

RESEARCH RATIONALE

Content-area writing in middle school requires the ability to generate ideas and extract key points from the content. Students also need to recall essential information, especially for science and social science content-area writing. However, students with learning disabilities (LD) often lack these skills, which affects their academic success.

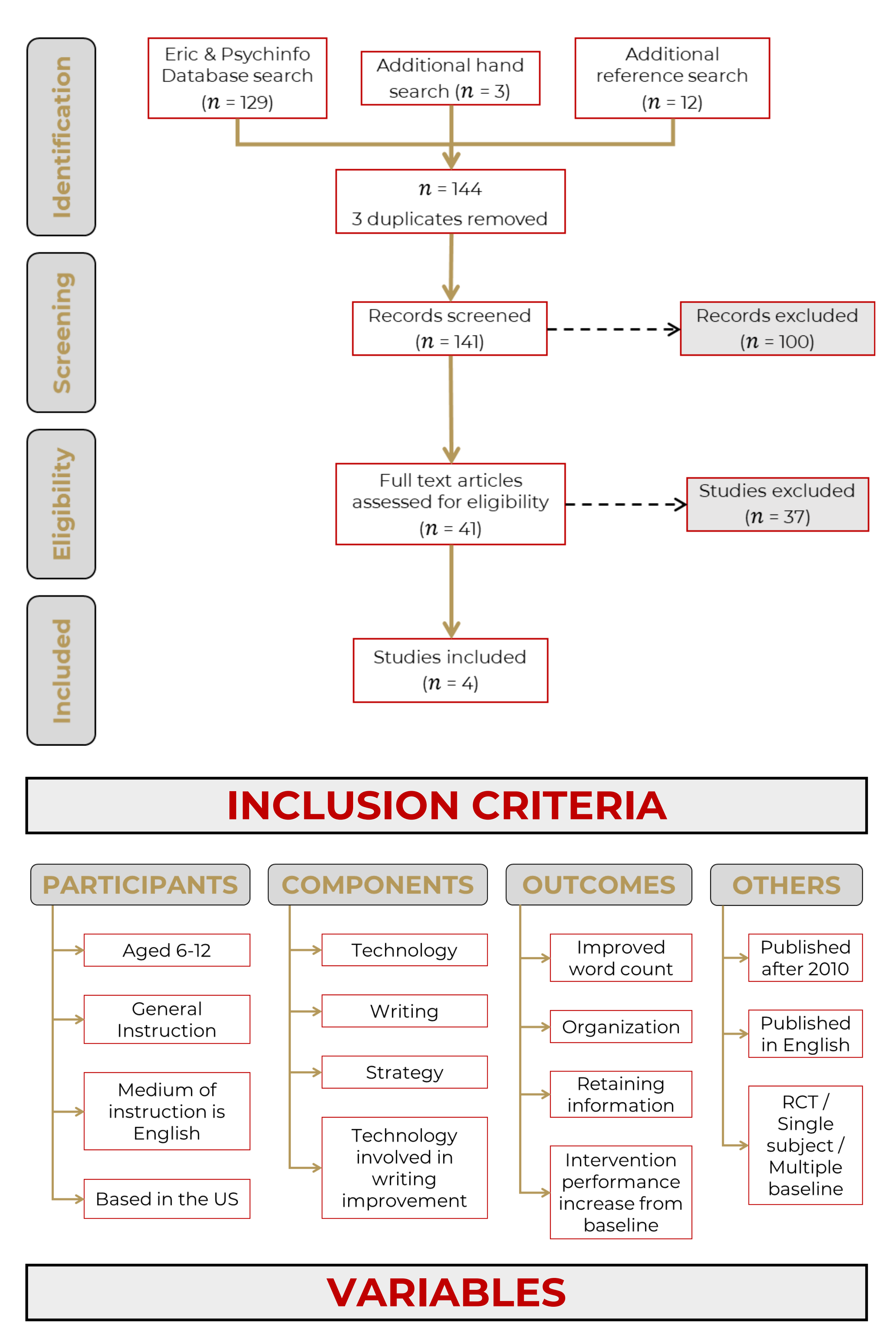
In recent years, society has become technology-dependent due to the advancement of digital technology in every step of human life. Researchers have invented assistive technologies that can be used in the classroom setting to assist students in having a practical learning experience.

- The purpose of this study was to
- ❖ Review effective technology interventions for writing
 - ❖ Explore how technology tools support middle school students in extracting essential points from classroom content
 - ❖ Summarize improvement in independent writing skills of students with disabilities

RESEARCH QUESTION

Which writing and note-taking assistive technologies and strategies are effective in improving content knowledge in middle school science and social studies for students with high incidence disabilities or learning disabilities?

METHODOLOGY



RESULTS

	Boyle et al. (2016)	Evmenova et al. (2016)	Evmenova et al. (2020)	Unzueta & Barbeta (2012)
Study Design	Mixture of qualitative (interviews) and quantitative (pre-/post within-subjects) data	Multiple-baseline single case (3 groups)	Pre/post within-subjects	Single-subject multiple-baseline
Participants (n)	36	10	43	4
Setting	Suburban middle school	Low-performing suburban middle school	Low-performing middle school	Middle school with high Hispanic student population
Independent variable	Note-taking metacognitive strategy, video-lecture content	Computer-based graphic organizer (CBGO)	Text to speech in Microsoft TBGO	CBGO
Dependent variables	Retaining vocabulary words from lecture	Writing quality, number of words, number of sentences and transition words.	Writing quality, number of words, number of sentences and transition words.	Writing quality, planning, organizing
Findings	Increases in Cued Lecture Point (1.2 → 6.7), Total Lecture Point (3.5 → 11.5), and Vocabulary Instances (3.7 → 15.3)	Increases in number of words (80%), sentences (90%), transition words (100%), essay elements (100%), and holistic writing quality (100%)	Increases in number of words (43%), transition words (103%), and essay parts measure (76%)	Increases in number of words (138), organizing-planning time (7.5 min), and syntactical maturity (12.2 T Units)

CONCLUSIONS

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- ❖ Computer-based graphic organizers (CBGOs) can be helpful for students who struggle remembering content or organizing points while writing.
 - ❖ There is very limited evidence on technology-based interventions for (a) improvement in writing, and (b) middle school students.

- LIMITATIONS**
- ❖ Short-term interventions and small sample sizes
 - ❖ Students with emotional disturbances and other comorbidities were not included.
 - ❖ Long-term effect of CBGOs is unknown.