

## ***REQUEST FOR PROPOSALS***

**Commonwealth Information Technology Initiative (CITI):  
Request for Proposal for Development of 21<sup>st</sup> Century  
Information Technology Skills through Middle School  
Mathematics and Science Curriculum**

**Proposals must be submitted electronically by  
February 9, 2007, 5:00 p.m.**

A Project of the Commonwealth Information Technology Initiative (CITI) funded through the  
2006 Economic Stimulus Bill and  
Managed by the University of Massachusetts Donahue Institute

December 11, 2006



## Request for Proposal for Development of 21<sup>st</sup> Century Information Technology Skills<sup>1</sup> through Middle School Mathematics and Science Curriculum

The goal of this RFP is to distribute funds to support the development of 21c Information Technology (IT) skills through Middle School Mathematics and Science Curriculum. In this grant program teachers will learn the content and skills they need as they develop new curriculum or extend current curriculum. The objective is to improve teaching and learning of 21st century IT skills at the middle school level in order to create pathways for students to move into high school and higher education programs. This in turn leads to preparing today's students for the Information and Communication Technology (ICT) infused world we live in and they will work in.

This curriculum development will be accomplished through a two-week summer institute, half days, (or an acceptable equivalent alternative), provided by either a higher education institution or a collaborative or a combination of both. Schools, school districts and collaborative may apply. The institutes will be offered to no more than 25 participants in any single session.

The summer institutes are being proposed as part of 3-5 year plan to reach all middle school science and math teachers through a program of summer institutes where teams of teachers, technology coordinators, administrators will develop new curriculum or extend current curriculum that incorporates 21st century IT skills in mathematics and science. These institutes will be followed by pilot implementations and assessment of these pilots. CITI will capture and promote best practices.

At the conclusion of the CITI Summer Institutes, a CITI Certificate will be awarded to attendees to signify the person has participated in and is prepared to act as a leader in his/her school and support other teachers in their adoption and adaptation of the curriculum and instructional practices of 21st Century IT skills. These educators will be known as CITI Ambassadors, and will, among other activities, conduct CITI Seminars/Workshops as part a Professional Day or some other form of educator education. Each round of participants will serve as mentors and advisors to next round.

Applicants are encouraged to identify potential local/regional industry support for a match in funding so that CITI can work with successful applicants to reach out/secure an industry match, if possible. Applicants should indicate how they would budget for such a match.

The full proposal is available on the CITI website ([www.citi.mass.edu](http://www.citi.mass.edu)) as of December 11, 2006. A full timeline appears below.

### Timeline:

RFP Released	December 11, 2006
RFP Briefing Session	January 4, 2007 3 pm
Final Date for Questions	January 10, 2007
Letter of Intent	January 15, 2007
Proposals Due	February 8, 2007
Awards Announced	March 6, 2007

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<sup>1</sup> See the final page for a list of 21<sup>st</sup> century skills as defined by the Partnership for 21<sup>st</sup> Century Skills. In this project we are focusing on the IT of ICT.

## CITI RFP for Middle School Programs

Project Activities	Spring, Summer, early Fall 2007
Mid Project Report	September 5, 2007
Final Project Report	November 5, 2007
Showcase Conference	October 17, 2007

### ***Background***

#### **Technology as the “New Fundamental” Skill in the 21<sup>st</sup> century**

The continuing growth of technology in society makes it necessary to continue to rethink the way it is integrated into teaching in middle schools. Students require a new set of skills known as 21<sup>st</sup> century skills that include Information and Communication Technology (ICT) skills. (We are focusing in this proposal on the IT of ICT.) Students also benefit from an “information technology across the curriculum” (or ITAC) approach. ITAC ensures that K-12 students use technology in all their classes for learning.

Several reports have been published that underscore the importance of preparing today’s students for the increasingly knowledge-based economy they will encounter as adults. Mass Insight Corporation, in its report, “Choosing to Lead,” points out that today’s global economy is “driving a new model of competition, one whose goal is to leverage innovation to drive economic growth within a state or region.”<sup>2</sup>

CITI’s outreach to stakeholders in education, industry and government has indicated that most economic sectors in MA are ICT-intensive, particularly those that are growing (pharmaceuticals, biotech, tourism, education). Industries that develop ICT have stabilized and indicate that the general workforce requires 21st century skills. In addition, P-12 graduates are unaware of the opportunities for ICT specialists across all sectors and that P-12 graduates, particularly underrepresented groups and those from economically depressed regions, lack adequate preparation for Information and Communication Technology and Information and ICT-related higher education programs.

Massachusetts’ future as a robust and vital center of economic activity is dependent on a workforce that is fluent in the use of Information and Communication Technology tools as well as able to understand the underlying principles and potential applications of Information and Communication Technology and to understand how technology influences the way we think and manage information. CITI believes that public school educators play a vital role in providing skills, knowledge and learning opportunities<sup>3</sup> that will help all youth to enter the ICT workforce pipeline.

