# Todxs cuentan: building community and welcoming humanity from the first day of class.

#### Federico Ardila-Mantilla

ABSTRACT. Everyone can have joyful, meaningful, and empowering academic experiences; but no single academic experience is joyful, meaningful, and empowering to everyone. Is it possible to build academic spaces where every participant can thrive? How might we do that? Audre Lorde advises us to use our differences to our advantage. bell hooks highlights the key role of building community while addressing power dynamics. Rochelle Gutiérrez emphasizes the importance of welcoming students' full humanity. This note discusses some efforts to implement these ideas in a university classroom, focusing the discussion on the first few days of class.

## 1. Community.

Excitement about ideas [is] not sufficient to create an exciting learning process. As a classroom community, our capacity to generate excitement is deeply affected by our interest in one another, in hearing one another's voices, in recognizing one another's presence. Any radical pedagogy must insist that everyone's presence is acknowledged. That insistence cannot be simply stated. It has to be demonstrated through pedagogical practices. There must be an ongoing recognition that everyone influences the classroom dynamic, that everyone contributes. Often before this process can begin there has to be some deconstruction of the traditional notion that only the professor is responsible for classroom dynamics.

bell hooks [bh]

## 2. January, 2017: The week before class.

The week before the semester started, as usual, I found myself frantically trying to organize my office, our apartment, our record collection, anything else that needed or did not need organizing. This made me feel productive while I avoided preparing for my upcoming classes.

While I was organizing our living room, I found a portable turntable and far too many records that did not fit in our crates. I brought them to my office the next day. When I played the first record, I was pleasantly surprised by how drastically this addition transformed the space – just like the extra coffee maker I had brought

a few semesters ago, which allowed me to offer visitors a nice, strong cafecito before we began to talk about life, or mathematics, or both.

That semester, I was going to teach my combinatorics class in a dark room with small windows and broken blinds. The whiteboards on all the walls would be very useful for group work; but the long rows of tables nailed to the ground and the clunky laptop computer locked into place on every seat would make collaboration challenging. A few hours before class, I was still thinking about how to make students feel welcome in this space.

I knew that the first days of class would heavily influence how the classroom would feel throughout the semester. This class had a very broad range of students: from second-year undergraduates to Master's students doing research in the field. Most of them did not know each other and I was dreading the uncomfortable silence that can sometimes engulf the room before class starts. So I thought: "I should at least bring my turntable and a few records to class."

When students arrived on the first day of class, Carlos Embales was playing. This quickly broke the ice and seemed to give them permission to start talking to each other.



## 3. Introductions.

We got in a circle – or as close to a circle as the tables allowed – and answered a few questions:

- What would you like us to call you?
- What is something outside of mathematics that you love doing?
- How do you feel about being here?

I answered first, to give them time to think about their answers. "I like being called Federico or Profe. I DJ. I am excited and a bit nervous, because I am going to try many new things in class this semester, and although academic tradition dictates that a professor is supposed to appear invulnerable and in control, I plan to put us in learning experiences that will not really be under my control."

My students said they loved making music, dancing, designing, playing video games, trying to solve crimes where the suspect was wrongly convicted. They were mostly excited and nervous, like me.

I explained my vision for this exercise: I wanted us to say these things out loud to remember that mathematics is a human endeavor. I hoped to make clear that our full humanity was not only welcome here, but in fact would define and enrich our mathematical space.

# 4. Quítalo del rincón.

After these introductions, I played a song:

http://math.sfsu.edu/federico/Talks/embale.m4a

In case you are not able to hear it, let me try to describe it, certainly not doing it any justice. The song starts with a pair of sticks, three drums, and a shaker, weaving an intricate combination of rhythms. A singer chants a long, melodic acalalalalalalala. Then he is joined by the main singer; in a beautiful and mysterious harmony, they introduce the theme of the song. The chorus comes in: a joyful call and response between the lead singer and a group of high-pitched voices – kids, maybe. While the kids keep repeating the chorus, the main singer starts improvising rhymes, and the drums just take off. If you have played in a group like this, you will recognize the feeling: you stop knowing exactly what it is that you are doing, and you collectively connect to something deeper than anything you can reach on your own. After a couple of minutes the recording fades out, but you can tell this is just for technical or commercial reasons: the musicians show no sign of slowing down; they are only getting started.<sup>1</sup>

