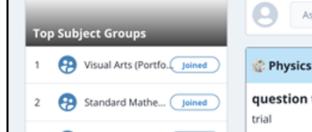
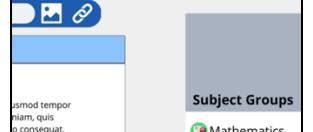
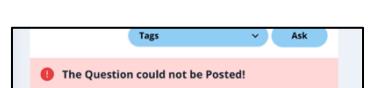
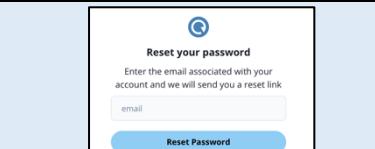
16. Determine the empirical formula of the compound whose composition by mass is 42% nitrogen, 48% oxygen and 9% hydrogen. $[H = 1, N = 14, O = 16, Cl = 35.5]$

4 Marks Questions

17. A compound X contains 4.8% carbon and 95.2% bromine by mass.

Strand 4- Fully Justify Changes made to the Chosen Design and Plan when making the Solution

Design:

Justification	Initial Plan	What Was Actually Done
Approval/ Disapproval Buttons -> Like/Dislike Buttons I deduced that 'like' and 'dislike' buttons are more relatable to the target audience, and hence, to give a sense of relatability in a learning space such as the website, I changed the design of the buttons		
Main Accent Color Change (#305BA9 -> #7DA6D3) Even though the colours were made slightly duller after the feedback from the client, I decided to make them a few shades brighter to make them appealing.		
Posts Layout: Addition of Delete icon to delete posts I did not think about the deletion of posts while making the design, however, this being extremely important was added later on when making the solution	NA.	
Moving 'Top Subject Groups' to the Left (Initially it was on right) Considering that the 'About' component was on the LHS of the question posting screen and the subject group page, I decided to keep it consistent and follow the same structure.		
Homepage: Showing the user details in the centre section -> Moving the user details on the top bar beside the subject		
Directory: Addition of Create Subject Modal for moderators Initially, I did not plan on how I would create subject groups, and hence, this feature/modal was added	NA.	
About: Addition of 'Change Image' option for 'moderators' Adding a bit of customization and change in the look of the subject groups was needed, and hence this option was added for moderators that are manually assigned	NA.	
Question Posting Page: Addition of alert for when question is not posted I realised that sending an intimation to the users if the question was not posted is important to inform them that something is wrong, hence, the alert was added for the same.	NA.	
Authentication: Adding a 'Reset Password' Modal with working functionality This was added keeping in mind the user-friendliness, as several users forgot their passwords when trying to log in.	NA.	

Plan:

Change Made	Initial Plan	What was Actually done
Making the Subject Specific Group prior to the Homepage	I initially planned to create the homepage prior to the subject group page planning to save the posts on the database from the homepage and then sort them into subjects	I realised that sorting the posts from the homepage was an inconvenient and cumbersome procedure, and firstly showing the posts on subject page and then showing them on the homepage was better, hence, I did the same.
Skipping stage 7 as I made sure to polish each screen and modal before moving on to another component	I initially thought that I will be not finessing all pages and move on to the other one but do the final touches all at once.	I finished each page in totality before moving on the next one that left minimal scope of final touches at the end.

