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A Case Study: Using Project-Based Learning with AI-Enhanced Learning Applications for Lesson Planning

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Abstract: *While language learning via AI-Enhanced learning applications has a decades-long well-documented history, the use of AI apps in teacher-training remains underdeveloped (Najmiddinova, 2025) despite a recent deluge of research in this specific area. This author used a Project-Based Learning (PjBL) approach to having reading methodology students scale a receptive skills lesson plan through AI applications. The scaling process involved receptive framework input, assistance from AI-Enhanced learning applications to produce a PDP reading lesson plan, and reflective questioning about the experience. The results of this case study showed that trainees responded positively to the overall input and output process used for lesson plan development. Implications on the use of AI-enhanced learning apps for teacher-trainers and teacher-trainees for lesson planning are also discussed.*

1. Introduction

Project-Based Learning (PjBL), according to Thomas (2000), is model teaching application "that organizes learning around projects (complex tasks)…that involve…and give students the opportunity to work relatively autonomously" with such work resulting in "realistic products or presentations" (p. 1). PjBL involves teacher facilitation, some form of collaboration with peers (Gomez-Pablos, 2020), as well as reflection on the work done. PjBL is an application that falls under social-constructivism theory (Cobb, 2024), primarily derived from work by Vgotsky (Wertsch, 1985) as PjBL has students learn through discourse and social interaction (John, 2016), with the aim of advancing knowledge in such a community.

Although it may seem that autonomous learning in language education classrooms via AI technology is a recent phenomenon, in fact, AI applications have been progressing toward a more inclusive personalized approach over the past half-century. Georgieva (2025), among others (Wei, 2023; Eslit, 2024), notes that applications have "constantly improved through the decades to blended learning, and currently to virtual reality environments, chatbots, and other types of adaptive learning systems/software" (p. 90). Such advances can allow for 'personalized learning pathway development' (Tan, et al., 2025), or more personalization of task work, a point reiterated by Alvarez-Jaimes & Lane (2023), who comment that, "learning experiences (can be) tailored to individual students' needs, pace, and proficiency levels" (p. 5).

The increased use of AI apps would seem to outweigh evolving cautionary guideline concerns about AI's use (Costa, 2024) at present, for the benefits are many. For example, current AI apps allow for stronger personalization (for example: Duolingo, Babbel, Memrise), and fast, real-time translation (Google Translate, iTranslate, Naver Papago, Notta, etc.). Ertel (as cited in Eslit, 2024), reinforces this point, stating that AI's, "ability to personalize learning, foster engagement, and enhance accessibility is transforming traditional approaches to teaching and learning" (p. 2). This point dovetails with a suggestion from Grabe and Stoller (2002) that language teachers should rely less on "sweeping assertions from research," but, more so on their own language classrooms and students to inform "meaningful classroom-based research" (p62). This is precisely the reason why this author endeavored to perform this case study.

Because of such personalized tailoring and the recent Covid-19 pandemic, both the use and research on AI apps have become much more prevalent. Hussain, et al (2024), found that the pandemic "led to a

surge in online activities, resulting in a heightened demand for AI ChatGPT." During the tail-end of the pandemic – with its delayed school openings and fractured collaborative workplace socializing - Hockly (2023) cannily noted that we would likely "see more AI-driven technologies in teaching and learning in the post-pandemic ELT world." This has come to pass in a majority of language classrooms around the world for students, yet, although on the rise, the role of AI in enhancing the professional development of teachers has been roughly half of such research on the use of AI in language learning, assessment, and immersive technologies, among other areas over the last ten years (Tan, et al., 2024).

Nevertheless, AI apps may now be indispensable for teachers, students and workplace professionals going forward. AI-enhanced methodology, pedagogy, and tools are evolving quickly and teachers need to keep up with such advances (Abdullah and Mohamad Said (2025); Sohan & Orpa (2025); Vashishth, et al (2025); Velmurugan, et al (2025); Whitmore (2025)). This author has continually facilitated such an environment for his students and throughout his research career. Foraying into AI for this author has been a tedious but balanced effort in evaluating research needs and classroom practices.

