

PHONEMIC AWARENESS AND AI: EVALUATING CHATGPT PLUS FOR STRUCTURED LESSON DEVELOPMENT

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Abstract

Effective phonemic awareness instruction is essential for early literacy development, yet teachers often seek additional support in designing structured, engaging, and standards-aligned lesson plans. Generative AI (GenAI), such as ChatGPT Plus, is a promising tool for assisting educators with lesson creation. This study explores the effectiveness of ChatGPT Plus in generating phonemic awareness lesson plans that align with learning objectives, the Gradual Release of Responsibility (GRR) model, and the Science of Teaching Reading (STR) instructional practices. The study evaluated and refined three ChatGPT Plus-generated lesson plans using a design-based research methodology. The initial output lacked student engagement, formative strategies, and explicit teacher feedback and needed multiple refinements. The final output indicates that ChatGPT Plus successfully created lessons using the GRR model, incorporated STR instructional practices, and aligned them with lesson objectives. This study highlights the potential of GenAI in lesson planning but emphasizes the need for teacher experience in using detailed prompts and critical evaluation of GenAI lesson plans. While ChatGPT Plus can streamline lesson planning, teacher oversight remains essential to ensure pedagogical and instructional effects.

Keywords: PA, generative AI, ChatGPT, Science of Teaching Reading, lesson planning

Introduction

Lesson planning is an instructional tool that helps teachers develop a framework to deliver content and structure learning activities (Li, 2024; Shen et al., 2007). Teachers should design lesson plans to be engaging (Behizadeh, 2015; Dorovolomo et al., 2010; Marchand et al., 2021), align their teaching with the learning objectives (Reed, 2012; Wiggins & McTighe, 2001), and support student needs (Li, 2024). Lesson plans should maintain student interest and motivation (Behizadeh, 2015; Marchand, 2021) and provide a clear direction for effectively teaching and assessing student progress (Li, 2024). The quality of the lesson plan directly influences instructional delivery and the students' learning experiences (Li et al., 2009).

Teachers often find that the time allocated for lesson planning during the school day is insufficient to develop high-quality instructional plans (Hixson, 2013; Rentner, Kober, & Frizzell, 2016; Shen et al., 2007). Teachers ranked needing more planning time as the most important issue supporting them with their day-to-day teaching (Rentner, Kober, & Frizzell, 2016). In addition to the lack of adequate time to plan, studies have shown that teachers face difficulties in lesson planning due to designing lessons that meet the learning objectives (Antari, 2021; Fadoli, 2022a) and are engaging and relevant to students (Behizadeh, 2015). Furthermore, teachers often lack the content knowledge regarding effective reading instruction and the necessary understanding of the Science of Teaching Reading (STR) needed to develop lesson plans (Cheesman et al., 2009; Moats, 2020). Effective reading instruction is based on an understanding of Gough and Tunmer's (1986) "simple view of reading" that both word recognition and language comprehension help develop readers. Learning to recognize words accurately depends on developing phonemic awareness (PA), which helps students understand how sounds combine to form words (Boyer & Ehri, 2011; Hulme et al., 2002). Many teachers possess limited knowledge of PA (Cheesman et al., 2009; Cunningham et al., 2004; Moats & Foorman, 2003), affecting their ability to design effective lesson plans that include research-based instructional practices (Ramanair et al., 2020). Teachers also face insufficient resources to create PA lesson plans, exacerbating the difficulties (Choi et al., 2024).

Designing PA lesson plans that meet learning objectives and engage learners can be time-consuming, and teachers can benefit from time-saving measures. According to the 2024 State of the American Teacher survey, 76% of teachers reported working between 41–60 hours per week, and 12% of teachers reported working more than 60 hours per week planning, teaching, and grading (Steiner et al., 2024). Additionally, 60% of teachers reported feeling burned out. (Doan et al., 2024). The introduction of Generative AI (GenAI) presents an opportunity to support lesson planning and reduce teacher workload and burnout.

GenAI refers to artificial intelligence systems that can create forms of media based on user input (Sengar et al., 2024). One widely used form of GenAI is ChatGPT, developed by OpenAI. This study specifically used the paid version of ChatGPT Plus to access the most advanced model available at the time. In this study, the term ChatGPT Plus is used when referring to the specific tool tested, and GenAI is used when discussing the broader implications of the tool. GenAI use in education is still emerging, but early studies show ChatGPT can help teachers create lesson plans, assessments, and other curriculum materials (Cooper, 2023; Lo, 2023; van den Berg & du Plessis, 2023). However, some studies have shown that ChatGPT has not performed satisfactorily in different subject areas (Lo, 2023). Zhang & Tur's (2024) systematic literature review identified only 13 peer-reviewed studies on ChatGPT use in K-12 education, with most focusing on student use in middle and high school in math, science, and

language arts. ChatGPT has been shown to assist teachers in creating engaging instructional ideas and strategies (Zhang & Tur, 2024). None of the reviewed studies explored ChatGPT's abilities in creating literacy lesson plans for early elementary students.

This study addresses the gap in research on how ChatGPT Plus can support the design of PA lesson plans. The purpose of this article is to explore the potential and limitations of how ChatGPT Plus can support teachers with creating PA lesson plans that align with educational learning objectives, use the Gradual Release of Responsibility (GRR) model to support student independence, generate engaging activities, and support STR instructional practice. The following research questions were used to guide the study:

1. How effectively can ChatGPT Plus create lesson plans aligned with learning objectives?
2. How effectively can ChatGPT Plus create PA lesson plans that align with the (GRR) model?
3. How effectively can ChatGPT Plus create lesson plans that use (STR) instructional practices?

