

Cover Page

COMPSCI 345 / SOFTENG 350 Human-Computer Interaction

Assignment Two: Low-Fidelity Design

Group Number: 26

Group Members:

Name	ID	UPI
En-Yu (Mike) Lee	840454023	elee353
Charlie Zhao	5926427	zzha862
Daniel Wong	137178800	dwon184
Victor Lian	442213705	vlia679

YouTube video link:

<https://www.youtube.com/watch?v=jxOOyLmQIbQ>

Note: To ensure a fair playing field for all students in the class the University of Auckland will not tolerate cheating or assisting others to cheat, and views cheating in coursework as a serious academic offence.

Student Declaration:

- We [the above named students] declare that this work is our own work and reflects our own learning.
- We declare that where work from other sources (including sources on the world-wide web) has been used, it has been properly acknowledged and referenced.
- We understand that our assessed work may be reviewed against electronic source material using computerised detection mechanisms.

Place this page in the front of your paper prototype envelop and as the first page of your document that you are submitting to Canvas

1. Introduction

- The primary stakeholders of the system are secondary school students aged between 13 and 18 (between Year 9 and Year 13).
- The subject domain chosen is Physical education and the sub-domain is the role of lactic acid in exercise.
- The two types of problem-based learning assignments selected are the case with structured questions and the 'solution' to a problem approach.
- The case with structured questions involves the student reviewing a case and providing brief responses to a set of questions. Students can do peer discussion before attempting the questions.
- The 'solution' to a problem approach consists of a problem outlined with a context for the student. The student then constructs a solution to the problem and an explanation/justification of their solution. They can then review other students' answers and provide peer feedback.
- The "case with structured questions" were interpreted as a case study followed by some short answer questions about the case.
- The "'solution' to a problem question" were interpreted as questions that require long answers, most likely writing in paragraphs.

2. Personas

Rationale

To help capture all the requirements, the persona should cover a wide range of typical users in terms of their system behaviour. The MBTI personality has been used as one of the indicators on the persona. It is designed to reveal psychological preferences and how people make decisions as well as revealing the cognitive learning style (Wikipedia, 2017) of the user. By expressing the four dichotomies on a scale, it provides us with a basic idea for the personality of the users. Since the design is a learning system, it pays to look at learning styles in more detail. The Felder-Soloman Index of learning styles (Felder & Soloman, 2012) is also used. Again, by putting the styles on a scale, we can get an idea on how the users will learn as an individual. This should help us design an interface that supports users with various learning styles. Personal information like traits, statements and hobbies help to create a more realistic person. Other attributes like academics and technology, together with the goals, help us to understand how the users will use the system.

References

Felder, R. M., & Soloman, B. A. (2012). *Learning Styles and Strategies*. Retrieved from NCSU:
<http://www4.ncsu.edu/unity/lockers/users/f/felder/public/ILSdir/styles.htm>

Wikipedia. (2017). *Myers-Briggs Type Indicator*. Retrieved from Wikipedia:
https://en.wikipedia.org/wiki/Content_delivery_network

For photos:

High School for Girls. Photograph, viewed 30 Apr 2017,
<<http://www.hsfg.org/site/data/files/images/professional%20photographs%20-%2018%20sept%202015/8C0CF2CC44F2AA653E2EAF48DF3B6308.jpg>>. (Emily Jones)

The Babylon Bee. Photograph, viewed 30 Apr 2017,
<https://cdn.pixabay.com/photo/2015/04/16/22/42/human-726332_960_720.jpg>. (Luke Fraser)

Emily Jones



Enthusiastic

Curious

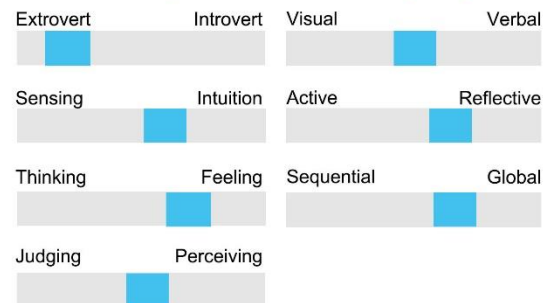
Dedicated

Emily is an intelligent girl coming from a small town near New Plymouth. She is humorous and kind, so she has lots of friends. She is creative and often comes up with bright ideas. She likes learning new things and asking "why". She likes group work and enjoys discussing problems with her classmates. She wants to be a journalist when she grows up.

