# Figure S1

*Example Search Prompts and Results Used to Develop Assignments*

|  |
| --- |
| The authors selected a “more precise” conversation style when given a choice in Copilot (formerly Bing Chat) among “more creative […an original and imaginative chat]”, “more balanced […an informative and friendly chat]” or “more precise […a concise and straightforward chat].”  Please note that, due to the nature of AI applications, using the same prompts with Copilot or another AI text generator now will likely result in different responses. Topic 1: Write a PLAAFP Component **Prompt 1**: “Please write a Present Levels of Academic Achievement and Functional Performance (PLAAFP) statement, for the reading performance of a 4th grade student with a specific learning disability in basic reading using these baseline data, like a special education teacher would: 3rd grade level: 80 words correct per minute with 6 errors on 3rd grade, with retell fluency of 32, and retell quality of 3 on curriculum based measure passages. 4th grade level: 62 words correct per minute with 10 errors; Retell fluency of 27 and retell quality of 3. He likes to read graphic novels.”  **Copilot Response**:  “Here is a sample PLAAFP statement for the reading performance of a 4th grade student with a specific learning disability in basic reading:  The student is currently performing at a 3rd grade level in reading fluency, with a rate of 80 words correct per minute and 6 errors on 3rd grade curriculum-based measure passages. The student’s retell fluency is 32 and retell quality is 3. On 4th grade level passages, the student’s reading fluency rate is 62 words correct per minute with 10 errors, with a retell fluency of 27 and retell quality of 3. The student has expressed an interest in reading graphic novels.  This information suggests that the student may benefit from targeted instruction and interventions to improve their reading fluency and comprehension at the 4th grade level. Is there anything else you would like to know?”  **Prompt 2**: “Please compare the student’s performance to grade level benchmarks, and include the student’s strengths and needs, and an impact statement.”  **Copilot Response**:  “Searching for: 4th grade reading fluency benchmarks”  “According to the AIMSweb Benchmarking, 4th grade students are expected to read at a rate of **105 words correct per minute** in the fall, **120 words correct per minute** in the winter, and **136 words correct per minute** in the spring ¹. Based on this information, the student's performance of 62 words correct per minute with 10 errors on 4th grade level passages is below the expected benchmark for their grade level.  The student's strength is their interest in reading graphic novels. This can be used to engage them in reading activities and provide them with materials that they find interesting and motivating. The student's needs include targeted instruction and interventions to improve their reading fluency and comprehension at the 4th grade level.  The impact of the student's specific learning disability in basic reading is that they are currently performing below grade level expectations in reading fluency and may require additional support to make progress towards meeting grade level benchmarks. Is there anything else you would like to know?  Source: Conversation with Copilot, 7/6/2023  (1) AIMSweb Benchmarking - rrcs.org. https://www.rrcs.org/AIMSwebBenchmarking.aspx.  (2) Fluency Norms Chart (2017 Update) | Reading Rockets. https://www.readingrockets.org/article/fluency-norms-chart-2017-update.  (3) Fluency Standards Table | Reading A-Z | Reading A-Z. https://www.readinga-z.com/fluency/fluency-standards-table/.  (4) 4th Grade Reading IEP Goal Bank Based On The Common Core Standards. https://enableteachers.com/2020/01/21/4th-grade-reading-iep-goal-bank-based-on-the-common-core-standards/.  (5) 10 Free and Affordable 4th Grade Reading Fluency Passages. <https://www.teachingexpertise.com/classroom-ideas/4th-grade-reading-fluency-passages/>.  **Prompt 3**: “Can you rewrite the PLAAFP statement using Acadience benchmarks?”  **Copilot Response**:  “Searching for: Acadience 4th grade reading fluency benchmarks”  “I'm sorry, but I couldn't find specific information on the 4th grade reading fluency benchmarks for Acadience. Would you like me to search again or provide information on another topic?”  Source: Conversation with Copilot, 7/6/2023  (1) Acadience Reading K–6 National Norms - Acadience Learning. https://acadiencelearning.org/wp-content/uploads/2022/01/AcadienceReadingK-6\_NormsTechReport32.pdf.  (2) reading k–6 - Acadience Learning. https://acadiencelearning.org/wp-content/uploads/2020/08/AcadienceReading\_Benchmark\_Student\_G4.pdf.  (3) Acadience® Reading K–6 Benchmark Goals. https://acadiencelearning.org/acadience-reading-k-6-benchmark-goals/.  (4) Acadience Reading (aka DIBELS Next) - Intensive Intervention. <https://charts.intensiveintervention.org/screening/tool/?id=29d92832847b8bc2>.  **Prompt 4**: “Can you rewrite the PLAAFP statement using DIBELS benchmarks?”  **Copilot Response**:  “According to the DIBELS 8th Edition Benchmark Goals, the benchmark goal for Oral Reading Fluency (ORF) - Words Correct for 4th grade students is \*\*131 words correct per minute\*\* in the middle of the year and \*\*159 words correct per minute\*\* by the end of the year ¹.  Here is a revised PLAAFP statement using DIBELS benchmarks:  The student is currently performing below the DIBELS benchmark goal for 4th grade Oral Reading Fluency (ORF) - Words Correct, with a rate of 62 words correct per minute on 4th grade level passages. The student's retell fluency is 27 and retell quality is 3. The student has expressed an interest in reading graphic novels.  This information suggests that the student may benefit from targeted instruction and interventions to improve their reading fluency and comprehension at the 4th grade level. Is there anything else you would like to know?  