Testimony by Former Student of the Academy of Aerospace and Engineering

In 2025 I asked one of my former students from the Academy of Aerospace and Engineering to reflect on how the academy STEM program influenced him and helped him. He had just graduated from college and was starting out in his first full-time job as an aerospace engineer. The following testimony is what he gave me.

> "When I reflect on the growth that contributed to my academic success and now strongly influences my career as a full-time engineer, no period of my education was as pivotal as my seventh- and eighth-grade years at the Academy of Aerospace and Engineering at John Wallace Middle School in Newington, Connecticut [in 2015 to 2017].
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> My entry into the Academy was different from most of my peers. While the rest of the students had begun the program weeks earlier, I was accepted off the waitlist. I vividly remember my first meeting with Mr. Holmes, when he explained the structure and philosophy of the Academy—an approach centered on problem solving, collaboration, communication, and innovation. From that first conversation, it was immediately clear that this was not a traditional learning environment.
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> Before joining the Academy, I was enrolled in the standard seventh-grade curriculum. Although I earned straight A's, I felt unfulfilled and disengaged. Learning was largely based on memorization and repetition, with an emphasis on mastering procedures rather than understanding concepts. Success came easily, but it was shallow. Homework took little time, studying was rarely necessary, and there was almost no demand for dynamic or analytical thinking. It felt like an academic assembly line—efficient, but uninspiring. Even at that age, I knew something was missing. When Mr. Holmes introduced the opportunity to join the Academy, I immediately recognized it as a chance to be challenged in a way I had never experienced before.
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> It quickly became clear that the methods I had relied on for success in the past were no longer sufficient. The Academy demanded a fundamentally different approach to learning—one that was dynamic, analytical, and open-ended. There was rarely a single correct answer. Instead of applying memorized formulas, we were expected to use tools and concepts from class to develop solutions to complex, authentic problems. Learning how to learn became just as important as the content itself.
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> At first, this shift was uncomfortable. I struggled with self-doubt and anxiety, often wondering whether I truly belonged. But as I progressed, I realized that this discomfort was not a sign of failure—it was a prerequisite for growth. I learned to ask essential questions, break complex problems into manageable parts, and continuously refine my thinking. Each answer led to new questions, and each challenge pushed me to think more deeply and creatively.
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> What truly set the Academy apart was the structure of its projects and collaborative work, particularly in courses like Principles of Aerospace and Innovations in Aerospace Engineering [the aerospace science and engineering elective courses]. Without fully realizing it at the time, I was immersed in a uniquely integrated learning environment. Our classes were intentionally intertwined, and each subject was carefully designed—and often personally adjusted by Mr. Holmes—to support individual learning styles. This focused approach allowed us to contribute where we were strongest while developing areas where we struggled.

One engineering design project, for example, tasked us with designing a spacecraft capable of transporting astronauts to Mars while maintaining their health throughout the journey. This single project seamlessly integrated math, physics, engineering, and science, yet remained open-ended enough to allow us to explore solutions in ways that aligned with our individual strengths and interests. We explored questions such as: What centripetal force is required to create artificial gravity based on the spacecraft's geometry? What velocity and fuel requirements are necessary to reach Mars within a specific timeframe? These problems had no predefined solutions. We approached them the way real engineers do—through analysis, iteration, teamwork, and creativity. In the process, I discovered strengths I didn't know I had. I became more vocal, began leading my crew, and often took on a project management role. Skills that once felt like weaknesses grew into strengths that have stayed with me throughout my academic and professional life.

I entered the Academy as a quiet student who knew how to succeed through memorization and repetition. I left as a learner who could adapt and thrive in any environment. That transformation became evident in college, where I worked on complex projects such as computational fluid dynamics analysis of jet engine combustion chambers. Despite the technical difficulty and open-ended nature of the work, I never felt overwhelmed or unprepared. I had the skills I needed—skills that were a direct result of my experience at the Academy. I served as a project leader, worked effectively in a research environment with no clear endpoint, and ultimately helped my team achieve award-winning results.

Today, those same skills continue to shape my career. As a methods engineer entering the next phase of my professional life, I am working with advanced additive manufacturing technologies, including directed energy deposition. I'm currently spending a year in Sweden learning this process before I return to Newington to lead multidisciplinary teams in implementing the cutting-edge manufacturing solution. The mindset I developed in the Academy—innovation, collaboration, leadership, and analytical problem-solving—remains central to everything I do. From developing process flows to working to develop and prove out continuous improvements, the mindset, personal development, and problem solving developed in the academy are core skills contributing to my progress within the project.

While this testimony speaks to the broader concepts of the innovative education practices described in this book, it would be an injustice not to recognize Mr. Holmes personally. He transformed my middle school education into an experience that not only set me—and my peers—far ahead academically but also gave us the confidence and capability to approach any challenge, whether academic, professional, or personal. More than delivering content, he invested time in understanding how each student learned best. For me, that meant being challenged to make decisions, find my voice, take ownership, and strive continually for improvement—while always knowing I had both a mentor and a team to rely on for support.

So I will end simply by saying thank you. Thank you, Mr. Holmes, for providing an education that sparked curiosity, demanded growth, and pushed me beyond my perceived limits. You gave me the tools to succeed and the confidence to use them."