GENDER Female
AGE 16
YEAR LEVEL Year 11
SUBJECTS English, Maths, Media Studies
History, PE

"I like solving problems with friends. Knowing other people's thoughts and how they differ from mine is fascinating."

Personality



Learning Style

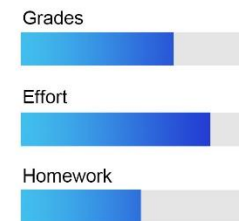
Goals:

- Emily's primary goal is to use the tool as a discussion platform to form collaborative answers.
- Emily needs reliable ways to share her ideas.
- Emily wants to see other people's comments on her answers.

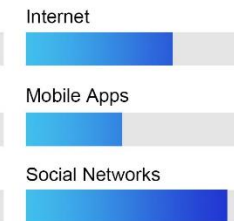
Hobbies:

- Painting
- Photography
- Netball

Academics



Technology



Favourite Websites



Luke Fraser



Capable

Calm

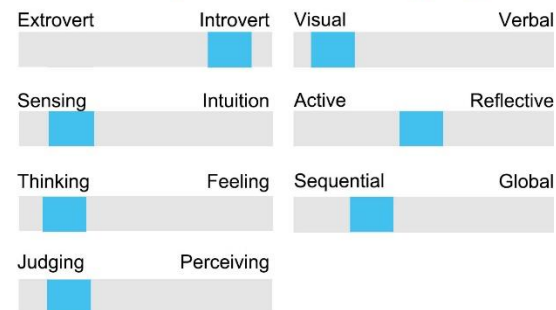
Orderly

Luke comes from a family in Auckland. Both of his parents work as engineers in factories. Luke is calm and organised and he likes facts. He is smart but he doesn't like homework and assignments. He likes reading, especially scientific novels. He is a little bit shy and don't talk very often in discussions. He wants to be an engineer like his parents in the future.

GENDER Male
AGE 15
YEAR LEVEL Year 10
SUBJECTS English, Maths, Science
Social Studies, PE

"I don't like homework, it is boring and time-consuming. I'd rather spend more time on reading books."

Personality



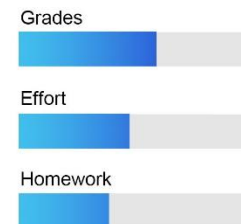
Goals:

- Luke's primary goal is to use the system to complete his homework efficiently.
- Luke wants fast access to his homework.
- Luke needs accessible and relevant information for his work.

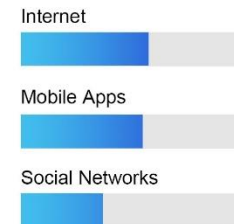
Hobbies:

- Chess
- Piano
- Football

Academics



Technology



Favourite Websites



3. Scenarios

Scenario 1

PACT Analysis

People: Emily Jones

Activities: Navigating the system to join a peer discussion on a case study.

Context: Alone at home doing her homework.

Technology: Chrome on a personal laptop

Scenario: Emily is doing her homework, one of the tasks for PE class includes a case study on the treatment of lactic acid after exercising. There are other cases, but this is the latest one published. She would like to discuss the questions for the case with her classmates and then answer them. They decided to come online together for the discussion at 4pm so they are discussing the questions live. It is 4:05 pm, Emily turns on her laptop and logs on to the learning system. She starts from the main screen, navigates to case studies and find the given case. She then reads the case material first before looking at the questions. After looking at the questions, she found that her classmates have already started the discussion, so she begins from reading their responses. After that, she thought of some clever ideas that could help with the question, so she joins the discussion by submitting her opinions to the discussion window.

Scenario 2

PACT Analysis

People: Emily Jones

Activities: Navigating the system to answer a problem-solving question, then read her classmates' solutions, then give some ratings and write some reviews.

Context: Half an hour after school has finished, Emily is in the library doing her homework.

