



## **Looking Ahead: From Driving Cars in The Lobby to Online: Using Open Creative Expression to Understand Student Emotions About Transitioning to Remote Instruction During the COVID-19 Crisis**

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### **ABSTRACT**

In response to COVID-19, students in a first-year general engineering program rapidly transitioned from a highly interactive, hands-on model with large remote-controlled cars in the lobby to an asynchronous, online model without face-to-face student interaction. The instructors designed an assignment to encourage students to creatively express how the course interruption and transition online was affecting them. The assignment encouraged complete freedom of expression and choice of media. The intent was to keep a personal connection with students and to create a feedback opportunity to make up for the lost in-person informal connections and observations. The instructor of each section viewed submissions, and offered encouraging, individual feedback on each. Afterwards, instructors developed and applied a coding system for applicable media and moods to help understand overall student response. The instructors were left with the perception that the responses were very powerful, and successful at strengthening the recently weakened student-instructor bond. We found the assignment gave students a chance to express themselves more creatively than assignments such as reports. This paper will introduce the assignment and give an overview of student submissions. We believe similar assignments could be useful in any course where the instructor has an interest in the well-being of their students, and we ourselves plan to use this style of assignment to explore topics including students' desire to continue to pursue engineering, or comfort level during their first year of college.

**Key words:** First Year, Course Assessment, Feedback, COVID



## INTRODUCTION

Virginia Tech has a general admission engineering program, admitting approximately 2,000 incoming first-year students into general engineering. Students select a discipline at the end of their first year. Approximately 60% of engineering programs nationwide follow such a model (Chen, *et al.* 2013, 8-9; Virguez 2017, 3-4). A key component of the first year is a two-semester Foundations of Engineering course sequence: ENGE 1215 and 1216, taught in multiple 72-seat sections with an instructor and graduate assistant. Students explore 14 engineering disciplines, professional skills, and are introduced to engineering tools in ENGE 1215. ENGE 1216 is a project-based course featuring an engineering design. In this case, the project centered around equipping remote controlled cars to complete specific tasks such as negotiating obstacles and directing different objects into goals. Specific design criteria included functionality and aesthetics.

Teams had completed a prototype demonstration prior to spring break, staged in a large test area in the atrium of a building. The syllabus called for this initial test at the midpoint of the semester, to be followed by design iteration and a final showcase event. The COVID-19 pandemic put a hard stop on these plans. Spring break was extended by one week and students, obviously unexpectedly, did not return to campus.

This meant a radical redesign of the course: from a highly interactive, hands-on model with large remote controlled cars in the lobby to asynchronous and online. From the instructors' viewpoint, the course went from a very student-focused model built around student interaction and teambuilding to an asynchronous, online model without face-to-face student interaction. The instructors decided to avoid synchronous Zoom sessions to help alleviate some of the burden on students. Clearly, the valuable, personal interaction was missed, and the ambiguity of the situation led to concerns of students' losing a sense of belonging as the community of their peers, program, and engineering in general disbanded. After striving to create a community, then having it destroyed, the instructors wondered: what happens to the students?

To address this, the instructors designed an assignment to encourage students to express how the interruption and transition online was affecting them. The assignment wasn't limited to their engineering identity, but was boundless to encourage complete freedom. The intent was to keep a personal connection with students and to create a feedback opportunity to make up for the lost informal connections and observations that come from in-person interactive instruction. By introducing an assignment as an intervention to increase (or restore) a sense of belonging (Murphy, *et al.* 2021), could we mitigate the effects of the separation due to COVID-19? In this paper, we share a preliminary review of outcomes, and provide readers a sense of the breadth of submission types and topics they might expect in doing a similar assignment with engineering students, who rarely, if ever, see such an assignment.



## METHODS

A creative expression assignment (Appendix A) asked students to communicate their feelings about the transition of the course to an online model. We asked them to do this using any medium they chose, so long as they could share it through our online course management tool, Canvas. The assignment was made available to students at the end of the extended break, and due within two weeks.

