

# ACM Education Board Annual Report for FY06

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## Executive Summary

This report summarizes the activities of the ACM Education Board in FY06 and outlines our priorities for the coming year. Our major accomplishments for this past year include the following:

- Restructuring the Education Board into a smaller executive body and a larger, more broadly representative Education Council
- Working with CSTA to support K-12 education
- Publishing three volumes in the *CC200x* series: Software Engineering, Computer Engineering, and the Overview report
- Concluding a Memorandum of Understanding with the IEEE Computer Society to define in more detail the responsibilities of the two societies in developing and publishing curriculum reports
- Establishing an Executive Committee with representatives from both the ACM and IEEE-CS to oversee the updating of curricular recommendations
- Releasing the final report of the Java Task Force
- Holding several meetings to strengthen our European ties
- Completing several milestones for the Two-Year College Education Committee

The challenges for FY07 include:

- Reversing declining enrollments in computing disciplines
- Fostering a positive image of computing among young people
- Updating the computer science curriculum guidelines
- Promoting new curricular themes and strategies
- Establishing connections with other disciplines
- Broadening European participation in computing education activities
- Enhancing the effectiveness of the reorganized Board and Council
- Increasing our visibility within the community

## **Section 1**

### **Summary of FY06 activity**

#### **1.1 Restructuring to create a separate Education Board and Education Council**

The most significant accomplishment in the last fiscal year was the restructuring of the Education Board into a smaller executive body that retains the name and a larger Education Council that brings many more perspectives to the table. The former Education Board included the chairs of all standing committees and representatives from a set of constituencies that expanded along with the discipline. Since those positions tended to attract people with expertise in a specific area, it was often difficult for the Education Board to achieve the comprehensive, high-level vision necessary to address the challenges of the computing field as a whole. By splitting the structure into the separate board and council, we can increase the breadth of participation in educational activities within the ACM while improving our ability to respond quickly to issues as they arise.

The reconstituted Education Board met for the first time in April. The new board is substantially smaller, declining from just over 20 members to the much more manageable size of ten. In the process, we were also able to add four new members to the Education Board and increase its diversity in several different dimensions. The Education Council

**Figure 1. Charter of the ACM Education Board (revised November 2005)**

#### **Scope**

The general scope of the Education Board is to promote computer science education at all levels and in all ways possible. The Board will be an executive-like committee overseeing the Education Council and will initiate, direct, and manage key ACM educational projects. This includes activities such as the promotion of curriculum recommendations, the coordination of educational activities, and efforts to provide educational and information services to the ACM membership.

The Board will oversee the work of the Education Council. This body will include representatives of all ACM committees concerned with accreditation, curricula, aid to educational institutions, and other educational activities.

#### **Executive Committee**

The voting membership of the Education Board is as follows:

- A Chair
- A Vice Chair
- At least five, and not more than ten, additional members.

Liaisons with other boards and committees within ACM will be invited to attend meetings in a non-voting capacity.

#### **Appointments**

The Chair is appointed by the ACM President. The remaining members are appointed as specified in Bylaw 7, that is, appointed by the Chair with the advice and consent of the President. The Past Chair will normally be appointed as a member. The Chair may also appoint non-voting members. The term of office for all members is as specified in Bylaw 7.

held its first meeting in June at the very end of the fiscal year. The Council currently includes 27 members beyond the Education Board, although we expect that number to grow slightly as we expand our international representation. The revised charter for the Education Board and the newly developed charter for the Education Council appear in Figures 1 and 2. The membership list for each body appears in Appendix A.

**Figure 2. Charter of the ACM Education Council (adopted September 2005)**

**Preliminary observations**

The first aim of the Education Council is to represent the broad education community within ACM. Through the standing and reputation of its members, it must provide a body that is able to offer high quality advice and guidance on all matters of significant educational concern to ACM. It will be important for Education Council members to keep abreast of current matters of educational interest and policy, and to have an eye to the creation of an ever better educational environment and educational experience for all those involved in Computing education.

**Mission**

The Education Council will be complementary to the Education Board. Its mission will be to

1. Provide advice and guidance to the Education Board on all educational matters of concern to the ACM
2. Assist the Education Board in the execution of its mission
3. Contribute to setting the agenda and the priorities for the Education Board
4. Provide a forum for communication on education matters among ACM constituents
5. Facilitate partnerships and initiatives among ACM education constituents

**Officers of the Council**

The Education Board Chair(s) will also serve as the Chair(s) of the Education Council.

