FORMING A DIALOGUE WITH ACADEMIA: INDUSTRY REQUIREMENTS VERSUS ACADEMIC PROGRAMS

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Many universities have created forums to encourage dialogue between academic departments and related industries. These industrial advisory boards are orchestrated in an effort to maintain currency and quality in their programs. The boards usually consist of vice presidents and directors, representing manufacturing, software, broadcasting, imaging, consulting, and finance industries. Regular meetings bring faculty and board members together to bridge the gap between what industry wants and what the university teaches. Often, the consensus after such meetings can be summarized as:

- Industry is irritated at academia for not focusing on practical subjects.
- Academia is irritated at industry for being narrow and shallow.

In recent meetings, however, the discussion seemed to be more constructive, raising interesting and important issues about the relationship between industry and academia.

This article consists of three parts. It begins by summarizing the issues raised concerning the needs of in-

**PAYOFF IDEA**

Many universities have established forums to encourage dialogue between industry and academia, in an attempt to bridge the gap between what the former wants and the latter teaches. These meetings are often unsuccessful, with industry annoyed at academia for not focusing on practical subjects, while academia sees industry as narrow and shallow. For the discussion to be more constructive, this article presents a new model for collaboration between industry and academia, built around a shared learning repository.
dustry and the goals of computer-related academic programs in the form of a synthesized dialogue between industry and academia. The authors' observations about recent trends and opportunities make up the second section. The authors then outline their recommendation for a constructive model of collaboration between industry and academia.

AN ADVISORY BOARD MEETING

Industry: I must say, your labs and computer facilities are very impressive. But, I do wish that you would teach your students more real-world skills. For example, why are you not using the operating system and the development suite, version n.m? I need employees with those skills.

Academia: I am not in the training business. I use the tools that best illuminate the theory and principles on which the discipline is based. (Besides, other employers use a different operating system and have switched development tools to version x.y.)

Industry: Well, at least the student should have been exposed to the specific technology on which I have standardized.

Academia: To do that I would need a lab for network administration. Can you help?

Industry: That sounds reasonable. I will consider funding it if you also prepare your students for the industry X certification exam.

Academia: I suppose I could include that material, but I teach the student principles that are applicable to other vendor products as well. I also emphasize the social and ethical issues related to the field.

Industry: That is quaint. It is good that someone is doing that. But what has happened to writing and business communication skills? I have noticed a dramatic decline in recent years.

Academia: So, you want more liberal arts classes?

Industry: No, I want more technology-specific classes and I want people who are proficient business writers.

Academia: Did you not say the same about math and science?

Industry: Yes, I hope to see more math that relates to my industry, and more science, as long as it is practical and applied.

Academia: Are there nontechnical characteristics you look for in a prospective employee?

Industry: The business work is changing dramatically. I need people who can work in teams.

Academia: I include team projects in many lab classes.

Industry: Great. Is there a way you can give your student a team experience involving team members with different skills and backgrounds?

Academia: That would be difficult. The students in my department are here because they are interested in the same subjects. The
university does not encourage for-credit projects involving students from different departments. To do that, I would have to get faculty from the different departments working together. And that is not likely to happen.

Industry: My operations also involve divisions and partners from many countries. I need people who can function in an international setting.

Academia: I do have many students from other countries.

Industry: That is not enough. They need to have an appreciation of the culture, work norms, and social structures.

Academia: Perhaps some sociology courses would be appropriate.

Industry: I would prefer teams of student with diverse professional and cultural backgrounds working on an industry-specific project related directly to my product development operation, and supervised by your faculty.

Academia: I will see what I can do …

Industry: Last year, I hired a group of students from your fine arts program. I found that they had the people skills I need and did very well in my product teams. However, I did have to spend a lot of time and money teaching them the technology I use.

Academia: So, you want me to teach art design?

Industry: Maybe not art per se, but the values, creative thinking, and “critical eye” that these programs seem to develop are useful.

Academia: I always have trouble keeping up with the changing technology. I build a curriculum based on the latest theories, and, before the student graduates, the theory has been replaced by a better one. Is there anything you can do to help me keep my curriculum current?

Industry: I was going to ask you the same thing. I train my employees on the latest industrial practices, and before they become comfortable with them, our competitors have introduced a new approach that threatens our established markets.

Academia: Well, change is one thing we have in common.

EDUCATIONAL TRENDS

Up through the mid-1980s, parents were interested in seeing that their children obtained a well-rounded liberal arts education. College was a place for socialization and development of the life skills needed to understand and function in a society. It was a one-time experience — not to be repeated.

Two major shifts changed the face of higher education. In the first, an economic shift brought the nontraditional student to the university. Older people facing career changes brought on by layoffs or changes in technology came back to college. These students are not looking for the “college experience.” Instead, they want the skills and knowledge to build
successful careers. And this is not a one-time experience; it is a continuous requirement.

