

Abstract: “Computation Exploration: An Introduction to High Performance Computing”

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With our increasing reliance on technology and computers it is critical that students begin their computer education early and that it involve more than just while loops and if statements. The Pittsburgh Supercomputing Center (PSC) has developed a program to help address these issues.

Computation Exploration (Comp Ex) is a high performance computing teaching module that can be incorporated into existing curricula in high school computer science classrooms. This program teaches high school students the basics of MPI and guides them through the development of their own parallel program. Once the students have completed their parallel programs they are introduced to various high performance computing platforms, on which they run their application. In addition to traditional HPC architectures, students are introduced to cloud computing and run their MPI program on Amazon’s Elastic Compute Cloud. Finally, students are introduced to large scale data analysis using Hadoop. Comp Ex piloted in February 2009 at a local Pittsburgh high school, where it was integrated into an existing introductory computer science course.

In this presentation we will discuss the components of the Comp Ex teaching module, our experience in teaching these concepts to high school computer science students, and the lessons we have learned from this experience. We will also discuss our future plans for teaching high performance computing and its applications in high schools.