

FINAL REPORT – January 2018

Digital Storytelling Project: Chemistry 401, Drug Interactions in the Body – Fall 2017

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Title: Course Design to Incorporate Digital Storytelling in Chemistry 401 (Drug Interactions in the Body)

Implementation Date: Fall 2017

Collaborating Partner:

Uma Vangal, Visiting Assistant Professor of Film, helped the Chem 401 students understand the process of making an effective digital story, helped the students refine their video scripts, and gave me a lot of background information to keep the project rolling.

Kenyon Students Impacted:

10 Kenyon students in Chem 401 (Drug Interactions in the Body)
1 community member taking the class

Community Partners:

Knox County Health Department:
Ashley Didinger Phillips, Health Educator

St. Vincent de Paul Middle School, Mount Vernon:
Sharon Tharp, Science and Health Teacher
Martha Downs, Principal

Community Members Impacted:

14 students in Sharon Tharp's sixth grade class at St. Vincent de Paul Middle School. Ideally, in the future these videos will be used to bolster drug education in the local middle schools.

Additional Support and Funding

Center for Innovative Pedagogy, Ashley Butler and Joe Murphy

Ashley Butler and Joe Murphy set the stage for the success of this video project. Prior to the start of the class, they explained the fundamentals of video production and introduced me to Film Professor Uma Vangal. Ashley Butler also talked with my class about the fundamentals of video production and provided reading and on-line materials to help us get acclimated to the project.

Community Engaged Learning Course Incentive Award (Fall 2017) –

This course incentive grant initiated a drug education project (in partnership with Knox County Health Department and St. Vincent de Paul's Middle School, Mt. Vernon, Ohio) that led to the development of the videos supported by this grant.

In short, Ashley Didinger Phillips, Knox County Health Department, noted that a recent survey of Knox County students indicated that they wanted more detail on how drugs interact with the body, particularly ethanol (in consumable alcohol) and nicotine (in tobacco). With the chemical, biochemical and neuroscience knowledge of upper level Kenyon students, our goal was to have my Chemistry 401 students contract educational modules that would give a greater scientific understanding of the targeted drugs and to deliver that information to the younger students through "peer-to-peer" activities. The pilot program was implemented between September and December 2017 at St. Vincent de Paul's Middle School, Mt. Vernon, Ohio

Background of Project

This project was originally conceived as Kenyon Chem 401 students creating science-based drug education lessons and, as a pilot, implementing them in the sixth grade health and science class of Sharon Tharp (St. Vincent's). Subsequent talks with the Principle of St. Vincent's, Martha Downs, indicated that the school was interested in having short videos accompany the alcohol and tobacco drug education lessons so the students could prepare for the in-class lesson (as with flipped classroom lessons). Although this was not originally part of my course design, I was interesting in exploring the video concept, and naively agreed to generate video content of this kind along with the other preparations already required.

My lack of experience with video and digital storytelling prompted me to reach out to Joe Murphy and Ashley Butler of CIP over the summer of 2017. Aside from giving great guidance in how to start the video portion, they also connected me with Professor Vangal of Kenyon's Film Department. Without their assistance and the financial support of this grant, which allowed for the hire of a recent graduate (Matthew Christopher, 2017, Film & Physics) to film and edit the videos, I would have removed the video production from my class – even after it the semester began.

From the outset I knew that we had to produce videos of a certain quality since the intention was to disseminate them to the members of the community (science and health teachers, middle schools students and potentially their families). However, since this was a new course and video was a new medium to me, I severely underestimated the time and expertise needed to complete the objectives to a proper standard. Knowing what I do now, it is clear my class could not have completed this assignment to the proper level and still retained its chemical rigor. Without the ability to hire someone to do video shoots and production, I would have had to sacrifice a considerable amount of the chemistry lessons in order to have the class try to learn how to properly shoot and edit video. This would have been an untenable situation, and thus the video assignment would have been abandoned. Even if there had been a student with some video expertise in the class, it would not have been acceptable to have this large burden fall so disproportionately on one or even a few students. This grant however, pave the way for the production of two videos (to accompany the alcohol and tobacco drug education modules) and out community partners seem very happy with the almost-finished versions they have seen. In fact, the video was so well received that the Knox County Health Department has offered to fund the production of another video through their Drug-Free Communities grant – and that would not have occurred without the financial support of this grant.

