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ABSTRACT

The West Virginia University Child Development Laboratory has successfully used microcomputers as a complement to their language experience approach to teaching three- and four-year-old children. The computer acts as a motivational tool, and gives children the opportunity to produce perfectly typed pictures or letters. The first encounter a child has with the computer is with the scribbling program. By pushing any key on the keyboard the child can make various lines, curves, and geometric shapes on the monitor that he or she normally cannot draw freehand. Just as a teacher may print a child's dictation when he or she draws freehand, the teacher types the child's verbalizations about the computer picture. The story appears below the picture and then a paper copy of the picture and story are printed for the child. Next, the child is introduced to a program in which specific keys draw specific objects, such as "B" for a boy or "D" for a dog. The child arranges the figures and composes pictures, then dictates an accompanying story, which is also printed. Results of a study conducted at the lab indicated that children verbalized significantly more about their computer pictures than about their hand-drawn works. In conjunction with developing language and motor skills, the children are developing a positive attitude toward the microcomputer. (Examples of children's computer scribbles and drawings with accompanying text are included.) (HTH)

Computer Language Experience Approach

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The West Virginia University Child Development Laboratory has successfully used the Language Experience Approach with three and four year olds for several years. Children dictate stories about the pictures they have drawn and the teacher prints those dictations on the child's paper. From here, the child begins to collect various words from his dictations for his word bank. The child may also begin to print some of the words. This approach emphasizes the fact that relevant reading and writing content comes from the child's verbalizations.

It is not surprising that children like to verbalize about their own work. A recent study at the University of Florida indicated that when five year olds drew their own pictures of a field trip they had taken, they verbalized to a significantly greater degree than when they were shown pictures of the trip. (Zepeda-de-Kane, 1978)

The importance of giving preschoolers the opportunity to informally draw, write and verbalize can not be underestimated. Those initial unrecognizable scribbles from young two and three year olds are important building blocks of basic forms and shapes that are later used in printing. Scribbling can be thought of as the first writing and it is something all children need to experience. It is a means by which a child can communicate his thoughts. It is an opportunity for a child to develop abstract symbols and to refine the manipulative skills involved in printing. It was once stated that if adults knew how important scribbling was, they would ruin the natural process (Kellog, 1969).

Scribbling is an intricate part of the Language Experience Approach. Children progress from scribbling to pictorial and then written symbols. Random scribbles become more controlled and children begin to repeat particular marks and later shapes develop into pictorial representations. By the time children

reach the form and shape stage, they have begun the necessary motor skills for handwriting.

The WVU Child Development Lab began using the computer as a mechanism for Language Experience in 1983. Just as a preschooler can scribble, draw and print with markers, he can scribble, draw and print with the computer. From earlier observations at the laboratory, we have found that a child goes through similar stages in the development of hand drawn LEA artworks as he does in his computer LEA artwork (Warash, 1983).

The computer has several advantages. First of all, it gives the child the opportunity to produce a perfectly typed picture or letter. The child has the responsibility of making the decision about what he wants to type. Secondly, the computer acts as a motivational tool. Children enjoy using the computer. In addition to the computer, we also use typewriters in the program.

The computer Language Experience Approach encompasses Logo and a modified version of the Instant program that is available on the Terripin Logo Utilities disk. The first encounter that the child has on the computer is the scribbling program. By pushing any key on the keyboard, the child can make various lines, curves and geometric shapes on the monitor. Just as the young scribbler enjoys making marks on paper, the young computer scribbler enjoys making various marks on the screen. Whether pencil or computer, the child's enthusiasm increases as he gains control over the instruments. With the computer, the child has complete control over all the keys. Each key the child pushes does something different. For example, "C" makes a circle, "T" makes a triangle, and "F" makes the cursor draw a straight line. Imagine being three years old and drawing a perfectly executed triangle by pushing one button. A child is given control over a machine that enables him to draw shapes that he normally can not draw freehand. Many

children giggle with delight over their accomplishments. Sometimes, we graphically display what the key does by drawing a representation on a small blank sticker and placing it above the letter on the corresponding key. These visual cues encourage the use of all keys.

Just as the teacher prints the child's dictation when he draws freehand, she types the child's verbalizations about his computer picture using the printer. The story appears below the picture and then a hard copy of the picture and story are made for the child. After the child becomes familiar with some words, he begins to type some of them on the keyboard. This step in our LEA computer program encourages the child to draw and verbalize about his work just as he does in our regular LEA program.

We have found that children tend to repeat certain keys that make certain marks which is what they do when they begin making particular marks on paper. Once they discover a mark they like, they repeat it on paper and on the computer.