As the music played, I asked students to come up with a mental picture of what was happening, and write down a few words to describe it. I'll invite you to do that as well. Because students who could understand the lyrics were better prepared to answer this question, I asked them to step back for a moment and let the others answer first. They said:

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community . joy . polyrhythm . family . crescendo . playful encouraging . unexpected . churchlike . inviting . dancing conversation . courage . motivation . cheerful . Spanish learning . rhythm . celebration . style . culture . festive
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Eventually, the Spanish speakers in the class explained the lyrics to everyone else: The song is a math lesson! Quítalo del rincón by Carlos Embales y los Roncos Chiquitos is a guaguancó; this is a style of Cuban rumba native to the Black neighborhoods of La Habana, born soon after the abolition of slavery in the late 1800s. The chorus says:

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If someone doesn't wanna learn, we'll teach them, very happily! 20+3? 23. 30+6? 36. 20+3? 23. 30+6? 36. Bring them out of the corner, towards the window; you'll see how they'll learn right away, full of joy! 20+3? 23. 30+6? 36. 20+3? 23. 30+6? 36.
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A few years earlier, on break during a mathematical visit to Ann Arbor, MI, I had found this enigmatic album for \$1, digging through the sales bin of a music store – the dream of a record collector. It had been a great thrill to return home

<sup>&</sup>lt;sup>1</sup>A recent performance of this song is at https://www.youtube.com/watch?v=FpxE\_xzPNQY.

and hear this song! I still return to it often, when I think about what I'd like my math classrooms to feel like.

#### 5. A community agreement

The course syllabus is the first official document students receive in a class; it is the first impression they receive about what is valued in the class. Twenty years ago, when I began teaching, I used to make the syllabus the night before classes started, essentially copying the syllabus from whoever taught the class last time – including the grading scheme. As an unintentional consequence, my class often valued whatever the last instructor valued. In recent years I have tried to write syllabi that actually communicate the kind of course that I hope to build together with my students.

That semester, after playing and discussing *Quitalo del Rincón*, we discussed the first part of the syllabus, which read:



math 420/720 . combinatorics

spring 2017

san francisco state university

**Community Agreement.** This course aims to offer a joyful, meaningful, and empowering experience to **every** participant; we will build that rich experience together by devoting our strongest available effort to the class. You will be challenged and supported. Please be prepared to take an active, critical, patient, and generous role in your own learning and that of your classmates.

In small groups, students discussed this agreement. To initiate a dialogue about it, I projected the agreement on the board, and asked each student to underline two words that particularly resonated with them. The wide variety of different answers was striking to me. Some students were excited that they would be challenged; some that they would be supported; some liked the combination of the two. Many liked the word "available"; most of them had jobs and many other obligations aside from being students, and they appreciated that this was acknowledged. We discussed how to be productively critical of each other's work, and what generosity might mean in a mathematics classroom. We talked about how sometimes we are very good at being patient with our classmates, but we are not so good at being patient with ourselves.

My students and I have cocreated this Community Agreement over the last few years, in collaboration with the organizers of the Encuentro Colombiano de Combinatoria (ECCO) [FA, AB]. Each semester, students start with the one used in the previous semester, and they make some (usually very minor, always thoughtful) changes. I then incorporate these changes into future agreements. I think it is important that this does not feel like an externally imposed code of conduct that they must obey. Instead, my hope is that we can reach a community agreement that is actually ours, that we are all excited to put into action.

## 6. Assessment.

To conclude the first day of class, we discussed the assessment scheme.

Grades in math classes are often largely based on exams and, to a lesser extent, on homework. This disproportionately rewards a certain kind of mathematician who enjoys and thrives solving problems quickly under pressure and time constraints. I am that kind of mathematician, and so are most current math professors, I suspect. After all, we had to succeed in this kind of grading system to become professors. But if we are honest with ourselves – and I am honest with my students about this – this is a very narrow kind of assessment; one that is easy for us to grade, but is not actually very good at measuring the kind of deep, creative thought that we associate with valuable mathematical work.

