

## The Saplings Model of Education: Case Studies in Autism

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*The Saplings Model of Education*

The Saplings Model of Education is a school in Ireland which offers children with autism access to individualized teaching using the framework of Applied Behavior Analysis (ABA), Precision Teaching, and Direction Instruction. This paper presents an outline of the Model, which incorporates teaching, training, and research, and delineates key operating principles. Learning pictures for three children with autism are also presented for a selection of tasks.

DESCRIPTORS: Autism, Saplings, Precision Teaching, Education

A major goal in the education of children with autism is the acquisition of behavior which will help them learn from their natural environment. Autism itself is characterized by impairments in social relationships and communication together with restricted, repetitive, and stereotyped patterns of behavior, activities, and interests. Whilst the efficacy of behavioral approaches to educating children with autism has been clearly shown over the last 20 years (see Matson, Benadivez, Compton, Paclawskyj, & Baglio, 1996; Kerr, 2000) little has been published on Precision Teaching (PT) with children with autism (for exceptions see Malabello, 1998; Kubina, Morrison, & Lee, 2002). Green (1996) stated that:

The vast majority of the child's time and other resources ought to be invested in treatments that have been shown, through scientific research, to produce the most lasting beneficial effects on the broadest range of behavioral deficits and excesses that constitute autism. (p. 17)

Kubina et al., highlight Precision Teaching (PT) as a method for providing daily assessment of progress which can also assist planning of curricular decisions. Adopting such an adjunct compliments existing curricula and allows for measuring behavior and facilitating decision-making. In a similar vein, West, Young, and Spooner (1990) reminds us of the importance of being aware of the relationship between teaching and learning:

Teachers who are truly interested in ensuring that teaching has had the intended effect will certainly be interested in precise measurements of learning. More important, however, they will want to adjust their teaching practices when the measurements indicate that prior instruction has failed to accomplish its objective. Therefore, measuring learning is one of the most important of all instructional acts. (p.5)

This is of central importance to practitioners working with children with autism. Understanding the nature of the teacher-learner dyad results in posing questions in regard to whether the pupil is learning and the speed of acquisition. Also, remedial questions concerning what should be done if the pupil is not learning and what level of performance should be expected arise from the introduction of precision measurement to the teaching process (cf. Raybould, 1981). Saplings attempts to address these issues for each of the children enrolled through the use of PT as an assessment through teaching model, thereby providing all children with a high level of individualized and appropriate education. This paper describes our approach to teaching and learning and introduces three children from Saplings, namely, Rob, Mary, and Mike in order to illustrate the type of tasks taught and the effectiveness of the teaching. The paper is a celebration of all that has been achieved in Ireland over the last few years. We recognize the work of all tutors and parents in creating the model and look forward to developing our skills in the related areas of PT and ABA.

### *The Saplings Model*

*The School and Students.* Saplings is a purpose built centre consisting of three large classrooms, which accommodate 4 children in each. These classrooms can be observed from two observation rooms. In addition there are two individual tuition rooms and a large playroom with a variety of play equipment. Cameras have been installed in all rooms to record teaching sessions. Outside there is a large play area with a trampoline, swings, slides etc. The school is situated in a rural area about 30 miles from Dublin. Saplings currently have 12 children enrolled on the programme (11 boys and 1 girl) with age ranging from 3 years to 8 years. All children were diagnosed with autism by an independent educational psychologist prior to enrollment at Saplings. The school has 14 tutors, one Supervisor and a Director of Education (behavior analyst) and

operates a 48 week academic year with standard school holidays for all staff and children. The school day starts at 9:15 for tutors and at 9:30 for children and ends between 2pm and 3pm for children with tutors staying until 4pm to review programs and plan for the following day's lessons. Each child has a tailor made individualized programme, which covers a wide range of educational domains (e.g., language, motor skills, social skills, play skills, self-help). The majority of children are taught individually in classrooms with other children. Direct Instruction programs, varying from Reading Mastery, math, and language are in place for 7 of the children. All children also take part in daily group work tasks. The ethos of the school is to provide children with autism access to an educational framework which allows children to master pre-requisite skills to a fluency level.

The teaching methodology of Saplings is based upon the principles of Applied Behavior Analysis (ABA) incorporating Precision Teaching which allows flexibility in the teaching and learning process. All tutors have attended introductory courses in ABA and PT. They have also been trained in Direct Instruction which provides a structured systematic approach to academic learning in our school. Tutor training on a monthly basis provides ongoing professional development for staff which means the children receive a high quality of teaching.

The general model within Saplings is made up of essential elements of PT including:

- Pinpoint. Tutors pinpoint or specify the correct response to accelerate and the incorrect response to decelerate. This allows Individualized Program Plans (IPP) to be written for each child which highlights a general educational path for each child.
- Count. Once pinpointed tutors collect information on the behavior. This is counted in the form of the correct responses and incorrect responses for each skill area.
- Chart. By creating learning pictures we can see immediately whether or not progress is being made. The use of the Standard Celeration Chart allows tutors to make minute to minute changes in the teaching process. Scrutiny of progress toward learning goals embraces the spirit of early intervention.
- Pre-Teaching Assessment - Children are presented with each task prior to teaching to ascertain current competency for each individual. In this way the pitch and pace of the instruction can also be considered prior to intervention.
- Intervention. Based upon pre-teaching scores

interventions are designed. The fundamental axiom of the "learner knows best" is adhered to at all points of the education planning process.