Source: Conversation with Copilot, 7/6/2023  (1) DIBELS® 8th Edition Benchmark Goals Updated: July 2020. https://dibels.uoregon.edu/sites/dibels1.uoregon.edu/files/2021-06/DIBELS8thEditionGoals.pdf.  (2) Parent Guide to DIBELS Assessment - University of Oregon. https://dibels.uoregon.edu/sites/dibels1.uoregon.edu/files/2021-06/dibelsparentguide.pdf.  (3) Progress Monitoring DIBELS Oral Reading Fluency Fourth Grade Scoring .... https://bw345class.weebly.com/uploads/1/2/6/0/12609703/dorf\_g4\_pm\_6th\_ed\_old.pdf.  (4) DIBELS 8th Edition | DIBELS® - University of Oregon. <https://dibels.uoregon.edu/dibels8>.”  **Prompt 5**: “Please compare the student’s performance to grade level benchmarks using DIBELS, and include the student’s strengths and needs, and an impact statement.”  **Copilot Response**:  “According to the DIBELS 8th Edition Benchmark Goals, the benchmark goal for Oral Reading Fluency (ORF) - Words Correct for 4th grade students is \*\*131 words correct per minute\*\* in the middle of the year and \*\*159 words correct per minute\*\* by the end of the year. Based on this information, the student's performance of 62 words correct per minute on 4th grade level passages is below the expected benchmark for their grade level.  The student's strength is their interest in reading graphic novels. This can be used to engage them in reading activities and provide them with materials that they find interesting and motivating. The student's needs include targeted instruction and interventions to improve their reading fluency and comprehension at the 4th grade level.  The impact of the student's specific learning disability in basic reading is that they are currently performing below grade level expectations in reading fluency and may require additional support to make progress towards meeting grade level benchmarks. Is there anything else you would like to know?  You've reached the conversation limit for today. To chat longer, link your work and personal accounts.”  Selected “New Topic” Topic 2: Write an IEP goal from baseline data **Prompt 1**: “Please write an Individualized Education Plan (IEP) goal for 5th grade reading levels using these baseline data, like a special education teacher would: In September 2020, a 4th grade student reads 80 words per minute with 6 errors at a 3rd grade reading level.”  **Copilot Response:**  “Searching for: IEP goal for 5th grade reading levels”  “An Individualized Education Plan (IEP) goal for a 5th grade student who reads 80 words per minute with 6 errors at a 3rd grade reading level in September 2020 could be something like this:  By the end of the school year, the student will demonstrate grade-level independent reading ability on literature passages as measured by the Developmental Reading Assessment (DRA), the Qualitative Reading Inventory (QRI-5), or the Star Reading assessment⁴.  It's important to note that IEP goals must align with the state’s academic content standards for the grade in which the child is enrolled³. You can find more information about 5th Grade Reading IEP Goals on websites like TeachTastic¹⁵. Is there anything else you would like to know?  Source: Conversation with Copilot, 7/6/2023  (1) IEP Goals for Reading: What They Look Like - Understood. https://www.understood.org/en/articles/iep-goals-for-reading-what-they-look-like.  (2) FAQs about standards-based IEPs - Understood. https://www.understood.org/en/articles/faqs-about-standards-based-ieps.  (3) 5th Grade Reading IEP Goals | TeachTastic. https://www.teachtasticiep.com/5th-grade-reading-iep-goals.  (4) 5th Grade IEP Goals | TeachTastic. https://www.teachtasticiep.com/5th-grade-iep-goals.  (5) 5th Grade Reading IEP Goal Bank Based On The Common Core Standards .... https://enableteachers.com/2019/11/18/5th-grade-reading-iep-goal-bank-based-on-the-common-core-standards/.”  **Prompt 2**: “Using the Utah State Core Standards, please write the goal so that it is SMART: Specific, Measurable, Attainable, Results-oriented, and Time-bound.”  **Copilot Response:**  “Searching for: Utah State Core Standards 5th grade reading”  “Using the Utah State Core Standards for 5th grade reading, a SMART (Specific, Measurable, Attainable, Results-oriented, and Time-bound) IEP goal for a student who reads 80 words per minute with 6 errors at a 3rd grade reading level in September 2020 could be something like this:  **By the end of the school year, the student will increase their reading fluency to 120 words per minute with no more than 2 errors on a 5th grade level text as measured by weekly one-minute timed readings.**  This goal is Specific because it targets reading fluency at a 5th grade level. It is Measurable because progress can be tracked through weekly one-minute timed readings. It is Attainable because it sets a realistic expectation for improvement within the school year. It is Results-oriented because it focuses on improving the student's reading fluency. And it is Time-bound because it sets a deadline of the end of the school year for achieving the goal.  You can find more information about Utah State Core Standards for 5th grade reading on websites like Utah Education Network² and Utah State Board of Education¹. Is there anything else you would like to know?”  Source: Conversation with Copilot, 7/6/2023  English Language Arts Grade 5 Core - Utah Education Network. https://www.uen.org/core/core.do?courseNum=4250.  Utah Core Standards - Utah State Board of Education. https://www.schools.utah.gov/curr/utahcorestandards.  K–5 LIBRARY MEDIA - Utah State Board of Education. https://www.schools.utah.gov/file/8f221361-0f3a-493e-b5e1-22309b8efa66.  English Language Arts Grade 1 Core - Utah Education Network. <https://www.uen.org/core/core.do?courseNum=4210>.”  **Prompt 3**: “The student is starting at a 3rd grade reading level. Can you make the goal more attainable?”  **Copilot Response:**  “Sure! Here's a revised SMART (Specific, Measurable, Attainable, Results-oriented, and Time-bound) IEP goal that takes into account the student's starting reading level:  **By the end of the school year, the student will increase their reading fluency to 100 words per minute with no more than 3 errors on a 4th grade level text as measured by weekly one-minute timed readings.**  This goal is Specific because it targets reading fluency at a 4th grade level. It is Measurable because progress can be tracked through weekly one-minute timed readings. It is Attainable because it sets a realistic expectation for improvement within the school year, taking into account the student's starting reading level. It is Results-oriented because it focuses on improving the student's reading fluency. And it is Time-bound because it sets a deadline of the end of the school year for achieving the goal.”  **Prompt 4**: “Can you tell me what Utah Core Standard this addresses for the 5th grade?”  **Copilot Response:**  “The revised SMART IEP goal I provided addresses the Utah Core Standard for 5th grade reading fluency. Reading fluency is the ability to read accurately, quickly, and with expression. It is an important component of reading proficiency and comprehension. While the goal I provided is focused on improving the student’s reading fluency at a 4th grade level, it is still aligned with the overall goal of improving reading proficiency as outlined in the Utah Core Standards for 5th grade reading.”  **Prompt 5**: “Can you tell me the number and give a source for the Utah Core Standard this addresses for the 5th grade?”  **Copilot Response:**  “I apologize for any confusion in my previous message. The revised SMART IEP goal I provided does not directly address a specific numbered Utah Core Standard for 5th grade reading. However, it is still aligned with the overall goal of improving reading proficiency as outlined in the Utah Core Standards for 5th grade reading.  You can find more information about the specific numbered Utah Core Standards for 5th grade reading on the Utah Education Network website. Is there anything else you would like to know?”  **Assignment for Self-Evaluation on CEC Advanced Standards:**  Please note that we included this prompt and example response to show that the generation of reflection by AI text generators is possible, but also inadequate in quality. This example demonstrates one rationale for not using AI text generators for reflection or self-evaluation activities. Please see the Comprehensive Portfolio Written Reflections and Oral Presentation Assignment in Figure S5 for an alternative approach to self-evaluation and reflection activities.  We chose a more precise setting. Note that prompts are limited to 4000 characters, so we chose and edited an artifact that fit this character limit. Longer artifacts may not be effectively presented in the prompt. Also, “Tim” is a pseudonym and the data are adjusted to not include PII.  **Prompt 1**: “I wrote an assessment report of a child for a class on preschool special education (included below). Please use my assessment report to write an academic reflection as a preservice teacher in special education. This reflection should be approximately two pages long, and should address how I showed my application of knowledge of education assessment and evaluation and skills in the implementation of assessment practices that minimize bias and are reliable and valid. The reflection should include information on my learning as reflected in the assessment report, a summary of my strengths and weaknesses, and benefits to me as an educator currently or in the future.  My assessment report: ‘Tim is a 4-year-old boy who lives with his parents and his younger sister. His mom mentioned that he eats well. Tim started attending preschool this school year. His mother reported that he reached developmental milestones typically. Currently, however, his parents are concerned about his difficulties with pre-academic, cognitive, communication, and attention skills. He knows colors but does not know any letters and cannot count. He sometimes cannot remember things he has been taught recently. Pre-academic skills were a relative weakness for Tim. He appeared easily distracted throughout the session. Therefore, this relative weakness may have led to decreased attention instead of knowledge or understanding. According to the Battelle Developmental Inventory, 2nd Edition, the assessment directly measures a child’s progress toward developmental milestones. The cognitive subtest assesses three domains: attention and memory, reasoning and academics, and perception and concepts. Within the Cognitive Domain, skills involve attending to, perceiving, and processing information, as well as remembering, thinking, and knowing are assessed. The BDI-II can provide an accurate snapshot of what the child can do at the present time. Percentile ranks and confidence intervals are provided for the subdomain scores and developmental quotients. According to the BDI-II, Tim demonstrated the skills required to uncover a hidden toy, search for a removed object, place a circle and a square in a form board and attend to preferred activities for more than 3 minutes. He matched simple shapes, nested three out 5 cups. He sorted by color but did not match colors. He had difficulty understanding verbal commands, but was more successful when a visual was presented. Tim was not able to name colors or sort by size and shape. Tim ran away from the assessor when presented with a difficult task. Overall, the results of this measure indicate Tim’s cognitive skills are delayed relative to other children his age. Conceptually, he was able to show an array of concepts and ideas. He could search for removed objects, look at, point to, or touch pictures in a book. He also attended to one activity for three or more minutes, found an object hidden under a cup, and was able to select a hand hiding a toy. Tim could not count or show one-to one-correspondence; he could not give three objects on request. He placed a square and circle on a form board. He matched a circle, square, and triangle. He could not identify big and little shapes, sort by size with demonstration, or sort forms by shapes. Regarding literacy development, Tim showed interest and enjoyment in age-appropriate books. He attended to the book and named and made comments about familiar things. Tim needed constant reminders to stay on task. He was compliant most of the time when asked to stay on task. Tim is a sweet boy who is prone to distractibility. His shortened attention span affected his play and his pre-academic abilities. In addition, he presented limited communication skills and used phrases and words to communicate. Tim displayed behaviors that are consistent with attention deficit/hyperactivity disorder. The team needs to work collaboratively in addressing these needs.’”  **Copilot response**:  “As a preservice teacher in special education, I have learned about the importance of education assessment and evaluation. In my assessment report of Tim, a 4-year-old boy, I demonstrated my application of this knowledge and my skills in implementing assessment practices that minimize bias and are reliable and valid.  One of the strengths I demonstrated in my assessment report was my ability to use a standardized assessment tool, the Battelle Developmental Inventory, 2nd Edition (BDI-II), to accurately measure Tim’s progress towards developmental milestones. The BDI-II assesses multiple domains, including cognitive skills such as attention and memory, reasoning and academics, and perception and concepts. By using this tool, I was able to provide an accurate snapshot of Tim’s current abilities and compare his performance to other children his age.  Another strength I demonstrated was my ability to observe and document Tim’s behavior during the assessment session. I noted that he appeared easily distracted and had difficulty understanding verbal commands, but was more successful when a visual was presented. I also observed that he ran away from the assessor when presented with a difficult task. These observations provided valuable information about Tim’s attention skills and his ability to cope with challenging situations.  One area where I could improve is in providing more detailed information about Tim’s strengths. While I did note some areas where he performed well, such as matching simple shapes and attending to preferred activities for more than 3 minutes, I could have provided more specific examples of his abilities.  Overall, my assessment report demonstrates my learning about education assessment and evaluation. By using a standardized assessment tool and carefully observing Tim’s behavior, I was able to provide an accurate picture of his current abilities. This experience has helped me to develop my skills in implementing assessment practices that minimize bias and are reliable and valid. As an educator, this knowledge will be valuable in helping me to accurately assess the needs of my students and provide appropriate support to help them succeed.” |

# Figure S2

*Reimagining Systematic Instructional Program Plans to Include the Use of an AI Text Generator*

|  |
| --- |
| Assignment Name: Systematic Instructional Program Plan **Desired Preservice Teacher Outcomes:**  *(What should the preservice teacher be able to do as a result of this task or experience? Are all outcomes observable and measurable?*)  As a result of this assignment, you will:   * identify a target behavior from a PLAAFP Statement and evaluate the quality of two IEP goals * identify principles of effective instruction for the selected PK-12 student * conduct a task analysis on the selected instructional task * select response prompting and fading strategies for the selected instructional task * select differential reinforcement and error correction procedures for the selected instructional task   **Task Analysis:**  *(Clearly identify each step in the assignment.)*  To complete this assignment, you will use a Present Levels of Academic Achievement and Functional Performance (PLAAFP) statement to develop related IEP goals and a systematic instructional program plan for one target skill/activity.  Please note: This component would typically be part of a longer PLAAFP statement, IEP goal, and short term objectives activity in a school setting. In addition, as a special education teacher you will need to individualize these goals for each student, collaborate with the student (as needed), their family (i.e., ecological assessment), and the IEP team in full, and consider each PK-12 student’s environments, strengths, needs, interests, and cultural and linguistic resources and needs when developing reports, PLAAFP statements, IEP goals, and the Systematic Instructional Program Plan.  Step 1: Using Copilot, enter a high-quality PLAAFP statement and request that it generate two annual IEP goals using the SMART criteria. Copy and paste the prompt you entered, the results of the chat, and any citations provided by Copilot into your assignment.  Sample Prompt: “Using this PLAAFP statement [insert PLAAFP], generate two annual IEP goals using the SMART IEP criteria.”  Step 2: Write a brief evaluation of the quality and appropriateness of the IEP goals based on the data provided, your knowledge of the PK-12 student, the academic or behavioral area, and SMART criteria. If needed, revise the IEP goals to meet the required criteria. Do not use AI for this step.  Step 3: Choose one IEP goal (revised as needed), enter it into the prompt box using Copilot and request it to summarize the research related to teaching skill X to the population X (e.g., teaching communication skills to students with visual impairments) using systematic instruction (i.e., stimulus, response prompts, differential reinforcement, error correction). Summarize the instructional procedures that have been identified in the research. Copy and paste the prompt you entered, the results of the chat, and any citations provided by Copilot into your assignment.  