

## ***In the OPASsphere – June 4, 2009***

***A service of the Oregon Pre-Engineering & Applied Sciences Initiative (OPAS) funded by ETIC***

*To subscribe or get more info, please contact Jo Oshiro - [jo\\_oshiro@ous.edu](mailto:jo_oshiro@ous.edu) or 503.821.1139*

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### ***In this issue:***

***Events: SuperQuest; Scratch; Engineering Essay Winners***

***Web: Gamer Sweeney talks; Kerpoof Kid Science***

***Articles: Farm Robots; Factory iPhones; UnderH2O Sensors; Math Nature vs. Nurture; GLB***

***Research: Malleable Brains***

***Field Reports: Workforce people inventory STEM Resources in Oregon & SW Washington***

***PLTW: Tennessee and Hillsboro, Oregon***

***Classroom Resources: Management Software by student; CS in a box for ages 9-14***

### ***Events – Announcements***

- **TechStart Education Foundation SuperQuest Registration Now Open –**  
<http://www.techstart.org/superquest2009> -- this year SuperQuest includes classes in NXT Robotics; Flash-driven websites; Carnegie Mellon's cs4hs, a way to integrate computer science into math and science curricula in high school; CS Unplugged, a way to teach computer science concepts (binary numbers, data compression and more – also see *Classroom Resources*, below) in grades K-12 without computers; and GameMaker. Classes are offered in Hillsboro and Monmouth
- **Making Math and Science Fun: Integrating Computer Programming Into Your Math or Science Curriculum**, June 20, 2009 9:00 a.m. – 2:00 p.m., SE Portland, put on by Portland Wiz Kids --  
<http://makingmathandsciencefun.eventbrite.com/?ref=linkedinshare> –based on work by MIT Media Labs Lifelong Kindergarten group, using the Scratch computer language. We would love to hear a report from anyone taking this workshop.

### ***Events – Wrap-Up***

- National Academies EngineerGirl **Imagine That! Engineering Innovation Essay Contest Winners Announced** -- <http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=05182009a> – see the contestants and their entries at <http://www.engineergirl.org/?id=10664> .

### ***Weblinks***

- **From the Past to the Future: Tim Sweeney Talks**, Gamasutra, downloaded May 26, 2009 --  
[http://www.gamasutra.com/view/feature/4035/from\\_the\\_past\\_to\\_the\\_future\\_tim\\_.php?page=1](http://www.gamasutra.com/view/feature/4035/from_the_past_to_the_future_tim_.php?page=1) – this 10 page interview with one of the still-successful pioneers of the gaming industry is included here because of these two quotes:
  - *“There are some things you just don’t know you need to know until you know them.”* – now there’s a great justification for continuing to pursue education, especially as the context is some math learned for mechanical engineering that was applicable to programming computer games. Is Tim Sweeney the best model, given that he stopped 4 hours short of his bachelor’s degree? Maybe not, but he nevertheless values the education he did get.
  - *“It influences your whole way of thinking about systems when you’re writing code in a really structured way like that.”* The context here is programming in Pascal versus C or C++, but Jo posits that writing code creates a detailed and testable description of a system, and that

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detailed descriptions of systems influence how one thinks about them, that few methods of describing systems yield something testable, and a wider range of system descriptions yields a better perceptions of those systems.

- **Kerpoof: Introducing Kids to Science Web Site** -- <http://www.kerpoof.com/> --:Engineer Krista Marks developed a Web site owned and operated by the Walt Disney Company that introduces kids to basic programming through fun and creative lessons with support from two [NSF Small Business Innovation Research grants](http://www.nsf.gov/eng/iip/sbir/) -- <http://www.nsf.gov/eng/iip/sbir/> . Kerpoof provides free multimedia software for educators in elementary and middle schools to create original artwork, animated movies, greeting cards, t-shirts, and more. Kerpoof is a great way to introduce broad concepts about computers, the Internet, and technical fluency. The Kerpoof teacher's page includes lesson plans, ideas for classroom use, a free monthly e-newsletter, and contests -- <http://www.kerpoof.com/teach> . *Thanks to the National Girls Collaborative Project Newsletter.*