Methodology

Research Design and Data Collection

My study employed a Design-Based Research (DBR) methodology framework to test ChatGPT Plus's ability to create PA plans. DBR addresses the limitations of traditional research by situating studies in real-world settings to improve practice and theory (Armstrong et al., 2020; Barab & Squire, 2004; Brown, 1992; Collins, 1990). A review by Tinoca et al.(2022) of 162 DBR studies in K-12 and teacher education confirms DBR's effectiveness in bridging the gap between theory and practice and shows how DBR can effectively guide the development and testing of GenAI-enhanced instructional tools in educational settings.

DBR was chosen for this study because it allows for repeated cycles of development, evaluation, and refinements through a four-phase process: identify a challenge to be addressed, create a potential solution, collect data on its effectiveness, and then analyze and refine it (Armstrong et al., 2020; McKenny & Reeves, 2019). This study followed the cycle by identifying the challenge of supporting teachers in designing effective PA lesson plans that align with learning objectives, the GRR model, and STR principles.

I crafted the initial prompt to simulate a teacher's process when working with ChatGPT Plus to design a PA lesson plan. This prompt tested whether ChatGPT Plus would generate the entire lesson by only stating the grade level, the targeted skill and prompting using the GRR model. Each output was evaluated for alignment with the established criteria. Following each output, the lesson output was assessed for alignment with crafting lesson plan objectives that align with the TEKS, the use of the GRR model, and STR instructional strategies. The second prompt addressed the misalignments a teacher would need to make after reviewing the initial output to be more specific by adding the TEK, asking for a script, and adjusting the time to meet the teacher's allotted time in a typical day to teach PA. The third and final prompt was designed to mimic changes a teacher would make to use only one type of manipulative, ensuring students could complete the independent practice after seeing it modeled. The lesson plan outputs were not used with students but served as data for analyzing how ChatGPT Plus can assist teachers in designing PA lesson plans.

Data Analysis

I performed a design evaluation to evaluate, compare, and refine the lesson plans generated by ChatGPT Plus to systematically assess their alignment with lesson objectives, GRR model, and STR principles. This process involved a qualitative analysis of the structure, content, and instructional strategies embedded in the lesson plan to evaluate the alignment and refine the input prompts accordingly. This part of the DRB process helps the researcher analyze and adapt to enhance the potential solution (Momand et al., 2022). The analysis was performed to systematically examine and interpret the lesson plans generated by ChatGPT Plus to gain insights into GenAI's ability and limitations to create a PA lesson plan for a first-grade classroom.

For learning objectives, I assessed whether the lesson objective aligned with Marzano's Taxonomy (2006) expectations that the nouns and verbs align with the TEKS and match the expectation of the PA skill. GRR alignment was evaluated by identifying whether all three phases of the GRR model, including affirmative and corrective feedback, were used effectively. The STR-aligned instruction was analyzed to check if a single skill was taught, if manipulatives were incorporated, and whether the lesson was auditory or included using letters.

Conceptual Framework

This section will discuss the conceptual frameworks that informed the analysis of the ChatGPT Plus outputs. Each lesson output was analyzed to evaluate its alignment with educational learning objectives, the GRR model, and PA within the STR framework.

Lesson Objectives

Lesson objectives are part of the instructional sequence when explicit instruction is provided (Archer & Hughes, 2011). Stating the learning objective at the beginning of the lesson helps clarify the goal for students and ensures the lesson is designed to assess mastery (Wiggins & McTighe, 2011). Maintaining a focus on the learning objective may increase student engagement by clarifying the purpose of the activity (Reed, 2012). Marzano's New Taxonomy of Educational Objectives (2006) builds on Bloom's Taxonomy to provide a detailed procedure for designing educational objectives. Marzano adopts the idea that it is important to specify the type of knowledge and the mental process into a framework to design objectives to promote higher-order thinking and align instruction with clear goals. To create a learning objective, teachers should identify the type of knowledge, specify the mental process, and use a consistent structure of "The student (or students) will be able to..., plus a verb phrase and an object of the phrase," (Marzano, 2006, p. 118) to present objectives. To accomplish this, teachers must unpack the standard to identify what the students will know and be able to do (Marzano & Haystead, 2008) so they can align the lesson objective to the verbs and nouns in the standards (Wiggins & McTighe, 2011), create summative and formative assessments, and design meaningful activities (Drost & Levine, 2017).

Gradual Release of Responsibility Model

Instructional frameworks guide teaching and learning by providing intentional, clear expectations for effective instruction (Fisher & Frey, 2021). Instructional frameworks support teachers with designing lessons and selecting strategies. The GRR model was developed by P. David Pearson and Margaret C. Gallagher in 1983 as a framework that transitions the cognitive load from teacher to student from the teacher modeling, guided practice, to independent practice. Pearson and Gallagher's (1983) framework begins with the "I do," where the teacher establishes the purpose for learning and models and explains the cognitive process and metacognitive needed to learn the skill. The "I do" is followed by the "We do," in which the students practice with support and feedback on errors and misconceptions from the teacher. Last is the "You do it" stage, where students work to apply what they have learned. Fisher and Frey (2021) expanded the GRR and the importance of affirmative and corrective feedback to address misconceptions and to guide students to an accurate understanding.