This purpose of this paper therefore is to present the use of a project-based learning application combined with AI-Enhanced learning applications – primarily ChatGPT – for the development of students' own receptive skills lesson plan and to examine students' attitudes, beliefs, and perspectives on that process. This paper aims to contribute to the growing body of research on the use of AI-enhanced learning applications in teacher training programs and how students' attitudes, beliefs, and perceptions about AI apps may be used to promote teacher and student autonomy via practical application to the benefit of teacher-trainee learning contexts.

2. METHODOLOGY

2.1. Participants

The participants in this study were two teacher-trainees at a graduate school in education at a Seoul-based university. The class size was ten students; eight students performed textbook- adapted lesson plans, while the remaining two students created original lesson plans. Those two are focused on in this paper. The students' ages were roughly early-to-mid 30's. Teaching experience ranged from private teaching to public school teaching duties. One trainee was a native Korean male and one was a native Chinese female. The instructor was an experienced TESOL teacher trainer. Note that 'students', 'trainees' and 'teacher-trainees' are used synonymously in this paper.

2.1.1. Limitations & Challenges of the Study

Several challenges made for an interesting classroom research process. First, the 90-minute course meant that both input modeling tasks and output planning tasks occasionally needed more than a one-class period to be completed. This was somewhat predictable at course onset, so flexibility for all task work with time management was imperious. Second, the trainees had a mixed-proficiency in English generally ranging from A1-B1 in the Common European Framework (CEF). This extended the communication time between the instructor and trainees for task input and output tasks. An ideal CEF level would be B1 or higher. Tomlinson's overview for teachers of "how to differentiate instruction for mixed-ability classrooms" (Smith, 2019, p. 117) is informative and can help teachers better understand how to approach such classroom challenges. Tomlinson states (as cited in Smith, 2019) that teachers can:

> differentiate content (what students should know, understand, and be able to do), process (lessons, activities, or tasks designed to help students come to make sense of or own the content), and/or product (how students will demonstrate and extend on what they have come to know, understand, or be able to do) (p. 117).

Such processes should aid in helping clarify all aspects ('the what, why, and how') of classroom differentiation. This made sense to this author as modifications would be necessary throughout classroom processes.

Third, the trainees had a clear unfamiliarity with the PDP receptive skills framework. Awareness was raised through repeated input practice with the PDP (Pre, During, Post) framework. To bolster students' understanding of the PDP framework and to minimize English deficiencies, a major goal was to focus on reading strategies training with particular emphasis on the PDP receptive skills framework for reading. Korean graduate students generally have been traditionally educated in a more top-down Present, Practice, Produce (PPP) framework; hence, there is, in this author's experience, usually a clear

lack of experience with *teaching* in a PDP framework by other-than-English-education-major students. So, this author had a concern that the PDP framework and accompanying tasks might be challenging for the group. Would students respond well to the PDP lesson planning process?

Fourth, the class size was low with only ten total students, with two students contributing to this case study. For that reason, there was not a pre-test or post-test survey completed for this research. Fifth, due to the short class time, practically no training in AI input processing was done. One reason for this was that the students professed experience with ChatGPT. This lack of training was still a concern, as AI models may make students feel overly-confident about the results generated, reports Costa, et al, (2024), but this author surmised that students' prior experience with ChatGPT would be adequate to produce the desired results.

Last, there are no universal ethical or professional AI-use guidelines in use for teachers and learners, but the limited scope of this case study found this to be an area of disinterest; parameters may end up being defined incrementally as research efforts progress. These trainees were all adult students, who will be teachers in their respective majors; therefore, it made sense to this author to pursue research using AI-Enhanced learning applications with such trainees, who will be working with the next generation of learners.

2.1.2. Procedure

Over a 16-week period, students in this reading methodology course competed several textbook lessons. These PDP reading lessons were part of the 'input' segment of the course. The book used was *Q: Skills for Success, Reading and Writing, Intro*, 3rd edition, by Oxford University Press. Lessons chosen for the age group and subject majors of the class were the most thematically relevant: social psychology (personalities), cultural studies (special foods), sociology (hobbies), and architecture (favorite building). The PDP format presented in the course text was repeated four times over these four units in the first-half of the course, allowing for ample exposure to the PDP framework.

