Cover Page

COMPSCI 345 / SOFTENG 350 Human-Computer Interaction

Assignment Two: Low-Fidelity Design

Group Number: 99

Group Members:

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YouTube video link:

https://www.youtube.com/watch?v=bdJMJHpHjOQ

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

Physical education (the 'knowledge' aspects – you're not physically training the user with the system)

Subtopic: Strength training

a) Introduction:

Domain - Physical Education
Subdomain - Strength Training
Problem based learning style:

- Case with structured questions
- Problem solving where a problem with a context is outlined for the student

We believed the best way to implement peer review type scenarios was to set a task which could have several different correct answers allowing for open ended feedback to provide a deeper learning experience ie. *create a strength building routine focusing on a given muscle group for a team of a given sport.*
The feedback may entail the suggestion of using more or less exercises in a given routine, or exercises more adequately suited to the type of sport involved, ie Hamstring strengthening for Rugby Players.

b)
Brief:
We designed 2 personas designed with the following in mind:

- Frequency of usage: make the application intuitive to use on both a daily and weekly basis
- Varying degrees of interest in strength training: Help make the system intuitive
- Varying levels of learning ability: make information balanced between readable and concise
- Differing peer relationships: help to design the peer review aspect
- Varying levels of tech confidence and usage: design the system to be efficient to use without prior experience of similar applications.
- Similar applications used: ie, facebook messenger for social aspect/piazza for peer review
- Prior knowledge of physical training: helped define the depth at which each exercise explanation needs to be developed, the difficulty of questions balanced.

We believe that Chad is a representative high-school boy that will fit as an archetype for our primary stakeholder.This male archetype user has a good well-rounded knowledge about technology, however, the conciseness of the information that this persona obtains must be extremely simplified and transparent as the primary focus is about quick result obtainment.
We believe that Stacy is a great archetype user for our secondary stakeholder who is interested in fitness. This persona represents focused and self motivated users interested in

deep learning. Due to the limitation of 2 personas max, our second persona has less confidence with technology

Chad Thunderwick

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What Chad needs is transparency, clarity and simplicity.

Age: 18
Location: Henderson
Attends: Avondale College
Background: Chad is your average highschool boy, he is constantly participating in social media and only concerned about getting fit with rigorous dietary planning and exercise, on the weekends Chad often goes out for runs maintaining his Cardiovascular system as he knows it is important not to enter a sedentary lifestyle if he wishes to achieve his goal of a lean aesthetic physique. However Chad isn't quite knowledgeable about the specifics of the human anatomy regarding the skeletal and muscular system and how the physics behind weightlifting and strength training regimens, but he is willing to participate and discuss with his peers to learn further about the specifics if the information is given to him in an accessible and easily understandable way.
Understanding of information Slower
Relationship with peers Casual
Will use the application Infrequently
Prior knowledge of physical training High
Tech usage: Phone - Very High, Laptop - Very High
Tech Confidence - High

[1] Image retrieved from https://cdn.pixabay.com/photo/2016/04/26/15/59/pistol-squat-1354688_960_720.jpg

Stacy Pennell

What Stacy needs is simplicity and accessibility
Age: 17
Location: Glen Eden
Attends: Avondale College
Background: Stacy is a highly academic intellectual who loves studying the theory behind what constitutes a healthy lifestyle and is interested in how the benefits of strength training can really excel this process. She is mildly sociable, however doesn't often participate in social media but loves to help out others on the journey to self improvement and regularly participates in the school netball team which plays weekly tournaments. In the near future Stacy hopes to further her education in physical education with a rigorous discipline in human physiology and physical exercise which she can then share with her peers and spread the message of healthy living, so she is quite enthusiastic about small online/peer reviewed communities so she can ease her way into a more similar professional environment in the future.
Understanding of information Fast
Relationship with peers Professional
Will use the application Frequently
Prior knowledge of physical training Low
Tech usage: Phone - Very Low, Laptop - Very Low
Tech Confidence - Low

c) Scenarios

Scenario 1:
People: Chad, Group Members / Peers
Activities: Navigating through the application to find information on explosive back exercises and providing brief responses to a set of questions.
Context: At home, on a school night.
Technology: A home computer, with internet access.

