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**Abstract:** Currently, there is a focus in science education on preparing students for lives as innovative and resilient citizens of the twenty-first century. Key to this is providing students with opportunities, mainly through inquiry processes, for discovery making and developing their creative reasoning by bringing school science closer to authentic science. I propose, building on the work of Woods, Magnani and the authors of a 2005 special issue of Educational Philosophy and Theory on Peirce, that these efforts can be advanced through the adoption of a Peircean logic of discovery in the science classroom. I further suggest that this can only take place if a classical logic that frames school science, which deems abduction—the creative element of reasoning that drives discovery—as fallacious and not valuable as an inference making process, is replaced with a naturalised logic. Such a logic positions students as practical, not ideal agents of reasoning who in their hypothesis making are inferential-experts not inferential-misfits. In doing so, I propose that actualising Peirce's vision of education is advanced, particularly as regards science education.

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