SYSTEMS THINKING IN THE LABORATORY CLASSROOM

Thomas A. Logothetis[a*]
[a] *University of Southampton, School of Chemistry and Chemical Engineering, Highfield, Southampton, SO17 1BJ, United Kingdom*
[*]*Corresponding author: thomas.logothetis@southampton.ac.uk*

Abstract
Systems Thinking[1] has been well established in most STEM subjects before chemistry picked up on this topic. Meanwhile, Green Chemistry[2] and Sustainable Development Goals[3] have been introduced to chemistry curricula in the previous millennium. Yet, they are connected[4] and this link paves the way to incorporating systems thinking into the chemistry classroom.
The chemistry laboratory is an integral part of chemistry and chemical engineering education. This location and mode of education is precious in many ways (e.g. timewise, financial commitment, infrastructure, teaching workload, health and safety implications) and rightly the trend pushes towards using a laboratory class to focus on dedicated chemistry and transferable practical skills[5].
With a fragmentation into shorter teaching components, i.e. individual practicals in a laboratory class, it was found inherently more challenging to forge a unit that combines teaching laboratory skills, highlighting progressive sustainable development, and kindling the learners' interest in the bigger picture: systems thinking – the impact of a given "chemistry" on societal, cultural, environmental, economic and other related aspects.
Here, discussion will be examining the challenges encountered by this approach, and how some of these have been overcome, and using this forum to solicit ideas how to best meet remaining issues.

Keywords: Systems Thinking, Laboratory education, Green Chemistry, Sustainability

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