Table 1
Gradual Release of Responsibility Framework

GRR Phase	Teacher Actions	Student Actions
I Do	<ul style="list-style-type: none">• Describe learning intentions and success criteria• Think aloud, model strategies, or deliver direct instruction	<ul style="list-style-type: none">• Listen and make connections• Take notes• Reflect on modeled behavior
We Do	<ul style="list-style-type: none">• Guide practice and prompt thinking• Ask questions to check understanding• Provide affirmative and corrective feedback	<ul style="list-style-type: none">• Participate in guided practice• Respond to teacher prompts• Clarify understanding
You Do	<ul style="list-style-type: none">• Assign independent tasks• Observe student performance• Provide feedback on mastery and next steps	<ul style="list-style-type: none">• Apply skills independently• Demonstrate understanding• Reflect and revise as needed

Phonemic Awareness within STR Framework

The "simple view of reading" is a theoretical framework proposed by Gough and Tunmer in 1986 to describe reading comprehension as a product of decoding and language comprehension. Decoding is recognizing words in print and translating them into spoken language, and language comprehension is the ability to derive meaning from spoken words (Gough & Tunmer, 1986). Both components are necessary to support proficient reading (Moats, 2020). STR research has identified effective, evidence-based instructional methods for supporting both decoding and language comprehension, including PA, phonics, fluency, vocabulary, and reading comprehension (Foorman et al., 2016; NRP, 2000).

The National Reading Panel (2000) found that PA, systematic phonics, and reading fluency help children identify words accurately and fluently. PA is the ability to identify, focus on, and manipulate the smallest units of sounds, known as phonemes, through blending,

segmenting, and modifying sounds to create new words (Ehri et al., 2001). When students learn that phonemes correspond to written words' letters through PA instruction, they begin to decode accurately (Erbeli et al., 2018; Ehri et al., 2001; National Reading Panel, 2000). PA instruction supports students in understanding the alphabetic principle to make meaningful progress in early reading (Ehri et al., 2001; Gough & Tunmer, 1986; Moats, 2023).

The National Reading Panel (2000) meta-analysis shows that PA instruction has a strong effect on PA and a moderate effect on reading and spelling. The findings suggest that instruction is most effective when combined with letter knowledge, taught in small groups, and targets one or two skills at a time over 5 to 18 hours. Longer PA instruction did not yield additional benefits, implying that shorter sessions are more advantageous for teaching PA. Furthermore, the study reveals that PA instruction supports a diverse range of learners, including those with reading difficulties and disabilities. The National Reading Panel's (2000) study provides solid evidence that PA instruction is critical to early literacy instruction.

Teachers recognize the importance of PA instruction but lack knowledge of PA and its instructional components (Bos et al., 2001; Cheesman et al., 2009b; Foorman et al., 2003; Hudson et al., 2021). Teachers deliver PA instruction through a curriculum program, teacher-developed lessons, or a combination of both (Mathes et al., 2003). Both PA programs and teacher-created lesson plans have strengths and limitations. Curriculum-developed programs provide teachers with systematic, research-based routines that use modeling and sequencing of PA skills from easy to hard (Santi et al., 2004). However, research has found that programs lack specific feedback techniques and do not provide opportunities for individualized instruction to meet the needs of at-risk students (Santi et al., 2004; Wanzek et al., 2000). Alternatively, teacher-created plans allow customization to meet individual student needs (Santi et al., 2004; Wanzek et al., 2000). The effectiveness of teacher-developed lessons depends on the teacher's knowledge of phonological development (Cheesman et al., 2009b; Moats, 2009).

Effective literacy lessons align the learning objectives with explicit and systematic instruction (Antari, 2021; Fadoli, 2022; Marzano, 2006). Research highlights that PA includes teacher modeling and several opportunities for students to practice the skill and incorporate interactive and engaging instructional techniques (Cunningham, 1990; Ehri et al., 2001; Foorman & Torgesen, 2001; Honig et al., 2000)

Outputs from ChatGPT Plus and Rationale for Revisions

The first prompt told Chat GPT Plus, "You are a first-grade teacher in the state of Texas, and you need to create a lesson plan to teach your students PA where students learn for the first time how to manipulate the initial sound in a word by deleting a sound and inserting a new sound. Please create a lesson that uses the "I do," "We do," and "You do" format." This prompt tested whether ChatGPT Plus would generate the entire lesson, including the learning objective. The resulting output from the first prompt is presented below in Table 2.

Table 2.*First Prompt ChatGPT Phonemic Awareness Lesson Plan: Manipulating Initial Sounds*

