TEACHING STATEMENT

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Ideal teaching and learning take place at the individual level, through one-on-one interactions. President James Garfield described the image of an ideal education this way: student and mentor sit at two ends of a log, engaged with one another in dialog. Paradoxically, the pursuit of this ideal is inherently a community endeavor. Communities of learning at every level—classroom, department, discipline, college, society—are the foundation of the close personal interactions which stand at the center of great education.

At the start of each semester, I try to create a classroom *architecture* in which a vibrant new learning community can develop and thrive. This semester, I have structured my two classes in starkly different ways. In Discrete Math, which serves most importantly as an introduction to proofs, but covers a wide range of topics—logic, basic number theory, sets, functions, relations, sequences (for induction), combinatorics, and graph theory—I have opted for an inquiry-based approach, so that student's can have the time and intellectual space to find their own proof-writing voices. In Linear Algebra with Differential Equations, I have taken a more traditional approach, where I teach from the front of the classroom; the challenge here is to *engage* the students—organically, through dialog, and architecturally, e.g. through think-pair-share and clicker questions—so that my "lectures" operate more like conversations.

The latter modality is more comfortable for me, more familiar; after all, this is how every single math class I ever took as a student was structured. Indeed, my teaching persona is the organic expression of a vast fortune I have inherited from a multitude of great teachers. Frauke Bleher at Iowa is my paragon of professionalism, organization, brilliance, and clarity; Satyan Devadoss at Williams taught me not just discrete math, linear algebra, knot theory, and computational geometry, but also how to foster classroom dialog. I could go on.

Yet, at Project NExT, I learned about several other ways to structure a classroom, and I learned that research shows that incorporating at least some of these inquiry-based methods into any classroom structure improves learning outcomes. The question is what blend of methods makes the most sense for a given course, based on the students and the material. In §4, I will describe how I have approached that question in my two courses this semester, and in the process convey my current approach to harnessing the dialectical tension between traditional and inquiry-based instruction. First, though, I would like to tell you some of my *how*'s and *why*'s, including how my earliest years instilled a life-long love of teaching (and learning) in me, why I have (almost) always known that I love teaching, how my four years teaching high school math continues to influence me.

1. Ever since I can remember...

The quality of my classroom teachers and mentors from pre-K through present day is no accident. Before she met my dad, my mom quit her job as an actuary to teach high school math for half the pay. My dad taught criminal law and torts, which, in its logical structures, is not so different from math. At the dinner table, Dad described the cases from class that day, asking for our opinions and engaging both sides of the debate. Before bed, Mom would sometimes pose a math problem in place of a bedtime story.

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When she was diagnosed with ovarian cancer, Mom resolved to fight, and she did. To fight, she needed to keep her spirit strong, and to feed her spirit, she kept teaching. Recognizing my unique needs as a learner, she enrolled me at Indianola Informal Alternative Elementary School; she observed every Kindergarten teacher; found the best fit for me, a first-year teacher named Kelly (all teachers went by their first names at Indianola Informal); and kindly asked the principal to place me in Kelly's class the next year. Whether persuaded by Mom's kindness or her cancer, the principal agreed. She also agreed the next time, and the time after that, all the way through the end of elementary school, and so I had the best teachers—best for me.

Kelly taught me about classroom culture and personal responsibility: "Actually, you *can* control your fist." Sylvia taught imagination and collaboration. When I had finished learning my times tables, she paired me with a classmate, Rod, who didn't yet know even his 0's or 1's. We started there. I still remember the feeling we shared when he got it, and knew he got it; what had felt impossible moments before now was easy; he felt empowered; he lit up; this was fun, deep down in your soul fun, and we wanted more. Rod and I worked together during math time, and once or twice even during recess, and by the end of the unit he knew all his tables except for 7's and 12's. (Later, as a sophomore in high school, I returned to Sylvia's classroom for my Wednesday internship. It was as if I asked myself: "Hey, remember that moment with Rod where I knew I *had* to become a teacher? Was that really as great as I remember?" It was, and it is, which is why I am a lifelong teacher.) Donna taught empathy and a love of animals that I appreciate every day now through the love I share with my dog Apollo. Ria gently but firmly prepared us for the harsh transition to middle school.

