

Educational institutions take the initiative. The innovative Academic Initiative from IBM supplies the tools, and universities from around the world supply the talent



Do more, with less money. For corporations, it's the way things are. But for educational institutions around the world, this is the way it's always been. Finding money for new, innovative programs is always a challenge.

Information technology and business-related schools are now challenged to develop curricula that offer students a practical combination of business and technical skills.

Studies indicate almost half of the IT professionals who understand large systems plan to retire over the next few years. Enrollment in technical curricula is declining significantly and fields of study such as data analytics, business and security analysis, and systems integration are not producing enough skilled people to meet even current demands.

Of course, funding is always an issue. For example, the Pentagon's annual funding for computer research at universities stood at US\$207 million in 2002 and, by 2004, had fallen to US\$123 million.

Today, too many students leave computer science departments of colleges and universities around the world without the skills needed to separate themselves from other candidates for jobs in the industry.

“We used to graduate one student in this field every few years. Now, we graduate 10-12 per year. IBM provides the kind of support that makes our graduates attractive to corporations all over the country.”

- Dr. Dennis Gendron, vice president of technology and administrative services, Tennessee State University

Why is this? Particularly, at corporations with large mainframe systems and equally large complex business processes, students have a difficult time getting experience with these systems, or training in these computing environments.

Furthermore, over the next few years, more people affiliated with corporate IT departments will need to assume more business-oriented roles, focusing not so much on computer hardware and software, but rather on corporate strategy, personnel and financial analysis.

As always, existing technologies constantly evolve and new ones arise, such as open standards. The need for professionals who understand new and evolving topics such as service oriented architectures, model-driven development, and business process modeling continues to grow rapidly.

How do universities use the program?

Educational institutions all over the world have become quite competitive in the never-ending search for funding. These days, everyone is looking for a competitive edge. Educators around the world are discovering an innovative way to get the tools they need to equip their students with the proper skills to enter the job market after graduation.

The IBM Academic Initiative provides open standards, open source and IBM technologies, and educational resources that help faculty and students learn the latest IT industry methods, concepts and software tools. It is also a major sponsor of the Shared Software Infrastructure (SSI) Program for Open Curriculum Development.

According to Dr. Dick Simmons, Professor, Department of Computer Science at Texas A&M University, “The IBM Academic Initiative gives us access to the tools we need with a license. Software engineering is the capstone course of our program. In it, seniors and first-year graduate students must use everything they’ve learned. We couldn’t do this without industry tools. It requires enterprise software and it’s not out-of-the-box.

“Until now, what has kept this software from being used in the classroom has been that instructors don’t know how to use it. We want students to learn to use these tools—all together and all at once—in one semester. Most graduates are recruited and hired by Fortune 1000 companies,” Simmons noted.

Dr. Simmons goes on to say, “Today, a lot of coding is off-shored. We want our students to be more than

simply good coders. We want them skilled in all phases of a software development project. From the upstream direction, that is, ‘What does the customer want?’ (for example, requirements gathering, use cases, and specifications) to the downstream direction, that is, ‘Did the customer get what they wanted?’ (for example, quality assurance, testing, acceptance testing, defect tracking, configuration and change management). This work is in demand.”

IBM Academic Initiative impact

Dr. Dennis Gendron, vice president of technology and administrative Services at Tennessee State University, agrees. “We used to graduate one student in this field every few years. Now, we graduate 10-12 per year.

“And these are not for sales or short term-type jobs,” Dr. Gendron added. “These are management-track positions, some paying \$60,000 a year or more. We are producing students certified in IBM Lotus Notes®, IBM DB2®, Open Source and Java®.”

A long-term commitment and successful partnership

At the University of North Carolina at Chapel Hill (UNC-CH) the Academic Initiative is the core element between IBM and UNC-CH, and leads to other

interactions between people of both organizations that are beneficial to all. Dr. John Smith, Professor of Computer Science at UNC-CH explains, "Students coming out of the Java 2 Enterprise Edition (J2EE™) course get multiple offers from top companies around the country. Being able to work with industrial-strength software, the enterprise computing course provides them with the opportunity to build systems with thousands of components.

"It could enable a school to meet the challenge as to whether technology will remain a major factor in the US economy or will be outsourced."

At the Worcester Polytechnic Institute (WPI) in Worcester, MA, Professor Gary Pollice is a firm believer in getting students access to industry-standard development tools.

"It is important for students to be exposed to as much of the technology they are going to need when they enter the workforce. WPI students are known for being able to hit the ground running after graduating," said Pollice.

"In the past two years, IBM has sent guest lecturers to talk about Eclipse and other new tools, how to build software plug-ins, and exposed students to high quality software."

Pollice continues, "For me, it has provided a set of tools I can use to collaborate on projects with other universities. Other professors use products like DB2 and IBM PurifyPlus™. This is an on-going collaboration between IBM and WPI, depending on the course content."

He added, "WPI is building a software engineering curriculum with an increased breadth of offerings aimed at helping students get the information about what is out there, what tools are available, how they are used by major corporations, and what the people are like."

Innovation in education

At the University of Massachusetts Amherst (UMass), computer science isn't just for computer science majors. Charles Schweik, assistant professor of Natural Resources Conservation and the Center for Public Policy and Administration at the school explains, "The Open Source laboratory has been operational for more than a year and is the center of a new atrium space in the main building of the College of Social and Behavioral Sciences."

Schweik continues, "Also, last October, working with the IBM Academic Initiative and Paul Coates of IBM, we offered a presentation on open source and open standards

and also a "Linux® Install-Fest" in the new UMass Learning Commons. More than 40 students and faculty attended. We presented a whole new group of students in the social sciences to open source technologies and Linux."

