

Dr. Lea Fredrickson, Shapes STEM Education in Silicon Valley

Interview by Lisa Babinet

As a child, Lea Fredrickson attended an outdoor preschool. There, a community of parents, inspired by their experience, began to envision a unique educational path for their children. This vision culminated in the founding of Waldorf School of Santa Barbara where Lea was part of the first graduating eighth-grade class. Her mother served as the founding administrator, with many classmates' parents playing integral roles in creating and shaping the school community.

"I loved everything about my Waldorf education," Lea shares. "The stories, creative play, being in nature, acting in plays, and learning math creatively—all these experiences shaped my childhood. The passion and joy my teachers brought to the classroom inspired me, and in the community, I formed lifelong friendships."

After graduating eighth grade, Lea attended a local independent high school, then went on to earn an undergraduate degree in physics from University of California, Santa Barbara, which included a year studying abroad in Spain. After completing her undergraduate degree, Lea went on to complete a Ph.D. in physics from UCLA. She gained teaching experience as a substitute teacher and graduate teaching assistant, but it was a serendipitous discovery that redirected her path to Waldorf education.

"While searching for a postdoctoral position, I found that Waldorf School of the Peninsula (WSP), just blocks away from my home, was seeking a high school physics teacher," she recalls. "It felt like a calling, and thirteen years later, I'm still here, finding immense joy in teaching."

Nurturing STEM at Waldorf School of the Peninsula

At WSP, Lea has taken on various roles teaching physics, calculus, Spanish, dance, and even co-creating an interdisciplinary senior science elective. A highlight of her teaching career is founding the school's robotics team, which competes in FIRST Robotics. Now in its

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twelfth season, the team has even hosted a competition on campus.

"Many students have said that robotics was a highlight of their high school experience," she says. "It fosters collaboration, creativity, and problem-solving in a hands-on, engaging way."

Lea recently transitioned to a leadership role as high school pedagogical administrator, supporting her colleagues while facilitating the redevelopment of the computer science curriculum.

Readiness in a Tech-Forward Future

Reflecting on her Waldorf education, Lea credits it with instilling a love of discovery and a multidisciplinary perspective. "My Waldorf experience taught me to find understanding through discovery rather than being handed answers. It's a principle I carry into my teaching."

To parents concerned about their children's readiness for the tech world, she offers reassurance. "Waldorf education prepares students with flexibility of thinking, resilience, and confidence to navigate an uncertain future. It's less about specific tools and more about fostering adaptability and critical thinking."

Embracing AI with Awareness

As AI continues to evolve, Lea is both excited and cautious. "Generative AI is accelerating human creativity in unprecedented ways, but it also carries the potential for misuse. Waldorf students are uniquely positioned to engage with this technology critical-



ly, understanding its capabilities and limitations." At WSP, Lea and her colleagues are ensuring that the next generation of students meets the future with curiosity, humanity, and a solid foundation in STEM. As she looks forward, her dedication to blending Waldorf principles with cutting-edge innovation offers a model for education in the 21st century.

Waldorf Alum Shares Memories of Dr. Frederickson

By Nammy Kasaraneni, Waldorf School of the Peninsula, class of 2017

"Dr. Fredrickson got on particularly well with my weird, unruly, often defiant class; we loved her; we called her "Derf" and sometimes "Freddie." We asked for her to come on our senior class trip with us and agreed unanimously that we wanted her to give our commencement speech. She encapsulated so much of what I loved about Waldorf: a spirit of curiosity and daring, joy and playfulness, and underlying it, a reverence for the universe. She taught me how to look at the sun through a telescope, how to run with pliés and launch a homemade rocket, and how to use basic combinatorics to break combination locks (a trick that a couple of my classmates took advantage of over the next four years of school). She taught me a week of Spanish (before I got moved up to the next class) and a year of calculus. But mostly, she taught me physics.



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Derf didn't teach us physics so much as ask us to invent it. She would drop a



metal ball attached to a piece of ticker tape and show us how the dots got further apart the longer it fell, or press down on a fire syringe so fast the paper inside burst into flames, and then she would ask us a simple question: "Why?" Answers like "gravity" or "heat" were not accepted; she wanted us to look at the phenomena with fresh eyes and come up with theories. She wanted us to think like Newton, and Kepler, and Noether, to understand how people delved into the universe around them and made sense of what they saw.

We rarely memorized equations, although she would eventually explain the formal theories behind what we were seeing. Instead, we dissected toasters, made balloons stick to the chalkboard, and hedged bets on a contraption we called the "dröppenflinger," which demonstrated that perpendicular forces do not affect one another. We came up with theories, and Derf would poke holes in them with new demonstrations, and then we came up with better theories.

Learning that way felt like play. I remember a lot of laughter and engagement in Derf's classes. I remember many of us hanging around on some lunch break or other to watch her smash a rose she had dipped into liquid

nitrogen, or start a fire with a solar oven, or just take a turn watching the Van de Graaff generator make our hair stand on end. Most of all, I remember how exciting it was to start looking at the world around me with fresh eyes."