Instructors reviewed all submissions from their sections, and discussed the results with each other. In an effort to capture the variety of submissions (and after giving individual student feedback) instructors developed a coding system for applicable media submitted and moods, which was then applied to classify all applicable descriptor codes for submissions. The coding was complicated as some submissions covered multiple media and genres: for example, an original song in a video would be coded as both. For this preliminary round of coding, the emotion/mood codes were selected based on feelings interpreted by the instructors as common during their initial review of assignments.

## PRELIMINARY RESULTS

The instructor of each section viewed each submission, and offered encouraging, individual feedback on each. Due to the nature of the assignment, it was graded only on completion. Each instructor agreed: the submissions were powerful. Students wrote and performed original songs, wrote poetry, wrote narratives of their feelings and current situation, and used many other non-traditional or inventive media, such as an individual baking a cake that went from happy to sad as it came out of the oven. These submissions ranged in detail and content from simple expressions of emotion to lengthy tales such as stories from international students who had added complications of whether to and how to return to their home countries. The instructors were left with the perception that this was hugely successful at strengthening the student-instructor bond. The bond had felt severed by the move online, but instructors felt much better connected and in-tune with student feelings after reviewing the submissions.

Of five sections to which the coding was applied (total consenting submissions included: 265), some media were selected by large numbers of students, such as drawings by hand or computer, and writing such as poems and essays (Table 1). While we were concerned about the openness of the format being difficult to process and manage, the variation turned out to be rewarding and enjoyable.

We further coded responses to explore student emotions mentioned in submissions (Table 2). Of these emotions, sadness and confusion were most common (~30% each), while about 20% did express hopefulness and optimism, with humor present in about 17%. The prevalence of negative mood is consistent with other studies of student sentiment in relation to COVID (e.g. Son et al. 2020).



**Table 1. Coded response types to creative assignment.**

Category	Type	Total	% (n = 265)
Writing	Prose	6	2.3%
Writing	Essay	32	12.1%
Writing	Word art	6	2.3%
Writing	Poetry: Not Haiku	32	12.1%
Writing	Poetry: Haiku	4	1.5%
Music	Lyrics	3	1.1%
Music	Playlist	3	1.1%
Performance	Music from instrument	6	2.3%
Performance	Performance of music	6	2.3%
Performance	Dance	2	0.8%
Performance	Spoken word	2	0.8%
Sculpture	Arranged Objects	6	2.3%
Sculpture	Sculpture	2	0.8%
Sculpture	Lego	2	0.8%
Video	TikTok	7	2.6%
Video	Youtube	4	1.5%
Video	Short-form (<20 seconds)	9	3.4%
Video	Music	3	1.1%
Video	Spoken word	5	1.9%
Graphics	Collage	13	4.9%
Graphics	Painting	18	6.8%
Graphics	Drawing by hand	58	21.9%
Graphics	Drawing by computer	10	3.8%
Graphics	Photography	15	5.7%
Graphics	Cartoon	18	6.8%
Graphics	Emoji	6	2.3%
Graphics	Meme	22	8.3%
Graphics	Web Design	4	1.5%

**Table 2. Student emotion coding of submissions.**

Mood	Total	% (n = 265)
Anger	37	14.0%
Appreciation	33	12.5%
Confusion	76	28.7%
Frustration	65	24.5%
Hopefulness/Optimism	54	20.4%
Humorous	46	17.4%
Sadness	82	30.9%



### NEXT STEPS

In short, the instructors were amazed at the submissions for this assignment, and felt that students took this opportunity quite seriously (Appendix B). As seen with collaborative creative activities (e.g. Verneert *et al.* 2021, 7–9), we suspect that creatively exploring this shared event did help students maintain a sense of belonging, which is a crucial aspect in retention (Tinto 1997, 613–619; Geisinger and Raman 2012, 918; Marra *et al.* 2012, 17–18; Murphy, *et al.* 2021). The department administers an end-of-semester survey designed to measure various non-cognitive attributes; perhaps a comparison from prior year results to results from spring 2020 could shed further light on the effect of the COVID disruption, although such analysis would not necessarily be attributable to this assignment.