Chad is given the task to develop answers for a set of structured questions based on explosive back exercises which is related towards strength training. On a school night he finds himself trying to navigate through the application, gathering information, before providing brief explanations on how to perform these routines on the peer feedback page.

He navigates through the app by beginning at the login page, after logging in, Chad tries to figure out where the section on back exercises is located. There is a help button and live chat which can provide Chad with extra assistance if he is struggling to use the app. Chad finds himself on the main page where he is prompted with an interactive body, which when clicking on a body part or muscle, a scrollable list of exercises drops down from the side with other information related in that section. He starts clicking on the quad and hamstring gathering information and resources as well as youtube videos suggesting how to perform these exercises. After being presented with the key materials essential for answering the given questions, Chad starts writing up his answers. Chad then navigates to the peer feedback page, where he posts his answers for his group members to see. His peers see his answers and respond by creating discussions on the given topic. His peers have options to respond to his question, giving feedback and suggestions towards his given answers, in addition to him responding to his peers.

Scenario 2:
People: Stacy Pennell
Activities: Stacy wants to understand and study the anatomy behind a stronger vertical jump that will contribute to her improvement in netball.
Context: Classroom, during the physical education period at school.
Scenario: Stacy's passion for netball has been growing, however she feels her game has room for improvement. Stacy decides to isolate one area of her play and want to understand the anatomy and muscle structure behind the vertical jump that will contribute to her improve during game time. Stacy clicks on the applications icon on the desktop and it promptly opens up. She logs in, navigates to the question and answer section and completes a form submitting it to the Peer user base, querying how she should go about training her vertical jump. Upon receiving a response some time later she is instructed to learn about strengthening the quadriceps and glutes as they are primarily responsible for the explosive jumping movement. Stacy navigates toward the leg and glute anatomy module and proceeds to learn about the various movements she can train to improve her vertical jump.

Scenario 3:
People: Chad

Activities: Navigating Strength Anatomy application and gathering information on specific muscles and the training that targets them.
Context:Chad independently designing the routine and learning about muscles after school and on his own time.
Technology: Microsoft Surface

Chad is being requested to find a routine for ‘Coach Dave’ as a hypothetical task provided by the learning management system. Chad needs to develop a strength based routine for offseason rugby players to keep them fit and strong while they aren’t regularly playing. The routine will need to focus on Legs Core and general explosiveness. Chad will use the strength training and anatomy application to gather the information he requires to successfully deliver a first draft of his strength based routine as a solution to this question. Chad will go through the Leg and Core modules on the app and find the most effective and suitable for group team training. Chad will devise a first draft of his routine to present to the peer review forum section of the application. Chad will receive peer feedback based on the integrity and correctness of his Strength routine.

Chad begins designing his routine by deciding to select some leg exercises. Chad starts from the login screen and enters his username and password taking him to the main screen and selects from the human body graphic, the Leg module. He is presented with a close up image of the muscles that comprise the leg system. And on the right a scrolling bar of exercises. Upon selecting a specific exercise, the screen shifts once again to display a scrollable infographic detailing how to set up and perform the squat with a barbell. At the bottom of the infographic is an embedded video of an athlete performing a squat with perfect form. Chad watches the video to get a good idea of the squat and the equipment it requires and notes down in his draft routine he will require a rack, a barbell and some plates. Chad repeats this process until he has created a draft workout plan he is confident will satisfy Coach Dave’s needs. Chad finds himself at the main screen and navigates to the Peer Review section to submit his draft for further review. Chad logs out.

