PENGGUNAAN *PAPER GRAPH* UNTUK MEREDUKSI KESALAHAN MATEMATIS *TIPE WATSON* PADA PESERTA DIDIK DISGRAFIA MATEMATIKA: *SINGLE SUBJECT RISET*
(Sandy Ihsan Amarulloh, 2025)

ABSTRAK

Pembelajaran matematika menuntut keterampilan representasi tertulis yang rapi dan akurat, sehingga peserta didik dengan disgrafia sering mengalami kesulitan dalam menuliskan angka, menempatkan digit sesuai nilai tempat, serta menggunakan tanda operasi secara konsisten. Kondisi ini menyebabkan munculnya kesalahan matematis *tipe Watson*, yaitu kesalahan prosedural yang berpola dan berulang meskipun peserta didik memahami konsep. Penelitian ini bertujuan untuk mengetahui efektivitas penggunaan media *Paper Graph* dalam mereduksi kesalahan matematis *tipe Watson* pada peserta didik disgrafia. Penelitian ini menggunakan metode *Single Subject Research* (SSR) dengan desain A-B-A, yang terdiri atas fase *Baseline* pertama (A1), fase *intervensi* menggunakan *Paper Graph* (B), dan *Baseline* kedua (A2). Subjek penelitian adalah satu peserta didik sekolah dasar yang telah diidentifikasi mengalami disgrafia melalui observasi, wawancara, dan asesmen ahli. Data dikumpulkan melalui tes operasi hitung penjumlahan dan pengurangan, lembar observasi perilaku menulis, dan wawancara. Analisis data dilakukan menggunakan inspeksi visual grafik yang mencakup analisis dalam kondisi (level, kecenderungan arah, stabilitas, jejak data, dan rentang) serta analisis antar kondisi (perubahan level, perubahan arah kecenderungan, stabilitas, dan persentase *overlap*). Hasil penelitian menunjukkan bahwa *Paper Graph* efektif dalam mereduksi kesalahan matematis *tipe Watson.* Hal ini ditunjukkan dengan: (1) penurunan level kesalahan dari fase A1 ke fase B; (2) kecenderungan arah grafik yang berubah dari mendatar/meningkat menjadi menurun pada fase *intervensi*; (3) stabilitas data yang meningkat selama fase *intervensi*; serta (4) persentase *overlap* antar kondisi yang rendah (<90%) sehingga mengindikasikan adanya pengaruh langsung dari *intervensi*. Selain itu, penggunaan *Paper Graph* membantu subjek menuliskan angka lebih rapi dan sejajar, mengurangi kesalahan salin, serta meningkatkan konsistensi penggunaan tanda operasi. Dengan demikian, *Paper Graph* dapat menjadi alternatif media sederhana dan efektif untuk membantu peserta didik disgrafia dalam meminimalisasi kesalahan prosedural *Watson*, serta mendukung pembelajaran matematika yang lebih inklusif dan adaptif di sekolah dasar.

Kata kunci: *Paper Graph*, disgrafia, kesalahan matematis *tipe Watson, Single Subject Research*, pendidikan matematika.

THE USE OF PAPER GRAPHS TO REDUCE WATSON-TYPE MATHEMATICAL ERRORS IN MATHEMATICAL DYSGRAPHIA STUDENTS: A SINGLE-SUBJECT STUDY
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ABSTRACT

Mathematics learning requires precise and well-structured written representation skills, making it particularly challenging for students with dysgraphia, who commonly struggle with number formation, alignment of place values, and consistent use of operational symbols. These difficulties often lead to Watson-type mathematical errors systematic and repetitive procedural errors that occur even when conceptual understanding is present. This study aims to examine the effectiveness of using Paper Graph media in reducing Watson-type mathematical errors among students with dysgraphia. This research employed a Single Subject Research (SSR) method with an A-B-A design, consisting of the first Baseline phase (A1), an intervention phase using Paper Graph (B), and a second Baseline phase (A2). The subject was one elementary school student identified with dysgraphia through observation, interviews, and expert assessment. Data were collected through arithmetic tests on addition and subtraction operations, writing-behavior observation sheets, and interviews. Data were analyzed using visual graph inspection, including within-condition analysis (level, trend, stability, data pattern, and range) and between-condition analysis (changes in level, direction of trend, stability, and percentage of overlap). The findings indicate that the Paper Graph is effective in reducing Watson-type mathematical errors. This is evidenced by: (1) a decrease in error levels from phase A1 to phase B; (2) a shift in trend direction from flat/increasing to decreasing during the intervention phase; (3) improved data stability during the intervention; and (4) a low percentage of overlap (<90%), demonstrating a direct effect of the intervention. Additionally, the Paper Graph media helped the subject produce more aligned numbers, reduce copying errors, and improve consistency in using operational symbols. Thus, Paper Graph serves as a simple yet effective tool to help students with dysgraphia minimize Watson-type procedural errors, supporting more inclusive and adaptive mathematics instruction in elementary education.

Keywords: Paper Graph, dysgraphia, Watson-type mathematical errors, Single Subject Research, mathematics education.