### ***Articles***

- **Robots Rolling towards Farm Revolution**, Tim Simonite, New Scientist, June 2009 -- <http://www.newscientist.com/article/dn17224-robots-rolling-towards-farm-revolution.html> -- Learnings from such seemingly frivolous contests as the DARPA grand challenge (autonomous off-roading) gets applied to orchards ... will robotic farmhands be The Next Big Thing? *Thanks to Ken Cone and the ACM TechNews.*
- **iPhone – The Work Tool for Sustainable Factories of the Future**, Chalmers University of Technology, May 26, 2009 -- <http://chalmersnyheter.chalmers.se/chalmers03/english/Article.jsp?article=13608> – immediate, paperless update for factory floor instructions is being tested in Sweden. *Thanks to Ken Cone and the ACM TechNews.*
- **Toward Cheap Underwater Sensor Nets**, Jacobs School of Engineering, UCSD, May 26, 2009 -- [http://www.jacobsschool.ucsd.edu/news/news\\_releases/release.sfe?id=847](http://www.jacobsschool.ucsd.edu/news/news_releases/release.sfe?id=847) – More insight into why scientists needs engineers, for the instrumentation for data collection. *Thanks to Ken Cone and the ACM TechNews.*
- **In Search of a Better Teaching Formula, Educators are Challenging the Idea that Numerical Ability Must Come Naturally**, Michael Alison Chandler, Washington Post, May 16, 2009 -- [http://www.washingtonpost.com/wp-dyn/content/article/2009/05/15/AR2009051503434.html?wprss=rss\\_education&sid=ST2009051503494](http://www.washingtonpost.com/wp-dyn/content/article/2009/05/15/AR2009051503434.html?wprss=rss_education&sid=ST2009051503494) – Teach students that studying new material makes them smarter by connecting new groups of neurons and they will indeed be more likely to work on new material effectively. *Thanks to the STEM Equity Project Pipeline Press*
- **Guys Left Behind**, Wall Street Journal, E. Kinney Kalesne, June 2, 2009 – Evolutionary adaptations for hunting-gathering and agricultural and military societies – risk-taking, short attention span, ego,

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physicality – are less suited for the information age, and now men constitute an at-risk group for education, employment, and mortality -- <http://online.wsj.com/article/SB124386767941072379.html>

### ***Research***

- I keep hearing it again and again, so I will repeat it here: **it is important to tell students of all ages that “smart” is a malleable trait** – use your brain, challenge your brain, make your brain practice and it will become a smarter, stronger brain. So, just like you should use more muscles than just the ones in your left leg, you should do lots of different mental activities: the picky problem-solving of math (which, unlike so many things in life, often actually has One Right Answer); the patterning of dancing and music; the symbolic decoding of reading language and music; the fine motor control and visualization of drawing and painting; the spatial skills of sculpture, dance, and drafting; the process and quality control of making concrete objects; the puzzles of Sudoku and “why is the sky blue?”; the encoding and communication skills in writing; the analytical skills in reading; the methodology and attention to detail in computer programming and dressmaking; the project management of large craft projects or group displays – **students who believe in a malleable brain, and are praised for the process of effort rather than the state of being smart, do better academically, have better self-efficacy**, i.e., are able to believe “this is something I can do, and I know how to figure out and get help to do the parts of it that I can’t do yet”.
  - One citation for this: IES Practice Guide “Encouraging Girls in Math and Science”, 2007 -- <http://ies.ed.gov/ncee/wwc/pdf/practiceguides/20072003.pdf>