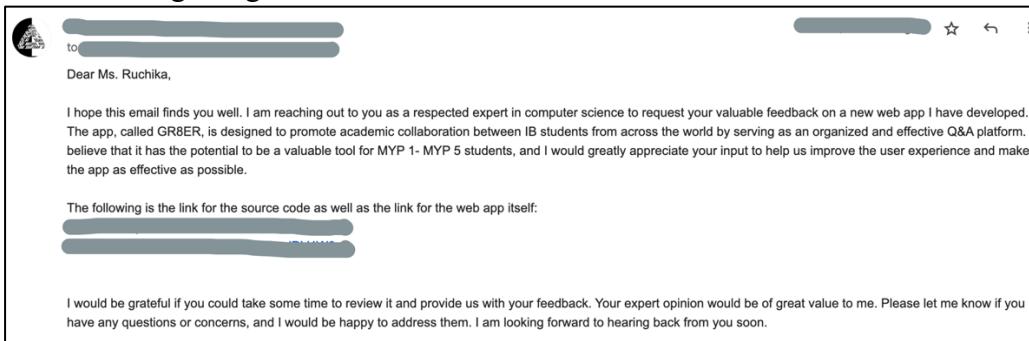
CRITERION D: EVALUATION

Strand 1- Design detailed and relevant testing methods, which generate data, to measure the success of the solution

Feedback from Expert (Qualitative):

In this testing approach, the tester has access to the application's internal code and design. This testing approach evaluates the internal structure, logic, and flow of the application to verify whether it is functioning as per the design and code standards.

I asked an expert who has a degree in computer science (Refer to Bib. 7) to evaluate my web app, and the following is the review and rating she gave for the same:



- “**The modular design** of the website is top-notch. The information is organized into clear and distinct modules that make it easy for users to find what they need. The modules are logically grouped together and the layout is aesthetically pleasing, making it easy to navigate and use.
- The website has **easy navigation** that allows users to move around the website quickly and efficiently. The menus are clear and concise, and the search bar makes it easy for users to find the information they need. The website also has clear breadcrumbs and a sitemap, making it easy for users to navigate back to previous pages.
- The website has an **extensive range of features** and **functionalities** that make it an excellent tool for IB students. The website allows users to collaborate and answer each other's doubts, making it an excellent resource for students to learn and grow together. Additionally, the website has sorting criteria that allow users to find information based on their specific needs, which is an excellent feature for students who need to revise and prepare for exams.
- The website is **highly responsive**, which means that it is optimized to work seamlessly on a variety of devices, including desktops, laptops, tablets, and smartphones. This is an essential aspect of a website, especially one that caters to students who are constantly on the go.
- The question and answer website for IB students is an **excellent resource** for students who are looking to collaborate and learn from each other. The website's modular design, easy navigation, features, functionality, and responsiveness make it an excellent tool for students to use. I **highly recommend** this website to any IB student who is looking to **excel in their studies.**”

Overall: The tester gave a 4.5/5

Grey box testing (Qualitative):

I employed Grey box testing, that is a combination of white box and black box testing(will be shown in subsequent section). In this type of testing, the tester has partial knowledge of the internal code and design of the application. Grey box testing is often used to test integrated systems, where the tester has access to the external interfaces of the application but not the complete internal code.

I asked my client to be the person who grey box tests for me, and with her seeing my journey from the start, she analysed the web app carefully and gave the following review + rating:

“The web app’s categorization into criteria helps students stay **organized and focused** on specific areas of study, while its **collaborative nature** fosters a **sense of community** among students. The Q&A format **promotes critical thinking and problem-solving skills**, making it a helpful tool for revision. Such a website is a valuable resource for teachers and students as it has the potential to play an integral part in the IB program. Overall, the web app is **well built**, with equal **focus** gone into the **backend, user-interface and the features.**”

Overall: The tester gave a 5/5

Black box testing (Qualitative):

I then used black box testing, that is a testing approach in which the tester does not have access to the internal code or design of the application. It is a type of testing that focuses on testing the application's functionalities from an end-user perspective. The testing is performed to validate whether the application meets the user requirements or not. In this type of testing, the tester has no knowledge of the internal structure and code of the application.

I sent the link of the web app to a fellow peer from MYP 5 who had no prior knowledge or information about my design product, and this is what he had to say about the same (Review + Rating):

Hey Suhana! How are you doing?
I've been working on something really exciting and I wanted to share it with you. I just developed a new web app called GR8ER and I think you might find it interesting. It aims to promote academic collaboration by serving as an effective and organized Q&A platform for all IB students.
It's still in the early stages, but I would love to get your feedback on it. Here's the link to download it: [REDACTED]
Let me know what you think of it after you've tried it out. Any feedback you have would be super helpful as I continue to develop it further.
Thanks so much and I hope you enjoy it!