Sample Prompt: Summarize the research related to teaching skill X to the population X using systematic instructional procedures.  Step 4: Using the same IEP goal (revised as needed), enter it into the prompt box using Copilot and request it to task analyze (TA) the skill targeted for instruction.  Sample Prompt: Task analyze the following IEP goal: [enter IEP goal].  Step 5: Take the TA generated by the AI text generator and collect baseline data for three instructional trials. Modify the TA based on student performance data (i.e., is the task broken down into appropriate units of instruction?). Submit the AI-generated TA and any modifications made. Be sure to explain the changes based on student performance data. This step cannot be competed with AI.  Step 6: Using the instructional procedures that were identified in Step 3 as research-based for the population and based on the targeted skill, identify any stimulus shaping or fading, the response prompting procedure to be used, and the procedures for differential reinforcement. Summarize these in a Systematic Instructional Program Plan.  Step 7: Your final product will contain the following elements (in the following order):   * The PLAAFP statement prompt you entered into Copilot to generate the IEP goals * The response from Copilot with the text of the generated IEP goal component * A brief paragraph of your evaluation of the quality of the generated IEP goals, referencing the SMARTcriterion from class * Revised IEP goals that meets the SMART criteria (if needed) * A brief paragraph of your evaluation of the research summary developed by Copilot on teaching skill x to population x using systematic instruction * The response from Copilot with the text of the generated TA of the targeted skill component * Baseline data collection (at least three trials) using the AI-generated TA, with subsequent changes to the TA based on the student data * A systematic instructional program plan based on the steps completed above that will include: PLAAFP, IEP goal, TA of targeted skill, stimulus procedures, response prompting procedures, differential reinforcement procedures, and error correction * An APA-formatted reference of the AI application that you used (see McAdoo, 2023: https://apastyle.apa.org/blog/how-to-cite-chatgpt).   **AI Usage and Limitation:**  *(How will AI be used or limited/constrained? Refer to the desired outcomes and task analysis to determine where using AI may increase efficiency without compromising critical thinking, or where explicit limitations on AI may be desired to encourage critical thinking.)*    AI use will be constrained by applictions to real PK-12 students and real PK-12 student data (e.g., PLAAFP Statements, baseline data). All AI outputs will have to be adapted and modified to meet the requirements of real world application.  **Support Preservice Teacher Use of AI:**  *(What skills will preservice teachers need to learn to use AI? Select all that apply.)*     * Identifying and refining prompts/queries * Analyzing and evaluating AI-generated content * Safeguarding and redacting personally identifiable information (PII) * Documenting the use of AI text generators (including the tool and the prompt/query) * Citing and referencing AI-generated content * Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   **Carefully Design Evaluation Rubrics:**  *(Can more points or weight be given to parts of the assignment that cannot be completed solely using AI? Parts of an assignment that cannot be completed solely using AI are listed below. Select all that apply.)*   * Analyzing accuracy of AI-generated content * Applying AI-generated content to real-world scenarios * Using AI-generated content to articulate and defend ideas in ways that go beyond straightforward information retrieval   + Responding to questions that require a deep understanding of AI-generated content   + Self-reflecting on personal growth or assignment quality * Other: *Develop interventions and materials based on the Instructional Plan* |

# Figure S3

*Reimagining Annotated Bibliography Assignments Using AI*

|  |
| --- |
| Assignment Name: Annotated Bibliography **Desired Preservice Teacher Outcomes:**  *(What should the preservice teacher be able to do as a result of this task or experience? Are all outcomes observable and measurable?*)  As a result of this assignment, preservice teachers will:   * navigate databases, libraries, and online resources * generate annotations using an AI text generator * evaluate the accuracy of AI-generated annotations that summarize the main arguments, findings, and key points in each source * analyze the strengths and weaknesses of each source, identify gaps or contradictions in the literature, and develop informed perspectives   **Task Analysis:**  *(Clearly identify each step in the assignment.)*  Step 1: Choose one of the chapters that you read from the required text that focuses specifically on intervention strategies for supporting individuals who have delays/disabilities.  Step 2: Review the content of the selected chapter and identify a specific topic or intervention strategy that interests you.  Step 3: Frame your topic as a specific question. Framing the topic as a question will help you to (a) maintain focus as you conduct your literature search and (b) determine whether each source that you locate helps to answer the specific question that you posed (and is therefore relevant to this assignment).  Step 4: Using the strategies discussed in class for conducting a literature search (e.g., accessing online searchable databases available through the University, using relevant keywords and combinations of terms to refine your search), identify and read six articles that support your topic. As discussed, not all articles identified through your search will provide information that helps to answer the specific question that you posed.  Step 5: Use an AI text generator to generate an annotated bibliography for **each** of your six articles using the following prompt:  Create an annotated bibliography of the following article: (INSERT APA STYLE REFERENCE FOR THE ARTICLE HERE).  