There are several similarities between children's hand drawn artwork and their computer drawings. In their early paper and pencil work, children start out with random marks but with more experience the scribble becomes more controlled and forms are repeated and finally children are naming their drawings. These same steps are followed when children begin the scribbling program on the computer. Children first randomly choose keys and then they begin to choose keys that produce certain lines and forms. Finally, they are naming their drawing.

After the child has had the opportunity to scribble and use the various keys on the computer, he is introduced to another homemade program. This program gives the child the ability to make an object when a particular key is pressed. For example, when "B" is pushed, a boy will appear on the monitor. If "D" is pressed, a dog will appear and "T" will produce a tree, etc. There are eleven keys that make pictures and four keys that allow the children to place the picture

where he wants it on the screen.

Children compose pictures with this program and then they make up a story about their work. Their dictations are typed and a hard copy of the picture and words are made on the printer.

As cited earlier, children like to verbalize about their own drawings. In a study at the Child Development Lab, we compared children's verbalizations about their hand drawn work to their verbalizations about their computer drawings. The study took place over an eight week period. Children were randomly chosen to participate in the study. Each child did a minimum of two pictures on the computer and two with markers. Some children did more.

Each child was first asked to draw a freehand picture using magic markers. The teacher would then ask the child to tell her something about his picture. The teacher printed the child's dictations on his paper. Immediately after this, the child went to the computer to compose a picture. Again, the child dictated his story to the teacher as she typed it. On several occasions, children refused to draw freehand pictures because they wanted to go directly to the computer.

The results of the study indicate that children did dictate numerous words to the teacher about their hand drawn works, but they verbalized significantly more with the computer pictures. (See chart on page 7)

The computer appears to be a highly motivational instrument. It has been in use for over a year but has not lost its novelty. Children seem fascinated by the fact that they can produce a perfect replica.

Working with words may not seem appropriate for preschoolers but the children have set the pace and the program is operated informally. We found that the computer compliments our regular LEA program. It definitely does not take the place of it.

Authorities have stated that children must meet certain prerequisites prior to learning reading and writing. One of these skills is the ability to control a writing tool. Some students may have the mental ability to write but not the manual dexterity. The computer is a means for students to control an instrument and at the same time work on necessary fine motor skills. Key pressing helps the thought process and muscle development.

In order to test a child's understanding of the difference between a written symbol and a stick figure picture, we drew seven stick pictures on index cards and printed seven words on index cards. Both words and pictures were from one of the homemade programs that we were going to use in the future. The children were asked to sort them into a pile of words and a pile of pictures. Of the 27 children (14 three year olds and 13 four year olds) involved in the activity, 25 could do this task without any problem. Both of the children who could not do it were three years old.

Findings such as these indicate that children have more of an understanding of words than adults give them credit for and working with words is appropriate if they show an interest. The computer at the WVU Child Development Lab is used as a free-choice activity and children make the decision about when they would like to work on it. It has been a popular center since its arrival.

The computer is used as a mechanism for children to develop various skills but in conjunction with these skills, children are developing a positive attitude toward the microcomputer. They are eager to work on it and to share their knowledge with their peers in the classroom. The computer does not take the place of any learning center or play activity at the lab. It is considered as an addition to the existing program.

Often people become concerned that the computer will lessen the child's

ability to socialize with peers. In recent parent evaluations of the WVU Child Development Laboratory, it was pointed out that the program is very strong in promoting socializational skills. At the same time, parents also were pleased with the computer program. Computers do not have to be a non-socializing activity. Many times the children work in groups and create stories together.

Comparison of Preschoolers Computer LEA and Hand Drawn LEA

Three Year Olds

Child	No. of Words Dictated in Hand Drawn LEA		No. of Words Dictated in Computer LEA	
A	Picture 1	8		23
	Picture 2	21		31
	Total	29	Total	54
B	Picture 1	0		13
	Picture 2	0		15
	Total	0	Total	28
C	Picture 1	8		4
	Picture 2	0		13
	Total	8	Total	17
D	Picture 1	0		10
	Picture 2	0		24
	Total	0	Total	34
E	Picture 1	11		15
	Picture 2	9		12
	Total	20	Total	27

Four Year Olds

A	Picture 1	9		15
	Picture 2	8		20
	Total	17	Total	35
B	Picture 1	13		32
	Picture 2	27		30
	Total	40	Total	62
C	Picture 1	11		14
	Picture 2	8		30
	Total	19	Total	44
D	Picture 1	10		36
	Picture 2	15		24
	Total	25	Total	60
E	Picture 1	11		32
	Picture 2	9		30
	Total	20	Total	62

Note: The above are examples of ten children used in the study. Picture One of the hand drawn and computer LEA were done consecutively. Picture One and Two were done on different days.