We value what we measure because we do not know how to measure what we really value.

## Richard Tapia [RT]

Over the years, in the various classes that I have taught, I have searched for assessment methods that truly support student learning. I have learned immensely from my colleagues in math and science education, in particular Kim Seashore and Kimberly Tanner; I have found the survey [ST] quite useful. I have also asked students what kinds of assessment might most accurately reflect the mathematical work they are capable of. As a consequence, I have shifted to grading schemes that promote student collaboration and reward many different types of mathematical work and communication.

For this paired undergraduate/graduate course, the assessment consisted of daily notecards (in pairs) summarizing the main lessons learned each day, homework, group reports summarizing the findings of the frequent group work activities, optional investigations on open-ended problems, a small research project (preferably but not mandatorily in groups), and a final five page "diary" summarizing the main lessons learned in the course. Collaboration was encouraged throughout all activities, with acknowledgment. There were no exams; I have always found combinatorial reasoning especially difficult to come up with on the spot.

I did not grade on a curve since I wished to promote collaboration. When I saw students behave competitively, I reminded them that they were not being compared to one another, and that the ultimate goal of the class was for every one of them to succeed. This was backed by research: Studies have shown that student learning in science classes is better supported by collaborative rather than competitive environments, particularly for women (who comprised 42% of the students in that class) and students from underrepresented minority groups (who comprised 42% of the students in that class) [ST].

## 7. From abstract goals to concrete practices.

On Day 1, my students and I generally concurred that our Community Agreement, and the words they used to describe  $\mathit{Quitalo\ del\ Rinc\'on}$ , were good goals to aim for in our class. They felt that

were especially important. With that in mind, I asked them to propose a few concrete practices that we could follow to build this classroom culture and atmosphere together. They wrote them in notecards and brought them to class on Day 2, anonymously if they preferred.

They had some suggestions for me, the instructor; for example:

- Offer many group assignments where we get to work with different people each time.
- You told us that the course will emphasize growth and teamwork. Have the assessment and the grading reflect this.

Students also had many suggestions for themselves and each other:

- Let's be very mindful of how we communicate with each other. Emphasize constantly that mathematics is often difficult, and understanding is developed through extensive practice. Replace "this is obvious" with "with a bit of thought one can understand this"; "I'm stupid" with "I'm struggling"; "I can't do this" with "I can't do this yet."
- Let's not take the joy of discovery away from others. If I think I understand something, I should step back for a moment, and offer myself as a resource to others as needed.
- Let's stay honest and vulnerable. If I don't think I understand something, I should ask for help.
- Let's be excited to help our classmates learn, with some leadership from the teacher.
- It was so interesting how every instrument plays a totally different rhythm but altogether they create a very beautiful piece of art. Similarly, every brain works differently, and creating a math community to solve problems will make learning much fun, and will lead to more creativity.
- In that *guaguancó* we can only hear the musicians, but we're pretty sure the community is dancing right in front of them. Try to accomplish that in our class.<sup>2</sup>

All of these suggestions became part of our course syllabus, and they shaped our behaviors in the classroom. In particular, I ran the course very interactively with relatively little lecturing, frequent group work, and many opportunities for students to share their work in oral or written form with each other and with the whole class. The articles [KT] on classroom structures and [BBDLW] on active learning in mathematics provided several useful ideas. We maintained an open classroom policy; students and I brought our partners, family members, friends, and colleagues, and we did our best to ensure that they could participate in a meaningful way.

It is important to emphasize that student belonging and community cannot be arrived at by simply doing a nice activity on the first day of class; they must be nourished constantly throughout the semester. Although we did this in several ways in our classroom, in retrospect, I wish that we had discussed our classroom practices again at least once or twice during the semester, and that I had asked students for feedback on their in-class experience throughout the class, including the option to do so anonymously. This would have helped ensure that our experiences aligned as much as possible with our goals, and would have helped me intervene when they did not. I have since instituted a second part of the community agreement that can better hold us accountable; see [AB, Section 3].