Technology: Chrome on a school desktop

Scenario: It is 3:30pm and Emily just finished school. She is in the library doing her homework. She needs to answer a 'Problem Solving' question regarding the formation of lactic acid. The question was set by her teacher in class today as homework. The homework also contains a peer review component, which means she also need to look at her classmates' responses and write some reviews. Emily logs on to the learning system. She starts from the main screen and navigates to the problem-solving section and finds the question. She then writes and submits her answer to the question. After she submits her answer, she then uses the review function to look at her classmate's work. She then reads her classmate's work, provides some constructive feedback and gives it a rating. Finally, she repeats this rating and feedback process until she has looked at all the responses of the classmates in her group.

Scenario 3

PACT Analysis

People: Luke Fraser

Activities: Using the discussions from a 'Case Study' section questions, formulate an appropriate answer.

Context: Half an hour after school, in the library doing his homework. The case was discussed in class.

Technology: Chrome on a school desktop

Scenario: It is 3:30pm and Luke is doing his homework in the library just before his football match at 4:15pm. He needs to complete some questions from a case study about treatment of lactic acid after exercising. His teacher went through the case with the class earlier in the day, and they had some peer discussion time afterwards. He turns on the desktop and logs in to the learning system. He starts from the main screen and navigates to the case studies section. Using the search bar, he enters the keywords "lactic acid" to find the case quickly. After finding the correct case, he selects it and reads through the case material and the posts in the peer discussion section. Using the information from the peer discussion, he forms an answer, submits it and moves onto the next question. He repeats this process until he finishes all the questions under this case study.

Scenario 4

PACT Analysis

People: Luke Fraser

Activities: Review the comments and ratings provided by his classmates on his solution to a problem-solving question, then answer some practice questions in this section.

Context: Studying alone in his room

Technology: Firefox on a personal laptop

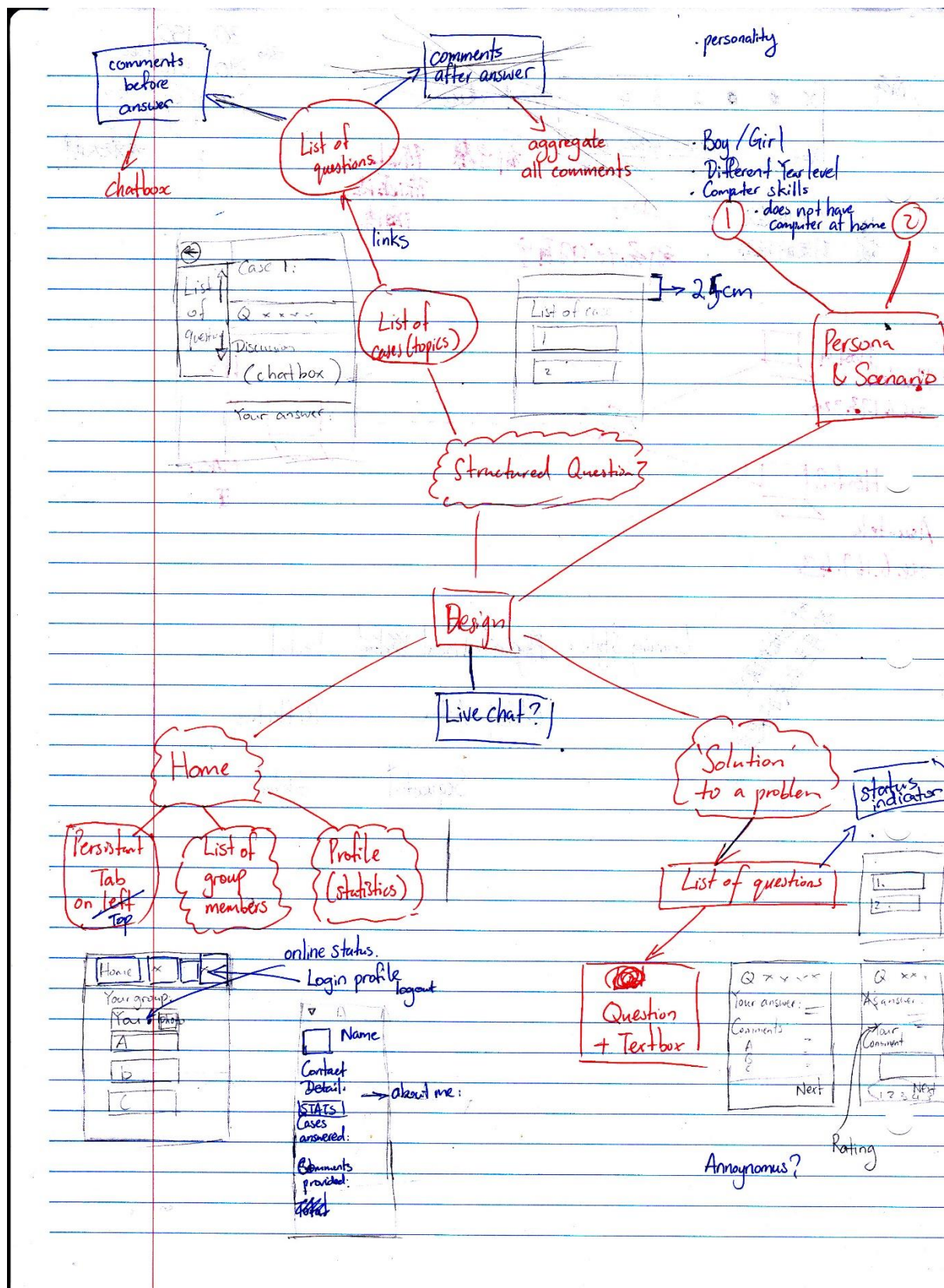
Scenario: It is 7pm and Luke is studying for his test tomorrow. He did a question earlier in the week but he wasn't sure about his answer. He wants to look at the comments and feedback made by his classmates to help him study. After logging himself onto the learning system, he starts from the main screen and navigates to the 'Problem Solving' section. He goes to the first question and starts reviewing his classmate's comments on his solution to the problem. After reading all the comments, he thinks he needs some more practice on problem solving questions, so he decides to answer some old questions that he didn't do for practice. He navigates himself back to the problem-solving section and finds a question that he did not do before. He enters the question and submits his response. He then moves on to look for other unanswered questions.