"As an MYP 5 IB student, I have found the question and answer website for IB students incredibly helpful in my studies.

- One aspect of the website that stands out is its **modular designed UI**, which makes it **easy** to find the information I need quickly. The website's **layout is intuitive and organized**, which allows me to focus on learning without getting distracted by unnecessary features or cluttered menus.

- Another feature that I appreciate about this website is its **easy navigation**.

The website is designed to make it simple for students to **collaborate and answer** each other's doubts while also revising, **sorted into criteria**. It is **effortless** to search for questions, answers, and discussions related to specific topics and criteria. This feature makes it **easy to find relevant information** and work on my areas of weakness.

- The website's **functionality** is also excellent. I love how the website allows me to interact with other IB students from all over the world. The website **encourages** students to **collaborate** and help each other, which is **essential** in a **program as challenging as the IB**.

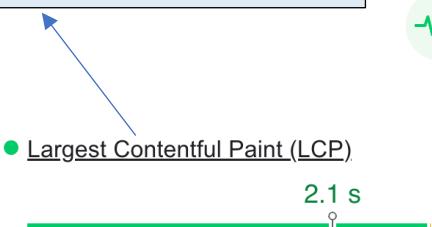
- One critical aspect of the website is its **responsiveness**. The website opens up on **all devices** allowing me to post **questions anywhere**.

- Overall, it is a fantastic resource for students like me. I **highly recommend** this website to all IB students who are looking for a **reliable resource** to help them succeed in their IB studies."

Overall: The tester gave a 5/5

Technical Evaluation (Quantitative) (Refer to Bib. 10):

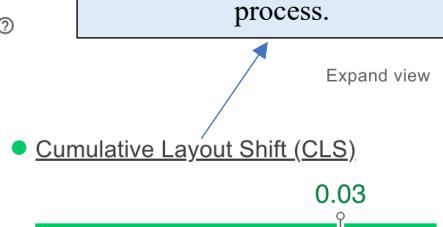
Largest Contentful Paint: Largest Contentful Paint (LCP) is a web performance metric that measures how quickly the largest element in the viewport becomes visible.



First Input Delay: First Input Delay (FID) is a web performance metric that measures the time it takes for a user to interact with a web page for the first time. It helps determine the interactivity of a web page.

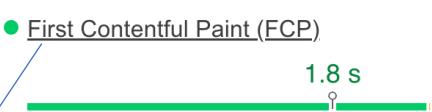


Cumulative Layout Shift: Measures the stability of web page layouts by tracking how much the page elements move or shift during the loading process.

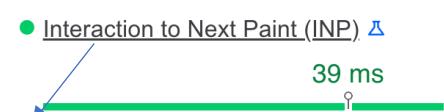


OTHER NOTABLE METRICS

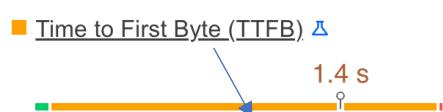
First Contentful Paint: First Contentful Paint (FCP) is a web performance metric that measures the time it takes for the first piece of content to be rendered on the screen.



Interaction to Next Paint: A web performance metric that measures the time it takes for a web page to respond to a user's interaction, such as clicking a button, and the time it takes for it to visually show.