**Membership of the Education Council**

The membership of the Education Council will consist of representatives of various relevant bodies as well as individuals. Decisions to appoint individuals to membership of the Education Council will be made by the Chair(s) of the Education Board. Members will ordinarily be appointed for a period of at most three years in the first instance, renewable for at most one other three-year term.

Representatives will be sought from SIGs and other agencies within ACM with a significant educational activity, and from individuals selected for the benefit and expertise they can bring. Consideration will be given to having members from constituencies outside of ACM once the Education Council and its *modus operandi* have become established.

**Mode of working**

Much of the activity of the Education Council will take place electronically. The Education Council will meet physically once per year.

**Annual budget**

The Education Board will include funding the for Education Council.

## 1.2 Supporting K-12 computing education

For the last several years, one of the high-priority educational initiatives for the ACM as a whole has been supporting education at the pre-college level. The bulk of that work has been done by the Computer Science Teachers Association (CSTA) under the dynamic leadership of Chris Stephenson. The Education Board maintains a close relationship with CSTA and will continue to do so. Chris Stephenson serves as a staff liaison to the

Education Board and participates in all meetings and activities. CSTA President Robb Cutler serves as a member of the Education Council. Education Board co-chair Eric Roberts is a member of the CSTA Advisory Council and was formerly a member of the CSTA Board.

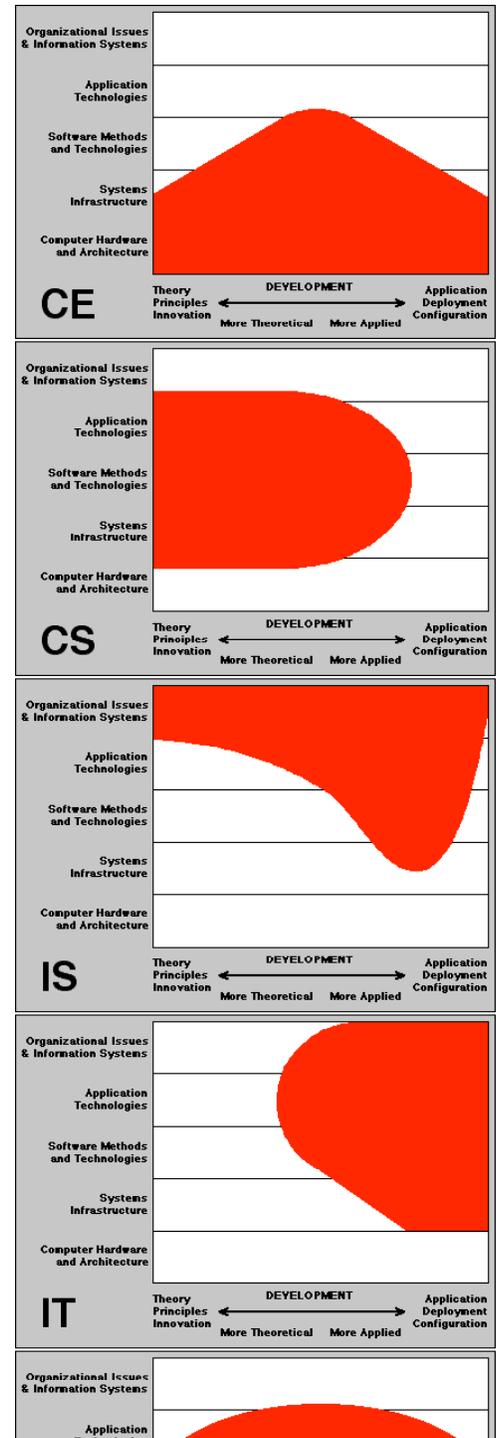
CSTA’s many activities are outlined in their annual report and do not need to be repeated here. The Education Board keeps abreast of CSTA activities through Chris’s participation and has worked closely with CSTA on several projects that involve high-school students, most notably the brochure described in section 2.1

### 1.3 Curriculum reports

Historically, one of the principal activities of the Education Board has been the creation and distribution of curriculum recommendations. The ACM has played an important leadership role in that process since the publication of *Curriculum '68* almost four decades ago. The most recent iteration of this process was the *Computing Curriculum 2001* project, which grew over time to become a six-volume work published over the last several years. The Computer Science volume of the report appeared in December 2001 and the Information Systems report was published in the following year. The Computer Engineering and Software Engineering reports were both completed in FY05 but did not appear in print until FY06 because of copyright and funding issues between the societies that participated in the joint effort. Those problems have been resolved through a memorandum of understanding, which made it possible to complete the publication of both volumes this year.

