Anshul Samar loved playing games, but lost interest once he had mastered a game. He wanted a game that not only was fun, but that would also be challenging and educational, a game kids could play with parents as well as friends. With an entrepreneurial spirit and plenty of hard work, Anshul created Elementeo, a board game that teaches chemistry to everyone from 9 to 99, and—dare we say—makes it fun.

**How did you come to create Elementeo?**

I grew up in Silicon Valley, where I developed a passion for entrepreneurship. My friends and I were all into games—I liked board games that lasted a long time, like Monopoly. But if you play Monopoly a few times, it gets kind of boring. Even with computer games, there’s not much learning involved. It’s mostly battle and fantasy. I thought if we had what we love about games in an educational context, we could learn while having fun.

**What was the process like?**

Elementeo took over three years to develop. It started as a simple card game of attack and defense. Then I created pictures and descriptions for each chemical element. I wanted to give them interesting personalities that would bring them to life. Initially I drew all of the cards by hand and printed them using grant money from the California Association for the Gifted. As the project grew, I found artists through Elance, an online service that connects employers with freelance workers. I sent the artists descriptions of the characters and they made the cards: Oxygen Life Giver, Sodium Dragon, Lithium Leprechaun. For oxygen, I said, “Make Oxygen a wizard with a staff, and he’s blowing stuff to Earth like he’s giving life to Earth.” They liked the work because
they had freedom in creating the images. Many didn’t know I was a kid—I was just a name on the Internet.

I showed the game to my peers, to Stanford and Berkeley graduates, investors, and game manufacturers. Initially the game was complex. I had to whittle away at it repeatedly so even kids with no knowledge of chemistry could play.

You launched Elementeo at a National Association for Gifted Children conference. How was it received?

Kids loved it because it was a competitive game where they could battle with things they encounter every day, from the air they breathe to the iron used to make their school buildings. It has fantasy components they’re used to seeing in things like Harry Potter and in the electronic games they play.

Parents and teachers were excited because the kids were learning without even realizing it. Kids tend to see chemistry as all about memorization and long chemical formulas. With Elementeo, they’re having fun: battling, using reactions, and making compounds.

What kind of feedback have you gotten?

It’s been great. We’ve sold about 2,000 games so far, mainly on Amazon. When I was testing it, I played Elementeo with 110 eighth graders at my middle school. You could actually see them learning. I give presentations to kids in other schools, and quiz them to see how much they’ve learned. I say, “You’re hiking in a forest and the flashlight runs out of batteries. Which element would you cull for batteries?” A kid raises his hand and says, “Lithium Leprechaun,” because lithium is used in batteries. That type of learning—when you’re using the property in a game—really gets the concepts into your head.

Why create a board game in an age of video games?

I wanted it to be something teachers and parents could easily use. As a board game, Elementeo is adaptable to the classroom. The face-to-face interaction creates a different learning dynamic. I am considering creating a video, computer, or web-based game.

Why a game about chemistry?

Chemistry is the coolest science and the origin of everything on Earth. It’s about elements, compounds, and reactions, but in a broader sense chemistry is about entrepreneurship, about combining two separate things no one’s ever thought of before to create some unique concoction or idea.

Did anyone ever say, “You can’t do this”?

No, and I’m extremely grateful for that! My parents have always encouraged me to explore new areas. My teachers were really supportive. I go to schools and talk about how I created this game, trying to get other kids into entrepreneurship. I tell them that the really cool thing is, if you have an idea and just talk to people, so many will help you. For example, I wrote to The Indus Entrepreneurs (TIE.org), an organization that promotes entrepreneurship worldwide, and they were a tremendous source of information and support. They gave me advice on business strategy, where to manufacture Elementeo, and how to go about marketing and distribution. A lawyer I contacted offered to work pro bono, as did a public relations firm, which helped me get one interview that was syndicated to many newspapers.
From that, venture capitalists contacted me and connected me with the CEO who brought Pokemon to North America. He and his team walked me through how the game industry works, where to find your ideal customer, and how to do product testing. They introduced me to manufacturers. It was fun, but I realized that this wasn't child's play; that it requires dozens of people to pull it off. I worried I wouldn't be able to compete with big firms that were doing this stuff full time.

**How much time do you spend on this?**
Most of my work on Elementeo took place during seventh and eighth grades. During the research, development, and prototyping stages, I finished my homework, studied, and then worked on Elementeo. Weekends were devoted to the game. During summer it was all day, every day, thinking, designing, proofing, and testing.

Now my focus is on marketing. I'm a sophomore in high school, and it's hard to find time, but I still e-mail groups with details about Elementeo, and they usually express interest. I contacted the American Chemical Society, and they invited me to speak at their annual conference in New Orleans. They recently invited me to their regional conference in Puerto Rico, where I spoke about creating Elementeo. It was great to spread the word to influential chemists and scientists, but it's hard to do high school along with a business.

**Do you feel like you’ve missed out on anything while you’ve focused on Elementeo?**
No. A lot of my friends are into other things. It may not be business. If they’re really into video games, they spend hours playing them and maybe even design video games in their heads. Maybe they’re into art and spend weekends drawing. I like entrepreneurship and business and chemistry, so I spend my weekends doing that. To me it’s fun, so I don’t feel like I’ve missed anything.

**What’s the best thing that’s come out of this for you?**
It’s incredibly exciting to create something and work with so many interesting people. There’s no limit to what this has started for me. You don’t stop learning about how to interact with people, or about negotiating and money and lawyers. I encourage everyone to create something, to combat the obstacles and conquer the world. That’s my motto: create, combat, conquer.

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<thead>
<tr>
<th>Chemistry Term</th>
<th>What it is</th>
<th>Application in Elementeo</th>
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<tbody>
<tr>
<td>ELEMENT</td>
<td>Substance that can’t be broken down by chemical means</td>
<td>Element cards represent a player’s army.</td>
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<td>ATOMIC NUMBER</td>
<td>Number of protons in an element</td>
<td>The atomic number, indicated by a roll of the dice, determines who goes first.</td>
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<td>ELECTRON</td>
<td>Fundamental constituent of matter</td>
<td>The goal is to reduce opponent’s electrons to zero.</td>
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<td>COMPOUND</td>
<td>Substance formed by two or more elements</td>
<td>Players combine element cards to make compounds, e.g., Sodium Dragon + Chlorine Troll = salt.</td>
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<tr>
<td>PROPERTY</td>
<td>Potential of matter to undergo change based on its chemical composition</td>
<td>Elements’ and compounds’ personalities are based on their chemical properties.</td>
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<tr>
<td>STATES OF MATTER</td>
<td>Whether an element is solid, liquid, or gas is determined by its composition and structure.</td>
<td>An element or compound card’s ability to advance is dependent upon its physical state.</td>
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<td>ALCHEMY</td>
<td>Ancient chemical science dealing with transformation of something common into something special</td>
<td>Players attack opponents by activating Alchemy card containing energy catalysts such as Black Holes, Nuclear Reactions, and Supernovas.</td>
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<td>ENDPOINT</td>
<td>Point at which a chemical action is complete</td>
<td>The game ends when one player reduces his or her opponent’s electrons to zero.</td>
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<td>CHAIN REACTION</td>
<td>Series of reactions in which a product of a reacting set is a reactant in the following set</td>
<td>In Elementeo, each level builds upon previous levels, so you’re always learning.</td>
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