Most of all, Donna and Ria kept stirring up my love of learning when my mom lost her last battle with cancer. My parents had taught me in frank terms about grief and loss, and so I knew what was happening at the end, and I had inner skills to cope with the grief. I cried whenever I needed to; the tears sometimes came in floods. Acute grieving is a skill. Living through grief requires this skill and many others, and I learned that, for me, the best approach was to continue doing the things I loved, especially learning. Hugs helped too. Donna and Ria were there for all of it. While all my experiences as a student inform my teaching, this is true most deeply when it comes to grief and loss. I discuss this further in my diversity statement.

My experiences at Columbus Alternative High School (CAHS), a public magnet school with lottery admissions where 70% of students are members of minority groups and a majority are black, deepened my love of learning in and outside the classroom. Freshman year, my Algebra 2 teacher Mr. Nguyen volunteered his lunch period to teach me trigonometry and precalculus, so that I could take AP Calculus the next year without enrolling in summer school. The next year, AP Calculus was scheduled in the same block as the school's most celebrated humanities course, AP European History, taught by our most revered teacher, Mr. Feeser. When I refused to choose, and looked into taking calculus at Ohio State instead, CAHS's calculus teacher, Dr. Velo, suggested that, if I took the course as an independent study in the first semester, he would work with me during his planning period in the second semester. This turned out great. Not only was I able to take both courses (Mr. Feeser's AP European History is the best-taught course I've ever taken, largely because of the way we interacted with primary sources), but I was able to work through calculus at my own pace, covering the Calculus AB material in the first semester. Then, in the second semester, Dr. Velo and I worked together through the Calculus BC material; the next year, CAHS offered Calculus BC for the first time. Forever grateful for the generosity of Mr. Nguyen and Dr. Velo, I also like to think when recalling this time that their kindness paid lasting dividends not only for me but also for the school at large.

Because I was fortunate enough to be granted admission to Williams College, I enjoyed world-class teaching in every classroom in college. The spring before I enrolled, Thomas Friedman gave the keynote speech at Williams' graduation ceremony. In his next column in the New York Times, Friedman extolled the part of the ceremony in which Williams honors four high school teachers, former teachers of graduating seniors, with the Olmsted Award. During my junior year at Williams, I served on the Olmsted committee, and read

about dozens of life-changing high school teachers. Somehow, we chose four to honor. Senior year, I knew I wanted to nominate one of my former teachers. Perhaps Mr. Feeser? Or Mr. Fawcett, the renaissance man who directed CAHS's theatre program and taught a fantastic AP Chemistry course? I chose to nominate my teacher and mentor Mr. Kaufman, who taught chemistry and organized CAHS' championship chess team. Although Kaufman did not "win" the award, it was great to have the opportunity to recognize his lasting impact, especially on me and my chess teammates.

On the first day of chemistry class, Kaufman demonstrated the concept of *specific heat* through the "red-hot penny lab": using lab tongs, Kaufman held a penny over a bunsen burner until it glowed, then dropped the penny in a flask of water and measured the temperature difference, which he then used (with the masses and specific temperatures of water and copper) to compute the temperature of the glowing penny: more than 750°F! Then he trained his teenage students in lab safety, putting on an almost frighteningly serious face, and we conducted the lab ourselves. New labs followed every few weeks. (My lab partner is now a Swarthmore alumna and an ER doctor.) In lectures, Kaufman wove historical personalities, conceptual dilemmas, and concrete computations into a compelling narrative. To lighten the atmosphere, he sprinkled in jokes, usually corny, sometimes hilarious, always effective. This veteran teacher had honed his classroom practice into its perfect form.

