

# Field Trip

## Occurrent

### Surfboards





# The Digital Shaping Bay:

## A Swank Family Field Trip

The morning sun was just hitting the coastline as Daddy Swank loaded Madison and Cash into the truck. Today wasn't an ordinary beach day. They were driving down to a hidden surf shop for a highly anticipated technology field trip.

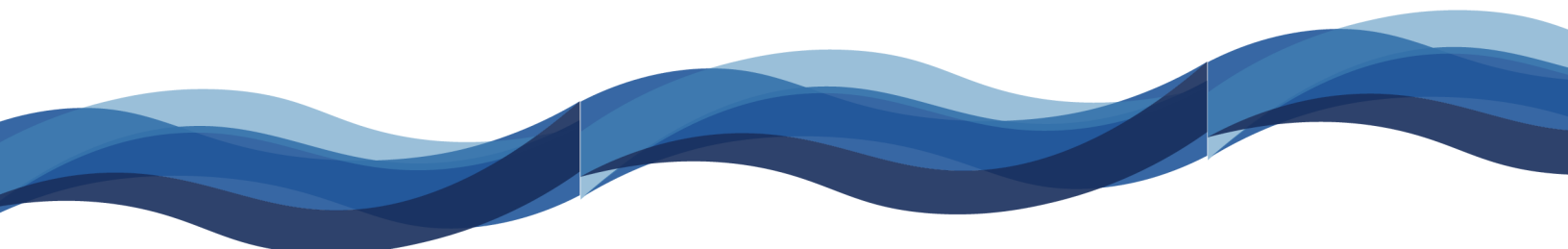
"Alright crew," Daddy Swank said, his athletic frame leaning back in the driver's seat as he navigated the turns. "Remember what we discussed on the computer screen at home? Shapers today use Computer-Aided Design, or CAD software, to create exact blueprints of a surfboard. Instead of just guessing with a handsaw, we can program the exact length, width, thickness, and curve into the computer down to a fraction of a millimeter. Today, you get to see it in action."

They pulled up to a roll-up warehouse door with a wooden sign that read CrossCurrent Surfboards.

The sweet, clean smell of foam resin and sawdust filled the air as Uncle Dave stepped around the high-tech CAD workstation. He extended a warm, calloused hand to Daddy Swank, then knelt down slightly to look Cash and Madison in the eyes.

"It's an absolute honor to have the Swank crew in the shaping bay today," Dave said, his salt-and-pepper hair catching the glow of the dual monitors. "Your dad tells me you guys are studying how physics and faith tie into the waves."

"We just finished a whole week on Newton's Third Law!" Cash said proudly, pushing a stray lock of strawberry blond hair out of his eyes. "Action and reaction. I'm mastering the pop-up."







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"That's exactly what's happening right here on this screen, Cash," Dave smiled, pointing a worn finger at the glowing blue 3D surfboard mesh.

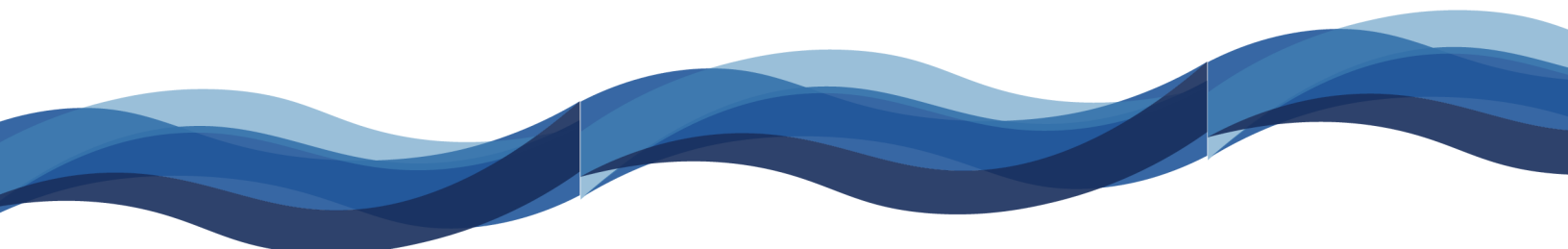
"In Computer-Aided Design, we don't just guess anymore. We program the exact curve, rail thickness, and volume down to a fraction of a millimeter. We plan for the physics before the board ever touches a blank of foam. But you know what's amazing? Long before engineers invented CAD software, God already programmed the perfect design into the ocean currents and the human body."