The other volume to be published this year is the Overview Report, which considers educational issues as they relate to the computing field as a whole. The purpose of the Overview Report was, as described in its introduction, “to explain the character of the various undergraduate degree programs in computing” as a way of helping students, teachers, parents, guidance counselors, and others in the educational system understand what options are available. One of the most widely circulated pieces of the report is a set of diagrams that map the major subdisciplines in terms of the extent to which they adopt a theoretical or applied perspective in various aspects of the field as a whole. These diagrams—which seem to have become universally known as “blob diagrams”—are reproduced in Figure 3.

Figure 3. Structure of the disciplines



The one volume that has yet to be completed is the Information Technology volume. This volume was added late to the overall plan and thus got a much later start. This volume is under the auspices of the ACM alone and does not involve other societies, which should make it easier to reach closure. Although a draft of the volume was published over a year ago, the process hit some snags moving forward from that draft, partly in terms of making sure that the community of Information Technology educators had the opportunity to assess the final report. Securing the requisite feedback required the introduction of a new revision cycle and a further meeting of the editorial group. We hope that the final report will appear as soon as possible in the current fiscal year.

The other major accomplishment for the year in terms of curriculum reports was the creation of an Executive Committee to oversee the updating these reports on an ongoing basis. This committee was established as part of the Memorandum of Understanding signed by the ACM and IEEE-CS at the end of 2005. The membership of the Executive Committee consists of two representatives from each society: Eric Roberts and Andrew McGettrick from the ACM and Pradip Srimani and Robert Sloan from the Computer Society. The Executive Committee had its first face-to-face meeting in Houston at the end of the SIGCSE Symposium in February. At that meeting, we put in place a strategy for orchestrating the ongoing reviews. The process we outlined has the following phases:

1. The Executive Committee's first responsibility is to determine at what point it is necessary to initiate a review in a particular discipline. That decision will depend on the length of time that has elapsed since the volume was published, the volatility of the discipline, and the degree to which the community seems to feel a need for revision.
2. Once the Executive Committee has decided to review a disciplinary volume, the next step is to appoint a small (three to five people), ad-hoc "needs assessment" committee to determine the scope and scale of any subsequent review. That needs-assessment committee will include at most one person—specifically not the chair of any previous committee—from the committee that produced the previous report so as to provide the historical memory necessary to understand why things were decided as they were. The other members should be familiar with the discipline and its curriculum but should be new to the curriculum-report process. The explicit inclusion of a strong majority of new people ensures that the review does not merely endorse the work of the original authors and will add to the perceived legitimacy of the review process.
3. The needs-assessment committee will be asked to spend no more than three months preparing a report to the Executive Committee that addresses the following questions:
  - *What is the scope of the necessary review in that area?* This question will include both a qualitative assessment of how much work is needed (which could presumably range from a decision that the original report was still current to a proposal for a complete rewrite) and a more focused assessment of what areas within the disciplinary report are most in need of review.
  - *Who should do the review?* The report from the needs-assessment committee should include a list of names from both societies who would be well-positioned to conduct the review. Both the size and the expertise set of this list will depend on

the scope identified in the preceding question. A small-scale, focused review will presumably require a smaller committee than a large-scale, complete rewrite.

- *What is the timetable?* The report should also include an estimate of the time required, including not only the due date for the final draft but also a schedule for those intermediate milestones on which the broader community will be invited to comment.
  - *How much will it cost?* The report from the needs-assessment committee will also include a budget that will allow the two societies to build the necessary funding into their overall budgets.
4. The Executive Committee will review the reports from the needs-assessment committees and marshal whatever resources are necessary to complete the necessary work.

At our first meeting, we concluded that a review was needed for the computer science volume. That volume appeared in 2001, and we are getting surprisingly close to the point at which it would have been necessary to begin planning a new curriculum effort, even if we were adhering to the once-a-decade strategy that we had hoped to put behind us.

