Revised Report

A DESCRIPTIVE LIST OF PLATO
LESSON PROGRAMS
1960 - 1965
Elisabeth R. Lyman
REPORT R-186                JULY, 1965
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Introduction

For the past five years, the Coordinated Science Laboratory has been developing an automatic teaching system called PLATO (Programmed Logic for Automatic Teaching Operation) in order to explore the possibilities of automation in individual instruction. In the course of development 129 programs have been written for the system to illustrate or demonstrate its flexibility for teaching as well as for educational and other research.

The PLATO system utilizes a high speed digital computer as the central control element for teaching a number of students simultaneously. The rules governing the teaching process are included in the program read into the central computer. A complete set of rules is referred to as a "teaching logic." Experiments have been made with two basically different types of teaching logics: a "tutorial logic" and an "inquiry logic."^4

This report lists and briefly describes the 15 sequences (109 lessons) which have been written for the tutorial logic and the 8 sequences (16 lessons) written for the inquiry logic. The version of the PLATO system for which the lessons were written is specified in each instance. PLATO I and PLATO II lessons are no longer operable on the PLATO system because the PLATO I and PLATO II systems are now obsolete, but several of these lessons have been rewritten for the present version of the software and hardware of the system, PLATO III.

In addition to the instructive uses of the PLATO system, the system has also found application in other areas of research. The four programs written for other purposes are listed in the report as non-teaching programs.
TEACHING PROGRAMS

A. Tutorial Logic

1. Perimeter of Polygons (PLATO I, II, III). A simple geometry demonstration lesson on perimeters designed to illustrate all the features of the PLATO system (i.e., control keys, help sequences, judging, evaluating, etc.), updated for each new version of the PLATO system.

2. Addition of Fractions (PLATO I, III). A demonstration lesson on fractions showing the use of the PLATO keyset and improvements (PLATO III version) in the flexibility of the teaching logic.

3. Introduction to Automatic Digital Computing (PLATO II). Three lessons comprising the first week of material taught in Math 195 (U of I): I. The Word as a Number; II.A. The Biquinary Code, B. The Storage Unit; III.A. The Arithmetic Unit, B. Instruction Format, C. The Control Unit, D. Execution of Single Instructions. Data collected from student runs provided material for studying the learning ability of each student, lesson effectiveness, and data rate requirements of the PLATO system.

4. Introduction to Computer Programming (PLATO II). Seven lessons designed to teach programming for the ILLIAC computer and written with PLATO tutorial logic. Chapter titles included: I. Number Representations; II. Binary Arithmetic, III. Negative Number Representation; IV. ILLIAC words; V. Introduction to the ILLIAC Order Code (Part 1); VI. The ILLIAC Order Code (Part 2); VII. The ILLIAC Order Code (Part 3).
5. **Network Synthesis (PLATO II).** Two short lessons in network synthesis for electrical engineering students demonstrating circuit diagram construction by means of the PLATO keyset and a judging routine allowing a tolerance in numerical answers and a degree of freedom in the answer form.


7. **Things and Their Names (PLATO II).** Two lessons in introductory secondary mathematics dealing with the subject of "Things and Their Names," designed for incoming sub-freshmen at University High School.

8. **CHAOS (PLATO II).** An exercise on number sequences written for use with the studies on physiological correlates of mathematical discovery in which student heart rates were recorded along with the lesson responses.

9. **ZOO (PLATO II).** A second grade level mathematics demonstration lesson (with a zoo theme) written for primary school children visiting the PLATO project.

10. **TEXT TESTER (PLATO III).** A program designed to test new text-books in which text materials are reproduced on slides with student answers inserted from the keyboard. Teacher comments and lesson modifications are also able to be inserted on line. TEXT TESTER has been used to present
lessons in the following areas: a) Remedial Arithmetic from the University of Illinois Committee on School Mathematics 7th grade course (20 lessons); b) Politics Unit from the experimental materials of the Social Sciences Curriculum Center (12 lessons); c) Braille, from the Library of Congress Braille course (a semester course in preparation).

11. **Circuit Analysis (PLATO III)**. 18 lessons written for use in a University of Illinois course (Electrical Engineering 322). The lessons used a generalized logic written to provide the option of either tutorial or inquiry teaching.

12. **ARITHDRILL (PLATO III)**. Arithmetic drill sequences for low achievers from sixth and seventh grades.


14. **Fortran Programming (PLATO III)**. Ten lessons on the Fortran programming language written for students in business and commerce in which the material is presented so as to be incorporated eventually into a programmed textbook.

15. **Special Demonstration (PLATO III)**. A program illustrating various possible functions of the keys of a PLATO keyset, written as an accompaniment to a lecture on the PLATO system.
B. Inquiry Logic

1. REPLAB (Responsive Environment Programmed Laboratory) (PLATO II and III). A lesson in scientific inquiry based on the properties of a bimetal strip in which the students inquire into the physical phenomenon in order to describe, analyze, predict, control and explain it. Important data is provided from student input for the multi-dimensional analysis of the inquiry process. The lesson uses an auxiliary film sequence to show the bimetal strip experiment.

2. PROOF (PLATO II and III). A program (with several versions) which enables students to compose proofs of mathematical problems in a logical manner, each solution or proof being judged only for violations in logic. The program provides a system for collecting data on thought processes during mathematical problem-solving or for preparing instructional programs in the mechanics of rigorous mathematical proof.

3. MEDICARE (PLATO II). A lesson for student nurses in the care of a patient with myocardial infarction using an auxiliary film sequence to provide the background material for the problem posed the students. Student input provided data for analysis of each student's approach to the solution of the problem.

4. ORDER (PLATO II). A timed exercise in numerical pattern recognition (more simple than CHAOS) used with the studies on physiological correlates of mathematical discovery.
5. **ARCH (Archimedes) (PLATO II and III)**. A demonstration lesson using PLATO as a simulated laboratory in which experiments based on Archimedes' Principle can be performed such as making volume or weight measurements.

6. **ALPHABAT (Alphabet Automatic Teaching) (PLATO III)**. A program designed for experimenting with the teaching by PLATO of the letters of the alphabet to two- and three-year old children.

7. **Making Things Move (PLATO II)**. An elementary science lesson based on a second grade science unit written as a demonstration for primary school children.

8. **TEACHER (PLATO III)**. A lesson designed to demonstrate the operation of the PLATO system to non-technical persons interested in preparing lessons for PLATO.

9. **Circuit Analysis (PLATO III)**. See #11 under Tutorial Logic.
NON-TEACHING PROGRAMS

1. **TALK (PLATO III)**. Short program to demonstrate communication between student stations.

2. **EXPERIMENT (PLATO III)**. A program which controls real-time experiments in a secondary emission surface physics study and immediately analyzes the experimental data, displaying the desired analysis on the PLATO screen.

3. **Verbal Learning and Retention (PLATO III)**. A program developed to improve the technology of a study being made by members of the Aviation Psychology Laboratory.

4. **VERBOSE (PLATO III)**. This program makes possible an elementary analysis, in real time, of a word chain generated by a subject's free association.
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### Abstract

A brief description is given of the 23 teaching sequences (comprising a total of 125 lessons) and the 4 non-teaching programs which have been written for the PLATO teaching system.
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