Kairi Black (updated October 2025)

Statement of Teaching Philosophy

I believe that **each person with whom I share classroom space is a whole human being** with their own personal, cultural, and mathematical stories (Estefan et al., 2016) that inevitably differ from my own (Aguirre et al., 2017). As such, I see the classes I teach as one part of students' wider narratives, and I invite them to take what we learn to other settings. I therefore conceptualize my role in the classroom as a facilitator of complex dialogue (Darder, 2017), which requires intentional expectations, engagement, collaboration, and check-ins.

Establishing expectations

I begin my courses with two activities. First, students introduce themselves in random groups with their choice from a list of suggested questions (e.g. "Where is home for you?" or "What brings you joy?"). Then, **students reflect on two questions – first individually, then in groups, and finally as a class: "What expectations do you have of me?" and "What expectations do I have of you?"** I see these activities as proactive opportunities for students to foster senses of agency in relationship with each other, which supports their success (Crick et al, 2015; Jääskelä et al., 2020; Stenalt & Lassesen, 2021). Moreover, I believe that students benefit from knowing the expectations around them (Maloshonok & Terentev, 2017). [1]

As part of the expectations discussion, **I work to convey that I have high expectations for my students.** I smile when I recall day one of my Fall 2024 calculus class. Seeing no hands after documenting "active engagement in class" on the board, I prompted "Thank you… now, what about grading, do you expect lenient grading from me?" A brief silence followed, then a quipped voice from the back: "It'd be nice!" We all laughed; I appreciated their earnestness. "Heard," I replied "It would be nice… and I expect that your learning would suffer from lenient grading… Hmmm I'm curious about 'fair and consistent grading' – I imagine that's something you all expect from me?" Seeing a mixture of smiling and begrudging head nods, I continued, "I'm seeing head nods", and added 'fair and consistent grading' to the board.

I continue to grapple with expectations for class attendance. I recognize that a stringent attendance policy can support student success (Zhu et al., 2019), perhaps because attendance correlates with higher grades (Credé et al., 2010).[2] However, I value students' sense of agency, which a strict policy can reduce (Macfarlane, 2013). Moreover, I value students' engagement (or "presence") more than their mere attendance (Büchele, 2021). For my current class – an inquiry-based introduction to proof for non-math majors – I settled on a stringent attendance policy. For a lecture-based, major-specific course, I lean toward a less strict policy. Instead, I prioritize the co-creation of a space that students want to be present in.

Student sense of belonging

I recognize that my high expectations for students – rooted in my belief in their ability to (re)conceptualize (Gutiérrez, 2018), integrate, and apply what they learn – only support students in the presence of other factors, such as effective communication, accessible resources, and student sense of belonging (Tinto, 2012; Kirby & Thomas, 2021). **Student sense of belonging especially matters to me** because I believe that it supports student motivation, enjoyment, and engagement (Pedler et al., 2020; Gilani & Liz, 2025).

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[1] When I cite other authors, I mean to indicate that they explore similar ideas; I want my philosophy to live in dialogue with others. However, I hold caution around the idea that a citation makes a claim "more true".

[2] I hold caution around (a) the idea of "grades" as a synonym for "success" or "performance", and (b) the temptation to subconsciously conflate correlation with causation.

With an eye toward student belonging, in Fall 2023 I began referring to my "office hours" as "drop-in hours". I recognized that office hours could feel intimidating and mysterious to students (Jack, 2016) and that office hours support student success (Guerrero & Rod, 2013), so I sought language that encouraged students to "drop-in" and ask questions. However, **I am working to notice when I use idiomatic or replaceable language which might inadvertently cause confusion** (Berardo, 2023), so this fall I planned to use "student help hours" instead. After a recent conversation with a colleague, I now use "student hours" to reduce an implicit message that office hours are only for students who need "extra" help.

Student belonging also motivates my choice to include a "mathematician blurb" – a short paragraph on the mathematical journey of a modern-day mathematician – in weekly course announcements, a practice that spans class size and which students have highlighted in course evaluations. Building upon the blurbs, in Fall 2022 **I designed and ran a lab** that had calculus students choose a mathematician, write a small piece about them, and later share with one another in groups. While sharing, **one student did a small dance in celebration of an 'aha' moment on how our in-class discussions of continuity functioned in the graph networks context of their chosen mathematician's research area.** I see such moments as powerful motivators for students to continue to engage with challenging material.

Collaboration in the classroom

Likewise, I value relationship-building (Smith & Watson, 2022) in the classroom for its ability to support student belonging, deconstruct power dynamics (Jack, 2016), and foster student success (Felten & Leo, 2020; Marmet, 2023). To be clear, **I use the word "relationship" here to refer to authentic and human-centered professional relationships, not out-of-class relationships**; the latter raise ethical concerns and can harm student success (Chory & Offstein, 2018). I therefore value thoughtfully structured group work and non-competitive course structures because they support inter-student relationships, student engagement, and students' richer mathematical dialogue (Springer et al., 1999; Johnson & Johnson, 2008; Liljedahl, 2018).

