

The Effect of Distributed Trial Sequencing on the Rate of Desired Student Outcomes

An Action Research Project
Presented
to the
Shawnee Mission Board of Education

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Abstract

The purpose of this project was to determine if isolated skills that students have shown difficulty in learning would improve using the distributed trial sequencing method. In this model of instruction, skills are taught in settings and at times when the skill naturally occurs, separating various training trials across the day. The program is sequenced in a distributed manner if these skills are taught many times throughout the day instead of the trials being taught in a mass session. Also, trials from another program or subject need to occur between two repeated trials.

Four skills were chosen that had a lower than desired rate of growth during the 2003-2004 school year. Scores were taken from daily logs from that year and the rate of growth was calculated. A distributed trial sequencing schedule was developed for each identified skill. The schedule was made so that each skill was taught in a natural occurring environment, five to eight times per school day. As a student developed proficiency, the trials were decreased to three to six per day.

Data was taken daily on each skill. The scores reported for both years are the highest score that the student received on at least four of the five days on the first, ninth, eighteenth, and twenty-seventh week of school. There was only one score for the 2003-2004 school year because the skills were taught in isolation or in a massed trial one time each day. Since skills were taught multiple times throughout each day for this project, the scores were averaged daily to acquire one score per day.

The skills had an increase in growth over last year's growth by 10%, 52%, 188%, and 160%. The skill that increased by 10% did not improve as well as anticipated, but behavior points, which are closely related to the skill, improved by 47 points over the previous year.

Based on the data collected, the project was successful. The hypothesis was supported and the use of distributed trial sequencing did increase the rate of desired performance outcome on the same essential life skills of the same middle school students from the 2003-2004 school year by 50%.

Original Proposal

Purpose: Sometimes students have more difficulty learning one essential life skill over another. The purpose of this project is to determine if isolated skills that students have shown difficulty in learning will improve using the distributed trial sequencing method.

Problem: What effect does distributed trial sequencing have on the rate of desired performance outcome of middle school students.

Review of Literature:

Professional Materials

Balestreri, Mary Jane. Application of the individual curriculum sequencing model for delivering services to severely/multiply handicapped preschoolers. Thesis (M.S.) University of Kansas: 1981.

Guess, Doug. "Serving Persons with Severe Disabilities: A Work in Progress." 14 Aug. 2002. Northern Arizona University. 24 Aug. 2004 <<http://nau.edu/ihd/positive/library/guess2/pdf>>.

Heironimus, Brent Damon. The effect of massed and distributed trial sequencing on the instruction of students with severe handicaps. Thesis (M.S.) University of Kansas: 1987.

Holvoet, Jennifer F. The effect of number and composition of interspersed trials on the learning of severely handicapped students. Diss.: University of Kansas: 1981.

Mulligan, Marilyn. The effects of massed, distributed, and spaced trial sequencing on severely handicapped students' performance. Diss.: University of Kansas: 1981.

Summary

The Individual Curriculum Sequencing Model was developed by the University of Kansas in 1978. One component of this model of instruction is to teach skills in settings and at times when the skill naturally occurs, separating various training trials across the day. The program is sequenced in a distributed manner if these skills are taught many times throughout the day instead of the trials being taught

in a mass session. Also, trials from another program or subject need to occur between two repeated trials.

Research supports that the use of distributed trial sequencing improves the rate of learning.

Hypothesis: The use of distributed trial sequencing will increase the rate of desired performance outcome on the same essential life skills of the same middle school students from the 2003-2004 school year by 50%.

Procedure:

Step 1: Gather data from daily logs from September – March of the 2003-2004 school year to identify the skills that had the lowest rate of growth and to determine the rate of student performance on these identified skills. (August, 2004)

Step 2: Develop the distributed trial sequencing schedule for each identified skill. The schedule will be made so that each skill is taught in a natural occurring environment. The schedule will require the student to have 7 - 14 trials of the skill per school day. (September, 2004)

Step 3: Instruct the students using the new schedule from September through March of the current school year. Keep a daily data log for each skill.

Step 4: In March, 2005, the data will be interpreted, comparing the growth on each skill- from the same period of time last year. A conclusion will be formulated, needs for future study will be evaluated, and results will be shared with evaluator by April 6, 2005.

Data Interpretation

Four skills were chosen that had a lower than desired rate of growth during the 2003-2004 school year. Scores were taken from daily logs from that year and the rate of growth was calculated. A distributed trial sequencing schedule was developed for each identified skill. The schedule was made so that each skill was taught in a natural occurring environment. The original plan was to teach each skill on a schedule of seven to fourteen trials per school day. This proved to be too optimistic due to time constraints. Therefore, each skill was taught five to eight times per day. As a student developed proficiency, the trials were decreased to three to six per day.

Data was taken daily on each skill. The scores reported for both years are the highest score that the student received on at least four of the five days on the first, ninth, eighteenth, and twenty-seventh week of school. There was only one score for the 2003-2004 school year because the skills were taught in isolation or in a massed trial one time each day. Since skills were taught multiple times throughout each day for this project, the scores were averaged daily to acquire one score per day.

The following tables show the scores for each skill and the amount of growth for each year. Due to confidentiality of students, specific skills are not being identified.