## 1.4 The Java Task Force

One of the other major projects to reach its conclusion in 2006 was the ACM Java Task Force (JTF), which was convened in early 2004 with the following general charter:

To review the Java language, APIs, and tools from the perspective of introductory computing education and to develop a stable collection of pedagogical resources that will make it easier to teach Java to first-year computing students without having those students overwhelmed by its complexity.

The JTF project was funded by grants from the Education Board, the SIGCSE Special Projects Fund, and the National Science Foundation. Input from the community was ensured by the release of two public drafts: a preliminary version in February 2005 and a beta release in February 2006. The final report of the Java Task Force appeared in August 2006 and is available at the following web site:

**<http://jtf.acm.org/>**

The materials available at the web site include the following:

- A set of five packages—**acm.program**, **acm.io**, **acm.graphics**, **acm.gui**, and **acm.util**—that offer solutions to the problems identified by the community as the most significant barriers to teaching Java at the introductory level.
- An 85-page tutorial guide to using the JTF packages.
- A 118-page rationale document that outlines the reasons behind each of the design decisions.
- An extensive collection of demo programs that use the features provided by the JTF materials. In addition to simple programs designed to illustrate the use of the classes provided in the various packages, the demo collection includes several assignments and classroom tools to illustrate algorithms and programming concepts. These demo programs—unlike most Java code written today—all run as web applets, even on browsers that do not support the latest version of Java. This flexibility makes them ideal for web-based teaching tools and lecture demonstrations.

The initial motivation for the JTF project grew out of a perception that part of the difficulty that students experienced learning computing skills was a consequence of the increasing detail complexity of the tools. Although that assessment generated some controversy when the Task Force was proposed, the problem is much more widely recognized today, even outside of the computing disciplines. In a September 14, 2006 article on Salon.com, science-fiction author David Brin argues that there is no longer any way for young students to feel the excitement of programming:

Quietly and without fanfare, or even any comment or notice by software pundits, we have drifted into a situation where almost none of the millions of personal computers in America offers a line-programming language simple enough for kids to pick up fast.

We hope that the JTF materials will help to address that problem, which Brin correctly identifies as a “problem for our nation and civilization.”

### **1.5 Strengthening our international relationships**

As the initiatives to expand our outreach to India and China make clear, the ACM is committed to becoming more of an international organization. In our FY05 report, we described a new initiative to increase our international connections in computing education. Part of that initiative is reflected in the inclusion of more international members on the expanded Education Council described in section 1.1. Although the membership on the Council is still predominately from the United States, we have reserved some spaces for additional international representatives as we identify them.

Most of the activity to date has been focused on Europe. We have given Gordon Davies a special portfolio within the Education Board to coordinate our European initiatives. In the past year, representatives from the Education Board attended a meeting in Zurich as well as the Conference of Professors and Heads of Computing (CPHC) in Glasgow. Discussion took place at each of those meetings as to ways in which to foster greater international collaboration among people interested in computing education. Those discussions have led to several proposed new initiatives included in section 2.6.

The Education Board has been involved in other international activities as well. In particular, the Education Board supported the SoRuCom conference on the History of Soviet and Russian Computing, which took place in Karelia earlier in the summer.

### **1.6 Ongoing activities**

The Education Board also sponsors several ongoing projects. The largest of these is the Two-Year College Education Committee (TYCEC), which is focused on the particular issues that face computing programs in community colleges and other two-year programs. As a standing committee, the TYCEC produces its own annual report, which appears in Figure 4.

In addition to this standing committee, the Education Board has supported a couple of projects that remain ongoing. These projects are:

1. *The Ontology Project.* This project grows out of the recognition that the expanding scope of computing and the emergence of new computing disciplines make it increasingly important to develop a shared understanding about the conceptual structure of the computing field as a whole. The goal of the project is to develop a comprehensive ontological mapping of the discipline that will:
  - Support the development of innovative academic programs and enable them to identify where they fall in the spectrum of computing-related topics.
  - Simplify the updating of curriculum recommendations by providing a common conceptual framework for the disciplines.
  - Promote the growth of interdisciplinary programs that span areas both within and beyond the classical computing domains.

- Foster better understanding and communication with related disciplines by providing a common language for computing concepts.
- Add flexibility and greater currency to the existing ACM classification scheme.