Madison leaned closer to the monitor, her calculated mind instantly analyzing the grid lines. "Look at the coordinate points," she whispered. "Every time you adjust the nose rocker, all the decimals recalculate to keep the curve smooth."

"That's right, Maddie," Dave said, looking at her with an encouraging nod. "It takes absolute intentionality. A board doesn't just happen by accident. And neither do we. Ephesians says we are His workmanship—His custom design."

Dave grinned, clicking his mouse to toggle the view from a flat grid to a spinning, translucent 3D model of a high-performance shortboard.

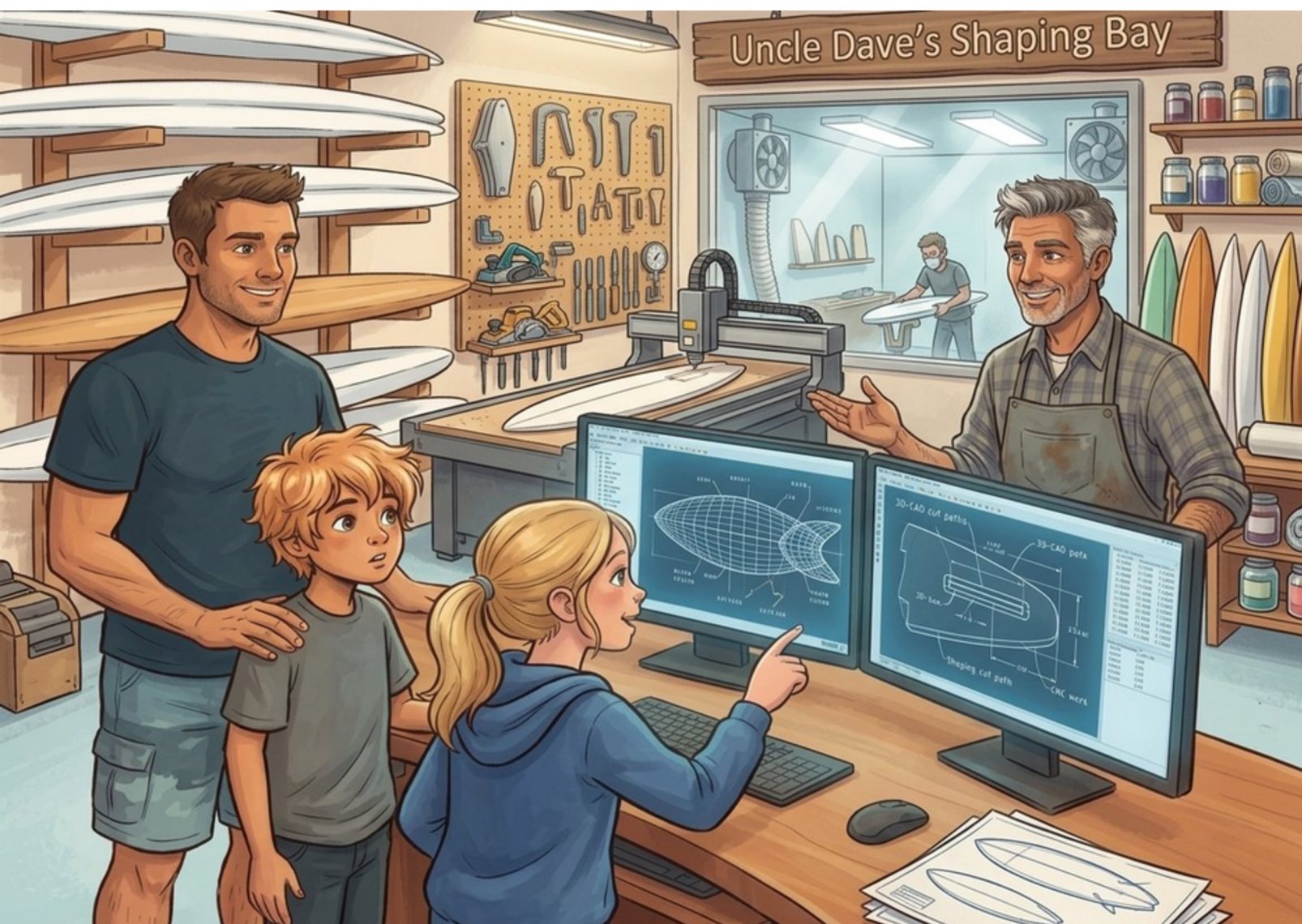
"That's because a surfboard's shape isn't just one static measurement. It's a continuous mathematical curve. In the old days, I used to just outline a board using a pencil and a flexible piece of wood on a rough foam blank. If my hand slipped by even two millimeters, the board's turning radius was ruined. But with this CAD software, I can program the three most important dimensions down to a fraction of a millimeter: the outline, the rocker, and the foil."





