



Topic: Free/Inexpensive Resources for Mathematics and Science Teachers

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Abstract: This session will provide a summary of some free-to-use software programs for teachers and students that can be downloaded or executed from the internet as well as free/inexpensive Smartphone applications for teaching and productivity. Internet educational software that will be highlighted includes *PhET* (downloadable simulations for all sciences and mathematics), the *Protein Data Bank*, *Google Body*, *Stellarium*, and various online simulations. Productivity programs include *Open Office*, *Team Viewer*, and *Dropbox*. A summary of some useful science and math Smartphone applications will be also be provided along with productivity apps that include *GoodReader*, *Dropbox*, *ePrint*, and *TeamViewer*. Attendees may want to have their laptops and/or smartphones as there may be time to try out the resources and share some of their own.

Program:

- I. Internet Teaching Resources
 - a. PhET – On and Offline – (<http://phet.colorado.edu/>)
 - i. Chemistry: Balancing Equations, Build an Atom/Molecule
 - ii. Biology: Neuron
 - iii. Physics: Circuit Construction Kit (AC+DC)
 - iv. Math: Calculus Grapher
 - b. Protein Data Bank – On and Offline – (<http://www.pdb.org/pdb/home/home.do>)
 - c. Google Body – Online – (<http://bodybrowser.googlelabs.com/body.html#>)
 - d. True RTA Audio – Offline – (http://www.trueaudio.com/rta_down.htm)
 - e. Stellarium & Celestria – Offline – (<http://www.stellarium.org/>; <http://www.shatters.net/celestia/>)
- II. Productivity Resources
 - a. Open Office (<http://www.openoffice.org/>)
 - b. TeamViewer (<http://www.teamviewer.com/en/index.aspx>)
 - c. Dropbox (<https://www.dropbox.com/>)
- III. iPhone Apps for Math and Science (many of which are available or have a counterpart on other smartphones)
 - a. iMathematics – Free (<http://itunes.apple.com/us/app/imathematics/id337535181?mt=8>)
 - b. iScience – \$1.99 (<http://itunes.apple.com/us/app/iscience/id386394943?mt=8>)
 - c. TED Mobile – Free (<http://itunes.apple.com/ca/app/ted-mobile/id303299045?mt=8>)
 - d. The Elements – \$9.99 (<http://itunes.apple.com/ca/app/the-elements-for-iphone-4/id377886887?mt=8>)
 - e. Wolfram Alpha – \$1.99 (<http://itunes.apple.com/app/wolframalpha/id334989259?mt=8>)
 - f. NASA – Free (<http://itunes.apple.com/ca/app/nasa-app/id334325516?mt=8>)
 - g. Star Walk – \$2.99 (<http://itunes.apple.com/ca/app/star-walk-5-stars-astronomy/id295430577?mt=8>)
 - h. Big Ideas Video Podcast – Free (<http://itunes.apple.com/ca/podcast/big-ideas-video/id336356622>)
 - i. Discovery News – Free (<http://itunes.apple.com/us/app/discovery-news/id336742160?mt=8>)
- IV. iPhone Productivity Apps (available on other smartphones)
 - a. GoodReader – \$4.99 (<http://itunes.apple.com/ca/app/goodreader-for-iphone/id306277111?mt=8>)
 - b. Dropbox – Free (<http://itunes.apple.com/ca/app/dropbox/id327630330?mt=8>)
 - c. ePrint – \$2.99 (<http://itunes.apple.com/ca/app/eprint/id304221132?mt=8>)
 - d. TeamViewer – Free (<http://itunes.apple.com/ca/app/teamviewer/id357069581?mt=8>)
 - e. Phone Drive – \$3.99 (<http://itunes.apple.com/us/app/phone-drive-file-sharing/id431033044?mt=8>)

Honorable Mentions (can be discussed if time permits)

- Duck Dodgers & Displacement (<http://www.youtube.com/watch?v=PyZ42Csl4Xw&feature=related>)
- Wii Physics (<http://wiiphysics.site88.net/index.html>)
- Ripple Tank Simulator (<http://www.falstad.com/ripple/>; App: <http://itunes.apple.com/us/app/ripple-tank-free/id453342553?ls=1&mt=8>)
- Diamond Light Source Simulations (<http://www.diamond.ac.uk/Home/Teachers/simulations.html>)
- You Tube Videos
 - Ruben's Tube (<http://www.youtube.com/watch?v=UR8rZMKllq4&feature=related>)
 - Tacoma Narrows Bridge (<http://www.youtube.com/watch?v=3mclp9QmCGs>)
 - Chladni Plate – 2D Resonance (<http://www.youtube.com/watch?v=YedgubRZva8&feature=related>)
- Severe Weather Website (<http://www.stormpulse.com/>)
- Interactive Physics (<http://jersey.uoregon.edu/>)
- General Physics Java Applets (<http://www.surendranath.org/Applets.html>)
- Physics Sims (<http://www.lon-capa.org/~mmp/applist/applets.htm>)
- Standing Waves in 3D (<http://www.ap.smu.ca/~guenther/seismology/seismology.html>)
- Online Physics Games (<http://www.physicsgames.net/>)
- Math, Physics, and Engineering (<http://www.falstad.com/mathphysics.html>)
- Angles in a Circle (<http://members.shaw.ca/ron.blond/Circle.Geom1.APPLET/index.html>)
- Many Applets (http://www.edinformatics.com/il/il_math.htm)