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Computer Language Experience Approach

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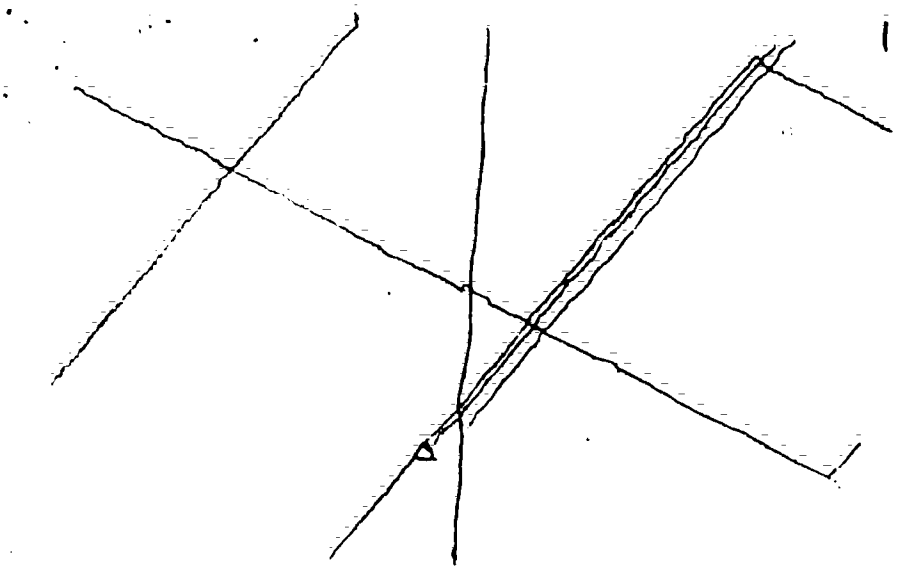
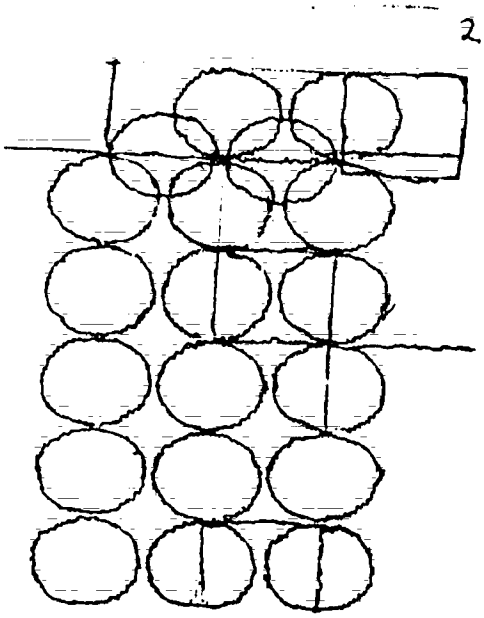
Attached are some actual examples of children's computer work. As illustrated on page one, scribbling is the first experience children have on the computer. Children have the opportunity to choose any key and to create what they want. Those computer drawings are the examples of one child's work. From these few pictures, it is possible to see the development and the similarities between children's hand drawn artwork and their computer artwork. Notice that the child's first picture appears tentative and simple. After some exposure to the computer, the child begins to repeat particular keys that produce certain marks (picture 2, 3, and 4). With more experience, the child begins to label his work or make up some stories (picture 5).