Component	Description
Time	20-30 minutes
Objective	Students will be able to delete the initial sound of a word and insert a new sound to form a new word.
Materials	Picture cards of simple words (e.g., hat, cat, bat, mat, rat, pat); whiteboard and markers; magnetic letters (optional).
Introduction (5 minutes)	Set the Purpose: "Today, we are going to play with sounds in words!"
Component	Description
Introduction (5 minutes)	<p>We'll learn how changing the beginning sound of a word can create a whole new word."</p> <p>Review: Briefly remind students what a beginning sound is by showing a few example words and identifying their initial sounds (e.g., hat starts with /h/, cat starts with /k/).</p>
I Do (Teacher modeling) 5-10 minutes	<p>Model Sound Deletion and Insertion:</p> <ul style="list-style-type: none"> Start with the word "cat." Say, "Listen carefully to the word: /c/ /a/ /t/. I'm going to take away the /c/ sound and replace it with the /h/ sound." Demonstrate slowly: "/h/ /a/ /t/." "What's the new word?" (hat) Write "cat" and "hat" on the board to visually show the change. <p>Emphasize Process: "First, I listened to the sounds in cat. Then, I removed the /c/ sound. Finally, I added the /h/ sound, which gave me a new word: hat!"</p>
You Do (Independent practice) 5-10 minutes	<p>Partner Activity: Give each pair of students a set of picture cards and ask them to practice changing the initial sound on their own.</p> <ul style="list-style-type: none"> For example, they might start with "rat" and change it to "pat" by replacing the /r/ sound with /p/. Encourage students to say the words out loud to each other and check if they formed a new word. <p>Observe and Support: Walk around the room to monitor and assist pairs as they work through the words. Ask guiding questions if they need help.</p>
Closing (3-5 minutes)	<p>Review and Reflect: Bring students back together and review a few examples as a class.</p> <p>Celebrate learning: "You did a great job changing sounds to make new words! You've just learned a new reading superpower called sound manipulation!"</p> <p>Preview: Let students know they will keep practicing this skill with more words in future lessons.</p>

A teacher could use this lesson output to teach first-grade students to delete the initial sound to create a new word. The lesson states the lesson objective and has the essential elements of the

GRR model research-based instructional practices, along with expected times in each section of the teacher modeling, guided practice, independent practice, and closing. It could use further refinement to engage students, monitor all students during the guided practice, and provide students with more support in creating words during the independent practice.

A second prompt asked, “Revise to meet this criterion. You are a first-grade teacher in the state of Texas, and you need to create a lesson plan to teach your students PA, where students learn for the first time how to manipulate the initial sound in a word by deleting a sound and inserting a new sound. Here is the *TEKS (2) Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking--beginning reading and writing. (A.vi) The student develops word structure knowledge through phonological awareness, print concepts, phonics, and morphology to communicate, decode, and spell.* The student is expected to manipulate phonemes within base words. Please create a lesson that uses the “I do,” “We do,” and “You do” format. The lesson needs to be scripted to what I would say and how I would model. The lesson should not last longer than 15 minutes. Please make the lesson multi-sensory.” The resulting output from the second prompt is presented below in Table 3.

Table 3.

Second Prompt ChatGPT Phonemic Awareness Lesson Plan: Manipulating Initial Sounds

Component	Description
Time	15 minutes
TEKS	ELA 1.2. A.vi Developing and sustaining foundational language skills: The student develops word structure knowledge through phonological awareness, print concepts, phonics, and morphology to communicate, decode, and spell. The student is expected to manipulate phonemes within base words.
Objective	Students will learn to delete the initial sound in a word and replace it with a new sound to create a new word, using multi-sensory strategies to enhance PA.
Materials	Picture cards with simple CVC words (e.g., a cat, a hat, a bat, a mat,
Component	Description
Materials	a rat, a sat) Sand trays or small tubs with rice (for tracing) Playdough or clay for shaping sounds Small objects (like buttons or counters) for each sound in a word
Introduction (2 minutes)	Teacher: “Today, we’re going to use different senses—like touch, sight, and hearing—to help us hear sounds in words and even change the sounds to make new words! This is going to be fun, and it will make us strong readers and spellers.” Example Introduction: “Let’s start by looking at this picture of a cat. I’m going to say the sounds I hear: /c/ /a/ /t/. Today, I’ll show you how to change the first sound to make a new word, and we’ll use some fun tools to help us!”

I Do (Teacher modeling) 3 minutes

Model Sound Deletion and Replacement (Using Picture of a Cat):

Teacher:

"Here's our picture of a cat. I'm going to say the sounds: /c/ /a/ /t/. Now, I'm going to change the first sound, /c/, to a new sound, /m/, and make a new word: /m/ /a/ /t/."

Tactile Activity with Sand Trays:

"I'll write the first sound, /c/, in the sand tray with my finger. Now, I'm going to erase it and write a new sound, /m/, in the sand. This helps me see how changing sounds can make new words."

Teacher:

"Now my new word is /m/ /a/ /t/, which makes 'mat.' I started with 'cat' and changed it to 'mat' by changing just the first sound!"

We Do (Guided Practice) 5 minutes

Practice Together with a Picture of a Hat:

Teacher:

"Now, let's try one together! Here's a picture of a hat. Let's say the sounds: /h/ /a/ /t/. Great! Now, let's change the first sound, /h/, to /b/. What new word do we make?"

Using Small Objects to Represent Sounds:

"Let's use these buttons to show each sound. We'll place one button for each sound: /h/ /a/ /t/."

(Students place three buttons in front of them to represent the sounds in "hat.")

"Now, let's take away the first button for /h/ and replace it with a new button for /b/. What sounds do we have now?"

(Guide students to say: /b/ /a/ /t/ – "bat")

Teacher:

"Good job! By changing the first sound from /h/ to /b/, we made a new word: 'bat'!"

Additional Example with Playdough:

Using another picture, such as "rat," guide students in forming the sounds with playdough letters or shapes.

