Science and Social Studies Return to School Task Force

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This report encompasses all three return-to-school scenarios. It acknowledges that students cannot share materials (textbooks and materials for hands-on investigations) in any of the three scenarios. Instead, teachers will create individual materials kits that students will either use in school or take home, depending on the scenario. Having a kit prepared for each student will also allow for a fluid transition between scenarios if necessary. Digital resources have a lower per student cost than hands-on materials, so we have incorporated that into our plan wherever possible.

- **Curriculum Maps**
  - I have received guidance from DESE that they will *not* be issuing prerequisite standards for science and social studies in SY2021.
  - To address all of the standards incorporated into the curriculum map, streamlined science units are being developed this summer that strategically target our standards and can be used in any back-to-school scenario. The first units at K-8 will be finished before the start of school. They will include digital science notebooks.
  - Science units that require a significant hands-on component have been moved to the spring, in the hope that students will again be able to share materials (like microscopes.)

- **Recommended Online Tools for Science**
  - In any scenario, students will not be able to share materials. Our recommendations include funding for individual science material kits that students will either use at school or at home. Based on figures from this year's summer school, a basic kit would average $30 per student. For 11,299 K-8 students, this would total $338,970. To reduce this cost, we recommend relying more on teacher-recorded demonstrations of investigations that students can observe and analyze. In that case, more science-specific materials would stay in the classroom and the materials cost for the year would be $56,495, or $5 per student. **No funding is currently in place in the FY21 budget for science supplies, so the $56,495 is critical for carrying out hands-on learning in any scenario.** This plan also recognizes that teachers will not be able to record every investigation, and will need additional online resources to guide investigations remotely.

- Our experience this spring has shown us that our science program, FOSS, does not adapt well to remote learning. It requires significant direct instruction and specialized materials. Their efforts to remedy the problem started late and are moving slowly. Online resources are being used to supplement it wherever possible. At K-4, *Mystery Science* was purchased using FY20 funds to support remote learning. This program is being integrated with FOSS to provide inquiry-based virtual instruction that is effective in any scenario. A similar product at grades 5-8, *Mosa Mack*, is being requested to support middle school science with remote learning. This inquiry-based program contains videos of science investigations that students can follow at home. It also has an engineering component embedded in every unit. (Feedback from this spring indicated that engineering activities were extremely popular and engaging during remote learning.) Use of this program will support teachers with providing inquiry-based science while also allowing us to keep our materials costs at $56,495.
- To summarize, costs for remote learning in science:
  - Individual materials kits for students: $56,495
  - *Mosa Mack*: $26,851
  - Stipends for teachers who are modifying science units: $10,000

- **Recommended Online Tools for Social Studies**
  - Some free curriculum units suitable for remote learning are being acquired at K-4. Some are being written by Lowell teachers with Children Discovering Justice. An additional resource is *History's Mysteries*, free inquiry-based units from an educational collaborative in western MA. These two initiatives do not cover all of the standards, but they're a start.
  - At grade 5 we have obtained online access to our social studies program for both teachers and students. It is being supplemented with free online lessons from other resources to align it with the 2018 MA HSS Framework.
  - In FY20, before the pandemic, we purchased new social studies programs at grades 6, 7, and 8 to align curriculum with the 2018 MA HSS Framework. The intention was for students to share textbooks. (Each teacher has 30.) In any return-to-school scenario, students will not be able to share textbooks. Therefore, a request is being made to purchase online student subscriptions for every student to use with their district-provided device:
    - *A History of the World* (Grades 6&7): $21,252
    - *We the People* (Grade 8): $11,448 on the platform *Actively Learn*
    - Grade 8 training on the online platform: $3,580
      - This platform, *Actively Learn*, also gives us access to a wide array of additional online resources for social studies. Teachers can add questions to the reading, allowing them to differentiate instruction for diverse needs.

- **Flipped Classrooms**
    - Our team is enthusiastic about the potential of the flipped classroom model. If training occurred across the district, teachers and students would be familiar with the model if we needed to switch between scenarios. Teachers who have experience using the flipped classroom model report that it gives them more time interacting and supporting individual students. Synchronous online meetings would be more engaging for students if they were applying what they learned rather than watching a traditional lesson on a screen.
        - We recommend that teachers create their own videos for asynchronous learning in order to support relationship-building at the beginning of the school year, especially in a remote environment.
        - We anticipate that the idea of creating videos for instruction may cause anxiety for some teachers. Here are some good resources that we found to support teachers with making this transition:
            - A 5-Step Guide to Making Your Own Instructional Videos
            - Everything You Need to Know About Building a Great Screencast Video
            - Some exemplars of teacher-created videos can be found here and here
        - These videos should be no more than 9 minutes long. More complex content should be chunked into multiple short videos. Struggling students can pause the video where necessary and/or watch it multiple times.
        - Teacher-created videos could be housed on a shared Google folder to inspire other teachers. Teachers could introduce a video if it's already created by a colleague. Scripts and other suggestions could be shared to support teachers with creating their videos, and professional development should be provided.