

ZMATH 2010c.00425

Dinov, Ivo D.; Christou, Nicholas; Sanchez, Juana

Central limit theorem: New SOCR applet and demonstration activity.

J. Stat. Educ. 16, No. 2, 15 p. (2008).

Summary: Modern approaches for information technology based blended education utilize a variety of novel instructional, computational and network resources. Such attempts employ technology to deliver integrated, dynamically linked, interactive content and multi-faceted learning environments, which may facilitate student comprehension and information retention. In this manuscript, we describe one such innovative effort of using technological tools for improving student motivation and learning of the theory, practice and usability of the Central Limit Theorem (CLT) in probability and statistics courses. Our approach is based on harnessing the computational libraries developed by the Statistics Online Computational Resource (SOCR) to design a new interactive Java applet and a corresponding demonstration activity that illustrate the meaning and the power of the CLT. The CLT applet and activity have clear common goals; to provide graphical representation of the CLT, to improve student intuition, and to empirically validate and establish the limits of the CLT. The SOCR CLT activity consists of four experiments that demonstrate the assumptions, meaning and implications of the CLT and ties these to specific hands-on simulations. We include a number of examples illustrating the theory and applications of the CLT. Both the SOCR CLT applet and activity are freely available online to the community to test, validate and extend (Applet: http://www.socr.ucla.edu/htmls/SOCR_Experiments.html and Activity: http://wiki.stat.ucla.edu/socr/index.php/SOCR_EduMaterials_Activities_GeneralCentralLimitTheorem). (Contains 8 figures.) (ERIC)

Classification: K65 R25

Keywords: computer uses in education; information technology; educational technology; visual aids; logical thinking; probability; statistics; course content; online systems