

# A Continuous Assessment Transponder

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**Abstract:** This project describes the first phase of a plan to implement a continuous assessment instructional model through the use of computerized 'transponders' - hand held infrared devices which can collect student responses to instructor stimuli and provide immediate feedback on learning outcomes to both the student and the instructor. The full project includes development of the transponder, software and course materials for a basic studies computer literacy course, field testing in small and large lecture sections, and full implementation in its final (third) year. The poster session describes the conceptual development of the transponder, receiver, and computer hardware.

**Project Plan:** The full project involves a plan for continuous assessment of classroom learning using state-of-the-art microcomputer and infrared technologies, loosely patterned on the work of Ehrmann ("Assessing the Open End of Learning, Roles for New Technologies", Journal of Liberal Education, May-June, 1988). There are three distinct phases of the project, covering three calendar years: The Developmental Phase; the Field Test Phase, and the Implementation Phase. This poster session describes the developmental stage.

**System Hardware:** The communications hardware will consist of student remote transponder units, a main receiver/transmitter unit, and a computer system to maintain and analyze student responses. Using infrared communications, the system will be able to monitor up to 400 student transponders, using time sequential multiplexing to collect all student responses in less than one second. These responses can then be forwarded by the receiving unit to the computer system where analytical software will calculate statistics and provide the instructor with instant feedback

Student transponders will be battery operated units about the size of a hand-held calculator. They will provide tactile feedback by means of a small keypad and a series of

small warning/status lights for low battery, acknowledge answer, and ready. The crystal controlled devices will transmit/receive via infrared signals. Each unit will contain a microcomputer chip (to minimize hardware) and must be synchronized by the main receiving unit.

Each student's transponder unit will have a unique ID, associated with a particular student at the beginning of the term. If a student forgets his unit or has a malfunction, spare units can be distributed quickly before class. These extra units can be temporarily assigned to the student through the computer's bookkeeping program.

The central receiver will be mounted permanently on the ceiling of the lecture hall. For unusual architectural situations, several receiving units can be connected together and function as a single unit. The main receiving unit also sends synchronizing signals to the students transponder units and can discern which units are on and operating (automatic roll taking). The computer's main purpose is to not only display results immediately, but also to accumulate results over the term. These results include learner outcome on each stimulus item, student and instructor performance and attendance.