



# Unlocking the Potential: Exploring Student Teachers' Perceptions of Human-Generated and ChatGPT Lesson Plans in Education

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**Abstract.** This qualitative study explores student teachers' perceptions of lesson plans generated by human beings versus those created by ChatGPT, an artificial intelligence (AI) language model. All the 25 participants were asked to complete the questionnaire at first; and among them, 5 students were specifically interviewed further. The study was conducted at a top provincial teaching university in China, involving semi-structured interviews with five student teachers. Findings indicate that human-generated lesson plans adhered better to standardized formats, provided more detailed guidance, and allowed for flexibility and personalization based on student feedback. However, ChatGPT demonstrated potential in providing a knowledge base to novice teachers and fostering passion and motivation towards education. Participants critically evaluated the format and level of detail in ChatGPT-generated plans, as well as the lack of teaching experience exhibited by the AI. The study highlights the potential of ChatGPT in supporting lesson preparation and the integration of New Bloom's Taxonomy. The theoretical contribution of this study suggested that ChatGPT was not only a mentor but a competitive peer to student teachers. While the practical contribution of this study lies in offering guidance for the training of contemporary educators by suggesting that the inclusion of generative AI utilization should be considered within their professional development. Further research is warranted to explore the practical implementation of ChatGPT in lesson planning and its impact on educational outcomes.

**Keywords:** ChatGPT; Lesson plan; Student teachers; Perception; Education.

## 1 Introduction

The use of chatbots to enhance students' language learning experience has gained much attention in recent years (Huang et al., 2023; Jeon, 2022) [1][2]. Language researchers have employed different types of chatbots, including both commercially available platforms and prototypes engineered within experimental settings (Dizon, 2020; Fryer et al., 2020) [3][4]. Subsequent investigations have elucidated a spectrum of innovative pedagogical prospects afforded by the deployment of such chatbot technologies (Huang et al., 2022) [5]. ChatGPT, a generative AI chatbot powered by a large language model

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(LLM) that has been trained on vast amounts of internet text data, is projected to overcome many limitations of previous chatbot technology and ultimately affect the way people learn (Heidt, 2023; Kasneci et al, 2023) [6][7].

Despite the growing significance of technology, there exists a notable research gap regarding the impact and effectiveness of these tools from the students' perspective (Xiao & Zhi, 2023) [8]. This research gap calls for further investigation to bridge the knowledge gap and gain insights into optimizing the use of ChatGPT for language learning (Ibid).

In this context, the paper employed a small-scale exploratory approach to investigate student teachers' perceptions and experiences regarding the lesson plans of a writing lesson combined with Bloom's Taxonomy generated by human as well as ChatGPT considering the Chinese educational environment. This study was conducted at a top provincial teaching university in China where the female student population significantly exceeds that of males. In this experimental design, all 25 participants have taken the teacher education curriculum and hold individual perspectives on the formulation of an effective teaching plan.

## **2 Literature Review**

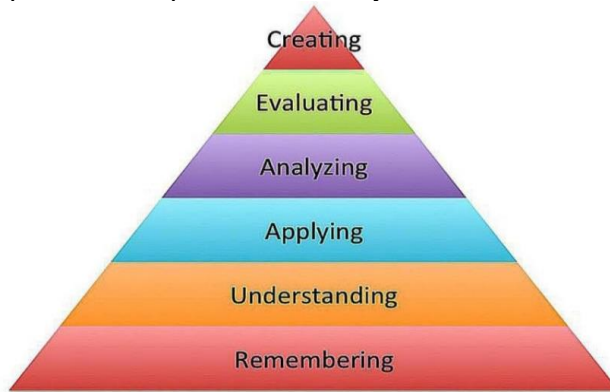
### **2.1 Researches on Teachers' use of ChatGPT During Teaching**

