Using Individual Artistic Expressions to Enhance the Shared Learning Experience

Katie Salmeron
University of Kentucky

April Hatcher
University of Kentucky

Author Biography

Katie Salmeron is an Assistant Professor in the Department of Neuroscience at the University of Kentucky. She specializes in teaching undergraduate anatomy and physiology, primarily to students in pre-nursing and other pre-healthcare programs. Her research focuses on utilizing social media and art as tools for engagement and student-teacher partnership.

April Hatcher is an Associate Professor in the Department of Neuroscience at the University of Kentucky. She teaches embryology, histology, and gross anatomy education for undergraduate, medical, dental, physician assistant, physical therapy, and graduate students. Her scholarly activity is directed toward the development of innovative teaching strategies in the anatomical sciences.

2020 Pedagogicon Proceedings

Using Individual Artistic Expressions to Enhance the Shared Learning Experience: A Quality Improvement Project

Katie Salmeron and April Hatcher
University of Kentucky

Students as Partners is a groundbreaking teaching method which combines pedagogical elements from traditional, flipped, and independent classrooms. While ideally suited for small, discussion-style (fewer than 20 students) or even upper level independent study courses, this pedagogy is daunting to anyone teaching a large lecture course. Throughout several semesters of an undergraduate anatomy course, we have worked to incorporate more free-expression type assignments in order to allow students to have some autonomy in the direction of their learning. Within the last two years, we have successfully implemented unit-based coursework incorporating the key elements of the Students as Partners philosophy. In our assignment series within the course, we allowed the students more freedom to choose the direction of their own learning while simultaneously providing enough early structure to prevent undue anxiety.

Introduction

Students as Partners (SaP) is a pedagogical approach that has been increasingly accepted in higher education classrooms and generally derives from the philosophy that students should have significant input in their own learning (Healey et al., 2016 & Matthews, 2016). Rather than the traditional, didactic environment, students as partners would have students and professors act as collaborators (Tullis & Goldstone, 2020). This is not to be confused with a flipped or reversed classroom where the instructor is still very much the authority. While the strictest definition of this pedagogical method would have the students actively participate in the implementation of the entire course, we felt that this would significantly overwhelm our student population (Kiester & Holowko, 2020). Additionally, this method is not typically attempted in a large lecture classroom such as this one. Typically, SaP is more effective in a smaller, discussion based course (Kiester & Holowko, 2020; Holmes, 2020). While we intend on moving the course in the SaP direction, that is not in the scope of this manuscript.

Instead, we chose a modified format which allowed the course to continue in a largely traditional format while affording the students opportunities to choose their own focus and modality of learning throughout the course. Due to the reticence of many students who often feel "forced" into unstructured assignments, we set out to create an assignment series within our course which allowed the students more freedom to choose the direction of their own learning, while simultaneously providing enough structure in the earlier stages so that they did not feel overwhelmed. We anticipated students would gain confidence in their creative talents over time, so with each assignment we deliberately scaled back on boundaries.

Evolution of creativity in the anatomy curriculum

In this project's infancy, we realized that students would not respond favorably to an intentional lack of professorial structure in these assignments. Therefore, we began by gradually introducing creative assignments into the course over the span of the last four years.

2016 Blue books

The earliest incorporation of nontraditional assignments in the anatomy course involved the completion of Blue Book assignments. These are essay-like exam booklets that are typically used in small classroom environments and writing-intensive courses. Blue Books were incorporated into the formative assessment plan for the students, and were used similar to an anatomy journal. Assignments involving Blue Books included students' reflections on goals for the course, how long they studied and with what methods, specific strategies for changing their study habits in response to their exam performance, and self-assessment on their progress toward defined goals. In addition, students drew anatomical structures before/after class (such as a neuron or sagittal view of the kidneys) to reinforce the foundational content, applied anatomy through clinical correlations, and created their own multiple choice questions/anecdotes for understanding and memorizing the content. Early on, students remarked on the hand-drawn assignments as highly beneficial for the learning process.