The concrete practice that we most often returned to was the following:

<sup>&</sup>lt;sup>2</sup>I still think a lot about what this might look like.

• Make space, take space. If I feel comfortable speaking out, I should be mindful of how much space I take, and make room for others. If I tend to be quieter in groups, I should remember that my ideas are important, and others will benefit from hearing them.

This is easier said than done. Building trust is a prerequisite, and that is what some of these early semester activities tried to accomplish; but it is not enough. Megumi Asada and Pamela Harris [AH] offer valuable insights on how to help different students find ways to take space in the classroom in ways that are sensitive to and support their needs.

## 8. Make space, take space.

This last practice feels really relevant to me as I write this.

As a mathematics researcher with more than 20 years of experience, I feel pretty confident that my mathematical ideas are valuable. It sometimes takes a special effort to truly listen to students' ideas without projecting my own views onto them. When I have been able to really make space for students' thought, we have all learned very innovative and useful ways of thinking about combinatorics.

As a mathematics educator with great interest but under 20 minutes of formal training in education, I still feel like a student with everything to learn. Writing about pedagogy feels very uncomfortable. For every criticism the reader may have of my educational work, I have at least five. I cannot count the number of self-deprecating statements I have edited out of this note.

However, I did commit to upholding our Community Agreement. Now that the editors of the volume have made space for my thoughts, I feel compelled to embrace our collective cultural practice, take space, and speak-while-uncomfortable anyway.

#### 9. Difference.

Advocating the mere tolerance of difference [...] is a total denial of the creative function of difference in our lives. Difference must be not merely tolerated, but seen as a fund of necessary polarities between which our creativity can spark like a dialectic. [...] Community must not mean a shedding of our differences, nor the pathetic pretense that these differences do not exist.

Audre Lorde [AL]

#### 10. Music.

After our first meeting it occurred to me that, if I was asking students to help me create an ideal atmosphere for our class, then I should not be the only one choosing music for us; so the first homework read:

Homework 0. Let's continue playing some music before class, to bring some more light into the classroom. On your designated day, please choose a song to share that makes you feel comfortable, joyful, at home. If you'd like to, you can tell us a bit about the song or why it's meaningful to you.

I emphasized to students that there was no obligation to share personal stories, and I also invited them to share something other than music if they preferred to.<sup>3</sup> We did this throughout the semester.

B.<sup>4</sup> got us started, playing a live performance of المُفه شدو بحريه يا by Marcel Khalife; in the chorus, a stadium full of people sings "Oh freely, hey hey hey". She told us that as a Palestinian woman and an immigrant in the US who was simultaneously raising four children, working, and going to school, she found it very difficult to feel at home, welcome, and free in this country. But in mathematics, she found a place where she feels free, where no one can take her freedom away.

B. gave the class a three-song showcase of cumbia's migration from Colombia to Mexico to California. "Every Californian should know about cumbia."

F. and M. and X. shared songs they liked, with no explanations.

U. chose *Dear Mama* by 2Pac: "My mom worked incredibly hard to give me the opportunity to go to college; when I'm in these classrooms, I am constantly thankful to her." This clearly resonated with several students, singing along.

D., a software engineer turned mathematician, shared the music and the journey of software engineer turned singer-songwriter Vienna Teng.

C. and D. and K. shared their favorite songs to perform.

D. told us that she wanted to share the song she sang at her mother's funeral. We did our best to hold space for  $her.^5$ 

K. played Lauryn Hill; "Who doesn't want to hear Lauryn Hill?"

N. made sure we knew that the Filipino-American hip-hop scene in the Bay Area is still going strong. Some of us knew Rocky Rivera as an MC, but none of us realized that she was a student on our campus.

Instead of a song, W. showed us a video of her son learning how to add; she told us that home is wherever she can be with her child, taking care of him.

B. brought her daughter to class one day. While young N. was on the board finding Eulerian paths in graphs with the rest of us, B. played N.'s favorite song: Israel Kamakawiwo'ole's *Somewhere Over The Rainbow*. It assured her that all her dreams can come true.

