

## **”Three strikes, you’re out... actually, that’s four strikes”: Transgressive Teacher and Student Humor in a Pre-College Engineering Classroom**

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Hi, I’m George Schafer (they/them) and I’m a 3rd-year PhD candidate at Drexel University in Philadelphia. Broadly, my work centers around dimensions of STEM education equity such as identity, power dynamics, and systemic change. For my dissertation, I am exploring how universities and communities partner around out-of-school K-12 STEM programs, and how such partnerships can center reciprocity.

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# **“Three strikes, you’re out... actually, that’s four strikes”: Transgressive Teacher and Student Humor in a Pre-College Engineering Classroom**

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# OVERVIEW

**Introduction**

**Context of Study**

**Humor and Equity**

**Theoretical Approach**

**Themes from Analysis**

**Conclusion**



# CONTEXT OF STUDY

## NORTHSIDE SCHOOL OF ENGINEERING & SCIENCE

- Grades 7-12
- Three STEM pathways: engineering, computer science, & biomedical sciences
- 1 of 4 “exam” schools in the city, but the only one with predominantly Black (70%) and Brown (25%) student population



### THE CLASSROOM

- Intro to Engineering course -- 10th grade
- Focus on engineering design process, mathematical applications, use of CAD, and hands-on projects
- Teacher (**Steve**): White man with professional engineering background; teaching for 5 years

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The data for this study are pulled from a classroom at the Northside School of Engineering & Science (pseudonym; all names of places and people are pseudonyms). This school houses grades 7-12 in an urban city. There are 3 STEM pathways in the school. Additionally, it is one of four "exam" schools in the city, where students must 'test in' to the school (so there is a certain level of achievement necessary to get in)

The class was a 10th grade intro to engineering course which focused on elements such as the design process, mathematical applications, use of CAD, and hands-on project. The teacher is a White man with a professional engineering background, which is important to note based on how he conceptualizes engineering and learning as well as the fact that the students are majority students of color at this school (note: this school is the only one with predominantly Black and Brown student population).

# DATA COLLECTION & ANALYSIS

(LARGER SCOPE OF PROJECT)

## CASE STUDY: IDENTITY

- Black boys' identities as "doers" of engineering [1]
- 8 total participants (class)
- 9 months of visits; ~3-4 hours per week

## DATA COLLECTION

- Monthly interviews with students, teacher [2]
- Field notes from 2 researchers including informal conversations

## DATA ANALYSIS

- Thematic analysis [3]
- Spatial analysis of interview data [4]

1. Sfard & Prusak, 2005  
2. Cobb et al., 2009

3. Saldaña, 2016  
4. Rucks-Ahidiana & Bierbaum, 2015

2

The data for the present study was pulled from a project that was conducted previously. This project was a case study examining dimensions of identity of Black boys as "doers" of engineering. One of the central reasons this study was conducted was the lack of identity-based research in K-12 spaces for Black boys.

There were two main researchers on the project (one of which is co-author for this presentation) who conducted about 9 months of visits with each visit consisting of about 3-4 hours. Data was collected through monthly interviews with students and the teacher (students were interviewed individually as well as in groups). Data was also collected through field notes.

Different stages of this project have utilized different analysis types such as general thematic analysis around identity development in engineering as well as spatial analysis to better understand the interactions between identity and space (e.g. through critical geographies)

# DATA COLLECTION & ANALYSIS

## (FOR THE PRESENT STUDY)

### DATA COLLECTION

- Using existing (previously collected) data: interviews and field notes
- Note: humor not previously a main focus, but it is related to identity

### DATA IDENTIFICATION

- Humor can be harder to discern solely from written data sources...
- Moments were selected for analysis that I felt could **clearly** be interpreted as humorous (e.g. involving laughter)

### DATA ANALYSIS

- Thematic analysis of different moments involving humor
- Presented two main themes (addressed later)

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The present study did not collect any new data (this had already been done). Interviews and field notes are the two sources used for the analysis. Of important note is the fact that humor was not a central theme of the original data collection. So, though humor shows up in the data, it was not something the 2 researchers were actively identifying during data collection. As I hope to demonstrate, though, in the spirit of the nature of the project, the element of humor is important to identity within this classroom space.

Again, since I was not one of the main data collection people (and based on the format of the field notes and interviews), identifying humor can be difficult. Thus, only moments where I felt humor could be **\*\*very\*\*** clearly identified were used for this study. This was done through things such as seeing "[laughs]" within an interview or tone indicators such as "[sarcasm]" written in field notes.