2017-2018 Creative assignments & Blue books

The ability to create meaningful content is the highest level of Bloom's Taxonomy (Anderson, Krathwohl, & Bloom, 2001). This tier was implemented with the introduction of "creative assignments" in the anatomy curriculum. For example,

students were instructed to turn in a one-page "product" that described how a clinical condition related to the anatomy they learned in class, as well as symptoms, causes, and treatments. Aside from these four required components, students were given free range on how they wanted to express creativity. Some students created brochures, some hand-drew symbols of the disease, while others constructed neurons from pipe-cleaners and jewels. Even in these early assignments, the spectrum of creative ideas was apparent.

2019-2020-Anatomy showcase

The Anatomy Portfolio Showcase represents the most recent evolution of the incorporation of art into the anatomy curriculum, a pedagogical strategy that has been increasingly recognized for benefits beyond understanding anatomical concepts (Bell & Evans, 2014; Mavrodi, Paraskevas, & Kitsoulis, 2013). In 2019, a series of assignments were included in the second half of the curriculum: abstract art on a neurodegenerative disease, heart poetry, creative media depiction of the kidney, a collage of the gastrointestinal system, and a photography challenge. Based on student feedback, we expanded the assignments across all four units of material for the following year.

In the latest iteration of the course, we elevated the level of learner independence to what it currently is, and what we presented at this year's Pedagogicon conference in May. Four assignments were created, one for each unit of the course, which progressively became less and less structured throughout the semester (Table 1). This was the best way to "ease" our students into a more independent learning role; one where they could truly act as the director of their own learning. A description of the assignments that were provided to the students is included below:

Nature Histology Photography Challenge (Figure 1) For this assignment, please identify an object, organism, or area in its natural form that relates to the four primary tissue types: epithelial, connective, muscle, and nervous tissue. Snap a photo for each of these categories, insert it in a word document along with a paragraph description of how the picture relates to each tissue type (no more than two paragraphs per photo). You will be surprised at some of the things you can find in nature that are part of your everyday life that remind you of anatomical structures. Please upload one word or pdf document that includes the four pictures representing epithelial, connective, muscle, and nervous tissue AND the brief explanation of how each image reminds you of the histology discussed in class.

Musculoskeletal Comic Strip (Figure 2) For this assignment, create a 4-6 frame comic strip to illustrate a chosen concept from Unit 2 (see options below). To receive full credit, use color to anthropomorphize different parts of the muscular or skeletal system to demonstrate your understanding of your chosen concept. You will also need to include captions/dialogue for each frame. Use the template provided to illustrate your frames by any means (colored pencils, pens, markers, OR digitally). For any digital content, it MUST be copyright free (open source). Any person in violation of copyright will receive a zero on the assignment. Topics on which you may choose to focus your comic are as follows: functions of the skeletal system, functions of the muscular system, endochondral ossification, intramembranous ossification, anatomical features of the axial/appendicular skeleton, anatomical features of the axial/appendicular muscles, any of the clinical correlates discussed in class.

Nervous System Abstract Art (Figure 3) Listen to the Radiolab episode "Unraveling Bolero" and view Anne Adams' painting of the same name. This podcast describes how pieces of art by musician, Maurice Ravel, and visual artist, Anne Adams, reflect their mental decline from frontotemporal dementia. In a way, these pieces of art, "Bolero" and "Unraveling Bolero" both depict aspects of frontotemporal dementia. For this assignment, please choose a neurologic disease/condition which interests you and create a piece of visual art which depicts some aspect of your chosen disease. Your art can be abstract, like Anne Adams' "Unraveling Bolero," or it can be realistic (e.g. a portrait of a grandparent with Alzheimer's). Include a short written explanation, no more than a couple paragraphs, of how your piece of art depicts the disease you have chosen. Do not forget to tell us which disease you have chosen. Some Diseases to Consider: Alzheimer's Disease, Amyotrophic Lateral Sclerosis (ALS), Parkinson's Disease, Stroke, Huntington's Disease, Multiple Sclerosis, Epilepsy. (Assignment description by Rachel Maggard).

