

UPDATE REPORTS FROM GOVERNOR'S TASK FORCE ON K-12 STEM EDUCATION
WORKING GROUPS
reported March 23, 2016

1. Foundations of STEM working group:

Goals

The Foundations in STEM Working Group has the following goals:

Alternative Math Pathways: recommend appropriate courses for non-calculus tracks, specifically (a) data/statistical analysis and (b) linear algebra, at the high school level

Coding: identify high-level content for a high school coding / computer science course that would be suitable for meeting the math requirement

Teacher Preparation: identify possible process(es) by which teachers can develop any additional background or credentials needed to teach coding in high school

Additional: address opportunities to teach coding across the curriculum, including at the high school level, and develop examples of coding concepts that could be taught in pre-K through 8.

Progress

Three brief documents have been developed, one outlining initial recommendations for content of a coding course to confer mathematics credit, the second outlining the three proposed four course high school math pathways, and the third outlining efforts towards micro-credentialing in other states and the current opportunity to develop an updated credentialing framework for NH. For the math pathways document, the initial outline proposes that each mathematics pathway culminate in a dedicated course in the relevant area, eg Calculus, Probability and Statistics, or Linear Algebra.

Key questions that the Working Group will be addressing in the next period:

- Narrowing the recommended content for the computer science course, trying to achieve the appropriate balance between providing guidance and schools-specific flexibility
- Commenting on the suitability of the AP Computer Science course to achieve Task Force recommendations for coding content

- Assessing the feasibility of including a course on coding in the mathematics pathways the Working Group is recommending. At present, a course on coding, even if it allowable for mathematics credit, would be a 5th course in high school mathematics, and thus may become an opportunity that is generally explored only by the most advanced students.
- Developing clearer understanding of what certification or credentialing is needed for a teacher to teach coding as math, and identifying that process
- Exploring (with individuals from other Working Groups) potential partnership with MIT to develop and offer a pilot workshop on teaching coding across the curriculum (ie in the specific discipline of the teacher)
- Working with the Department of Education to determine what action is needed for endorsement of the Alternative Math Pathways and for Coding as Math.
- Next Working Group Conference Call: Thursday March 24, 2016. Reported by Joe Helble

2. Empowering Teachers working group:

At the last meeting of the TF, Empowering Teachers reported their work on micro-credentialing would be put on hold until the NHDoE finished its work (with the CCSSO) on modernizing pre-service and in-service credentialing, including review of micro-credentialing. The group then turned their attention to their second goal: coordination of disparate professional development training being offered by various organizations throughout NH. The group focused on LESCEN centers (NH Education Service Centers).

- The working group organized a call Feb. 17 with 3 of the 6 LESCEN directors inviting them to present and discuss their programs for STEM professional development for K-12 teachers in NH. SERSEC, North Country and Southwest Center (now located at Keene State) attended. The Group is scheduling a second call with the remaining three directors this week. The goal and next steps: lead a collaborative effort among these professional development centers so that work can be better coordinated statewide, identify gaps and overlaps, and foster a community of interest among these centers as delivery models of STEM professional education on a regional basis. Lead development of new approaches to delivery of professional development.
- Next working group: Arranging for week of March 29-April 1. Reported by Todd LaMarque

History List of centers:

https://docs.google.com/document/d/1f6cCJLCo1vY9t_kJwemt9_ytpcgCEZi3XQMFRZungow/edit

3. Inspiring Students working groups:

- **NH Math and Science Academy team:**

- *After a number of interviews with founders and leaders in the math and science academies community as well as NH higher education leaders interested in working to support NHMSA , the NHMSA group met with SNHU innovations lab director (now known as the Sandbox) The attached notes provide more detail.*
- **Next steps:** *With SNHU as a sponsor, the NHMSA group will recruit and hold a one-day design charrette April 25to sketch out a framework for the Academy and a timetable for further development of a proposal. Task Force members are asked to recommend participants from industry, especially those who seek employees with a college degree or higher as NHMSA is intended to be a college preparatory high school. Any Task Force Member who is interested in attending the April 25th Design Day and who has not already expressed an interest should let Susan know THIS WEEK. A list of invited participants will be available shortly and sent to the Task Force via email. Reported by Susan D'Agostino.*