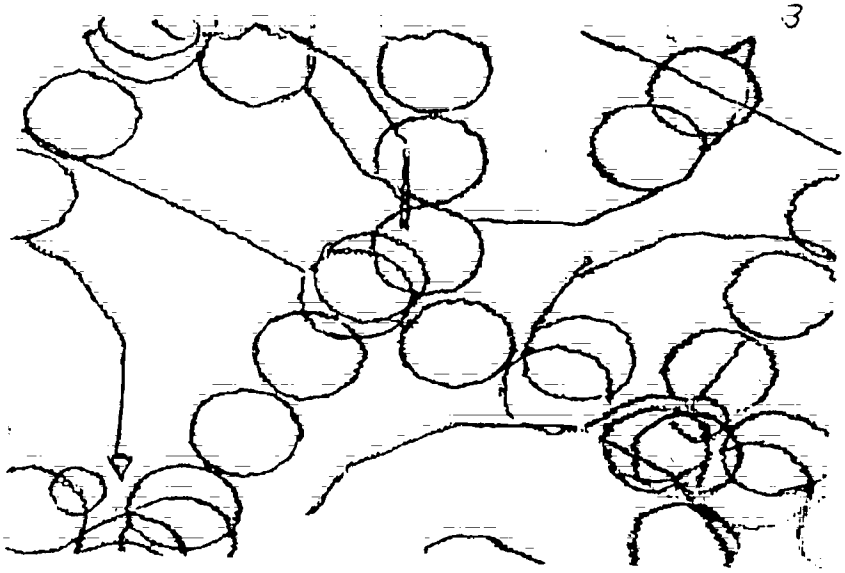
From this point, the child is introduced to another homemade program that gives the child the ability to make an object when a particular key is pressed. There are eleven keys that make objects and four keys that are designed to let the child place his object anywhere on the monitor. The child composes his picture and then dictates a story to the teacher. The teacher may use a simple prompt such as "Can you tell me something about your picture?"

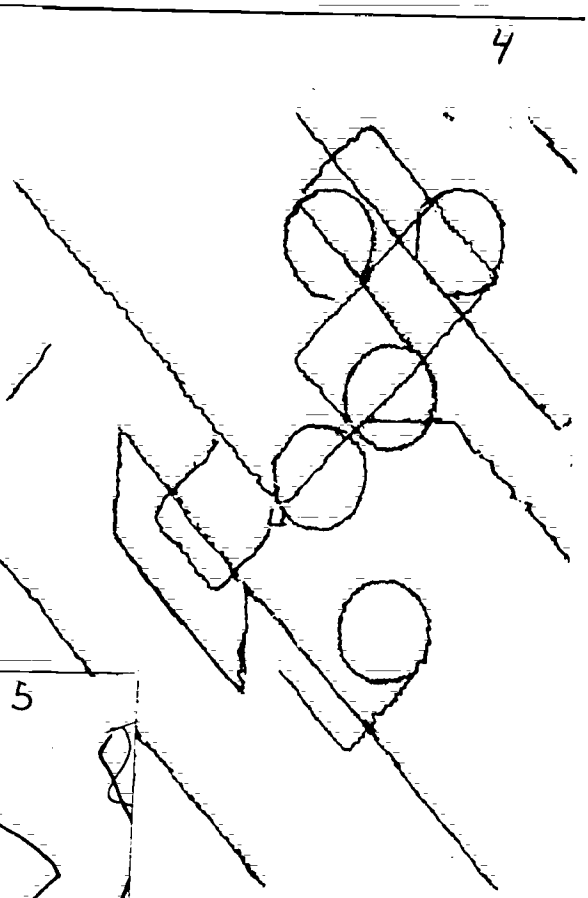
The pictures on page two and three are examples of the Computer Language Experience Approach. Page two is the work of three year olds and page three is the work of four year olds.

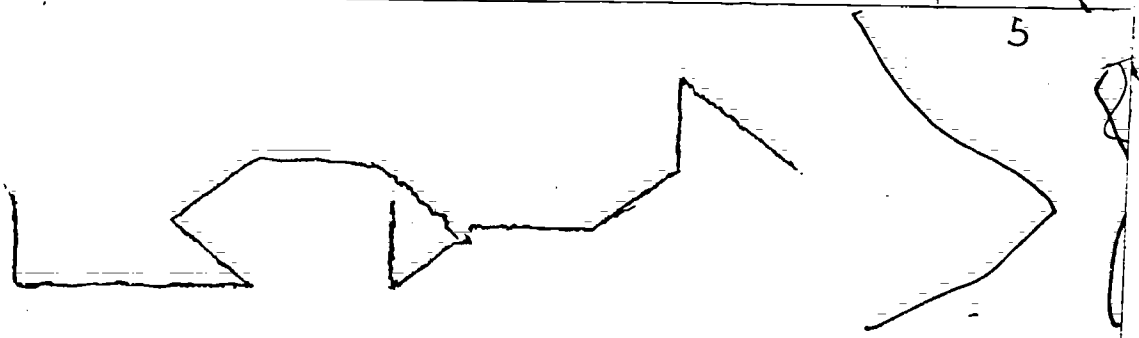
We have found the children verbalize significantly more when composing with the computer rather than when they draw their own picture. The computer is used as an addition to our regular language experience approach program.



