Exploring logo in children's play: A playworker's perspective

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This paper discusses the value of Logo work with children in out-of-school environments — specifically, in playschemes. A Logo project is described and its outcomes discussed. The present and future place of Logo within the playwork field is considered.

Key words: Playworker, Logo, children, computer

INTRODUCTION

This article takes a retrospective look at work carried out by myself and colleagues using Logo and robot Turtles in out-of-school play settings. I will describe the thinking behind the work, and briefly summarise what we did. I will discuss some of the positive outcomes of the project, and also some of the reasons why I think it has been difficult to sustain the development of this work since our early efforts.

PLAY-TRAIN AND OUT-OF-SCHOOL PLAY

PLAY-TRAIN is a Training and Development Project for Creative Playwork. We are an independent voluntary organisation, based in Birmingham, England, aiming to increase, both in quality and quantity, the opportunities for creativity and self-expression available to school-age children in out-of-school play settings. We do this by providing training opportunities for adults involved in Playwork, and also through development projects exploring creative ideas and innovation in Play.

Before discussing our Logo project, perhaps, for readers who are not familiar with Playwork, I should talk about the out-of-school play settings where we work.

Children's lifestyles show that they spend more time at play than they do in school. For much of this time, most children play without adult direction or facilitation. As children get older, a greater part of this play takes place outside the home. For a number of reasons, however, such independent play outside the home is becoming problematic. I can sum this up by saying that children increasingly grow up in

highly-developed environments, designed to meet adult needs and not at all conducive to positive play experiences or to children's safety and well-being.

In order to provide safe, secure play space and opportunities for positive play experience, we now have a variety of specific play facilities. Most children's playgrounds, of course, are outdoors and unsupervised (swings and roundabouts, in public parks etc.) but, particularly in urban areas, there are a number of play projects with indoor facilities and staff known as Playworkers. These include Playcentres, Adventure Playgrounds, Junior Clubs and After School or Latchkey clubs. Most of these open each day after school and often at weekends. During school holidays they open longer hours and run more intensive programmes of activities. There are also a great many "Holiday Playschemes" that run for a few weeks only during holiday periods, using a whole range of facilities including schools and community centres.

The Playworkers range from full-time, sometimes highly-trained professional staff, to casual hourly-paid staff and volunteers, some of whom will have had very little training (though a high level of dedication is almost universal).

Some play projects have no age limits and work with young people from birth to adulthood, but most these days do have age limits. Some work with children from five to fourteen, some from five to twelve, others are different again. (This area of Playwork, with school-age children in their out-of-school time, is generally organised separately from provision for under-fives; Pre-school Playgroups, Nursery Schools etc.). PLAY-TRAIN works with children throughout the whole compulsory school age-range (5—15), but in this article I will be concentrating on the younger end of this range.

The Playwork profession has not yet established a unified philosophy. A range of styles and methods can be found, based on different views of the work. Some people tend to see the work as being about keeping children happily occupied, out of danger and out of trouble. This seems to be the prevailing public perception of Playwork. Most of those involved, however, believe in the fundamental importance of play experience in the learning and development of all children. All experiences involve learning which contributes to children's development. If the experience doesn't have a positive effect it will have a negative one. Playworkers therefore have an important role ensuring all children have access to the widest possible range of positive play experience. PLAY-TRAIN's work is based very much on this view of Play and Playwork.

WHY WE WANTED TO USE LOGO IN PLAYWORK

Our rationale for introducing Logo into out-of-school play settings was based closely on the thinking of its principal creator, Seymour Papert; particularly in "Mindstorms: Children, Computers and Powerful Ideas" (Papert, 1980). As an experienced Playworker myself I felt instantly in tune with Papert's ideas about children's learning. It is clear from studying "Mindstorms" that Papert, taking his lead from Piaget, with whom he had worked in the early 60s, was seeking to create a world where children could learn mathematical skills and concepts through free, self-determined, non-directed, internally motivated activity — in other words, through

play. The learning processes that Papert discusses so incisively are *exactly* what most committed playworkers would hope to facilitate in their day-to-day work: Children seek stimulation through exploring the environment around them — both the physical and the social environment — and experimenting with all kinds of interaction with that environment. This type of play behaviour facilitates the development of mental flexibility; intellectual tools for responding to new situations and solving new problems as the child develops. The Logo environment that Papert described seemed to me to be an "Adventure Playground of the Mind".

