

KAYLEIGH KORTRIGHT

"OH NO, I HAVE TO DO MATH IN MED SCHOOL?!"

KEY ATTRIBUTES

- **Didn't take statistics during undergrad**
- **Little research background**
- **Not a 'math person'**
Compared to other subjects, math is difficult to learn/understand
Not that interested in developing better quantitative skills

PERSONAL PROFILE

Kayleigh has wanted to become a doctor ever since she began watching Grey's Anatomy in high school. She decided to pursue a bachelor's degree (BSc Honours) in Life Sciences at Queen's University, as this program would provide her all the requisite coursework/knowledge to write the MCAT: she completed coursework in biology, chemistry, anatomy and physiology, microbiology, biochemistry, and physics; she also took a single mathematics course (differential and integral calculus). She graduated with a cGPA of 3.95. While she is above average in intelligence, most of her 'smarts' come from her uncanny ability to memorize vast quantities of information in relatively short periods of time. She found her introductory calculus course to be one of the most challenging as she couldn't rely on memorization alone to succeed; similarly, she found some of her upper-level science courses challenging as they required more critical thinking and application of knowledge than regurgitation of information and execution of procedure. During undergrad, she also volunteered in a physiology wet lab for one semester to help beef up her CV. From that experience, she learned that doing research was not to her taste (she wasn't expecting it to be), though she began to appreciate role of research in the advancement of medicine and clinical practice; however, since her experience was limited, she didn't gain a complete understanding of what research entails (in particular, analysis and interpretation of data). She was so excited when she got in to her first-choice medical school, U of T!

Now 18 weeks into her first year of med school, she finds herself extremely busy with coursework, though everything is going relatively smoothly. She is a few weeks into a component of CPC1, Health Science Research (HSR), which she is slowly realizing will present her with learning challenges she may have difficulty overcoming. Not only does this course seem to be about math and applications thereof (which she had trouble with in undergrad), but it also has nothing to do with her other coursework, which is all centered around weekly themes (e.g. blood). For these reasons, she feels both intimidated and relatively unmotivated to learn HSR material. However, she does attend mandatory HSR lectures and she does complete the required readings and e-learning modules at home to the best of her ability (which varies depending on how busy she is with other, more interesting and seemingly more relevant coursework). She hopes that she can get through the HSR content by relying on her 'strengths' in mathematics: memorizing and applying formulas. For her Mastery Exercises, she hopes her performance on other types of questions (not covering HSR content) will make up for her likely poor performance on the HSR questions.



PERSONAL INFO

Age: 21 years

Occupation: first year undergraduate medical student @ U of T

Location: downtown Toronto
Lives with roommates
Belongs to Wightman-Berris academy

Status: single

GOALS

Kayleigh wants to:

Do well on Mastery Exercises

Prioritize/focus energy on coursework that seems the most relevant or is more highly represented in evaluations (Mastery Exercises)

Try to get by by "getting the most out of doing the least work possible" for coursework that seems less relevant or is less frequently represented in evaluations (not challenge herself more than the minimum necessary to succeed)

BUSINESS GOALS

Stakeholders want Kayleigh to:

Become familiar with course content before lecture so that she can get the most out of class time

Have the opportunity to ask informed questions, participate in the class (if applicable)

Gain a conceptual understanding of HSR content

CONTEXT SCENARIO

Kayleigh is entering her 6th week of HSR and is about to start Topic 4. She notices in her HSR schedule, for the first time since HSR began, that she is to complete an e-learning module for this topic, whose content will be covered in the upcoming CPC1 Mastery Exercise. Since she's never taken statistics and she isn't feeling completely swamped with her other coursework, she decides to take half an hour at home the evening before Topic 4 lecture to go through the e-module and familiarize herself with the content it covers.

She opens her laptop, logs in to Elentra, navigates the HSR course page, and loads the e-module for Topic 4.

On the main page, she sees a navigation menu that can take her to many different locations, including directly into the e-module, into a diagnostic test, into practice problems, and into flagged areas. Kayleigh decides to go directly into the e-module, since she already knows that she knows nothing about the content.

The e-module begins with a context scenario that is presented as a short, narrated story that unfolds as Kayleigh scrolls down the screen. Kayleigh is glad that the context scenario is relevant to Week 18's theme: blood – she already knows something things about that!