More information on the Ontology Project is available on its web site at:

**<http://what.csc.villanova.edu/twiki/bin/view/Main/OntologyProject>**

2. *The Great Principles Task Force.* In November 2003, Peter Denning published an article in *Communications of the ACM* in which he emphasized the importance of identifying the “great principles” that underlie the disciplines of computing and information technology. In May 2004, the ACM Education Board endorsed the creation of a Great Principles Task Force chaired by Peter Denning with the following objective:

Assemble and maintain a structured collection of materials that document and teach the great principles of computing.

The project has a three-fold purpose:

- To assist in the design of future curricula
- To improve the credibility of the various computing disciplines in comparison to other science and engineering fields
- To inspire young people toward a computing career

The current work of the Task Force consists of collecting “principle-stories” about the emergence of principles and their subsequent integration into systems, written as first person accounts by the people who developed them. The current plan is to create an initial collection with about three stories in each of several major categories.

**Figure 4. Two-Year College Education Committee Annual Report for FY06**

- 1) The TYCEC achieved the following milestones in FY06:
  - Development of the initial draft of the *Guidelines for Associate-Degree Transfer Curriculum in Computer Engineering* report which is now being distributed to reviewers
  - Investigated the efficacy of proposed curriculum guidelines for career-oriented programs in computer engineering
  - Participated in stage-setting activities for a project to update the associate-degree Information Technology curriculum report
  - Produced a draft promotional flier detailing the resources available to the two-year college community via the ACM TYCEC; collaborated with ACM Headquarters staff on related strategies
  - Updated and enhanced the **acmtyc.org** website and associated resources
  - Continued to inform constituents of its activities via the regular column in the *SIGCSE Inroads* publication and related activity
  - Further established groundwork for increasing the internationalization of its work
  
- 2) In FY07, the TYCEC plans to pursue the following activities:
  - Finalize the curriculum report titled *Guidelines for Associate-Degree Transfer Curriculum in Computer Engineering*
  - Initiate a major undertaking for updating the previous TYCEC curriculum report in Information Technology
  - Develop a structured overview report that unifies the TYCEC curricular guidelines for end-users
  - Continue its dissemination and outreach activities, including mailings, website improvements, conference poster sessions and exchanges with colleagues (especially with regard to individuals external to the US), as well as continuing our *SIGCSE Inroads* column and participating in the Ed Council

— Submitted: June 5, 2006  
Robert D. Campbell, TYCEC chair

## Section 2

### Priorities for FY07

#### 2.1 Reversing declining enrollments in computing disciplines

Declining enrollments continue to be an extremely worrying feature of admissions in higher education. This matter is of deep concern, not only to those in education, but to employers and to industrialists. Given the strong link between information technology and innovation, this matter is vital to the continued leadership role of this country and beyond.

Members of the Education Board and Education Council are currently completing their work on the following deliverables:

- *A brochure due to go out to high schools in the fall of 2006.* We have designed a brochure that will be sent out to approximately 56,000 high schools in the United States. Each school will receive multiple copies of the brochure along with a letter asking the principal or head of the appropriate department to assist with drawing the contents of the brochure to the attention of all appropriate students, teachers, counselors, parents, and so forth. Working together with CSTA, we have tested the brochure with teachers and students and believe that it will catch the attention of today's students. We have also included in the cover letter a number of suggestions designed to increase the audience for the brochure, such as making the brochure available to classes outside of the computing area, particularly in science and mathematics. Our hope is that broader distribution will encourage some students—particularly women and students from disadvantaged communities—to consider studying computing fields, even if they might otherwise have given little or no thought to that possibility.
- *A web site for further guidance and information.* The brochure includes the address of a web site at [www.acm.org](http://www.acm.org) that includes additional material on educational and career options in the computing field. The web site also links back to the brochure and makes it easy for interested parties to obtain additional copies.

This activity is being undertaken with the help, support, approval, and guidance of Chris Stephenson in CSTA and her colleagues. It will be important that this close partnership continues. To be certain that we start to make an impact, the initial web site is informative but somewhat rudimentary. At this point it seems inevitable that this has the potential to become an extremely important mechanism for communicating with aspiring computing students as well as their parents, teachers, counselors, and so on.