- **Personal Learning Plans Update**

- Spoke with Dan Auger in Senator Ayotte's office about the Middle STEP Act and how it aligned with our Pathways work. We agreed to work together in an attempt to garner stronger support for this Act while further defining the Act to align with our work. Perkins grant funding is being sought for Middle STEP. We agreed to work together to further define the Middle STEP Act. A summary of the Act is included on page two.
- The Pathways Committee will be reviewing two Personal Learning platforms, LiFT and Naviance. LiFT is new to the market and currently in beta testing. Naviance has been around for a while and is the system of choice in the state of VT. We will have a live demonstration of the LiFT system on March 30. A date for exploring Naviance is currently underway.
- Several members of the Pathways Committee (Jacqui Gillette, Joanne Roberts and Barbara Couch) are meeting on April 6 to discuss a Pathways pilot opportunity at the Lebanon Middle/High Schools.
- Interviewed two superintendents asking the question, "What would success look like if we could create the perfect pathway opportunities for students both in middle school and high school?" This list is evolving and being circulated for further commentary. (Feb. 29)

Middle School:

- Technology (personal learning plans) to aid in discerning students' interests, skills and talents; to bring greater coherence, focus, and purpose to the decisions students make around their short and long term educational goals. (Examples include Naviance and LiFT).
- Student advisors (in addition to guidance counselors) to work with students, teachers, parents, guidance counselors and the community at large for the purpose of helping students with their educational and career opportunities road map.
- Career Fairs annually
- Job shadow days annually
- Opportunities for career exposure and learning: Tours and time spent in workplaces (Little League of Manufacturing Program as an example)
- Mentors for students (aligned to academic/career road maps)

High School:

- Continuation of the Personal Learning Plan
- Competency based learning opportunities both in and out of the classroom aligned with Common Core and NGS Standards including Extended Learning Opportunities, apprenticeships, etc.
- Required financial literacy class
- Opportunities to graduate from high school with the credentials and certificates needed in the market place (dual enrollment opportunities during the school day, after school, summers and on-line).
- Half year internship during the senior year of high school
- Mentors aligned with career interests Reported by Barbara Couch

● **CTEs – Early College and modernization of CTE curriculum team update**

New Skill for Youth Grant from CCSSO was submitted earlier this month and we expect to learn results by early April. The purpose of the grant is to create a Career Pathway System. The New Skills for Youth initiative, specifically Phase I of this grant, would provide us with the resources, technical expertise and short timeline needed to create such a plan. The plan identified four steps in the education/workforce pipeline to make this happen: competency based education, career technical education, work-based learning opportunities and pathways to careers that begin in middle or high school. Beyond the overarching goal of increasing post-secondary degrees and credentials, the grant, if received, will focus on increasing the number of young adults entering high demand STEM fields. More information is available at:

http://www.ccsso.org/Resources/Programs/Career_Readiness_Initiative.html.

Reported by Chris Dodge

● **Challenges, Competitions and Capstones team:**

- The focus on this group is to develop opportunities to expand the FIRST® competitions held in many schools throughout NH. A meeting will be scheduled with FIRST representative Don Bossi, Bob Hallowell., Chancellor Gittell, Brittany Weaver and others.

- Reported by Bob Hallowell

- **Girls in STEM team:**

With the help of Jeremy Hitchcock, FIRST, among others, we are gathering best-practices on engaging diverse learners across STEM pathways reviewing best practices that span formal and informal learning, P-12, higher education and industry. We have an informal subgroup willing to continue the conversation and work beyond April. Within Dartmouth, the office of outreach is continuing to centralize STEM education efforts, building potential sustainability in keeping the GTF efforts moving forward.

We will be partnering directly with the National Alliance for Partnerships and Equity and their stem equity pipeline. They have been pioneers in gender equity for years. They have lots of great relationships with historically black colleges and minority serving institutions. Reported by Lauren Provost

4. Communications and Engagement working group update:

The working group, led by Buck Beaudoin, is developing a user experience group (with parent/child/teacher) teams from different socio-economic backgrounds and geographic areas to test out website pilot (based on original design/wireframe presented to Task Force). Goal is to test out design by late April and after reviewing and validating recorded results, to report back to Task Force for review and approval to move forward.