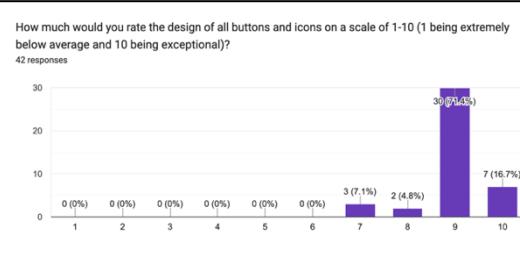
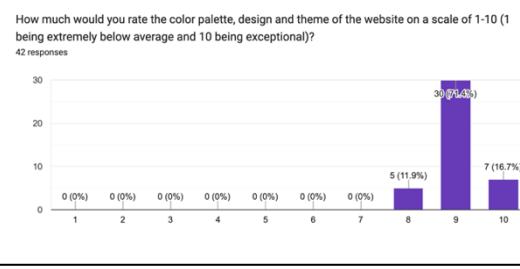
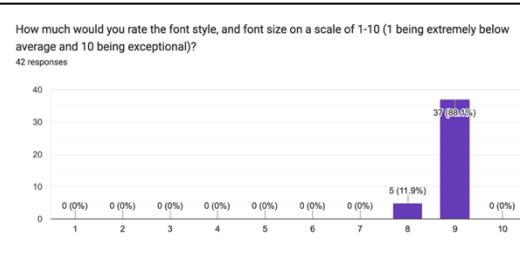
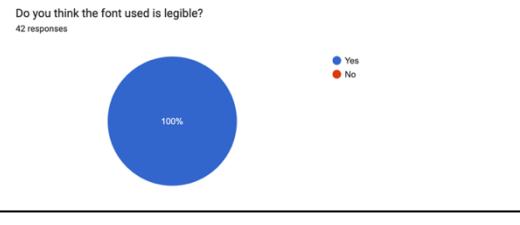


Time to First Byte: Time to First Byte (TTFB) is a web performance metric that measures the time it takes for a user's browser to receive the first byte of data from a web server after making a request.

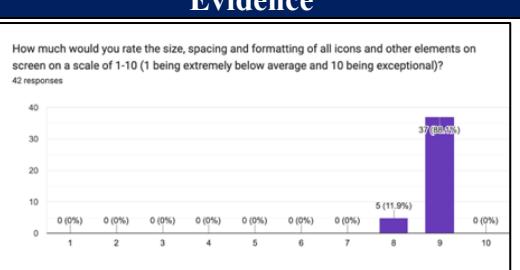


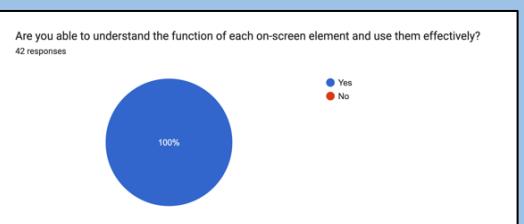
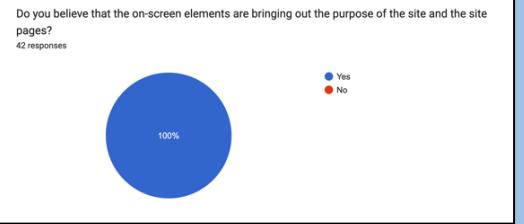
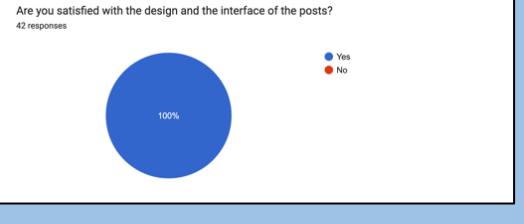
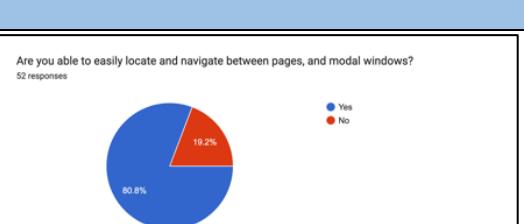
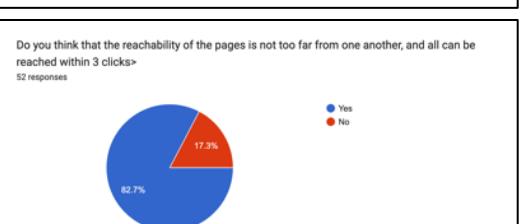
Strand 2- Critically evaluate the success of the solution against the design specification

