

THE ARTS IN HEALTH PROFESSIONS EDUCATION

An Artistic Active-Learning Approach to Teaching a Substance Use Disorder Elective Course

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Objective. To incorporate an artistic, multimedia approach to teaching within a substance use disorder (SUD) elective course to intellectually, visually, physically, and emotionally engage Doctor of Pharmacy (PharmD) students in learning and applying clinical and legal SUD topics.

Methods. Faculty members created a two credit-hour SUD elective course that required students to engage in visual, linguistic, and performing art forms, including acting, screenwriting, choreography, dancing, artwork, writing movie reviews, writing book reports, writing journal reflections, create-your-own-adventure storytelling, speech writing, examination writing, policy writing, and creative thinking in an escape room gaming environment to learn about SUD and related topics.

Results. Student learning and perception of the activities was evaluated using faculty-created analytic rubrics, pre- and post-intervention tests, student feedback, and student responses on standard course evaluations. Students performed well on the graded assignments. Pre- and post-intervention tests administered for the escape room activity demonstrated an increase in scores from 56.7% to 94.9%. Student feedback and course evaluations revealed student engagement with subject material and enthusiasm for creative applications, critical thinking, and collaborative aspects of the activities.

Conclusion. The PharmD students consistently rated the interactive class format highly on course evaluations and reported having the perception of simultaneously learning and having fun. Pharmacy instructors are encouraged to incorporate creative projects and activities in courses to enhance student learning experiences and increase student motivation to engage with the material, their classmates, and other professionals.

Keywords: arts and health, active learning, substance use disorder, pharmacy law, addiction

INTRODUCTION

Substance use disorder (SUD) and substance misuse are the source of a public health crisis in the United States.¹ Opioid use disorder (OUD), a chronic illness manifested through the use of illicit opioids and misuse of prescription pain medications, fuels this nationwide epidemic. Opioid use disorder currently afflicts an estimated two million Americans, resulting in over 46,802 deaths from drug overdose in 2018.² The healthcare costs of illicit drug use and prescription opioid misuse approach \$37 billion annually.³ The opioid epidemic has revealed numerous missed opportunities where pharmacists' clinical skills could have been used to screen and assess patient disease risk, manage pain medications, make clinical interventions, coordinate care, promote harm

reduction strategies, and provide rescue naloxone.⁴⁻⁸ As frontline community healthcare providers equipped with extensive drug knowledge, pharmacists are uniquely positioned to access, treat, and educate underserved rural and urban populations who are at increased risk for poor health outcomes and medication misuse.^{5,6}

The education of future pharmacists in SUD is critical to prepare them to work with SUD patients. A 2015 survey on SUD content in US pharmacy programs revealed that most responding programs provided two hours of SUD in therapeutics, but fell short of the suggested content and hourly curricular recommendations from the American Association of Colleges of Pharmacy (AACCP)'s Special Committee on SUD and Pharmacy Education.⁹ Additionally, programs should meet the 2018 pharmacy core competencies for SUD education set forth by the Association for Multidisciplinary Education and Research in Substance Use and Addiction (AMERSA).⁸ An SUD elective with an interactive-learning approach is

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one method of offering SUD content using a variety of teaching approaches as recommended by AACP and which also meets AMERSA's core competencies.

We describe a novel, creative format for an SUD elective course for Doctor of Pharmacy (PharmD) students that featured activities and assignments that combined SUD content with visual, linguistic, and performing arts forms. Artistic methods including acting, screenwriting, choreography, dancing, painting, drawing, movie reviews, book reports, journal reflections, create-your-own-adventure storytelling, speech writing, examination writing, policy writing, and creative thinking in an "escape room" gaming environment were used to engage students with SUD content. Although the dance activity for this course was reported in a paper published in 2017, the entire course has not been previously described in the literature. A literature search revealed descriptions of individual activities used in pharmacy courses that included either dance, movie reviews, book reports, or filmmaking, as well as one course that used an escape room format, but we did not identify an elective pharmacy course that encompassed all of these.¹⁰⁻¹⁴ This elective course was intended to assist students in achieving AACP's core entrustable professional activity (EPA) domains, including patient care provider (ie, information collection and analysis, care plan creation and implementation, patient education), interprofessional team member (ie, understanding of team member roles), population health promotor (ie, screening and patient assessment, appropriate medication use), and information master (ie, education of patients and colleagues).¹⁵ The course was also intended to bolster student attainment of several elements of the Accreditation Council for Pharmacy Education (ACPE) Standards 2016.¹⁶