The point of this solicitation is to support programs that facilitate active student learning of 21<sup>st</sup> century IT skills in mathematics and science and to equip teachers to integrate 21<sup>st</sup> century IT skills into mathematics and science by developing or adapting curriculum which enables that to happen.

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<sup>2</sup> Choosing to Lead: The Race for National R&D Leadership & New Economy Jobs. The Massachusetts Technology Roadmap Part I. by Mass Insight Corporation and Battelle Memorial Institute. 2004.

<sup>3</sup> We recommend that potential applicants read the Massachusetts Recommended PreK-12 Instructional Technology Standards ([www.doe.mass.edu/edtech/standards.html](http://www.doe.mass.edu/edtech/standards.html)) which are currently being updated. The revised version will be available upon request.

## CITI RFP for Middle School Programs

### **Background/CITI**

The Commonwealth Information Technology Initiative (CITI) is a public private partnership with the mission to increase the number of Information and Communication Technology (ICT) competent workers available for the Massachusetts' knowledge-based economy.

Launched in 2000 and led by the University of Massachusetts at Amherst to address the need for IT workers and to improve the teaching and learning in public higher education, CITI brought together community colleges, state colleges, and the University campuses with industry and government leaders to strengthen and modernize computer science and information technology programs at public higher education institutions across the Commonwealth.

Additional information on CITI, its history and its programs is available on the CITI website at <http://www.citi.mass.edu/>

## **Request for Proposals**

**Goal:** To develop 21<sup>st</sup> century Information Technology (IT) skills through Middle School Mathematics and Science curriculum.

**Grant Priorities:** Proposals will be prioritized using the following criteria:

- Understanding of the 21<sup>st</sup> century IT skills and capacity to identify / develop high quality mathematics and science curriculum which can be replicated
- Partnerships among K-12 and higher education faculty
- Future impact on student learning.
- Expertise and knowledge in promoting the skills, concepts and capabilities that support Information and Communication Technology (ICT) fluency for teachers and students.
- Participation of low-income schools/ districts.
- Evidence of successful outcomes and/or a plan to generate such evidence during the grant period through evaluation.
- Potential for other groups to replicate the model in the future with similar successful results.
- Evidence of teacher leadership
- Adequate, efficient and reasonable budget to support the project.
- Plan to disseminate information for greatest possible impact including a case study<sup>4</sup> of the project

Proposals should be no longer than 10 pages, not including attachments. Proposals that fail to meet these criteria will not complete the review process.

### **Proposal Requirements**

- I. Applicants must identify a lead partner who will take responsibility for the partnership's activities under this grant
- II. Project Abstract (One page)
  - a. Contact Information (Lead Partner, Contact, Title, Organization, Address, Telephone, Email).
  - b. Names and addresses of all partners involved in the project.

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<sup>4</sup> Case studies will be placed on the CITI website and be used for future discussions with the legislature and business.

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- c. One paragraph providing an overall description of the project.
- III. Narrative (must not exceed five pages). Provide a description of the proposed program that addresses the following (label each subsection with the corresponding letter).
- a. Structured plan for the curriculum development experience that demonstrates how teachers will extend their knowledge and pedagogy of 21<sup>st</sup> century IT skills in mathematics and science courses
  - b. A recruitment and selection plan to secure participants for the institutes.
  - c. Continuing follow-up activities for teachers to expand and replicate these promising programs/practices after completion of the grant.
  - d. Number of schools, teachers, and students that will be impacted by the proposal. Please make a special note of high need districts/schools involved in the project.
  - e. Evaluation plan that is focused on outcomes. For many projects, the purpose of the evaluation should be to demonstrate that the project has had an impact on the project's participants, or attitudes toward 21<sup>st</sup> century IT skills
  - f. Timetable indicating implementation and completion dates for the project to be funded.
  - g. Dissemination plan that shows a broader impact and efforts to share the material, including a case study.
  - h. The history of the partnership working together, if applicable
  - i. Indication of the impact of revisions if applicable
  - j. Individual and institutional capacity and expertise in this area.
  - k. A plan for ensuring teacher leadership
- IV. Budget and Budget Narrative. Provide a detailed budget and narrative that includes:
- a. Calculations and breakdowns of budget amounts
  - b. Description of budget items
  - c. Indication of how a matching funds would be used
  - d. Please note: Institution overhead is not allowable under these grants.
- V. Attachments
- a. Resumes of key project personnel (limited to two pages for each individual).
  - b. Evidence of matching funds, if available.
  - c. Evidence of principal investigator's institutional support for the proposal.
  - d. Evidence of institutional administration support for curriculum and commitment to begin using the new or revised curriculum in fall 2006.
  - e. Copy of existing Curriculum if proposing alterations

Individual grants for this program will not exceed \$50,000.