If the AI application cannot generate an annotation for a selected source, you must write your own. At the end of each AI-generated annotation, insert a citation to document the use of the AI text generator and add the AI text generator to your reference list (see McAdoo, 2023: <https://apastyle.apa.org/blog/how-to-cite-chatgpt>)  Step 6: Conduct a critical analysis of **each** identified annotated and source by responding to all questions on the critical analysis worksheet (Figure 4).  Step 7: Your final product will contain the following elements (in the following order):   * A one-paragraph description of the topic that you decided to study further. This description should explain the topic, your question, and why you found the topic/question intriguing. * The APA style reference, annotated bibliography, and responses to questions on the critical analysis worksheet (see Figure 4) for each source. * A 1-2 paragraph discussion of what you learned from your research. This discussion should include in-text citations and draw obviously and explicitly from the six annotated sources.   **AI Usage and Limitation:**  *(How will AI be used or limited/constrained? Refer to the desired outcomes and task analysis to determine where using AI may increase efficiency without compromising critical thinking, or where explicit limitations on AI may be desired to encourage critical thinking.)*  AI will be used to generate an annotation for each selected source. If the AI application cannot generate an annotated for a selected source, the preservice teacher will write their own.  **Support Preservice Teacher Use of AI:**  *(What skills will preservice teachers need to learn to use AI? Select all that apply****.)***   * Identifying and refining prompts/queries * Analyzing and evaluating AI-generated content   + Safeguarding and redacting personally identifiable information (PII)   + Documenting the use of AI text generators (including the tool and the prompt/query) * Citing and referencing AI-generated content * Other : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   **Carefully Design Evaluation Rubrics:**  *(Can more points or weight be given to parts of the assignment that cannot be completed solely using AI? Parts of an assignment that cannot be completed solely using AI are listed below. Select all that apply.)*   * Analyzing accuracy of AI-generated content * Applying AI-generated content to real-world scenarios * Using AI-generated content to articulate and defend ideas in ways that go beyond straightforward information retrieval * Responding to questions that require a deep understanding of AI-generated content   + Self-reflecting on personal growth or assignment quality   + Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

# Figure S4.

*Reimagining Literature Reviews to Include the Use of an AI Text Generator*

|  |
| --- |
| **Assignment Name:** Literature Review  **Desired Preservice Teacher Outcomes:**  *(What should the preservice teacher be able to do as a result of this task or experience? Are all outcomes observable and measurable?*)  As a result of this assignment, preservice teachers will:   * generate a topic using AI * generate potential sources related to a topic using an AI text generator * thoroughly document the vetting of resources supplied by AI * generate summaries and analysis for vetted resources using AI * edit and improve grammar, style, and clarity of writing using AI * generate citations and references in APA formatting using AI * write a reflection on the process and ethics of using the AI tools in your literature review   **Task Analysis:**  *(Clearly identify each step in the assignment.)*  Step 1: Develop a prompt to request an AI text generator’s help with selecting a topic for your literature review (e.g., When looking at peer reviewed research articles related to teaching PK-12 students with visual impairments communication strategies, what are the most pressing research questions that have been identified as needing investigation?). Include your AI prompts and the possible topics in your assignment.  Step 2: Review the content generated in Step 1 to identify one specific topic or intervention strategy of interest.  Step 3: Frame your topic as a specific question to conduct an initial literature search using an AI tool to gather related resources to the topic.  Step 4: Review the sources supplied by AI to determine the credibilitiy of the information (e.g., scholarly research, peer-reviewed, timely). Use an online searchable database available through the University, using relevant keywords and combinations of terms to refine the search, to verify the scope and content accuracy of the articles returned by the AI tool, as well as determine if other, more relevant sources are available. You should not use AI to complete this step.  Step 5: Use an AI tool to generate summaries and analyses of vetted sources.  Step 6: Conduct a critical analysis/revision of **each** summary and/or analysis written by the AI text generator. Include the original section and revisions made to each section. You should not use AI to complete this step.  Step 7: Compile summaries and analyses into cohesive paragraphs to emphasize significance of findings. Include an introduction and conclusion as typically found in a literature review.  Step 8: Use AI tools to refine your product to APA writing standards. Use AI tools to edit and improve grammar, style, and clarity of writing. Use AI tools to generate applicable citations and references in APA formatting.  Step 9: Reflect on the process of using AI tools to generate research papers, including the strengths and weaknesses of the AI content, the ethical considerations of responsible use, and the efficiencies of AI support versus a traditional method. This reflection requires you to respond solely from your experience and knowledge without the support of AI tools. Prompts may include: Identify any erroneous interpretation of search prompts. Based on your experience with this assignment, how would you avoid similar outcomes in other searches? Identify any inefficiencies in using AI in this process and support an appropriate alternative.  