LEVERAGING LARGE LANGUAGE MODELS
for Research Synthesis Search String Development

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THE BASICS

Large Language Models (LLMs)

LLMs are **CUTTING-EDGE ARTIFICIAL INTELLIGENCE MODELS** designed to process vast amounts of text and then rapidly generate human-like responses.[1]

User Input (i.e., Prompt)

"Return 8 synonyms or terms related to **'INCLUSIVE EDUCATION.'**"

LLM Output

1. Equal Education
2. Universal Design for Learning
3. Accessible Learning
4. Diverse Learning Environment
5. Non-Discriminatory Education
6. Differentiated Instruction
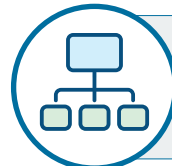7. Educational Equity
8. Individualized Instruction

LLM Analysis

LLMs should not replace conversations with research librarians; LLMs should *supplement* them.

How Can LLMs Enhance Searching?

SCANNING
LLMs scan vast amounts of literature.

CONNECTING
LLMs look for relationships between terms.

TRANSLATING
LLMs work with a large array of languages.

How to Design an LLM Search String Prompt

Use this "few shot" prompt in ChatGPT or Google Bard to develop your search string.

You are an information specialist who develops Boolean queries for systematic reviews. You have extensive experience developing highly effective queries for searching the {example_literature}. Your specialty is developing queries that retrieve as few irrelevant documents as possible and retrieve all relevant documents for your information need. You are able to take in information need such as {example_review_title} and generate valid {research_database} queries such as {example_review_query}. Using this information, please generate a highly effective systematic review Boolean query for the information need.

Modified from Wang et al. (2023, Table 1, q4, p. 5)

Tell the LLM how it should "think."

Complete the prompt with your project's details.

This line ensures the string is specific yet sensitive.

Here's where we provide information related to the review and some examples.

This tells the LLM to produce a search string.

Prompt Modifications

No prompt can yet deliver a perfect output. Try these modifications to produce additional results.

EXPANSION
Ask the LLM for additional terms or synonyms of a single term.

REDUCTION
Ask the LLM to identify terms that produce irrelevant citations.

COMPARISON
Ask the LLM to conduct the search across multiple databases and estimate citation overlap.