

Integration of NGSS Earth and Space Science Concepts into a High School Chemistry Course: One Teacher's experience

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Nationwide, high school science teachers are being asked to teach outside their areas of expertise. Because many states and districts are not including the Earth and Space Sciences (ESS) into their course structure, it falls on Biology, Chemistry and Physics teachers to integrate concepts of geology, atmospheric and oceanic science, and astronomy into their courses. While offering ESS courses would be the best solution to meeting the Next Generation Science Standards (NGSS) [1], integration should be emphasized in all courses. The true intention of the NGSS is to provide students learning opportunities that demonstrate how scientists build their research off the work of scientists in all disciplines.

In every unit that a Chemistry teacher creates, there are tangible and relevant connections to ESS. These connections require an established content knowledge and an understanding of the different teaching strategies that are most effective in both ESS and Chemistry as described the the NGSS.

During this presentation, we will:

- examine explicit and implicit connections between ESS and Chemistry highlighted in the NGSS;
- outline proven strategies that engage and inspire students to pursue majors in the ESS at the college level;
- review example unit plans, lessons, lab exercises, and projects that provide students with the knowledge and skills they need to be successful in those majors; and,
- identify existing gaps in teaching resources.

[1]NGSS Lead States (2013) *Next Generation Science Standards: For States, By States*. The National Academies Press.