Step 10: Your final product will contain the following elements (in this order):   * An APA formatted research paper that is 8-10 pages in length with a minimum of 10 references, including references for the AI tool(s) used to generate the paper. * A one page written reflection on the processes and ethics of using AI tools to generate research papers.   **AI Usage and Limitation:**  *(How will AI be used or limited/constrained? Refer to the desired outcomes and task analysis to determine where using AI may increase efficiency without compromising critical thinking, or where explicit limitations on AI may be desired to encourage critical thinking.)*  AI is both utilized and limited in this assignment. AI will be used in this assignment to 1) help preservice teachers identify issues in a given area of interest, 2) begin to filter available research for timely and relevant sources, 3) summarize and analyze vetted sources, and 4) produce a product that meets APA writing standards and is stylistically appropriate for the task. Utilizing AI for these tasks supports preservice teachers in writing a literature review without experiencing the roadblock of getting ‘stuck’ trying to move from a topic to a question, or waiting for library/writing lab support on intial research searches and APA format.   AI is not utilized for 1) vetting sources, 2) revising the summary/analysis provided by AI, 3) the intitial drafting of the literature review, and 4) the reflection component of the use of AI. These skills are necessary for the preservice teacher to refine early in their courses and become the focus of their efforts when AI is utilized as outlined above. Additionally, limiting the use of AI for these portions supports the desired outcomes and provides practice opportunities in academic written language, critical analysis of research articles, and their personal ethical issues with utilizing AI.  **Support Preservice Teacher Use of AI:**  *(What skills will preservice teachers need to learn to use AI? Select all that apply.)*   * Identifying and refining prompts/queries * Analyzing and evaluating AI-generated content * Safeguarding and redacting personally identifiable information (PII) * Documenting the use of AI text generators (including the tool and the prompt/query) * Citing and referencing AI-generated content * Other : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   **Carefully Design Evaluation Rubrics:**  *(Can more points or weight be given to parts of the assignment that cannot be completed solely using AI? Parts of an assignment that cannot be completed solely using AI are listed below. Select all that apply.)*   * Analyzing accuracy of AI-generated content * Applying AI-generated content to real-world scenarios * Using AI-generated content to articulate and defend ideas in ways that go beyond straightforward information retrieval * Responding to questions that require a deep understanding of AI-generated content * Self-reflecting on ethical considerations of responsible use * Other : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

# Figure S5.

*Reimagining Comprehensive Portfolio Written Reflections and Oral Presentation Assignment*

|  |
| --- |
| **Assignment Name:** Comprehensive Portfolio Written Reflections and Oral Presentation  **Desired Preservice Teacher Outcomes:**  *(What should the preservice teacher be able to do as a result of this task or experience? Are all outcomes observable and measurable?*)    As a result of this assignment, preservice teachers will:   * demonstrate knowledge of the research in their specialization area, by submitting one artifact graded by the original instructor as a “B” or higher for each CEC Standard, and by using research and specialization terminology accurately in written reflections and fluently during oral presentations * synthesize and apply the knowledge and skills developed in their specialization area, by including reflections on how different assignments relate to each other in the preservice teacher’s learning (synthesis) and by giving at least 2 examples per reflection of how they have successfully applied knowledge and skills related to the CEC Standard and/or how they plan to apply knowledge and skills in their future teaching or work environment * communicate ideas effectively in written and oral form, including written responses with minimal grammar and writing style errors that impede communication, as measured by the committee’s detailed rubric, and including oral responses with minimal communication errors that impeded communication, as measure by the committee’s detailed rubric * self-evaluate their skills and experiences in leadership, policy, collaboration, ethical and equitable practices, and professionalism in supporting individuals with disabilities and their families (CEC, 2015a), by providing written and oral reflection on how they have mastered or made progress in each standard and providing at least 2 examples per standard in which this mastery or growth is demonstrated, as measured by committee evaluation of the preservice teacher’s reflection using the written and oral evaluation rubrics.   **Task Analysis:**  *(Clearly identify each step in the assignment.)*  Step 1: Review the CEC *Advanced Preparation Standards* (CEC, 2015a).  