For this reason, I include suggested group work norms in my syllabus, and in fall 2025 added a question to the expectations activity: "What expectations do y'all have of each other?". **When classroom space permits, during group work I encourage my students to work on vertical, non-permanent surfaces (e.g. a chalkboard)** so that they can: work in a shared writing space, experiment in an easily-erasable medium, and learn from other groups by visiting other boards (Liljedahl, 2018). Plus, I like that group work, especially on the boards, invites students to engage in a wider variety of learning mediums, and can get them physically moving and constructing knowledge in new ways (de Freitas & Sinclair, 2012; Saxe et al., 2015).

Student assessment

I routinely use a "thumbs poll" for day-to-day classroom assessment: "thumbs up for 'option A', thumbs down for 'option B', and thumbs sideways for 'option C' or 'I don't know'". I especially like a "thumbs poll" after a long post-question wait time (Abell et al., 2018). Week-to-week, I assess student understanding by meeting with lab TA's (when applicable) and a written 'check-in' submitted at the end of each problem set. **This semester, my homework 'check-in' prompts students to engage in coursework reflection alongside simple mindfulness practices, like deep breathing** (Morgan & Abrahamson, 2016; Peper et al., 2016). With an awareness of students' test-induced anxiety, I have included pre-quiz mindfulness

reflections; I hypothesize that these will support students by facilitating self-awareness and nervous system soothing (compare Reyes & Castillo, 2015).

Once per month I assess student understanding with written in-class problems, completed as individuals and without notes. I value these assessments for how **they provide both students and me with a check-in on students' unassisted learning, especially as AI continues to diversify**. At the same time, I worry about the potential negative impacts of testing anxiety, especially across demographic groups (Khasawneh et al., 2021), and of perceived unfairness and inequitable outcomes (Bazvand & Rasooli, 2022). **As such, I'm curious to explore alternatives to traditional math exams** such as: replacement with distributed low-stakes quizzes (I'm trying this now), exams with a structured "work-in-groups" portion (Dobie & MacArthur, 2021), or emphasis shifted to presentations or projects (I'm also trying this now).

Other curiosities

I will continue to explore mindfulness practices as facilitators of students' learning. I would also like to develop materials for a more robust in-class discussion of AI use, which I would love to inform with **research on ways that AI might support the development of soft skills in the math classroom, like mathematical communication, abstraction as a problem-solving tool, and student metacognition.** I'm also curious about the idea of a course structure that lets students select from a range of grading schemes. In general, I am excited to explore how we can better cultivate student metacognition, foster student agency, and support students in healing from their mathematical trauma (Lange & Meany, 2011).

References

Abell, M. L., Braddy, L., Ensley, D., Ludwig, L., & Soto, H. (2018). *MAA Instructional Practices Guide: Guide to Evidence-Based Instructional Practices in Undergraduate Mathematics, Mathematical Association of America, 2018* (pp. 3–4).

Aguirre, J., Herbel-Eisenmann, B., Celedon-Pattichis, S., Civil, M., Wilkerson, T., Stephan, M., Pape, S., & Clements, D. H. (2017). Equity within mathematics education research as a political act: Moving from choice to intentional collective professional responsibility. *Journal for Research in Mathematics Education*, *48*(2), 124–147.

Bazvand, A. D., & Rasooli, A. (2022). Students' experiences of fairness in summative assessment: A study in a higher education context. *Studies in Educational Evaluation*, *72*, 101118.

Berardo, K. (2023). Framework: The SCORE communication principles. In *Building Cultural Competence* (pp. 225–230). Routledge.

Büchele, S. (2021). Evaluating the link between attendance and performance in higher education: The role of classroom engagement dimensions. *Assessment & Evaluation in Higher Education*, *46*(1), 132–150.

Chory, R. M., & Offstein, E. H. (2018). Too close for comfort? Faculty–student multiple relationships and their impact on student classroom conduct. *Ethics & Behavior*, *28*(1), 23–44.

Credé, M., Roch, S. G., & Kieszczynka, U. M. (2010). Class attendance in college: A meta-analytic review of the relationship of class attendance with grades and student characteristics. *Review of Educational Research*, *80*(2), 272–295.

Darder, A. (2017). *Reinventing Paulo Freire: A pedagogy of love* (pp. 80–126). Routledge.

Crick, R., Huang, S., Ahmed Shafi, A., & Goldspink, C. (2015). Developing resilient agency in learning: The internal structure of learning power. *British Journal of Educational Studies*, *63*(2), 121–160.