Elements of Mr. Kaufman's teaching practice seeped into my bones and became my own. So too with Mr. Feeser's practice, Mr. Nguyen's, Mr. Fawcett's, and so many others from every privileged stage of my education. It is my great fortune to inherit some of this cultural wealth, which I now carry in my bones, like reverberations of ancestral voices. Among their diverse gifts, each of these master teachers delivered captivating, engaging lectures, each in their own unique way which has now become, in part, my own.

As much as Mr. Kaufman's masterful classroom practice inspired me, his greatest impact has been as a mentor, especially through CAHS' chess program. Since my elementary years, the Columbus Public Schools had invested heavily in chess through its Gifted & Talented program.[1] As a result, Columbus regularly sent more students to each of the two annual national tournaments than any city except New York and the host city. Recognizing that CAHS' academic excellence created an opportunity to build a "chess powerhouse" Mr. Kaufman recruited middle school students at local, state, and national tournaments. Although I hoped to attend CAHS anyway, subject to the luck of the lottery draw, I believe that Mr. Kaufman's chess outreach brought several youngsters into CAHS and its academic opportunities. I witnessed first-hand how Mr. Kaufman used chess as an incentive for other students to work harder in class, and how he stood up for students when he learned of other teachers trying to do the same but being unfairly punitive in the process. He shepherded us through airports across the country before and after 9/11, booked hotels, and hired Grandmaster Babakuli Annakov during nationals to go over our games with us. Senior year, I interned for Mr. Kaufman on Wednesdays, and he let me teach a chess class for the first-year students, who went on to win nationals. It never mattered that Mr. Kaufman was, frankly, an awful chess player. For me and many others, he was a life-changing mentor, as well as a master teacher.

At Williams, Professor Satyan Devadoss captured my imagination with his novel (to me) inquiries, elegant illustrations, rapturous narrative style, and comfortable yet methodical cultivation of broad classroom dialog. When a group of students from his discrete math class visited his house for board games, we paused between games for a casual conversation at his basement blackboard. He drew a diagram of a trefoil and posed the unknotting problem. In our short conversation, he used the socratic method to demonstrate that it is

[1]Although Gifted & Talented programs often disproportionately serve white students, this was not my experience. Quite the opposite. In particular, our top local rival was the all-black team from Eastmoor Academy who fielded one of the best teams every year at fall nationals. Today, at least one member of that team and one black member of CAHS's team run separate chess programs in the Columbus area. The Chess in the Schools Program changed lives, including black lives.

surprisingly difficult to prove that the trefoil is actually knotted. Inspired, I enrolled in his knot theory course next semester (Colin Adams was on sabbatical).

The next summer, I began working with Colin Adams on knot theory research in Williams' REU, SMALL. Colin gave me an open-ended problem to consider: can we build more spanning surfaces for alternating knots? The inquiry grew into a research project, which lasted two summers at SMALL, an independent study, a senior thesis, and a six-year publication process. As he coached and mentored me through this project, Colin taught me how to be a topologist and, by his example, how to advise student research. Even as I continue unpacking new lessons from those years, Colin remains an invaluable mentor.

2. Teaching high school

Although I didn't yet have a teaching certificate, I started my first teaching position in January 2009 at the Charles School, a public charter school in Columbus, Ohio, serving a diverse student body, in its second year of existence. My responsibilities would be the envy of most high school teachers: two classes of pre-algebra and one remedial fundamentals of math. I remember the latter most distinctly. All nine students in the class were black, and four came from Columbus' Somali-American population. All nine had fallen far behind in previous math classes. For the Somali students, this was most likely due to a language barrier; for the other students, it seemed tied in different ways to attention-seeking behavior and/or difficulty concentrating. In short, each student in that class needed individual attention, and with such a small class, I was sometimes able to give them this attention. We began with addition and subtraction of positive and negative integers. For some of the students, this was far too advanced, and we started more basic: addition and subtraction of 1- and 2-digit numbers, and multiplication tables. Overall, that semester, we made progress; yet, there were also many days when math seemed out of the question, due to forces that felt out of my control. You might say the issue was classroom management, but naming a thing is different than understanding it.