Choose Your Own Artistic Adventure (Figure 4) For this assignment, please choose a disease or condition which directly relates to your prospective career field and create a piece of art which depicts some aspect of your chosen disease.This assignment prompt is purposefully open-ended. Your art can be anything from abstract to hyperrealistic. Include a written explanation, no more than a couple paragraphs, of how your piece of art depicts the disease you have chosen AND how it relates to what you want to do in your career. Do not forget to tell us which disease you have chosen. Feel free to pick from any body system we have covered in this course. If you choose to pick a disease out of previously covered material

(e.g. histology, MSK, neuro, or endocrine) it needs to be a unique piece of art. You cannot reuse art from Units 1-3.

Assessment

After the deadline had passed for each unit, we each evaluated student's submissions to reach a consensus for scoring and top choices. To avoid putting too much weight on the student's innate artistic ability, we instead put more emphasis on the clear presence or absence of effort. Regardless of artistic quality, the students who successfully submitted their piece by the deadline were graded on a scale of 8-10, meaning that if they turned in a submission, they got at least 75% of the points possible. Those who clearly devoted time and effort to their submission received full marks, again, regardless of whether or not they demonstrated artistic "talent."

To reward those whose pieces were exemplary, we separated the ones that we felt were outstanding in their representation of the required topics and/or went above and beyond in their creative expression of their chosen subject matter. We then conferred with each other and, more often than not, our selections were consistent. Those who fell into the Top 10% of the class (for us, the Top 25 entries) were rewarded with two bonus points onto their score for a total of 12/10. Those entries were then compiled into a showcase where their fellow students were able to appreciate their work and also allowed to use those entries to help them study for their upcoming Unit exams.

Traditional Showcase In the previous year, 2019, we compiled the top entries from each unit assignment into an artistic showcase. The students were given the opportunity to attend and reflect on the submissions from throughout the semester. In order to recreate the feel of an art gallery, we spread the assignments throughout the classroom into groups of like submissions and played soft music in the background. This experience gave the students a much needed break from the traditional classroom and also gave due recognition to those students whose work was being displayed. In this way, our students were able to freely discuss the art as it was presented and allowed for the students to appreciate each other's artistic interpretation of anatomical features.

Virtual Showcase While we had intended on continuing this project into the Spring 2020 semester, we, like so many others, were forced to abruptly change our plans in March. It was necessary to find an alternative method of implementing the showcase because it, and the associated grades, were printed in the syllabus. By

our institutional policies, it had to be assigned and honored in some way. Upon reviewing our options, we decided that the best way of doing this was through Zoom in a synchronous, drop-in format. We held two separate windows of time where one of us was in attendance to answer questions and facilitate discussion on each piece. Each showcase item was given a number for the students to reference in both their discussion and in their reflection. Since in-person and fluid reflection was not conducive in a virtual environment, the students were required to submit a reflection via our learning management system (Canvas) in which they discussed which submissions they found most impactful and/or well done.

Impact and Overall Reception

Generally, students expressed appreciation for the opportunity to incorporate creative works into their study of anatomy. The structured, semi-structured, and open-ended elements of project design allowed for a variety of approaches to the portfolio and encouraged creativity along a spectrum. Students suggested additional methods for artistic expressions, including poetry or videos for a more narrative and performance- based approach to art and anatomy. Indeed, these additions would diversify the showcase experience. One can imagine the last day of class as a celebration of the student's ability to connect anatomy to their life experiences, and ultimately to a shared understanding of its importance.

A further recommendation for building on the theme of students as partners included letting the students vote for the top 25 creative projects. Along this theme, future iterations of the anatomy portfolio may include a list of assignment options, where students vote on the type of medium they would like to depict for each unit of material. This would contribute to a shared ownership of the anatomy project and support the various creative capabilities in a single classroom. It was our goal to emphasize the variety of artistic talents that students offered, and not to isolate students who felt they could not contribute in an imaginative way. In fact, students remarked they appreciated that there was no bias in the grading process, and they were not penalized for their perceived lack of creativity. Overall, the authors felt this encouraged a more inclusive expression of shared lived experiences that made these assignments so impactful for the class.

Conclusion

Our Anatomy Portfolio assignment series has evolved over a period of several years. While we greatly enjoyed the in-person experience of the showcase, COVID-19 prevented this pinnacle experience from happening in its intended form.