Component	Description
We Do (Guided Practice) 5 minutes	Teacher: "Here's a picture of a rat. Let's say the sounds together: /r/ /a/ /t/. Now, let's change the /r/ sound to /s/. What new sounds do we have?" (Guide students to say: /s/ /a/ /t/ – "sat")
You Do (Independent practice) 4 minutes	Partner Activity with Multi-sensory Tools: Teacher: "Now it's your turn to try with a partner! I'm going to give each of you a picture. Start by saying the sounds you hear in that word, then take turns changing the first sound to make a new word. You can use the sand trays, buttons, or playdough to help you with each sound." <ul style="list-style-type: none"> • Example words: "cat" (change to "bat"), "sat" (change to "mat") • sound and blend the new word aloud.

Closing (1 minute)	<p>Teacher Support: Walk around to monitor and assist as students practice changing the beginning sounds in their words. Ask guiding questions if they need help (e.g., "What sound are you changing? What's your new sound?").</p> <p>Review as a Group:</p> <p>Teacher:</p> <p>"Let's share one or two new words you created with your partner. Who would like to share?"</p> <p>Reinforce Learning:</p> <p>Teacher:</p> <p>"Great work! Today, you used listening, touch, and sight to change sounds and create new words. You're becoming amazing readers and spellers!"</p>
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The lesson generated by ChatGPT Plus added three different methods of multi-sensory instruction that changed for each section of the lesson plan. To keep the lesson structured around one method of multi-sensory instruction, a third and final prompt asked, "Please revise this lesson only to use manipulatives in the teacher model, guided practice, and independent practice to delete the initial sound of a word and insert a new sound. The resulting output from the third prompt is presented below in Table 4.

Table 4.
Third Prompt ChatGPT Phonemic Awareness Lesson Plan: Manipulating Initial Sounds

Component	Description
Time	15 minutes
TEKS	ELA 1.2. A.vi Developing and sustaining foundational language skills: The student develops word structure knowledge through phonological awareness, print concepts, phonics, and morphology to communicate, decode, and spell. The student is expected to manipulate phonemes within base words.
Objective	Students will delete the initial sound in a word and replace it with a new sound to create a new word by using manipulatives to represent sounds.
Materials	Picture cards with simple CVC words (e.g., cat, hat, bat, mat, rat, sat) Small objects (e.g., counters, buttons, or small blocks) to represent each sound in a word
Introduction (2 min)	<p>Teacher:</p> <p>"Today, we're going to use our hands and our voices to practice a new skill that helps us with reading and spelling. We'll listen closely to the sounds in words and learn how changing the beginning sound can create a new word!"</p> <p>Example Introduction:</p> <p>"Look at this picture of a cat. When I say 'cat,' I hear the sounds /c/ /a/ /t/. We're going to use these small counters to show each sound and learn how to switch the first sound to form a different word!"</p>

I Do (Teacher modeling) 3 minutes	<p>Model Sound Deletion and Replacement (Using Picture of a Cat):</p> <p>Teacher:</p> <p>“Here’s a picture of a ‘cat,’ I have three counters here, one for each sound: /c/ /a/ /t/.”</p> <p>Place three counters in a row to represent each phoneme.</p> <p>Teacher:</p> <p>“Now, I’m going to take away the first counter that stands for /c/ and replace it with a new one for /m/. Let’s say the new sounds: /m/ /a/ /t/. What word did we make?”</p> <p>(Pause for students: “mat”)</p> <p>Teacher Explanation:</p> <p>“I started with /c/ /a/ /t/ for ‘cat.’ Then, I removed /c/, replaced it with /m/, and made /m/ /a/ /t/—‘mat.’ We created a new word by changing just the first sound!”</p>
We Do (Guided Practice) 5 minutes	<p>Practice Together with a Picture of a Hat (Using Manipulatives):</p> <p>Teacher:</p> <p>“Now, let’s do one together! Here’s a picture of a ‘hat.’ I have three counters, one for each sound: /h/ /a/ /t/. Let’s place them out and say each sound.”</p>

Component	Description
We Do (Guided Practice) 5 minutes	<p>Practice Together with a Picture of a Hat (Using Manipulatives):</p> <p>Teacher:</p> <p>“Now, let’s do one together! Here’s a picture of a ‘hat.’ I have three counters, one for each sound: /h/ /a/ /t/. Let’s place them out and say each sound.”</p> <p>Students repeat: “/h/ /a/ /t/” as they touch each counter.</p> <p>Teacher:</p> <p>“Now, let’s change the /h/ sound to /b/. Take away the first counter and replace it with a new one for /b/.”</p> <p>Students replace the first counter and say the new sounds: “/b/ /a/ /t/.”</p> <p>Teacher:</p> <p>“Great job! What word did we make?”</p> <p>(Students respond: “bat.”)</p> <p>Practice Together with a Picture of a Hat (Using Manipulatives):</p> <p>Teacher:</p> <p>“Now, let’s do one together! Here’s a picture of a ‘hat.’ I have three counters, one for each sound: /h/ /a/ /t/. Let’s place them out and say each sound.”</p> <p>Students repeat: “/h/ /a/ /t/” as they touch each counter.</p> <p>Teacher:</p> <p>“Now, let’s change the /h/ sound to /b/. Take away the first counter and replace it with a new one for /b/.”</p> <p>Students replace the first counter and say the new sounds: “/b/ /a/ /t/.”</p>

