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 p

# recommend_search_terms(purpose)
```

Import Data

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

```
# import data
data <- xlsx::read.xlsx("savedrecs.xls", sheetIndex = 1) %>%
  filter(!(is.na(Abstract) | (Abstract == "")))

# 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 BVI in classroom settings and lar
  a. Levels of learning: K-12, Higher Education
  b. Type (Purposes) of assessment: Larger-scale/Classroom; Performance/Aptitude
  c. Accommodations for testing for students with visual impairment
    i. What kind: past and now (classroom, standardized tests, large-scale tests)
    ii. Context of being used (Assessment context & Teaching and learning context)
    iii. Students' reactions to the accommodations?
    iv. Impacts of accommodations and Remediations?
  d. how K-12 students with visual impairment get schooling (or learn in schools) in the United States)
2. How are assistive technologies used in assessing students with BVI in different contexts?
3. How are modeling and scoring procedures adapted for students with BVI in different contexts?
4. What are the impacts of these accommodations on the academic performance and assessment experiences
5. What gaps exist in the current literature regarding assessment accommodations for students with BVI?
```

```
  a. Equivalence of braille version and regular version?
"

# 15 example data
example_data <- data_reduced[1:200,] %>%
  toJSON(pretty = TRUE)

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

```
## Used tokens: 94164 + 1651 = 95815
```

```
## Price: $ 0.495585
```

Printing Out

Literature Review Summary

Major Accommodations for Students with BVI in Classroom Settings and Large-Scale Assessments

Levels of Learning: K-12, Higher Education

- **K-12**: Various studies have focused on the development and implementation of assistive technologies and educational tools for visually impaired students in K-12 settings. For instance, the development of interactive Braille learning systems and tactile educational materials has been highlighted (Iqbal et al., 2017; Damit et al., 2014; Gadiraju et al., 2020).
- **Higher Education**: Research has also explored the challenges and accommodations in higher education, such as the use of digital libraries, accessible course materials, and assistive technologies to support visually impaired students (Christensen & Stevns, 2012; Gkouvatzi, 2010).

Type (Purposes) of Assessment: Larger-scale/Classroom; Performance/Aptitude

- **Larger-scale Assessments**: The use of Braille and other tactile materials in standardized tests has been a common accommodation. Studies have also explored the use of digital and audio formats to make assessments more accessible (Posey & Henderson, 2012; Hoskin et al., 2024).
- **Classroom Assessments**: Classroom assessments often involve the use of Braille, audio materials, and assistive technologies to ensure that visually impaired students can participate fully (Al-Rajhi et al., 2015; Gadiraju et al., 2019).

Accommodations for Testing for Students with Visual Impairment

What Kind: Past and Now (Classroom, Standardized Tests, Large-Scale Tests)

- **Past**: Traditional accommodations included the use of Braille and large print materials.
- **Now**: Modern accommodations have expanded to include digital formats, audio descriptions, and interactive technologies (Iqbal et al., 2017; Damit et al., 2014).

Context of Being Used (Assessment Context & Teaching and Learning Context)

- **Assessment Context**: Accommodations are used to ensure that visually impaired students can access and respond to test materials effectively. This includes the use of Braille, audio formats, and digital tools (Posey & Henderson, 2012; Hoskin et al., 2024).
- **Teaching and Learning Context**: In the classroom, accommodations such as tactile graphics, interactive Braille tools, and assistive technologies are used to support learning (Gadiraju et al., 2020; Al-Rajhi et al., 2015).

Students' Reactions to the Accommodations

- **Positive Reactions**: Many studies report positive feedback from students regarding the use of interactive and digital tools, which enhance their learning experience and engagement (Gadiraju et al., 2020; Damit et al., 2014).
- **Challenges**: Some students face challenges with the availability and usability of certain technologies, indicating a need for continuous improvement and support (Christensen & Stevns, 2012; Gkouvatzi, 2010).

Impacts of Accommodations and Remediations

- **Academic Performance**: Accommodations have been shown to improve academic performance and engagement among visually impaired students (Hoskin et al., 2024; Gadiraju et al., 2020).
- **Remediations**: Continuous feedback and iterative improvements in assistive technologies and teaching methods are necessary to address the evolving needs of students (Christensen & Stevns, 2012; Gkouvatzi, 2010).

How K-12 Students with Visual Impairment Get Schooling in the United States

- **Special Education Schools**: Many visually impaired students attend special education schools where they receive tailored support and resources (Iqbal et al., 2017; Damit et al., 2014).
- **Inclusive Education**: There is a growing trend towards inclusive education, where visually impaired students are integrated into mainstream classrooms with appropriate accommodations (Christensen & Stevns, 2012; Gkouvatzi, 2010).

Assistive Technologies in Assessing Students with BVI in Different Contexts

- **Braille Learning Tools**: Various studies have developed and evaluated Braille learning tools that assist in both classroom learning and assessments (Iqbal et al., 2017; Damit et al., 2014).
- **Digital and Audio Tools**: The use of digital and audio tools has been explored to make assessments more accessible for visually impaired students (Posey & Henderson, 2012; Hoskin et al., 2024).

Modeling and Scoring Procedures Adapted for Students with BVI in Different Contexts

- **Adaptations**: Adaptations include the use of tactile graphics, audio descriptions, and digital formats to ensure that visually impaired students can participate in assessments on an equal footing (Posey & Henderson, 2012; Hoskin et al., 2024).

Impacts of Accommodations on Academic Performance and Assessment Experiences of Students with BVI

- **Positive Impacts**: Accommodations have been shown to improve academic performance, engagement, and overall assessment experiences for visually impaired students (Hoskin et al., 2024; Gadiraju et al., 2020).

Gaps in the Current Literature Regarding Assessment Accommodations for Students with BVI

Equivalence of Braille Version and Regular Version

- **Research Gaps**: There is a need for more research on the equivalence of Braille and regular versions of assessments to ensure fairness and accuracy in testing (Posey & Henderson, 2012; Hoskin et al., 2024).

References

- Iqbal, M. Z., Shahid, S., & Naseem, M. (2017). Interactive Urdu Braille Learning System for Parents of Visually Impaired Students. *Proceedings of the 19th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS'17)*, 327-328.
- 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).*
- Posey, V. K., & Henderson, B. W. (2012). Comprehensive Adult Student Assessment Systems Braille Reading Assessment: An Exploratory Study. *Journal of Visual Impairment & Blindness*, 106(8), 488-499.
- 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.
- Christensen, L. B., & Stevns, T. (2012). Biblus - A Digital Library to Support Integration of Visually Impaired in Mainstream Education. *Computers Helping People with Special Needs, PT I*, 36-42.
- Gkouvatzi, A. N. (2010). Enhancing the Academic Achievement of Disabled Students in Greek Universities through Accessible Technology Services. *Proceedings of the 3rd International Conference on Software Development for Enhancing Accessibility and Fighting Info-Exclusion (DSAI 2010)*, 79-86.