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Dave clicked on the top-down view of the board to show them the outline.

"I use digital control points called Bezier curves. Watch what happens when I drag this point outward near the middle." With a smooth click, the midsection widened by exactly 1.5 millimeters.

"By widening the outline right here, I add more total surface area. For your calculated style, Madison, that means the board will glide over flat sections of the wave without losing speed. If I pull the tail points inward, making it a narrow 'pin-tail,' it allows the board to hold onto the steep wall of a larger wave without sliding out."

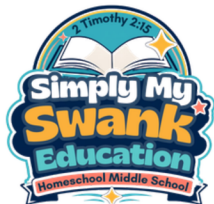
Next, Dave toggled the screen to a perfect side profile view, showing the surfboard resting on a flat digital axis. The nose and tail curved upward kind of like a banana.

"This is the rocker line," Daddy Swank noted, pointing to the screen so Cash could see. "Remember what we learned about fluid dynamics? The rocker dictates how the board cuts through moving water."

"Exactly," Dave nodded. "I can adjust the entry rocker at the nose and the exit rocker at the tail. If I give Cash too flat of a nose rocker, the board will plow underwater when he tries a steep drop-in—we call that a 'pearl.' But if I program too much curve into the nose, it creates massive aerodynamic and hydrodynamic drag, slowing him down. The computer lets me find the perfect balance for the waves right here at the Oceanside Pier."

Dave then sliced the 3D model in half horizontally, revealing a cross-section view of the internal thickness, known as the foil. "The foil is how the thickness is distributed. A board needs to be thickest right under your chest so that when you paddle, it keeps your body weight floating high. But as we move toward the tail, it tapers down dramatically to a thin, sharp edge." Dave clicked a feature called Symmetry Lock.





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"Human hands are amazing, but we aren't perfectly symmetrical. If the left side of a surfboard is even a fraction of a millimeter thicker than the right side, the board will pull heavily to one direction during a turn. This software forces the left and right rails to be absolute, mirror-image clones of each other."

"That's so epic!" Cash exclaimed, his blue eyes wide with excitement as his hand hovered over the mouse. "Can you check the floatation value, Uncle Dave? Is it going to float my crazy air-reverses?"

Dave laughed heartily, matching the 10-year-old's wild energy, and tapped the spacebar. Instantly, a text box flashed on the screen: Volume: 24.8 Liters. Target Rider Weight: 75–95 lbs.

"There is your math, Cash," Dave said proudly. "The software calculates the total volume in liters by measuring every single cubic millimeter of our 3D model. It tells us exactly how much water the board will displace. For your weight and your explosive style, 24.8 liters is the absolute sweet spot. It gives you maximum lift to fly down the line, but low enough mass to let you whip the board around into a sharp turn."

As Dave clicked through the software, Madison noticed something unique pinned to the corkboard right next to the high-tech computer monitor: a Christian Surfers pamphlet, and he had a worn Bible on a shelf with a surf-logo sticker on the cover, right next to a calendar filled with event dates for Christian Surfers.

"Are you a Christian, Uncle Dave?" Madison asked knowingly.

Dave's smile brightened even more. "I am, Madison. In fact, everything I do in this shaping bay is to honor the ultimate Creator who made the waves we ride. That's why I love being a part of Christian Surfers."



# The Digital Shaping Bay:

## A Swank Family Field Trip

Daddy Swank leaned against a rack of blank foam cores, a look of deep respect on his face. "Dave, how did a kid who grew up just wanting to surf end up building a high-tech shaping business right here in Encinitas?"

