

STEM integration: Using a hydroponic curriculum to engage STEM integration

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Grade Level: 9-12

Content Areas: Science, Engineering, and Integrated STEM

Objective of Poster: The poster will focus on how to use a hydroponic system to engage STEM integration, such as biology, physics and engineering design, with 9-12 grade students.

Brief Description of Poster:

In science education, one of the biggest concerns was that often science instruction is disconnected from students' everyday experiences and knowledge (Levin & Andrew, 2012). In order to engage students in meaningful learning, teaching science in a more connected manner, such as concerning a real-world example, can make science content knowledge more relevant to students.

Hydroponics, growing plants in nutrient solution without soil, is developed as early as 1860. It is a way of the future for environmentally controlled agriculture. Hydroponics gives students opportunities to build and maintain a real live growing system and plant, and harvest crops. From design to full construction, a hydroponic project integrates skills and knowledge across STEM subjects.

The STEM integrated curriculum and instruction focuses on integrated hydroponic curriculum created by the authors. The activities aim to provide students more autonomy in their learning, and connect STEM content from their classes to real-world applications of theory and concept. By using the activities form a STEM integrated hydroponic curriculum, the STEM integrated curriculum and instruction intend to show how teachers could use STEM integration in their classrooms.

References:

Levin, D.H., Hammer, D., & Elby, A. (2012). The refinement of everyday thinking. In D.H. Levin, D. Hammer, A. Elby, and J. Coffey (Ed.), *Becoming a responsive science teacher: Focusing on student thinking in secondary science*, pp.15-42. Arlington, VA, National

Science Teachers Association.