Next, the concepts are presented within the given context. While math-centric, they are presented in a way that is easy for even statistics novices like Kayleigh can understand. There are lots of visuals to facilitate understanding of the content, which is pretty abstract. The visuals are accessible because they don't presuppose prior knowledge of statistics (read: they're not charts and graphs). Advancement through the content is contingent upon Kayleigh's interactions with the visual representations, which reflect her understanding of the content. The types and qualities of Kayleigh's interactions determine how quickly or slowly she can progress through the content. Her interactions elicit feedback from a pedagogical agent who helps her reflect on correct interactions and understand her erroneous thinking underlying incorrect interactions. She notices that if she spends too much time on a particular concept, it is flagged within the system as requiring revision, but she isn't prevented from moving to the next concept – she appreciates this feature as she is very busy and can't spend all day on this e-module! [Besides, she still has the lecture to attend, at which time she can ask her prof questions about this content if it's still not clear by the end of the lecture.] By the time she gets through all the concepts, she feels like she is starting to have a good grasp on the content.

After advancing through the concept presentation portion of the e-module, she is presented with a problem related to the content she just reviewed, which is relevant to Week 18's theme (blood). To help her solve the problem, she can interact with a set of visual assets on screen. A pedagogical agent pops up to help guide her when she needs it and provides feedback on her interactions until she provides a solution to the problem. She receives feedback on her solution.

After completing the problem-solving portion of the e-module she is given the option to work through additional practice problems, or to go back in the module and review flagged concepts. Kayleigh has already spent half an hour on the module, so she decides to leave that for another day. She exits the e-module, logs out of Elentra, and begins to work on other coursework.

CONTEXT SCENARIO (CONT.)

Several days later, Kayleigh is reviewing for the Mastery Exercise on the blood theme. She is feeling pretty good about the HSR content on this evaluation (Topic 4), as she completed the e-module before lecture and had the opportunity to ask questions during class time. She remembers that the HSR e-module included practice problems at the end, so she opens her laptop, logs on to Elentra, navigates to the course page, then starts up the Topic 4 module. In the opening menu, she has the option to skip the content presentation and problem-solving portions and go straight to the practice problems.

When she submits an answer for a practice problem, she always receives feedback. With a correct answer, she is prompted to reflect on why she was correct, always linking back to relevant concepts covered in the module; with an incorrect answer, a pedagogical agent helps her understand where she might have gone wrong, again linking back to concepts covered in the module. Following an incorrect response, she is given the opportunity to go back to the relevant part of the module to review that content if she wants. As she goes through the questions, Kayleigh notices that the ones she answers incorrectly re-appear periodically in the question queue. She enjoys this feature as it allows her to correct her own (previous) erroneous ways of thinking.

JON LAU

"I FEEL PREPARED FOR HSR, BUT IT'S BEEN A WHILE SINCE I'VE SEEN SOME OF THIS STUFF!"

KEY ATTRIBUTES

- Took courses in statistics, epidemiology, and critical appraisal during undergrad
- Not a 'math person' but is naturally curious and inclined to learn/push himself when it comes to math

PERSONAL PROFILE

Jon has always been interested in medicine, since both of his parents are doctors. With hopes of applying to medical school afterward, he completed a bachelor's degree (BSc Honours) in Health Science at McMaster University. Through several of his compulsory courses (i.e. epidemiology, critical appraisal) he became familiar with clinical epidemiology and evidence-based medicine and gained a true appreciation for the role of research in the advancement of medicine and clinical practice; he also gained a clear understanding of the role that analysis and interpretation of data have in research and how they can impact the way medicine and clinical practice advance. During his undergrad, he also completed coursework in statistics and carried out a thesis-based research project on genetic determinants of osteoporosis. He didn't love his statistics course as he was never a fan of math, but he was motivated to work hard to understand the concepts that didn't come easily to him. His research experience helped him gain an appreciation for the scientific method and gave him the opportunity to apply his statistics knowledge to data he collected himself. He graduated with a cGPA of 3.97 and was accepted to U of T Medical School. However, he decided to defer his entry one year, so he could backpack around the world.

