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Using inquiry-based learning to teach proofs.

Inquiry-based learning (IBL) is a student-centered method of instruction, with an aim of getting students to attain a high level of independent thinking. While IBL is generally used in small classes, certain aspects of it are extendible to large class environments. In any mathematics class, students benefit from brief chats with their professor in office hours, to check-in about their thoughts on homework problems. This "check-in" experience can be simulated using modern technology via a daily electronic feedback system used in the presenter's IBL Introduction to Proofs class. Various levels of this system will be discussed, ranging from one Webwork problem due midway between classes to a handwritten assignment submitted via Dropbox. The key feature of this between-class assignment is that students brainstorm on future material in a grade-lenient setting, while receiving feedback far enough in advance of class to allow time for reflection while preparing for class. A wide range of possible implementations in large classes will be presented, ranging from a high budget environment with many Teaching Assistants to a low-budget environment with one professor.