Step 2: For each of the seven standards, choose one artifact from your master’s degree program that represents your progress toward or mastery of that standard. Some of these assignments may have been completed using AI text generators, based on the assignment details of the original instructor. Artifacts can include, but are not limited to:   * **Course assignments** (e.g., papers, presentations, lesson/instructional plans, assessment reports, behavior support plans, individualized education plans, collaboration assignments, professional goals and development plan, case study, curriculum or program evaluation, training plan for others, annotated bibliography) * **Non-coursework items** (e.g., professional and leadership experiences). Non-coursework items are optional and need prior approval from the committee chair. The activities for these items need to have occurred during the master's degree program enrollment period. A maximum of 3 non-coursework items can be used as artifacts, and they must be across 3 different standards. You cannot use the same event, training, or conference attendance for multiple artifacts. Evidence of artifacts may include, but are not limited to, a certificate of attendance for Professional Development (PD), advertising and materials for a PD that you provided to others, or a written statement that describes the details of the activity, such as date, hours engaged, activity engaged in, etc. We recommend a minimum of 6 hours of work to count as one artifact, but the committee chair and/or committee can approve exceptions.   Step 3: Write a self-evaluation for each artifact and standard pair without using AI support in order to meet the self-evaluation learning objective. Describe how the chosen artifact demonstrates your progress toward and/or mastery of the chosen Advanced Preparation Standard. A good response will demonstrate your (a) depth of knowledge in the specialization area, (b) ability to synthesize and apply the knowledge and skills developed in the specialization area, (c) ability to communicate ideas in written form, and (d) ability to self-evaluate your skills and experiences in leadership, policy, collaboration, ethical and equitable practices, and professionalism in supporting individuals with disabilities and their families.  Step 4: Prepare and deliver an oral presentation on your portfolio to your master’s degree committee members without the use of AI support in order to meet the learning objectives. Prepare to answer the following questions that span across your artifacts, providing specific examples from at least two artifacts for each question:   * **Question 1**: Reflecting on the learning in your master’s degree program, what are some ways you have grown or made progress as a professional in special education (e.g., how have you acted on feedback from others, integrated others’ perspectives into your own, grown in your knowledge and/or skills over time)? * **Question 2**: As you complete your program, what broad strengths and/or values will you take into your professional work from your master’s degree program? Please summarize your current knowledge, professional experiences, values, and/or skills in the field of special education in a way that demonstrates connections across your program and across the standards. * **Question 3**: As you continue in the special education profession, what future challenge(s) do you think you will face in the field? What future professional experiences (e.g., professional development) do you think you will need to meet the challenge(s) you have identified to best meet the needs of students with disabilities and their families?   **AI Usage and Limitation:**  *(How will AI be used or limited/constrained? Refer to the desired outcomes and task analysis to determine where using AI may increase efficiency without compromising critical thinking, or where explicit limitations on AI may be desired to encourage critical thinking.)*  AI will be limited, because the use of AI text generators would undermine the targeted learning outcomes that include self-reflection and higher-order thinking and communication skills. AI grammar checkers may be used to give the preservice teacher feedback on mechanical and writing style of their reflection and preparation for oral presentation.  **Support Preservice Teacher Use of AI:**  ***(What skills will preservice teachers need to learn to use AI? Select all that apply.)***   * Identifying and refining prompts/queries * Analyzing and evaluating AI-generated content * Safeguarding and redacting personally identifiable information (PII) * Documenting the use of AI text generators (including the tool and the prompt/query) * Citing and referencing AI-generated content * Other: *Using AI grammar checkers for feedback on written components.*   **Carefully Design Evaluation Rubrics:**  ***(Can more points or weight be given to parts of the assignment that cannot be completed solely using AI? Parts of an assignment that cannot be completed solely using AI are listed below. Select all that apply.)***   * Analyzing accuracy of AI-generated content * Applying AI-generated content to real-world scenarios * Using AI-generated content to articulate and defend ideas in ways that go beyond straightforward information retrieval * Responding to questions that require a deep understanding of AI-generated content * Self-reflecting on personal growth or assignment quality * Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   **Example Evaluation**: Your committee will use a rubric to evaluate your ability to communicate in writing and orally, including your ability to:   * analyze your growth in or mastery of the Advanced Standards * provide background information to contextualize the answers to questions, including defining relevant terms and/or concepts * demonstrate fluency and accuracy in using terminology specific to special education (e.g., terms and concepts found in the Standards) and provide examples from your program and professional experiences that accurately relate to the terminology * use and manage visual aids effectively (e.g., readable, comprehensible, reinforce key points, provide structure) * talk to the committee members, rather than reading from the portfolio * use professional rather than colloquial expressions * use nonverbal communication that conveys confidence and professionalism |