- Fluency and Cumulative Curriculum Planning. Effective planning of a comprehensive curriculum to establish key component skills and their underlying tool elements to fluency is central to the work at Saplings (cf. Johnson & Layng, 1994). Mastery of each task is determined by showing retention, endurance, and application in relation to performance standards whilst showing stability of responding.

- Self-Management. Placing the child at the centre of the learning process within Saplings is possible by allowing all children to choose their rewards/playtime activities. Some of the children use visual icons to denote their choice whilst others vocally request items.

#### *Informed Decision-Making: Using Learning Pictures*

Through application of the above mentioned elements at Saplings since October 2001, we have been able to collect several hundred charts showing the progress of the children and tutors in implementing PT. The following cases are provided to give a flavor of the work and progress we have committed to at Saplings.

*Rob.* Rob is 4 years 9 months old and was diagnosed as having mild to moderate autism at 2 years 6 months old. He has been attending Saplings since 30.10.01 and was engaged in a one-to-one home-based ABA program for the year preceding his enrollment. His active task list includes tasks such as see/say words, see/write letters and numbers, and hear/answer questions on function while tasks in maintenance range from see/say body parts to hear/do prepositions. Charts 1 – 3 show the learning pictures before, during, and after teaching for the tasks hear-give objects by function, see-say clothes, and see-say body part cards.

*Mary.* Mary is 4 yrs 6 months old and was diagnosed as having autistic spectrum disorder just after her 2nd birthday. She has been attending Saplings since 30.10.01 and was engaged in a one-to-one home based ABA program for one year prior to enrollment. Mary's current tasks include see/say phonics, see/match non-identical actions, hear-give pictures, see/match word to picture and see/write numbers. Charts 4 – 5 show the learning pictures before, during, and after teaching for see-match non-identical pictures and see-match emotion cards

*Mike.* Mike is 3 years 8 months old and was diagnosed as having mild autism at the age of 3 years 1 month. He has been attending Saplings since September 2001 and had been receiving one-to-one tuition at home, based on the principles of