A typical textbook task layout is illustrated by focusing on one unit, Unit 5. The unit's theme was Architecture, and Reading 2, 'A Green House', was the model reading text with its accompanying activities. Reading 2 featured an eco-friendly house – one designed to be a mostly off-grid structure complete with solar panels and a garden. In this unit the following activities were presented over three stages: 1) a lead-in stage (vocabulary, a preview of photos and captions, and a 'quick write' based on photo scanning); 2) a during stage (reading the text) with: a main idea question, an events-sequencing task, a cloze task, a short writing task, and a graphic organizer task. (Note that readers may reengage with the text for during-task completion); 3) a brief post stage (discussion) task was presented (with comprehension and personalization questions). A feedback task was done verbally in the post stage by the instructor. Generally, students were asked which tasks were easy or challenging for them and which strategies or skills they still needed to practice. In sum, the thinking here was that students would basically create a text-to-text ARM based on their favorite house style; students were excited about this topic.

While the first-half of the course focused on the four textbook lessons, the second-half of the course focused on the PDP sample lessons. Also covered were a PDP development modeling task, and the development of individual student PDP lesson plans – their 'projects' – using an Activity Route Map framework (Scrivener, 2009).

The process for creating an ARM lesson plan using AI-Enhanced learning applications was straightforward. Of the four textbook units, Unit 5 (Architecture, A Green House) was the last unit studied. After completing Unit 5, students chose the topic 'a favorite house/space' for their ARM lesson planning. In order to put students at ease about the ARM process, two other input tasks were completed beforehand. First, two sample reading lessons* (*adapted) from *Simple Reading Activities* (SRA) by Jill Hadfield and Charles Hadfield were taught; after teaching, the ARM framework component boxes were analyzed, discussed, and explained. These two SRA units are 'mini-pdp' lessons as published, meaning that they feature limited task work for the pre- and during stages of the PDP framework. The goal was to alleviate any misconceptions or confusion about the ARM framework components. These two lessons were adapted to make them fully PDP (adding detailed and/or comprehensive tasks as needed to the Pre or during stages). Basically, the CBI *Q Skills* textbook lesson input mirrored the two *Simple Reading Activities* lessons, but, secondly, one more input element was added to boost ARM framework familiarity – this author modeled the ARM lesson planning process with the entire class with

help from ChatGPT. (See Appendix A for this PDP model). This was a guided discovery process of sorts between the instructor and students. The basic steps for this ARM modeling process are briefly presented below in Table 1.

Table 1. *ARM modeling process steps for PDP model lesson*

Basic ARM modeling process steps
1) Find a house you like (a green house, a smart house, old house, any house or building);
2) Make a paragraph about it using ChatGPT. Add the student's ability (ex: intermediate)
3) Get a picture of the house or building. 4) Make a main idea question (with an answer).
5) Make three True or False questions or three Multiple Choice questions (with answers).
6) Make three deeper details questions: Wh- questions (with answers).
7) Make a one-sentence summary of around 20 words for the paragraph/text.
8) Complete the Lead-in tasks, insert Main stage tasks, and then add the Close stage task steps.

Steps follow below with follow-on explanations and/or examples, with ChatGPT responses indented. The classroom ARM modeling tasks included using ChatGPT for the lead-in and main stage work. Lead-in tasks were chosen from a task list, and closing-stage tasks followed standard ARM steps for that stage. Here are the detailed steps on the main stage task work.

For step one (choose a house), this author chose Frank Lloyd Wright's *Falling water* house. For step two, the author used the following prompt in ChatGPT to produce a reading model text: *Produce a 75-word summary of Frank Lloyd Wright's Falling water residence. Use intermediate-level English for ESL students in a foreign context. Include a topic sentence, three major details with supporting examples, and a concluding sentence.* ChatGPT's response was:

> Falling water is a famous house designed by American architect Frank Lloyd Wright. It was built over a waterfall in Pennsylvania, showing his love for nature. The house uses natural materials like stone and wood to match the forest around it. Its strong, flat shapes stretch out over the water, making it look modern and unique. Falling water is a great example of harmony between buildings and nature. Today, many people visit it as a museum.

For step three (choose a picture), a simple google search showed a variety of photos of the residence, and one was chosen. The step four (main idea) prompt given to ChatGPT was: *Make a main idea question about this (Falling Water) text,* and ChatGPT's response was:

> "How does Falling water exemplify Frank Lloyd Wright's philosophy of organic architecture?",

This response may be a bit strong, lexically. A more common main idea question might be, "What is the main idea of the reading passage?", or, "What is the reading passage mainly about?" A main idea task should be easy, so if students have an unfamiliarity with 'organic architecture' then a second question could be added to aid learners in successfully completing the task.

