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The Effects of Precision Teaching on the Acquisition of the Prevocational Skill of Cross Stitching: A Case Study

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This study considers the effectiveness of Precision Teaching techniques on the acquisition of a prevocational skill. The participant was a 58 year-old adult male with a developmental disability. The skill chosen for the study was cross stitching. A time series analysis was used to compare progress between baseline and intervention phases. The results indicated that although the target rate of 20 movements per minute was not achieved, definite progress was made across time.

Sewing is a good recreational skill and can teach both developmental and marketable skills to individuals. Eye-hand coordination, spatial relationships and patience are among the valuable developmental skills taught through sewing. Practice is necessary to develop dexterity, efficiency in coordination, and spatial conceptualization. Techniques for time, money and stress management can be built into the projects. Interpersonal relationships can be enhanced by working together on sewing projects (Loker, 1987).

"In whatever circumstances of fortune one may be placed, the ability to sew will always be useful; for as, on the one hand, a practical knowledge of plain sewing enables one to appreciate other people's work at its true value, so, on the other hand, it enables one to produce strong and lasting work should necessity arise" (Dillmont, 1972).

Hand-sewing is also relatively economical as it requires few inexpensive and easily obtainable materials (Cronin & Cuvo, 1979). Cross-stitching was the skill chosen for this study. By learning this skill, the participant would be able to produce articles for sale which, in turn, would add to his income.

Sewing is a skill that may increase presentability as it can embellish the appearance of a garment. Presentability has been defined as a goal for rehabilitation of clients who live in the community (Sanders, 1976). Physical appearance is an important aspect of integration; therefore, promoting presentability should be a major objective (Cronin & Cuvo, 1979).

Precision Teaching is a technique of basing educational decisions on changes in continuous self-monitored performance frequencies displayed on Standard Celeration Charts (Lindsley, 1992). Since Precision Teaching requires a graphic display, changes in performance can be studied more easily (West, Young & Spooner, 1990). Precision Teaching has been found successful, in part, because feedback to the teacher is immediate, which allows for interventions of new methods if the initial methods are unsuccessful (Briere, 1988). Data-based Precision Teaching allows one to determine whether an intervention is effective, whether it would be maintained, or whether it should be completely changed (White & Haring, 1980). Precision Teaching is said to improve any curriculum as it combines well with any curricular approach (Lindsley, 1992). In addition, wherever Precision Teaching has been used, it has almost always doubled student learning (Lindsley, 1992).

The purpose of this study was to evaluate the effectiveness of Precision Teaching techniques on the acquisition of cross-stitching skills, by an adult male with a developmental disability.

Method

Participant and Setting

The participant was a 58 year-old adult male with Downs Syndrome. The study was conducted in a sheltered workshop for people with disabilities. The participant was chosen for the study to improve his prevocational skills which consisted of woodwork techniques. Learning a new skill would be beneficial to both the participant as well as the organization.

Dependent Variables and Measurement Procedures

The dependent variable was the number of cross stitch movements per minute. These data were gathered and placed on the form shown in Chart 1. Across-stitch consisted of two diagonal stitches that overlap, worked on a grid. Two movements constituted one diagonal stitch. A series of diagonal stitches, running from the top left to the lower right corner of each square, was made. Then the direction was changed, and the stitches were crossed by diagonal stitches, running from the top right to lower left corner of each square. Sample cross-stitching patterns can be seen in Figures 1 through 3.

Daily sessions were conducted Monday through Friday. Each session was 30 minutes. The first 20 minutes were spent teaching the skill, and the next 10 minutes the participant was given an opportunity to stitch without assistance. The results of these sessions were recorded and charted on six cycle Charts.

Experimental Design

A time series analysis was conducted to record and compare the participant's progress over time. The rate was set at 10 stitches per minute (i.e. 20 movements per minute). This was determined by timing a non-disabled person; however, this was not applied to the subject because of his disability. The rate was used as a comparison.

Baseline. The baseline consisted of a recording of the participant's current level of performance for cross-stitching. This lasted for two days.

Physical Guidance. Physical guidance was used to teach the participant the movement of the needle in and out of the fabric. This was in effect for five days.