Now 18 weeks into his first year of med school, he finds himself extremely busy with coursework, though everything is going relatively smoothly. He is a few weeks into a component of CPC1, Health Science Research (HSR), and he is pleasantly surprised to find that he is somewhat familiar with this content. He's relieved to find that HSR is mostly a review of things he has already learned in undergrad but has forgotten over his gap year – in comparison to his other courses, he doesn't have to work as hard to understand the material, though he still does have to make a bit of effort in his learning, especially for the math-centric bits. He finds it odd that HSR content has nothing to do with his other coursework, which is centered around weekly themes (e.g. blood); it feels disjointed to him. He attends mandatory HSR lectures and completes the required readings and e-learning modules at home. He is motivated to challenge himself and gain a deep understanding of the HSR content because he knows its importance in research and the advancement of clinical practice; however, the amount of time he has to study HSR varies depending on how busy he is with other, more demanding coursework.



PERSONAL INFO

Age: 23 years

Occupation: first year undergraduate medical student @ U of T

Location: Mississauga
Lives with family
Belongs to Mississauga academy

Status: single

GOALS

Jon wants to:

Do well on Mastery Exercises

Gain a deep understanding of HSR content

Prioritize/focus energy on coursework that is more highly represented in evaluations (Mastery Exercises)

BUSINESS GOALS

Stakeholders want Jon to:

Become familiar with course content before lecture so that she can get the most out of class time

Have the opportunity to ask informed questions, participate in the class (if applicable)

Gain a conceptual understanding of HSR content

CONTEXT SCENARIO

Jon is entering his 6th week of HSR and is about to start Topic 4. He notices in his HSR schedule, for the first time since HSR began, that he is to complete an e-learning module for this topic, whose content will be covered in the upcoming CPC1 Mastery Exercise. He feels somewhat familiar with the course content so far and is pretty busy with other coursework at the moment, but decides to put aside 10-15 minutes to check out the content at home the evening before Topic 4 lecture.

He opens his laptop, logs in to Elentra, navigates the HSR course page, and loads the e-module for Topic 4.

On the main page, he sees a navigation menu that can take him to many different locations, including directly into the e-module, into a diagnostic test, into practice problems, and into flagged areas. Jon decides to take the diagnostic text – maybe he'll find out he doesn't need to go through the module at all!

The diagnostic test begins with a context scenario that is presented as a short, narrated story that unfolds as he scrolls down the screen. He thinks it's cool that the context scenario is relevant to Week 18's theme: blood.

Next, he is prompted to solve a few questions on the content of the module. After he has answered at the questions, he receives feedback from a pedagogical agent about his performance. For questions he gets right, he is prompted to reflect on why he is right. For the one question he answers wrong, he is asked if he wants to review material related to that question. He agrees. He is taken into the part of the e-module where the concept is presented. Advancement through the content is contingent upon Jon's interactions with visual representations, which reflect his understanding of the content. The types and qualities of his interactions determine how quickly or slowly he progress through the content. His interactions elicit feedback from a pedagogical agent who helps him reflect on correct interactions and understand his erroneous thinking underlying incorrect interactions.

After advancing through the presentation of the problematic content, Jon is presented with a problem related to that content, which is relevant to Week 18's theme (blood). To help him solve the problem, he can interact with a set of visual assets on screen. A pedagogical agent pops up to help guide him when he needs it and provides feedback on his interactions until he provides a solution to the problem. He receives feedback on his solution.

After completing the problem-solving exercise, Jon is given the option to work through additional practice problems. Since he now feels confident about the content, he decides to exit the e-module. He logs out of Elentra and begins to work on other coursework.

CONTEXT SCENARIO (CONT.)

Several days later, Kayleigh is reviewing for the Mastery Exercise on the blood theme. She is feeling pretty good about the HSR content on this evaluation (Topic 4), as she completed the e-module before lecture and had the opportunity to ask questions during class time. She remembers that the HSR e-module included practice problems at the end, so she opens her laptop, logs on to Elentra, navigates to the course page, then starts up the Topic 4 module. In the opening menu, she has the option to skip the content presentation and problem-solving portions and go straight to the practice problems.

When she submits an answer for a practice problem, she always receives feedback. With a correct answer, she is prompted to reflect on why she was correct, always linking back to relevant concepts covered in the module; with an incorrect answer, a pedagogical agent helps her understand where she might have gone wrong, again linking back to concepts covered in the module. Following an incorrect response, she is given the opportunity to go back to the relevant part of the module to review that content if she wants. As she goes through the questions, Kayleigh notices that the ones she answers incorrectly re-appear periodically in the question queue. She enjoys this feature as it allows her to correct her own (previous) erroneous ways of thinking.