For step five (T/F and/or MC questions), the prompt was: "*Make three True or False questions about this paragraph (with answers)*", with this ChatGPT result:

1) Falling water was built over a river in California. (False);

2) Frank Lloyd Wright used natural materials to help the house blend with the forest. (True);

3) Falling water is now open for people to visit as a museum. (True).

Here is ChatGPT's response for the Multiple-Choice questions:

1.) Where is Falling water located? (**Answer**: C)

A. New York B. California
C. Pennsylvania D. Texas (Answer: C)

2) What materials were used to build Falling water? (**Answer**: B)

A. Glass and steel

B. Stone and wood

C. Brick and Concrete

D. Plastic and metal

3) Why is Falling water considered special? (**Answer**: C)

A) It was the tallest building of its time

B. It was made without any windows

C. It shows harmony between nature and architecture

D. It was built under the ground

For step six (make Wh- questions), the prompt was: "*Make three specific Wh- details questions about the text."* ChatGPT's response:

1) Where was Falling water built? (**Answer**: Over a waterfall in Pennsylvania)

2) What materials were used to make the house match the forest? (**Answer**: Stone and wood)

3) What do the flat shapes of the house do? (**Answer**: They stretch out over the water and make the house look modern and unique)

For step seven (make a summary), the prompt was: "*Make a one-sentence summary of around 20 words for the paragraph/text.*" ChatGPT's response was:

> Falling water is a famous house built over a waterfall, showing harmony with nature through its design and natural materials.

Step eight was to complete both the lead-in tasks and close-stage tasks. ARM lead-in tasks in order, were: 1) a prediction (using a visual of the house); 2) lexis (four to six words to match with definitions). The lead-in predictive task was straightforward. ChatGPT was asked: "*Make a predictive question for this reading passage*," and gave the response: "What do you think you would see or feel if you visited Falling water in person?" The second lead-in task was for lexis. The question was: "*Make a vocabulary matching task – word and definition – for this reading passage. Use six words."* Here is ChatGPT's reponse:

Match the words to their correct definitions:

Words:

A. Architect

B. Waterfall

C. Materials

D. Forest

E. Harmony

F. Museum

Definitions:

1. A person who designs buildings
2. A place where people go to see important or interesting objects
3. A group of trees growing close together
4. A mix of things working well together
5. Things used to build something, like wood or stone
6. Water falling from a high place, like a cliff

Both of these tasks fit the framework, and were added to the model ARM lead-in stage. The ARM close-stage usually features three steps: 1) A closing of the summary task; 2) a feedback task (asking questions about the lead-in and during stage tasks); and, 3) a post- activity (in a skill other than reading). Because these steps are standard for all skills in an ARM framework, ChatGPT was not used to generate close-stage task work; it was instead done by the instructor. Thus, the PDP ARM lesson plan (Appendix A) was completed for and with the students.

After PDP modeling completion, an ARM workshop was held for students to begin drafting their own PDP ARM. Their PDP ARM process mirrored the modeled ARM process, but in two groups. Generally,

students choose their own type of favorite dwelling (apartment, condo, house, etc.) and by following the steps of the ARM framework, began to fill in an ARM template (see Appendix B), using generative AI apps (like ChatGPT). The main stage boxes required the most preparation and translation work using an AI translator. Students completed the main PDP stages sequentially. The overall steps in this project-based learning PDP lesson plan production were:

1) Completion of four textbook PDP lessons from *Q: Skills for Success Intro*

2) Presentation of two sample PDP reading lessons from *Simple Reading Activities*

3) Analysis of two sample PDP reading lessons from *Simple Reading Activities*

4) PDP ARM lesson plan building using ChatGPT with student participation

5) ARM Workshop for students' planning/completion of individual PDP ARM lesson plans

6) Submission of PDP ARMs and feedback response from instructor

7) Student completion of reflective questions about the project

Steps one, two, and four were the input process steps; basically, these were in response to the questions: "What are the steps of a reading lesson? What is the PDP framework? What is an ARM framework? How do I build a build PDP reading lesson using this ARM framework?; step five was the output process (the 'project') step. After receiving feedback on their respective ARMs, students prepared and taught their lesson to a small group, concluding the ARM processes. Finally, students completed reflective questions which highlighted these processes in three different areas: 1) Recalling and reflecting on lesson planning experiences; 2) Beliefs about effective reading instruction; and, 3) Feelings and beliefs about AI integration. Due to the low-English ability of participants, a questionnaire was deemed to a more effective feedback tool. Below are the question sets for each area.