Thematic analysis of interviews and field notes was used to identify two main themes of humor (which will be discussed later). Transcripts and field notes were read, instances of potential humor were identified, and emergent themes were created.

## WHY HUMOR...?

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This slide takes a moment to introduce why humor was chosen as a analytic framework for this study

## WHY HUMOR...?

Humor has been studied in a variety of STEM contexts such as:

- mathematics + students with disabilities [1]
- health / physical education classroom [2]
- student climate activism [3]
- humor as experiential learning in environmental education [4]

Some important non-STEM contexts relevant to the present study:

- teacher humor and classroom management [5]
- Latinx students' and navigating assumed racism [6]

1. Bishara, 2023

2. Hackworth, 2024

3. Mayes & Center, 2023

4. Spörk et al., 2023

5. St-Amand, 2024

6. Zhang, 2023

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Humor as a whole is not a commonly studied topic... It is more often used as a frame of analysis in humanities classes -- this is tied to ideas such as critical literacy.

There are studies that have taken up the use of humor in STEM contexts [list items on slide]. Two important notes here:

(1) you can see that these studies are 2023 and 2024. In my search, there were very few studies overall but very very few before 2020 relating to STEM.

(2) none of these involve engineering

Two other examples listed in non-STEM contexts. These are important because they relate to the topics of the present study: how the teacher uses humor as part of classroom management and how students use humor in an (arguably) oppressive environment



## WHY HUMOR...?

"Funny kids are two steps ahead," Ms. Villegas told me the first time we met. "They're past where we are. They've figured out something if they know how to skewer it." Carina Villegas ... went on to tell me that American schools are product-driven, serious, and industrial. "There's a natural cycle of times in the classroom, times to be loose, times to put on the pressure. [Adopts a mock-authoritarian voice] *'We need to get this done. I don't want to hear your funny stories. This widget has to be made.'*" After a pause, Ms. Villegas added, "Funny students may choose these times to be the most subversive." (Low, 2024, p. 95)

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This quote is taken from a book by David Low (which I'll talk about on the next slide) that examines transgressive humor in classrooms. The quote demonstrates several dimensions of why understanding, analyzing, and reflecting upon humor in classrooms is important.

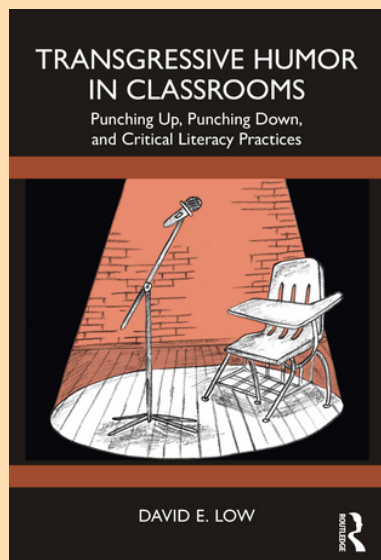
First, it acknowledges that when students use humor, it represents that they understand things (i.e. "being two steps ahead") instead of the common notion of being (unintentionally) disruptive.

Second, it acknowledges the capitalist, industrial normativity of classroom climates. The use of humor in classrooms directly counters this normativity.

Third, through her mock authoritarian voice, the teacher speaks to the fact that humor (i.e. "funny stories") are framed as a distraction from the main purpose of school ('getting stuff done').

This quote is also relevant because, as I will discuss further, students in the engineering class of this study frequently reported that they felt like the emphasis of the course was more 'follow the rules' and 'get stuff done' as opposed to the actual principles or practices of engineering.

# WHY HUMOR...?



## Transgressive humor:

*transgress*: to go past a limit or boundary

*humor*: this is harder to define...

- amusement
- incongruity
- surprise
- humor is also highly contextual

transgressive humor:

- "Aims to interrogate status quos and disrupt systems of oppression." (Low, 2024, p. 37)
- But, it isn't always critical of power... it can be used to enact injustice and perpetuate inequities

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In his book, David Low takes up the lens of transgressive humor to analyze students' critical literacy practices. This book is an excellent read, by the way. It takes up a refreshing but unavoidably important framing to considering some of the everyday dynamics between teachers and students in classrooms. Dr. Low does an excellent job of positioning the youth in the study as agentic, knowledgeable, powerful, and upset (by systems of power)

Transgressive humor (Dr. Low's term) is the lens I use for this study. First, let's break down what this term means. To "transgress" generally means to go past a limit or boundary, often with people or social/societal norms. What does "humor" mean....? Well, that is a lot to unpack in this talk but some key components to consider are amusement, incongruity, and surprise. It is also important to recognize that humor is completely contextual -- it depends on who is telling the 'joke,' who else is present, where you are, what is taking place at the time, etc. For example: if I try to tell my parents (who are much older) about a meme I saw, it doesn't land the same way as a young person seeing it online (age, format, modality, communication). Hence, I hope I have done (and will continue to do) a good job of making the context of this study very clear for you so that you may understand how humor unfolds.