Scenario 4:
People: Stacy
Activity: Stacy wishes to further her understanding of the muscular system around the arm and how corresponding muscle groups work together to perform actions and movements for her P.E exam.
Context: Stacy is enrolled in her high-school PE class and regularly attends lectures as well as out of school studies to improve her understand of her subject course as she aims for good grades in both her academic and practical areas. She currently preparing for an in class examinable test, but she has several issues and difficulties understanding particular things about the course, mainly to do with the mechanics and anatomy behind arm functionality. Stacy opens up the Strength101 application and logs into her account where she keeps track of her progress and personalized study, she navigates her way using the interactive anatomy model on the front page and locates the arm region, after selecting the body part she is then redirected to an in-depth detailed page which rigorously talks about all exercises, muscular and skeletal mechanics behind arm movements. Stacy see's that she has a big problem with remembering arm tendons and how they correlate to the muscular system and watches a pseudo-lecture about this specific topic which was displayed as an option to her on this detailed page. After watching the lecture at her own pace she heads over to the questions & answers page which then prompts her with multichoice quiz like questions to test her understanding of the concepts she has just learn via the embedded video, Stacy proceeds to answers the quiz and makes note of her score to see whether she has truly understood the concept. Stacy notices that she's just slightly unsure of this one axiom that seems to be a recurrent question in all of the quiz questions so she heads over to the social tab and makes an instant message to her friend Johnny who she knows excels in this area, after clarifying her question which was answered by Johnny who helped explain it to her, Stacy is satisfied she is well studied for the test and exits the application.
Technology: Laptop, Strength101 web interface application.

