

User Personas and Context Scenarios

Interactive media object: Desktop application

The following are applicable to all user personas:

- First-year undergraduates at U of T
- Pre-PT
- Motivated to do well
- Kinesthetic/visual learners
- Generation Z (tech-savvy), ages 18-20



Primary Persona:

Tracy “who tries”

“Anatomy is so hard! There's too much information to memorize.”

Personality and Student Characteristics

- Surface learner with low visuospatial ability
- Detail-oriented, hardworking student
- Type A student who is anxious about grades

Profile:

Tracy is a hardworking student who is struggling in anatomy. Although she finds Dr. Laprade’s lectures very interesting, she is overwhelmed by all the material she needs to know.

After each class, she carefully re-writes her notes several times, and regularly reviews her flashcards. However, she finds the work she’s putting into memorizing is not helping her understand the material. Tracy can list specific names of bones, muscles and nerves, but she always forgets what these structures look like and has a lot of difficulty linking the name of the structure to its function. When she consults Grant’s Atlas, she gets overwhelmed by the complexity of the images and distracted by details such as the shapes of the muscles. During her peer group ICK tutorials, she has no idea where to begin and ends up relying heavily on her classmates to solve the case study problems. She is frustrated about her lack of contribution, but too embarrassed to reach out to the TAs or Dr. Laprade for extra help.

As the upcoming exam draws closer, Tracy is feeling increasingly stressed. Recognizing that her current approach isn’t working, she would love a resource that teaches her how to more effectively study anatomy. Specifically, she would like to be able to practice the steps to solving a case study

problem on her own time, without the added stress of peers who are faster than her. Feeling discouraged by the available resources, she is looking for visuals that are simple and easy to understand. Finally, Tracy wishes she could monitor her level of knowledge so she can determine how much more studying she needs to do to get a good grade.

User Goals

- Learn and review key concepts in anatomy
- Practice how to approach and solve case study problems
- Gain strategies on how to effectively learn and study anatomy

Context Scenario

Scenario 1: Using application alone for the first time

1. Despite reviewing lecture notes and assigned reading before the ICK tutorial today, Tracy had no idea how to even start approaching the case study problems on leg anatomy and felt useless in her peer group. At the end of the session, Dr. Laprade mentions *Kinundrum*, an optional e-learning app for case study problems, and Tracy jumps at the chance to give it a try.
2. After coming back to her dorm room that afternoon, Tracy downloads the application from the class page on Blackboard onto her laptop. Often intimidated by new software, she is relieved to see that when she opens the application, there is a tutorial to guide her through the main controls.
3. Tracy clicks on a lower level case study to start. She watches a short, entertaining case scenario animation on a person with a limp. As prompted by the app, she types up the main points in the notebook feature next to the video, re-watching and scrolling through the video several times to get all the important information. After she decides to move one, she notices the animation and notes are placed in a 'patient folder' feature that she is able to re-access at any point.
4. The first question asks her to identify the plane of the affected movement. She consults the GIF animations accompanying the question and clicks to answer. She is rewarded with victory sounds, which make her feel successful. She also notices that the first bubble in the progress bar is now highlighted. Great! Tracy is happy she can track her progress through the case study.
5. The next question is accompanied by a 3D model. Tracy clicks and drags with her mouse to rotate around the model. When her mouse hovers over strings, she sees that labels appear, identifying the muscle. Oh neat! She realizes the strings on the muscle represent muscle. Tracy is able to understand the anatomy in the simplified model, but she doesn't know the answer and guesses.
6. Tracy sees a message notifying her that her answer is not right, and asked to abduct her leg to mime the movement in the question. When Tracy lifts her leg and consults the 3D model once more, she realizes which muscle must be the correct answer. Indeed, she is rewarded with victory sounds when she clicks to answer. Tracy makes a note to use this problem-solving approach in the future.
7. Tracy also gets the third question on ligaments wrong. This time she is directed to another module with an interactive diagram. Guided by instructions on the page, Tracy clicks to drag the femur relative to the hip joint. She can see different ligaments stretching to limit a particular

movement depending on which direction she moves the femur. Cool, she can visualize the functions of each ligament! Tracy takes her time, slowly goes over each ligament in the diagram. She decides to bookmark this module so she can review these ligaments again later.

