MCEER RESEARCH TASK STATEMENT

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<th>Education and Outreach</th>
<th>Budget:</th>
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<td>Task Title:</td>
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<td>Project Number: 8.5.1</td>
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Investigator/ Investigator: Andrea Dargush*
Institution: MCEER/University at Buffalo

* indicates task leader

Statement of Project Goals: (Conceptually describe what the work is intended to accomplish, in 100 words or less. Do not provide detailed description here.)

This effort is intended to sustain ongoing educational and outreach related activities for a wide audience. These include but are not limited to development of materials and activities for precollege students and teachers, with an emphasis on the multidisciplinary nature of natural disasters. Integration of these activities with other ongoing educational programs involving undergraduate and graduate students and faculty will also be carried out where feasible.

Problem Description and Research Approach of Proposed Work for Year 8: (Detailed description of research to be conducted and methodology to be used.)

The primary purpose of this effort is to provide an interface between ongoing research activities of the center and the primary beneficiaries of this information - its end users. MCEER has a mission to increase the awareness of the general public about earthquake hazard and risk, to encourage greater involvement in the studies and professions related to earthquake hazard mitigation, to promote adoption of measures to mitigate earthquake hazards and to share emerging research findings with the hazard community at large.

Specific tasks within this effort are intended to develop educational tools and products that can be used by individuals at several levels, to create and conduct programs that encourage students to pursue earthquake studies and to be directly involved in inquiry-based earthquake research, to improve the interface between students and members of practice, and to encourage the involvement of those groups traditionally underrepresented in engineering.

Greater emphasis is being placed in years 7 and 8 on expanded interaction with precollege teachers as well as preservice activities for undergraduate education majors.

MCEER will also begin to develop a suite of tools which can be used to measure effectiveness of selected activities.

Description of the integration between tasks is presented in Volume I.
**Assessment of State-of-the-Art:** *(Describe other relevant work being conducted within and outside of MCEER, and how this project is different.)*

While other institutions carry out educational efforts related to earthquakes, MCEER is the only organization to apply a multidisciplinary approach to conveying earthquake-related concepts. Few of the materials available are consistently evaluated for their effectiveness.

**Progress to date:** *(If applicable, a short description of achievements in previous years. Clearly distinguish progress achieved in the past year, i.e., accomplishments from April 1, 2003, to March 31, 2004.)*

MCEER mentorship to the precollege audiences – students, teachers and the public at large continues throughout year 7. MCEER has also furthered its collaboration with other participants in the curricular development arena, e.g., EarthScope, NEES, and the US Educational Seismograph Network. A continuing outreach activity using a local seismic array continues with the University of Western Ontario. A new initiative launched in Year 7 will explore the obstacles to involvement of underrepresented minorities in earthquake-related study areas.

**Role of Proposed Task in Support of Strategic Plan:** *(Describe how the effort will make a unique, useable contribution to the MCEER strategic plan.)*

The mission of MCEER is to help development of more disaster resilient communities. Education is essential to enhancing awareness of natural disaster hazards, risk and possible approaches to hazard mitigation. The increased role of industry in MCEER’s strategic plan will enrich the education programs ability to articulate the interaction of professions and disciplines to minimize future losses due to earthquakes and other disasters.

**Task Integration:** *(Describe how the work performed interfaces with other tasks and researchers funded by MCEER.)*

It is important to maintain a robust interface between all phases of the MCEER research activity and its education programs to assure that developing knowledge and tools are conveyed effectively. Elements of the research will be integrated into both the programs for teachers as well as thematic classroom materials to illustrate the application scientific method within the context of earthquake hazard mitigation. The education program also relies heavily on the expertise and capabilities of the networking program to deliver useful, engaging products.

**Possible Technical Challenges:**

These exist both internally and externally. Availability of resources and personnel to assist with materials delivery mechanisms may impact the rate at which the information may be transferred to end users. Externally, MCEER must be able to meet the varied technological capabilities of the audiences to be reached, which will sometimes include students from disenfranchised communities. In addition, increased regional opposition to imposed curricular standards will likely have an impact on content of materials under development.
### Anticipated Outcomes and deliverables:
*(Also indicate those of particular benefit to IAB members and other end users.)* Those industry members active in professional society outreach (such as ASCE) may find these activities useful.

### Potential end-users beyond academic community:
*(IAB members and others.)* Some activities and materials will be suitable for the educated yet nontechnical audience, which may include corporate and governmental decision makers.

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### Educational outcomes and deliverables, and intended audience:

Educational materials for grades K-16, workshop/short course program for teachers, public awareness materials for the general public for educated non-engineer/scientist.

### Project Schedule and Expected Milestones for the Project:
*(Milestones and estimated time of achievement; e.g. Fall, Spring, Summer.)*

- Spring 2004: First Meeting of the Working Group on Diversity Issues
- Summer 2004: Teacher Program
- January 2005: Phase II of web-based materials development

### Team Members: *(If known, provide names of team members associated with project including project leader, other faculty and their departments, undergraduate students, graduate students, postdoctoral students, industrial participants.)*

In addition to other education program leaders (Abdullah, Agrawal, Mylonakis, Purasinghe, and Spencer), MCEER will work with other faculty depending on the nature of the specific activity. Andrei Reinhorn and Amdre Filiatrault are also involved in these educational endeavors.

### Possible Direction of Work in Subsequent Years:

It would be desirable to develop a modular set of educational materials which can be easily accessed without assistance, regularly maintained and monitored for effectiveness. MCEER will also be developing a progressive plan to work with members of traditionally underrepresented groups, and pursuing independent sources of funding to sustain these activities.