### ***Field Reports***

- A consortia of Workforce organizations is the grantee for a "High Growth Job Training Initiative STEM (Science Technology Engineering Math) Grant" from the US Department of Labor. The collaborating organizations are SWWDC (Southwest Washington Workforce Development Council), WSI (WorkSystems, Inc), MTC (Management & Training Corporation), EEE (Enterprise for Employment and Education) and the US Department of Labor. The grant runs from 2009 - 2011 and provides, among other things, 3 STEM Coaches for Northwest Oregon (Columbia, Washington, Multnomah, Yamhill, Marion and Polk counties) and Southwestern Washington (Wahkiakum, Cowlitz, Clark counties) and these resources:
  - Regional Resource Catalog: Science Technology Engineering and Math (STEM) Initiative, A list of Active STEM Programs Serving Northern Oregon and Southwest Washington, April 2009. Prepared by Scruggs and Associates, LLC and Professionals on Demand: program description and contact information -- [http://opas.ous.edu/Committees/Resources/NonOPAS\\_Working\\_Papers/Scruggs\\_STEM\\_Directory\\_May\\_2009.pdf](http://opas.ous.edu/Committees/Resources/NonOPAS_Working_Papers/Scruggs_STEM_Directory_May_2009.pdf)
  - Northern Oregon and Southwest Washington Science Technology Engineering Math Resource Listings, a STEM Resource List for Career Exploration, Program and Classroom Activities and other related efforts, April 2009: annotated website listings -- [http://opas.ous.edu/Committees/Resources/NonOPAS\\_Working\\_Papers/Scruggs\\_STEM\\_Directory\\_May\\_2009.pdf](http://opas.ous.edu/Committees/Resources/NonOPAS_Working_Papers/Scruggs_STEM_Directory_May_2009.pdf)

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### ***PLTW***

- **Students Steered Toward Science**, Teacher Magazine, May 26, 2009 – [http://www.teachermagazine.org/tm/articles/2009/05/26/tennscienceprogram\\_ap.html?tkn=TTLFYVUW1LFJRIKSzGgVnQj1H7qW8Xs3HNm2](http://www.teachermagazine.org/tm/articles/2009/05/26/tennscienceprogram_ap.html?tkn=TTLFYVUW1LFJRIKSzGgVnQj1H7qW8Xs3HNm2) -- PLTW in Tennessee middle and high schools; while not the best description of the PLTW program itself, this article shows the growing appreciation for what PLTW can bring to the classroom.
- **Congratulations to Glencoe High School in Hillsboro**, which just became a PLTW-certified school, meaning it has been reviewed by an independent panel of educators who certify the quality of content and delivery of the PLTW curriculum. The panel was led by State Affiliate Director Tim Brower of OIT. Congratulations to Peter Schmurr, who teaches PLTW at Glencoe, and the PLTW students who may now be able to earn college credit for these classes. Thank you to the panel: Tim Brower, OIT; Tom Thompson, Oregon Department of Education; Edith Gummer, North West Regional Education Laboratory; Dale Moon, Regional Coordinator for Career and Technical Education, Linn-Benton Community College; Marybeth Stiner; Regional Coordinator for Career and Technical Education, Portland Public Schools; Steve Day, Principal, Health & Science School, Beaverton School District; Ramona Toth, Instructional Coach & Teacher, Liberty High School, Hillsboro School District. *Thanks to Tim Brower.*

### ***Classroom Resources***

- **Classroom Management 2.0**, Teacher Magazine Web Watch -- [http://blogs.edweek.org/teachers/webwatch/2009/05/classroom\\_management\\_20.html](http://blogs.edweek.org/teachers/webwatch/2009/05/classroom_management_20.html) -- The Millennial Horatio Alger story: 17 year old creates web-based classroom management software to help his teachers and now has 100 clients. The product is GPA Software -- <http://www.gpasoftware.com/>
- **Computer Science in a Box: Unplug your Curriculum**, National Center for Women in Information Technology -- <http://www.ncwit.org/resources.res.box.cs.html> – based on CS Unplugged, you can download the complete box as a pdf; this particular configuration is aimed at students ages 9-14. A blog entry about its use -- [http://www.ncwit.org/news.blog.php?editorial\\_id=458&action=display](http://www.ncwit.org/news.blog.php?editorial_id=458&action=display). The original CS Unplugged curriculum and its developers from down under are here -- <http://csunplugged.com/>

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