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Experience early, logic later.

MacGillivray, Helen (ed.) et al., Topics from Australian conferences on teaching statistics. OZCOTS 2008–2012. New York, NY: Springer (ISBN 978-1-4939-0602-4/hbk; 978-1-4939-0603-1/ebook). Springer Proceedings in Mathematics & Statistics 81, 25-42 (2014).

Summary: The motivational value for students of problem-based immersion in the process of data collection, data analysis, and interpretation is accepted by many. However, the culture of instruction through technique-based courses is still used at the tertiary level in many universities. The coverage of topics seems to trump guidance through the process of data analysis. In this chapter, I suggest how to complement a problem-based experiential presentation of statistical methods with a presentation of the abstract structures necessary for future applications. A series of problem-based courses might fail to highlight the general and transferable concepts and principles that help to bring coherence to the toolbox of statistical techniques. To overcome this shortcoming one can present the logical structure – that is definitions, strategies, theoretical frameworks, and justifications – to unify the collection of problem-specific methods, but only after extensive immersion in practical problems. Once students have experienced the effectiveness of the practical statistical approach, they may be better prepared to absorb the abstract generalizations.

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