8. After an hour, Tracy decides to save her progress and exits the app. Even though she only finished three questions, she feels like she learned a lot. Seeing the three bubbles highlighted in the progress bar makes her feel especially accomplished. She decides that she will start using the app regularly to both learn and review anatomy.

Scenario 2: Reviewing a second time with a friend

1. It's only a week away from the anatomy final, and Tracy is knee deep in studying. She has been slowly making her way through the *Kinundrum* case study modules. She has unlocked all of them except the most difficult module. Feeling like a change from studying by herself, she sets up a study date with her classmate Julia to go through it together.
2. After watching the case study video, laughing at the cute animation and graphics, they take turns listing the important symptoms and information to type out in the notebook feature. Before they even start on the first question, they briefly talk about what their problem-solving approach would be to solve the problem as a whole.
3. Right away, they notice that the question in the most difficult exercise aren't accompanied with problem solving tools such as illustrations or 3D models. They are prompted to rely on their anatomy knowledge and mental map to solve the questions.
4. For the first couple questions on skeletal and muscle anatomy, Julia and Tracy are able to talk out the answers correctly. For one question on ligaments, Tracy visualizes an interactive diagram she remembers from a previous remedial module to identify the structure.
5. The question on nerve anatomy, however, stumps them. Instead of guessing to move on, however, they decide to access the hint feature, which reveals the relevant 3D model. Rotating this model around, they are able to figure out the correct answer. Tracy bookmarks this model so that she can make sure she can visualize it in her head before the exam.
6. At the end of the case study, Julia and Tracy watch the conclusion video, which highlights the main takeaways. They also look at the flowchart which maps out the question breakdown to review their problem-solving approach.
7. After finishing the case study, they reset some of the previous case studies and do them again to make sure they understand the concepts. Instead of reading the feedback for each question carefully, they whiz through them and mostly rely on the review animation and bulleted points at the end of the case study to confirm their results.
8. Using the diagrams and 3D models they've bookmarked, Julia and Tracy spend some time quizzing each other. Because they are able to hide the labels and move the muscles and bones relative to each other, they can ask each other a variety of questions on anatomy identification and function.
9. After a couple hours, they decide to grab dinner. Tracy feels happy that the review session was so productive. She is confident for her upcoming exam.



Secondary Persona:

Luke “who loves anatomy”

“I love the lectures and labs, but I wish there were more ways I could test my knowledge.”

Personality and Student Characteristics

- Deep learner with high visuospatial ability
- Studies regularly and is eager to learn

Profile:

Luke is an enthusiastic first year who absolutely loves anatomy. Dr. Laprade has started lecturing on the lower limb and Luke finds the musculoskeletal structures and their movements absolutely fascinating. He eagerly attends every lecture, lab and tutorial. In class, he takes notes diligently on his laptop and then reviews them at least twice a week. Luke usually goes to the library after class to review them before eating dinner. He uses his Grant’s Atlas to look at the relevant structures and movement charts. He then summarizes that information into his own words.

As the weeks progress, the lectures are increasingly in-depth and require more critical thinking. Luke feels comfortable with the material, but needs to actively relate what he knows to everyday movements and possible injuries. Even with all the tutorials, textbooks and lecture slides at his disposal, he struggles to find a resource that would allow him to apply his knowledge to real-life examples. Currently, the only opportunity for him to problem-solve is during the weekly tutorial held by FEAT leaders. He enjoys working with his peers, but they can be distracting. He would like to see if he can complete a case study on his own.

