

September 24, 2009

Mr. Reginald Robinson
President and Chief Executive Officer
Kansas Board of Regents
1000 SW Jackson Street
Suite 520
Topeka, Kansas 66612-1368

Dear Mr. Robinson:

As leading organizations for computing professionals and educators, we are deeply concerned with the Board of Regent's decision to eliminate the computer technology requirement as proposed by the Qualified Admissions Temporary Regulations. Because rigorous computer science content is currently being taught to meet the computer technology requirement, this change would have the unintended consequence of reducing student access to computer science knowledge. While we agree with the State University Admissions Task Force's recommendation that basic computer literacy skills can be taught within other courses, we believe that rigorous computer science should be a vibrant part of Kansas' K-12 education landscape.

We respectfully suggest a different approach that we believe would meet the Board's goals while at the same time prevent the unintended impact on rigorous computer science courses. First, we suggested including "computer science" as one of the approved units within the mathematics or natural science Qualified Admission categories. Second, we recommend an update of the Board's Qualified Admissions Regulations and state standards association with computer science to reflect the model learning objectives for computer science created by the Association for Computing Machinery (ACM) and the Computer Science Teachers Association (CSTA)¹. With these changes, Kansas can ensure students are gaining the critical knowledge and skills they will need in the 21st Century.

Computing Technology Courses in Kansas

Across the country there is a movement to improve science, technology, engineering and mathematics (STEM) education by allowing students to count rigorous computer science courses as math or science credits for graduation purposes. (This change has already been made in 10 states.) In Kansas, the computing technology requirement has

¹ To view the complete model curriculum and grade-appropriate learning standards see: <http://www.csta.acm.org/Curriculum/sub/ACMK12CSModel.html>

allowed schools to develop computer science courses. For example, at Winfield High School and Hays High School students enrolled in Computer Technology II as part of the Qualified Admissions requirement are taught computer science concepts such as webpage design and development, integrating software productively, and program design. The Computer Technology II course is instrumental in feeding other STEM courses such as Programming I and aligns with several of the Level II recommended standards in ACM/CSTA model curriculum.

If the Board was to eliminate the computing technology requirement without allowing for computer science courses to count toward core graduation requirements, students will focus only on the core requirements and computer science courses in Kansas will suffer.

Why Teach Computer Science?

The Task Force's recommended changes to the Qualified Admissions clearly are intended to ensure the curriculum is preparing students with the knowledge and skills they will need to succeed in the workforce or college. We realize that as education policymakers make tough decisions about which subjects will meet the needs of citizens, workers and industry in the 21st Century, they want to know how a subject makes students successful. Teaching computer science in K-12 meets students' needs in three ways:

- Students gain a deeper knowledge of the fundamentals of computing, which—as computing becomes ubiquitous—is a critical foundational knowledge that will serve them well throughout their lives
- Students are exposed to a field that drives innovation and in which job prospects remain strong despite the current extraordinary economic challenges
- Students gain critical knowledge and skills proven to bolster their success in higher education academic pursuits

Computer science education is strongly based upon the higher tiers of Bloom's cognitive taxonomy, as it involves design, creativity, problem solving, analyzing a variety of possible solutions to a problem, collaboration, and presentation skills. Through studying computer science, students develop and extend logical thinking and problem-solving skills. These skills can then be applied to real world problems—mathematical and otherwise. Further, students who take on high school computing classes and have previous experience with technology demonstrate improved readiness for postsecondary studies.

Computer science underpins the technology sector, which has made tremendous contributions to the domestic economy, as well as numerous other economic sectors that depend on innovative, highly skilled computer science graduates. Computing touches everyone's daily lives. Securing our cyber-infrastructure, protecting national security, and making our energy infrastructure more efficient are among numerous issues dependent on computing, computing literacy and a strong computing workforce.

We consider it critical that students be able to read and write, and understand the fundamentals of mathematics, biology, chemistry and physics. To be a well-educated citizen in today's computing-intensive world, students must have a deeper understanding of the fundamentals of computing as well. It is crucial that public education take on this charge.

Our Recommendations

We share the Task Force's conclusion that the Qualified Admissions standards should enhance prospects for student success, but we believe that this can be achieved without diminishing the opportunity for students to take the rigorous courses they need to thrive in this new economy. The existing computing technology standards embedded in the Qualified Admissions Regulations do fall short of what we would recommend students learn in computer science courses. To ensure that Kansas' students are being exposed to rigorous computer science courses and not basic computing literacy, we recommend that:

- add "computer science" as one of the approved units in either the mathematics or natural sciences Qualified Admissions requirements, and
- the Board update the Qualified Admissions Regulations to reflect core computer science concepts. Further, that the state establish a task force to review Kansas' current science standards (some of which can be found in "standard 5" of the Kansas Curricular Standards for Science for 8th to 12th grade) and how they could be updated to mirror changes to the Qualified Admissions standards.

We are willing to provide whatever consultative support we can to assist the state in ensuring that computer science is part of the curriculum in Kansas.

Thank you for considering our position on this important matter. We hope that you will work with our organizations to improve and strengthen computer science education in the Kansas K-12 system.

Sincerely,



Robert B. Schnabel
Chair, ACM Education Policy Committee
Dean, School of Informatics and Computing, Indiana University



Chris Stephenson
Executive Director, CSTA

Association for Computing Machinery (ACM)

With over 90,000 members worldwide, the Association for Computing Machinery is the world's largest educational and scientific computing society, uniting computing

educators, researchers and professionals to inspire dialogue, share resources and address the field's challenges. ACM strengthens the computing profession's collective voice through strong leadership, promotion of the highest standards, and recognition of technical excellence. ACM supports the professional growth of its members by providing opportunities for life-long learning, career development, and professional networking.

Computer Science Teachers Association (CSTA)

The Computer Science Teachers Association is a professional membership organization committed to supporting the teaching and learning of computer science in K-12. Formed in 2005, it now encompasses more than 7,300 members, primarily practitioners teaching in K-12. CSTA is a national leader in the conduct of academic research and the provision of professional development for teachers and the distribution of teaching, learning, and informational resources focused on computer science.