While not ideal, the virtual showcase was well received and was as engaging as we could have hoped given the circumstances surrounding the spring 2020 semester. This project shows that the students as partners pedagogy can be implemented not only in a large lecture, science-based classroom, but can also be executed virtually. This provides the opportunity to open up the anatomy showcase to other institutions so that students' creative work can be shared with a wider audience and contribute to a greater sense of shared humanity.

References

Anderson, L. W., Krathwohl, D. R., & Bloom, B.S. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's Taxonomy of educational objectives* (1st ed.). Longman.

Bell, L. & Evans, D. (2014). Art, anatomy, and medicine: Is there a place for art in medical education? *Anatomical Sciences Education*, *7*(5), 370-378.

Healey, M., Flint, A., & Harrington, K. (2016). Students as partners: Reflections on a conceptual model. *Teaching and Learning Inquiry*, *4*(2), 1-13.

Holmes, A.J. (2020). Being patient through the quiet: Partnering in problem-based learning in a graduate seminar. *International Journal for Students as Partners*, *4*(1), 34-47.

Kiester, E. & Holowko, J. (2020). Redefining the roles of master and apprentice: Crossing the threshold through the co-creation of a first year seminar. *International Journal for Students as Partners*, *4*(1), 66-81.

Matthews, K.E. (2016). Students as partners as the future of student engagement. *Student Engagement in Higher Education Journal*, *1*(1), 1-5.

Mavrodi, A., Paraskevas, G., & Kitsoulis, P. (2013). The history and the art of anatomy: A source of inspiration even nowadays. *Italian Journal of Anatomy and Embryology*, *118*(3), 267-276.

Tullis, J.G. & Goldstone, R.L. (2020). Why does peer instruction benefit student learning? *Cognitive Research: Principles and Implications*, *5*(15), 1-12.

Appendix

	Unit 1	Unit 2	Unit 3	Unit 4
Assignment	Nature histology photography challenge	Comic strip for musculoskeletal content	Abstract art on a neuro-degenerative condition	Art on a condition related to your future career
Topic(s)	Structured	Semi-structured*	Semi-structured*	Open Ended
Art Medium	Structured	Structured	Semi-structured#	Open Ended
Art Genre	Structured	Structured	Structured	Open Ended

Table 1. Topic and degree of structure for each given assignment. In Unit 1, the students saw the most direction and structure, where the topic, medium, and genre are all selected for them. In Unit 2, we instead gave a list of topics from which to choose rather than dictating the topic. For Unit 3, the topic again was semi-guided, allowing an even broader subset of topics from which they could choose. The medium was semi-guided, allowing only 2D artistic media to be used. Finally, in Unit 4, the only guidance given was the prompt.