Colour and Font

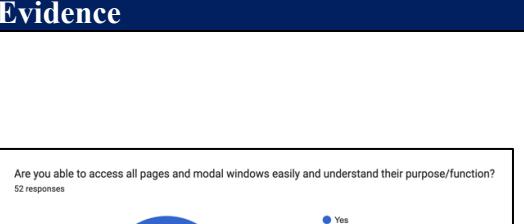
Specification	Measure of Success	Evaluation	Evidence																												
Colour Palette & Theme	<p>If the average rating from the target audience is ≥ 8 on a scale of 1-10 for the color palette, design and theme of the website</p> <p>If the average rating from the target audience is ≥ 8 on a scale of 1-10 for the design of all buttons and icons</p>	<p>According to the results of the survey conducted: The average rating for the color palette, design, and theme of the website is 8.97, indicating that the design has been well-received by the target audience. Additionally, the average rating for the design of all buttons and icons is 9.04, which further confirms that the website's design is appealing and user-friendly. Moreover, the survey found that the majority of the participants (83.3%) prefer buttons and icons with rounded edges, which means that the website's design specifications have been met successfully and that it is well-received by its users.</p>	 <p>How much would you rate the design of all buttons and icons on a scale of 1-10 (1 being extremely below average and 10 being exceptional)? 42 responses</p> <table border="1"> <thead> <tr> <th>Rating</th> <th>Responses (%)</th> </tr> </thead> <tbody> <tr><td>1</td><td>0 (0%)</td></tr> <tr><td>2</td><td>0 (0%)</td></tr> <tr><td>3</td><td>0 (0%)</td></tr> <tr><td>4</td><td>0 (0%)</td></tr> <tr><td>5</td><td>0 (0%)</td></tr> <tr><td>6</td><td>0 (0%)</td></tr> <tr><td>7</td><td>3 (7.1%)</td></tr> <tr><td>8</td><td>2 (4.8%)</td></tr> <tr><td>9</td><td>30 (71.4%)</td></tr> <tr><td>10</td><td>7 (16.7%)</td></tr> </tbody> </table>	Rating	Responses (%)	1	0 (0%)	2	0 (0%)	3	0 (0%)	4	0 (0%)	5	0 (0%)	6	0 (0%)	7	3 (7.1%)	8	2 (4.8%)	9	30 (71.4%)	10	7 (16.7%)						
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Design of Icons and Buttons	<p>If $\geq 80\%$ of the users prefer buttons/icons with rounded edges</p>		 <p>How much would you rate the color palette, design and theme of the website on a scale of 1-10 (1 being extremely below average and 10 being exceptional)? 42 responses</p> <table border="1"> <thead> <tr> <th>Rating</th> <th>Responses (%)</th> </tr> </thead> <tbody> <tr><td>1</td><td>0 (0%)</td></tr> <tr><td>2</td><td>0 (0%)</td></tr> <tr><td>3</td><td>0 (0%)</td></tr> <tr><td>4</td><td>0 (0%)</td></tr> <tr><td>5</td><td>0 (0%)</td></tr> <tr><td>6</td><td>0 (0%)</td></tr> <tr><td>7</td><td>0 (0%)</td></tr> <tr><td>8</td><td>5 (11.9%)</td></tr> <tr><td>9</td><td>30 (71.4%)</td></tr> <tr><td>10</td><td>7 (16.7%)</td></tr> </tbody> </table>	Rating	Responses (%)	1	0 (0%)	2	0 (0%)	3	0 (0%)	4	0 (0%)	5	0 (0%)	6	0 (0%)	7	0 (0%)	8	5 (11.9%)	9	30 (71.4%)	10	7 (16.7%)						
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Font	<p>If the average rating from the target audience is ≥ 8 on a scale of 1-10 for the font style, and size</p> <p>If $\geq 80\%$ of the users think that the font used is legible easily</p>	<p>A survey was conducted with the target audience to evaluate the font style and size used in a design. The results of the survey indicated that the average rating for the font style and size was 8.88 out of 10. Additionally, 100% of the users surveyed agreed that the font used was legible, indicating that the design met the requirements for legibility. Based on these results, it can be concluded that the font style and size used in the design were successful and the specifications were fulfilled.</p>	 <p>How much would you rate the font style, and font size on a scale of 1-10 (1 being extremely below average and 10 being exceptional)? 42 responses</p> <table border="1"> <thead> <tr> <th>Rating</th> <th>Responses (%)</th> </tr> </thead> <tbody> <tr><td>1</td><td>0 (0%)</td></tr> <tr><td>2</td><td>0 (0%)</td></tr> <tr><td>3</td><td>0 (0%)</td></tr> <tr><td>4</td><td>0 (0%)</td></tr> <tr><td>5</td><td>0 (0%)</td></tr> <tr><td>6</td><td>0 (0%)</td></tr> <tr><td>7</td><td>0 (0%)</td></tr> <tr><td>8</td><td>5 (11.9%)</td></tr> <tr><td>9</td><td>37 (88.1%)</td></tr> <tr><td>10</td><td>0 (0%)</td></tr> </tbody> </table>  <p>Do you think the font used is legible? 42 responses</p> <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr><td>Yes</td><td>100%</td></tr> <tr><td>No</td><td>0%</td></tr> </tbody> </table>	Rating	Responses (%)	1	0 (0%)	2	0 (0%)	3	0 (0%)	4	0 (0%)	5	0 (0%)	6	0 (0%)	7	0 (0%)	8	5 (11.9%)	9	37 (88.1%)	10	0 (0%)	Response	Percentage	Yes	100%	No	0%
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Response	Percentage																														
Yes	100%																														
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User Interface and User Experience