It felt like it didn't matter that much how hard I tried or what I *did*. Something big was missing. What was it? Some lessons went fine, some better than that, but the lessons weren't really the issue. The math, the content, the presentation, the lesson plan; this wasn't the issue. What really mattered, I was learning, was the *culture of our classroom community*. I didn't know how to foster this culture.

All my great teachers and mentors, all my life experience, none of it prepared me to cultivate the type of setting in which all of this experience took place. For example, CAHS is a public magnet school, and so, while the student body was socioeconomically diverse in a beautiful and obvious way, we were still somewhat homogeneous, due to the self-selection (in part through the agency of our parents) which enrolled us in the lottery for admission. There was a shared ethos at CAHS, just as there was at Williams. What did successful teaching look like in a context that lacked this shared ethos?

During the summer of 2009, I joined the Mississippi Teachers Corps. The Corps' intensive summer workshop covered classroom management and lesson planning, put us in front of summer school classrooms, asked us to critique what we saw from our cohort, and certified us to teach in Mississippi's classrooms. At the end of the summer, we dove into our classrooms across the state and "learned to swim by swimming."

The students at Potts Camp, the school where I taught, were rural, generally poor or working class, roughly 60% white and 40% black, reflecting the small-town community in which the school was located (in northern Mississippi, between Memphis and Tupelo). Potts Camp faced uniquely rural challenges: a typical graduating class had maybe 35 students. Thus, the high school had two math teachers, me and Mr. Weeden. Under the No Child Left Behind testing regime in place at the time there were four high-stakes subject tests; the one in math was in algebra 1. The dominant strategy for algebra 1 test prep was to load all the information that students would need into a TI-83 and then to train the students accordingly. I was grateful that Mr.

Weeden taught all the algebra 1 and high school pre-algebra. This left me to teach geometry, algebra 2, trig/precalculus, and AP Calculus AB.

With four preps my first year, I was constantly planning. The tasks from the textbook generally were ill-suited to my students, so I designed most class activities from scratch. I tried to design simple, straightforward tasks without extraneous details. When I succeeded in doing this, it felt beautiful. I would show an example; we would work through an example together; the students would work some examples on their own. Everyone would work on the task. It might sound simple, or dry, or rote, or uninspired. But the alternative was chaos. If I gave students a task that they found open-ended, or a task which required an extra skill like manipulating decimals or fractions or roots, things would quickly spiral into disorder. Conversely, my students all seemed to enjoy the feeling they would get when working through an activity; they seemed to enjoy the structure, the predictability, the positive reinforcement. Some students coped well with challenges, pinpointing their confusion and asking about it. But several students, while they enjoyed tasks that they understood, often reacted to challenges in less productive ways, intentionally disrupting the flow of class for everyone. Connecting with these students was perhaps the most exhausting, and most rewarding, aspect of my time at Potts Camp. The most important thing was to build a shared rapport, then trust, and eventually that good *agape* love that MLK preached about. This mutual respect, trust, and love enabled us to work together as they sought to improve resilience, self-discipline, and altruistic respect, while I expanded my equanimity, affability, and empathy.

Based on the experience of my first year at Potts Camp, I strove during my second year to have a more predictable, structured rhythm each week in the classroom. I also started teaching physics that year, in fact AP Physics C Mechanics, because there were two seniors who were ready for calculus, but this wasn't enough to offer calculus, plus I had a handful of bright, driven students who could handle AP Physics despite being co-enrolled in trig/precalculus. That year went much better in my classroom than my first year.

