TECHNOLOGY

Much Fun, for Credit

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T isn’t frivolous, it isn’t gimmicky, and it doesn’t pander to college students who love their Xboxes more than they love their mothers. Most of all, they would like you to know, it is not trendy. The new course of study in digital games at Rensselaer Polytechnic Institute is “profoundly conservative,” says James Watt, chairman of the college’s language, literature and communication department and a specialist in human-computer interaction.

For years students have been showing up at the Troy, N.Y., campus with a burning passion to play interactive games on PCs, consoles and cellphones. Among tech school students who like to live on the digital frontier, the passion to play escalated into a passion to create games, as they aspired to jobs in the white-hot game industry. Philip Bloom, a junior and computer science major from Miami, paints a sad picture of the way it was before R.P.I. made game arts and sciences an undergraduate minor last fall. “What constantly happened was, here were four programmers who wanted to make a game,” he says. “Somewhere else on campus, there were four artists who wanted to make a game. Neither of these groups could get much accomplished.”

Before there was that minor, the philosophy department and its faculty scholars in artificial intelligence made a home for an ambitious student-run game development organization called Omega Worlds. Through Omega Worlds, students started to become familiar with the math and coding involved in making games, then moved on to creating technical designs, then prototypes. Some graduates founded or went on to work for game companies.

The point is that R.P.I. students (like college students everywhere) did not wait to learn game-making in a classroom. They went hunting for faculty to help them. “The program burst out of the students,” says Kathleen Ruiz, an artist and professor. She taught the first game class at R.P.I. five years ago. Back then, says Jesse Schell, a leader in university-level game development at Carnegie Mellon in Pittsburgh, “games were just beginning to move from a nerdy niche business into something that’s really big.”

Ms. Ruiz, a critic of violent digital games, later initiated a course in experimental game design, and R.P.I. students were encouraged to subvert what is commercially popular. Currently the experimental gamers work in design teams of computer scientists, who dress in a thousand shades of gray hoodies, and artists, who style themselves like color-soaked animated figures in their own games. This semester teams are building a stick-figure action game that is a commentary on overdone graphics; a government conspiracy game in which the protagonist is a poor single mother; and a simulation of finding student parking on the R.P.I. campus.

Almost a year after taking Ms. Ruiz’s class in game design, three students continue to work on a shooter game they are developing (and hope to market) called Synergy. To play the game, one team member controls a keyboard and mouse. A second player, hooked to a heart monitor, dances on a floor pad to the first player’s commands. The force and accuracy of the team’s weapons increase with the dancer’s cardiovascular exertions.

Ms. Ruiz says of her game classes: “I can’t get students to leave. When does that ever happen?”

Marc Destefano’s classes in game mechanics and development are scheduled for two hours, but students — some not even enrolled in his courses — often keep him in the game lab for hours more. As this semester reached its midpoint, Mr. Destefano looked tired, but not his students. “It is much fun,” says Philip Bloom, who spends 30 hours some weeks on his game-building homework, trying to develop a game from an idea into a tested, playable product.

This is the kind of undergraduate fervor that you can either ignore or you can exploit, says Mr. Watt, the communications department chairman. So at R.P.I., a core group of humanities faculty is designing a bachelor’s degree in game arts and sciences that will essentially send students on a march through the classic liberal arts. Students will work their way through literature, higher level math, physics and fine arts before they emerge with industry-ready portfolios (they hope) that will convey specializations in programming and engineering, graphic arts, game design or applications outside the entertainment field — say, for fields like teaching or health care or simulations that might mitigate natural disasters.

“This is a liberal arts education in a technical context,” Mr. Watt says. All the techies will learn art, all the artists will learn a computer language, and everyone will learn scientific analysis through two semesters of required research in fields like human-computer interaction, psychology or artificial intelligence. The bachelor’s degree program — unusual, because most game-design education now comes through vocationally oriented technical schools or graduate programs — should be in place and accepting applicants by fall 2006.
To create games that seduce intellectually and emotionally, as well as dynamically and mechanically, through sight, sound and touch, R.P.I. students "will learn Shakespeare, they will learn statistics if they have to, they will learn fluid mechanics and art and history in the pursuit of what they really want to do," says Ralph Noble, an associate professor of psychology. "I see this as a thematic way to get to the new liberal arts education, where you have Shakespeare and 3-D graphics as co-habituants."

Over the last decade, nearly every kind of institution of higher learning has carved out a place for interactive media and games. Art schools, technical schools and community colleges offer two-year degrees and professional certificates in the specialized skills of game design and development, as well as game art and music. Universities like the Massachusetts Institute of Technology and the Georgia Institute of Technology have created Ph.D. programs for critics, interpreters and scholars of games — the theoreticians rather than the game-makers — in the field called game studies. Graduate schools of communications examine the ways that games and interactive media are changing how people relate and communicate.