Year	Baseline	9 weeks	18 weeks	27 weeks	% Growth
03-04	15%	15%	24%	24%	9%
04-05	18%	44%	56%	79%	61%

Skill A

Year	Baseline	9 weeks	18 weeks	27 weeks	% Growth
03-04	20% (1 part)	20%(1 part)	40%(1 part)	75% (1 part)	55%
04-05	50% (4 parts)	75% (4 parts)	100% (4 parts)	93% (6 parts)	243%

Skill B This is a 6-part skill

Year	Baseline	9 weeks	18 weeks	27 weeks	% Growth
03-04	0% (1 part)	20% (1 part)	40% (1 part)	80% (1 part)	80%
04-05	40% (2 parts)	100% (2 parts)	60% (3 parts)	80% (4 parts)	240%

Skill C This is a 4-part skill

Year	Baseline	9 weeks	18 weeks	27 weeks	% Growth
03-04	0%	20%	20%	20%	20%
04-05	20%	50%	20%	50%	30%

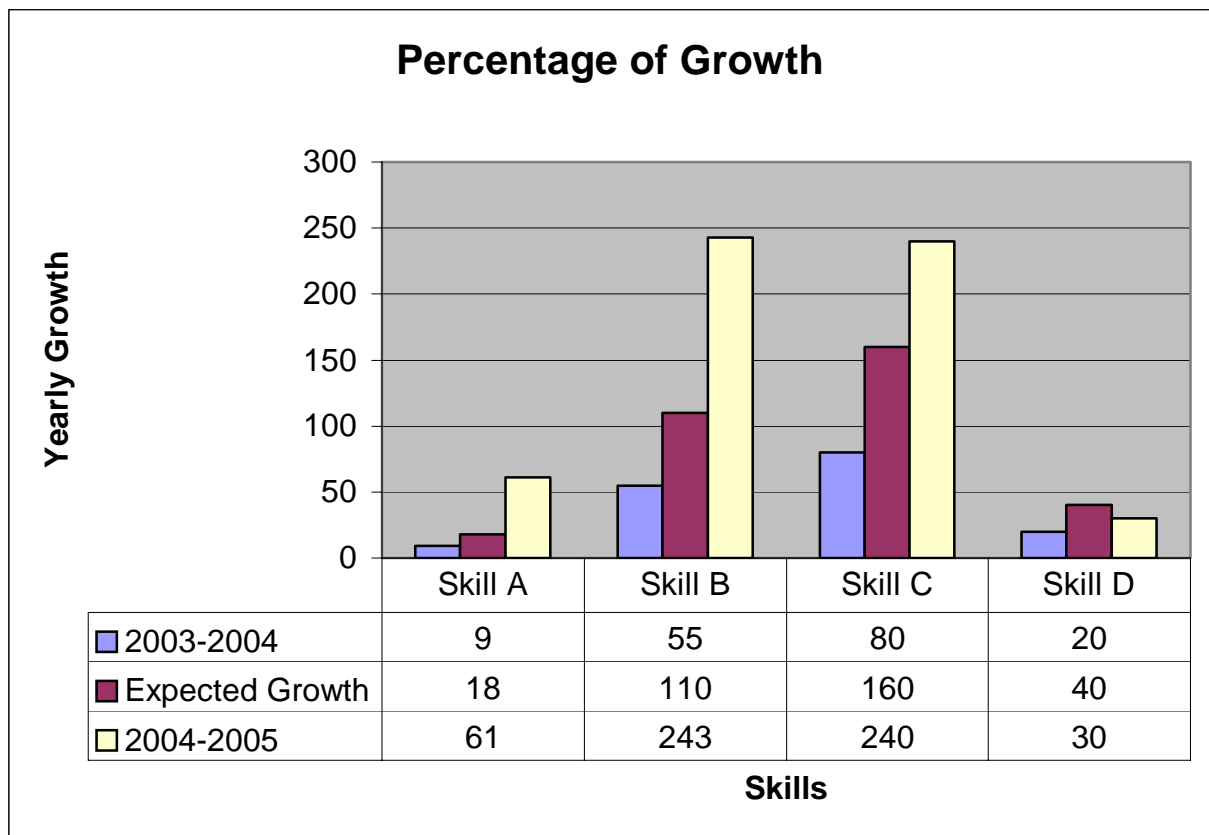
Skill D

Skills A, B, and C had 52%, 188%, and 160% growth over last year respectively. Skill D had a growth of 10% over last year. Skill D is closely related to behavior. That skill did not improve as well as anticipated, but behavior points, which are closely related to the skill, improved by 47 points over the previous year. This is shown in the following table.

Year	Baseline	9 weeks	18 weeks	27 weeks	% Growth
03-04	30 points	33 points	41 points	45 points	15 points
04-05	50 points	80 points	60 points	112 points	62 points

Behavior points earned per week by student of Skill D.

The following graph compares the rate of growth of all skills for both years.



Conclusion

Based on the data collected, the project was successful. The desired rate of growth anticipated with the use of distributed trial sequencing was that each skill would increase by 50% over the rate of growth from the 2003-2004 school year. Skills A, B, and C did achieve this rate of growth. Skill D did not achieve this rate

of growth, but the rate did improve over last year. Also, this skill is behavior related and the overall behavior of the student improved over last school year by more than 50%. So, the hypothesis was supported and the use of distributed trial sequencing did increase the rate of desired performance outcome on the same essential life skills of the same middle school students from the 2003-2004 school year by 50%.

Future

This is a teaching method that I will continue to incorporate when I see a student having difficulty acquiring a particular skill. It requires more time and planning to find the times throughout the day to teach the skill, but the outcome is so overwhelmingly favorable that it cannot be ignored.

I will share this teaching method with other special education teachers. It is not a method that should be used on all skills, but when a student is have difficulty acquiring an IEP objective, this is an excellent way to achieve the desired results. I will tell my colleagues about this method whenever one of them shares with me that they have a student having trouble acquiring a particular skill.