Table 2. *Reflective Questions for Teacher Trainees*

Questions
Part 1 – Recalling and reflecting on lesson planning experiences
1. How did your confidence in lesson planning change after completing the four textbook-based reading lessons?
2. What aspects of the textbook lessons felt most comfortable or familiar for you as a future teacher?
3. How did you feel when shifting from the textbook-based lessons to the Activity Route Map framework?
4. In your opinion, what are the strengths and weaknesses of the Activity Route Map approach for beginner-level learners?
5. Which lesson planning stage (Pre, During, or Post) do you personally find the most challenging, and why?
Part 2 – Beliefs about effective reading instruction
6. How has working with different lessons and frameworks (textbook, Activity Route Map, PDP) influenced your beliefs about effective reading instruction?
7. Which framework do you believe provides the most support for student engagement, and why?
8. What is your belief about eh role fo the Pre-stage in helping students succeed in reading tasks?
9. How important do you think it is to include both comprehension-focused and production-focused tasks in reading lessons?
10. How do you see the relationship between structured lesson frameworks and teacher creativity?
Part 3 – Feelings and Beliefs about AI integration
11. What were your first impressions when you saw the AI-generated tasks for the PDP lesson?
12. How did using AI-generated materials make you feel about your own role as a lesson designer?
13. Did the AI-generated tasks meet your expectations for quality and appropriateness? How did that affect your trust in the tool?
14. How do you feel about the idea of relying on AI for certain stages of lesson planning in the future?
15. What feelings or concerns, if any, do you have about students knowing that parts of a lesson were created by AI?

3. RESULTS

For the Part 1 questions, students were to recall and reflect on their lesson planning experiences related to the textbook and ARM lesson input segments of the course. They responded well to the textbook and ARM lessons as evidenced by reflective question answers. One challenge of note for these reflective questions is that translation tools were used due to the students' low proficiency in English. Fortunately, as Alvarez-Jaimes and Lane (2023) state, "translation tools can assist learners in overcoming language barriers" (np), and these were used so that course instructions and reflective tasks were made clear, which enabled task comprehension and completion.

For question one, "How did your confidence in lesson planning change after completing the four textbook-based reading lessons," both students responded positively. Student 1 stated, "At first, even [though] the textbook lesson felt a bit overwhelming, but now, (sic I feel a confident (sic) that I can at least build a solid structure for a lesson." Student 2 proclaimed that, "…my confidence in lesson planning has significantly improved. Specifically, it helped me develop my writing skills, giving me more flexibility in organizing lesson materials and designing activities." Both students may have responded this way due to more background knowledge begin activated in these reading lessons.

For question two, "What aspects of the textbook lessons felt most comfortable or familiar for you as a future teacher?", Student 1 commented on the supportive aspect of the framework: "The textbook had the materials and activity sequence already set, so working within that structure felt reassuring." Also, Student 1 could "see how well the students were understanding the text in real time," a subjective pronouncement. Student 2's answer was off-topic and irrelevant to the study, but Student 1's answer is not surprising in that the textbook lessons were of a similar format and repeated several times. Familiarity with materials can boost student comfort and lessen anxiety in the learning process.

Although the third question, "How did you feel when shifting from the textbook-based lessons to the Activity Route Map framework?", was a shift away from perceived comfort, students responded to the ARM framework newness. Student 1 stated,

I could bring my own ideas (share ideas), and that made it really fun. In the ARM lesson, I worked with the topic of Passive House. During the lexis activity, I made sure to explain in detail some of the vocabulary that might be unfamiliar to the students. This helped them feel more confident before moving into the reading stage. (S1)

Student 1's approach seems to be a form of teacher-student interaction with the teacher guiding or 'mediating' the lesson, a variation on Vgotsky's theoretical work (Blair, et al., 2007).