Specification	Measure of Success	Evaluation	Evidence																						
Responsive Nature	<p>If the average rating from the target audience is ≥ 8 on a scale of 1-10 for the size, spacing and formatting of all icons and other elements on screen</p>	<p>The results of the survey conducted with the target audience are overwhelmingly positive. Users gave an average rating of 8.88 for the spacing and formatting of all icons and other elements on the screen, indicating that the design is visually</p>	 <p>How much would you rate the size, spacing and formatting of all icons and other elements on screen on a scale of 1-10 (1 being extremely below average and 10 being exceptional)? 42 responses</p> <table border="1"> <thead> <tr> <th>Rating</th> <th>Responses (%)</th> </tr> </thead> <tbody> <tr><td>1</td><td>0 (0%)</td></tr> <tr><td>2</td><td>0 (0%)</td></tr> <tr><td>3</td><td>0 (0%)</td></tr> <tr><td>4</td><td>0 (0%)</td></tr> <tr><td>5</td><td>0 (0%)</td></tr> <tr><td>6</td><td>0 (0%)</td></tr> <tr><td>7</td><td>0 (0%)</td></tr> <tr><td>8</td><td>5 (11.9%)</td></tr> <tr><td>9</td><td>37 (88.1%)</td></tr> <tr><td>10</td><td>0 (0%)</td></tr> </tbody> </table>	Rating	Responses (%)	1	0 (0%)	2	0 (0%)	3	0 (0%)	4	0 (0%)	5	0 (0%)	6	0 (0%)	7	0 (0%)	8	5 (11.9%)	9	37 (88.1%)	10	0 (0%)
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On-Screen Elements	If $\geq 90\%$ of the users will be able to understand the function of each on-screen element and use them effectively	appealing and well-organized. Additionally, 100% of the users able to understand the function of each on-screen element and use them effectively, suggesting that the design is intuitive and user-friendly, 100% the users believe that the on-screen elements are bringing out the purpose of the site and the site pages, indicating that the design aligns well with the overall goals of the website,	 <p>Are you able to understand the function of each on-screen element and use them effectively? 42 responses 100% ● Yes ● No</p>
	If $\geq 90\%$ of the users believe that the on-screen elements are bringing out the purpose of the site and the site pages	and 100% of the users are satisfied with the design and the interface of the posts meaning that is engaging. Hence, the specification has been fulfilled as these results suggest that the design is likely to be effective in achieving the goals of the website.	 <p>Do you believe that the on-screen elements are bringing out the purpose of the site and the site pages? 42 responses 100% ● Yes ● No</p>
	If $\geq 90\%$ of the users are satisfied with the design and the interface of the posts		 <p>Are you satisfied with the design and the interface of the posts? 42 responses 100% ● Yes ● No</p>
Navigation	If $\geq 90\%$ of the users will be able to easily locate and navigate between pages, and modal windows	The results showed that a high percentage of users (80.8%), were able to easily locate and navigate between pages and modal windows. Additionally, 82.7% of users believed that the reachability of pages was not too far from one another and all could be reached within three clicks.	 <p>Are you able to easily locate and navigate between pages, and modal windows? 52 responses 80.8% 19.2% ● Yes ● No</p>
	If $\geq 90\%$ of the users believe that the reachability of the pages is not too far from one another, and all can be reached within 3 clicks	These results indicate that the design specification has been successfully met, and the website's design is user-friendly and accessible.	 <p>Do you think that the reachability of the pages is not too far from one another, and all can be reached within 3 clicks? 52 responses 82.7% 17.3% ● Yes ● No</p>