Dobie, T. E., & MacArthur, K. (2022). Exploring shifts in student attitudes toward group exams in college calculus: The case of Dane. *International Journal of Research in Undergraduate Mathematics Education*, *8*(1), 149–175.

Estefan, A., Caine, V., & Clandinin, D. J. (2016). At the intersections of narrative inquiry and professional education. *Narrative Works*, *6*(1), 15–37.

Felten, P., & Lambert, L. M. (2020). *Relationship-rich education: How human connections drive success in college*. Jhu Press.

Gilani, D., & Thomas, L. (2025). Understanding the Factors and Consequences of Student Belonging in Higher Education: A Critical Literature Review. *Journal of Learning Development in Higher Education*, *34*.

Guerrero, M., & Rod, A. B. (2013). Engaging in office hours: A study of student-faculty interaction and academic performance. *Journal of Political Science Education*, *9*(4), 403–416.

Gutiérrez, R. (2018). The Need to Rehumanize Mathematics. *Annual Perspectives in Mathematics Education*.

Jääskelä, P., Poikkeus, A.-M., Häkkinen, P., Vasalampi, K., Rasku-Puttonen, H., & Tolvanen, A. (2020). Students' agency profiles in relation to student-perceived teaching practices in university courses. *International Journal of Educational Research*, *103*, 101604.

Jack, A. A. (2016). (No) harm in asking: Class, acquired cultural capital, and academic engagement at an elite university. *Sociology of Education*, *89*(1), 1–19.

Johnson, R. T., & Johnson, D. W. (2008). Active learning: Cooperation in the classroom. *The Annual Report of Educational Psychology in Japan*, *47*.

Khasawneh, E., Gosling, C., & Williams, B. (2021). What impact does maths anxiety have on university students? *BMC Psychology*, *9*(1), 37.

Kirby, L. A., & Thomas, C. L. (2022). High-impact teaching practices foster a greater sense of belonging in the college classroom. *Journal of Further and Higher Education*, *46*(3), 368–381.

Lange, T., & Meaney, T. (2011). I actually started to scream: Emotional and mathematical trauma from doing school mathematics homework. *Educational studies in mathematics*, *77*, 35-51.

Liljedahl, P. (2018). Building Thinking Classrooms. In A. Kajander, J. Holm, & E. J. Chernoff (Eds.), *Teaching and Learning Secondary School Mathematics: Canadian Perspectives in an International Context* (pp. 307–316). Springer International Publishing. https://doi.org/10.1007/978-3-319-92390-1_29

Macfarlane, B. (2013). The surveillance of learning: A critical analysis of university attendance policies. *Higher Education Quarterly*, *67*(4), 358–373.

Maloshonok, N., & Terentev, E. (2017). The mismatch between student educational expectations and realities: Prevalence, causes, and consequences. *European Journal of Higher Education*, *7*(4), 356–372.

Marmet, M. D. (2023). Bridging the power gap: the impact of pedagogical strategies and relationship-building on student success. *Journal of Research in Innovative Teaching & Learning*, *16*(2), 192–209.

Morgan, P., & Abrahamson, D. (2016). Cultivating the ineffable: The role of contemplative practice in enactivist learning. *For the Learning of Mathematics*, *36*(3), 31–37.

Pedler, M. L., Willis, R., & Nieuwoudt, J. E. (2022). A sense of belonging at university: Student retention, motivation and enjoyment. *Journal of Further and Higher Education*, *46*(3), 397–408.

Peper, E., Lee, S. S., Harvey, R., & Lin, I.-M. (2016). Breathing and math performance: Implications for performance and neurotherapy. *NeuroRegulation*, *3*(4), 142–142.

Reyes, M. D., & Castillo, A. C. (2015). Test anxiety and college students' performance on mathematics departmental examination: basis for mathematics achievement enhancement. *Asia Pacific Journal of Education, Arts and Sciences*, *2*(1), 62–69.

Saxe, & Turner, P. (2015). *A common vision for undergraduate mathematical sciences programs in 2025*. 19.

Smith, S., & Watson, S. (2022). Experiences of belonging: A comparative case study between China-domiciled and UK-domiciled students. *Journal of University Teaching and Learning Practice*, *19*(4), 1–19.

Springer, L., Stanne, M. E., & Donovan, S. S. (1999). Effects of small-group learning on undergraduates in science, mathematics, engineering, and technology: A meta-analysis. *Review of Educational Research*, *69*(1), 21–51.

Stenalt, M. H., & Lassesen, B. (2022). Does student agency benefit student learning? A systematic review of higher education research. *Assessment & Evaluation in Higher Education*, *47*(5), 653–669.

Tinto, V. (2012). Enhancing student success: Taking the classroom success seriously. *Student Success*, *3*(1), 1.

Zhu, L., Huang, E., Defazio, J., & Hook, S. A. (2019). *Impact of the stringency of attendance policies on class attendance/participation and course grades*.