Whereas, Student 2 commented,

> When shifting…to the ARM framework, I felt like it was as exciting as playing a game. This approach allowed students to engage more actively, making the learning process feel dynamic rather than repetitive. Overall, it created a more lively and interactive (sic) classroom atmosphere. (S2)

The ARM lessons from Simple Reading Activities likely lowered students' affective filter since these lessons were aimed at a high-beginner ESL student, creating a more comfortable learning process.

Question four, "In your opinion, what are the strengths and weaknesses of the ARM approach for beginner-level readers?" brought strong opinions. Student 1 said that the framework "gives students lots of opportunities to move around and actively participate" in reading tasks, a seeming emphasis on peer sharing. Student 2's comments mirrored this sentiment in more detail. Student 2 responded positively, but with a caution:

> One of the main strengths of the ARM approach for beginner-level learners is that it makes the learning process more engaging and less intimidating. The step-by-step structure helps learners clearly see their progress, which can boost motivation and confidence. However, a possible weakness is that some beginners might focus too much on "completing the route" rather than fully understanding the content. (S2)

The final question for Part 1 was question five, which asked, "Which lesson planning stage (Pre, During, or Post) do you personally find the most challenging, and why?" Both students responded that the pre-stage (lead-in tasks) were the most challenging, but for different reasons. Student 1 offered that, "The pre-stage is challenging for me. You have to grab the students' attention and connect [it] to their

background knowledge", which seems to be an acknowledgement that doing so was not as successfully as hoped. Student 2 said,

I find the Pre stage of lesson planning the most challenging. This is because, at the beginning, I often felt uncertain about what exactly needed to be prepared and how to organize the materials effectively; …it was difficult to decide which activities and resources would best fit the lesson goals. (S2)

Both responses may reflect that fact that these students had limited reading methodology input prior to the course. Although many textbook PDP lessons and several ARM framework lessons were completed in the class, planning certain parts of the PDP lesson were more difficult than others for these students. It may be summative to say that the planning segment of the lessons was more 'functional' (practical, pragmatic) than 'perceptual' (more creative or enlivening) at this point for both students, processes examined by Uhrmacher, et al (2013).

Another set of five questions were given for Part 2, which elicited students' beliefs about effective reading instruction. The focus of the textbook and ARM lessons was to build or expand on students' foundational skills, to promote comprehension of reading materials, boost reading strategy awareness, and to provide a foundation for later lesson planning. For question six, "How has working with different lessons and frameworks (textbook, Activity Route Map, PDP) influenced your beliefs about effective reading instruction?" showed that students preferred a flexible approach to applying tasks and frameworks to their teaching context. Student 1 remarked, "Working with different frameworks gave me the conviction that it's more effective to combine approaches depending on the students' level and situation, rather than sticking to just one method." This feels a bit broad. It may be that the student is implying that the activities used were of structural importance within the PDP framework, or that Student 1 just favored task variety, as Student 2 noted, "

Working with the different [lessons and] frameworks such as the textbook, Activity Route Map, and PDP has strengthened my belief that effective reading instruction requires a variety of approaches. Each framework offers unique benefits – textbooks provide structured content, the ARM adds an interactive and engaging element, and PDP helps build comprehension through a clear sequence or pre-, during-, and post-reading activities.

This response may imply that both skills work and higher-level cognitive strategies were of value to both students due to varied learning objectives over these multiple lessons, as Rupley, et al, (2009) note, "the objective students are to learn often requires differing degrees of directness and structure" (p. 127).

Question seven asked, "Which framework do you believe provides the most support for student engagement, and why?" Both students agreed that the ARM framework provided the most support, and Student 2 reasoned, "This is because its game-like structure captures student's interest and curiosity, encouraging them to actively participate in each step of the lesson." The variety of reading tasks can be engaging for students at any age. An additional point of agreement was on the importance of the ARM pre-stage.