Positioned together, transgressive humor:

- aims to interrogate status quos and disrupt systems of oppression
- but, as Dr. Low frames in his book, transgressive humor works both ways...

# PUNCHING UP AND PUNCHING DOWN

(Low, 2024)

## PUNCHING UP

- Used to acknowledge and push back against systems of power
- Targets people, organizations, etc. which hold power and privilege
- **Problematizes** oppression, discrimination, inequity, etc.
- Generally more accepted/supported

## PUNCHING DOWN

- Perpetuates and upholds systems of power
- Targets people, organizations, etc. which **lack** power and privilege
- Is based in oppression, discrimination, inequity, etc.
- Not as commonly accepted/supported (but it depends on the context and interpretation)

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Dr. Low frames transgressive humor through two directionalities: punching up and punching down

Punching up pushes back against systems of power, problematizes oppression, and is typically more accepted and supported by people when used as a form of humor. Conversely, punching down upholds systems of power, is based in oppression, and is usually not accepted by people when used as a form of humor -- but that depends. This can be discerned by the target of the joke: is it someone or something which holds power and privilege, or not?

## TWO EMERGENT THEMES

### PUNCHING UP (STUDENTS)

- Students 'punch up' to interrogate and critique the structures and systems of the classroom and teacher

### PUNCHING DOWN (TEACHER)

- Teacher 'punches down' at the students through ridicule, punitive language, and sarcasm

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As mentioned earlier, there are many levels of power and privilege intersecting in this engineering classroom space. Students generally hold less power with respect to things such as their age, education level, race, and ethnicity. The teacher holds more power given that he is a White man, is older, and has direct education and experience with engineering. It is worth noting that many of the students in this class have had previous engineering experiences, though (educational and applied) -- so they *\*do\** have a sense of what engineering can/should look like.

I will highlight examples of each of these in the coming slides.

# STUDENTS PUNCHING UP

**Researcher:** *In as much detail as possible, can you describe a typical day in the intro to engineering class?*



Data about students punching up was taken from interviews.

This question from the researcher asks the students to describe a typical day in the intro to engineering class in as much detail as possible.

## STUDENTS PUNCHING UP

**Researcher:** *In as much detail as possible, can you describe a typical day in the intro to engineering class?*

**Unknown Student:** *[laughter] This class? The class that we take right now? [laughter]*

**Royal:** *Wooo, uh, that a good one. [more laughter]*



[narrate quotes]

Here, the students are reacting to the question with laughter because, as they go on to describe, the idea of a 'typical' day in the engineering class is incongruous with their experiences.

Royal then describes it as "all over the place", noting how there is not a clear structure to the content they engage in, the activities, that they do, etc.

Thus, in this example, we see the students critiquing the status quo – the day-to-day operations of the class (which, by extension, can be seen as a critique of how the teacher, Steve, runs the course). They are not simply saying “this class sucks” or something like that. They are very clear on what they expect from a course which, if we consider the implications of this, can significantly affect their learning experiences.

## STUDENTS PUNCHING UP

**Researcher:** *When you all faced difficulties or issues with your design, was there a particular resource that you went to? Like, was there a person(s), online, or what kinds of things did you do in order to get beyond the difficult parts of the design process --*

**Mario:** *[interrupts] My group, we really just walked around to see the other plane designs.*

**Royal:** *Hmmmmmm [looks at Mario]*

*[All laugh]*



Here, the researcher asks a question around how students navigate difficulties -- specifically, the kinds of resources that they seek out in such moments.

[narrate quotes]

Mario interjects with one answer to the question. This is referring to a project where they were put in groups and asked to design a plane/glider. Without context, we might interpret Mario's response as benign -- their group used observation to gather data and face their challenge. But, this example is important for a few contextual reasons. First, the grading of the project was comparative -- not based on standardized performance. So, there was more pressure to succeed based on these parameters. Second, Royal actually ended up getting in trouble for walking around during this time. He was deemed 'off task' and assumed to be walking around just talking with friends.

So, while the humor here isn't directly critiquing the systems of power in the class, the students are laughing about an incident where the systems of power were at play. They share a camaraderie around the group project and the mutual experience of walking around (and, subsequently, Mario getting in trouble for it). Their laughter tells us, in a way, "oh yeah we went looking for help -- and what did we find? Trouble."

