

The Kansas City Star

Explain the flame: Quantum physicist who went to Truman High wins science challenge

Benjamin Ames' mix of humor, music and visuals recently won a contest to explain fire.

By ROXIE HAMMILL

Special to The Star

Updated: 2012-06-11T04:41:22Z

Benjamin Ames was, by his own admission, not a great high school math student. In fact, he says, his classmates at Truman High School in Independence would better remember him for his painting and music composition.

“I was a B student ... B average.”

So how did it come about that Ames, 31, now a quantum physicist, recently won the world Flame Challenge to explain fire to an 11-year-old?

The answer would give hope to any parent of a “undeclared major” college student.

Ames, who is studying for his Ph.D. in quantum optics at the University of Innsbruck, Austria, got national recognition this month when his 7 1/2-minute video was selected as the best explanation of flame to a young audience. The worldwide contest, run by Stony Brook University in New York, was inspired by actor and visiting professor Alan Alda and was judged by 6,000 sixth-graders.

The award was given by the Stony Brook Center for Communicating Science, a part of its School of Journalism.

Ames' video bested 800 entries by getting the top number of rating points from sixth-graders in 131 schools.

In the video, a scientist narrator tells a cartoon prisoner in a burning dungeon about the properties of fire, using a cupcake and plastic building blocks to describe the reactions between carbon, hydrogen and oxygen. The video ends with a rhyming rock song — full of robust harmony and using the words pyrolysis, chemiluminescence, incandescence and oxidation as counterpoint.

Sure, that stuff is easy for a quantum physicist to say. But after the sixth-graders watched the video, they voted the mix of humor, music and visuals as the clearest explanation presented.

It's been a circuitous route to science for Ames. As a young child, he sometimes spoke of being an inventor.

"I had a Thomas Edison book on my bookshelf that I just loved, loved to read," he said.

But his interest waned after he began having trouble with math in third grade.

It was confusion over the "greater than" and "less than" symbol that initially stressed him out, and he continued a pattern of math avoidance through high school, he said.

Instead, Ames concentrated on the arts. That was a natural fit, he said, because his family's business was in dance. Ames is the youngest of eight children. His parents, Allen and Ulla, own the Ballet Conservatory of Independence and Cotillion Room and Garden, a reception hall.

His mother is a native of Finland and a ballerina. Ames and his four brothers were conscripted to dance in the troupe's annual productions of "The Nutcracker" at schools.

Ames gravitated toward music and painting in high school and also competed in drama and forensics. It was one of his dreams to write music for movies.

"If you'd asked my friends in Kansas City what I'd be doing when I was 30, they'd say acting or music," Ames said. "If you told them I'd be doing physics, they wouldn't have believed you."

He went on to the University of Utah and studied political science for three years, planning to be a lawyer, perhaps a patent attorney. He spent some time helping out in the law office of his brother Rodney, but his heart was never in it.

"I had so many questions about the natural world," he said. "So I naively said, 'I'm going to switch to physics.'"

It would require three more years of undergraduate work and yes, advanced math.

"That first year was one of the most gruesome you could imagine," he said. "But I was receiving answers to questions I'd never thought of."

Calculus, he said, was a revelation. "I thought, this is information everyone needs to know."

Although such a late switch in majors might sound harrowing, his father and brother Rodney believed in him.

"I never had any doubts, not with Ben," Allen Ames said. "When he changed his major, I thought, 'That is great because he'll be doing something he likes.'"

After graduating with a Bachelor of Science in applied physics, Ames took advantage of his dual citizenship with Finland to study for a master's at the University of Jyväskylä. He is now experimenting in Austria with the behavior of light at the atomic level. The Flame Challenge came about when Ames

caught a nearly expired podcast of National Public Radio's "Science Friday." Alda was the guest, explaining the contest, and the deadline was only two weeks away.

Alda also was the inspiration for the Flame Challenge. As an 11-year-old, he'd asked his teacher to explain fire. The less-than-satisfactory reply: "It's oxidation."

Ames locked himself away for those two weeks, writing the music, the script and drawing out every frame, he said.

Burning question

This year the Flame Challenge asked scientists to explain "What is a flame?" in a way 11-year-olds would understand and enjoy. Now the project is asking children ages 10-12 to suggest the next question. For more information about the Flame Challenge, and to submit an idea for next year's question, go to flamechallenge.org.