Question eight inquired, "What is your belief about the role of the Pre-stage in helping students succeed in reading tasks?" Student 1 metaphorically described the pre-stage as "the key that unlocks the lesson. If students think, "This looks fun" at that point, they tend to be much more active in the later activities." Student 2 concurred, believing that "This stage prepares learners by activating background knowledge, introducing key vocabulary, and setting a clear purpose for reading. When students understand the context and expectations before they start, they can approach the text with greater confidence and focus." This author agrees that setting students up for success is an important part of lesson planning and cohesion as this is based on the author's experience. It may be that these trainees reacted positively to the textbook lesson and ARM lesson tasks, and therefore are associating a 'personal practical knowledge' – knowledge grown out of circumstances and actions "that have affective meaning for the individual" – to the Pre-stage activities (Pearson & Hoffman, 2011, p. 12).

Question nine was, "How important do you think it is to include both comprehension-focused and production-focused tasks in reading lessons?" Student 1 preferred a balance between these two types of tasks because

> (the balance) supports different aspects of students' learning. Comprehension tasks help students understand the text and build confidence with the content, while production task tasks give them a change to use what they've learning in a more active and creative way. This balance prevents students from feeling stressed or overwhelmed by one type of task. (S1)

Student 2 agreed with Student 1, adding that the balance "not only reinforces learning but also makes the reading lesson more interactive and meaningful." It is interesting to see similar opinions on the balancing of tasks. The final question for Part 2 was Question 10, which asked, "How do you see the relationship between structured lesson frameworks and teacher creativity." This author was curious to see what these two students thought about this question since their background with reading lessons and reading frameworks was fairly limited. Both students found the frameworks helpful in providing a good foundation upon which to build creative task planning. Student 1 was specific, saying, "Because the structure is there, I can focus on adding variations and creative elements. For example, in one reading lesson, I …modified the lexis stage by adding a short matching game to make it more interactive." While Student 2 stated similarly that lesson frameworks provided a good foundation, she also believed that "greater emphasis should be placed on teacher creativity" because "creativity allows teachers to adapt activities, materials, and approaches to meet the unique needs of their students."

Superficially, this similarity of using 'creativity' within the PDP framework may simply come down to teacher choice – which tasks are interesting to the teacher, or which tasks do teachers think the student will enjoy – within this group context (PjBL group), although there is a methodology for incorporating creativity into lesson planning (Ragbir-Shripat, 2019), which is much more analytical and involved.

A final set of questions for Part 3 focused on feelings and Beliefs about AI integration. This was by far the most interesting aspect of this case study for these students. To remind, there is much less research on teacher-training and AI app usage than there is L2 language learner AI app usage. The questions and answers that follow may help buttress this deficiency.

Question 11 asked, "What were your first impressions when you saw the AI-generated tasks for the PDP lesson?" Both students were impressed with the AI's efficiency. Student 1 noted surprise "at how specific [the AI-generated tasks] were and how well they matched my intended learning goals. I was happy about it. The AI-generated tasks not only aligned with my learning goals but also saved me time in lesson preparation." Student 2 also noted that "the information delivery was very fast, and the numerical data seemed especially accurate." This finding is similar to research from Cruz, et al, (2024) among faculty at a higher education facility which showed that the "personalized support and instant feedback from the AI chatbot significantly enhanced [teachers'] learning experience." Generative AI apps are consistently being upgraded so more of this can be expected in the future.

For Question 12, "How did using AI-generated materials make you feel about your own role as a lesson designer?", students' answers differed slightly. Student 1 said, "With AI providing a draft, I could focus more on adapting it to my own teaching style. I felt my role didn't shrink but became more strategic." This appears to show an empowerment in Student 1's confidence to teach in their preferred style, perhaps allowing for more flexibility in that area. Student 2 responded that the AI made her realize that her "role as a lesson designer is to ask the right questions…to have a certain level of knowledge to accurately infer and obtain the desired information." These answers seem to connect to the observation by Chibber & Law (2019, as cited in Du & Daniel, 2025) that, "When interacting with learners, chatbots have been employed in diverse capacities, including as instructional facilitators, collaborative peers, entities capable of learning from users, and entities designed to enhance motivation" (p. 6).

Question 13 asked, "Did the AI-generated tasks meet your expectations for quality and appropriateness? How did that affect your trust in the tool?" Student 2's answer sums up both students' perspectives, stating, "Yes, the AI-generated tasks met my expectations. This had a positive impact and increased my trust in the tool." This response begs the question as to whether the students were more willing to pursue further learning based on this experience. Taking initiative for one's own learning via AI app usage, as trainees did in this type of PjBL task, is a concept known as self-directed learning (SDL) (Li, et al., 2025). It seems that trainees were able to meet the self-management, self-monitoring, and motivation tenets of SDL, albeit on a micro-scale for this project. This would be an interesting area of further study for teacher-trainees as related to AI-app usage and lesson planning.

