

# A Treatment Package Utilizing Data-Based Decision-Making to Increase Academic Achievement in the School-Setting

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## Introduction

According to the most recent data, there are 7.2 million students who have qualified for special education services (NCES, 2022). For students with Individualized Education Plans (IEP), a March 2017 U.S. Supreme Court ruling stated that an IEP must be designed for a student to make meaningful progress (Endrew F. v. Douglas County School). Progress monitoring is part of data-based decision making (DBDM) which focuses on collecting data in a systematic way in order to analyze and then inform educational practices and student performance (Mandinach, 2012). Progress monitoring has shown to improve the performance of students with intensive learning needs (e.g., Jung et al., 2018; Fuchs et al., 2021).

However, use of data in schools to analyze and change instructional practices may not always be occurring. For example, Silva and colleagues (2021) disseminated the results of a survey on best practices regarding data analysis in schools. Findings suggest that although schools are more inclined to collect screening data, less data is collected for progress monitoring purposes and not often utilized to make changes to instruction. Collecting data alone without instructional changes does not affect student performance (Stecker et al., 2005).

Providing a system for using data to evaluate student performance that is linked to a change in instructional practices is needed to support students on IEPs make meaningful progress, as outlined in the Endrew F. ruling (i.e., academic and functional advancements). We set out to develop and evaluate a DBDM system for students with IEPs in a specialized school for individuals with developmental disabilities. We examined a DBDM system that utilizes data in four main components of the IEP process: (a) assessment data (b) linking assessment data to the development of IEP goals, (c) progress monitoring of IEP goals every two weeks, and (d) the analysis of goal progress after instructional changes are made.

## References

- Endrew F. v. Douglas County School District, 580 U.S. \_\_\_\_ (2017).  
Fuchs, L. S., Fuchs, D., Hamlett, C. L., & Stecker, P. M. (2021). Bringing data-based individualization to scale: A call for the next-generation technology of teacher supports. *Journal of Learning Disabilities*, 54, 319-333.  
Jung, P. G., McMaster, K. L., Kunkel, A. K., Shin, J., & Stecker, P. M. (2018). Effects of data-based individualization for students with intensive learning needs: A meta-analysis. *Learning Disabilities Research & Practice*, 33, 144-155.  
Mandinach, E. B. (2012). A perfect time for data use: Using data-driven decision making to inform practice. *Educational Psychologist*, 47(2), 71-85.  
National Center for Education Statistics. (2022). Students With Disabilities. *Condition of Education*. U.S. Department of Education, Institute of Education Sciences. Retrieved September 26<sup>th</sup> 2022, from <https://nces.ed.gov/programs/coe/indicator/cgg>  
Silva, M. R., Collier-Meek, M. A., Codding, R. S., Kleinert, W. L., & Feinberg, A. (2021). Data collection and analysis in response-to-intervention: A survey of school psychologists. *Contemporary School Psychology*, 25, 554-571.  
Stecker, P. M., Fuchs, L. S., & Fuchs, D. (2005). Using curriculum-based measurement to improve student achievement: Review of research. *Psychology in the Schools*, 42, 795-819.

## Method

### PARTICIPANTS:

Students ages 6-13 with full IEPs (four full quarters) completed prior to and after intervention. All students were attending in-person for all IEPs and did not move into different learning cores within the larger school.

### SETTING:

Learning core consisting of five-to-six self-contained classrooms at a larger special education school specializing in applied behavior analysis.

### DEPENDENT VARIABLES:

Student individualized education program (IEP) annual goals statuses as reported on quarterly progress reports (QPR)

### DATA COLLECTION:

Data was taken from students' quarterly progress reports (QPRs) for each IEP with four teaching quarters before and after intervention. QPRs are completed by the classroom teachers and based off academic data collected by the classroom. The count per category was reported per student—achieved, not achieved, and insufficient data.