You Do (Independent practice) 4 minutes	<p>Teacher: "Great job! What word did we make?" (Students respond: "bat.") Additional Example With "Rat": Teacher: "Let's try another picture. Here's 'rat.' We have three counters for /r/ /a/ /t/. Now, change the /r/ to /s/. Replace the first counter, then say the new sounds." Students say: "/s/ /a/ /t/" ("sat"). Check for Understanding: Teacher: "Which sound did we remove? Which new sound did we add? Excellent! Changing just the first sound made a brand-new word." Teacher: "Now it's your turn! I'll give each pair a picture. Use your counters to show the sounds in the word, then switch the first sound for a new one to create a different word."</p>
Component	Description
You Do (Independent practice) 4 minutes	<p>Teacher: "Now it's your turn! I'll give each pair a picture. Use your counters to show the sounds in the word, then switch the first sound for a new one to create a different word." Example words: "cat" → change /c/ to /b/ = "bat" "sat" → change /s/ to /m/ = "mat" Students work together, saying each sound as they place or remove counters. Teacher Support: Walk around to monitor and assist. Ask questions like, "Which sound are you removing? What new sound are you adding?"</p>
Closing (1 minute)	<p>Review and Celebrate: Teacher: "Let's share one or two words you created with your partner. Who would like to share their new word?" Encourage Reflection: Teacher: "You did an amazing job using counters to change the first sound in words. This skill helps you become better readers and spellers!"</p>

The third lesson output meets the instructional criteria of alignment with the TEKS and lesson plan objective, appropriate GRR model use, and implementation of STR-aligned practices. It did not require any immediate revisions, and a detailed evaluation is provided in the analysis section.

Insights Gained from the Process

This section analyzes ChatGPT Plus-generated lesson plans to highlight the strengths and weaknesses in aligning with learning objectives, applying the GRR model, and supporting STR instructional practices. This section is organized into three parts: the initial attempt, evaluating and improving lesson quality with targeted revisions, and implications of using GenAI to create PA lesson plans.

Initial Attempt

One key component in lesson planning is clearly defining the learning objectives for students and directly teaching (Antari, 2021; Fadoli, 2022; Marzano, 2006). The initial lesson states the lesson objective, “Students will be able to delete the initial sound of a word and insert a new sound to form a new word,” which aligns with the goal of the lesson and uses the lesson objective language consistent with Marzano’s (2006) objective stem, but the exact learning standard was not used in the initial prompt to ensure the objective was aligned to the nouns and verbs of the TEKS (Marzano & Haystead, 2008). The instructional activities and formative checkpoints in the guided and independent sections of the GRR model lesson plan assess students’ understanding of the lesson objective.

The teacher begins the GRR lesson with a five-minute introduction and a five-to-ten-minute teacher model to explain and provide an explicit demonstration of how to change the beginning sound of a word to create a whole new word to support students in learning how to substitute the initial sound of a word to create new words. The teacher models that sound substitution orally with a simple CVC (consonant, vowel, consonant) word cat to model removing the /c/ speed auditory and replacing it with the /h/ sound to create a new word. The teacher writes cat and hat on the board to show the new word, which aligns with using letters to support children’s reading proficiency (National Reading Panel, 2000). PA requires students to work at the auditory level, but research shows that students benefit from practicing with letters (Boyer & Ehri, 2011; Piasta & Wagner, 2010). The first prompt did not set the boundaries of whether to treat PA as only an auditory task or to integrate letters, the inclusion of writing the words on the board could be used, but a teacher will need to decide if they want to include the STR instructional practice of orthographic mapping to help students connect phonemes and graphemes or if they would like the lesson to be auditory only.

The lesson provides three new words for students to complete in guided practice, and the prompt “What’s the new word?” to check for understanding and ask students to explain how they arrived at the answer. The lesson plan targets one skill of manipulating the initial sound of a word but could use further refinement to engage students and encourage active participation to foster deeper understanding and retention of literacy skills in guided and independent practice. The initial attempt only requires listening and repeating sounds as a whole class and lacks monitoring of all students during the guided practice. Incorporating more interactive and collaborative elements during this phase of the GRR model would allow students to engage in collaborative learning to support a deeper understanding of the content (Fisher & Frey, 2011). Additionally, the guided practice should enable the teacher to provide immediate feedback during the guided practice to help correct student misunderstandings and refine their understanding (Fisher & Frey, 2011), which is a missed opportunity in the initial attempt since all students are answering at the same time. Moving into the independent practice section, while

the students have discussions during the independent practice, the lesson plan needs to provide students with clear instructions on creating words during independent practice. The teacher could model how to change the initial sound, ask the partner to give feedback, and then ask students to repeat the instructions before the students begin.

The initial lesson plan uses the GRR model and could teach first-grade students to delete the initial sound to create a new word using STR instructional practices. While prompt one created an output using the GRR model, it lacks adequate student engagement and support during independent practice. These observations, along with using the exact verbiage of the first-grade TEKS, informed the changes in prompt two.

Improving Lesson Quality with Targeted Revisions

Prompt Two

The second prompt was designed to incorporate the language used in the first-grade TEKS (2) *Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking--beginning reading and writing: the student develops word structure knowledge through phonological awareness, print concepts, phonics, and morphology to communicate, decode, and spell. (A.vi) The student is expected to manipulate phonemes within base words.* The prompt asked for a 15-minute scripted multi-sensory lesson that uses the I do, we do, and you do format from the GRR model to ensure the lesson was developmentally appropriate and engaging for students and provide guidance to the teacher on how to present the lesson.