Some master's degree programs, like the seven-year-old Entertainment Technology Center at Carnegie Mellon, aspire to turn out students who not only can create interactive entertainment but who will become leaders in an industry that needs them. The burnout cycle for game talent is famously rapid; a decade is considered a long career. And with evolving game systems and technology, development companies perform the equivalent of building the camera every time someone wants to make a movie.

Carnegie Mellon was an early creator of the interdisciplinary teaching model that many schools, including R.P.I., have adapted. "It's become pretty well understood in the industry that communication and collaboration among people in different disciplines is the key to great content," says Professor Schell, who was creative director at the Walt Disney Imagineering VR Studio before he joined Carnegie Mellon. "Our program is completely focused on finding people who are already excellent at something" - be it art or technology - "and teaching them to innovate and collaborate with people outside their disciplines." He notes that the design stars who create best-selling games "tend to be generalists."

The most recent graduate program to make a splash is the Guildhall at S.M.U., a unit of Southern Methodist University in Dallas. That seed was planted when Texas game industry entrepreneurs approached the university to suggest creating a program to infuse the local industry with highly developed talent.

Before establishing the Guildhall for the university, Peter E. Raad, a mechanical engineering professor, says he wanted to make sure he "wasn't starting something that would have a negative impact on our children," by encouraging more people to get into the work of designing blood-fests of gunfire and apocalypse. Industry leaders made it clear that they were looking for entirely new forms for game players of all ages, cultures and sexes.

Mr. Raad is aware of those who doubt whether game development belongs in a university, just as their predecessors once questioned film school.

As he studied digital games, Mr. Raad says, "I became convinced that what we had stumbled upon was not simply a form of entertainment or mindless, endless games, but rather what I believe is a form of human expression. I also began to discover how pervasive and powerful this industry is, how deeply it has penetrated our society. To me, games are a primal form of community building, and now we have to understand how they are being mediated by technology. Our goal is to instill in students a broader understanding of that power and the social responsibility that comes with that."

S.M.U.'s 18-month certificate program (soon to become a 21-month master's degree) admitted its first class in July 2003, only 11 months after the first conversation that led to its creation. It's an extreme example of how "academics is racing to catch up with the games industry," in the words of Jason Della Rocca, executive director of the International Game Developers Association. It's an industry where there are more applicants than jobs, he says, "in the same way that everyone wants to go to Hollywood or work in music instead of working in a bank."

But he predicts openings will continue to expand, as the task of developing games for new systems demands larger and larger design teams. Defenders of gaming education argue that one reason corporate game design is so inefficient, and design teams so overworked, is that companies are full of hyper-specialists who don't speak one another's languages and have no one trained to manage them. That's exactly what students in interdisciplinary university programs are learning.

"Five years from now we think there will be four times as many" bachelor's degree programs, says Mark Claypool, who directs the undergraduate game development major that Worcester Polytechnic Institute in Massachusetts established this year.

Professor Schell of Carnegie Mellon, currently the chairman of the International Game Developers Association, opposes undergraduate majors. He says that he believes there will be misspent energy among students who think they can make games because they love playing them.

But Professor Destefano of R.P.I. argues that an undergraduate's open-mindedness affords the best opportunity to mold broadly educated generalists. The career-minded gamers "come to all the classes," he says. "They do all the work." He can boast about students like Chelsea Hash, an artist who wants to create animation for games and movies. "Before I came here, I knew fine arts and had a passing knowledge of computers," she says. "Now I could build a computer. I feel like I can be so much more functional."
Ian Stead, a recent graduate and Omega Worlds veteran who designs cellphone games, says this: "I'm not really into fashion design or hairstyles. I'm not really into architecture. But all these things matter when you're trying to animate a game. I walk through the world now, and I think, 'How would I get the shine from that car? What are the most important surfaces in this room? How can I faithfully re-create them with the smallest amount of data?' It changes the way I see."

R.P.I. is betting that the major will help it attract the kind of students it seeks - those who are both creative and technically minded. Applicants can expect to be asked to submit portfolios that demonstrate they are more than recreational gamers. Ms. Ruiz notes that even now freshmen arrive at R.P.I. having already created entirely new games, variations built on commercially available digital games or sometimes game engines or 3-D digital renderings.

Formal university-level education for game developers is so new, Professor Schell says, that it's too soon to say which combinations of coursework, research and internships will be of the greatest long-term educational value. "Right now," he says, "we measure our success in whether graduates get the jobs they want, keep the jobs they want and excel at the jobs they want."

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