

EDUCATING FOR THE FUTURE

A look at the future of technology as it relates to IT education

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Due to rapidly changing technology, there is potential for a mismatch between the skills required by business and those taught by universities. To gain insight into this problem, we ask the question "What is the future of information technology in the workplace, with particular regard to education?" We compare the skills required from the IBM Tech Trends report and the skills offered by the Businessweek Top 20 undergraduate business schools. We find a significant gap between the skills required in the workplace and the skills offered by the top 20 schools.

ABSTRACT

| Business Analytics | Cloud Computing | Mobile Computing |
|----------------------|-------------------|------------------|
| 1. Data mining | 1. Security | 1. Programming |
| 2. Unsure | 2. Unsure | 2. Security |
| 3. Business analysis | 3. Development | 3. Java |
| 4. Training | 4. Training | 4. Development |
| 5. Data analysis | 5. Virtualization | 5. Android |
| 6. Data mgmt. | 6. Java | 6. iOS |
| 7. Statistics | 7. Programming | 7. Platforms |
| 8. Integration | 8. Networking | 8. Web design |
| 9. Programming | 9. App dev | 9. HTML |
| 10. Reporting skills | 10. Management | 10. Networking |

SKILL RESULTS

Based on our quantitative cross-sectional study and qualitative comparative research, we produced a final ranking of Bloomberg's Top 20 schools that reflects their students' preparedness for the workforce (see ranking table). Overall there is a very diverse range of scores for the universities and the particular trends. The answer is not a clear-cut 'yes, students are prepared' or 'no, students need more work'. According to the results, some universities are doing a better job emphasizing the same skills that the developers who responded to the IBM survey recommended. Others may need to invest substantially in IT programs and skills so that their students remain competitive. It would be safe to say that all universities have significant areas for improvement especially in the non IT major specific skills which would readily transfer from industry to industry and between different job functions.

RESULTS

The four major technology trends explored by IBM's "Tech Trends Report" are cloud computing, business analytics, mobile computing, and social business.

- 1) Major corporations are developing **cloud-computing** systems to share resources and information quickly and effectively
- 2) **Business analytics** uses data, statistics, and modeling to better understand past events and to predict future events.
- 3) **Mobile computing** has transformed from handheld and notebook computers to smartphones and tablet computers. This indicates a shift to a multi-device user experience.
- 4) IBM's report defines **social business** as businesses employing social networks to improve their effectiveness as a company and their relationships with their customers.

LITERATURE REVIEW

| RANKING BASED ON RESULTS | | | |
|----------------------------------|---------------------------------------|-------------------------------------|------|
| CORE BUSINESS CURRICULUM RANKING | | TECHNOLOGY MAJOR CURRICULUM RANKING | |
| Rank | School Name | Percentage Points | Rank |
| 1 | University of Notre Dame | 96 | 1 |
| 2 | University of Michigan | 89 | 2 |
| 3 | Massachusetts Institute of Technology | 66 | 3 |
| 4 | Washington University | 60 | 4 |
| 5 | University of Texas | 60 | 5 |
| 6 | Indiana University | 58 | 6 |
| 7 | Boston College | 50 | 6 |
| 8 | Emory | 46 | 8 |
| 9 | University of North Carolina | 44 | 9 |
| 10 | Babson | 43 | 10 |
| 11 | Georgetown | 42 | 11 |
| 12 | University of Virginia | 41 | 12 |
| 13 | University of Pennsylvania | 35 | 13 |
| 14 | Cornell University | 35 | 14 |
| 14 | Bingham Young University | 35 | 15 |
| 16 | UC Berkeley | 33 | 15 |
| 17 | University of Richmond | 25 | 15 |
| 18 | Villanova | 22 | 15 |
| 19 | Wake Forest | 19 | 15 |
| 20 | New York University | 14 | 15 |

RANKINGS

Schools need to update their skills to reflect the changing needs of business. There is room for improvement at all universities.

Bloomberg *BusinessWeek* should consider including technology as a criteria for their undergraduate programs. Since technology is the future for business, it should be valued in undergraduate curriculums.

Universities should create committees to determine what skills are most valued in the workplace. There should also be annual audits of the curriculum to ensure that education is keeping up with the progress of technology.

Students should be proactive to learn the necessary skills for their future industry and take the appropriate classes and electives.

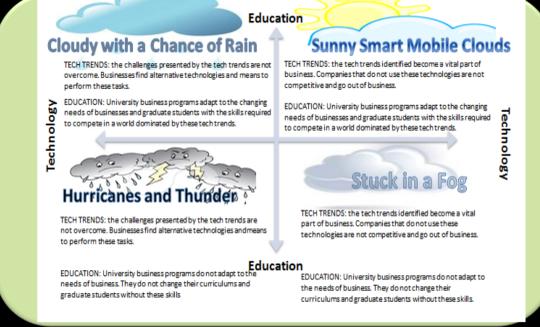
IMPLICATIONS

The research design consists of both **quantitative** and **qualitative** studies. First is a quantitative **cross-sectional study** that examines the "IBM Tech Trends Report" that contains data collected as part of a questionnaire run by IBM. All of the responses were collected at a single point in time. The qualitative study consists of a **comparative study** that ranks universities by the amount of IT skills taught in their curriculums. The list of universities comes from Bloomberg *Businessweek's* Top Undergraduate Business Schools. Each university will be compared to each other and measured by the number of highlighted skills present in their course descriptions. These two methods allowed us to make conclusions about the discrepancy between skills needed in the workplace and skills taught by universities.

METHODS

| Percentage of Skills For Each Trend By School | | | | | |
|---|---|---------------------------------|--------------------------------|---------------------|---|
| Summary Table | | | | | |
| University | Percentage of Skills For Business Analytics | Percentage of Skills For Mobile | Percentage of Skills For Cloud | University | Percentage of Skills For Business Analytics |
| ND | 41% | 31% | 24% | ND | 41% |
| UofM | 19% | 0% | 10% | UofM | 19% |
| MIT | 22% | 11% | 13% | MIT | 22% |
| UofT | 19% | 11% | 5% | UofT | 19% |
| Cornell | 23% | 17% | 16% | Cornell | 23% |
| UofC | 38% | 25% | 26% | UofC | 38% |
| Villanova | 9% | 8% | 5% | Villanova | 9% |
| North Carolina | 22% | 0% | 16% | North Carolina | 22% |
| MIT | 31% | 17% | 18% | MIT | 31% |
| Georgetown | 25% | 6% | 11% | Georgetown | 25% |
| Bingham Young | 16% | 6% | 11% | Bingham Young | 16% |
| Babson | 16% | 0% | 3% | Babson | 16% |
| UC Berkeley | 16% | 6% | 11% | UC Berkeley | 16% |
| Wash U | 28% | 14% | 18% | Wash U | 28% |
| UofV | 4% | 3% | 5% | UofV | 4% |
| Boston College | 22% | 17% | 11% | Boston College | 22% |
| University of Texas | 25% | 17% | 18% | University of Texas | 25% |
| Indiana | 26% | 22% | 6% | Indiana | 26% |
| Wake Forest | 19% | 0% | 0% | Wake Forest | 19% |
| Babson | 19% | 11% | 13% | Babson | 19% |

UNIVERSITY RESULTS



SCENARIO ANALYSIS



Phone



Mail



Safari



iPod



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