My third year at Potts Camp, I repeated many of the approaches from the previous year. Unlike the previous year, there were enough seniors to offer AP Calculus AB. Each of the eight students in that calculus class took four or five classes with me during my three years at Potts Camp. They had excellent math skills and great attitudes, and we all had terrific rapport. That year, these students learned how to compute derivatives and integrals and solve standard optimization problems. Yet, when I tried to engage them in open-ended problem solving, they always wanted me to tell them what to do. I imagine that this dependency comes largely from the way that I, and other teachers before me, structured these students' previous math classes, in some cases because of incentives coming from the high-stakes testing regime. Still, it should have been possible to help them develop problem solving skills during AP Calculus. I just didn't know how. More on this later.

3. Higher education

Teaching high school, I tried to limit my "at the board time" to 15 minutes per class period, partly because of students' limited attention span, but also because I quickly learned that most students would not spend any time on homework; if I actually wanted them to do something, I needed to have them do it during class. By contrast, as a graduate student and TA at the University of Iowa, I spent 100% of class time at the board.

Indeed, all of my graduate courses were taught this way, as were all of my math classes at Williams. I always found this traditional method of teaching and learning to be extremely effective (for me) when done well, as it always was at Williams, and it often (but not always) was at Iowa.

Thus, at Iowa, I thought it made sense to work on improving the craft of teaching from the front of the classroom. Critical elements of this craft include preparation, board work, explaining things well, and

engaging in dialog with the class. All of these elements are critical as well to successful research talks, and at Iowa I took every possible opportunity to give seminar talks. Many, I think, were terrific, others less so. Occasionally, the problem was that I underprepared, but usually the problem was that I was overly ambitious in the amount of material to cover, or that I spent too much time preparing notes, especially pictures, and not enough time engaging with the actual material, leaving myself underprepared for dialog. I am still working on those weaknesses. Overall, though, I believe that this method of instruction, call it "engaging lecture," is one of my top strengths as an instructor. In part, student evaluations inform this belief. On a deeper level, though, this belief is rooted in my knowledge about my teaching inheritance. The vast wealth that I carry in my bones from 50 or 100 master teachers informs my best teaching (although, as I described in §2, it is far from sufficient), and most of those teachers delivered instruction in the form of engaging lectures.

Yet, research shows that the traditional lecture-only approach to college teaching is inferior to an approach which includes inquiry-based or active learning components. For this reason and others, I sought to expand my teaching toolkit by applying to MAA Project NExT.

Project NExT revealed new worlds of pedagogical possibility. The next year, as a result, I incorporated several new techniques into my pedagogical practice. For example, teaching linear algebra for the second time at UNL, I incorporated "Plickers" questions into an otherwise traditional format for the course. My second time teaching Introduction to Modern Algebra, a "rings first" proofs course, I applied lessons from Project NExT to improve the effectiveness of group work and introduced an end-of-semester project called "Being Them," in which each student learns in detail about a historical mathematician (in this case, in algebra or number theory); then all students come to class "as" their mathematician and dialog with one another. The project is the brainchild of my sister Jessie Kindred, who has used this format with great success for 25 years in psychology classes. The following semester as I taught linear algebra remotely, we again used Plicker questions, but now with a think-pair-square-revote-share format: First, everyone answers the questions. Then I sent them to breakout rooms in groups of 2-3 to discuss, compare, and square their answers; part way through this, I combine groups of 2 into groups of 4. Then everyone revotes and we discuss the correct answers. I like this activity because it gets the students engaging with each other around the conceptual side of the linear algebra content. This seemed universally challenging for them, and engaging.

In Fall 2020, I taught remotely via Zoom, following a flipped classroom model. This went remarkably well in discrete and finite math, a proofs course in which 11 of the 15 students were future high school teachers. The curriculum was flexible, and so I was able to keep the recorded lectures short, 17 minutes on average. This freed up students' time and energy for other things, which helps explain the success of this course.