4. Requirements

- Home screen
 - Navigation tabs on the left, with shading to indicate the current screen to the user.
 - Two progress bars that presents the percentage completion of each mode to the user.
 - A list of members with name, class, photo and online status is shown.
 - Clicking on the drop-down buttons shows more details of the member.
 - The display picture of the current user is displayed on the top right corner.
- Case study screen
 - Navigation tabs (same as above)
 - Clicking on the navigation links on the top allow the users to switch screens
 - A list of cases and their last updated dates are shown in the middle. They are sorted in chronological order (from latest to oldest).
 - Search bar on the right allows the user to quickly find their case by using keywords.
- Case study sub-screen
 - A list of questions under the case is shown on the left.
 - Users can use the search bar provided to filter the questions.
 - The case is shown on the right.
 - The question description is on the top.
 - The middle section allows the users to discuss by reading or posting comments.
 - The answer section below the discussion area allows the users to form and submit individual answers.
- Problem solving screen
 - Navigation tab (same as above)
 - A list of questions is shown in the middle, again sorted in last updated date
 - The search bar on top of the question list allows the user to enter keywords to filter questions.
 - Each question has a “Answer” or “Review” button which will take the user to the answer screen or the review screen.
 - The review button is greyed out (not clickable) before the question is answered. Hence, the user cannot review the question before answering it.
 - The last updated date for each question is also displayed.
- Problem solving sub-screen - Individual questions
 - A list of questions is shown on the left.
 - Users can use the search bar provided to filter the questions with keywords.
 - The question is shown on the top.
 - The answer text-field and the submit button are below the question.
- Problem solving sub-screen - Reviewing
 - A list of questions and the search bar is shown (same as above).
 - The question is shown on the top.
 - On the bottom left, a screen displays the answer for the individual selected.
 - The tab on the left of the answer screen allows the user to select who’s answer to review.

- If “You” is selected, then the screen on the right shows all the comments given to the user.
- If any other member is selected, the user can provide ratings and comments on that member’s answer.