METHODS

Beginning in 2013, a two-credit hour elective course on SUD and misused substances was developed for third professional year (P3) pharmacy students enrolled in the PharmD curriculum at the University of South Florida (USF) College of Pharmacy. Having P3 standing was a prerequisite for the course, which included two hours of pharmacotherapeutics on SUD. The format for weekly class sessions was one hour of lecture on a drug topic delivered by the course coordinator, followed by either a one-hour artistic, collaborative, active-learning activity or a one-hour lecture by a guest speaker, after which students would compose a reflection. Course activities were designed and speakers selected with the goal of engaging students' attention each week by having them participate in a different method of artistic expression or listen to and speak with a field expert. For the following

three class sessions, the entire two hours was devoted to a single activity involving the entire class: the in-class 12-step program meeting, the in-class Mechanism of Action Rave Dance, and the final project presentations. For the following four class sessions, the entire two hours was devoted to one or more guest speakers, including a patient in recovery, law enforcement officer, psychiatric clinical pharmacist, Florida Professionals Resource Network (PRN) medical director, a drug court expert, etc.

Guest speakers were recruited from the community through professional connections. Guests chose the format of their hour-long discussion. Most speakers (about 75%) used a PowerPoint presentation and engaged in interactive discussion with students, while the remainder (about 25%) spoke without visual aids. No pre- or post-lecture assessments were administered, but students completed a reflection paper that had to include some of the factual information given as well as their personal opinion about the speaker's presentation and the topic.

Hour-long traditional lectures on major drug topics were created and presented by the instructor. Students' knowledge of drug lecture material was assessed through two Quiz Myself assignments (Table 1).

There were seven in-class activities. Students wrote a paper analyzing marijuana legalization for medical and recreational use and wrote reflections on guest speaker talks. The details of each activity, the paper, and guest speaker reflections are described in Table 1. The escape room activity was evaluated in 2016. Thirty-five students were given a 22-question pre-lecture, pre-activity, and post-activity test to evaluate their learning during the activity versus their learning after lecture.

For the required final project, students were given three options: creating original artwork, composing a create-your-own-adventure story, and writing a book report. The option of writing a movie review was added in 2018. If students selected the same movie or book, they gave a group presentation with an overview of the plot and then each student provided individual commentary. The audience (student peers) was encouraged but not required to ask questions because of time constraints. This study was deemed exempt by the USF Institutional Review Board (IRB).

RESULTS

The elective was offered from 2013 through 2019. Initial student enrollment in the class was 22. This grew steadily to 45 students in 2019.

Student perceptions of the course were assessed by the instructor based on student comments on standard university-developed course evaluations and on requested student feedback on the escape room and dance

Table 1. Descriptions of Activities Incorporated Into a Substance Use Disorder Elective Course for Doctor of Pharmacy Students