We closely followed the graph theory part of our textbook *Distilling ideas: An introduction to mathematical thinking*, by Katz and Starbird. In the recorded lectures, I asked each student to pause the video each time we encounter an exercise or theorem, so that they can give it a good attempt. Then everyone brought this work to class to discuss in groups of 3-4 in breakout rooms. To keep them accountable (to themselves, mainly) and to keep me in touch with their experiences, I required them to complete a 3-5 question survey before some classes (initially once per week, then less frequently as they established good habits).

Based on those surveys, among other things, it became clear during the first few weeks that they needed somewhat more structure than the textbook's purely inquiry-based approach. Over the next few weeks, I gradually ratcheted up the structure, careful not to displace their genuine problem solving process with a follow-the-hint type of scavenger hunt. I reminded them clearly and repeatedly that our main goal is to develop their problem solving process, rather than to acquire any specific content knowledge.

My last semester at UNL, I remotely taught a topics in topology course, *Knot Theory via spanning surfaces*, again following a purely flipped classroom model. Student engagement during class was terrific. We also covered lots of material. I was a convert to the flipped model of the classroom!

Then I started a new position at Wake Forest and returned to in-person teaching. New students, new courses, new department. It was time to start from square one, in terms of getting to know a new student body, in terms of building trust and forming realistic expectations for my students' work in class and on their own. My first year at Wake, teaching two sections of Calculus 1 both semesters, I maintained an active approach to the classroom, but within the context of a more traditional model, rooted in my own experiences learning from master teachers. That is, I scaffolded my classes around a lecture, but the real structure was that of a conversation.

My second year at Wake (last year), I brought the same sort of approach to the year-long graduate topology sequence I taught, and student engagement was especially fantastic (the first semester followed a standard curriculum on point-set topology; the second was a course I'm continuing to develop, building on the topics course I taught at UNL, called *The Linear Algebra of Curves and Surfaces in Space*); most importantly, I was able to spend time individually with my students in and out of the classroom, both in short but meaningful exchanges (especially in class) and in deeper conversations in office hours.

Both semesters last year, I also taught a section of Discrete Math, the intro to proofs course that I am also teaching this semester. This sophomore-level course is required at Wake for the math major and minor and for computer science and covers a wide range of topics, and I was told that it was especially important not to short-change any topic. This is why, as I prepared to teach the course for the first time last fall, I decided to stick with a lecture format, but with guided notes; this would ensure that we didn't fall behind. I would pause for a few minutes several times per class for students to work on problems, often generally a think-pair-share format, and I think the semester went okay, but as the end of the semester approached, I realized I had made a crucial mistake: I had written too many proofs on the board. Students didn't have enough of a chance in class to find their own proof-writing voices. I decided to take a completely different approach the next semester.

This past spring, I maintained the guided notes, but devoted the majority of class time to letting students work their way through the material. Typically, I spent the first ten minutes of the 75-minute class summarizing the main ideas and then let the students work through the material at their own pace. Students worked individually but also compared ideas with each other in pairs and groups of three and asked me questions when one arose. Every student had time to ask specific questions of their own and get personalized feedback. Students' questions revealed which concepts needed more clarification from me (two or three times per class, I would ask for *the whole class'* attention briefly to address a particularly salient point) and, more importantly, which concepts were intuitive enough that it was best for me just to stay out of the way (logic and truth tables had lots of concepts like this). Most importantly, students received the time and space to find their own proof-writing voices. Learning outcomes, as evidenced by the quality of students' proofs, improved dramatically.

4. Fall semester, 2023

As I prepared to teach Discrete again this semester, I initially thought that I would do things almost exactly the same, with a few tweaks. For example, in the spring, we used playing cards to have rotating semi-assigned seating that was visibly random—each suit designating a quadrant of the room—which facilitated a shared commitment to the sort of openness required to build an inclusive classroom community. But we did this only for the first four weeks of class, so that everyone could meet a majority of their classmates; unfortunately, after those four weeks, most students chose a preferred spot to sit for the rest of the semester, and the lasting

benefits for our classroom community weren't quite what I had hoped. This is why I decided to stick with the visibly random semi-assigned seating for the entirety of this semester; I explained the reasons for this to my students, and they bought in graciously.