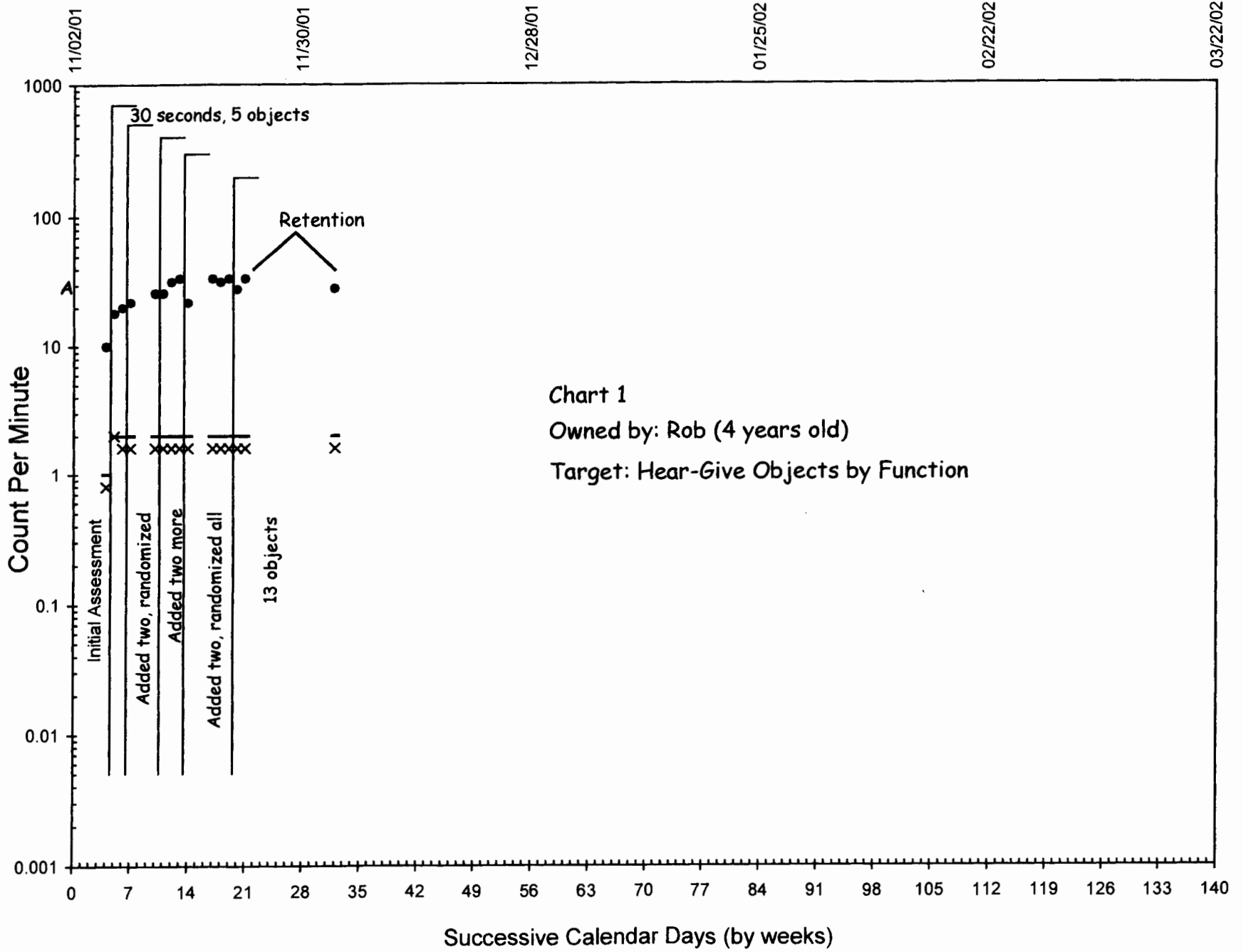


Figure 1

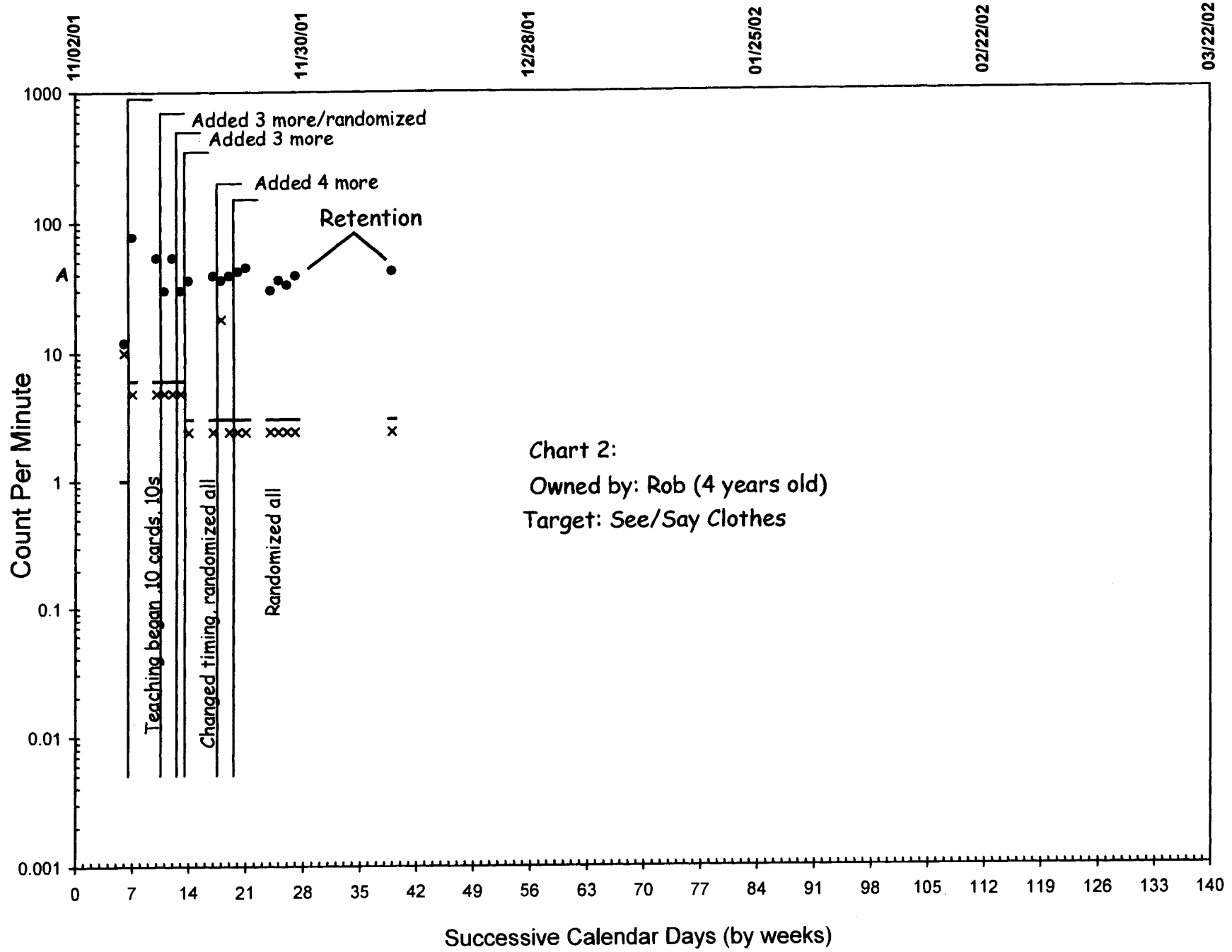


Figure 2

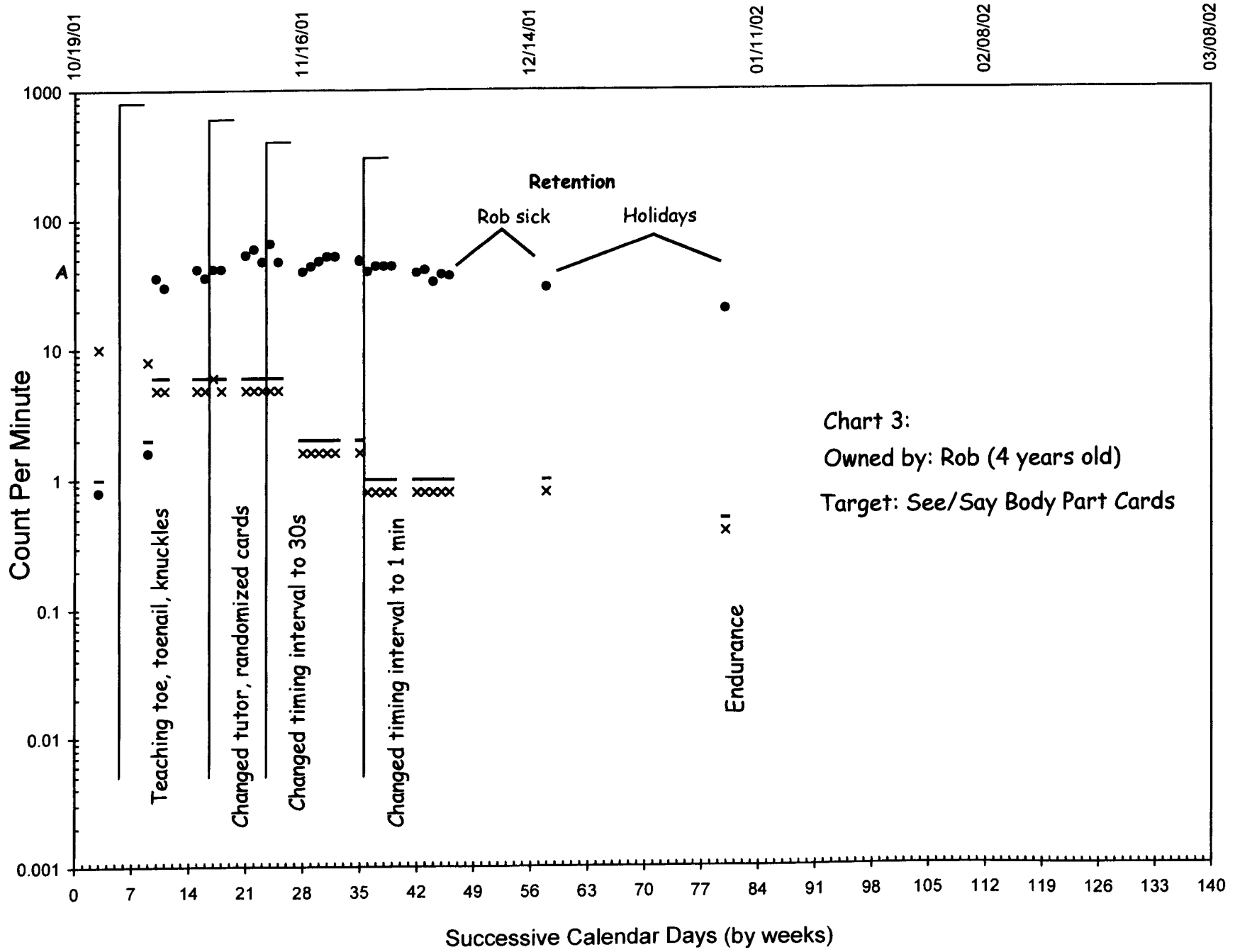


Figure 3

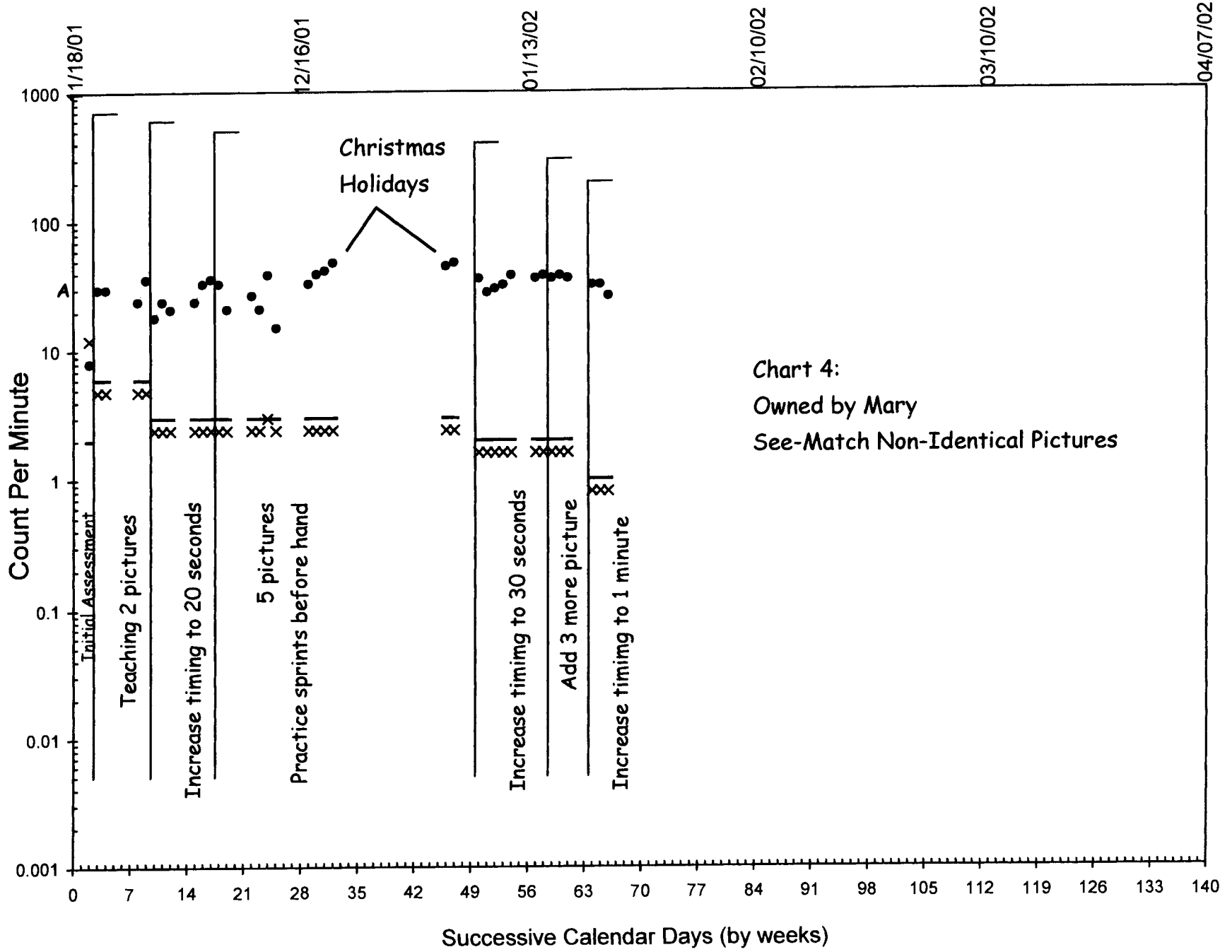


Figure 4

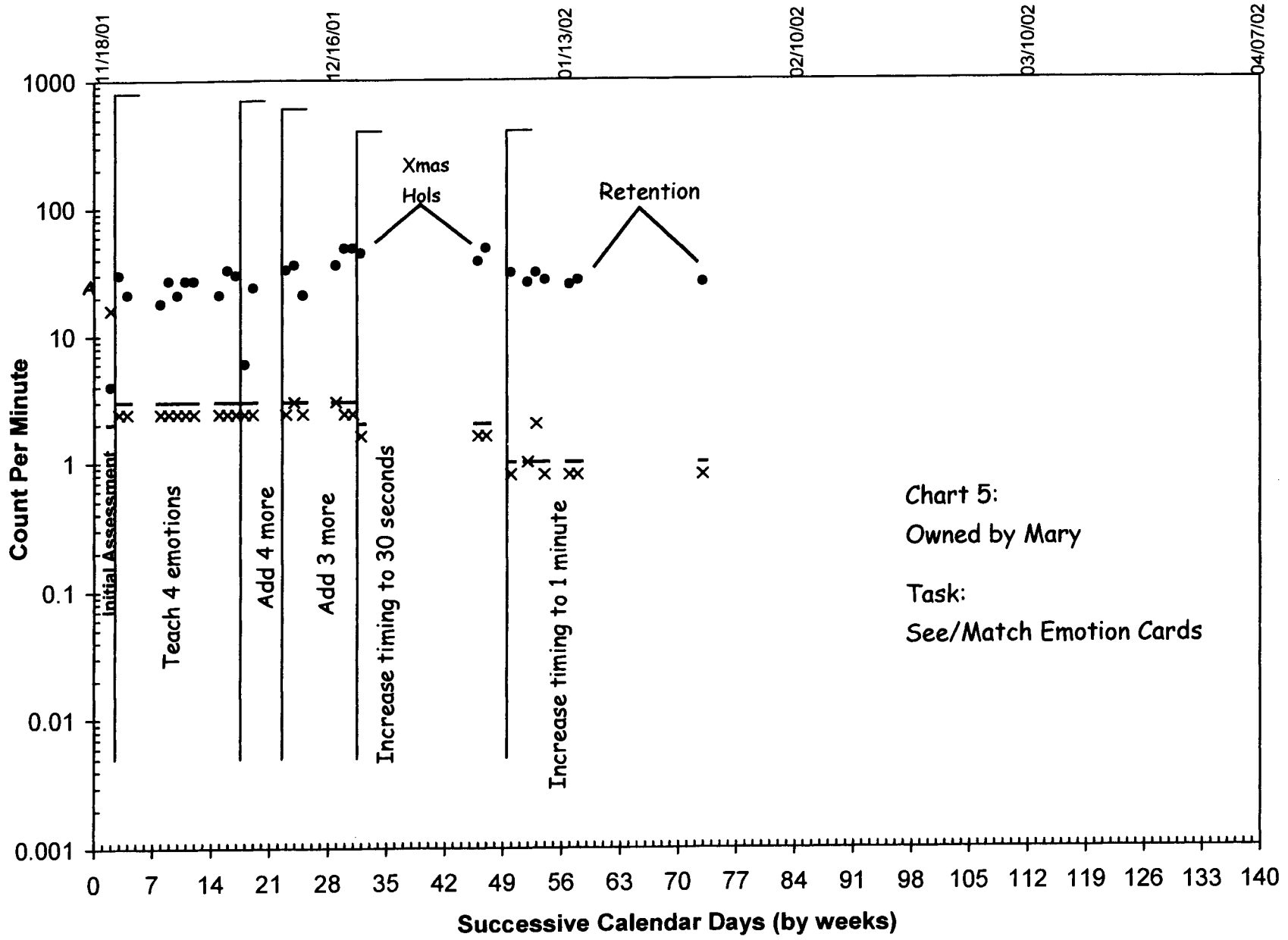


Figure 5

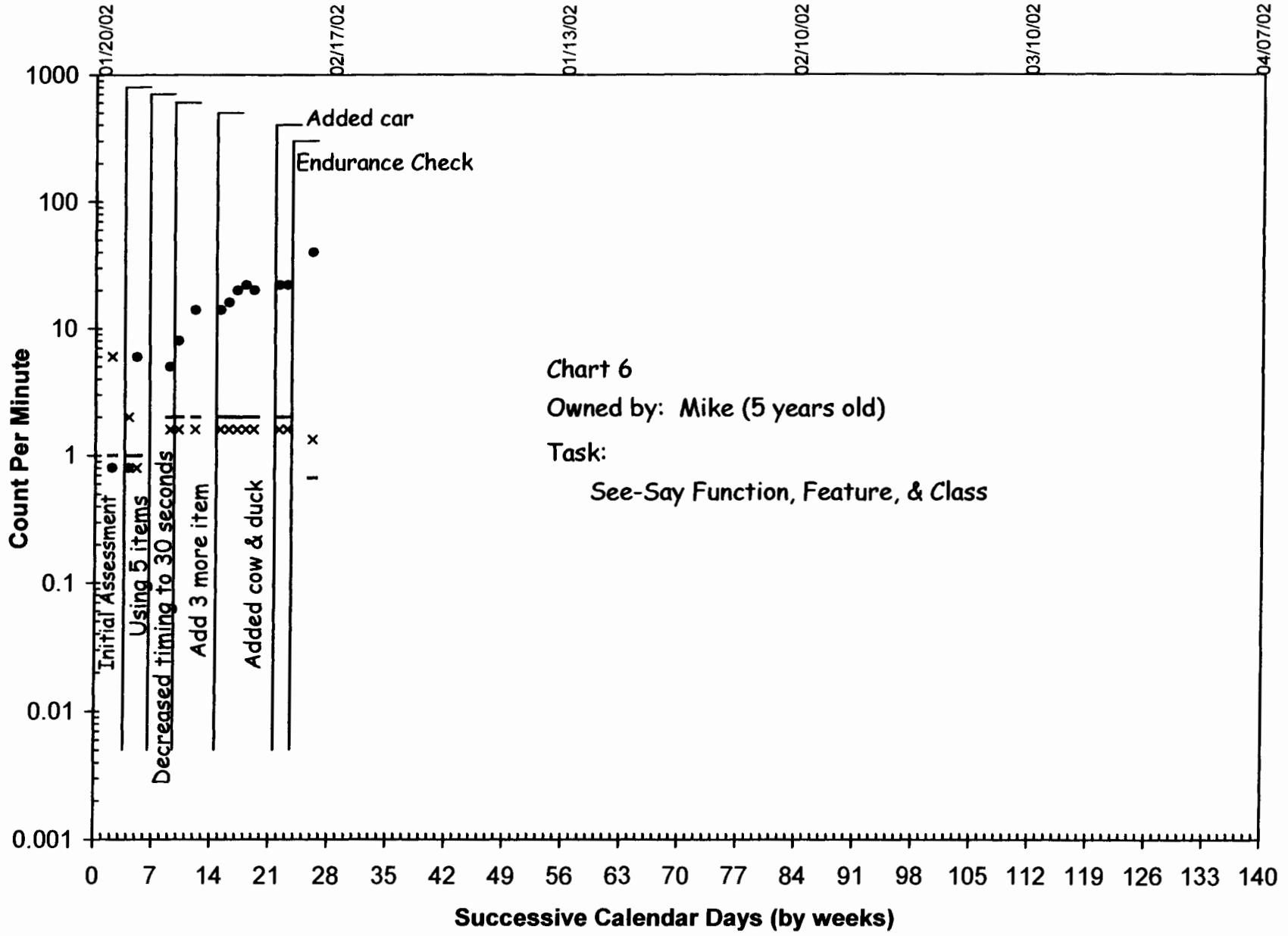


Figure 6



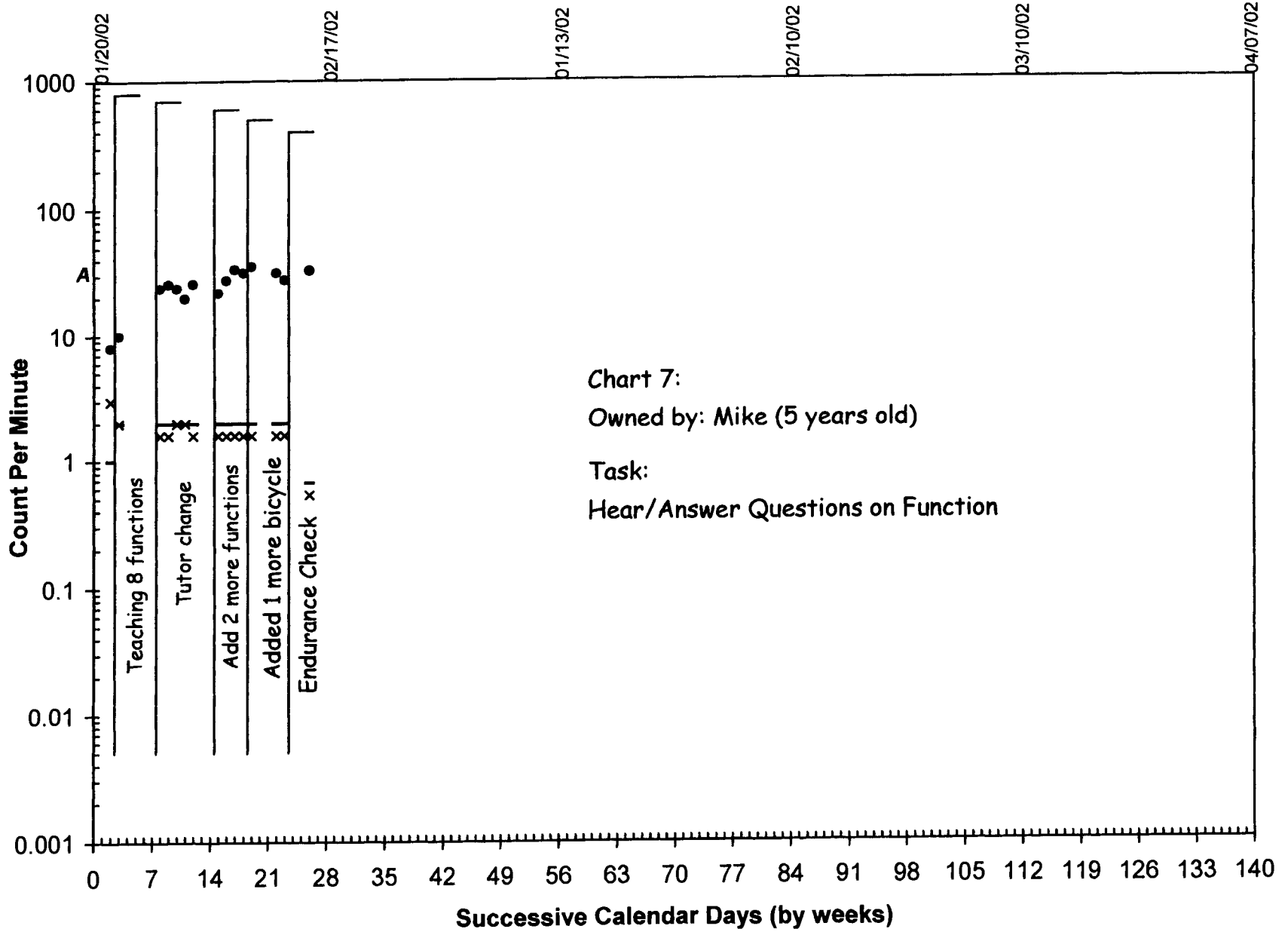


Figure 7

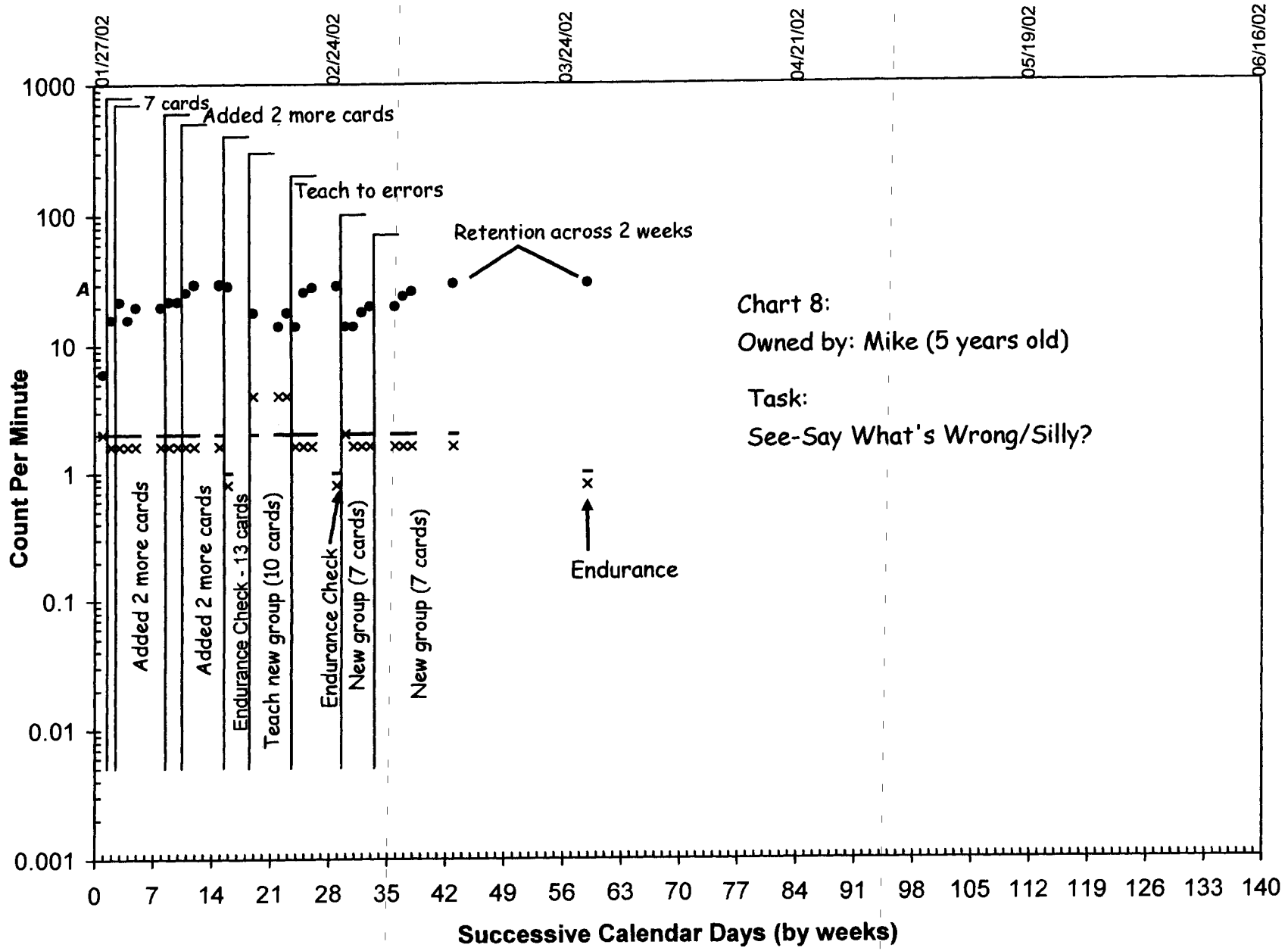


Figure 8

ABA, since June 2000. Mike's active tasks include see/count/say sums, see/say sequencing, see/say why-because, and hear/put prepositions. Mike's tasks in maintenance range from see/say phonics to see/match letters to keyboard. Charts 6 – 8 show the learning pictures before, during, and