Some Effects of Logo With Emotionally Disturbed Children*

by J.O. Michayluk and D.H. Skalskoske

Summary

In this exploratory research study, four children who were classified as emotionally disturbed were introduced to the LOGO computer program as part of the school's ongoing structured-success program. Students worked on the computer at their own rate and individually for the one hour, 9 weeks period. Teacher's and researcher's observations, interviews with the children and program output suggested that LOGO had a salutory effect on the therapeutic and academic process. The results are further discussed in terms of LOGO as a motivator, socializing agent, and educational tool.

Introduction

The work described here is based on the LOGO program developed by Seymour Papert and the MIT LOGO Group (Papert, 1972a, 1972b, 1972c, 1972d, 1972e, 1972f, 1972g). The LOGO program was originally created by Papert for children. LOGO incorporated an easy-to-learn, yet rich and expandable variable to reflect such key computer science ideas as local and global variables, naming, recursion, and proceduralization, editing, etc.

Ease of use and a solid Piagetian base ensured interest in LOGO as a research tool. Since its development, LOGO has been used with the physically handicapped, the learning disabled, the emotionally disturbed, the gifted, and the delinquent (Watt, 1982). In school settings, the research has ranged across all age groups and a range of subject areas. Although it is clear from the literature that LOGO has been used with LOGO as a teaching tool, this same literature also points out that the exact role that LOGO and its related activities have to play have yet been fully delineated.

* In order to protect the anonymity of participants, all names used in this paper are fictitious.

The authors are with the Department of Educational Psychology, University of Saskatchewan, Saskatoon, Saskatchewan.

Review of the Literature

As indicated in the literature, the use of LOGO in the schools has increased dramatically during the past few years. Some of these studies have emphasized the observational or subjective components (e.g. Watt, 1979; 1982; Solomon and Papert, 1976; Lawler, 1980); other studies have been more objective in nature. The objective measurement component (e.g. Miller, 1973; Sato, 1974; Howe, O'Shea, and Plane, 1974; Michayluk and Yackulic, 1983) yet, other studies have focused on a variety of special populations. For example, LOGO has been used with handicapped and learning disabled students (Weir, 1979; Watt and Weir, 1981; Papert and Weir, 1978) with some success.

Of special interest to the researchers was the suggestion made by Laticha that LOGO could be used as a therapeutic tool with juvenile delinquents. Noting that the LOGO program was often concrete operational thinkers and incapable of either seeing or resolving contradictions, Laticha and her collaborators (Laticha and Michaud, 1980; Laticha and Gendreau, 1980; Laticha, 1979, 1980; 1981) have suggested that the LOGO program could be used in conjunction with traditional therapy in the therapeutic process with juvenile delinquents. Similarly, other studies (Muller, 1982; Weir and Emm, 1980; Watt, 1982; Furst, 1983) have suggested that computer programs such as LOGO might prove to be effective with severely emotionally disturbed and autistic children. Emotionally disturbed children, it seems, responded favorably to the immediacy of results and the non-human environment (no personal rejection or threatening judgment) provided by LOGO. Interest by the researchers in this aspect of the literature led to this study with emotionally disturbed children.

The Study

An elementary school with a structured success program for severely emotionally disturbed children was chosen for this study. As many as ten children who are designated as emotionally disturbed (high handicap funding) are taught by a teacher and a teacher-aid using a point-based, structured-success approach. In general, children earn points for appropriate behavior; the earned points can then be "cashed-in" for a variety of goods and experiences. In addition, children in the program often express themselves as nearly impossible right in the school. This step is achieved with little difficulty, since some form of structured-success is found in virtually every classroom.

The Subjects

Four children who were designated as emotionally disturbed were selected by the teachers as part of the teacher's and researcher's introduction to the LOGO session. The three male and one female subjects had all been initially diagnosed as hyperactive, and all had received the drug, Ritalin. The available psychometric data on the subjects is summarized in Table 1.

One male subject was re-evaluated by his doctor after the first half of the study and found to be just below the criteria established for diagnosing hyperactivity. His last two computer sessions were accomplished without any sort of medication.

The Method

The four subjects were put in pairs, and each pair was initially allowed two hour sessions per week on the Apple computer. For reasons which will be discussed later, it was eventually decided to have each subject work on the computer independently, that is, for one hour-half per week. Each session was closely supervised by one of the researchers. The teacher and the teacher-aid were asked to observe and closely monitor the behavior and the achievement of the subjects during the research period (four weeks). Typically, each computer session with each subject was followed by a meeting between the researcher and the teacher and/or teacher-aid, at which time information was exchanged and strategy for the next session was planned.

The computer sessions consisted of an introduction to the capabilities of Apple LOGO. In the graphics mode of LOGO, a small triangle called a turtle moved on the computer screen in response to commands. The commands were typed, and the turtle moved forward or back and changes its heading when told to turn right or left. Initially, the subjects experimented in a trial-and-error sort of fashion, coming up with interesting but unproportioned designs (See Figure 1). With tutoring, the subjects eventually learn commands and procedures to put those procedures together into more complex procedures. The researcher would suggest a step, such as asking the subject to recursion, for motivational purposes to try a new procedure (one which shifted and changed), although it must be pointed out that none of the subjects really grasped the meaning of recursion.