The student impact and outcomes of this assignment could be further explored in several ways, including direct inquiry through surveys or interviews. It might also be meaningful to have an expert in a creative field judge the quality and depth of the student submissions. Future analysis could also include more advanced coding methods with additional coders and comparison.

We found the assignment succeeded in giving students a chance to express themselves in a more creative way than, for example, a formal report. We plan to implement similar assignment(s) in the future. We feel this would be an excellent tool for students to express their desire to continue to pursue engineering, or comfort level during their first year of college.

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## APPENDIX A: ASSIGNMENT TEXT

### Purpose

Self-reflection and creative expression can be useful tools, particularly in times of uncertainty. This assignment will give you the opportunity to practice these tools in the context of our course transition.

**Task**

Moving a course from in-person to online in the middle of the semester is disruptive, to say the least. It is probably also causing you to have a wide variety of thoughts and feelings.

For this assignment, I'd like you to spend some time reflecting on your feelings about the transition of ENGE1216 to an online format. Then, express your thoughts or feelings through some creative medium. A few of you mentioned drawing and dance in your intro slides - feel free to be creative!

Your creative medium can be whatever you like, depending on your preferences and available resources. Some of you may want to write stories or poems, some may want to draw, paint, or sculpt, some of you may want to create songs or videos. Some of you may have other ideas entirely. Any medium you choose is valid, and you do not have to explain this choice. All we ask is that you submit some way for us to see, hear, or experience your creation. We expect that will be through images, text, or links to audio or video for most of you.

Your feelings may be positive, neutral, negative, or all of the above. This assignment is an expression of your feelings, and any and all of them are valid (but please be classroom appropriate).

**Deliverables**

A way of accessing or experiencing your creative expression.

**APPENDIX B: EXAMPLE SUBMISSIONS**

Example 1: Poem

Endless Silence.

The whirring sounds of an idle laptop  
engulf the room in mindless noise.

The sounds, once rarely a part of life,  
are all that's left.

Yet, time moves on. The birds still chirp,  
the world still moves;

The world will return with time.

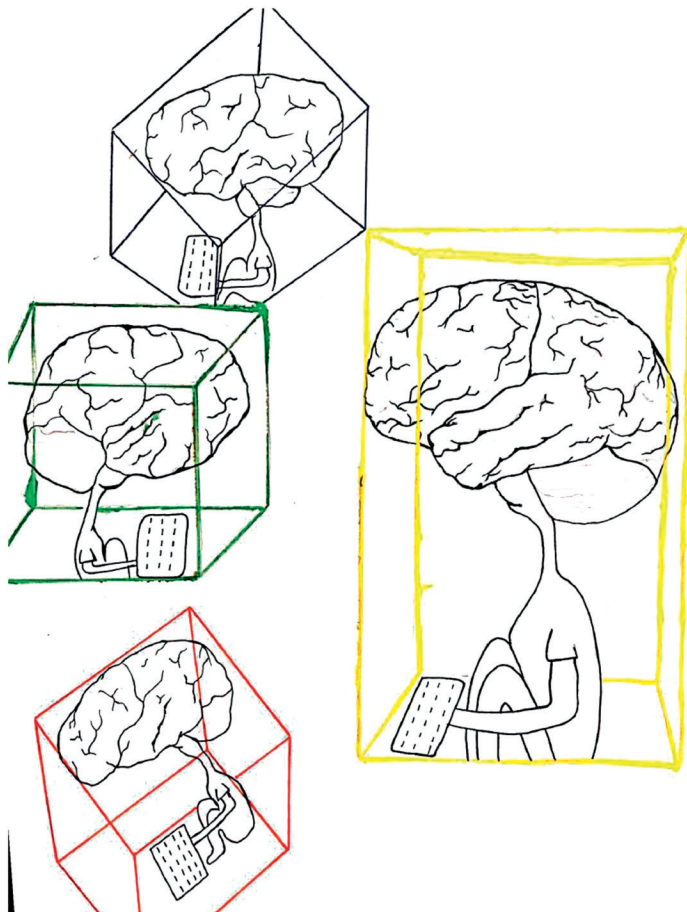
The mindless noise becomes mindful noise

## Example 2: Photo and explanation

Below is a portrait of myself that I took during this time of social distancing/quarantine. I feel as if being restrained to my home has caused me to lose my identity, an identity that I prided myself in hanging out with my friends, freely being able to travel anywhere I wanted, and attending the school that I had fallen in love with. With the quarantine placing all of these freedoms behind an iron wall, I feel like the only thing I can do in order to taste freedom once again is to soullessly roam my phone's virtual world, lacking the identity that is real life.



