

In Search of STEM"™: A proposal for a "one stop" information system for  
Science, Technology, Engineering, Mathematics

Despite the urgency to improve STEM education because of its critical role in the future of the states' and national economy, there is no infrastructure/system for connecting people/effective programs and materials or providing key information about STEM for teachers, educational leaders, businesses and other stakeholders.

In fact, tens of millions of dollars are appropriated every year for STEM initiatives throughout the nation and yet, the many STEM data warehouses, inventories and other resource lists are disconnected, disparate and difficult to use, much less find. There should be a single site where interested parties can access information about all programs, projects, products, initiatives, collaborations and services in STEM education, preK through 20.

We propose to develop an interactive, searchable "one stop app store" and knowledge exchange to coordinate available STEM resources and bring them to end-users to support PK-16 teaching and learning to improve STEM education outcomes. Inclusion in the portal will be determined by a set of criteria/rubrics selected by representatives of all the stakeholder groups. The proposed system will contextualize the content. Users will not have to hunt to find out how the resources can be used, how they link to standards, etc.

We propose the following functionality and attributes for this "one stop application" STEM portal/clearinghouse:

The functions:

1. Single user interface
2. Easy personalized access
2. Capacity for networking
3. A suite of publishing tools

The attributes:

1. Contextualized resources
2. High quality STEM content organized by comprehensive criteria
3. Personalized searching capacity
4. On-demand access
5. Trusted sources
6. Sustainable design
7. Alignment with standards
8. Ease of use

The added value:

1. Organized by, with and for stakeholders
2. Capacity for contributed content
3. Up to date information
4. Constant communication to maintain engagement and currency

In order to begin the process of establishing “In Search of STEM”™, we see the need for the following:

- A review of existing institutional assets and those effective materials and practices
- The establishment of a process to determine essential elements and organizational structure by representatives of the stakeholder groups
- A process, structure and personnel for updating and providing quality assurance going forward
- The development of an action plan and fundraising strategy

The time is now and urgent action is needed. The next most important step is to secure support and funding. For support, we are seeking partnerships with national organizations, e.g. CCSSO; governmental agencies, e.g. in MA, the Instructional Technology Division of the Executive Office of Administration and Finance, the Office of the Lieutenant Governor; educational agencies, e.g. in MA the Massachusetts Departments of Elementary and Secondary Education; and the Department of Higher Education; educational and business professional organizations such as MASCD, MassCUE and CELT, as well as foundations, universities and other interested parties both on the national and state level. We are in discussion with industry partners such as Google which have shown interest in STEM education.

There are existing models which we intend to build on. For example, Kayanta (<http://www.kayanta.com>) is a search site that filters information down to what is most relevant to the user. Other STEM repositories we will explore include the National Science Digital Library (NSDL) and Defined STEM. Finally, it is our long-range expectation that this infrastructure will be extensible to other disciplines such as the arts (think STEAM).

We propose a pilot in Massachusetts and one other state which, when successful, will serve as a model for rest of the nation. Such an endeavor, as we envision it, has not been undertaken before. We expect that the site will be continuously evolving as new information is added and as tools change. In addition, because we intend to leverage existing sites, sources and people we will not to “reinvent the wheel.”