An important aspect of this activity is obtaining funds to support the printing and the initial distribution of the brochure. We have initiated contact with the National Science Foundation, the National Center for Women in Information Technology (NCWIT), and industry in an attempt to secure funding. We will continue these fundraising activities, although ACM has agreed to provide the necessary first rounds of support.

During the coming months the opportunity will be taken to evaluate the effectiveness and impact of the brochure and the web site. The primary goal of the evaluation will be to identify ways in which this site can be made more effective in reaching its audience. We plan to initiate open discussions at several upcoming conferences and meetings. The oversight for this evaluation will be vested in one of the Task Forces of the newly formed Education Council. It is important for that Task Force to keep in mind the specific issues facing K-12 education and will therefore need to work closely with CSTA. We have sought to populate the Task Force with people who are imaginative, forward-looking, and action-oriented.

## **2.2 Fostering a positive image of computing among young people**

One of the contributing factors to the current enrollment crisis is that young people do not see today's programs of study in computing as being sufficiently attractive or offering attractive career opportunities. The reasons given for this loss of interest in the popular press include the phenomena of offshoring and outsourcing, a poor understanding of the discipline among the general public, problems with the teaching of the discipline in high school, inadequate attention to the achievements of the discipline, and a lack of diversity in the field that reduces its appeal to women and minorities. These factors are complex and interconnected. We believe that the Education Board and Council need to undertake an extensive analysis of the situation so that we can gain a better understanding of the dynamics and relative importance of these issues.

Even in advance of obtaining the results of this analysis, it is clear that any action plan we develop will include a campaign of some kind to foster more positive images of the discipline among young people. That campaign will probably involve developing new curricular offerings that hold greater appeal and greater promise. We expect that it will be important over the next several years to experiment with several different models intended to increase the attractiveness of the discipline. We plan to prepare a report within the next year outlining suggestions of new curricular models that might then be used in future curricula guidelines. In the short term, those models will also provide a focus for discussion of the key issues.

The metrics for success in this endeavor must include both increased admissions and increased retention rates in degree programs.

## **2.3 Updating the computing curriculum guidelines**

With five volumes of curricular guidelines now published (or about to be), we need to put in place a process that demonstrates the ACM's commitment to keeping these curricular models up to date. The following bullet points offer additional comments about how that work is expected to proceed in each of the major areas:

- *Computer Engineering.* This report has now been published by the Computer Society, which has also put in place monitoring activities to assess the level of uptake and to provide support at the rollout of these guidelines. Because this report is so recent, we do not envision further action in this area. The Two-Year College group is working to

finalize their curriculum report entitled “Guidelines for Associate-Degree Transfer Curriculum in Computer Engineering.”

- *Computer Science.* The CS volume in the *Computing Curricula 2001* series was published in December 2001 and has therefore been in place for nearly five years. The joint ACM/IEEE-CS Executive Committee initiated a review of the Computer Science volume in the spring of 2006, led by Larry Snyder. That group has offered a preliminary report on strategic options that the Education Board will be discussing at its upcoming meeting in Seattle. Some follow-on work will certainly be required, and we anticipate that the more comprehensive review process will be well underway by the end of the next fiscal year.
- *Information Systems.* The existing version of the Information Systems report dates back to 2002. A thorough review and revision of this work is now needed, particularly in light of the fact that the 2002 report consists largely of updates to the previous IS '97 report. We expect to put in place a review process for this report within the coming year. However, because Information Systems does not fall within the locus of the Computer Society, we need to establish a new arrangement between ACM and AIS to carry out this work. We have developed a draft management plan based on the existing agreement between the ACM and the Computer Society.
- *Information Technology.* This report will be the final component of the *Computing Curricula 2001* effort and is now in final review. We fully expect to complete that review and publish the document within in the next 12 months. In addition, we expect the Two-Year College Committee to undertake a major revision of their previous report in Information Technology that will incorporate material from the Information Technology report.
- *Software Engineering.* The Software Engineering report was published in early 2006, although much of the development work took place several years ago. Although the authors of the report have argued that this report is already in need of significant revision, the joint ACM/IEEE-CS Executive Committee has concluded that we need more time to assess the success of the existing report. We do, however, need to monitor the level of uptake of this report and assess its effectiveness. We have identified a group to carry on a monitoring activity that will provide us with feedback on the impact of the Software Engineering report on the development of new curricula and on what curricular models seem to be the most effective and the most popular.
- *Overview Report:* The full Overview Report has now been published by ACM. This volume offers a comprehensive definition of the various fields of study and provided considerable background for the brochure and web site described in section 2.1. Over the next year, we expect that the Two-Year College Committee will publish a similar volume aimed at the two-year college community.

