

Key note Science Education

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Relic or Remedy? Practical Work in Science Education

Practical Work in Science Education dates back almost as far as the inception of science as a school subject. It is one of the elements most readily associated with science education, and frequently it is the one element that can fill the harshest critics with nostalgia for school days gone by. Practical work has never fallen out of fashion, and hardly anyone appears to want to eradicate it. At the same time, it has been notorious for falling short of its alleged potential. Much time has been invested in developing students' practical abilities and skills, and still, there has not been the ultimate breakthrough in science education outcomes. Is this suggestive of practical work's inherent inadequacy to contribute to wholesome science education? Or does this imply that practical work's potential has so far been misjudged, that it has even been overtaxed? Add to this that today's students face multiple issues of more existential dimensions than problem-solving in science, and science education as an academic discipline is well-advised to reappraise one of its crucial assets.

The presentation aims to review which expectations have been conferred onto practical work since its introduction into science education. By doing this, it intends to identify shared justifications and to probe these with a view to current and imminent challenges that confront science education. It will—hopefully—also offer a perspective on why practical work in science education is still valid and should not be considered just a welcome change of pace. Though the presentation will focus on science education as a domain, it is assumed that the underlying rationale will prove relevant to a wider audience.

Selected works

Emden, M., & Colberg, C. (2025). Die naturwissenschaftsbezogenen Arbeitsweisen im Lehrplan 21: Rekonstruktion einer Typologie aus naturwissenschaftsdidaktischer Perspektive. *Progress in Science Education*, 8(2), 19–36. DOI: 10.25321/prise.2025.1574

Emden, M.; Bewersdorff, A.; Baur, A. (2025). Assessing Professional Development on Experimentation as a Method of Inquiry-based Science Teaching. Framework and Principal Results. *Science Education*, 109(5), 1257–1286. DOI: 10.1002/sce.21943

Emden, M. (2021). Reintroducing «the» Scientific Method to introduce scientific inquiry in schools? A cautioning plea not to throw out the baby with the bathwater. *Science & Education*, 30(5), 1037–1073. DOI: 10.1007/s11191-021-00235-w

Baur, A., & Emden, M. (2020). How to open inquiry teaching? An alternative scaffold to foster students' inquiry skills. *Chemistry Teacher International*, 2, 1–12. DOI: 10.1515/cti-2019-0013