neighbors" and "doubles, neighbors and two houses away" sheets. When he finally went back to the original sums to 18 sheet, his frequencies were much more fluent than previously and he reached his aim in five days (see Chart 1).

Charles was quite severely learning disabled. He typically had a difficult time reaching aim on even simple skills, yet his data were similar to Lee's. He showed some improvement in addition with sums to 18, but he had reached a "plateau". When "doubles", "doubles and neighbors", and "doubles, neighbors and two houses away" were introduced, he quickly reached his aim on all the practice sheets(see Chart 2).

Claudia, Kay, and Anne reported that other children in the class also benefited from this procedure and shared their data and practice sheets at our monthly Precision Teaching gathering. Other teachers in the area began to use the same procedure with similar results.

Sometimes it is not IF you slice curriculum, but HOW you slice it that makes the difference for a child's learning. The area of curriculum evaluation and development is one that can be easily and effectively studied using Precision Teaching. Teachers can learn from the performance and learning of their children the most effective ways to sequence curriculum and to apply learning strategies to help them master basic skills.

## REFERENCE

Hansen, C. & Lovitt, T. (1973) Program Slicing: A tool for individualizing instruction. **Education and Training of the Mentally Retarded**, 8, 153-158.

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# The Pre-purchase Assessment: Guarding Against Those Nasty Dust Collectors*

**Clifford Bourie**
Merrimack Special Education Collaborative

Among the complex needs of multi-handicapped people, deficits in expressive communication are often the most profound. Without a fluent output channel, effective interaction with their environment is minimized.

Alternative communication systems have existed for years. Sign language, picture and/or symbol systems have, in many cases, greatly enhanced the communicative ability of non-verbal people. Ingenious applications of technology have enabled any reliable, voluntary movement to indicate a discrimination. The overt discrimination can be translated into a unit of information or communication.

The complexity of alternative communication systems ranges from direct selection of an object or its representation on a picture board via an eye gaze or touch (Shane, 1979) to encoding techniques on a personal computer with a voice synthesizer. The expense of alternative systems has an equally broad range. When presented with such a myriad of possible configurations, parents of multi-handicapped, non-verbal people sometimes become overly optimistic about the impact of technology. A complex electronic system can be seen as the magic key that will finally unlock the ability to communicate for their child.

Teachers are responsible for determining what alternative communication system, if any, is most appropriate for a person. Frequently, determining what is appropriate is a guessing game, with the prescription for a communication board based on absence/presence questions. Can he recognize objects? Can he identify photographs? What about line drawings? Without objective rules at the start, the guessing game usually ends with the "pieces", the communication system, in a closet gathering dust. A frequency-based assessment before the purchase may more precisely prescribe a system format to prevent a closet full of dusty magic keys.

Abdul is a 16 year old student in the Merrimack Special Education Collaborative's Basic Skills classroom. His medical diagnosis includes cerebral palsy and severe mental retardation. Spasticity in his extremities limits Abdul's mobility and fine motor performances. He communicates via a combination of gestures, approximated manual signs, and a few words. He identifies objects (hear,see/point), and can demonstrate their use. He can identify Rebus pictures of familiar objects (hear,see/touch), with varying accuracy (Rebus pictures can be obtained from American Guidance Service,

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* A special note of thanks to Jim Pollard for his fluent help in preparing this paper.

Cedar Pines, MN 55104)). Abdul's parents hope that an electronic system will allow him to communicate more freely.

A medical supplier loaned us a Zygo-16C communication board (Zygo-16C electronic communication systems can be obtained from Zygo Industries, Portland, OR 97207). The board is a matrix of 4 rows and 4 columns of 4x3" message areas. Each message area contains a single indicator light. The lights can be illuminated in succession by operating a switch in the Manual Scan Mode. In the Auto Scan Mode, the light advances automatically on a 3-second delay, or remains illuminated if the switch is depressed. Leaving the light illuminated can indicate a desired choice from among the displayed pictures or symbols. The automatic scan resumes when the switch is depressed again.

A series of 7 pinpoints based on face validity comprised the pre-purchase assessment. Performance data were recorded for 6-8 days on each pinpoint. Performance standards, or proficiency aims (Haughton, 1972, 1980) were determined via cold snapshots of 3 classroom staff (performance standards indicate proficiency levels and provide a basis for comparison among skills).

The pinpoints were:

**Hear, See/Touch Pictures.** This pinpoint allowed Abdul to tell us how well he could identify Rebus pictures of familiar objects. The pictures were: bus, chair, cookie, cracker, cup, milk, paper, toothbrush, and water. The pictures were chosen because the objects were common to Abdul's environment, and because they had been used previously during informal training sessions. We presented the pictures in groups of three. Abdul was asked to "Point to the _____." Corrects and errors were counted during 2-minute timings.