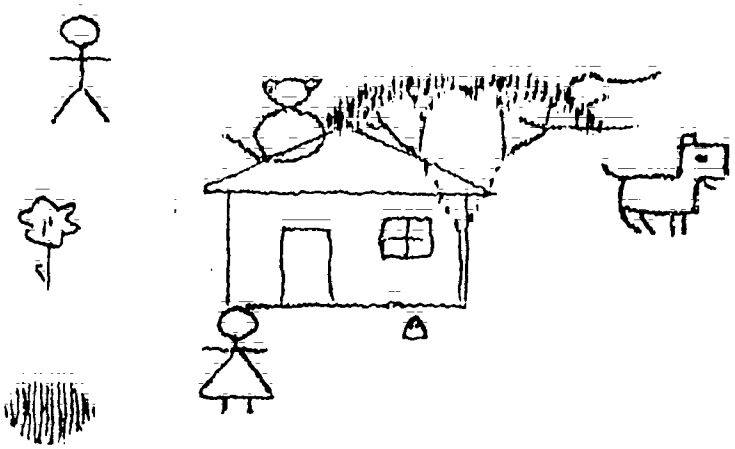






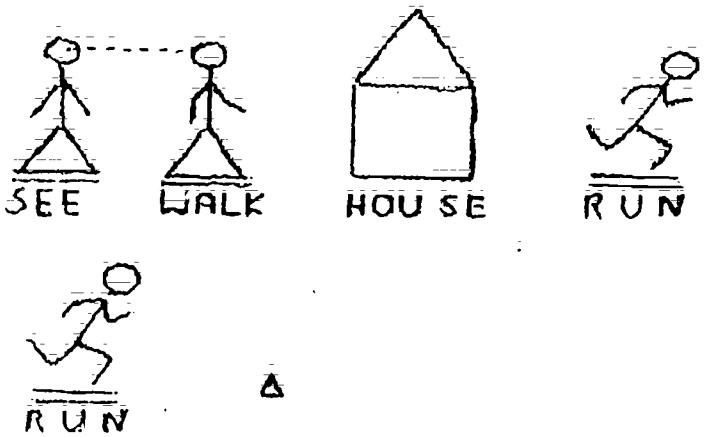


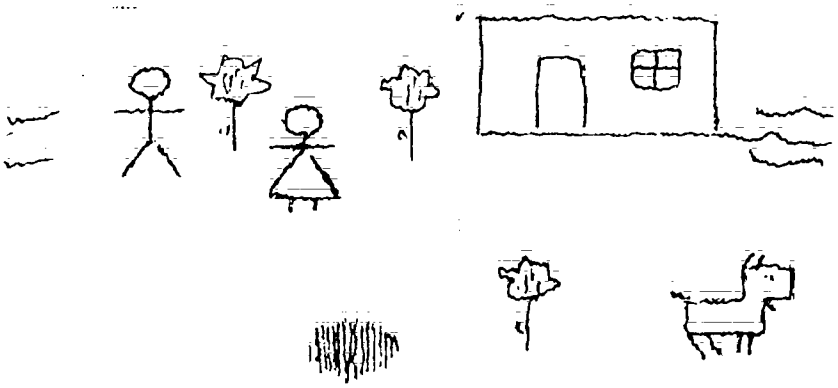
The Turtle who Found His Way Home



THERE'S THE MOM STANDING OUTSIDE IT'S SUNNY-SHE SEES THE FLOWER.

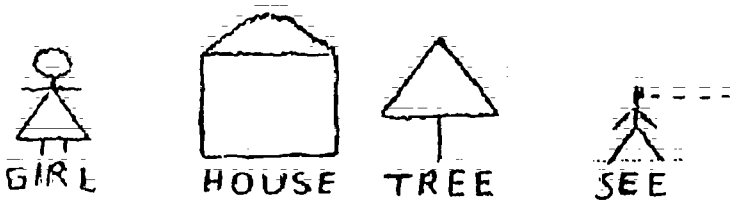
A RACE WAS COMING AND THEY HAD TO GO TO IT AND THEY SAW THEIR HOUSE AND THEY RAN RAN DOWN THE HILL





A

A GIRL AND A BOY GOING TO PICK SOME FLOWERS FOR THEIR MOM. IT IS A BEAUTIFUL SUNNY DAY. BUT THEY WERE NEAR THEIR HOUSE. THEY HAD A POND NEAR THEIR HOUSE.



A

THE DOG IS THINKING ABOUT ANOTHER DOG WHO IS HIS FRIEND. HE WAS THINKING ABOUT HIS OTHER FRIEND RUNNING. AND THE GIRL IS THINKING ABOUT ANOTHER GIRL. THE HOUSE IS TALKING. THE TREE IS TALKING TOO.