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Requirement	Middle School Curriculum Grants
I Lead Partner	<b>PI</b>
II - Abstract	x
III - Narrative	
a) Structured Plan	x
b) Follow-up for Teachers	x
c) Capacity /Teacher leadership	x
d) Number Impacted	x
e) Evaluation Plan	x
f) Timetable	x
g) Dissemination Plan including a case study	x
h) Partnership History	x
i) Impact of Curriculum Development/ Revision	x
j) Expertise	x
IV - Budget	x
V - Attachments	
a) Resumes	x
b) Matching Funds, if appropriate	x
c) Institutional Support	x
d) Revised Curriculum Commitment	x
e) Copy of existing Curriculum if proposing alterations	x

**Proposal Submission:**

Proposals must be submitted electronically via the CITI website ([www.citi.mass.edu](http://www.citi.mass.edu)) as a single Word or PDF document by 5 pm February 8, 2007.

**Formatting Instructions:** Proposals should be no smaller than 11 point font (please use Palatino) and should follow the page limits above. A premium will be placed on clear and concise proposals.

**Letter of Intent:** A letter of intent is required. Letters should be sent to Isa Zimmerman at [izimmerman@umassp.edu](mailto:izimmerman@umassp.edu) by 5 pm on January 15, 2007. Your letter should include a paragraph summarizing your proposed project.

**Deliverables**

Grantees must submit a mid-grant report, a final report and evaluation (including a case study), be available to present at CITI showcase conference on October 17, 2007 and be available for one year from the end of the grant period to answer questions on the model /materials they have developed for those who may be replicating.

**Timeline:** See page 2, please

## CITI RFP for Middle School Programs

The CITI website will have any addenda to the RFP. It is the responsibility of proposal writers to access RFP changes on the CITI site. Proposals are to be submitted electronically through the CITI website. ([www.citi.mass.edu](http://www.citi.mass.edu)). Proposals must be uploaded in a single document. Proposal writers are asked to minimize file size for easy uploading and distribution to reviewers.

A RFP briefing session will be held on January 4, 2007 at 3 pm in the Berkshire Room at the University of Massachusetts Collaborative Services Center in Shrewsbury, MA (directions available on the CITI website). While the briefing session is not mandatory, we encourage all interested parties to attend to receive updated materials and RFP clarification. Notes from the briefing session will be available on the CITI website. RSVP to Isa Zimmerman at [izimmerman@umassp.edu](mailto:izimmerman@umassp.edu). Attendees must RSVP to be on the security list for entry.

Questions not addressed by the briefing session can be submitted by calling Isa Zimmerman at 617-642-4733 by January 10, 2007 at 5 pm. Questions and answers will be posted on the website ([www.citi.mass.edu](http://www.citi.mass.edu)).

## CITI RFP for Middle School Programs

The Partnership for 21<sup>st</sup> Century Skills (<http://www.21stcenturyskills.org/>) defines 21<sup>st</sup> Century skills as follows. (Please visit the site to view greater detail, especially the ICT literacy maps for science and mathematics:

[http://www.21stcenturyskills.org/images/stories/matrices/ictmap\\_science.pdf](http://www.21stcenturyskills.org/images/stories/matrices/ictmap_science.pdf)

[http://www.21stcenturyskills.org/images/stories/matrices/ictmap\\_math.pdf](http://www.21stcenturyskills.org/images/stories/matrices/ictmap_math.pdf))

**1. 21st Century Content.** Several significant, emerging content areas are critical to success in communities and workplaces. These content areas typically are not emphasized in schools today:

**Global awareness**

**Financial, economic, business and entrepreneurial literacy**

**Civic literacy**

**Health and wellness awareness**

**2. Learning and Thinking Skills.** As much as students need to learn academic content, they also need to know how to keep learning - and make effective and innovative use of what they know - throughout their lives. Learning and Thinking Skills are comprised of:

**Critical Thinking and Problem Solving Skills**

**Communication Skills**

**Creativity and Innovation Skills**

**Collaboration Skills**

**Information and Media Literacy Skills**

**Contextual Learning Skills**

**3 ICT Literacy.** Information and communications technology (ICT) literacy is the ability to use technology to develop 21st century content knowledge and skills, in support of 21st century teaching and learning.

**4. Life Skills.** Good teachers have always incorporated life skills into their pedagogy. The challenge today is to incorporate these essential skills into schools deliberately, strategically and broadly. Life skills include:

**Leadership**

**Ethics**

**Accountability**

**Adaptability**

**Personal Productivity**

**Personal Responsibility**

**People Skills**

**Self Direction**

**Social Responsibility**