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From Ancient Greece to Modern Education: Universality and Lack of Generalization of the Socratic Dialogue

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Abstract

Two thousand four hundred years ago Socrates gave a remarkable lesson of geometry, perhaps the first detailed record of a pedagogical method in vivo in history [Plato. (2008). *Apología de Sócrates. Menón. Crátilo*. Madrid: Alianza Editorial]. Socrates asked Meno's slave 50 questions requiring simple additions or multiplications. At the end of the lesson the student discovered by himself how to duplicate a square using the diagonal of the given one as the side of the new square. We studied empirically the reproducibility of this dialogue in educated adults and adolescents of the 21st century. Our results show a remarkable agreement between Socratic and empiric dialogues. Even in questions in which Meno's slave made a mistake, within an unbounded number of possible erred responses, the vast majority of participants produced the same error as Meno's slave. Our results show that the Socratic dialogue is built on a strong intuition of human knowledge and reasoning which persists more than 24 centuries after its conception, providing one of the most striking demonstrations of universality across time and cultures. At the same time, they also emphasize its educational failure. After following every single question including Socrates' "diagonal argument," almost 50% of the participants failed to learn the simplest generalization when asked to double the area of a square of different size.

Citing Literature

Supporting Information

Supporting Information

Additional Supporting Information may be found in the online version of this article:

Appendix S1. Full detail of the dialogue.

Figure S1. Representative drawings made by participants to the 51st question.

Filename	Description
MBE_1126_sm_AppendixS1.pdf 100 KB	Supporting info item
MBE_1126_sm_FigureS1.pdf 202.8 KB	Supporting info item

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