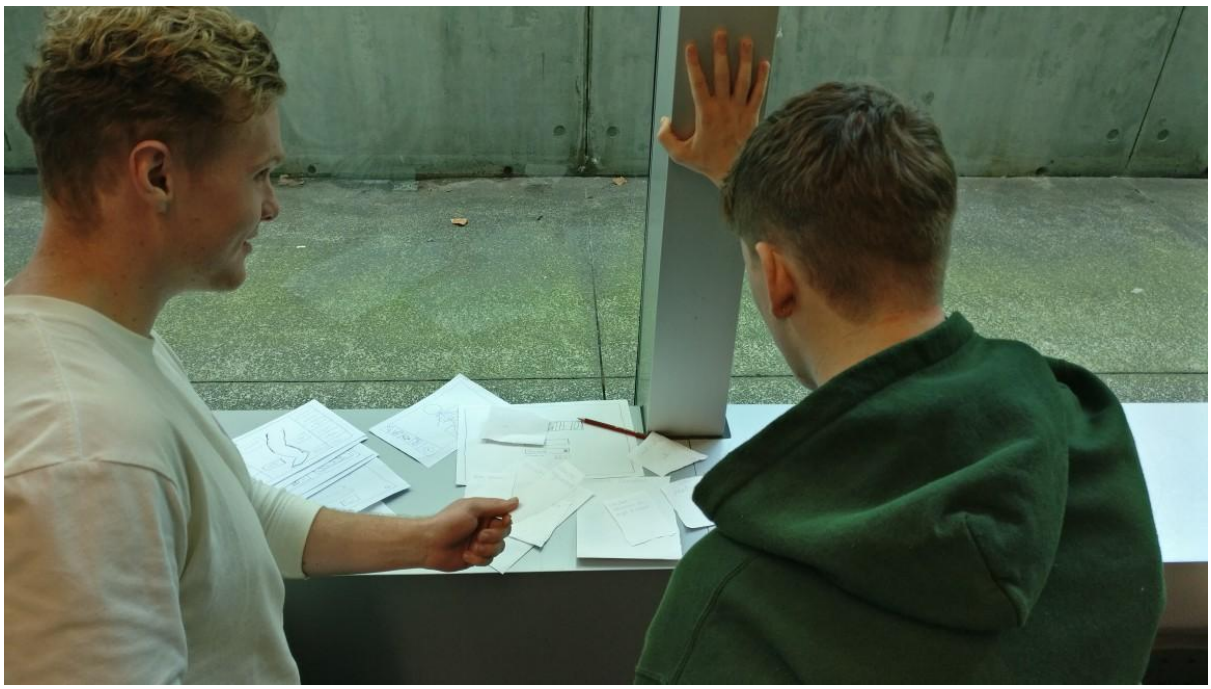
d) Requirements

User is able to log into his/her account then directed to main menu

- From the main menu the user has 6 options:
    - Home screen
    - Questions & Answers
    - Messaging + Contacts
    - Problems & Solutions
    - Settings
    - Interactive body model learning tool
- Under Problems & Solutions the user is able to:
    - Undertake a scenario like question to answer
    - Review feedback from attempted questions
- Under Messaging + Contacts the user is able to:
    - Add a user
    - Send a private message to another user
    - Open messages received by other users
- Under Questions & Answers screen the user is able to:
    - Create a new question which creates a thread on the community reviewed page
    - Answer existing threads with a solution
    - Upvote / Downvote existing solutions for correctness
- Under Settings the user is able to:
    - Adjust notification frequency
- Under interactive body model learning tool

