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New media and biochemistry students collaborate to create game teaching advanced biochemistry processes

A pair of third-year University of Lethbridge classes, one in biochemistry and the other in new media, unknowingly shared a synergy until the AGILITY program brought them together. The end result is a new game that could enhance the learning process of one of the most difficult courses in biochemistry and provide a deeper understanding of the value of collaboration and the game creation process.

Seeking a way to engage his students with a subject that is admittedly daunting, biochemistry professor Dr. HJ Wieden thought a game might help his students learn. The class, Biochemistry 3300, Metabolism and Bioenergetics, is essential to understanding the metabolic process and synthetic biology but the volume of material to be learned is massive.



“This is probably the most hated subject matter in all of biochemistry because it is so much material,” admits Wieden.

But, he says, nature is lazy, and there are only so many ways that processes can occur and they all start with these guiding principles. Understand the principles and you’re able to build off them for the rest of your studies.

“However, you still have to do the learning, which is difficult, and it’s all out of a textbook,” says Wieden. “I thought one way of interacting with it might be putting it into game play so that you could engage with the material.”

Easier said than done, his class started on the project last year but didn’t have time to delve too deep into the material. He then entrusted PhD student Taylor Sheahan to lead the effort with this year’s class, and when she went to the AGILITY lab to have 3D game

tokens designed, manager Tyler Heaton learned of the project. Heaton's next call was to James Graham and his New Media 3310 Game Design, Theory and Production class.

"They had the science but were finding it challenging to insert game play into it," says Graham, who was eager to give his students a tangible project to sink their teeth into. "We talk about games as systems, they are not just processes that happen, so that's where it has a really nice overlay. You can take the matrix of game design as a system and overlay the science as a system and see how that matrix can be made to line up and then connect that to people in a way that makes science understandable and enjoyable."

In theory it sounded great, and after an initial presentation by the biochemistry students to their new media brethren, the project began. But with only one month of class left and a massive language void yet to conquer, the creation process proved challenging on both ends.

"They were trying to communicate complex scientific systems, the metabolic process, in a way that was not didactic and boring," says Graham. "My students had to educate themselves to understand the science and the science students had to educate themselves about the challenges in creating complex game play that seems simple and intuitive."

Sheahan said the communicative process between the groups was the key to overcome barriers and enhanced learning on both sides.

"It helped our biochemistry students really learn the material because they had to repeat it to the new media students, who had no knowledge of the concepts," she says. "They had to really focus on using layman terms as well as understand the overall concept of how everything fit together so that it would make sense."

In the end, Graham's class of 12 split into two six-person working groups. One group designed a non-competitive, narrative-based game aimed at Grade 11 students. The other group worked on a competitive game designed for third-year biochemistry students.

The transdisciplinary process proved to be remarkably successful and the new media students showcased the game designs at the end of semester. Sheahan expects to use the game in class next year to see how well it enhances the learning process for the next Biochemistry 3300 class.

Beyond that, it also engaged students along the way, Wieden saying it even saved a few students who were floundering with the material in his class.

"I'm a big fan of when the students have to talk to each other and I think a lot of learning happened in that interface between what is the language that new media

students use and what is the language that biochem students use,” he says. “One of the critical aspects of teaching is how to get into the heads of students, and this was a fantastic example of students getting hands-on experience and getting exposed to the material in an interactive way and suddenly it all fell into place for them.”

To view online: <http://www.uleth.ca/unews/article/new-media-and-biochemistry-students-collaborate-game-creation>

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