# TEACHER PUNCHING DOWN

## A scene from field notes:

- Steve asks what's the difference between a regular and servo motor (takes out clipboard for performance grade)
- reminds students this counts towards performance grade
- calls on specific student and the student remains silent
- other students in the class say you can do it, you're the smartest man I know
- Later in class, Steve asks the student again: "I'll give you another chance."
- Student remains silent.
- Steve says "Pass? Uhh... three strikes, you're out." (Looks at clipboard) "actually, it's four strikes."



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[narrate slide]

There are some important key elements I would like to highlight from this interaction.

First, why did I code this as humor? There is an element of interpretation here, but I found the use of "4 strikes" to be an attempt at humor (even if there was not explicit kind of laughter or other cue in the field notes). There is an incongruity here because, what's the point of counting to 4 strikes anyway? Steve seemed to do this intentionally as a way to say 'oh you were already doing poorly in performance and I'm going to make it clear you've done \*very\* poorly' (with the fourth strike).

Next, this scene tells us that there is an expectation in the course that you should 'perform' (read: participate by giving answers on command) and that your grade depends on this performance. Despite this, the student does not feel compelled or able to answer in the moment. We cannot say why, but the student chooses not to answer for one reason or another.

One last important note is that, the first time the student is asked the question, other students in class encourage them. Steve, on the other hand, does not. Would the student have responded differently if Steve, like the rest of the class, had encouraged them?

And, finally, during the second prompting to the student, Steve also chooses not to encourage them. Instead, he uses the symbolic language of failure (3, then 4, strikes) to comment about the student.



Here, we see Steve as someone who holds power through choosing who to ask questions of, having the power of grading performance, and being able to influence the student through encouragement or inciting dejection. Steve chooses the latter; as such, this can be seen as a moment of punching down.

# TEACHER PUNCHING DOWN

## Other instances of humor being used

- Wow, I can tell by the looks on your faces this is pretty awesome [sarcasm]
  - demonstrating how to use a type of caliper
- Students say they are finished and Steve says OK [sarcastically]... asks if anyone in the class needs clarification on content for their spreadsheet
  - this takes place in the context of two students talking about their project



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These are taken directly from field notes (direct transcriptions)

[narrate field notes]

In the first instance, Steve has a read on the students' level of interest in the topic. At a moment where he could potentially stop and check in with the students, he chooses to make a joke and punch down at them for not taking interest in something that, in his opinion, they "should" be interested in (i.e. because they should be paying attention, 'on task', etc.)

In the second situation, Steve can sense that the students may not feel comfortable or confident in their discussion of the topic. When they say they're done, he responds sarcastically. Again, this is a moment he could have chosen to check in with the students to see how they were feeling, to ask them clarifying and supportive questions, etc.

# TEACHER PUNCHING DOWN

And, lastly, I find it important to note ...

... nobody laughed at any of Steve's "jokes"



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The fact that students did not laugh at Steve's sarcasm can be seen as evidence that they, too, saw this humor as punching down. As I mentioned earlier, humor that punches down doesn't typically land well with the audience (especially when that audience is the group being "punched")

# IMPLICATIONS

Humor is a powerful thing in educational spaces -- it can be used to punch up or punch down

Students in engineering spaces are developing identities as engineers -- but also as people [1, 2]

How can we understand students' use of humor in ways that honor their identities, ideas, and rightful presence in STEM spaces? [3]

How can we, as educators, reflect upon our use of humor and teach to transgress? [4]

1. Henderson et al., 2021

2. Jensen & Cross, 2021

3. Calabrese Barton & Tan, 2019

4. hooks, 1994



Humor is deeply related to equity, though many of us often don't think about it in this way. I hope that this presentation has prompted you to think more critically and carefully about the role of humor in classroom settings (and, for that matter, other settings!). Humor can be used as a device to punch up or punch down. This means there are implications for humor to uplift, provide new opportunities, and validate students' identities. Conversely, using humor to punch down can result in continued oppression, lack of belonging, and other negative associations with learning spaces.

These are important things to consider in engineering education spaces given that many students (e.g., in this study, Black and Brown students) face systemic inequities in engineering education. The development of engineering identity is key during K-12 -- but, so is the development of identity along many other aspects. If youth are shown from a young age that humor isn't 'allowed' or encouraged in learning or engineering spaces, what kind of a future are we setting them up for?

As educators and education professionals, our roles are to subvert systemic inequities and do everything within our power to make sure students succeed. In this way, as bell hooks urges us to do, we must strive to teach \*to\* transgress, and not make teaching itself a form of transgression (a negative one).

THANK YOU!



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