Video Production Process

The chemical foundations of this course focused on the thermodynamics and kinetics involved with drug binding in the body; in addition, improving the students' ability to communicate scientific concepts was also an aim of the class. For example, the Chem 401 students initially learned the foundations of ethanol and nicotine interactions at a level appropriate to upperclass chemistry majors/minors. They then distilled and translated the information to a level appropriate to a middle school student in a drug education class. Because of the communication objective, this video project – particularly the script writing and development of the visual metaphors – was a good fit for this course.

Scriptwriting:

Since none of the class (nor I) had experience in script writing, Professor Vangal was an exceptional resource, particularly given her previous involvement in the production of public service announcements. Initially she spent some time talking to the class about the general 3-act format, which if done properly, should lead to a compelling story. Since we were aiming for a 3-5 minute video, the Chem 401 students (split into ethanol and nicotine teams) then had to carefully decide what information was essential to their message and build a narrative around that information. Our initial drafts were not all that engaging and Professor Vangal returned to the class several times to help the two groups think more about the clarity of messaging and think more creatively with respect to storyline, word choice, and setting. It was a challenging process, one that made the class quite uncomfortable. From that discomfort, however, came big improvements. In the end all the students were quite proud of their work, particularly since digital storytelling, has never been part of their academic background.

Video shoots:

Aside from Matthew Christopher doing the video, the Chem 401 students were the main contributors to everything else. Professor Vangal also made sure we were able to function in this setting.

Translating concepts and message into video was the most alien to the students. As junior and senior science majors, they rarely have to confront activities that are completely new – much of their “new” work is really an extension of science concepts they have learned about in the past. That said, I think this confrontation of the unknown was particularly important and boosted student confidence. While learning chemistry was our main objective, I thought this activity was an amazing way to for the students to understand their strengths and aptitudes as a scientists are not just defined by their ability in classroom and laboratory.

Nicotine molecule (in tobacco products) video: Our nicotine video has a theme similar to that of the movie *Fantastic Voyage*. We devised ways to animate our characters and constructed images for our backgrounds. For that video a Drama major volunteered to play the scientist role in the live action shots, but the students of the class did the “animation” and voice of the nicotine character.

Ethanol molecule (in consumable alcohol) video: For the on-camera roles, this video involved one Drama major volunteer and one of our Chem 401 students. We also fabricated a “shadow stage,” and another two students helped portray a party scene “in shadow.”

Video editing:

The video editing was taken care of by Matthew Christopher with input from me. The class did not have the background to accomplish this task. Also based on the amount of time Matthew, a film graduate, put into the editing, this work would not have been possible curriculum-wise even if the class did have editing skills.

Notes for the Future

Due to the time commitment required for script development and video production, I could only imagine incorporating video production into classes that did not have strict and jam-packed chemistry content requirements. That said, the video production offered a way to get students actively working on their communication skills; they needed to know their audience, have a clear message, be able to distill and translate the concepts essential to the message, and be creative in message delivery. Additionally, in contrast to verbal messages that are not recorded, because the students were viewing their work product, the positives and negatives were clearly visible and it was difficult to gloss over deficiencies in messaging. Equivalently important, this mode of work motivated some students that less inspired by more traditional chemistry work (see narrative on video shoot). Overall, this project taught the students and I a lot about communication and digital storytelling and I plan to use this type of project in the future.

The other part of this project, which rides undercover, is the interesting and informative Film-Chemistry collaboration between Uma Vangal, my class, and me. It is rare that a scientist gets the opportunity to work closely with someone from the fine arts, but the rewards that are reaped are tremendous. My students and I were pushed to think outside of the norms of traditional scientific communication and that will make these future medical doctors and scientists be more attuned to how they present their work to the public, and in turn this should make the public more informed consumers of science.