#### **2.4 Promoting new curricular themes and strategies**

The continuing decline in enrollments and poor retention rates suggest that there are problems with the image and effectiveness of computing education, which seems to have limited appeal to current students and its ongoing popularity. This is true at all levels in the world of education. It is appropriate to address this head-on as a matter of some considerable urgency.

One of the major challenges to be addressed in the coming year is to look at the nature of computing education and to decide how we can reconceptualize computing education in a way that will make it more appealing. Can we create at least one image of computing education that is new and different and does not suffer from the ills of the present situation? This vision must be appealing and stimulating to the community, it needs to offer advantages over existing possibilities, and it must lead to a measurable reversal of recent enrollment trends. We see the Education Council taking the lead in this activity, but it will also be important to engage the broader community in this discussion and debate. We believe that this process will proceed by identifying new curricular models and approaches that have proven to be effective in the institutions at which they were developed and then helping to promote the distribution of those new models by developing new curricular recommendations around those themes. The overall success of this endeavor will almost certainly require us to experiment with many models, not all of which will succeed individually. The goal is to promote a diversity of strategies and then to let individual institutions choose models that are likely to work well in that environment.

## **2.5 Establishing connections with other disciplines**

As computing becomes more integral to a range of disciplines, it seems likely computing education will increasingly become more closely tied to education in other areas. These developing connections may develop in several ways:

- By absorbing aspects of other disciplines into computing, which continues to evolve as a discipline
- By expanding the breadth of training we offer to computing students so that graduates can provide effective support in other areas, including science, engineering, economics, business, and education.
- By encouraging students to take a broader set of electives as part of their overall program of study
- By increasing the number of computing courses designed for students in other disciplines who will require those skills

These developments have the potential to lead to new kinds of degree programs.

The importance of taking this broader view is confirmed by the following quote from *Nature* in February 2006:

Applied computer science is now playing the role which mathematics did from the seventeenth through the twentieth centuries: providing an orderly, formal framework and exploratory apparatus for other sciences

For some disciplines, the Internet itself has become a research tool: grid computing has been used to exploit the power of millions of Internet-connected machines. Building on the popularity of SETI@home—an experiment that uses Internet-connected computers to search for extraterrestrial intelligence—and prime-number hunts, there are now

physics, medical and proteomics projects enlisting the enthusiasm of people (and their computers) across the world. For linguists and sociologists, new questions can be investigated simply by observing what occurs on the publicly available Internet. Even experimental sociology is possible: in their study of social influence on music preference, Salganik et al. recruited more than 14,000 subjects through a popular website, ran online trials on these subjects, and then obtained results directly from their experiment website.

The value of computing to other disciplines—which has long been clear to those who have been involved in computing-intensive projects but which has become increasingly evident to specialists in a wide range of fields—provides an incentive for providing curricular recommendations that will encourage this sort of cross-disciplinary study. We are in the process of commissioning a study group to devise a strategy for moving ahead in this area.

## **2.6 Broadening European participation in computing education activities**

We have a number of projects in progress to expand our activities in Europe:

- Two members of Council (Gordon Davies and Andrew McGettrick) are involved in the planning and implementation of the second European conference for Europeans heads of department, which takes place in Zurich in October 2006.
- An education conference supported by ACM has been planned for early November in Montpellier, France.

Both of these events reflect an increased realization in Europe of the need for discussion and co-operation on educational matters. They have the potential to become annual events. The success of these meetings will be monitored closely with the intention of broadening the involvement and appeal of ACM in Europe. An institution in Greece has already raised the possibility of initiating activity in Eastern Europe as a follow-up to the Montpellier conference. We are looking into whether ACM should become more involved in that initiative.

Other activities in this area that are worth mentioning include:

- In June 2007, the ITiCSE conference is due to take place in Dundee, Scotland.
- There are discussions involving members of the Education Council and CSTA about the possibility of holding a workshop in Scotland in May 2007 on computing in schools.