**Touch/Press Paddle Switch.** This pinpoint allowed Abdul to tell us how well he could manipulate the control mechanism. The switch was not connected to the Zygo-16C unit to minimize possible visual distractions. The number of audible switch closures was counted during 15-second timings.

**See/Press Switch (Advance Light).** The switch was connected to the unit. The unit was in the Manual Scan Mode. A single press of the switch advanced the indicator light to the next display area. This pinpoint allowed Abdul to tell us if the moving light effected his manipulation of the switch. The number of message areas illuminated was counted during 15-second timings.

**See Target/Stop Light.** This pinpoint allowed Abdul to tell us how well he could operate the unit in the Auto Scan Mode. The light advanced automatically every 3 seconds. The light stopped when the switch was depressed. Only the top row of message areas was used. A single message area was designated as the target by a large star. The other 3 message areas were blank. A correct movement stopped the light when it was in the target area. Errors were counted as any touch to the switch when the target area was not illuminated. The Auto Scan Mode imposed a ceiling of about 20 corrects/minute. Corrects and errors were counted during 1-minute timings.

**See/Touch Light.** This pinpoint allowed Abdul to tell us how well he could follow the light. We randomly advanced the light over all 16 display areas, and asked, "Where's the light?" Corrects were counted as touches to the illuminated light. Errors were any touches to lights that were not illuminated. Timings were 1-minute in duration. There was a teacher-imposed ceiling to the performance (Binder, 1983).

**See Picture/Touch Light.** This pinpoint allowed Abdul to tell us if he could match the light and the picture. A picture was randomly placed in one of the 16 message areas. We asked Abdul, "Where's the light next to the picture?" The lights were not illuminated. Touches to the correct light, and to the inappropriate light (errors) were counted during 1-minute timings.

**See Picture/Stop Light.** This allowed Abdul to tell us how well he could operate the entire system in composite. A single picture was placed in different locations in the top row of the display matrix. Abdul was asked to move the light to the picture, and then place his hands in his lap to indicate that he was finished. Corrects were counted if Abdul put his hands down when the light next to the picture was illuminated. Errors were counted if Abdul advanced the light beyond the message area with the picture. The location of the picture and light were changed after

each error, and Abdul was asked to "Start again." Corrects and errors were counted during 1-minute timings.

Abdul told us the following ( see Charts 1 and 2):

1. I can't identify pictures fluently or accurately. Performance standards are 25-31 corrects/minute. My pace was 5-9 corrects/minute and 1-5 errors/minute. My errors were accelerating more than my corrects.

2. I can adequately manipulate a paddle switch. My pace (48-142/minute) is well below performance standards (about 220-400/minute), but it's improving (x1.4), and it's more fluent than performance standards on other composite skills.

3. I prefer the Manual Scan Mode (72-120/minute) to the Auto Scan Mode (2-6 corrects/minute, 9-52 errors/minute, and errors accelerating at x2.3).

4. I can visually track the indicator light (7-18/minute), although well below performance standards (38-42/minute).

5. I quickly learn that a picture and the indicator light go together. My pace is 2-14 corrects/minute and 1-11 errors/minute, but corrects are accelerating at x5.3 and errors are decelerating at /7.3.

6. I don't stop pressing the switch when the appropriate indicator light is illuminated. I don't understand the functional relationship between the switch, light, and the picture. Although I can operate isolated portions of the communication system, I have difficulty putting all the parts together.

When presented with the information from the assessment in a plain english, straightforward manner, Abdul's parents agreed with us that purchase of the electronic communication system at this time would be, at best, premature. Abdul's educational plan was designed to increase his pace on accurate identification of Rebus pictures and in the component skills of using the Zygo system, such as see/touch light and see picture/touch light. However, given Abdul's performance and celerations on this assessment, the priority for a system at this time would be a direct selection picture board.

The assessment was an effective tool in several ways. It allowed Abdul to tell us his ability on related component skills required to operate a communicative system. It clearly identified deficits and their magnitude, and suggested goals to be addressed in his educational plan. It facilitated discussion of an appropriate communication system for Abdul between his parents and teacher. It saved a large sum of money. It prevented a sophisticated "magic key" that didn't quite "fit" from being discarded into a dusty closet.

## REFERENCES


Binder, C. (1983) Teacher-imposed ceiling? **Data Sharing Newsletter**, 2(3).

