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Make the Most of Math Skills With KenKen, A Sudoku-Like Game Catching on in the U.S.

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It is 10:50 a.m. on a Monday. Student officers of Valley High School's Math, Engineering and Science Achievement Club file into a chemistry lab for a quick lunch meeting.

Before official business begins, senior Rebekah Pflieger checks out her first KenKen puzzle. Seconds later, she is scribbling numbers in boxes. In three minutes, she has figured out the game, a new Japanese puzzle similar to the logic game Sudoku.

Joel Cruz, Gary Martinez and Joe Stevens — all MESA Club officers — fill out their boxes soon after. Their mission? Master the game and report their observations to the Journal.

It doesn't take the students long to figure out the rules. In the basic three-by-three puzzle, no numbers can be repeated in the same line and each line must use the digits 1, 2 and 3. Each box outlined in black, called a cage, must add or subtract to equal a number in a corner of the box.

"This is a lot more mathematical than Sudoku," Cruz says. "It's pretty fun."

The students aren't the only ones trying it. Borders sells KenKen books in a prominent place near its cash registers. The New York Times puzzle master Will Shortz has endorsed the game.

KenKen was created by Japanese math teacher Tetsuya Miyamoto, whose teaching style is unorthodox, to say the least.

According to Robert Fuhrer, president and founder of Nextoy and KenKen Puzzle, Miyamoto has pioneered "The Art of Teaching Without Teaching" at his school. During tutorials students can't ask questions but must figure out puzzles on their own.

It's addictive

In his introduction to the book "Will Shortz Presents KenKen," Shortz writes that Miyamoto's students spend hours on the game and find it "more engaging than TV and video games."

Fuhrer, who has been making toys since 1982, learned about the game in Japan in April 2007. Fuhrer introduced the game to Shortz, who told him it was "addictive." When The Times of London added KenKen to its Web site in March, he knew it was headed for success, Fuhrer says.

KenKen is now featured in Reader's Digest, and The New York Times started running it on Thanksgiving. Handheld and mobile phone versions are expected next year, Fuhrer says.

Puzzle advocates say games like KenKen often find homes in the classroom.

Janice Chase, a math teacher at Valley High School, has used puzzles for extra credit throughout her 17-year career. In recent years, she has used Sudoku. This year she started offering Numbrix puzzles.

Anything that improves logical skills will help students' math skills, Chase says. It can also help them "logic out" answers on standardized tests like the SATs, she says.

"I keep telling them, 'this is logic,' " she says. "If it's math, they don't want to do it."

Chase isn't familiar with KenKen but likes the idea of a puzzle that improves what she calls "basic facts" — computation skills that many students still haven't mastered by high school.

Get kids involved

Julie Cervantes, regional coordinator for MESA, which works to motivate New Mexico students in science, math and engineering, says puzzles are one way to engage students.

MESA groups often use puzzles for in-school math competitions. They help reinforce skills for visual learners and can give math-phobic students a confidence boost, she says.

Ed Pegg Jr., a puzzle designer for 30 years and consultant for the CBS show “Numb3rs,” which features using mathematical computations to solve crimes, says the best puzzles can be described in 30 seconds or less. KenKen fits that model, he says.

He likes that players can progress from one level to the next, moving from smaller boxes with addition and subtraction to larger puzzles with multiplication and division. Each time people figure out a new puzzle trick, they are also using their brain in new ways, he says.

Train your brain

In addition to honing math skills, puzzles and games are often touted as a way to improve brain functioning.

Puzzles are no magic bullet — factors like cardiovascular health and psychological well-being are also critical for healthy brains, according to Michael Weisend of the Mind Research Network in Albuquerque.

But scientists have found that some types of brain training may improve cognitive functioning or at least help stave off dementia.

A 2006 study published in the Journal of the American Medical Association trained senior citizens in 10 sessions of progressively difficult mental workouts focusing on memory, reasoning and speed of processing exercises, which asked participants to quickly identify objects on a computer screen. Compared with a control group that didn’t do the exercises, those who did the exercises showed improvement in all areas five years later.

Other research shows that increasing mental stimulation early in life may provide an extra cushion of cognitive reserve to slow the decline of brain functioning as people age.

“If you know multiple languages, learn chess as well as football, all those things add to your repertoire,” Weisend says.

The biggest benefits of brain training come when training starts early, Weisend says. But he adds that there is no clear link between any specific puzzles and improved brain functioning.

“Doing crossword puzzles will not make you a great author,” he writes in an e-mail. “Similarly, Sudoku will not make you a mathematician. However, some interactive mental activity like puzzles is almost certainly better than the passive viewing of the television.”

Change of pace

Can KenKen replace the wildly popular Sudoku?

Jason Zuffranieri, a member of the U.S. Sudoku team from Albuquerque, isn’t sure. After checking it out online, he says he likes the change of pace from Sudoku, but doesn’t think it will gather as many fans.

While Sudoku is mostly about tricks players pick up to solve the puzzles, KenKen is all about math. That may not appeal to everyone, he says.

For Cruz, KenKen’s mathematical bent is a fun challenge. For him, that is a good thing. In fact, all four MESA students say they would play again. Only next time, they’ll try a harder version.