I was sure that my students would bring lots of good music, but I never imagined how deeply personal this exercise would turn out to be. One thing seemed very clear to me: my students wanted to be seen, really seen, as full humans, inside the classroom.

## 11. How I experienced this classroom.

Throughout my career I have tried to make my mathematics classroom a human place, where every interested student feels at home, and finds a conducive environment to discover and shape their own mathematical voice. It's a tall order, and I certainly will not claim that I have succeeded.

<sup>&</sup>lt;sup>3</sup>In particular, an activity like this would have to be implemented very differently in classrooms with students who are deaf or hard of hearing.

 $<sup>^4</sup>$ The students' initials have been changed throughout the paper.

<sup>&</sup>lt;sup>5</sup>I use the term *holding space* to mean supporting someone by being fully present for them to process their feelings, without letting one's own feelings, ego, or proposed solutions interfere with that process. I now think it is a good complement to the suggestion of making space and taking space in the classroom.

I can comfortably say this, though: That SFSU Combinatorics class felt like no other that I'd ever experienced. Teaching and learning in it was a tremendously human experience for me. Additionally, and relatedly, this was also the home to the richest mathematical discussions I had ever seen in one of my classes.

Let me confess something. When I devote a whole class period to getting us to know each other, when we spend a few minutes of every class sharing music that is meaningful to us, when we spend most of the time in each class period exploring mathematical situations together and at most 15 minutes "delivering content," I start worrying: Am I covering enough mathematics?

I have come to understand that when students are engaged so actively, and when we really listen to each other's ideas, a creative, mathematical magic can happen that I could not have arrived at by simply preparing a lecture and delivering it. In this class, more than ever before, I experienced my students truly take charge of their shared learning experience, take ownership of the material, allow themselves to ask their own critical, insightful mathematical questions, value those questions, and turn them into their own original discoveries. In fact, their insight taught me many new things about classic problems that I thought I understood completely. More importantly, it led to new discoveries that I think only they would have come up with.<sup>6</sup>

I cannot take credit for this. In fact, I am certain that I will not be able to replicate it: a unique combination of humans made this classroom what it was, and led to a unique atmosphere and a unique mathematics. As a professor, I can only try to put some structure in place that may help my students and I flourish together. I continue to do this, each semester, with varying success.

## 12. Humanity.

Teachers cannot claim their pedagogy is rehumanizing without obtaining recurring evidence from their students that they agree and without giving students opportunities to offer additional approaches for rehumanizing.

Rochelle Gutiérrez [RG]

## 13. How (some) students experienced this classroom.

The following is a representative selection of students' feedback in the anonymous final course evaluations.

- The first day of a class wasn't spent reading through the syllabus or diving into material. Rather, it was spent entirely on introductions and conversation, setting the tone for a class in which students are deeply valued as human beings rather than just as mathematicians.
- The math was great, but the thing that stood out to me was the music. As I have been teaching for now 4 years, I try to continuously find different ways to make students feel comfortable/motivated/etc. [...] Having everyone have a chance to express themselves in that way in the class was awesome, so awesome that I actually used it in my class this semester.
- I am totally stealing classroom structures used this semester to implement in the classes that I will teach in the future.

 $<sup>^6</sup>$ The mathematical work of this classroom will be the subject of an upcoming paper.