Dave's smile softened as he looked around the warehouse. He pulled over a couple of stools for the kids. "It started a long time ago, through Christian Surfers. When I was a teenager, I thought surfing was just about catching the biggest wave, getting sponsorships, and making a name for myself. But then I met a great surfer one day at South Tamarack, his name was Chuck and he invited me to go on a surfing trip with a group of guys to a remote coastal village in Central America. I was a wild teen and I couldn't say no to that. Little did I know that I was on my very first mission trip with them.

Cash sat up straight, his eyes wide. "Did you find giant waves?"

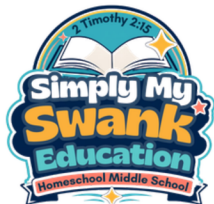
"We found massive, perfect waves, Cash," Dave laughed. "But we found something way bigger. We brought boxes of medical supplies, clean water filters, and we helped rebuild a local community center that had been destroyed in a tropical storm. Every morning before the sun came up, we'd sit on the beach with the local kids, they would open their Bibles, and talk about Jesus.

Out there in the water, sharing waves and sharing Christ, I realized that surfing wasn't my identity anymore. It was just the tool God gave me to build relationships and serve people. I accepted Jesus as my Savior on that trip and my life has never been the same. I was reborn there on that trip, and life makes so much sense now. I am fully in love with Jesus and all I want to do is serve Him, my identity is in who He is, not what I do, or what I accomplish.

I surrender to Him daily and simply ask, "What's the next thing, Lord? Send me!"

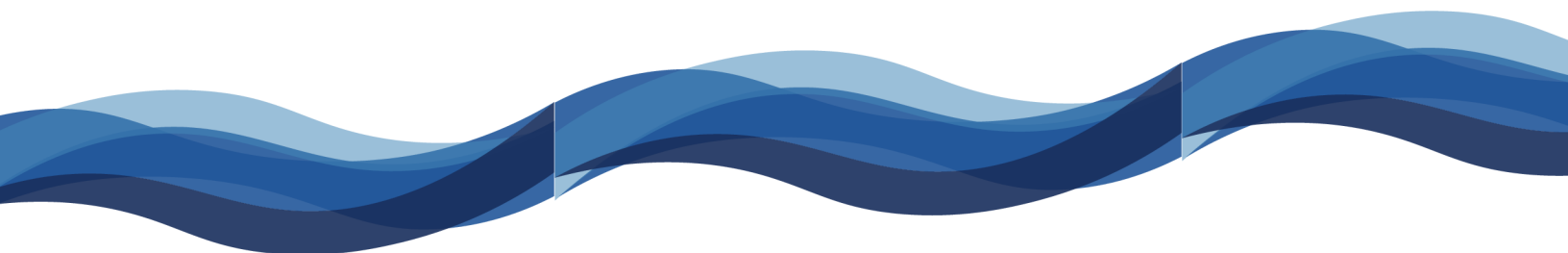
"Is that why you moved here?" Madison asked.





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"Exactly," Dave replied, nodding out the window toward the Encinitas coastline.

"Encinitas is one of the surf capitals of the world. After that mission trip, I knew I wanted to set up shop in a place where the surf culture is alive, but where people are often searching for meaning in all the wrong places. I opened this bay to build high-quality, high-tech boards, but my real business is being a light in the lineup."

Dave leaned back against the workstation, a look of humble gratitude washing over his face.

"Just last year, a local guy named Kai started coming by the shop. He was a phenomenal surfer, but his life was falling apart. He was angry, empty, and chasing after everything the world told him would make him happy. He bought a board from me, and when he picked it up, I noticed he looked completely exhausted. I invited him out to Swami's beach for a sunrise session the next morning."

"Did you teach him how to carve?" Cash asked.

"He already knew how to carve, buddy," Dave smiled. "But sitting out there on our boards between sets, waiting for the water to move, I started sharing my testimony with him. I told him about how Jesus took my broken, selfish ambitions and gave me a brand-new heart with real purpose. For three months, we surfed together every week, and we read the Gospel of John right there on the sand after our sessions. Right before winter started,

Kai looked at me out in the water and said, 'Dave, I want what you have. I want to follow Jesus.' We paddled in, and I baptized him right there on the shore."