Website Page Types and Modal Windows

Specification	Measure of Success	Evaluation	Evidence
Website Pages	If $\geq 90\%$ the users will be able to access all pages easily and understand their purpose/function	The results show that all of the users were able to access all pages and modal windows easily and understand their purpose/function. This indicates that the website design and layout are user-friendly and intuitive, allowing for a smooth user experience. Hence, the specification was met successfully.	 <p>Are you able to access all pages and modal windows easily and understand their purpose/function? 52 responses 100% ● Yes ● No</p>
Modal Windows	If $\geq 90\%$ the users will be able to access modal windows and understand their purpose/function		

Observations and Conclusion: The product received an overwhelming response from the audience who evaluated it to be successfully adhering to all the design specifications significantly. From a pool of approximately 50 people from the target audience, the average rating and the percentile for positive results was greater than or equal to 8/10 and/or 80% respectively.

Strand 3- Explain how the solution could be improved.

Changes I could Make	Justification	How I could change the product
Making a section to specifically share notes, and resources in exchange for the same from others	For assistance with academic concerns and to better comprehend the course material, a Q&A website created just for IB students might be a great resource. Answering questions might be beneficial, but sharing notes and resources can be just as important for a student's progress. For a number of reasons, having a section especially devoted to note and resource sharing is crucial. At the beginning, it enables students to work together and share knowledge, which may result in a deeper comprehension of the course material. For those who have missed a class or require extra assistance in a particular subject, the ability for students to share notes, study materials, and other resources can be very beneficial.	I would add a feature to upload documents and images in a separate console that would be sorted into an array of different topics of each subject for every grade (MYP 1- MYP 5)
Making a profile page for users to update their profile image and username as well as give a short intro about themselves	Any community-based website must have a profile page because it enables users to customise their experience, which can assist to create a feeling of community and promote involvement. The capability for users to edit their profile image and username is one of the main elements of a profile page. Users may show their identity and personality within the community thanks to this, which is vital. Users can connect with others who share their interests and values by selecting a profile photo and username that best represent them. Moreover, a distinctive username and profile picture might aid in user recognition.	I would do this by creating another page that would connect to the database and allow users to update their input fields easily. And further show the changes in-app.
“Confirm Delete?” option before permanently deleting posts or comments	Because publishing and commenting are so simple, there is always a chance that a post or comment could be unintentionally deleted. This can be very inconvenient for both the user and the community. A student question and answer forum must offer a "Confirm Delete?" option before permanently removing posts or comments in order to prevent such errors. Before a post or remark is deleted permanently, this feature enables users to verify their deletion intentions.	I would add another modal that would show when delete icon is pressed and would run the delete function on its click instead of the icon's.
'Teachers' and/or 'Alumni' badge	It can be difficult to distinguish between responses provided by other users and those provided by reliable sources, such as teachers or alumni. A "Teachers" and/or "Alumni" badge is necessary on a student question-answer forum site in order to handle this problem. These badges make it easier to spot forum contributors who have answered queries and have been confirmed as teachers or alumni.	I would do this by adding a UI element beside the name with a conditionality of showing it, if it exists.
Group Chat functionality for each subject group to host private discussions aside from Q&A posts	It can be difficult for students to have private talks about a particular subject because of the emphasis on Q&A posts. A group chat feature can be very helpful in this situation. Students can hold private conversations about a particular subject using the Group Chat feature. Students can speak with their friends about subjects by setting up different chat groups for each subject. For students who are studying the same subject, this can be quite helpful because it enables them to work together and exchange knowledge.	I would add another section that would be expanded on the press of a bottom sheet that allows users to post multimedia and text with their username and date showing.