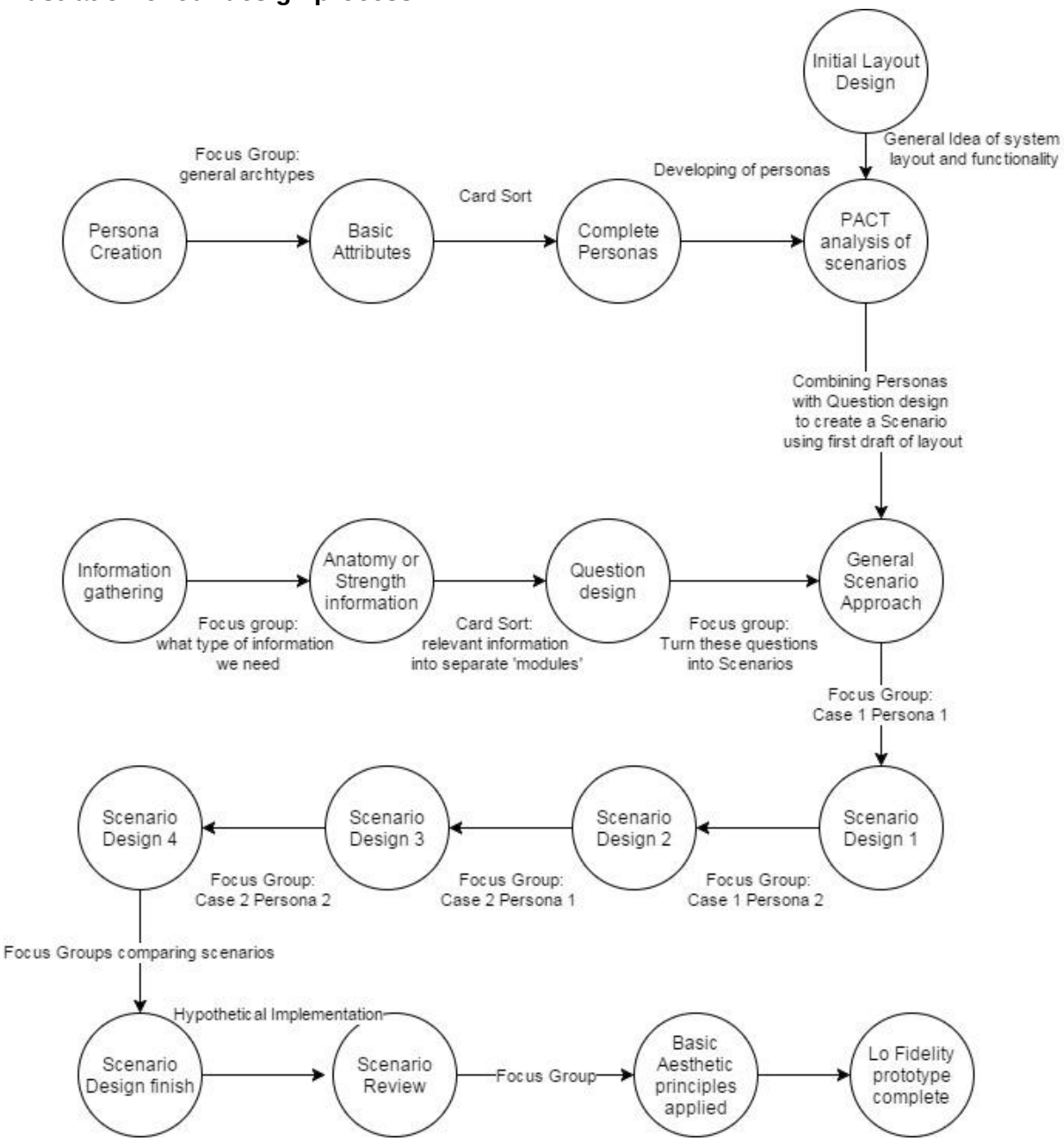
e) Conceptual Design

Conceptual design included a card sort and focus group approach. To card sort, we set up an area with 2 or more topics and decided which ideas or functionalities applied to the topics the most, placing those cards on the respective area. Once we had our initial ideas on paper and sorted, we knew what our priorities would be. A focus group would iron out any communication gaps or ambiguities. Focus groups were great places for discussion about how our Scenarios could come together from a PACT analysis perspective. These were essential as to reach conclusive Scenarios we would need to approach from 3 angles: Questions/Information, Personas and A general idea of layout.



Team members completing a card sorting exercise

Illustration of our design process:



Design for the four scenarios had to be approached from 3 angles. First we had to think about the type of questions would be asked which required gathering certain information pertaining to Strength Training. We needed a good idea of the initial layout so our Scenario run had consistent use of the application, finally we needed a good solid set of Personas to apply our Scenarios to. Once we had these we were able to approach Scenario design with PACT analysis. We approached all three of these angles with the same combination of card sorting and focus groups.

f) Visual and Interactive Design

1. Layout of menu navigation icons: The goal with our design is to achieve a minimalist design coupled with efficacy from the layout of the navigation from the main menu. The navigation menu contains all the icons that are finely bordered and aligned with a common fate to show distinctive groupings (navigation) and text accompanying the icon starting with a capital letter followed by lowercase letters as well as icon centering which reduces eye strain. Icons are used to induce an affordance for clicking for each boxed option as they should since they are navigation options, it also includes consistency and standards with relatable and commonly used icons which has global recognition and easy understandability. By including all these principles it makes navigation effective (tightly grouped related navigational functionalities) and efficient (minimalist and easily accessible/understandable design)

2. Within the interactive body model learning tool, the balance of the layout is maintained by keeping equal weights of objects such as the menu navigation which lies on the left of the screen and body part navigations with further functionalities on the right side of the screen where the interactive body model is centered in the middle of the screen to induce emphasis and importance. There is also the ease of recognition rather than recall as every navigation possibility relating to a body part will be prompted on the right hand side of the screen which users can recognize and navigate to rather than having to remember or create a mental mind map as they hover over a clickable body part in the interactive model.

3. Within the question and answers section the layout takes on a symmetric and unified design following the balance principals as the bottom panels containing peer activity are weighted evenly towards the top panels regarding more smaller weighted but greatly clustered question boxes. The unity of each individual component within the top panel gives the effect of a singular larger section grouped with similar region of functionalities. Each question box are of equal size with a good D/W ratio giving rise to easy clickability according to fitts law, followed by a logical ordered listing with lexicographical ordering in regards to the bottom panel for peer activity and in regards to the top panel for questions having the most recent created questions near the top to allow a fast decision time for users which is a demonstration of the hick hymans law.