Luke would like an application that presents musculoskeletal anatomy (hopefully free!) in context and allows him to test his knowledge while he is at home. He likes quiz-type apps because they are engaging and more fun. He has always enjoyed learning by doing rather than passively reading the textbook.

User Goals

- Practice applying his knowledge to case study problems
- Test himself to know whether he understands the material
- Review the material before the exam

Context Scenario

Scenario 1: Using application at home for the first time

1. After a long day of class, Luke decides to study some anatomy. He recalls Dr. Laprade presenting a new learning resource available on Blackboard. Using his laptop, he clicks on the link to download the application.
2. After downloading, Luke launches the application and is met with a screen explaining the learning goals of the application. He briefly reads over them. He is then met with two options: Home and Tutorial. Dr. Laprade went over the tutorial already so Luke feels comfortable skipping it.
3. Once at the home page, Luke is presented with different case studies. They have fun topics but do not specify the joint. He clicks on one that is unlocked for the time being. Here, he is presented with a short animation of a patient hurting their knee playing soccer. That's cool! Luke also plays soccer. In the video, he is able to see the mechanism of injury. Once the video is done, Luke chooses to move forward and the video is filed into a patient folder.
4. He breezes by the first questions addressing basic knowledge. However, he thinks they did serve as a good reminder. As he goes through the questions, he finds himself having to constantly consult different parts of his notes.
5. Occasionally, Luke gets a question wrong because he reads it too quickly. Fortunately, the app will highlight keywords in the question and gives hints before letting him try again. He can also open definitions as he hovers over the highlighted keywords. The hint button gives prompts such as "use your elbow to replicate the motion". He also enjoys the testing format because it keeps him more engaged than readings and reviewing lectures.
6. Luke reaches a question that is accompanied by a remedial module. He explores the remedial module by clicking on the book icon beside the question. It is an interactive activity that showcases ligament tension. Luke hasn't experienced any resource that would allow him to visualize the body in such a way.
7. Many times, Luke is between answers and ends up guessing between the two. If he answers correctly, the app will explain why his answers are correct or incorrect. This allows him to gain a greater understanding of the problem.
8. Luke is a big fan of the interactive 3D models in the app and saves them for later studying by pressing the bookmark button. He can access these bookmarked modules at any time.
9. Finally, Luke has reached the last question where he is asked to put together the entire problem in context. He has access to all his previous answers to help him piece together the case study diagnosis. Once he has answered, he is brought to a page with the conclusion animation, a flow chart detailing the problem breakdown to show him what path he has taken to reach his answer as well as a summarized list of the study. At the bottom of the page, there are more open-ended questions that encourage Luke to further explore aspects of the case study.
10. Luke has successfully finished the first case study. He enjoyed the experience because it allowed him to apply the class material in a clinical context, instead of repetitively reviewing theory. He closes the app and gets some well-deserved ice cream.



Secondary Persona:

Polly “the parrot”

“Is this on the exam? OK, what’s the most fun way to learn it?”

Personality and Student Characteristics

- Surface learner with low visuospatial ability
- Finds most learning resources dull and uninteresting
- Not particularly interested in anatomy; motivated to study only what will be on the exam

Profile:

Polly knows that a solid understanding of anatomy is essential to becoming a PT, but she finds the lectures slides a little boring, the textbooks overwhelming, and online resources unengaging or irrelevant. YouTube videos are fun but don’t always cover the content that Dr. Laprade tests on the exams.

She is also an international student who lives in residence. Even though her English is quite good, some words are still unfamiliar to her so she uses her translator from time to time. She is thankful for the lecture slides because she can always go over them on her own time. The problem is she finds the slides and textbooks boring so she quickly loses interest.

She likes the ICK tutorials because she gets to work with her friends. She’s pretty good at identifying muscles and bony structures. But beyond that, her friends take over because they understand functional relationships better than she does. She can see these structures in her head, but can’t visualize how they interact to produce movement. Innervation is even more complicated. Polly wishes there is a learning resource that is free, easy-to-use and engaging.