Haughton, E. C. (1972) Aims, Growing, and Sharing. In J. Jordan and L. Robbins (Eds.), **Let's try doing something else kind of thing**(pp. 20-39). Reston, VA: Council of Exceptional Children.

Haughton, E. C. (1980) Practicing practices: learning by activity. **Journal of Precision Teaching**, 1(3).

Shane, H. C. (1979) Approaches to communication training with the severely handicapped. In R. L. York and E. Edgar (Eds.), **Teaching the Severely Handicapped: Volume IV**(pp. 155-179). Seattle: American Association for the Education of the Severely and Profoundly Handicapped.


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[The following is Part I of an article written by Owen R. White, in which he uses a special, analogizing format. The remaining parts of this article will appear in subsequent issues.]

## AIM*STAR WARS

### [Setting AIMS that COMPETE]


**Owen R. White**
University of Washington


Episode I: The Deathstar

Once, a long, long time ago, on a charted performance record far, far from aim, the Learner Rebels were struggling to overthrow the bonds of

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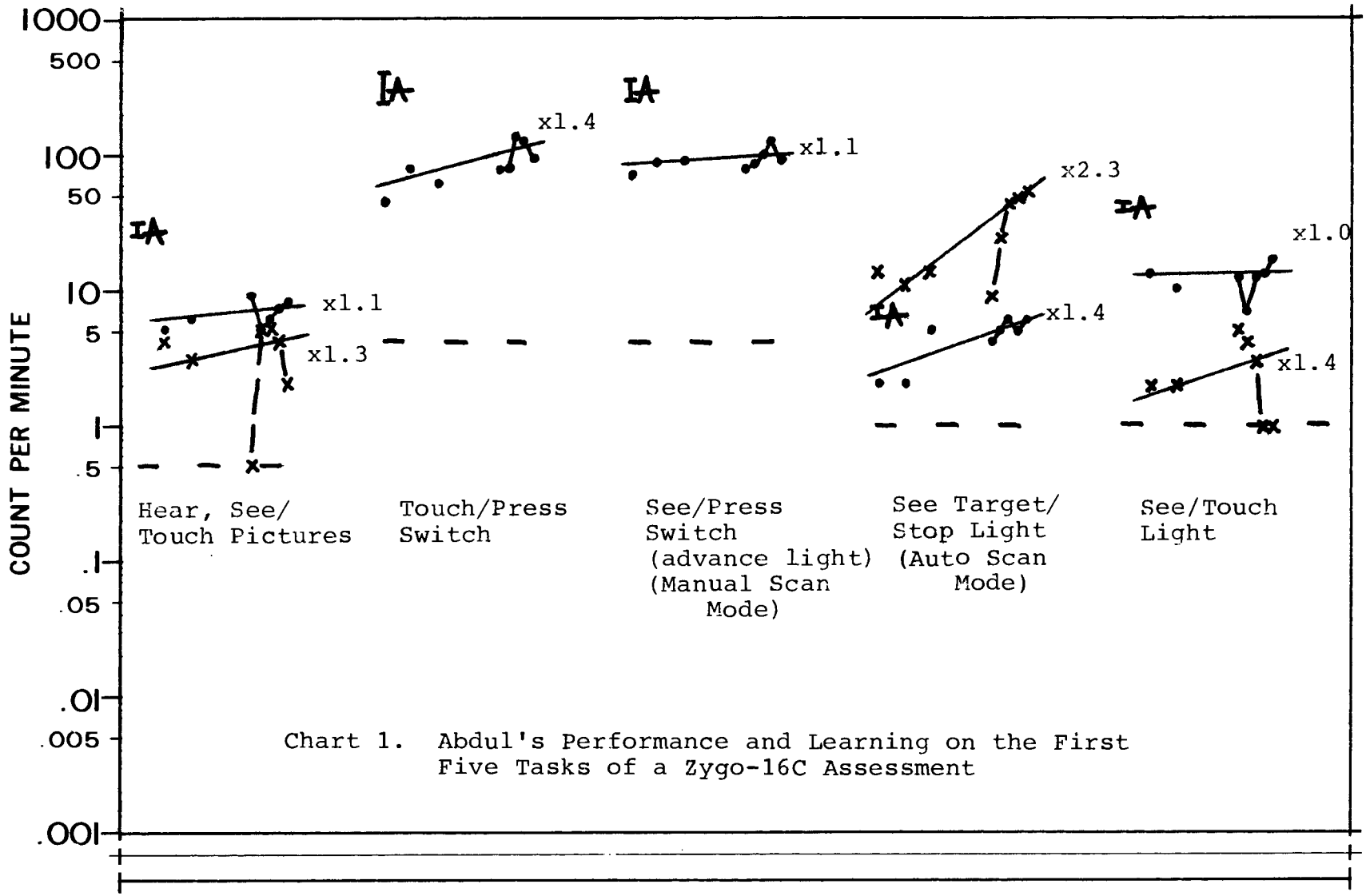