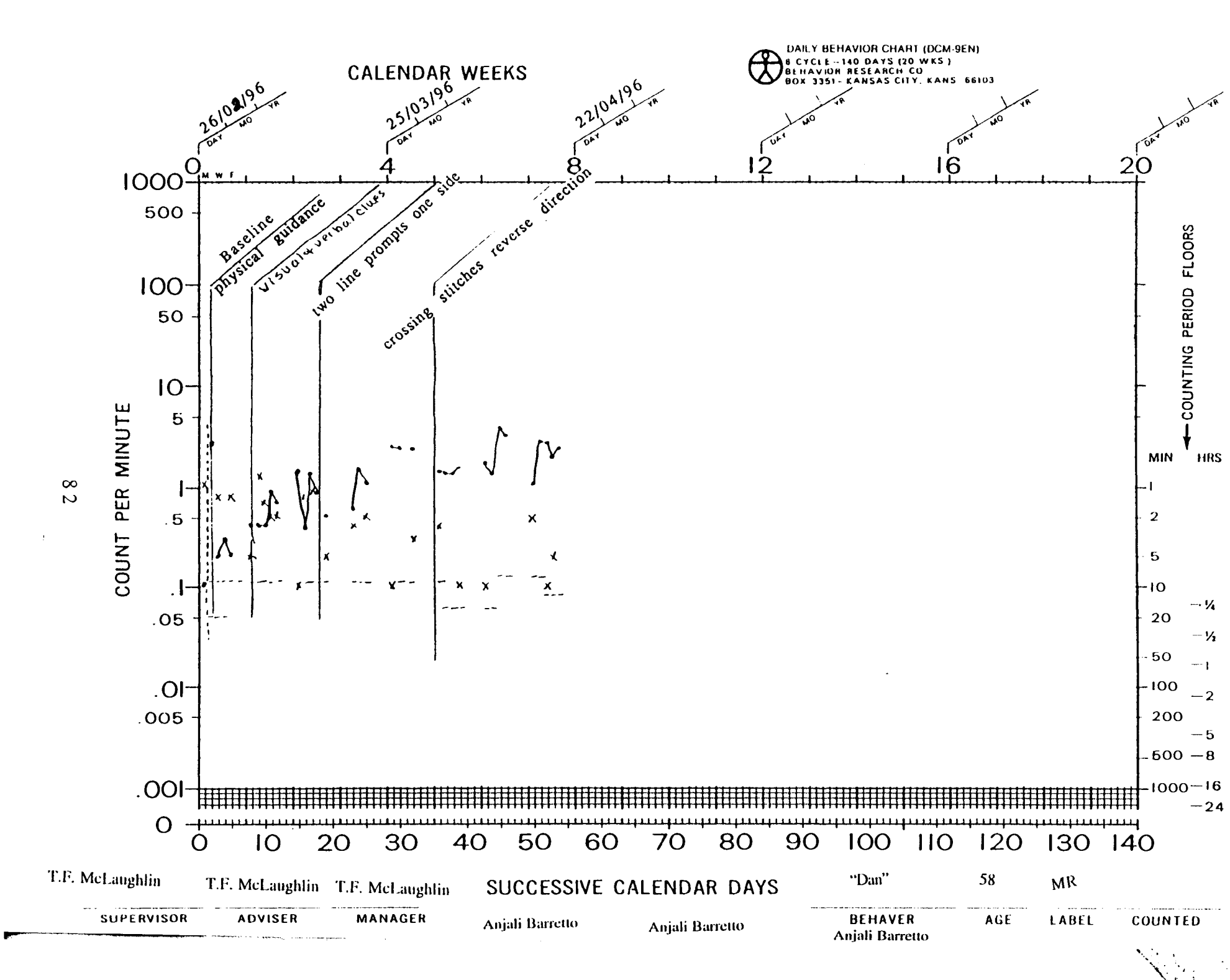
Fading physical guidance using verbal guidance. During this phase, physical guidance was faded, and verbal guidance was given. This was done for eight days.

Two line prompts. Two line prompts were introduced. A two line prompt consisted of two horizontal lines drawn parallel to each other and the width of one square on the grid. The participant used these lines as a visual clue to guide him in his stitching. This phase was in effect for seven days.

