SCIENCE INTERACTIVE
eScience Labs & Hands-On Labs

CASE STUDY
October 2020

THE NEW GLOBAL EDUCATION ENVIRONMENT: HOW SCIENCE INTERACTIVE IS PUSHING THE EVOLUTION OF ONLINE SCIENCE LABS

IN THE BEGINNING

When Marc LaBella teamed up with Dr. Jim Brown at Ocean County College (OCC) to help move the school's science courses online, it was hardly his first experience with distance learning. At his previous institution, a small Catholic school in northern New Jersey called Felician University, LaBella had been teaching classes virtually since 1999. Back then, the school's e-learning program consisted of physical video tapes and communication over email. "It was like a primitive caveman type of online learning," LaBella said.

Even after LaBella and Felician traded in their VHS tapes for e-learning software such as Blackboard, they were still only able to teach basic science courses; any curriculum that included a lab component had to be taught face-to-face (F2F). How else was a professor supposed to ensure students had the proper lab equipment, were conducting the experiments correctly (if at all), and were following lab safety protocol? There was simply no adequate substitution for the F2F lab environment.

At least, that's what LaBella — along with almost every other STEM instructor at the time — assumed. But then he met Dr. Jim Brown, who introduced him to Peter and Linda Jeschofnig and their company, Science Interactive (originally called Hands-On Labs).

GET TO KNOW OCEAN COUNTY COLLEGE

For more than 40 years, Ocean County College, a public two-year community college sponsored by Ocean County and the State of New Jersey, has provided area residents with the opportunity to benefit from higher education.

OCC offers students a chance for a new beginning, a chance to grow, a chance to learn, and a chance to discover the world around them—all within a supportive yet innovative environment.

OCEAN COUNTY COLLEGE

The meeting blew open his conception of what was possible in the distance learning environment. Since then, armed with SI lab kits and a belief in the power of online pedagogy, LaBella and Dr. Brown have helped transform OCC into one of the world's premier e-learning institutions. Today, the school offers every one of its science courses online, from biology to forensic science, and about 500 of its students conduct experiments with customized lab kits every year. We recently sat down with LaBella to learn more about his experience with Science Interactive and the process of moving lab science courses online.

AN IMPOSSIBLE TASK

After moving to the Jersey Shore in 2005, LaBella spent a year splitting his time between Felician and OCC. But when Dr. Brown offered him a full-time job teaching online courses at Ocean County, LaBella parted ways with Felician and embarked on a new chapter.

Dr. Brown had recently been appointed as the Dean of Science, Engineering, Health Sciences, and Human Performance at OCC, and was tasked with placing the college's science courses completely online. Part of the impetus for this was an ever-growing need to alleviate pressure on the school's new Hiering Science Building (HSB), which had been rapidly running out of space since its construction in 2002. Even though the school already offered many online/campus "hybrid" courses, there seemed to be no way around the fact that lab classes had to be taught on-site. By the time Dr. Brown stepped into his new role, lab science classes in the HSB were running from 8 a.m. to 11 p.m. Monday through Friday and 8 a.m. to 5 p.m. on Saturdays. Not only did this create nightmarish administrative issues, it did nothing to help the non-traditional students who required the convenience of online learning — i.e., those who struggled to get to campus due to family, job, or distance constrictions. The benefits of learning from home were limited when students still had to work that one on-campus lab slot into their busy schedules.

It became clear to Dr. Brown and LaBella that the key to solving their problem lay in finding an effective way to teach lab courses online. If they could clear that seemingly immovable roadblock, not only would it fix the HSB's space issues, it would open up infinite learning possibilities for a variety of students.

THE MISSING PIECE TO THE PUZZLE

Around this time, the president of OCC, Dr. Jon H. Larson, alerted Dr. Brown to a company he'd heard about that was producing at-home lab kits for distance-learning science students. Eager to learn more about this "lab in a box," Dr. Brown started to investigate and came across Science Interactive (SI), a company based in Englewood, CO. SI's lab kits replicated campus-laboratory experiments and offered discipline-specific kits across a wide array of sciences. Peter and Linda Jeschofnig, the company's founders, had designed the lab kits while teaching chemistry at Colorado Mountain College. During a week of road-closing snowstorms, the Jeschofnigs had recognized the need for lab kits that students could use

THE HISTORY OF DISTANCE LEARNING

Did you know distance learning has been around for over a hundred years? The University of Chicago was the first standard educational institution in the U.S. to offer correspondence courses in 1892.

Thanks to the advancement of technology and the internet, distance learning is available to students around the world. Check out how distance learning has evolved over the years:

1892
University of Chicago is the first standard educational institution in the U.S. to offer correspondence classes

1922
Pennsylvania State College broadcasts courses over the radio

1953
The University of Houston offers the first televised college credit classes

1965
The University of Wisconsin begins a statewide telephone-based distance education program for physicians

1976
Coastline Community College becomes the first "virtual college," offering telecourses with no physical campus

1996
Jones International University becomes the first accredited fully web based university

2020
More than 6.3 million U.S. college and university students take at least one online class per semester

Sources: worldwidelearn.com and usnews.com

without the need to travel to campus. These at-home experiments were exactly the key that Dr. Brown and LaBella had been searching for.

Though LaBella knew that the idea of students actually having labs in their homes would likely face pushback from more conservative professors, after seeing the kits, he was immediately ready to start testing them out. "I'll try anything once. I'm very open," he said. "I didn't disbelieve it; I was just shocked that we could do this. I like to buck the system, so when everyone was saying, 'No, no, no, it won't work.' I said, 'Yes, yes, yes, it's gonna work.' I didn't have any reservations."