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## A Swank Family Field Trip

A quiet stillness fell over the shaping bay. Daddy Swank looked at Madison and Cash, seeing the deep impact Dave's words were having on them. The connection between high-tech engineering and a high-calling faith was suddenly crystal clear.

"Dave," Daddy Swank said, his voice filled with emotion, "that is exactly what my wife Katie and I want for our family. We want them to excel in everything they do—whether it's science, math, or sports—but we want Jesus to be the center of all of it."

Madison looked up from the CAD screen, her blue eyes shining with conviction. "Dad, it makes total sense. If God created the physics that makes the board float, and the waves that give us power, then leaving Him out of sports is like trying to surf without an ocean."

"Yeah!" Cash agreed enthusiastically, punching the air. "From now on, every time I pop up or catch a wave, I want people to know I'm riding for Jesus. It's the best way to go."

Uncle Dave smiled warmly, placing a hand on Cash's shoulder and looking at the family. "You guys have the right perspective. When you choose Jesus in your sports, your hobbies, and your academics, you aren't just performing for a trophy anymore. You are participating in His creation, and that changes everything."

You all should join me at Christian Surfers on Monday at Oceanside Harbor. We meet up weekly—right on the sand by the south jetty. We share a meal, open up the Scriptures, talk about life, and then we all paddle out together. It doesn't matter if you're a pro or just learning to pop up; it's all about Christian community."





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Daddy Swank smiled, nodding in approval. "We have been a couple of times, Dave, and I agree, we enjoy it so much and are committed to making this lifestyle so much more of what we want for our children. It nurtures a sense of family, connectedness to our Creator, and allows others to see Christians gathering outside of the church. We find it draws those with questions about Jesus in and it's a great way to love Jesus."

"Oh, the mission trips are the absolute best part," Dave said, his eyes lighting up as he pulled up a photo on his second monitor of his local youth group standing with surfboards on a sunny beach in Mexico.

"Every year, our local group packs up a bunch of surfboards and basic building supplies and hits the road. We do fun mission trips down to places like Baja, or over to small island communities. We help rebuild local schools, run free surf clinics for kids who have never had their own boards, and share the gospel. It's an incredible way to use the sport we love to serve God.

Technology is just a tool, Swank team, but when we use it with precision, we can build things that bring people together, keep them safe on God's ocean, and open up doors to share His love."

Cash's face beamed. "Daddy! Can we go on a surf mission trip?!"

"We will definitely talk about it, wild man," Daddy Swank smiled, clapping Cash on the shoulder. "But first, we have to finish our workbook so you actually know how to ride the board Uncle Dave is blueprinting for us."

Dave reached onto his desk and handed both Madison and Cash a circular Christian Surfers sticker.

"You guys keep studying hard. God gave us brilliant minds to understand technology, and amazing oceans to enjoy His handiwork." He shook each of their hands with a glowing smile on his face.



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As they packed back into their adventure van to drive home along the coastline, the morning sun was high and bright. The Swank crew reflected on their amazing field trip and all it had taught them about the science behind surfing, but the greatest lesson was etched into their hearts: no matter the successes in sports, choosing Jesus is the ultimate achievement.

### Tech Field Trip: Review & Checkpoint

#### The Blueprint & Outline

Fill in the Blank: Modern surfboard makers use \_\_\_\_\_ software to program board shapes down to a fraction of a millimeter.

Short Answer: Why does Uncle Dave use digital control points called Bezier curves to adjust the board's outline instead of cutting it by hand based on a "feeling"?

#### Rocker & Foil Physics

Fill in the Blank: The vertical upward curve from the nose to the tail of a surfboard is called the \_\_\_\_\_ line.

Short Answer: Explain how the digital feature Symmetry Lock ensures that Madison's board doesn't pull heavily to one side when she is riding a wave.

#### Volumetric Calculations

Fill in the Blank: The CAD software measures every cubic millimeter of the 3D model to calculate the board's total volume, which is measured in \_\_\_\_\_.