Strand 4- Explain the impact of the solution on the client/target audience.

Impact of the Solution on the Target Audience:

A question answer forum site specifically made for IB students to post doubts and questions and sort them into subject groups by tagging them with tags of IB criteria of assessments and grades would have a **significant positive impact** on the academic community, **particularly IB students from across the globe**.

One of the most significant benefits of such a forum would be the **ability to foster academic collaboration** among students, educators, and professionals from around the world. By providing a **centralized platform** for students to ask questions, share resources, and discuss academic topics related to the IB program, the forum would encourage students to engage in **active collaboration** with their peers and educators. This would promote the **exchange of ideas**, facilitate the **sharing of knowledge**, and ultimately **improve the overall quality of education**.

Additionally, the website would give students a special chance to **hone their communication, problem-solving, and critical thinking abilities**. Students would be exposed to various viewpoints and opinions by interacting with other students and educators from various cultures, which would aid in the development of a more thorough understanding of the subject. The forum would also give students a stage on which to express their ideas and viewpoints, enhancing their **presentation** abilities.

The capability of such a forum to enhance **academic outcomes** for IB students globally would be another significant advantage. The forum would aid students in better preparing for IB exams by giving them a centralised location to access **academic resources** like sample questions. Additionally, having the chance to talk to other students would enable them to clarify any uncertainties or questions they might have, which would help them grasp the material better and ultimately **improve their performance** on IB exams.

Impact of the Solution on the IB program:

Furthermore, the forum would promote **greater awareness** and **understanding** of the IB program among the academic community worldwide. By providing a platform for students to ask questions and share information related to the IB program, the forum would help to **promote the program** and its objectives, leading to **increased awareness** and **adoption** of the program by schools and students worldwide.

How the impact of the design is going to lead to develop a better prospect in/of the future:

A question and answer forum site for IB students from across the world has the **potential** to impact the global scenario by **encouraging academic collaboration** and **fostering a sense of global community**. GR8ER can facilitate conversations and encourage the **exchange of ideas, perspectives, and solutions** by bringing together students from various backgrounds. This kind of cooperation can promote **creative problem-solving** and **thinking** as well as a **greater awareness of** and respect for various cultures and points of view.

In terms of design, the site can play a **critical role** in the better prospects for the future by fostering communication and collaboration in a **secure** and **user-friendly environment**. It promotes **interaction** and **engagement**, due to the inclusion of elements like **simple navigation, search tools, and user-generated content**. The forum can also encourage **inclusivity** and **respectful communication**, which can foster a sense of **community** and **fruitful** cooperation.

Novelty of the Solution:

The site is **extremely novel** and provides an **interestingly new experience** as there are currently no sites that provide a medium for IB students to take **academic assistance** from other IB students from across the world, that too with the capability to tag questions into IB topics, IB criteria of assessment, and grades. The novelty of the solution provides an opportunity for it to be **widely recognized** and used by the target audience to take **help/revise, especially prior to assessments**.