User Goals

- Understand structural relationships, function and dysfunction
- Study anatomy efficiently and effectively
- Have fun learning anatomy

Context Scenario

Scenario 1: Using the application to review for an exam

1. It’s the weekend before the exam and Polly is in a panic. She has been reviewing her lecture notes, and memorized all the muscles and movements but still doesn’t understand how the joints, bony structures and direction of muscle fibers result in these movements. Her friends are all home for the weekend so she is on her own. She turns on her laptop to visit UofT’s Blackboard portal. Maybe Dr. Laprade posted links to other resources Polly hasn’t checked out

yet. She recalls Dr. Laprade talking about *Kinundrum*, a helpful case study application, so she clicks on the link to start the download.

2. The app opens with the learning goals which she quickly reads over. As she goes through the tutorial, she is immediately attracted to the app's gaming format. She likes that she has to unlock modules to be able to attempt the most difficult case study. Polly is a video gamer so the app configuration feels comfortable. After the tutorial ends, she starts with the first case study.
3. This app is pretty cool! The case study is introduced with a fun animation. She also notices that the narration is accompanied by written text highlighting the major points. The animation has a pause button which she uses when she encounters a word or phrase that she doesn't quite understand. She enters the written text into the translator app on her phone then hits play again to continue the animation.
4. When the animation ends, the video slides into the patient folder. She guesses that she is able to watch it again if she needs to. She begins exercise 1, and is relieved that the module is not timed. She can take her time understanding the question.
5. The first exercise asks her which ligament will be strained for each ankle position illustrated. In her head, she identifies the ligaments, and locates where they originate and insert, but beyond that she's stumped. She clicks on the *Hint* button, and it asks her to move her own ankle to determine which ligaments are being stretched. She selects her answers and hits submit. She is greeted with a victory sound, and a green check mark appears on the first exercise of the progress bar. She is pleased and moves on to the next exercise.
6. The second exercise asks her to identify which muscles would be affected by the ankle sprain and is accompanied by a rotatable 3D model. How fun! She gets excited and starts to rotate the model around. Now she has rotated and zoomed into an unrecognizable angle. She clicks on the reset button and the model goes back into the original view point. Instead of rotating the model itself, she uses the arrows to rotate it into preprogrammed angles. Looks like the mode rotates incrementally. When she mouses over muscles, they are highlighted but not labeled. Hmm, that makes this exercise a little trickier. She clicks on the first *Hint*, and it asks her to identify the ligament affected first. She consults the case study video again, and makes her choice. The ligament remains highlighted on the model. She clicks on the second *Hint*, and it asks her if she wants to turn the labels on. Now, when she mouses over muscles, labels pop up identifying each. She selects one muscle and hits submit.
7. A pop-up window appears telling her that her answer was not quite right. It tells her that more than one muscle is affected. It gives her other helpful prompts like thinking about which muscles are activated and which muscles are antagonistic to it. She likes that there is a link to review Dr. Laprade's slides, but she is confident about her answer, so she clicks the button that says, "I got this!".
8. She selects the second muscle on the 3D model and hits submit. Yes, it's correct! A green check mark appears on the progress bar, and she has reached the end of this module. She watches the conclusion animation, and likes that the key take-away points are summarized next to it. She bookmarks this page because she knows this will be useful to review closer to exam time.
9. This app turns out to be pretty fun. Polly is determined to unlock all levels, so she eagerly moves onto another case study.



Secondary Persona:

Omar “the overachiever”

“Anatomy is very interesting but I wish I had more time to study.”

Personality and Student Characteristics

- Deep learner with high visuospatial ability
- Procrastinator (because he has too much on his plate)
- Ambitious but has trouble finding time to study for anatomy

Profile:

Omar is elated to be a first-year student. He is excited about being in university and will sign up for every event and committee clipboard he encounters. He did well in high school, so he’s determined to do just the same in university. Because he has taken on a full course load, several extracurricular responsibilities, and a spot on the varsity swim team, however, he is having trouble committing enough time to studying anatomy.