One of the reasons Papert suggests children do not easily learn key mathematical and logical principles, is that it is not easy for them to play with, explore and experiment with these concepts. It is certainly not easy for young children to find the *internal* motivation to do so! Papert discusses the failure of much mathematics teaching in schools in terms of the prevalence of a debilitating "mathophobia" throughout the adult population. If children do not feel they *want* to play with mathematical concepts, because these have no positive attraction for them, they are denied the massive benefits of learning through play in this field. "Teaching" as an alternative learning process tries to compensate, but often fails.

Papert also uses an analogy of the difference between learning French in a school French class and learning French in France. In the latter case, the necessary learning will happen through interaction, exploration and experimentation with the surrounding social environment. It will probably happen *more effectively* than in the class situation. Applying this analogy to Playwork, we could say that the Playworker is seeking to create an environment in which a whole range of relevant learning will take place through the child's own interaction with it. Papert suggested that communicating with a robot turtle through Logo could be seen as "learning mathematics in 'Mainland'".

So it was quite obvious to me that the only sensible place for children to learn about Logo was in a *Play* environment — most appropriately the type of playwork project that I have described above — and quite definitely not in a traditional school setting.

Although this seemed so obvious to me, I suppose it was inevitable that Logo would mainly be used in schools. The idea that computers and associated complicated electronic gadgetry should be provided for free use in playcentres was seen as rather ahead of its time. However I still believe that Logo is not at home in schools and does not work well in the typical school environment: the need for timetabling, for working to *adult-determined* targets and curricula, the limited access to the computer and lack of time for pursuing ones own projects, the lack of time and resources to train thousands of primary teachers to be skilled facilitators of learning in Logo environments; all these prevent the Logo learning process from working the way its creators intended it to in the typical primary school (* See footnote).

(•Footnote: I often get told off for expressing negative views about teachers and the education system, so perhaps, to avoid arousing excesses of righteous indignation, I should say that the above comments are gross generalisations and I know that much wonderful work is being done with computers in primary schools by highly competent committed teachers, who *have* read Papert and know what Logo is all about.)

THE IMPORTANCE OF THE ROBOT TURTLE

In work with younger children, the famous robot turtle is not just a clever gimmick, it is central to the whole enterprise. Papert is quite right that younger children find it difficult to get to grips with the abstract concepts of programming on a computer screen. The turtle effectively "concretises" these abstract concepts. It is a real object that moves around the room; an idea young children easily understand. The possibility for the child to "act like the turtle" provides a tool for thinking out what instruction will produce what sort of movement. Programming becomes a process of "teaching the turtle new words", not unlike training a dog!

The other great advantage of the turtle, which is particularly important in non-school settings, is that it can offer the stimulation and positive reinforcement necessary to motivate the child to explore and experiment and so facilitate learning through play. This contrasts with "traditional" school maths where, as Papert says, children generally do not care in the slightest what the answer is, and are therefore not motivated to seek it. In fact they are often alienated from the whole process of seeking answers they don't value to questions that don't matter. The turtle can do the sort of things that many children seem to find fascinating and worthwhile. In the very earliest stages of learning to control it, you can play games with your friends: "Shove Turtle", "Demolition Turtle", "Obstacle Race" — for details see "Computers in Children's Play" (Shier, 1986). Later it can be got to draw large, accurate pictures and patterns on the floor. Children are strongly motivated to achieve a desired result, and there appears to be immense satisfaction in the process of getting the turtle to do your bidding (i.e. programming it correctly) as well as in showing off your finished drawing.

Playworkers nearly always work with children in groups and here again the robot turtle is vital. It acts as a focus for a whole group of children, encouraging group collaboration in problem-solving. Otherwise you need another computer for every two or three children, and on most play projects this is just not possible.

One firm conclusion I have come to is that, when working with children under eight, if you don't have regular access to a reliable robot turtle, it is best to forget the whole idea of computer programming.

THE PLAY-TRAIN LOGO PROJECT

PLAY-TRAIN spent a whole summer taking turtles to playschemes around the West Midlands. We carried on this work for a total of three years with regular Logo sessions at a number of play projects and short training courses for Playworkers on the use of Logo in children's play. This enabled a number of Playworkers to become competent Logo facilitators themselves, and they then had regular access to our equipment to develop the work further on their own projects.

