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Cloud computing in nanoHUB powering education and research

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ABSTRACT

If you had access to interactive modeling and simulation tools that run in any browser, could you introduce interactive learning into your classes? If you had easy access tools, which need no installation, could you use them to help guide your experiments? If you did not have to worry about compute cycles, would you benchmark your own tools against other state-of-the-art approaches? If you had your own tools and could easily share them with the community, would you do it? This short course will provide an overview of these processes and their impact as they are supported on nanoHUB.org today. If you have never been on nanoHUB.org, learn how it might help you; if you have used it, learn about new and upcoming features and share your story with the nanoHUB team and other participants. Annually, nanoHUB provides a library of 3000+ learning resources to 330,000+ users worldwide. Its 340+ simulation tools, free from the limitations of running software locally, are used in the cloud by over 13,000 annually. Its impact is demonstrated by 1100+ citations to nanoHUB in the scientific literature with over 14,000 secondary citations, yielding an h-index of 57, and by a median time from publication of a research simulation program to classroom use of <6 months. Cumulatively, ~22,000 students in over 1000 formal classes in over 185 institutions have used nanoHUB simulations. nanoHUB.org is a virtual nanotechnology user facility funded by the National Science Foundation and supports the National Nanotechnology Initiative with a highly successful cyber-infrastructure. nanoHUB.org has been supported by the NSF for 12 years and funding was awarded for another 5 plus 5 years in 2012.