He enjoys Dr. Laprade’s class immensely. He has no difficulty identifying musculoskeletal structures, innervation and joint anatomy. He also has a good understanding of structural relationships, and how it affects movement and function. When it comes to solving case study questions, however, he is not confident on how to approach the problem. Because of his busy schedule, he is unable to attend some of the ICK tutorials and is therefore not familiar with the PBL process.

Omar is always on the go, but he reviews his lecture notes when he can. What he could really use is a resource that can help him review anatomy, allow him to apply what he has learned, and ultimately develop his critical thinking skills.

User Goals

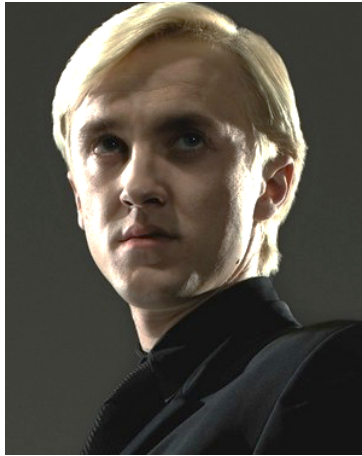
- Do well in the anatomy course
- Practice applying what he learned in lectures because he is unable to attend the ICK tutorials
- Review content and develop critical thinking skills while accommodating his busy schedule

Context Scenario

Scenario 1: Using the application on the go

1. The exam is coming up and Omar feels unprepared. He has attended lectures and labs but hasn’t had time to review his notes. He really regrets taking on a full course load this semester, and joining the varsity swim team on top of that! But he’s determined to do well in anatomy. He did very well in biology during his senior year in high school so maybe this exam won’t be so bad. After going through his lecture notes once, he remembers the application Dr. Laprade recommended to the class. Trying out another learning resource isn’t a bad idea, so he gives the application a go.

2. He logs on to the UofT Blackboard portal and downloads the application onto his laptop. As the application loads, he organizes his lecture notes and places it next to him so he can refer to them if he has to. The application opens up to a page with a list of learning goals. He reads them and makes a mental note that they are similar to Dr. Laprade's course goals.
3. The app suggests doing the tutorial but Omar feels it'll be a waste of time. Besides, he's familiar with video games, how complicated could this be? So he skips the tutorial and moves on to the lower limb joints.
4. He starts with the first case study. After an animation explaining the problem, he dives right into exercise 1. He answers everything correctly and is feeling pretty good. He moves on to the next exercise and is unfamiliar with the activity. He decides to go through the tutorial after all. After he finishes his tutorial, he realizes he's late for swim practice.
5. On the bus, he takes out his laptop and continues the hip joint module. His progress was saved, so he continues completing exercise 2. He moves on to exercise 3 and has difficulty answering the question. He realizes he has forgotten his notes back home. He clicks on the case study icon to watch the animation again. He's unsure but he picks the option that seems most correct. Oh no, it's incorrect! A hint is given but even with that, he's still not sure. So he clicks on the "I need to review" button, and Dr. Laprade's lecture slides open. He reviews the lecture slides and figures out the answer. He submits his answer, and is rewarded with a victory sound. That was a tough one! He bookmarks the module so he could try it again another time. He feels more confident about continuing so he moves on to the next exercise.
6. He's almost at his stop so he checks the progress bar to see how many exercises are left. He's got one more to go so he pushes on. Once he completes the last exercise, a conclusion animation plays. It explains why the patient's dysfunction is occurring, while simultaneously listing down the key take-away points. That's good to know! He bookmarks this module to review again later.
7. He's at his stop. He goes to swim practice feeling a little relieved knowing that he has finished the hip module. He decides to move on to another case study after swim practice during his bus ride home.