Two line prompts and reverse direction cross-stitching. Two line prompts were continued, and the participant was made to move the needle in the reverse direction to cross the stitches. Up until this phase, the participant had been doing the stitches in one direction (i.e. series of diagonal stitches running from the top left to bottom right corner of each square). This phase of instruction required him to reverse the direction of the stitches, thus doing a completed cross-stitch. This phase lasted for 13 days and continues to be implemented after the conclusion of the data collection.

Results and Discussion

Overall, results of the study showed an increase in the number of correct stitches, from 0.05 per minute to 2.2 per minute and a decrease in number of error stitches from 2.0 per minute to 0.1 per minute. During Baseline, average number of correct stitches was 0.05 (range 0.0-0.1) and error stitches was 2.0 (range 1.2-2.8). When physical guidance was given, the mean for corrects rose to 0.27 (range 0.2-0.4) and errors fell to 0.45 (range 0.0-0.8). In the next phase, physical guidance was faded and verbal guidance was given. The average number of correct stitches showed a further increase to 0.83 (range 0.4-1.5). The errors showed a slight increase to 0.63 (range 0.1-1.4). When the two line prompts were given, the mean for corrects rose to 1.58 (range 0.5-2.5) and for errors fell to 0.2 (range 0.0-0.5). In the final phase, where the participant was required to do complete cross-



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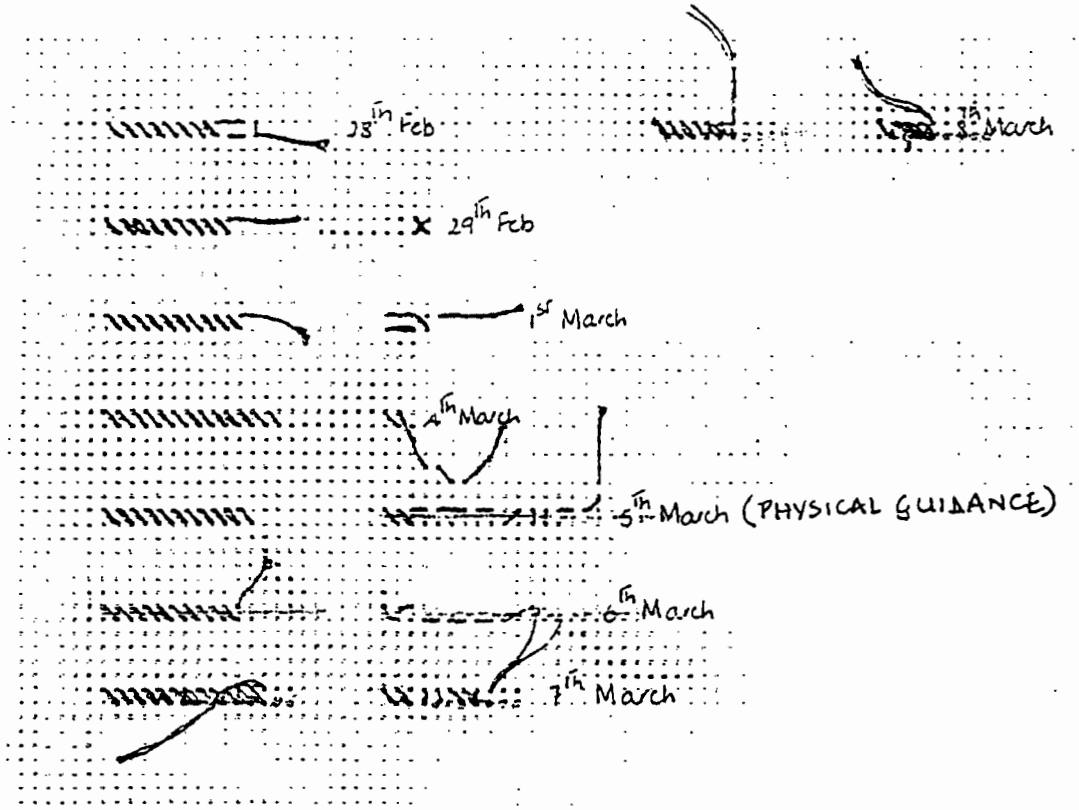
SUPERVISOR	ADVISER	MANAGER	BEHAVER	AGE	LABEL	COUNTED
T.F. McLaughlin	T.F. McLaughlin	T.F. McLaughlin	"Dan"	58	MR	
			Anjali Barretto			
			Anjali Barretto			