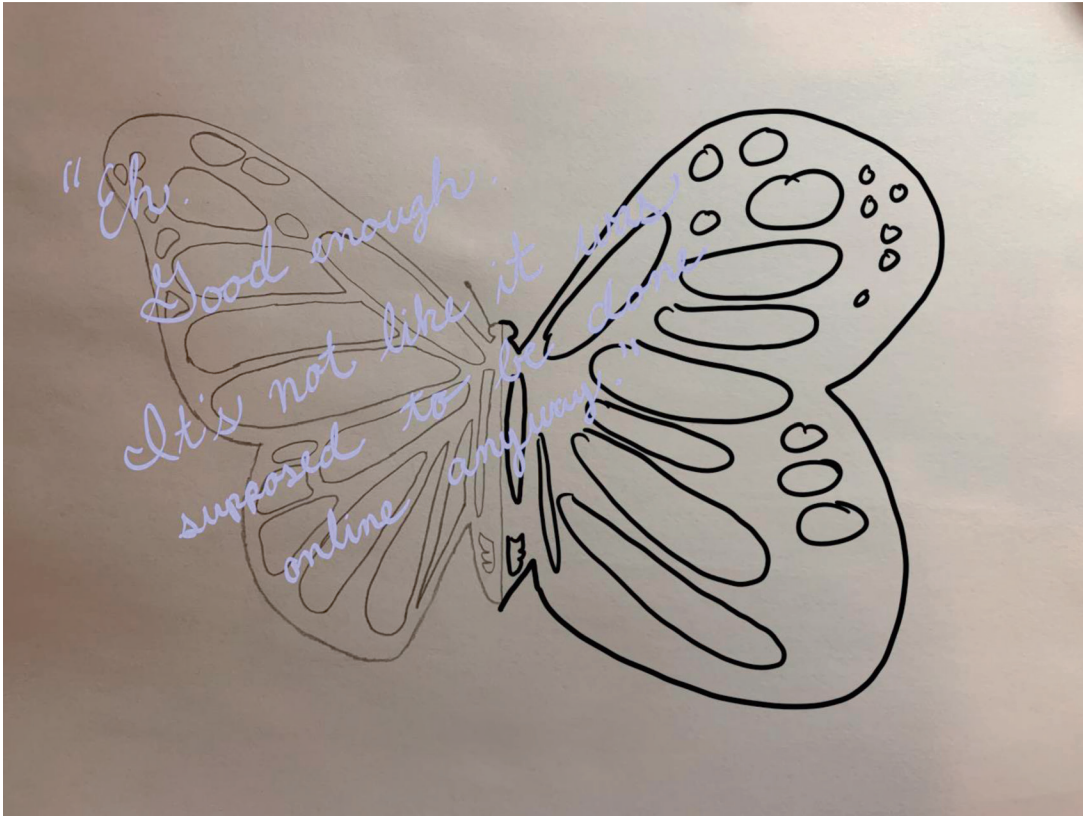
## Example 3: Computer-aided drawing







Example 4: Drawing



Example 5: Poem

I decided to write a poem, here it is:

#### Quarantine

I woke up one morning to all sorts of buzz  
 A longer spring break they said was all the fuss  
 Well that sounds fun, give me some extra time  
 Now I sit here dreading having too much time  
 Day in and day out it's all the same  
 Everything blurs together, quarantine is its name  
 My friends are so close yet so far away  
 I just hope I get to see them again some day  
 School switched to online, to be honest I miss campus  
 But it's not too bad now all I have is canvas  
 Working at my own pace is nice  
 Couple days a week does suffice  
 I just want to leave my house and go explore  
 But I have to wash my hands every time I open a door  
 Maybe soon this will all be over  
 Or maybe that will be never