after teaching for the tasks see/say description based on feature, function, and class, hear/answer questions on function, and see/say what's wrong or silly.

### *Training Courses & Research*

To address the uneven pattern of development typical of children with autism, the Saplings Model of Education was created to act as a school, research centre, and training centre. This multifaceted approach is designed to tap into the evolving skill sets within education for children with autism. Placing our finger on the pulse of learning and measuring the outcomes allows Saplings to evolve. 12-week training courses which provide a basic introduction to ABA have been successfully run by Saplings throughout Ireland. The essential elements of PT outlined above are of central importance in these training courses.

Currently 3 courses are running across Ireland. Saplings aim is to provide ongoing basic training to new groups of interested parties as well as more advanced courses for those who have completed introductory level training. These courses are open to all parents and professionals with an interest in teaching children with autism and related disabilities. The courses cover aspects of ABA, verbal behavior, curriculum design, and the use of visual aides for children with Autism. Courses have been well received and through them we aim to promote the interest in, and application of, PT in Ireland whilst also empowering parents with skills in designing and monitoring effective educational programs.

With regard to research interests, Saplings are forging links with universities in order to enhance our research potential. Currently at Saplings we are investigating the effectiveness of video modeling in promoting social interaction and social commenting. The implementation of self-management packages (e.g., Koegel, Koegel, Hurley, & Frea, 1992) are also being explored. As Saplings becomes more established, it will be possible to investigate further avenues of research in a variety of important areas.

### **DISCUSSION**

The increasing popularity of behavioral interventions for children with autism has been well documented (e.g., Matson et al., 1996). Central to the arguments for behavioral programs are calls

for data-based decision making. However, scrutiny of many programs under the general name of "ABA" often reveals a lack of data used to drive the program. This is incompatible with the characteristics of ABA utilizing the methods of science including description, quantification, and analysis (cf. Cooper, Heron, Heward, Eshleman, & Grossi, 1994).

The Saplings Model of Education aims to ensure that it does not fall into this trap by keeping data based decision making at its core. By providing continuing professional training for staff and highlighting the importance of evidence based practice all of those involved with Saplings are keenly aware of this issue. Saplings recognizes the importance of "having our finger on the pulse of learning" which ties in with Lindsley's (1972) argument that by "putting science in the hands of teachers and their students" that discoveries on an individual level would be possible. All children within Saplings have made progress with the caveat that progress has been relative to each child's starting point. Our collection of learning pictures gives us the opportunity to learn from our learners and allows us to analyze variables which affect learning-teaching. The future for Saplings is bright.

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