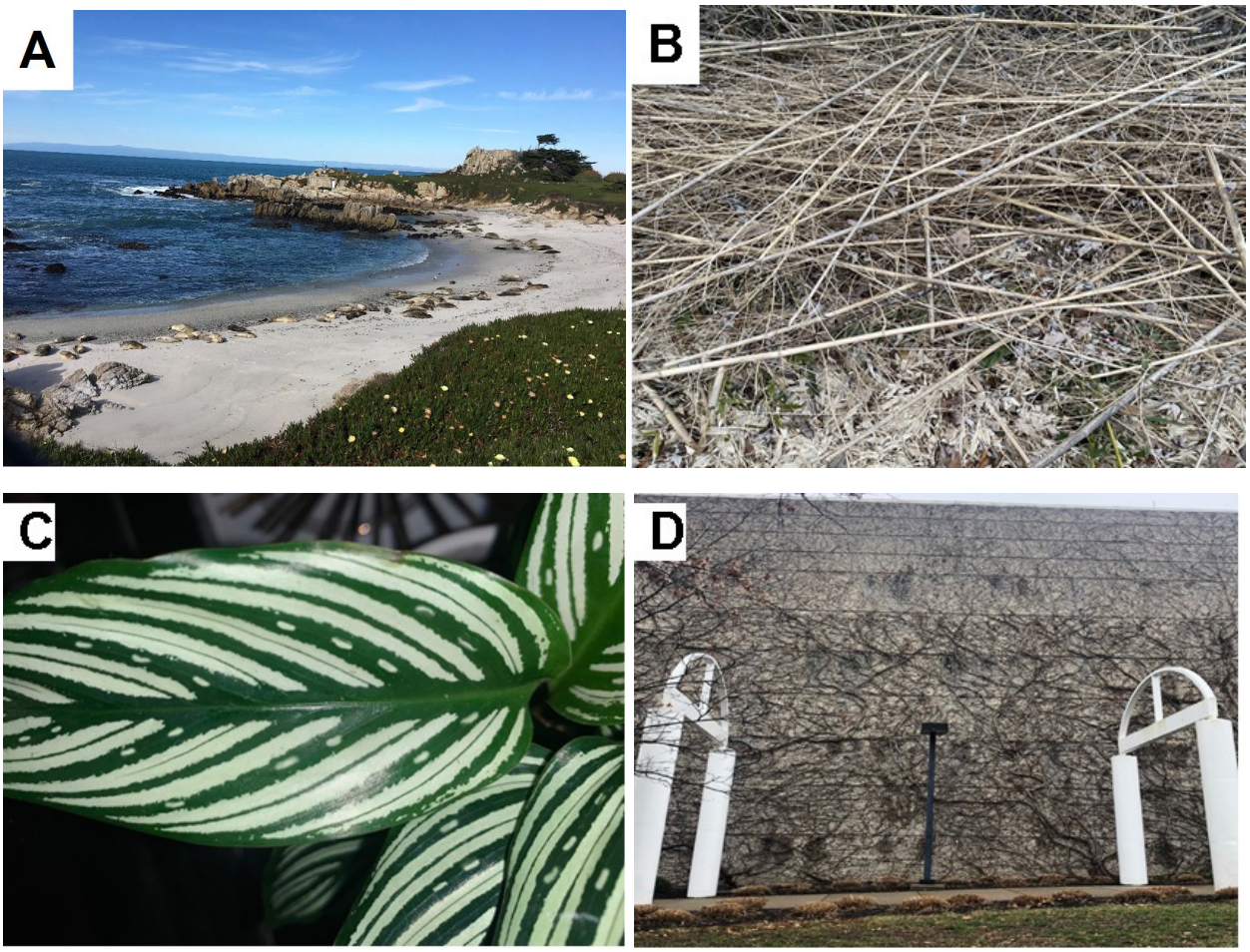

Figure 1. Excerpt photographs from the Nature Histology Photography Challenge. **A.** Seals laying along the coastline represent simple squamous epithelial tissue where the seals are the squamous cells, the wet sand is the basement membrane, and the water is the connective tissue layer (*credit: Grace DuPlessis*). **B.** Dead bamboo brushpile represents areolar connective tissue with the loose collagen fiber configuration representative of this type of connective tissue (*credit: Matthew Collard*). **C.** Leaves of a snake plant show the clear striated patterning which is similar to that of skeletal muscle tissue (*credit: Keeley Justice*). **D.** Climbing vines on the side of a building on the UK campus represent the branching dendrites of a multipolar neuron within nervous tissue (*credit: Molly Armstrong*).

