and other applications. Further, the goal of AP CS is to identify what colleges and universities actually do in their first year, so that high school students can get college credit. While we might debate some details, it seems plausible that AP CS is quite successful in capturing what colleges expect in CS1/CS2, and the syllabus is more focused than in many university courses.

If our courses are all above average, if AP CS successfully outlines what most CS1/CS2 courses actually do, and if we hear about introductory (or AP CS) courses not connecting with students, then we may need to rethink how our courses are really going. If we think "it's not my problem", then we should ask how we know that. Are we engaging in wishful thinking, or do we have solid evidence that our courses actually are going well?

In probing evidence and possible success further, the keynote talks at ITiCSE 2007, together with recent discussions, have raised issues for me about what images are being presented in CS1/CS2. For example, here are some questions for consideration:

- To what extent do introductory courses reinforce or challenge the cultural image that computing is surfing the Web, playing video games, and hacking?
- Do CS1/CS2 courses emphasize programming details to the exclusion of other topics, even though professionals commonly say that computer science is not the same as programming?
  - - Do assignments only involve writing programs?
  - - Do tests ask for code (not explanations, comparisons, analysis, ideas for experimentation, possible simulations, design, etc.)?
  - - Do evaluation questions focus on idiosyncrasies of language syntax or ask students to merely mimic the same constructs they have done numerous times previously?
- Do CS1/CS2 courses and laboratory exercises highlight solitary, individual work (with collaboration not allowed), or do some activities promote the image that teamwork is a fundamental environment for software development?
- Do examples and assignments in CS1/CS2 appeal to a wide range of students or only a narrow group? For example, an emphasis on games is well known to turn off many women and folks from under-represented groups -- a population many departments are trying to attract.

As one considers image, it is worthwhile to observe that, in some cases, just a recasting of a problem can have a significant impact on the image being presented. To illustrate, consider the image presented in these two equivalent problems:

- Conduct 1000 simulations to count the number of times a coin should be tossed before both a head and a tail occur.
- A couple plans to have children until they have at least one boy and one girl. Conduct a simulation of 1000 couples to determine the number of children the couple might have.

In summary, I invite readers to consider what images of the discipline CS1/CS2 really present at their institutions. For example,

- What is actually required on assignments and tests?
- What experiences do students really have?
- How much of the course is syntax and straightforward practice?
- If simulations are important, are these in CS1/CS2?
- Do CS1/CS2 discussions and assignments hint at real applications? (Actual applications may be too complex for beginners, but connections and directions are possible.)
- Do CS1/CS2 examples suggest possibilities for computing to meet social needs, help people, improve the quality of life?

Of course, it is not feasible to pack every possible topic and theme into just a couple courses. However, every CS1/CS2 course inevitably portrays an image of the discipline, and considering that image may have an important impact on the recruitment and retention of students.

Acknowledgment: Many thanks to Steve Cunningham for his feedback on an early draft of this column and for his insights and contributions.

Community College Corner

Visions of a Future … Without Forgetting the Past

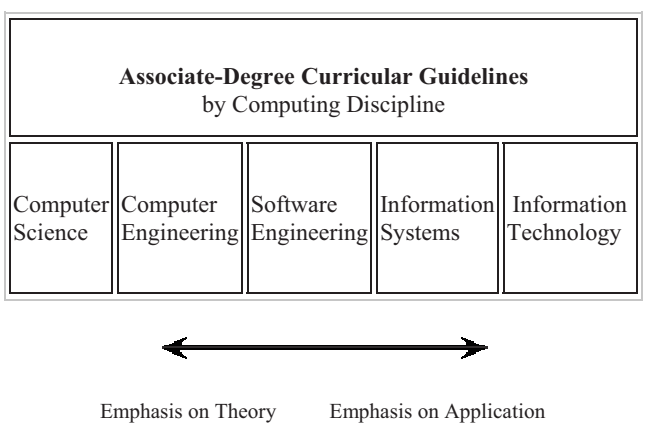
Elizabeth K. Hawthorne

In his last column, *Reflections on a History*, Robert D. Campbell bade farewell as chair of the ACM Two-Year College Education Committee (TYCEC). On behalf of all committee members past and present, it is my pleasure and privilege as incoming chair to thank Bob for all his countless hours of service to the TYCEC over the past fourteen years. As chair for the last six years, Bob lead the

committee to an exceptional record of accomplishment and by doing so continued the fine reputation of the committee. We extend our deepest appreciation for your personal dedication and noteworthy contributions. Likewise, we are so delighted to have ongoing access to your unique talents and vast experience as you remain a committee member and invaluable mentor. You most certainly will be a hard act to follow. I will endeavor to carry on your momentum as well as those of past chairs to promote this committee's extraordinary history into the foreseeable future.

It is truly an honor to serve as the next chair of the TYCEC; here is a brief synopsis of my professional background. I was invited to join the TYCEC in 2001 and have enjoyed every moment of this collegial affiliation. Presently, I am employed by Union County College in New Jersey as a Senior Professor of Computer Science and by the University of Maryland, University College as an Adjunct Professor of Information Assurance. I hold a Ph.D. in Computer Information Systems from Nova Southeastern University in Florida, and I am a charter member of Nova's chapter of the *UPE* honor society. I also hold an industry certification in computer security – Certified Information Systems Security Professional (CISSP).

As a standing committee of the ACM Education Board, the TYCEC is chartered with all educational issues that affect computing at two-year colleges and in two-year degree programs. Its primary purpose is to provide curriculum recommendations in all areas of computing for such degree programs. The committee may also make recommendations on other educational matters affecting such programs. For three decades, the TYCEC has worked diligently to develop and maintain contemporary curricular guidelines in the time-honored disciplines of computing. See the diagram below. Some guidelines were specifically designed for transfer into upper division coursework, while others were intended for entry into the workforce upon graduation. All of these associate-degree curricular guidelines are freely available from the TYCEC's web site at <www.acmtyc.org>.



Padmasambhava, the wise teacher and scholar is often quoted, "If you want to know your past – look into your present conditions. If you want to know your future – look into your present actions." Over the next year, the TYCEC will be working concurrently on two important curriculum initiatives. Both efforts will include weaving vital security and information assurance topics into the computing curricula. One project involves updating the associate-degree computer science guidelines in conjunction with the ACM committee tasked with the five-year review of the 2003 Computer Science volume. The second project entails a major revision to the so named *Information Technology* guidelines.

The term information technology (IT) evolved in the 1970s, but according to scholars its basic concept can be traced back to the 1940s with the World War II alliance of the military and industry in the development of electronics, computers, and information theory. Over time this term has managed to mutate into many connotations and synonyms – information and communications technology (ICT), information processing (IP), information sciences and technology (IST), information systems and technology (also IST), informatics, and computing to name just a few – causing widespread confusion even among the best.

So given this magnitude of perplexity, how is a committee to approach crafting curriculum recommendations for a nebulous body of knowledge? Generally employers of two-year college graduates are interested in a person who can either perform a certain *task* or fill a certain *job title*. So rather than embarking on a path that creates recommendations that fit into a tenuous category of computing or IT strata, we plan to focus our efforts on the industry perspective first, then attempt to associate appropriate relationships between student performance objectives and end-user abilities. The committee will divorce itself from the trappings of program or degree titles and instead will seek to map classroom and lab experiences into meaningful career opportunities for students and graduates.

The TYCEC is actively seeking new members to assist in broadening the vision of computing at associate-degree granting institutions both domestically and internationally. If developing computing curriculum interests you, please send a message to ehawthorne@acm.org or chat with me at SIGCSE 2008 in Portland, Oregon.

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Education Committee