The reader might be interested in the fact that, although the LOGO study was never envisaged as being part and parcel of the regular structured-success program, the subjects immediately assumed that it was. Consequently, being able to work on LOGO twice a week quickly took on the dimension of reward for appropriate behavior.

The Results

The results came from a variety of backgrounds. One subject had two hyperactive siblings and a mentally ill parent; another subject had overcontrolling parents, another was put into a foster home because he was unmanageable at home; and in yet another case, having been an abused child, the subject showed virtually no attachment to any member of the family, the one exception being the foster parent. It is not surprising, therefore to find that each subject reacted rather differently to the LOGO experience. These reactions are discussed below under general headings drawn from the literature.

LOGO as a Motivator

One of the strengths of LOGO is that it is vividly active. This usually translates into interest and concentration, even with hyperactive children (Muller, 1983). The four children in this study were working directly with LOGO did not show any signs of hyperactivity or a lack of concentration. As an incentive, LOGO proved particularly effective with one male subject, "John" whose behavior at school was characterized as passive-aggressive. The incidence of appropriate behavior, as judged by the number of commands performed increased dramatically prior to each LOGO session. Although the point count was not very large for this subject, the teachers felt that their behavior was positively influenced, nevertheless. At 12 years of age, Sam was the oldest subject in the study. He was very slow of speech, perhaps because of an HGH deficiency. Sam's problems were judged by the teachers to be most severe, both emotionally and academically. When Sam first entered the LOGO study, he had just been given up by his parents and placed in a foster home. This experience, coupled with a grade one reading level, was having deleterious effects on his self-concept and his behavior.

The Results

The teachers said it would have been inconclusive for the three remaining subjects. At this point the teachers reported that very small for his age, perhaps because of an HGH deficiency. With this in mind, the subject was studied for a small period, the one exception being the foster parent. It is not surprising, therefore to find that each subject reacted rather differently to the LOGO experience. These reactions are discussed below under general headings drawn from the literature.

LOGO as a Socializing Agent

The literature generally indicates that children learn to work together using LOGO, with those "catching-on" first often acting as tutors to the others (Watt, 1982; Yackulik and Vackulis, 1983; Furst, 1983). With this in mind, the subjects were paired, in the hope that when one was working at the keyboard, the other would aid him. The researchers soon discovered that most of the hyperactive subjects displayed behavior while working at the keyboard. LOGO did not transfer to the situation where they were expected to watch and help someone else.

Tina was left on the computer with the physically handicapped, the learning disabled, the emotionally disturbed, the gifted, and the delinquent (Watt, 1982). In school settings, the research has ranged across all age groups and a range of subject areas. Although it is clear from the literature that LOGO has been used with LOGO as a teaching tool, this same literature also points out that the exact role that LOGO and its related activities have to play have yet been fully delineated.

* In order to protect the anonymity of participants, all names used in this paper are fictitious.

The authors are with the Department of Educational Psychology, University of Saskatchewan, Saskatoon, Saskatchewan.

VOLUME 14, NUMBER 4, 1985

CANADIAN JOURNAL OF EDUCATIONAL COMMUNICATION
LOGO as an Educational Tool

The researchers' observations agreed with those of Furst. In addition, there were also several serendipitous occurrences which illustrated how the computer can prove to be a concept builder. Sam had been telling the teachers that he was the "dumbest kid in the school." At the computer session he became fascinated and pounded his fingers hard on the keyboard. The screen lit up with error messages. Sam was agitated at what he had done. The researcher simply said, "I don't know what you've done, but you must be pretty smart. I've been working on the computer for years, and I've never had error messages like that." Sam perked up and said "for its complexity or creativity as for the placebos."

The researchers noted, too, that Lon would emerge as passive-aggressive; the school counsellors said that he found them "enemies" throughout the entire study. Lon's performance and behavior during the LOGO sessions were normal. The teachers noted, too, that Lon would emerge from his unmotivated and uninvolved state each time a LOGO session was imminent.

Two of the subjects were thought of as "losers" begin to see themselves in a more positive way. The "loser" begins to feel like a winner. He begins to glimpse the possibilities in computer work and can change for him and that he is capable of doing something of value to himself and others.

Eventually they [the children] come to see themselves in a more positive way. The "loser" begins to feel like a winner. He begins to glimpse the possibilities in computer work and can change for him and that he is capable of doing something of value to himself and others. (Furst, 1983, p. 15)

LOGO and Self-Esteem

Miriam Furst (1983) found that the computer had a useful role to play in enhancing the self-concepts of her mainstreamed K-8 children. It is exciting to see what happens when children share their accomplishments with others. Children who thought of as "losers" begin to see themselves in a more positive way. The "loser" begins to feel like a winner. He begins to glimpse the possibilities in computer work and can change for him and that he is capable of doing something of value to himself and others. (Furst, 1983, p. 15)

FIGURE 2. A proposed graphics project.

FIGURE 3. John's spider in a flower-box design.

FIGURE 4. John's house.