PROBLAB: A COMPUTER-SUPPORTED UNIT IN PROBABILITY AND STATISTICS

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ProbLab is a computer-based middle-school curricular unit in probability and statistics designed to enrich student thinking in the domain. The ProbLab unit is part of the Connected Probability project (Wilensky, 1997) and includes a suite of interactive models[1] authored in the NetLogo (Wilensky, 1999) modeling-and-simulation environment and using the HubNet Participatory Simulation technological infrastructure (Wilensky & Stroup, 1999). ProbLab's design rationale and interactive materials reflect our view of the domain as constituted on three interrelated pillars: theoretical probability, empirical probability, and statistics. Students explore connections between these pillars by constructing and experimenting with domain *bridging tools* (Abrahamson, 2004), such as the *9-block*, a 3-by-3 array of squares, each of which is either green or blue. A 9-block is at once one of all 512 permutations in its combinatorial sample space (theoretical prob.), a randomly generated compound event (empirical prob.), and a sample of out of a population of squares (statistics).

Figure 1 (from left): One of 512 9-blocks; 6th-grade students create and assemble the combinatorial space; the resultant Combinations Tower; an empirical experiment that dynamically builds frequency distributions of randomly generated 9-blocks; on his laptop, a student takes 9-block and 1-block samples from a hidden population.

References: (see also http://ccl.northwestern.edu/curriculum/ProbLab/)

Abrahamson, D. (2004). *Keeping meaning in proportion*. Unpublished doctoral dissertation, Northwestern University, Evanston, IL.

Wilensky, U. (1997). What is normal anyway? Therapy for epistemological anxiety. *Educational Studies in Mathematics. 33(2),* 171 – 202.

Wilensky, U. (1999). *NetLogo*. Evanston, IL. Center for Connected Learning and Computer Based Modeling, Northwestern University. http://ccl.northwestern.edu/netlogo

Wilensky, U. & Stroup, W. (1999). *HubNet*. Evanston, IL. The CCL, Northwestern University. http://ccl.northwestern.edu/netlogo/hubnet.html

[1] All ProbLab models are available for free download at http://ccl.northwestern.edu/.