THE SELF CONTROLLED INTERACTION LEARNING SYSTEMS (SCILS):
A COMMUNICATION MODEL OF LEARNING*

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PART I: THE SCILS PROGRAM

INTRODUCTION

The Self Controlled Interactive Learning Systems (SCILS) program involves the use of a "talking typewriter," a "talking page," and a "voice-mirror" to teach reading, typing, writing, and mathematics to children at the Drexel Early Childhood Center, Drexel University, Philadelphia. Its premise is that learning involves both the acquisition of skills (training) and the going beyond past experience to the formation of new concepts (education). The proper use of instructional technology is to enable the learner to acquire skills which can be utilized in new concept formation. The teacher's role shifts from concentration on training to involvement in education. However, if instructional technology is to be effective it should incorporate control by the student, responsiveness to the student, and instantaneous feedback to the learner which allows for self-correction. (For a more detailed explanation of the theoretical principles underlying the SCILS program see Part II of this paper.)

Specifically, learning in the SCILS program involves the following:

*This study has been partially funded by the Bernard van Leer Foundation grant to D. R. Steg (No. 648). Support is gratefully acknowledged.
Multi-sensory engagement of the learner;
Learner control of the environment;
Responsiveness to the actions of the learner;
Instantaneous feedback allowing the learner to evaluate his actions in relation to his goals.

These features enable substantial learner progress. Further, these learning principles are not age-specific or culture-specific; rather, they are principles which can be universally applied to any learner. One of the main goals of the program is to enable the child, or adult, to become an independent learner. Because SCILS involves an interactive environment which the child can control with a minimum of effort, it is especially suited to this purpose.

The designs of the hardware, courseware and software components of SCILS embody the above learning principles and the use of this automated and non-automated equipment provides the child with the opportunity for exploration and investigation using discovery techniques.

COMPONENTS OF THE SCILS PROGRAM

A) Hardware

The Talking Typewriter: The "Talking Typewriter" is a computer based typewriter which involves the child totally in a learning experience. Secluded within a small sound proof booth, the child is free to do as he wishes, away from the approval or disapproval of adults and peers, in a practically indestructible environment. The child's visual interest is secured by the color-coded keys of the typewriter, by the images projected on the viewing screen, and by the letters and other symbols which appear on the paper when he types.

Auditory stimulation comes from the voice recordings played by the equipment in programs of exploratory typing and in replay of the child's own voice when included in the format of a program. The child receives tactile input from the typing action itself. A sense of accomplishment is quickly established as every typing motion can trigger a simultaneous auditory, visual, and/or kinesthetic response.

The Talking Page and Voice Mirror: Lessons introduced on the Talking Typewriter are reviewed and expanded on the Talking Page. In a sound-proof environment, similar to that of the talking typewriter, the child's interest is again held by the tactile stimuli of handling the record, paper and pencil, by the visual input of the lesson book, by his own writing, and by the auditory input of the recorded voice. Used in conjunction with the Talking Page, the Voice Mirror, a basic tape recorder with simplified controls for recording