Secondary Persona:

Hans “the hotshot”

“High school biology was so easy. I’m sure anatomy will be a piece of cake.”

Personality and Student Characteristics

- Surface learner with high visuospatial ability
- Feels overly confident about anatomy; doesn’t study regularly because he feels he doesn’t need to
- Unaware of how to study anatomy effectively

Profile:

Initially, Hans felt like he was going to ace anatomy with little effort. He got high marks in exercise science in high school without trying hard, so he felt like he was a step ahead of everyone else. His confidence was boosted when he realized he was already familiar with most of the anatomical vocabulary presented by Dr. Laprade.

Writing the midterm, however, was a brutal wake-up call for Hans. Despite his familiarity with the material and general understanding of the concepts, Hans struggled to apply his knowledge to answer the test questions. Surprised and frustrated, Hans barely got a passing grade. Hans needs a learning tool that allows him to identify and resolve his knowledge gaps. Specifically, he would like to actively review and test his anatomy knowledge in different contexts.

User Goals

- Ace the anatomy course
- Learn how to study and review anatomy effectively
- Test his knowledge and understanding; find out which topics he struggles with and fill in his knowledge gaps

Context Scenario

Scenario 1: Using the application to learn how to study

1. Hans can’t believe it. He got 58% on his midterm! He’s frustrated and upset because he had gone into the exam feeling so confident. He memorized all the structure names, took stellar notes and spent hours watching YouTube videos to help him prepare for the exam. So identifying structures was no problem for him, but when it came to the case study questions, he blanked out. He underlined the names that he recognized, but that was as far as he got. He really wants to do better. What is his study approach lacking and how can he fix it? He sees Dr. Laprade during her office hours in search of hope (cue god rays). Dr. Laprade recommended *Kinundrum*, a learning application. He downloads it on his iPad immediately.

2. Hans quickly skims through the learning goals and tutorial. On the main page, he sees that there are a bunch of modules to choose from. Great, looks like there are a lot of exercises to practice with! He starts with one titled “The Case of the Tennis Mom” because the thumbnail looked interesting.
3. While watching the case study scenario, Hans easily picks out the important information to write in the notebook feature, which he can access throughout the case study.
4. Although he recognizes the key terms in the first question and is familiar with the illustrations that accompany it, he doesn’t know how to answer it. He’d rather not have to ask for hints but he presses the *Hint* button reluctantly anyway. The hint asks him to recall the structures in the area, and move his ankle around. Oh DUH, why didn’t he think of that. He does it and notes which ligaments are being pulled. He matches the ligaments to the ankle position, and hits the submit button. He’s correct! He thinks that maybe checking the hints might not be so bad after all since helpful prompts are given.
5. The next question asks what type of movement affects the injury. He recalls what type of movements are produced in the ankle. He’s got this one for sure, so he submits his answer. It’s incorrect! But instead of moving on, he is directed to another model. He follows the instructions and clicks to move the ankle into different positions. He realizes that he didn’t actually understand the ankle movements like he thought. He bookmarks this module to review again later. He re-evaluates his answer, and hits submit. Phew, it’s correct! He checks the progress bar and sees that he has one more question in this case study.
6. The last question asks him which of the muscles involved in plantar flexion are the two most dominant. He recalls seeing a table in a textbook which lists the muscles on one column and relevant functions on the next column. He recognizes all the plantar flexor muscles listed as options. He selects the two that he is most familiar with. Oh man, he’s incorrect again. A hint pops up that reminds him of the ‘rule’ of muscles. He remembers Dr. Laprade going over this in class. He changes his answer and hits submit. He’s correct! And another window opens with an illustration of the superficial and deep layers of the ankle. The app offers this module for him to review, so he looks over it quickly now, and bookmarks it for later.
7. He got through the case study! He got answers wrong more often than he thought. For Hans, the app was particularly useful as a diagnostic tool to point out his knowledge gaps and weaknesses. He tries out the rest of the case studies, and uses the hints to help him along the way.