Mind-mapping



Processes and findings

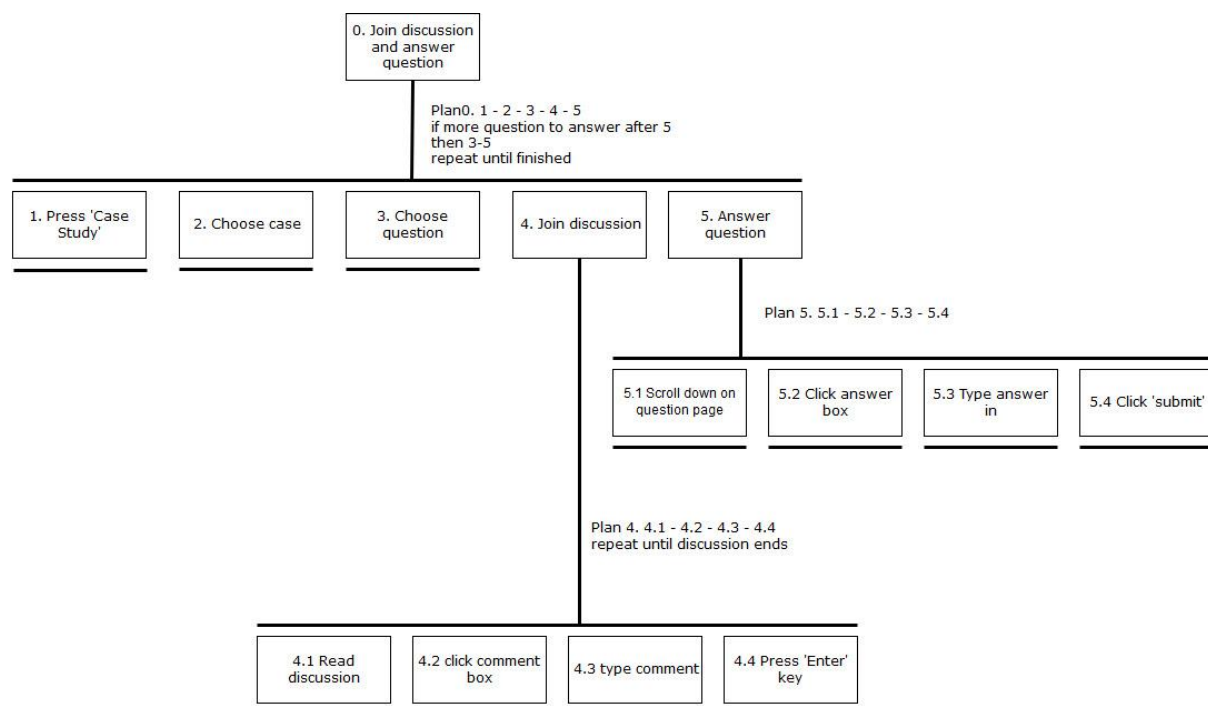
- All four members attended the mind-mapping
- Top-level structure of system: home, case study, problem-solving
- Basic layout: persistent navigation tab on the left, hyperlinked headings, back buttons
- Design on home screen: personal profile, extendable for more details, online status, progress bar or statistics
- Design on case study: case followed by questions, discussion on questions – chat box, case material always visible, search bar
- Design on problem solving: list of questions (with indicator on complete status), question and simple text-field layout, review on separate screen (with ratings and comments).