Generative artificial intelligence has always been a hot topic in the field of machine learning, widely used in various fields such as text generation and computer vision (Yin, Shi & Huang, 2024) [9]. Along with the recent proliferation of AI into classroom contexts, scholars have paid much attention to human-AI collaboration, positing that more effective learning can be jointly created by human facilitators and AI than by humans or AI working alone (Kim, Lee & Cho, 2022) [10]. Hu (2024) argued in his research that ChatGPT's application in the class could help teachers to collect teaching materials more conveniently, reduce the time cost of teachers' teaching investment, so as to improve the teaching efficiency [11]. In this line of inquiry, teachers' agentic roles are emphasized and described as facilitating the positive impact of AI on education, rather than AI being considered as a potential substitute for teachers (Jeon, Lee & Choe, 2022) [12]. In Holstein & Alevén's experiment (2022), teachers utilized smart glasses that provided real-time data on student learning during class. They observed, "*teachers then made a rich inference about the latent, underlying cause of the behavior and responded with support and flexibility that the AI tool could not provide...*" [13]. This observation shows that it was not the AI tool itself that facilitated learning, but rather the teachers' pedagogical expertise which was strengthened by the AI-generated data (Jeon & Lee, 2023) [14]. Hence, ChatGPT could be considered as an interlocutor, content provider, teaching assistant and evaluator (Ibid).

### **2.2 Researches on English Writing Teaching Based on the Bloom's Taxonomy**

In the framework of Bloom's Taxonomy, cognitive abilities are stratified into a hierarchy that ascends from basic to advanced levels: Remembering, Understanding,

Applying, Analyzing, Evaluating and Creating (Conklin, 2005) [15]. The hierarchical model is depicted in Figure 1 below. This taxonomy accentuates the significance of higher-order cognitive skills, particularly the creation level, which facilitates the development of innovative pedagogical exercises that are versatile across a plethora of content areas, disciplines, and instructional contexts (Williams, 2017) [16]. Combining the theory of Bloom's Taxonomy with the teaching characteristics of English practical writing can not only promote teachers' innovative teaching thinking, but also promote students' understanding and mastery of English writing (Cui, 2010) [17]. This study thus aims to allow teachers to design lesson plans based on Bloom's Taxonomy under ChatGPT's help and better implement such theory.



**Fig. 1.** Framework of Bloom's Taxonomy

### **3 Research Design**

#### **3.1 Research Questions**

There are two main research questions in this paper. The first one is to investigate which lessons could be more effective -- the ones created by teachers or by generative AI, and what are the related reasons. The second research question is to find how do student teachers perceive the lesson plans that are created by generative AI.

#### **3.2 Research Participants**

All 25 participants are undergraduate student teachers major in English. Initially, seven students were recruited to develop a teaching plan. Subsequently, two iterations of these plans, referred to as Version One and Two, were selected for further analysis. In addition, we employed ChatGPT to generate two alternative versions of the teaching plan, labeled as Version Three and Four. These versions were created by providing ChatGPT with identical input prompts. Notably, Version Four represents an enhanced and more detailed iteration of Version Three. The aforementioned four versions of the teaching plan were systematically chosen to serve as the primary research materials for this study. Thereafter, a series of semi-structured interviews were conducted to facilitate an

in-depth comparative analysis. The following Figure 2 shows the gender distribution of 25 participants, and Figure 3 shows their grade distribution.