Mechanism of Action Rave Dance Activity	Activity Type: Dance Performance & Choreography
<i>Activity Description:</i> Student groups were assigned a different drug, dance style, and popular song and were required to choreograph, perform, and teach a dance depicting the mechanism of action of the drug to the rest of the class. The activity and rubrics were described in detail in a previous publication. ^a	
Methamphetamine Lab/Smurfing Skit Activity	Activity Type: Acting & Screenwriting
<i>Activity Description:</i> Students wrote and performed six separate acts for the skit during class. Faculty posted on Canvas an outline document explaining all the acts and roles and the purpose of the skit with links to references to use when writing the script. All acting roles with their act numbers were printed on slips of paper and students drew the roles at random out of a plastic container. Students separated into their acting groups and had a half hour to write their script. During the last half hour, each group was called up to act out their skit. Faculty members adjusted the acting roles to match student course enrollment and add or combine roles as necessary. The six acts covered: Smurfs attempting to buy pseudoephedrine in a pharmacy, cooks in a laboratory teaching ingredients and methods used for making methamphetamine; drug researchers explaining tamper-resistant formulations of pseudoephedrine; patients describing their experiences using the drug; physicians, pharmacists, and dentists explaining the physiologic and psychologic effects of methamphetamine use and treatment; and legislators debating creation of prescription-only pseudoephedrine in Congress. When students came to class, there was a Smurf or Smurfette character on their desk with their name on it as well as a light blue (for Breaking Bad) or white rock candy “methamphetamine” stick they could snack on while composing their skit.	
Death With Dignity Skit Activity	Activity Type: Acting & Screenwriting
<i>Activity Description:</i> Students composed and performed six separate acts during class, similar to the methamphetamine skit activity. The six acts covered: a contrast between healthy and unhealthy family dynamics in the application of the Death with Dignity Act, considering soundness of mind, manipulation, depression, and vulnerability; a variation on Charles Dickens’ <i>A Christmas Carol</i> novella, where students represented the Ghosts of Death with Dignity Acts Past, Present, and Future appearing to a patient to explain requirements for Death with Dignity Acts in states that have passed or are considering legislation; a patient and family member describing the residency requirements for patients who move to states with an Act; a doctor’s office showing a patient with sound judgment and another with impaired judgment along with procedural requirements; a pharmacy where the pharmacists explain the medications used in Death with Dignity and debate the professional and personal ethics of filling or not filling a prescription; and a farewell toast delivered by one student after which the entire class raises their drinks and self-administers their “high-dose barbiturates” (ie, mini Coke cans) and collectively depict a class death scene. A panoramic photo of the students before and after was taken by the instructor and posted on Canvas.	
In Class AA/12-Step Meeting	Activity Type: Storytelling & Speech Writing
<i>Activity Description:</i> Students were introduced to 12-step programs through the conduction of an in-class Alcoholics Anonymous (AA) meeting following the recommended standard format on the AA website. Students participated in Step 1 by selecting a topic they felt comfortable sharing with the class (eg, a favorite food, sport, team, celebrity, device, television show, etc) and use that as the basis for moving through the first step. Students examined the questions asked in Step 1 and wrote short speeches on how their selected favorite topic had taken over different areas of their lives. Students delivered their speeches in class during the meeting. Chairs in the classroom were moved to a circle formation, faculty brought donuts, play money was passed out and then collected as voluntary donations in a collection basket. A reading of “How it Works” from the AA Big Book, The Twelve Steps, and Twelve Traditions was included and read by student volunteers. A moment of silence was held at the beginning for purposes of prayer or to use silently however members saw fit. An overview of the 12 Step programs was given at the start of class and a separate PowerPoint listing resources and ways to get help if an addiction was identified was posted on Canvas.	
Final Project	Activity Type: Artwork or Creative Writing
<i>Project Description:</i> Students had a choice of creating artwork, writing a create-your-own-adventure story, writing a book report, or writing a movie review. The artwork is meant to teach others about an aspect of a drug of misuse or the disease of addiction and the artist had to complete a written artist statement describing the work, meaning and media used. The create-your-own adventure stories were written using the online tool inkewriter that allowed students to make interactive stories enabling the audience to select the character’s path towards addiction and recovery. The book reports and movie reviews had to be on a book or film relating to SUD. Students presented their final projects in class on the final day. Student selection of project types varied with student preference. The majority of projects selected were story writing, book reports, and movie reviews, but several students have created beautiful artwork over the years.	

