Encouraging Successful Transition in Computer Science from Community College to University

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Abstract

Factors impacting successful transition of diverse student populations from urban community colleges to universities for a 4-year degree in Computer Science are identified. A significant ‘jagged edge’ or curriculum mismatch between community college and 4-year university students is observed, specifically in Java and other computer science courses. This mismatch is exacerbated by financial constraints, limited transferable credits, and lack of community college support for students.

Significance of Topic

Today’s community college student is different from years past, as today’s students are from diverse backgrounds, younger, better prepared, and often first-generation college students. Working with local community colleges, an alternative has been developed which addresses the major barriers to successful transition from community college for Computer Science students.

The transition from a 2-year to a 4-year school in Computer Science can be defeating.

- ‘jagged edge’ or curriculum mismatch between community college and 4-year university
  - Different programming languages
  - Different course requirements
- Credit for courses taken does not correspond to knowledge acquired - either material at university is trivially redundant, or assumes prior knowledge missing from transfer student experience
- New logistics and university environment intimidating and overwhelming for community college campus unfamiliarity

Identification of Factors Affecting Successful Transfer to 4-year Program

1. Curriculum content, quality, and standards of 2-year Associate in Science Programs and 4-year Programs
2. Opportunities for community colleges to increase diversity in the 4-year school and the professional field after graduation
3. Sources of data on community college and transfer students and the need for more systematic data collection

Example: Curriculum Content and Factors

Key curriculum topics between Community College and University environments identified:

- Assembly language programming
- Operating systems
- Database management
- Programming languages

Solution: Faculty collaboration including course objectives, syllabi and textbooks

- Identifies topics covered
- Identifies areas of overlap and exclusion between community college and university curricula

Future Plans

- University faculty visits to community colleges and vice versa, to encourage idea sharing and familiarity with research and professional opportunities for students and faculty
- Pre-event and post-event questionnaires for student visitors to university campus, in order to determine how their ideas regarding 4-year degree completion have changed as a result of the campus visit

Summary

- University faculty visits to community colleges and vice versa, to encourage idea sharing and familiarity with research and professional opportunities for students and faculty
- Pre-event and post-event questionnaires for student visitors to university campus, in order to determine how their ideas regarding 4-year degree completion have changed as a result of the campus visit

References


Educational Population Change

Community colleges: Accessible locations, reasonable tuition, growing faster than 4-year schools. Academically talented students are beginning coursework at community colleges. Disproportionate number of immigration, first-generation citizens, and minorities attend community colleges.

Example: Recruitment and Retention

Community college student profile includes:
- Triviality of subject matter
- Lack of career opportunities
- High dropout rates
- Lack of transfer opportunities

Solution: University visit by Community College students and Faculty

Hosting Community College students and faculty during a University campus visit to the Computer Science Department provides an opportunity to discuss tuition affordability, scholarship opportunities, academic career opportunities, and illustrates logistical feasibility of parking and locating classrooms and CS department offices.

Local ACM Student Programming Contest

- Hosted at Kean University April 15, 2007.
- Event organized and run by Kean Student ACM Chapter
- Contestants include Kean University students and Community College student visitors.
- Contest problems and judges composed of Community College and University faculty.

ACM Contest/Campus Visit Encouraged

- Peer-to-peer conversation between University and Community College students
- Including students who transferred to Kean in years past

References