The second shift was in the things the culture values. Parents and their children are more interested in seeing that the children get good jobs. The value of a well-rounded liberal arts education declined in favor of a career-focused education consistent with the needs and demands of industry. Whether these shifts are beneficial or harmful to society as a whole is not the subject of this article. Here, the concern focuses instead on the demands that these changes have made on academia and industry, and how academia and industry can respond constructively.

Everyone knows that acculturation provided by the university has value. It is probably not in the best interest of industry, the university, or the individual to have a workplace full of “techno-weenies” with no background in history or literature. However, the lines between work and learning are becoming blurred. Opportunities and obligations face all players.

A COLLABORATIVE MODEL

A hybrid model is required in which industry and universities collaborate, each building on its strengths and relying on the other for specific support. Industry-defined technical certification programs answer the specific needs of employers. Universities provide the basic technical background — science, math, and liberal arts foundations. Jointly applied research projects provide a structured environment where technical skills and basic knowledge are applied to practical and illustrative objectives.

Industry and academia have complementary needs. Much like other industries that are finding it profitable to form strategic alliances along supply chains, industry and academia can create supply chain relationships to effectively address these issues. The trend is clearly toward closer relationships between business and universities, with both playing important roles in satisfying the individual’s need for life-long learning.

The environment that is envisioned is built around a shared learning repository. It is convenient to think of it as a Web site; but in reality, it is a multi-technology, geographically distributed, and coordinated collection of information resources. These resources include learning modules, job aids, course material, white papers, interactive discussion areas, research proposals and results, personal portfolios, technical reference material, and collaborative project libraries.

Money flows through the environment in the form of student- and industry-paid tuition, as well as research grants from industry and foundations. Other resources include faculty talent, industry expert participation, and technical resources (purchased or donated by industry).
All partnership models must have clear benefits for the institutions involved, and for the individuals likely to participate. Benefits to industry include educational resources supporting employee development (perhaps through a corporate university), a source of highly qualified employees, and an environment where applied research projects can be quickly organized. The individual professional benefits by having access to a community of practice from which he or she draws insight and stimulating exchange, and which can be a potential source of extra income from an occasional teaching assignment.

Universities benefit by having a wider student market (including employees returning for continuing education); a potential source of adjunct instructors; a source of research funding; an opportunity for practical, industry-related projects for faculty and students; and communication with industries likely to hire graduates. The individual professor benefits by having an environment where educational material can be developed and refined. There is also an exchange with industry experts, an opportunity for industry consulting and applied research, and a source of industry-based projects for his or her students.

To illustrate the concept, visualize a university and an industry partner (see Exhibit 1). A manager recognizes that a group of employees needs to expand its skills in a particular emerging technology. The manager enrolls the employees in an online community of practice sponsored by the organization’s university partner. The university provides access to a repository of the latest developments and ideas. The employees and manager participate in useful discussions with professors and industry experts from around the world. The exchange helps clarify how the technology might fit into the company’s development plans.

During the discussion, one of the participating professors and one of the senior employees identify an interesting application. They write a proposal for an applied research initiative and present it to the company and to the university. The funding is approved, and the two begin working together.

Another employee has demonstrated impressive mastery of the subject, and has the credentials necessary to teach one of the courses typically assigned to the professor. The university hires this employee as an adjunct to teach one class, in order to help free up the professor’s time for the approved research project.

The project also brings in several students who have shown promise and interest in the area. One of the students is nearing graduation and the work on the project piques her interest in the company. This student applies to the company and is hired upon graduation, working for the manager who initiated the university’s participation in the community of practice. The student already knows several of her new co-workers because they were attending distance classes in her degree program as part of the company’s employee development plan.
The research effort produces some interesting results, as well as educational material that is immediately used in related university classes. Most of these classes are team based. One of the student teams develops a performance support tool that promises to be useful to workers applying the research results. The support tool is part of the repository and accessible to the community of practice. The manager begins using the tool in his operation. Another student project team monitors the use of tool and uses the results of the study as part of the class requirement.

Thus, the results of the dynamic relationships are beneficial to all parties:
The manager now has a motivating means of keeping his employees up to date, as well as a means of experimenting with promising ideas, and a source of interested and qualified employees.

The senior employee can enhance his career with research experience and participation in the discussion with fellow professionals.

The student gets the opportunity to work on relevant projects and create relationships with potential employers and people working in her field of study.

The employee hired as an adjunct expands his professional range by teaching a college course. This work is made possible by the existence of the repository containing the best coverage of the domain that participants in the partnership have created to date.

The professor advances his career with the research project and contributes to his discipline.

The university has access to qualified adjuncts, research support, and faculty in constructive partnership with related industry.

In short, valuable and intriguing partnerships are possible between academia and industry. These partnerships will succeed if the focus remains on the interests of the learners. Financial and intellectual advantages are possible if constructive partnerships are formed along mutual supply chains. Industry and academia will both benefit from seeing each other as supplier and customer simultaneously.