## Visual Data and Statistics

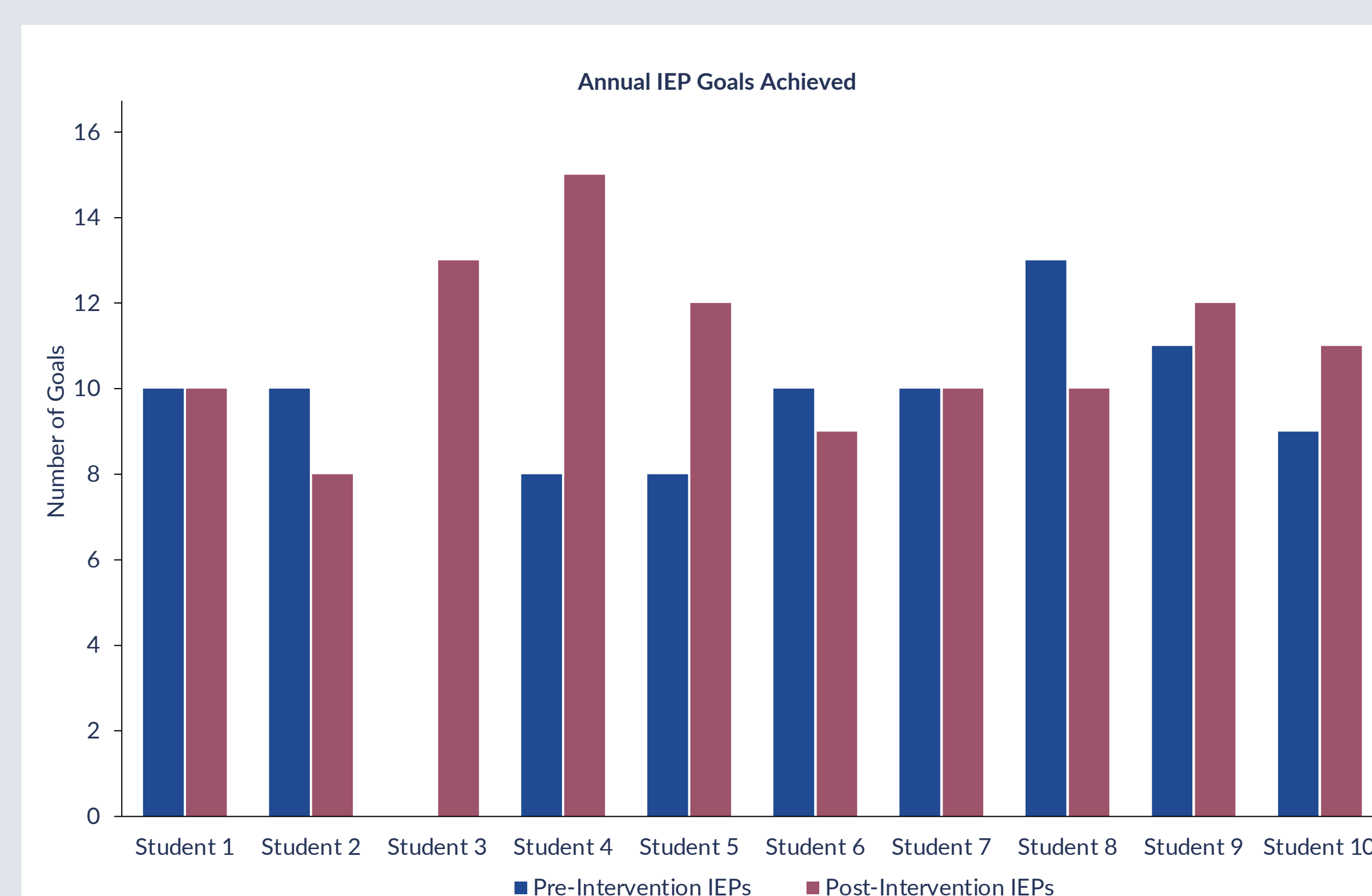


Figure 3. Number of annual IEP goals achieved prior to and post intervention. All IEPs had four full teaching quarters of in-person learning.

### DESCRIPTIVE STATISTICS

- Pre-Intervention
  - Average annual IEP goals achieved: 8.9 goals (range 0-13)
  - Percentage of annual goals achieved: 49.7% (range 0-83.3%)
  - Average goals per student: 19.2 goals (range: 12-27)
- Post-Intervention
  - Average annual IEP goals achieved: 11 goals (range 8-15)
  - Percentage of annual goals achieved: 85.3% (range: 66.7-100%)
  - Average goals per student: 13 goals (range: 12-15)

### TREATMENT COMPONENTS (INDEPENDENT VARIABLES):

- Assessment data:** Verbal Behavior Milestones Assessment and Placement Program
- Linking assessment to goals:** use VBMAPP assessment data to create goals
- Progress monitoring:**
  - Daily program tracker (paper data sheet tracking completion and teaching of goals)
  - Goal tracker meeting (biweekly review of student progress as presented on template)
  - Quarterly review (QPR data presented to supervisors, both core-wide and classroom-specific)
- Evaluation of changes:** discussed at goal tracker meetings and after QPR data is presented