(Continued)

Table 1. (Continued)

Escape the Room Activity <i>Activity Description:</i> Students were randomly assigned to one of four instructor-designed and built escape rooms that physically brought a methamphetamine lab, a crack party, a bath salt “zombie” room, and a mini marijuana dispensary to life. Students reviewed material covered in lecture by finding clues in the rooms, answering drug questions, and solving different puzzles to escape the room within one hour. Students entered the room one at a time for five minutes each and switched when faculty called time. Clues were hidden in secret locations within each room including being baked into jello “meth” trays, jello shots, and marijuana edibles; buried under piles of powdered cocaine (ie powdered sugar) and mini bags of methamphetamine or crack (ie rock candy), hidden in diversion safes (eg, Coke or water bottles and batteries), a puzzle box, and an actual combination safe; in glitter within balloons hanging from the room ceiling. Codes were hidden in a book and in photos on the wall requiring a UV light to read them. Faculty members designed overall puzzle scheme for the rooms incorporating safes and codes by watching escape room video games on YouTube for tricks that could be applied to create a real-life room. Students took a picture as a group outside the room once they had escaped. Students were randomly assigned to a room by drawing mini bags of rock candy representing the drug of their room (crack, meth, or bath salts) that were numbered. Mini bags of chocolate with little marijuana leaf stickers on them were used for the dispensary room.	Activity Type: Creative Thinking/ Escape Room
Medical and Recreational Marijuana Legislation Paper <i>Project Description:</i> Students composed a policy paper expressing their opinions on the legalization of marijuana for medical and recreational purposes. Students had to discuss types of legislation, in addition to arguments for and against, then students had to explain which approach or combination of approaches they preferred and why, to prepare them for potential future questions from other healthcare providers or patients. The papers were graded based on a faculty-created analytic rubric.	Activity Type: Policy Analysis Paper
Quiz Myself Assignment <i>Assignment Description:</i> Students had two assignments to write their own test questions and answer keys, including an explanation/rationale for the correct answers. When constructing the questions, students were instructed to identify the most important issues from the lecture and keep in mind what real life, practical questions about these drugs might be posed to them as pharmacists. Assignments were 25 questions in length consisting of 13 multiple-choice, 6 true/false, and 6 short answer questions.	Activity Type: Exam Question Writing
Guest Speaker Reflections After each guest speaker presentation, students had one week to write a reflection paper containing their personal thoughts and opinions on the presentation as well as factual knowledge gained. Guest speakers who appeared in the elective included: a patient in recovery, a toxicology pharmacist, the medical director for the recovery network for impaired professionals, a board-certified psychiatric clinical pharmacist, a drug court expert, a medical marijuana dispensary representative, a DEA special agent, an emergency room physician, a community pharmacist, police officers, a forensic pharmacologist/expert witness, an SUD counselor, a loss prevention officer from a chain pharmacy, an attorney specializing in DEA issues, a judge from the Netherlands, and the President of the National Association of Drug Diversion Investigators (NADDI).	Activity Type: Journal Reflection
Naloxone Administration Activity <i>Activity Description:</i> Students were taught how to administer naloxone by a community pharmacist using a PowerPoint presentation and visual demonstration. The pharmacist detailed overdose identification and response steps. Sample autoinjectors were obtained from the drug company and students practiced administering the autoinjector Evzio [®] teaching devices on each other. Administration of Narcan nasal spray was also taught and a sample was brought in and passed around.	Activity Type: Drug Administration Training
Over-The-Counter Drug Test Kit Activity <i>Activity Description:</i> Students rotated in groups to different areas in the room containing different drug testing kits with their components and manuals (ie, hair testing kits, urine tests, saliva tests, test the substance kits, and personal breathalyzers) and answered questions about use of the kit on a faculty created worksheet.	Activity Type: Practical Kit Training

^a Steinhardt SJ, Clark JE, Kelly WN, et al. Active-learning strategies for legal topics and substance abuse in a pharmacy curriculum. *Am J Pharm Educ.* 2017;81(1):Article 4. doi: 10.5688/ajpe8114

activities. On the standard course evaluations, 122 out of 173 students submitted written comments from 2013 to 2019. Completion of evaluations is mandatory, but comments are not required. Under the question, "Please comment on at least two aspects of the course that you enjoyed and helped you learn," the most common responses included the interactive activities (76 comments) and the guest speakers (52). Some students stated they loved everything about the class (63), the course was enjoyable and educational (42), they loved the creativity (16), it was a great environment to learn in (8), they looked forward coming to class every week (7), they liked the written assignments (7), and the course reduced semester stress (6). Feedback from the dance rave and escape room activities was similar, with students expressing appreciation for the course having collaborative activities and using creative learning methods. Students did not formally evaluate speakers, although the patient in recovery and the law enforcement officers received consistent praise in student reflections and course evaluations across all years.

