

BVI literature review

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Ask GPT to Recommend Search Terms

```
purpose <- "understand the current status of accommodations, identify gaps, and highlight effective pra  
recommend_search_terms(purpose)
```

```
## Used tokens: 309
```

```
## $search_words  
## [1] "accommodations for students with blindness"  
## [2] "accommodations for students with visual impairments"  
## [3] "effective practices for blind students"  
## [4] "effective practices for visually impaired students"  
## [5] "policies for students with blindness"  
## [6] "policies for students with visual impairments"  
## [7] "educational support for blind students"  
## [8] "educational support for visually impaired students"  
## [9] "inclusive education for blind students"  
## [10] "inclusive education for visually impaired students"  
## [11] "assistive technology for blind students"  
## [12] "assistive technology for visually impaired students"  
## [13] "barriers for students with blindness"  
## [14] "barriers for students with visual impairments"  
## [15] "challenges for blind students in education"  
## [16] "challenges for visually impaired students in education"  
## [17] "academic performance of blind students"  
## [18] "academic performance of visually impaired students"  
## [19] "teacher training for blind students"  
## [20] "teacher training for visually impaired students"
```

Import Data

- The current example data are extracted from Web of Science (WOS).

```
# import data  
data <- xlsx::read_xlsx("savedrecs.xls", sheetIndex = 1)
```

```
# filter columns
data_reduced <- data %>%
  select(Authors, Author.Full.Names, Article.Title, Source.Title, Document.Type, Conference.Title, Co
```

Conduct Literature Review

```
# research questions
r_questions <- "
  1. What are the major accommodations currently used for students with blindness and visual impairment?
    A. Levels of learning: K-12, Higher Education
    B. Type (Purposes) of assessment: Larger-scale/Classroom; Performance/Aptitude
"

# 15 example data
example_data <- data_reduced[1:10,] %>%
  toJSON(pretty = TRUE)

# result
BVI_lr <- literature_review(
  r_questions = r_questions,
  bib_data = example_data
)
```

Used tokens: 5500

Printing Out

Present Situation

K-12 Education

Classroom Accommodations

Braille literacy remains a critical component of education for visually impaired children. Various tools and technologies have been developed to support Braille learning in classroom settings. For instance, the BrailleBlocks system allows visually impaired children to learn Braille alongside sighted parents through tangible blocks and an associated application (Gadiraju, Muehlbradt, & Kane, 2020). Similarly, the Slate Master is a mobile device tool designed to ease the learning of Braille slate usage, combining a mobile application with a custom input interface (Lee et al., 2017).

Large-Scale Assessments

NA

Higher Education

Classroom Accommodations

NA

Large-Scale Assessments

NA

Challenges

K-12 Education

Despite the availability of various assistive technologies, there are significant challenges in their implementation and effectiveness. A systematic review highlighted the low quality of research supporting the use of current technology for Braille literacy education, emphasizing the need for standards in technology evaluation (Hoskin et al., 2024). Additionally, the integration of technology in education for the visually impaired community is still lacking, as revealed by surveys in welfare centers (Lee et al., 2017).

Higher Education

NA

Prospects

K-12 Education

The development of new technologies and tools shows promise for improving Braille literacy education. For example, the NAT Braille software offers a customizable transcribing tool that supports inclusive education by allowing teachers and students to interact directly and produce instant Braille transcriptions (Mascret & Mille, 2011). Furthermore, the Dual Braille Code Translator provides a low-cost, portable solution for converting keyboard inputs into Braille symbols, facilitating real-time interaction between visually impaired and sighted individuals (Damit et al., 2014).

Higher Education

NA

References

- Damit, D. S. A., Ani, A. I. C., Muhamad, A. I., Abbas, M. H., & Ali, F. Z. (2014). Dual Braille Code Translator: Basic Education Tool for Visually Impaired Children. *2014 International Conference on Computer, Communications, and Control Technology (I4CT)*, 399-402.
- Gadiraju, V., Muehlbradt, A., & Kane, S. K. (2020). BrailleBlocks: Computational Braille Toys for Collaborative Learning. *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI'20)*.

- Hoskin, E. R., Coyne, M. K., White, M. J., Dobri, S. C. D., Davies, T. C., & Pinder, S. D. (2024). Effectiveness of technology for braille literacy education for children: a systematic review. *Disability and Rehabilitation-Assistive Technology*, 19(1), 120-130.
- Lee, G., Quero, L. C., Yang, J., Jung, H., & Son, J. (2017). Slate Master: A Tangible Braille Slate Tutor for Mobile Devices. *Proceedings of the 19th International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI '17)*.
- Mascret, B., & Mille, A. (2011). Supporting the learning process - more than a Braille transcription. *Everyday Technology for Independence and Care*, 640-647.