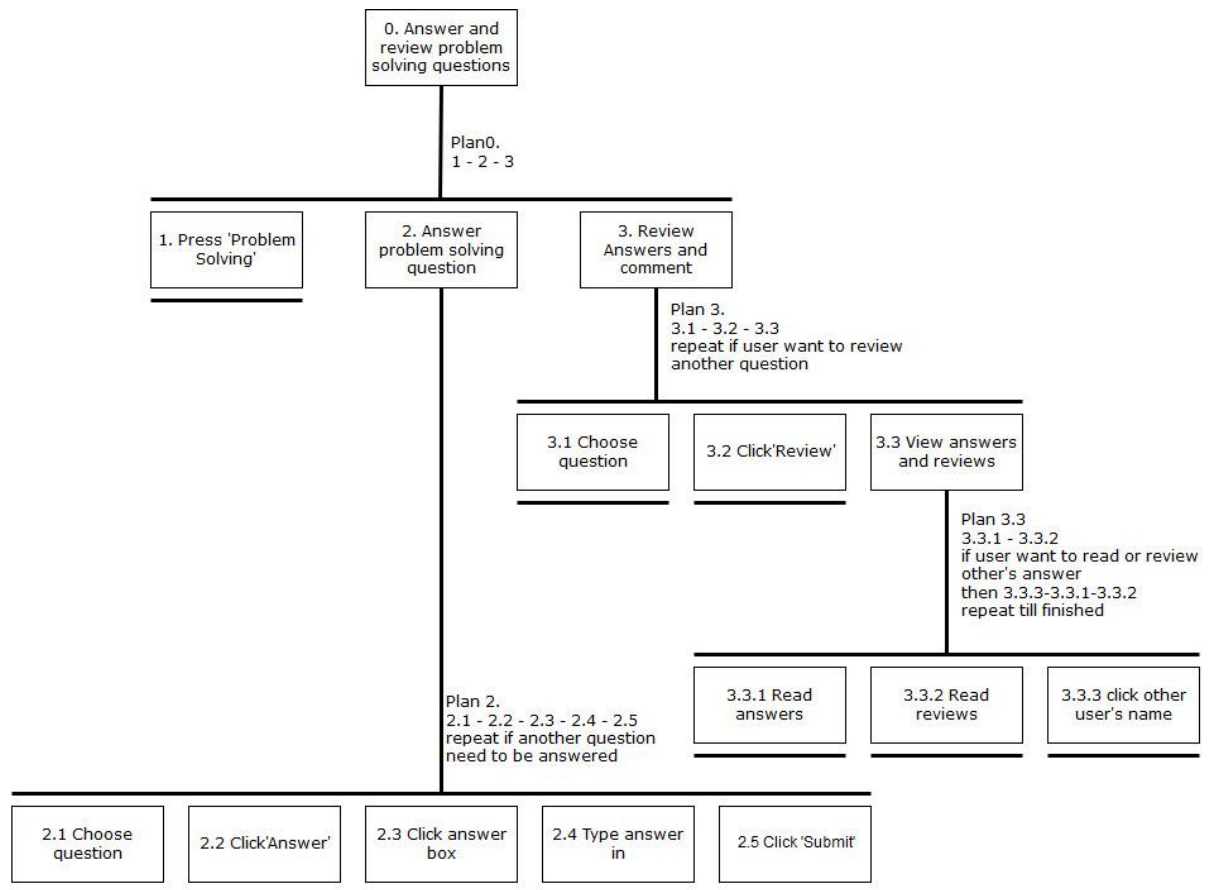
Hierarchical Task Analysis

The two HTAs show the steps to use the interface.

The first HTA shows how to join a discussion and answer a case study question. This covers scenario 1 and 3.

The second HTA shows how to answer and then review a problem-solving question. This covers scenario 2 and 4.





6. Visual and Interaction Design

1. Cannot review before answering

For the section on problem-solving questions, we decided that the review button should be greyed out when a question hasn't been answered. This is to prevent the user from reviewing others answers before they've attempted it themselves. This demonstrates the efficiency principle, specifically simplicity and constraints. The constraint limits the actions that the users can take when they cannot perform a review. It is also convention to 'grey' out input boxes when they are not applicable. The idea of leaving the button on the screen but greying out follows the consistency principle. On the same note, it also demonstrates the principle of effectiveness specifically safety, as it helps to keep the program in a safe state and not enter an error state which could potentially occur if the user enters a review for themselves.

2. Navigation tab (on the left)

One of the design element is the navigation tab on the left. We decided that the navigation tab will appear on every screen with the same width and height. This follows the principle of consistency and gives the system memorability. We also decided that the current tab will be shaded or coloured, which gives some indication on the status of the system. This follows the visibility principle. Finally, together with the hyperlinks navigation across the top of the screen and the back button on the top left corner, users will always be able to navigate themselves using these areas, giving them the orientation needed under the visibility principle. Also, the location of these navigation based elements follow conventions, on the left or on the top.

3. Personal profile

On the home page, a profile is displayed for each team member. We decided that the profile should only display the minimum amount of information, so only the profile picture, the name, the class and the online status is displayed. Other personal information such as contact details can be viewed by clicking the drop-down arrow. This design follows the simplicity principle, specifically, the progress disclosure principle. By showing only the basics to the users, the interface looks tidier, and will not overload the users with information. The member profiles line up neatly, following the common fate principle. The order of the member profiles is also carefully designed. The first one is always the user himself/herself, followed by online members ordered in alphabetical order, and then followed by offline members also in alphabetical order. These ordering also follows conventions and should help user to find their members more easily.