Question 14 asked, "How do you feel about the idea of relying on AI for certain stages of lesson planning in the future?" This a rather open-ended question. Student 1 saw the AI app as a bit of a workhorse, stating, "I think AI is great for repetitive prep work or material searching, so I can spend more time

designing engaging activities for students." Student 2 had a similar take, saying that she believed also that "relying on AI for certain stages of lesson planning could significantly enhance students' understanding and engagement" and that AI could potentially help her "free up more time…to focus on creative and interactive aspects of teaching." De la Vall and Araya (2023) note that "AI-powered tools can save time for teachers by automating specific tasks", a benefit of which trainees can take advantage.

The final question, Question 15, was, "What feelings or concerns, if any, do you have about students knowing that parts of a lesson were created by AI?" This question can tie directly to a teacher's sense of authenticity, but with such rapid changes in AI technology, how long will such a thought be relevant? Student 2's answers spoke for both respondents:

I have no concerns about students knowing that parts of a lesson were created by AI. On the contrary, I believe it can spark greater curiosity, interest, and understanding. Knowing that AI contributed to the lesson might encourage students to explore technology more deeply, ask better questions, and engage more actively in the learning process. It can also demonstrate how human creativity and Ai capabilities can work together to create richer educational experiences. (S2)

This is a progressive attitude, and appears sensible, for if much learning content is generated by AI, and students will work with AI chatbots, note-taking apps, VR, etc., then how is lesson content much different?

4. Conclusion

Based on the widespread availability of wifi, wired classrooms, an upsurge in student ownership of mobile technology, and the refinement of generative AI apps like ChatGPT, it is likely that AI-Enhanced learning apps will only become more accessible and necessary in learning and teaching contexts. New teachers need to meet the demands of learners who may be as adept in AI technologies as themselves. Du and Daniel (2025) note that "Given the pivotal role of teachers in educational activities, their proficiency in AI technologies is crucial for ensuring high-quality instruction." This viewpoint raises questions, such as: Where do we begin to teach our teacher-trainees when it comes to AI? Which apps are best to use? How do we use such AI apps ethically or train our students to do so? Will teachers and students be successful with these using AI apps?

These were some of the questions that this author thought over the sixteen-week semester and that the author attempted to address. Because teachers are 'behind' in AI training (Najmiddinova, 2025), there may be a gap between learning about AI apps and implementing appropriate AI apps successfully in classroom teaching contexts. While the scope of this case study was on teacher-trainees using a generative app to produce a simple reading lesson plan, how else will these or other trainees address any potential shortcoming in their AI knowledge in future teaching contexts?

For this author, the volume of work done in the class and the tight time within which to do it made answering such questions (as above) a tedious undertaking. Answering such questions takes reflection, but some thoughts here on ChatGPT are warranted. ChatGPT is a convenient or approachable app to use for lesson planning or for students to begin getting acquainted or refamiliarizing themselves with AI apps. This instructor felt that ChatGPT was more useful for this case study project as students already had a general familiarity with it. Such 'AI literacy' (Pang, et al., 2025) is necessary for today's students and teachers. The modeling done by this author with AI and involving the class can be considered a 'deepening' of AI tool integration, or according to Najmiddinova (2025), this was a modeling of "*human-AI collaboration* approach, where the teacher guides and interprets AI outputs (p. 249). Even so, this author feels that more practice is needed in this application.

The contact that students had with ChatGPT was deemed to be more appropriate for lesson plan production with this group of teacher-trainees also, versus trying more sophisticated reading apps (like ellii) or teacher-skewed apps (like diffit, monsha, or questionwell). Also, the goal was for students to plan an entire PDP lesson, not just a question set or vocabulary set, through a proven framework. ChatGPT has a familiar 'everyday' atmosphere about it for students that allowed them, coupled with helpful translation software to complete this task. It is hoped by this author that such future teaching endeavors used for teaching students – no matter their level or ability with AI-enhanced apps – will be successful and fruitful for himself and for the countless educators around the world, which is becoming smaller by the app, er, by the minute.

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