SUPERVISOR ADVISER MANAGER Anjali Barretto BEHAVER Anjali Barretto AGE LABEL COUNTED

SUCCESSIVE CALENDAR DAYS



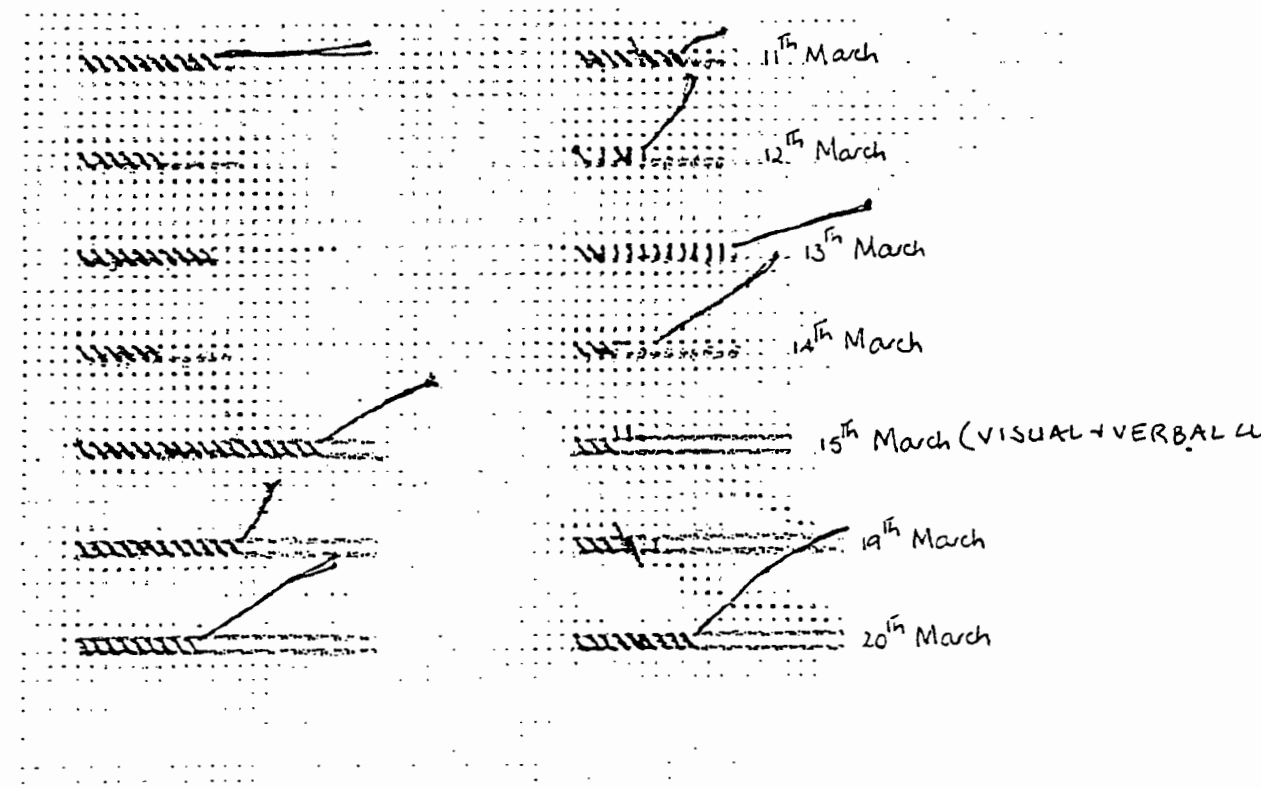


FIGURE 2

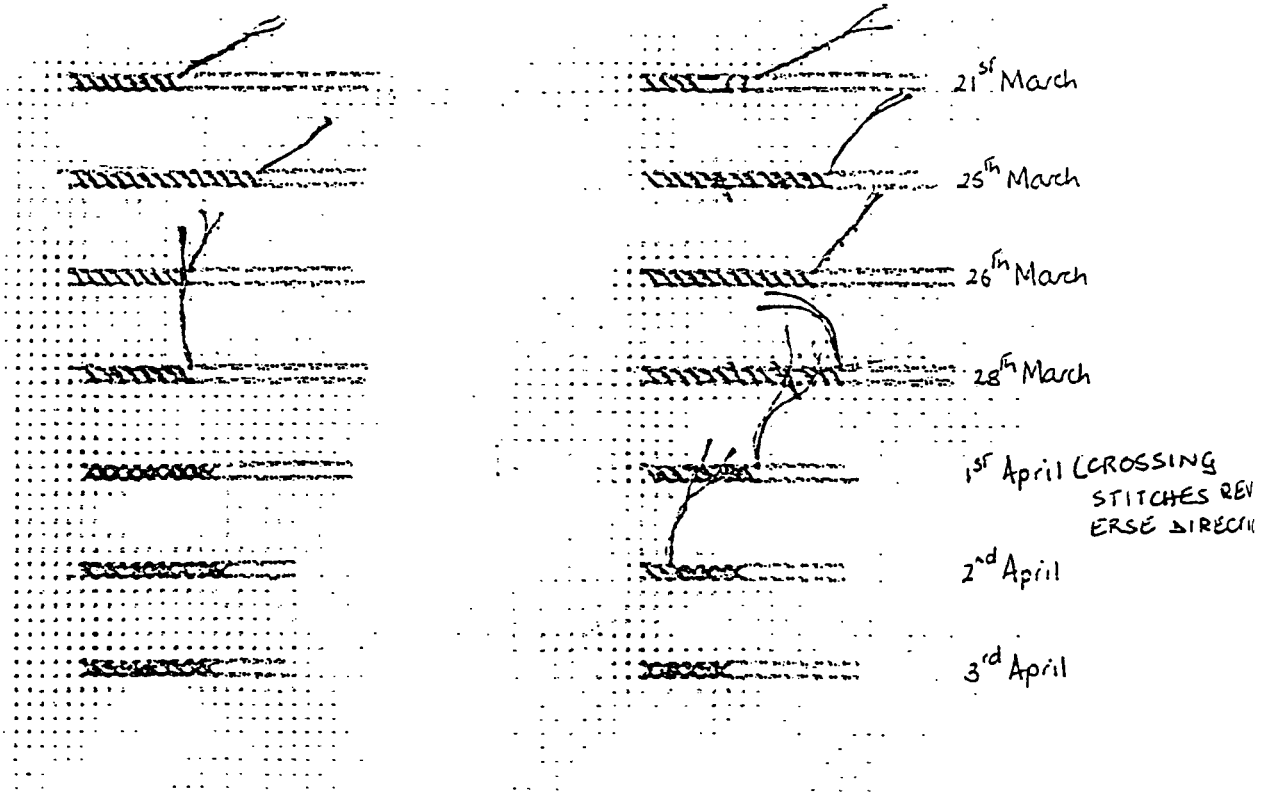

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FIGURE 3

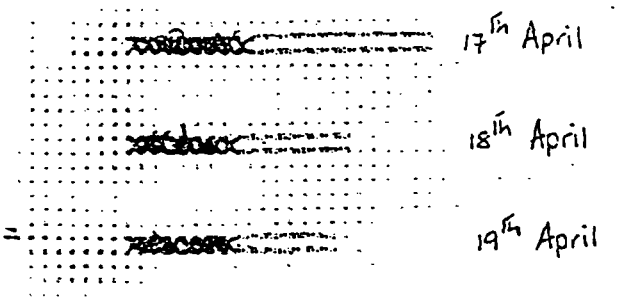

FIGURE 4

stitches, the average number of correct stitches showed a further increase to 2.2 (range 1.5-3.8), and errors showed a decrease to 0.1 (range 0.0-0.5).

The results showed that the participant had learned the skill of cross-stitching accurately and now should be assisted to work toward increasing his speed. At the end of the study he was given an opportunity to choose a project of his own and the colors he would like to use. He is currently working on it. Although he still makes a few errors, he can identify them and ask for help. The author's intention was to make him totally independent in this skill area. The director of the workshop asked the author to teach the skill to one more person from the workshop while continuing to work with the participant of this study. The intention was to increase the variety of sellable products from this workshop. Precision Teaching proved to be an effective technique in analyzing and evaluating the progress of the client. In addition, Precision Teaching was effective in indicating when a phase change was required.

The cost of the materials used was less than five dollars. However, no articles have been produced for sale as yet. The cost effectiveness of this project in terms of turnover can be determined with a survey of the market to discover what items will yield more sales. Production rates will have to be increased, and more people in the workshop will have to be taught the skill.

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