The lesson objective, “Students will learn to delete the initial sound in a word and replace it with a new sound to create a new word, using multi-sensory strategies to enhance PA,” in attempt two matches the learning standard of students deleting the initial sound in a word to create new words using Marzano’s (2006) lesson objective stem. By focusing on teaching students to manipulate the initial sound, the objective aligns with the nouns of the standard: phonemes, base words, sound manipulation, and verb manipulation.

Furthermore, the lesson met the requirement of using the GRR model in a 15-minute lesson to explicitly teach deleting the initial sound of a word and inserting a new sound to form a new word. The second prompt provides the teacher with the script of how to instruct and think aloud to support manipulating phonemes within base words. The lesson plan includes instructional activities during all phases of the GRR model lesson plan by including multi-sensory tools to represent and manipulate the sounds, along with formative check-ins during the guided and independent practice to ensure students understand the objective.

Think-alouds support learners in understanding the thinking process (Pratt & Hodges, 2022), and the script provided by ChatGPT Plus provides the teacher with language to use to think-aloud to support students in becoming more proficient. The introduction of multi-sensory learning in the second lesson plan output supports hands-on learning and engagement and supports students using letters with phonemes to develop reading skills (Farrell & White, 2011). However, during the teacher modeling, the teacher is instructed to model writing the first sound in a sand tray, but then two new multi-sensory methods, playdough and buttons, were used in the guided practice. The teacher model section of the gradual release model should provide an explicit and intentional model of how to perform the task so students do not need to infer how to

complete the skill in independent practice (Fisher & Frey, 2011), and changing multi-sensory methods could impact students' success in applying the skill of manipulating phonemes.

The second attempt improved the guided practice from attempt one by using a STR instructional practice to engage students and encourage active participation by having the students use concrete manipulatives to show how one sound is deleted and a new sound is added (Yopp & Yopp, 2000). This also allows the teacher to provide affirmative and constructive feedback while observing each student's use of manipulatives to delete and insert a new sound instead of listening to the whole class's answers in the initial lesson plan.

The independent practice instructions were more explicit on the steps the students would take when taking turns to make new words, allowing the students to hear and support each other. The closing asks students to share the words created and then reminds them of what they learned in the lesson as another attempt to check on student learning. While prompt two improved the instructional practices in the GRR model, a third prompt was created to ask ChatGPT Plus only to use manipulatives throughout the lesson to substitute sounds.

Prompt Three

Prompt three asked ChatGPT Plus to "Please revise this lesson only to use manipulatives in the teacher model, guided practice, and independent practice to delete the initial sound of a word and insert a new sound." The lesson objective is written in Marzano's (2007) lesson objective stem and is aligned with the standard by teaching students how to delete and replace initial sounds in words, which aligns with the nouns, manipulation, and phonemes, and the verb, manipulation.

The resulting lesson streamlines the GRR model of instruction to slowly shift from the teacher modeling to the application by the student (Frey & Fisher, 2011). The teacher model now provides an explicit and intentional model of how to change the initial sound using counters to form a new word, which aligns with the student STR instructional practices used during the guided and independent practices, so the students no longer need to infer how to complete the skill in independent practice (Fisher & Frey, 2011). The scripted lesson uses the STR instructional practices of concrete manipulatives throughout the lesson plan to actively engage students using multi-sensory instruction to support student independence in learning to manipulate the first sound in a word to form a new word. The teacher checks for understanding in the guided practice by asking students to identify the sound being removed and add the new sound. The independent practice instructions are explicit on the steps and expectations of the partners to practice manipulating phonemes in base words. In addition, the teacher monitors students' progress during independent practice and is instructed to provide feedback and support. The closing provides another checking in on student learning when the teacher asks students to share the words created and then follows up with a reminder of what they learned to do and how it will support them with being readers and writers.

ChatGPT Plus's Potential and Limitations

To address the research questions guiding this study, the following section will present an analysis of ChatGPT Plus's potential and limitations of PA lesson plans.

Research Question 1: How effectively can ChatGPT Plus create lesson plans aligned with learning objectives?

The ChatGPT Plus demonstrated high effectiveness in aligning lesson objectives with the standards and instructional activities without prompting exact phrasing or support for formulating an educational objective in all three outputs. The nouns in the standard identified what the students were expected to know, and the verb matched what the students were expected to do to align with Marzano's (2006) Taxonomy of Educational Objective framework to design educational objectives. The instructional activities and formative assignments were specific and designed to help monitor student progress.

Research Question 2: How effectively can ChatGPT Plus create PA lesson plans that align with the GRR model?

ChatGPT Plus can effectively use Pearson and Gallagher's (1983) GRR model to create the "I do," "We do," and "You do" when it is prompted. All three attempts begin with the "I do," where the teacher establishes the purpose for learning and models sound deletion and replacement. The "We do" follows the "I do," in which all attempts required the students to practice deleting the initial sound and replacing it with support from the teacher. The first output did not provide the teacher with ways to provide affirmative or constructive feedback, but attempts two and three provided the teacher with a script to provide only affirmative feedback. Attempts two and three may have added affirmative feedback due to the revisions to prompt two, asking for a scripted lesson. None of the lessons provided feedback on errors and misconceptions from the teacher. In the "You do" stage, students work to apply what they have learned by working with partners to view a picture, and then they practice switching the first sound for a new one to create a different word. When prompting ChatGPT Plus, a teacher would need to include the expectations of a script that includes not only affirmative feedback but also corrective feedback.