Learning was evaluated based on student performance on assignments and activities as assessed by the course coordinator using analytic rubrics. The overall class average was an "A." The escape room evaluation showed improvement when average pre-lecture (56.7%), post-lecture (85.3%), and post-activity test scores (94.9%) were compared. With the exception of the dance activity, we did not attempt to assess the individual impact of the other course activities; therefore, pre- and post-intervention tests were not conducted specifically on those activities.

DISCUSSION

The design of this SUD elective course, which includes a variety of activities and has an artistic, creative emphasis, continues to be a popular choice for students. The majority (70%) of students who completed the elective course submitted comments and all of the comments were enthusiastic about the course format and delivery. Course enrollment increased and even reached maximum capacity in most years.

Abraham Flexner revolutionized medical education with his 1910 report that emphasized the importance of active learning to promote critical thinking and lifelong learning in students.¹³ Flexner believed "description is no substitute for tactile and visual experience." The design of this elective course, with its focus on artistic, interactive, expressive, practical activities reinforces Flexner's vision for education where "[t]he student no longer merely watches, listens, memorizes; he does."¹³ In their analysis of Flexner's report on the context of pharmacy education, Crass and Romanelli suggested pharmacy educators

"look to other areas of education, namely primary and secondary education, for insights on engaging students in active learning."¹³ This elective course encompassed primary and secondary education activities, including artwork, physical activity (acting and dancing), creative writing, and writing book reports. The cultural aspects of illicit substance use make the topic of SUD suitable for creative, relatable projects.

This course provides interprofessional interactions with interdisciplinary experts involved in different areas of SUD treatment and the legal aspects of the disease, thus meeting ACPE Standard 11.2 for interprofessional team education and practice. The course curriculum also covers the 10 educational goals and four major content areas recommended by the AACP Special Committee, ie, psychosocial aspects of alcohol and other drug use; pharmacology and toxicology of illicit/misused substances; identification, intervention, and treatment of people with addictive diseases; and legal/ethical issues.^{1,16} Students enjoyed hearing guest speakers' life experiences and learning their practical expertise. Several speakers described the importance of the role of pharmacists in treatment (ie, the patient in recovery, police officers, emergency room physician, clinical pharmacists, community pharmacist, PRN representative, Drug Enforcement Agency Special Agent, etc) which gave the students a holistic, multifaceted perspective on their role and potential interactions within and outside of the profession involving SUD and substance misuse.

Challenges in course implementation included course coordinator time investment to create the games and use of personal funds to enhance the course. Escape room construction cost \$500 initially and approximately \$250 thereafter. Another challenge is obtaining guest speakers and coordinating their schedules, availability, and handling cancellations. Instructors would also need to follow and become knowledgeable about pop culture and other references familiar to students in order to incorporate those aspects into the class to further engage and connect with students. Additionally, a future study on this course should include further assessment of student knowledge pre- and post-course to determine the exact degree of student learning.

A limitation of the study is that the feedback provided on this elective course represented the perspectives of only those students who were enrolled in the course rather than all students in the PharmD program. Students who chose to enroll in this elective course likely had artistic inclinations and preferred participating in a variety of activities and engaging with a variety of content, and this could have been partially responsible for their positive feedback about the course. Students who did not prefer an artistic approach to learning SUD would likely have enrolled in a different elective course.

CONCLUSION

Students enrolled in an SUD elective designed to engage students in activities using a variety of art forms to teach them about SUD enjoyed the interactive format of the class and had the perception of simultaneously learning and having fun. Pharmacy instructors are encouraged to incorporate memorable creative projects and activities into courses to enhance student learning and increase students' motivation to engage with the material, their classmates, and other professionals.

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