### TIMELINE OF COMPONENT INTRODUCTION:

- Winter 2017-2018: VBMAPP introduced as standard academic assessment
- Fall 2018: Began aggregating QPR data
- Spring 2019: QPR data presented to learning core and classrooms
- Fall 2019: Bi-weekly academic reviews begin
- Winter 2019-2020: daily program tracker standardized across all classrooms, all intervention components in-place

### TREATMENT MATERIALS

IEP goals	Manding for Continuation of a Preferred Activity	Intraverbals	LRFFC Novel Scenes	Tacts - Adjectives	Simple Math Facts
Quarter 3 (9/12-12/11)	Student will appropriately mand for more time with preferred activities without engaging in problem behavior	Student will correctly answer 2 personally relevant WH questions (i.e. What's your teacher's name?) in 3 out of 3 consecutive probes	Student will select the correct item from a book or the natural environment given 2 different rotating LRFFC questions (i.e. Where does the cow live? Who milks the cow?) for 2 novel topics per quarter in 3 out of 3 consecutive probes	Student will select 2 adjectives per quarter (i.e. What is it? Fast Car, etc.) in 3 out of 3 consecutive probes.	Student will select the answer to 2 math facts (i.e. 1+1=2) per quarter in 3 out of 3 consecutive probes.
Date of Data	12/11/2021	12/11/2021	12/11/2021	12/11/2021	12/11/2021
# Mastered this Quarter	0	7	3	6	3
In Progress	fruit snack, sour patch	what's your behavior specialist's name? What's the man's teacher's name? What is your gym teacher's name? What about adding pictures to help the mystery of these?	Picnic scene (spoon)	No new targets in session (12/14)	None in session (11/30; 12/8; 12/14)
Notes	3 total mastered (iPad, handwriting tray, playground)	19 total mastered, mastered this quarter: Eye Color, What can you do in the bathroom from 18-19, what can you do in the shower, 18-19 who drives a truck? Who drives a public car? Cat?	47 total mastered, mastered this quarter: lunch lady, display cases, picnic [square]	22 total mastered, mastered this quarter: pretty flower, scary ghost, halloween girl, fuzzy blanket, sock man, silly dog.	6 total mastered, three mastered with manipulatives this quarter: 1+1=2, 2+2=4, 1+2

Figure 1: Example of goal tracker template presented at biweekly meetings for review period 12/2-12/16. Progress was color-coded to aid in visual analysis of overall progress. Orange indicates the goal is not progressing and urgent review is needed. Green indicates the goal has been achieved for the annual or quarterly goal. Yellow indicates a goal is progressing towards the annual or quarterly goal. Red indicates insufficient data.

Academics (3x/week)	Monday	Tuesday	Wednesday	Thursday	Friday
3.2 Reading Curriculum					
NET/Social (daily)					
2.1 Manding to Peers					
2.5 Manding for Items					
2.7 Turn Taking					
3.1 Answers Question in Group Lesson					
ADL's (daily)					
4.1 Toothbrushing					
4.2 Chore Schedule					
AVB (daily)					
Cold Probes					

Figure 2: Example of daily program tracker data sheet. Staff initial when the programs are run. Blank boxes at the bottom were filled in with targets that were incorrect during cold probes and staff initialed in the smaller boxes when the targets were taught.

## Results

- Increase in number of annual goals achieved post-intervention by average 2.1 goals per student (23.6% increase)
- Decrease in average goals on each IEP by 6.2 goals per student (32.3% decrease)
- If Student 3 data removed as an outlier, results would still show a similar increase in percentage and number of goals achieved

## Conclusion

We evaluated the potential effect of a DBDM system on the annual IEP performance for 10 students in a specialized education school. We compared student performance (i.e., the number of goals achieved by the 4<sup>th</sup> quarter) prior to the DBDM system being in place and compared it to student IEP performance after all DBDM program components were implemented. Results suggest socially significant progress occurred across most students, with an average achievement of approximately two additional annual goals achieved per year. This may be due to several factors:

- Goals were more appropriate and achievable by directly linking assessment data to IEP goals
- A decrease in number of total IEP goals likely contributed to an increase in the dose (i.e., time allocation) for each goal. Increased opportunities to practice each skill likely led to an increase in performance
- Frequent data review allowed the team to intervene quickly if goals were not progressing appropriately due to skill acquisition issues or behavioral challenges
- Larger trends on core-wide and classroom-wide revealed during data analysis allowed for responsive follow up on core wide instructional practices

Further research is warranted to replicate findings and isolate key components for achievement.