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Lebanon. *A charlatanic proof: the case of proof by induction*. Preliminary report.

Mathematics instructors witness every day student's difficulty in understanding proofs, let alone writing their own. It is one task to understand a proof, and a totally different job to write one's own. In an attempt to look for a pattern for proofs in general, students think that all proofs must have a common format. In this paper I want to focus on an irregular aspect of mathematical proofs that is best depicted in mathematical induction. In particular, I am interested in the way the proposition or predicate $P(n)$ is proven valid for all positive integers n without exactly showing $P(n)$ to be true for a general value per se. It seems as if the "proof executor" does not implement real action on the fundamental constituents of the two sides of the equation to be proven (in case $P(n)$ involves an equality), and as such appears not to deserve the credit for doing the job, since that person did not exactly deal with the essence of what it is that makes the two sides equal. Implementing such a proof seems like a rehearsed performance that follows a more general template that merely needs to be customized according to each situation. As such, it appears to be only a representation or illustration of the general principle of mathematical induction. This raises the question: are induction proofs mere corollaries of the general principle? (Received September 23, 2005)