- These are the kind of classes that remind me why I love math. I really enjoy the learning environment that was created. [...] I am not a fan of group work with preassigned groups. I would keep getting in the same group with an individual who's learning style was less than compatible with my own which was frustrating and a bit unnecessary.
- He tries really hard to engage with everyone and that paradoxically means that he doesn't have a lot of time for an individual student sometimes.
- I'm typically one who doesn't speak out much in class but working in groups helped me to become more comfortable and I found myself sharing more than usual.
- He ensures that each class member knows their opinions are important and that their voices should be heard. We established a supportive atmosphere and frequently worked in groups on difficult and interesting problems making sure everyone made a significant contribution and had a strong grasp on the material. I found myself pouring my extra time into this class because of how much I enjoyed learning the material we covered.
- As a combinatorics enthusiast, I have seen or self-discovered all problems/techniques covered in the class. I cannot afford to spend my sharpest years not learning, especially if I want to contribute to combinatorics. Each day, I hoped for something new, but each day was disappointing. I really did enjoy the homework, but I stopped attending class. Instead, I read the book at a higher rate at home and self studied upon completing the book.
- Math departments can be inhospitable elitist places where undergraduates who are earlier in their careers are looked down upon for not immediately grasping concepts. From the first day of class he builds a supportive environment for those students who may feel "non-brilliant" and helps them see that they have just as much to contribute as other students. He is always willing to seriously consider a student's ideas and suggestions. All of this while still pushing each of us to challenge ourselves and providing ways for students to pursue their specific interests.

It is important to say explicitly that not every student's experience was reflected in the comments above (74% of them filled in the final evaluation) and that course evaluations never tell the full story of the student experience. I shared a draft of this paper with my students, and was very grateful to receive additional feedback from some of them, including the following, shared here with the students' permission.

• [This paper] does not reflect my experience in your classroom and lacks nuance about who gets to safely bring their humanity into the classroom. I faced more sexism and microaggressions in your classroom, than anywhere else during my time at SFSU, but this might just be because I've learned how to deal with it now. The more feminine I was, the less I was taken seriously. You'd never notice. As a woman, I do not get to bring my humanity into the classroom and succeed.

Even though that class may have been awful for me, you're onto something really important with the way that you teach. You were the first person in the education system who acknowledged to me that we do not all have the same privileges. I have my own classroom now, and do my absolute best to create a space where my students can engage in mathematics without having to "check themselves at the door," as you had put it.

• Thanks to you because you were (and always are) putting a great effort to create a welcoming environment inside your classroom. We know that you were doing this from your heart; I was able to sense that. Students are sensitive to their teacher's energy. Being different, I always felt comfortable inside your classroom; ego or use of power were never practiced inside or outside your class.

I am reading "Culturally Responsive Teaching and the Brain" by Zaretta Hammond now. The author discusses that unwelcoming environments may cause real damage to [students'] brain cells which negatively affect their brains' intellectual capacity. Teaching is a very sensitive job. Teaching mathematics is even more serious.

Teaching mathematics is a serious job indeed. We followed these messages with long conversations that I am still learning from.

This feedback reminds me of Rochelle Gutiérrez's insistence that we do not romanticize the rehumanization of mathematics. Humanity comes with power dynamics, biases, and blind spots – including the teacher's – and it is heavily influenced by the effect of the structural inequalities of our societies. By breaking away from the traditional and more impersonal style of lecturing, and instead having everyone in the class interact constantly with each other, we are also making space for many new human challenges. How do we deal with them in useful ways?

Zeus Leonardo and Ronald Porter offer a framework for race dialogue that may also be useful for mathematics educators. They argue that a critical pedagogy is inherently risky, uncomfortable, and unsafe; it's impossible to create a truly safe space when the "violence is already there" [LP], explicitly or subtly. Instead they propose welcoming risk, since contradiction and tension are necessary if we are to really address the problems at the root of our societies and educational systems.

This has to be done with thought and care. Many students arrive to our classrooms despite significant structural barriers, and sometimes rather traumatic experiences within and outside of mathematics. As Shawn Ginwright points out, the work of helping them understand and overcome those structures and experiences is the work of hope and healing. In [SG] he studies how teachers and activists in urban schools use collective organizing and healing strategies to build hope and create social transformation. He highlights the central role of culture and identity, and the reciprocity between the teacher and the students in the healing process.

This work is rooted far from mathematics, but I believe it contains valuable lessons for mathematics educators. I am still seeking to understand how these strategies might be used productively and responsibly in our classrooms.

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Most importantly, I would like to thank my wonderful students; they are my teachers. Their diverse, critical, and generous perspectives have completely transformed my world view and my understanding of our work as educators. Working with them keeps my spirit young and my heart full.

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