Chart 1. Abdul's Performance and Learning on the First Five Tasks of a Zygo-16C Assessment

Pollard Bourie Bourie Abdul 16 performs tasks on Zygo-16C assessment

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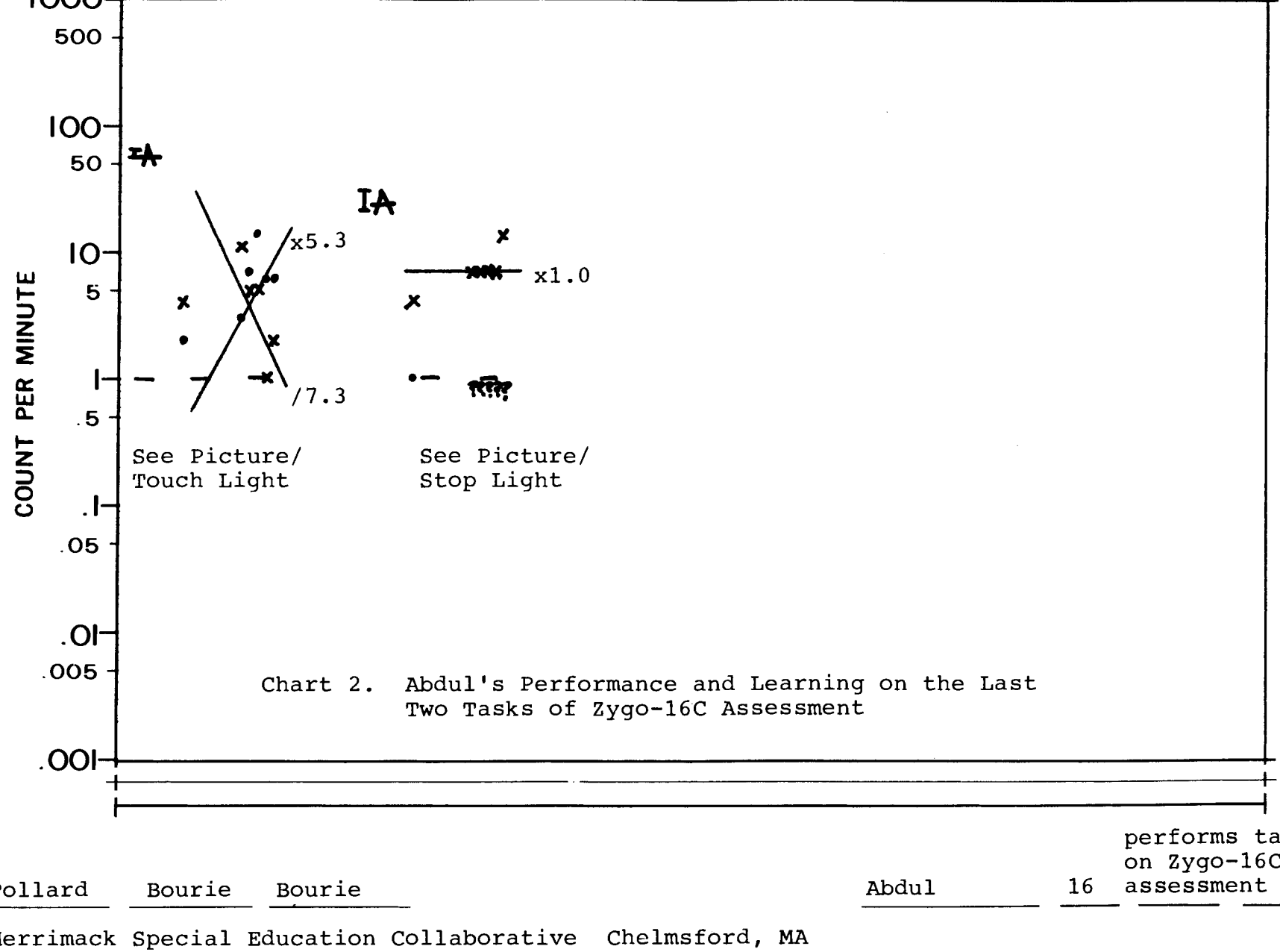


Chart 2. Abdul's Performance and Learning on the Last Two Tasks of Zygo-16C Assessment

performs tasks on Zygo-16C assessment

Pollard Bourie Bourie Abdul 16

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