## **2.7 Enhancing the effectiveness of the reorganized Education Board and Council**

The range of activities in which we are engaged is considerable. To meet the many challenges we face, it is essential to maximize the efficiency of our internal processes and structures. The primary role of the Education Board is to manage and guide the work of the Education Council. Because the Education Council is new, we need to develop mechanisms that allow it to function as effectively as possible. In particular, we need to set up Task Forces within the Education Council, give those Task Forces specific

charges, and then empower them to carry out the relevant tasks. Planning that activity is at an early stage of development and remains in flux. To date four Task Forces have been established:

- Enrollment crisis and public image
- Technology and tools
- Curriculum
- Accreditation

Each of these groups has been asked to assess the challenges in their areas of concern, to identify both short-term and long-term goals, and to develop concrete strategies for achieving those goals. Such is the rate of change in the general area of computing that there will need to be regular review of the structures and responsibilities and to consolidate. To ensure that progress is being made, a second meeting of the Education Council is planned for early December 2006.

Over the next six months, we will focus significant energy on strengthening this structure and finding ways in which to empower the individual Task Forces to be effective in their activities on an ongoing basis.

## **2.8 Increasing our visibility within the community**

Another strategic goal toward increasing the effectiveness of the Education Board and Education Council consists of promoting public awareness of our work. Increasing our visibility is important for two reasons:

- The community needs to be informed about the changes that have occurred and the reasons underlying those changes
- At this time in which so many people in computing education feel threatened by declining enrollments, it is important for the ACM to be seen as an organization that not only cares about the problems but also as one that can marshal the resources necessary to have an impact. By showing our support for the community, we will also be in a better position to enlist their aid in solving the many problems we all face.

Much can happen via conferences and via public meetings. But it is the intention to provide two articles that tell the community about

- The new arrangements in an article, possibly for *Communications of the ACM*
- The new memorandum of understanding between the ACM and the Computer Society

We also intend to investigate via the Education Council the feasibility of producing enough high-quality material to support the notion of a regular education column in the new and revamped *Communications*.

In terms of further aspects of dissemination, the Two-Year College Group intends to continue its dissemination and outreach activities, including mailings, website improvements, conference poster sessions and exchanges with colleagues (especially

with regard to individuals external to the United States), as well as continuing our *SIGCSE Inroads* column and participating in the Education Council.

## **Appendix A**

### **Roster of the Education Board and Education Council (FY06)**

#### **Education Board**

Eric Roberts, Stanford University (co-chair)  
Andrew McGettrick, Strathclyde University, Scotland (co-chair)  
Boots Cassel, Villanova University  
Peter Denning, Naval Postgraduate School  
Mark Guzdial, Georgia Tech  
Laura Hill, Sun Microsystems  
John Impagliazzo, Hofstra University  
Jane Prey, Microsoft  
Larry Snyder, University of Washington  
Heikki Topi, Bentley College

Kati Lovasz, ACM Staff Liaison for the Education Board  
Lillian Israel, ACM Director of Membership  
Chris Stephenson, Executive Director, Computer Science Teachers Association  
Gordon Davies, Coordinator of ACM European Education Initiative

#### **Education Council (which also includes the members of the Education Board)**

Owen Astrachan, Duke University  
Joanne Atlee, University of Waterloo, Canada  
Gordon Bailes, East Tennessee State University  
Bob Campbell, Rock Valley College  
Michael Caspersen, Aarhus University, Denmark  
Jan Cuny, University of Oregon/NSF  
Robb Cutler, The Harker School/CSTA  
Sally Fincher, University of Kent, England  
Dan Garcia, University of California at Berkeley  
Roscoe Giles, Boston University  
Maggie Johnson, Google Inc.  
Robert Jones, Intel  
Lisa Kaczmarczyk, Rose-Hulman Institute of Technology  
Deepak Kumar, Bryn Mawr College  
Jim Kurose, University of Massachusetts  
Eydie Lawson, Rochester Institute of Technology  
Rich LeBlanc, Southern Catholic College (retired)  
Terry Linkletter, Pacific Edge Software  
Jose Maldonado, University of Sao Paulo, Brazil  
Ken Martin, University of North Florida  
Barbara Price, Georgia Southern University  
Eugene Spafford, Purdue University  
Carol Spradling, Northwest Missouri State University  
Joe Turner, Clemson University (retired)

Patrick Walsh, IBM

Jeannette Wing, Carnegie Mellon University

Alison Young, Auckland University of Technology, New Zealand