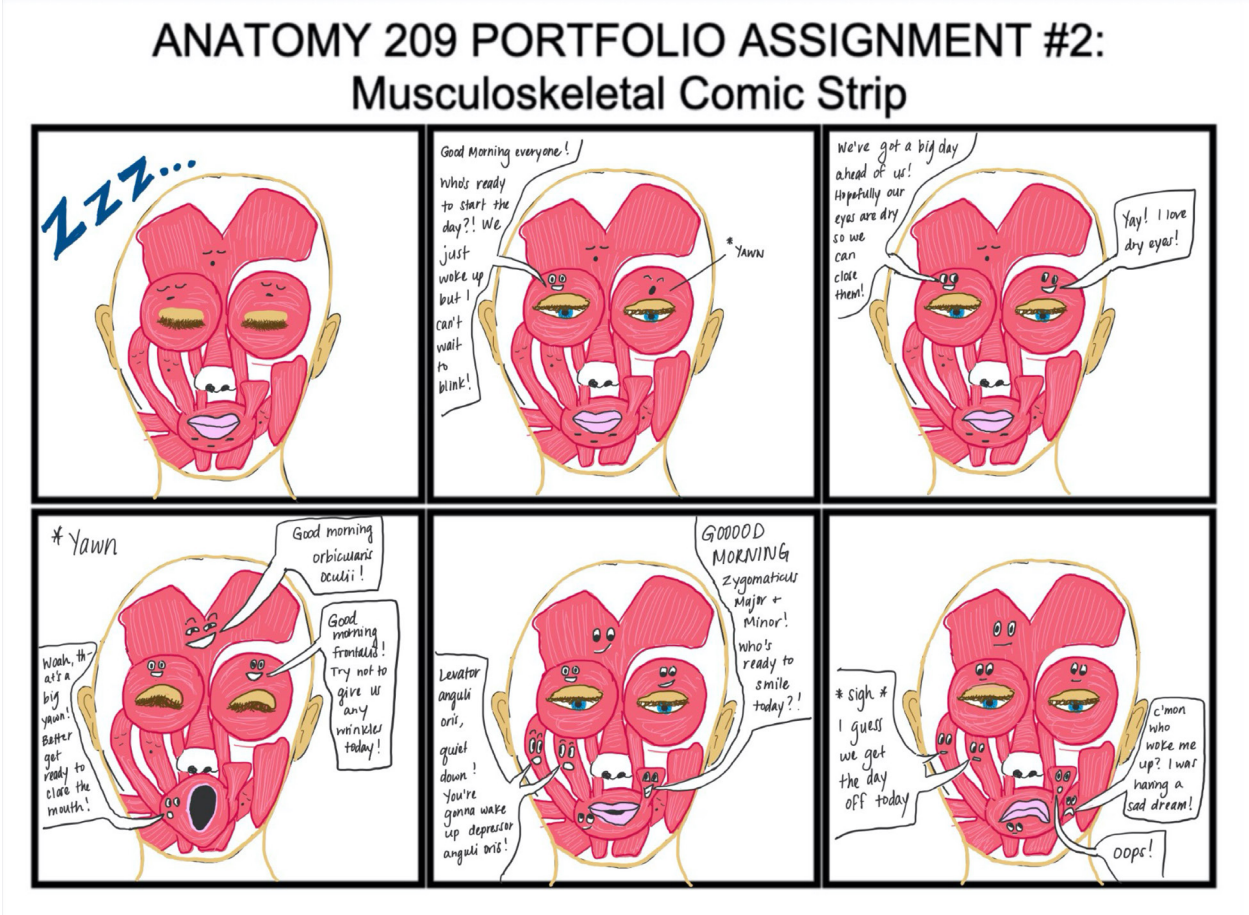

Figure 2. Example submission from Musculoskeletal Comic Strip assignment. Muscles of facial expression each waking up for the day in tandem with their "human". Each muscle wakes up as each part of the face becomes more active. This submission was particularly remarkable not only for the execution but also for the creativity and humor (credit: Anna Carlson).

Figure 3. Example submission from Nervous System Abstract Art assignment. A. This piece depicts cognitive decline and memory loss associated with Alzheimer's Disease. The tangled yarn represents the neurofibrillary tangles characteristic of the disease. As the women knits the red scarf from one of these tangles, all of the different images encased in the scarf represent her memories. Her husband reading a newspaper, a cat curled up with a ball of yarn, church, a newborn sleeping, riding a bike, her childhood home and dog, represent the memories she's slowly losing (*credit: Callie Smothers*). **B.** This sculpture represents Lewy Body Dementia. The student wrote in their description "their mind and body slowly unravel and begin to come apart at the seams. The sculpture above shows as if the string has been pulled, unraveling the top of the head and giving the impression that the rest of the sculpture could fall apart at any minute". The student also noted that the color choice represents the episodes of lucidity (white parts of the string) remaining in the midst of the Lewy Bodies. The viewer sees how LBD eventually affects all aspects of the body until the person you once knew, has unraveled, leaving the remains of an empty stranger (*credit: Cameron Brown*). **C.** This painting also depicts Alzheimer's Disease showing the dandelion petals continuing to fly away into the wind until there are no petals left. Such are the memories flying away from a patient suffering from AD (*credit: Lauren Lawson*).