Research Question 3: How effectively can ChatGPT Plus create lesson plans that use STR instructional practices?

The analysis found that ChatGPT Plus could partially generate STR-aligned practices for phonemic instruction. PA is often defined as hearing, recognizing, and manipulating phonemes in spoken language (Flett & Conderman, 2002; Yopp & Yopp, 2000). Songs, rhymes, wordplay, and riddles are researched instructional practices used to support understanding of the sound structure of language (Yopp & Yopp, 2000), and often, these activities do not explicitly state the use of letters, which can lead to strictly auditory instruction. The National Reading Panel (2000) noted "that when PA is taught with letters, it qualifies as phonics instruction," indicating that PA and phonics instruction intersect. The National Reading Panel (2000) found that PA instruction significantly impacted reading acquisition when students used letters to manipulate phonemes. ChatGPT Plus suggested using letters in lesson plans one and two but not in lesson three. When using the ChatGPT Plus PA lesson plan outputs, teachers must make instructional decisions based on student's knowledge of the PA continuum to select which STR instructional practices

to include, and if they should include letters instead of concrete manipulatives or create auditory-only lessons.

Teachers should use structured multi-sensory strategies to support students with learning to understand phonemes, graphemes, and letter knowledge throughout the GRR lesson plan. “Simultaneous multi-sensory instruction purposefully integrates visual, auditory, and kinesthetic-motor (for speech and writing) pathways to support memory and learning of both oral and written language skills” (Farrel & White, 2011, p. 48). Kilpatrick (2016) emphasizes incorporating phonics into PA lessons to reinforce the oral activities students engage in visually. Teachers can also use manipulatives to support phoneme deletion and substitution as a way of representing sounds so students connect abstract concepts with representations (Kilpatrick, 2016; National Reading Panel, 2000). When using GenAI to create PA lesson plans, teachers will need to prompt, review, and revise outputs to purposely incorporate selected activities to support memory and language skills (Farrel & White, 2011) due to ChatGPT Plus using multiple types of activities in one lesson or only creating auditory lessons.

Prompting and Evaluating

AI prompting represents a new form of digital skill (Korzynski et al., 2023), and non-experts often struggle to understand and create effective prompts when using GenAI (Zamfirescu-Pereira et al., 2023). While prompting GenAI seems easy and effortless, effective prompting directly impacts the outputs (Zamfirescu-Pereira et al., 2023). Creating PA lesson plans requires specifics of lesson plan design and instructional-based practices to be used in the prompting. The more detail and specifics used in the prompt led to better alignment between the GRR model and STR instructional activities. The teacher’s knowledge of PA, lesson planning, GenAI prompt design, and instructional activities influences the effectiveness of the ChatGPT Plus outputs. The analysis of the three outputs in this study showcases the need for teachers to analyze and evaluate lesson plans generated by GenAI. When using GenAI to create PA lesson plans, teachers must examine the outputs to align with the educational learning objective and standard, the GRR model to support student independence, and support STR instructional practice.

Continued Exploration and Research

Further research could test the lesson plans created by GenAI in real classrooms and gather data on their effectiveness and teacher perceptions of the lessons to meet the learning objectives. Additionally, research could be done to study different GenAI generators, specifically ones designed for education, to understand the potential and limitations of lesson plan design to align with the GRR model and STR principles. Furthermore, a study could be conducted by interviewing teachers from various subjects and grade levels to understand their experiences leveraging GenAI for lesson planning. Another approach could be to conduct studies on GenAI’s ability to create other forms of “simple view of reading” word recognition lesson plans to support teachers with teaching accurate letter names and sounds, phonological awareness, phonics and decoding, automatic word recognition, and reading irregular words (Gough & Tunmer, 1986).

Conclusion

The application of GenAI in lesson planning has the potential to support teachers in creating and improving the lesson-planning process and time constraints. The lesson plans generated by ChatGPT Plus demonstrated potential in designing PA lesson plans that align with standards that deliberately target the student learning outcomes, helping the teacher align the lesson plan to provide opportunities for the students to practice and demonstrate their learning. Another major strength was designing lesson plans that use the GRR instructional model based on the specific criteria created in the prompt. The lesson plan outputs successfully created the teacher model and structured the lesson to guide the students with formative check-ins before completing the work in partners. Furthermore, with specific prompting of explicit, systematic, and engaging instructional STR practices, ChatGPT Plus was able to create a PA lesson plan.

One of the primary limitations of teachers using GenAI is teachers having the knowledge to create effective and detailed prompts (Zamfirescu-Pereira et al., 2023) that create comprehensive lessons that meet the needs of their students. Additionally, teachers lack confidence in using their knowledge to evaluate and review the outputs with instructional practices (Kaplan-Rakowski et al., 2023). To address this, the teacher should provide follow-up prompts after reviewing the lesson plan to make adjustments to the specifics needed to improve the output created by GenAI (Karpouzis et al., 2024). This evaluation and revision process is especially important because while ChatGPT Plus was able to include STR instructional practices, the teacher will need to provide specific guidance in their prompts to ensure the output effectively uses instructional practices.

Using GenAI to create lesson plans could help teachers plan explicit, systematic lessons if the teacher provides detailed prompting and examines the outputs to adjust and refine the lesson plan to meet students' expectations and individual needs. Teachers should maintain a role in evaluating and ensuring that GenAI complies with their students' educational needs.

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