I also decided to reorder the curriculum a bit and give more structure in some places and less in others. For the first two weeks, as we covered truth tables, conditional statements, quantifiers, and predicate logic, I really tried to stay out of the way: each class, there would be two or three main points to emphasize and maybe an important nuance or common pitfall to mention, but when it comes to logic, I've found that over-explaining is the bugaboo of good teaching.

Then it came time to begin writing proofs. For the first two weeks of proof-writing, I took a much more active role, spending more time at the board than I will throughout the rest of the class. This was based largely on student feedback from last semester. Several students wanted to see more examples of valid proofs before being asked to write their own proofs independently. And no student seemed to find much joy in struggling to figure out how to prove something that they have known for years, like the fact that multiplying by 0 always gives 0. Instead, we all worked through these proofs together, with me at the front of the classroom. I modeled problem-solving techniques, like making two columns— Know and To Show—and working at the proof from both ends, forward and backward. I emphasized the importance of definitions, choosing e.g. to cover "floor" and "ceiling" just so that we could write down the proof that, for any $a \in \mathbb{R}$ and any $m \in \mathbb{Z}$, $\lfloor a + b \rfloor = \lfloor a \rfloor + m$. I left ample time for the class to work together through the proofs that $\sqrt{2}$ is irrational and that there are infinitely many primes.

Then I decided to postpone the chapter on induction so that we could spend the four classes before our first midterm discussing proofs involving sets. I told my students that their success is important to me and that, from that perspective, these make better problems for me to ask them on a midterm. I was asking them to trust me. Again, I led the class through the first two or three examples, introducing "the element method" of proving that one set is a subset of another and then describing how to structure a proof by "double-containment." Then I stopped. Now it was their turn to write all the proofs. I planned to interject only twice more: once to discuss strategy for proving that some set equals the empty set, and once to suggest using Venn diagrams to test whether or not a given statement is true (and, once, how to use the diagram to construct a counterexample).

This was last week. On Friday, as my students worked through four proofs independently and in pairs and triples, one of my students had an all-time aha! light-up learning this is why I teach moment. It was their first every proof by contradiction involving sets. I had suggested the strategy but nothing else. A student asked me to read his proof. "It feels like I might have skipped a step." I read his proof, looked at him, and shook my head, smiling. He lit up. "I'm good!?" I nodded.

This semester, I am also teaching Linear Algebra with Differential Equations. I taught linear algebra three times at UNL, but this is my first time teaching DE's. When I teach any course for the first time, I like to take a fairly traditional approach. You could call it a risk analysis. On the positive side, I am supremely confident in my ability to deliver an engaging, conversational lecture, to adapt to my students' receptiveness and energy, or lack thereof, and to infuse the classroom with my own contagious energy and joy. On the negative side, I have no experience to guide selection of in-class activities for DE's that are appropriate in terms of both difficulty and and length; it's too easy to lose an entire class day with a seemingly reasonable choice.

In the case of Linear Algebra with Differential Equations, though, there is a more compelling factor: the subject matter itself. I try to view any course through the lens of storytelling. What are the major narrative threads? The minor ones? In linear algebra, everything connects; the narrative threads form a tapestry.

Incorporating DE's into the curriculum brings the tapestry to life: a vector space isn't always just $\mathbb{R}^n$ in disguise. Rather, it can be something that doesn't *seem* linear at all, something that's authentically motivated in its own right, with some extra structure that, well, qualifies because that's how derivatives work... and Bam! Linear algebra arrives and knows just how to use its tools and everything feels like magic but at the same time we can say exactly *why* the magic works.

The real power of storytelling in the classroom, however, isn't really about the telling; it's about the story and the shared space it opens up in the world of ideas. Configuring a body of knowledge in *narrative* form taps into humankind's most primeval way of knowing in which the listener loses herself in the story and the story becomes her own.