Part of what excited Dr. Brown and LaBella about the lab kits was their sophistication. Each came with everything the student would need for the experiment, including a full-color lab manual, chemicals, specimens, material safety data sheets, and high-quality lab equipment — all at a reasonable price. As Dr. Brown wrote, "it was not a 'Mickey Mouse Cookbook' science kit!"

LaBella was right that not all the faculty were as excited about the concept of at-home labs as he and Dr. Brown were. To this day, the biggest obstacle he faces in continuing to develop online lab science courses is getting professors on board.

"How do you do chemistry from a box?" they'll ask.

"Is the microscope just a toy?"

"How will students perform dissections without injuring themselves?"

However, because the kits are so well-organized, LaBella has found that the best way to quell these concerns is to simply show the lab kits to the instructors.

"My biggest fear was how we were going to get faculty on board," LaBella said. "I mean, there are still professors that use overhead projectors … But it's hilarious because a lot of the faculty that were dead-set against this and were screaming and yelling, three years later, they were in line asking for courses."

AN OVERWHELMING STUDENT RESPONSE

As LaBella and Dr. Brown had anticipated, the lab kits solved a whole host of problems for their students. No longer needing to travel to and from campus for labs, online science students would save money on gas, parking fees, and even child care, while still holding down full- or part-time jobs. They now had the flexibility to conduct lab experiments whenever best suited their schedule. And because these kits offered a hands-on laboratory experience, students did not have to worry about the problem of credit transferability (other colleges and universities would sometimes not accept virtual science experiences for transfer credits).

SI TODAY

After over twenty years since the inception of SI, today we are proud to offer :

700+
RIGOROUS EXPERIMENTS

9
SCIENCE DISCIPLINES

650+
US COLLEGES & UNIVERSITIES

1
POWERFUL PLATFORM

While many faculty took some time to warm up to the lab kits, the students took to them immediately. "They were really fascinated by the fact that they could dissect on their own," LaBella said. OCC's initial online lab offerings were Microbiology and Anatomy & Physiology, and almost overnight, out-of-state and even out-of-country students began signing up. The school's revenues increased as students from as far away as Alaska, Germany, Ireland, and Japan started conducting experiments from the comfort of their homes.

Although "old-school" professors often worry that students outside a F2F environment will lack the structure needed to engage with the material, LaBella has found that because of the flexibility and independence they offer, the lab kits actually increase student engagement. Instead of taking instruction from a professor at the front of a lecture hall, students in these online courses are forced to take ownership over their own learning. Without an instructor constantly watching over their shoulder, ready to answer any question at the raise of a hand, students must regularly solve problems on their own. That ability to think critically is a key component of a science student's education.

Additionally, the increased workload of online lab courses forces students to think more deeply about the material. While more traditional F2F professors might initially view online courses as nothing more than shortcuts, LaBella finds that they tend to be surprised by how sophisticated the curricula turn out to be.

"When you look at the amount of work that goes into a good online class, it's probably twice as much as you do in a face-to-face class," he said. "You have lab reports and papers and discussions — we don't do that in the classroom. Instead, there are just lectures and an exam. Dissect a cat, make observations, take a practical, and that's your grade."

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A PRODUCTIVE PARTNERSHIP

When Dr. Brown met with Linda and Peter Jeschofnig back in 2007, it signified the beginning of a mutually beneficial relationship. As Science Interactive has grown and evolved as a company, Ocean County College has grown with it. In the beginning, the company was too small to allow for lab-kit customization, so OCC had to choose from the standard lab kits and adapt its curricula around them. But as SI expanded, it began offering schools the ability to customize their own lab kits. According to LaBella, that step was influential in convincing some of the more hesitant faculty members to start using kits.

"The biggest obstacle at first was ensuring that the lab kits and pedagogy matched the material in the face-to-face courses," he said. "Once professors were able to tailor the labs to match exactly what they were doing in face-to-face classes, nobody could say, 'Well, with the kits, you're not able to do this or that.' Yes, you are."

The customization potential of Science Interactive has reached its zenith with the most recent introduction of the SI Cloud, a self-contained learning platform that allows professors to design and teach courses that their students can access anytime and from any device. Integrating seamlessly with existing learning management systems and offering cutting-edge analytics, the SI Cloud provides instructors with effortless control over their digital classroom.

THE NEW GLOBAL EDUCATION ENVIRONMENT

As Marc LaBella and Dr. Jim Brown have discovered with their work at Ocean County College, online learning for lab science is more than just possible; it's beneficial — to students and instructors alike. Through the independence of at-home lab kits and the interactivity of LMS discussion forums, science students are becoming more engaged. No longer content to simply sit quietly and soak up lecture notes, students are taking an active role in their education, building a strong and complex learning network between themselves, their peers, and their professors.

And as LaBella points out, this sort of digital community represents the future of learning: "This is how we stay competitive. This is the new global education environment and we need to go toward that. If there are colleges that haven't done that, they are so far behind."

SCIENCE INTERACTIVE: BRIDGING THE GAP IN DISTANCE LEARNING

Science Interactive is the world leader in science distance learning. SI pioneered the way education is conceived and delivered around the world, regardless of location, time zone, or language.

We don't just create products. We create a comprehensive learning process. Our cutting-edge lab kits are self-contained learning portals that allow instructors and students to collaborate anytime, anywhere.

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