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- Charles Schweik, assistant professor of Natural Resources Conservation and the Center for Public Policy and Administration, University of Massachusetts, Amherst

He notes, "IBM has really helped by providing the equipment, and by supporting the student intern to support the lab and help with special workshops. The IBM Academic Initiative also helps by presenting workshops at the Learning Commons. We are in the process of planning what we might do next, possibly a workshop on open source Web-database technologies."

Schweik concludes, "According to IBM, this may be the first laboratory of its kind in the nation, serving students in the social and behavioral sciences and the IT minor students, in general.

There is an innovative link between this lab and my open source curriculum efforts, with the IT minor program, and the new Library Learning Commons which has the potential to reach many more students. But it will take time.”

International scope

Just as the program has expanded to include students in other areas of study, it has also spread around the world. In Germany, for example, Professor Dr. Edda Pulst, University of Applied Sciences, Gelsenkirchen, describes her schools involvement with the IBM Academic Initiative, “We have been involved with the IBM Academic Initiative for four years. The IBM Academic Initiative keeps us close to the innovation, close to the most current tools and applications.”

Dr. Pulst states, “Our students know the latest developments of one of the most innovative firms. When they enter the business world, they remember the tools and application context. They can work hands-on so that they can apply their knowledge. We are mainly working with globally-active firms, and those firms use IBM tools. My students know the software and are, therefore, one step ahead.”

This is not the only university in Germany where the IBM Academic Initiative has supplied students and

faculty alike with an innovative spark to their IT careers. At Universität Jena, Lehrstuhl für Datenbanken und Informationssysteme, Professor Dr. Klaus Küspert has seen what the IBM Academic Initiative can do as well.

He notes, “For more than seven years we have been working with IBM. The Academic Initiative helps us develop computer science curricula with a strong emphasis on industrial needs. There is a broad acceptance of DB2 skills in industry. Overall, the IBM Academic Initiative greatly improved the quality of our teaching platforms and materials.”

Dr. Küspert concludes, “The DB2 certificate is an important cornerstone in the process of our students’ computer science education. Students get familiar with the IBM laboratories by doing internships. Students also frequently do their thesis work with the cooperation of IBM staff members.

“For us, the direct interaction with these IBM technical professionals is most helpful. Moreover, we have many IBM staff members giving lectures and presentations.”

He adds. “Frequently, we receive specific requests from industry recruiters for students who are

certified in the use of specific tools. Certification is definitely a benefit on the resume of any student.”

And the price is right

Nothing sounds better to an educational institution than the words, “At No Charge.” With the IBM Academic Initiative, educational institutions around the world get full, unlimited licenses for IBM software

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*- Professor Dr. Edda Pulst,
University of Applied Sciences,
Gelsenkirchen, Germany*

intended for academic use or non-funded research. In addition to support for open source, IBM also provides onsite training, courseware and tutorials, as well as IBM middle-ware and tools—at no charge.

In the Department of Information and Electrotechnology, Fachhochschule Dortmund (University of Applied Sciences), Professor Dr. Burkhard Igel says it best, “Based on our

experience with IBM VisualAge®, we decided to take advantage of the Academic Initiative because we got to use Open Source software for free, especially Eclipse. I think this support of universities by IBM is unique. It is great that the company provides access to open source and IBM software at no charge. I really appreciate the commitment of IBM to support universities with the offers of the IBM Academic Initiative.

“Our students profit from the IBM Academic Initiative by studying open source software over the course of several years. By working with this kind of software, they prefer working with the IBM Web Application Developer, instead of comparable, but unfamiliar, tools,” says Dr. Igel.

He adds, “I find it most helpful that I can use the tools without having to buy them—as a university we do not have much money for such investments. For our students, it is very helpful that they can access the presentations and accompanying commentaries via the Internet. IBM does much better than many of its competitors. Many of our graduates find employment because of their experience in working in the Eclipse environment.”

The final grade for the IBM Academic Initiative

No matter what school we visit. No matter how many professors and school administrators we speak with. When we ask, “What grade would you give the IBM Academic Initiative?” The answer is always the same. The IBM Academic Initiative gets an “A” —for cost savings, for an innovative approach to education, and for providing the tools needed to transfer skills and prepare students to take their place in the business world.

Shared Software Infrastructure Program

How do universities provide students with experience in the business process and project management tools currently used by the software development industry? Until now, most universities had neither access to this kind of software, nor the expertise needed to install, configure, and use it in the classroom environment. Programs like the IBM Academic Initiative are helping change all that.

To further remedy this situation, the Shared Software Infrastructure (SSI) Program, sponsored by IBM, Intel, and Avnet, was created in partnership with Texas A&M University. The SSI Program is a community of academia and industry that has the mission of enabling the use of enterprise-level

tools and technologies in the classroom through development of open source curriculum and the sharing of expertise and software infrastructure.

The IBM Academic Initiative provides tutorials, examples, courseware and accelerated classroom collateral to participating faculty. This allows schools to introduce new or augmented courses, using enterprise-level tools and technologies, to professors as well as students.

The SSI Program connects the software industry to the academic community and makes advanced software knowledge more readily accessible to their students. The SSI Program is also a forum for member universities to share expertise and course materials. By helping develop such key courseware, the SSI Program, in partnership with the IBM Academic Initiative, enables universities to produce graduates ready to join leading companies in the software industry — and contribute to their success immediately.

For more information:

To learn more about the IBM Academic Initiative, visit: **ibm.com/university**

To learn more about how educational institutions around the world are using the IBM Academic Initiative, visit the SSI Program Web site at: ssi7.cs.tamu.edu/ssi/



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