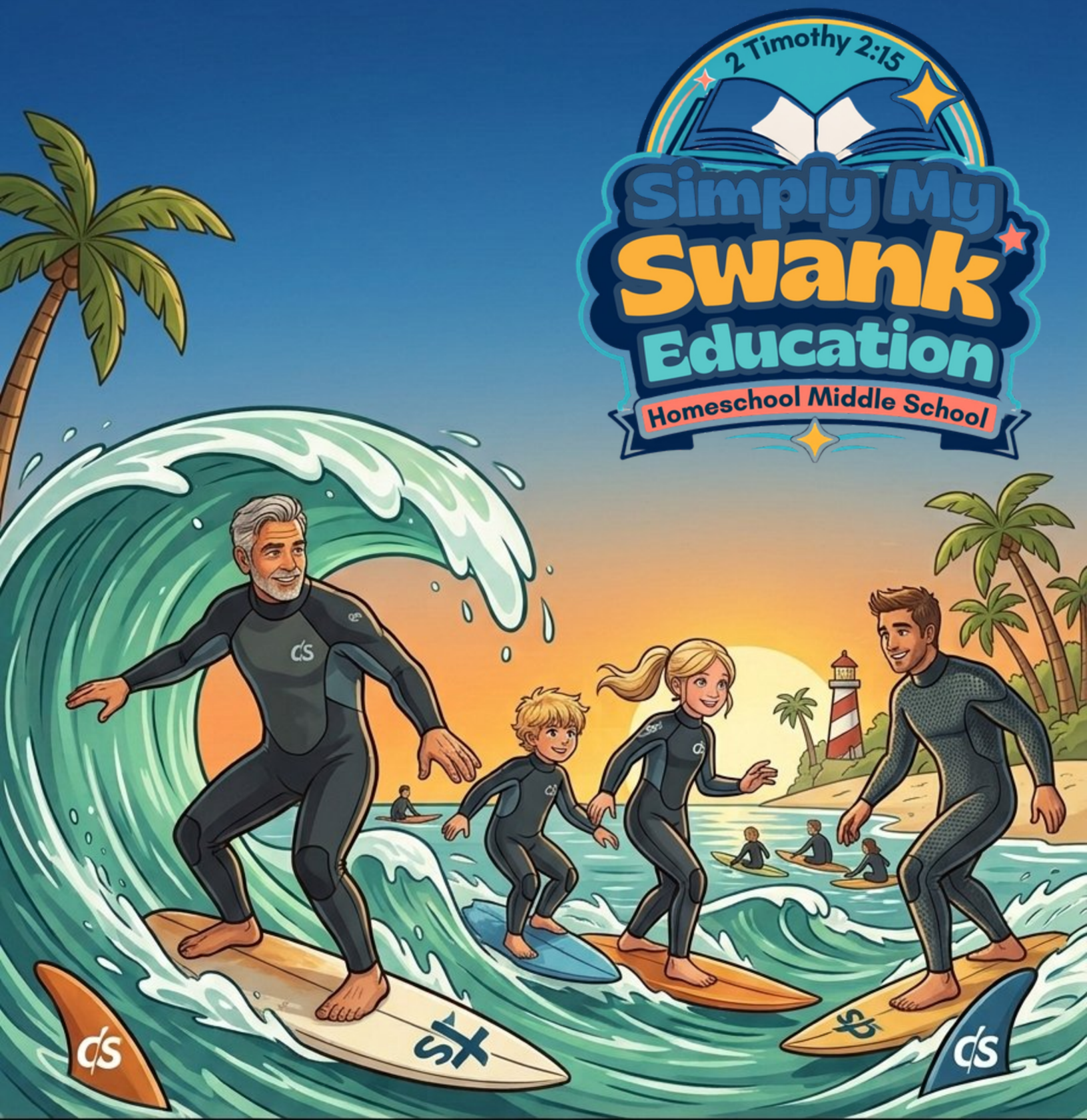
Short Answer: If Cash's board has too much programmed volume for his body weight, how will it affect his ability to perform quick, sharp turns?

#### Faith and Community

Fill in the Blank: The local faith-based group that Uncle Dave belongs to, which meets weekly and does mission trips, is called \_\_\_\_\_ Surfers.

Short Answer: How does Uncle Dave connect his faith as a Christian with his passion for surfboard design and technology?





# *The Digital Shaping Bay:*

## *A Swank Family Field Trip*