We monitored all this work and published our initial findings in "Computers in Children's Play" (op.cit.). The aim of our research was to find out how practically

feasible it was to use Logo on out-of-school Play projects. We didn't attempt to find out the effect of doing so on the children's cognitive development. In fact this would have been very difficult to do, as measuring the developmental effects of any specific play opportunity is a notoriously difficult business. This is partly because the essence of learning through play is that the child controls the experience and determines what she will concern herself with. It is quite inappropriate then for the adult researcher to decide what should have been learnt and so what effects to measure. Playworkers who work with certain children over a period of time give anecdotal evidence of changes in understanding, personality, competence and confidence, but I don't think anyone has come up with a scientific way to link cause and effect. I suppose this is a major reason why Playwork continues to be so undervalued and under-resourced.

Here is a summary of our feelings about using Logo in Playwork:

1. Logo and the turtle are a serious practical possibility on all kinds of children's play projects. The level of facilities is not important. What matters is having competent, well-trained workers who know what they are trying to do and how to go about it, and who have a sound relationship of mutual trust with the children.
2. Children can and do learn Logo successfully through using the Turtle in a free play environment.
3. Using computers in out-of-school play environments is an effective way of helping children from disadvantaged backgrounds to gain familiarity and confidence with computers.
4. Logo and turtles offer an approach to computing that helps to redress the computer-culture's strong male bias. Girls are more attracted to, and successful with turtles than many other computer applications.
5. The turtle offers a group-based way of working with computers, which is both appropriate for organised playwork settings and also avoids the risk of isolation and withdrawal associated with the "computer addict" syndrome.
6. While Logo encourages logical, step-by-step approaches to problem solving, it also makes room for imagination, creative thinking and serendipity.
7. The approach to using Logo in play settings can be adapted to meet the needs of children of all ages. The youngest we worked with were five, and it was necessary for them to recognise the letters of the alphabet as a starting point. However there is no reason to suppose this is a fixed constraint and it should be simple to develop adaptations that do not even require this.

    When working with children in the younger age range (five to seven year-olds) I sometimes adapted the programme so that the necessary instructions (forward, back, left, right etc) were replaced by single initial letters. This has the disadvantage of making the computer language look less like English, but saves the frustration that young children experience because of their lack of keyboard skills.

WHAT HAS HAPPENED SINCE THEN: THE CURRENT SITUATION

This article was originally intended to contain an overview of current work with young children using computers in out-of-school play settings. The sad fact is that I haven't been able to find any. A number of centres I know have their own computers or games machines but, for the younger children, these are used almost exclusively for playing standard commercial computer-games, often with no thought at all being given to the effects of the excessive violence and destruction portrayed.

Why, given the very positive conclusions of the PLAY-TRAIN Logo project described above, has the momentum not been sustained? There are several factors, all mutually reinforcing:

1. For young children to use computers creatively in a play setting, and in particular to use Logo as it should be used, requires great skill and dedication from the Playworker. This in turn requires both substantial training and a strong personal commitment. Generally the training is just not available, while the commitment is worn down by other adverse factors.
2. For the sort of learning through play that Papert describes, children have to have regular free access to a Logo environment. Papert suggested that the state should provide every child with a powerful home computer, the cost being saved by cutting unnecessary schooling! In reality, of course, the equipment is scarce and what is available has to be shared out, so a session with the turtle becomes an occasional special treat, and children never really get used to the "Logo environment".
3. Children are now overwhelmed with arcade-style computer games that provide a great deal of immediate stimulation without the need for much intellectual effort. This appears to be very attractive to a lot of children, and makes the robot turtle seem a real plodder.
4. There is very little in the way of a Logo sub-culture or users network. There does not appear to be any network of people still concerned to use computers creatively in children's play.
5. Working with computers is an expensive form of Playwork. You have the extra hassle of raising money for equipment, which becomes harder as budgets are trimmed and priorities reviewed.
6. To some extent the interest in computers in Playwork was a fashion. When it was a brand new idea it was very exciting, but most of those involved have not sustained their interest, or have moved on. This certainly applies to PLAY-TRAIN, which is essentially an arts and media training project. Having pioneered the idea of Logo in children's play, we gradually shifted our attention to other areas of development and stopped actively promoting it.

THE FUTURE

PLAY-TRAIN's work over the past five years has shown that computers have a great positive potential in the out-of-school play of children of all ages. Yet no-one has

taken up the challenge of trying to achieve that potential. I hope that, with continuing development of hardware and software, this sort of work will become easier and cheaper to do, and that this will lead to a revival of interest and a new wave of practical development on play projects.

References

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