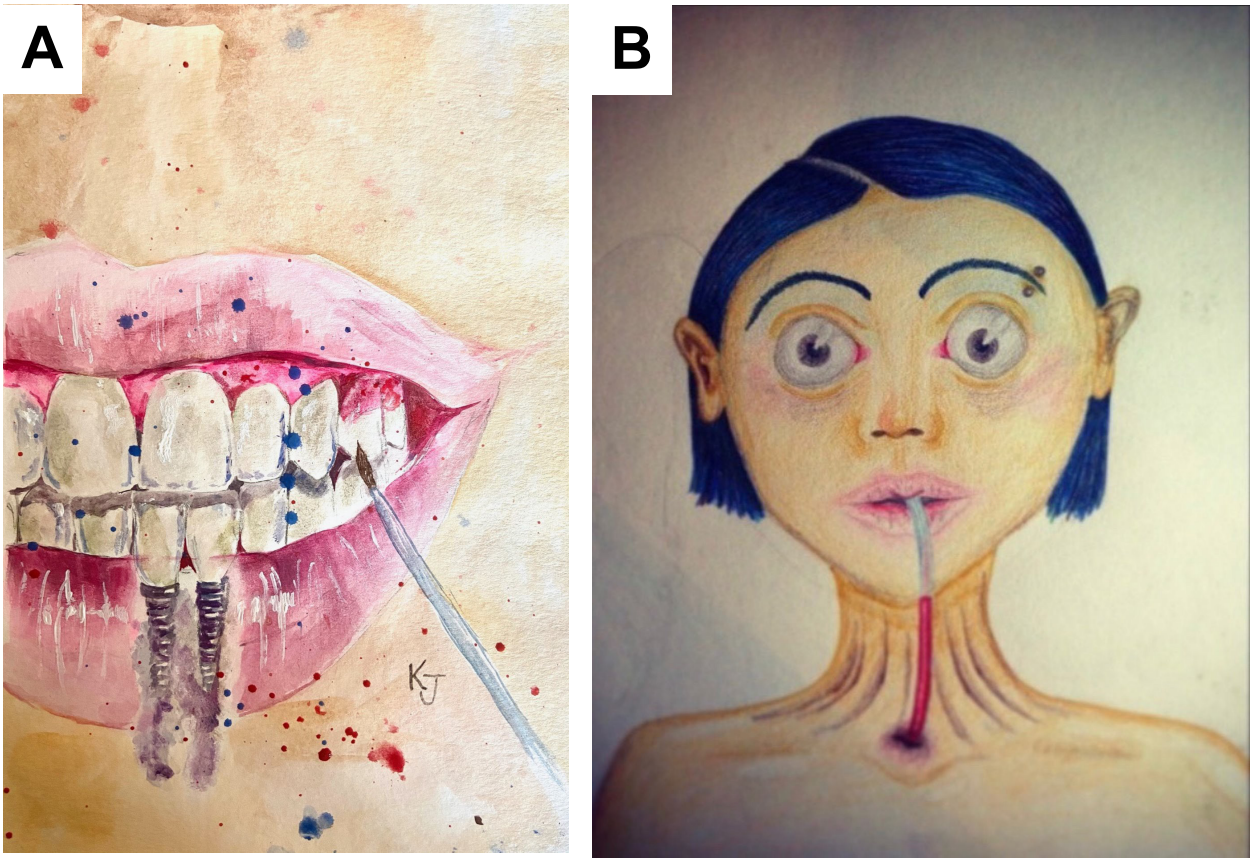

Figure 4. Example submission from the Choose Your Own Art Adventure assignment. These entries were supposed to be focused on each student's eventual career goals. These two submissions were among our most striking. **A.** A stunning watercolor of dental implants as a treatment for tooth agenesis. The student stated that dentistry, to them, is an art form, as depicted by the inclusion of the paintbrush (*credit: Keeley Justice*). **B.** A jarring depiction of anorexia and bulimia. This student wishes to go into psychiatry and chose to create this sketch to showcase how anorexia and bulimia goes beyond merely avoiding food but also causes the eating of your own internal fat and muscles (*credit: Pooja Parikh*).