

# Sheldon Jacobson: When March Madness meets STEM, everyone wins

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## FULL TEXT

High-paying jobs in the fields of science, technology, engineering and math (STEM) are plentiful, with millions going unfilled every year. In 2018, 2.4 million STEM jobs sat empty, with no qualified candidates available and few in the pipeline to backfill the deficit. The COVID-19 pandemic also had a less severe impact on people in STEM positions, with many able to transition to remote work with greater ease than those in non-STEM fields.

With so many openings, why aren't more embracing this opportunity?

The answer is simple.

The problem is occurring long before young people even reach the job market. Nearly 80% of high school graduates are ill-prepared for college courses in math and science. Research shows students are losing interest in STEM during their teenage years.

How can young people get engaged and become excited about STEM? The answer, make it fun. And a way to make it fun is with sports.

With March Madness just around the corner, STEM can be a centerpiece of the tournament.

Brackets are filled out with the hope of having a perfect bracket.

Will a No. 16 seed once again beat a No. 1 seed? Probably not (but don't ask the University of Virginia when they lost as a No. 1 seed to UMBC in 2018).

Which No. 12 seed will pull the Round of 64 upset (in 15 of the past 36 tournaments, two or three No. 12 seeds pulled such an upset)?

Which sleeper No. 10 or No. 11 seed will reach the Sweet Sixteen (in 31 of the past 36 tournaments, one or more teams seeded No. 7 or worse advanced to the Sweet Sixteen)?

No single event attracts more attention across such a wide swath of the nation than March Madness. With 67 games played across about 20 days, the number of combinations is almost unlimited, coming in at around 147 quintillion –that's 147 followed by 18 zeros. To put this number into perspective, it is over 4 million times larger than the United States national debt.

Such computations use probability, statistics and math, the building blocks of STEM. Putting together brackets can be an exercise in data analytics to demonstrate their power and value.

This makes March Madness a candy store of opportunities to advance our thinking about STEM, especially with high school students. Any activities that sharpen such skills contribute to enhancing STEM skills across all age groups.

Middle and high schools can use the tournament to make March Madness into a STEM event and get good engagement because young people are already interested in it. Schools across the country use the data and modeling available at the Bracketodds website to create schoolwide tournament challenges. This allows students to collect data to compare the school population's selection strategies against the website simulation model, available for both the men's and women's tournaments, while also helping promote advanced elective probability and statistics courses within the school itself. This type of enthusiasm and knowledge can live far longer than the

tournament.

Research shows that this is possible. A weeklong instructional curriculum for high school math and engineering classes, allowing students to learn how mathematics can be used to model uncertainty and gain a better understanding of the outcome of random events through a real-world scenario. The curriculum provides an opportunity to inspire students into addressing problems through probability, statistics, and math.

Activities that build upon popular sports events such as March Madness bring STEM to life for many young people, particularly at a time when students are preparing to enter college. Just bringing the names of 68 schools to their attention provides an enhanced awareness of educational possibilities. These experiences are fueled with excitement and provide benefits enjoyed for years. If just one additional student decides to study a STEM field because of this activity, all have achieved success.

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