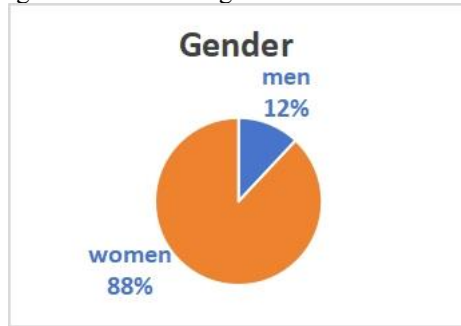


Fig. 2. Gender Distribution of the Participants

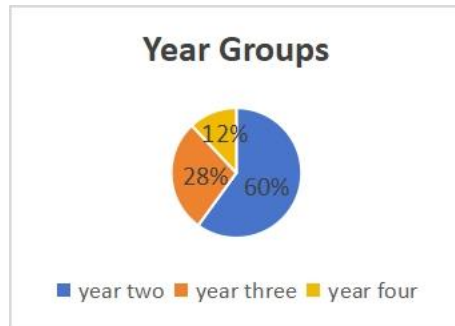


Fig. 3. Grade Distribution of the Participants

### 3.3 Research Methods

#### 3.3.1 Questionnaires

The research published and collected 25 questionnaires aiming to garner student teachers' attitude towards ChatGPT's ability when making a lesson plan.

#### 3.3.2 Interviews

Then, the research conducted interviews with five students specifically. Among the five students, Tony, Yuna, Hancy and Han are from Year two, and Ryan is from Year three. Semi-structured interviews were adopted to observe the students' views regarding the quality of teaching plans made by human beings and ChatGPT separately. The interviews primarily addressed three key issues: (1) the specific reasons regarding the fact that why you're in favor of this version as well as the parts that other versions lack; (2) where or which points can reflect that the teaching plans generated by human outweigh ChatGPT as well as the opposite circumstances; and (3) opinions towards the future development of ChatGPT and the combination between education and ChatGPT.

### 3.3.3. Data Analysis

It was conducted thematically using NVivo 11, guided by the thematic map of the power of ChatGPT developed by Yan (2023) [18]. This thematic map encompassed three key aspects: (1) the potential challenges of ChatGPT; (2) advantages it possesses when making lesson plans; and (3) the influences ChatGPT can bring to novice teachers. Additionally, a fourth theme, “critical reflections on ChatGPT”, emerged from the findings. Yan’s thematic maps guide the direction of our data analysis, with detailed codes emerging from the data itself. For example, codes coded under the potential challenges of ChatGPT included “generating ideas”, “providing individualized assistance”, and “offering immediate feedback”.

## 4 Findings

### 4.1 For Novice Teachers, Who Produced a Better Lesson Plan?

Out of 25 student teachers, 22 believed that the teacher plans created by human were better than the ones generated by Chat GPT because of two reasons. Firstly, human plans provided more concrete details. Secondly, teachers could tailor plans based on students’ feedbacks.

#### 4.1.1 Human Teachers Could Write More Detailed Lesson Plans.

Interviewees believed integral and necessary parts are better included in the teaching plan wrote by human. Yuna, for instance, after skimming four distinct versions of teaching plans among which half were generated by Chat GPT, she noted: *“After all, compared to AI, the lesson plan created by human includes indispensable parts such as the type of class, duration of class, teaching key and difficult points and teaching tools, etc....”* She considered each step and point of the lesson plans generated by human beings were explained in detail while the one made by ChatGPT were quite general and vaguely described. She said *“This human-written plan clearly lists the teaching objectives, directly clarifies the direction of the learning, and then emphasizes the teaching focus, which can help students to focus on the most critical points.”*

Ryan and Tony also agreed with this viewpoint and they believed the version generated by ChatGPT was much more ambiguous and general in expression which could not render the direct and suitable details. Ryan noted: *“ChatGPT designed mutual evaluation among students; however, it didn’t mention detailed evaluation criteria”*, and Tony said *“The lesson plans ChatGPT put forward feel like it can be applied to all kinds of classes...”*

People always consider a good lesson plan could lead both teachers and students appropriately through education, and conceivably, detailed information are indispensable. Compared to such skills of human beings, ChatGPT seems to fail to do so.

#### 4.1.2 Human Teachers Could Conduct Needs Analysis on Students

Students need analysis and teachers could cater to their needs. Teachers possess the real-teaching experience and they can interact with students in time regarding what the

students separately need; therefore, based on these feedbacks, teachers could improve their lesson plans further, which the artificial intelligence apparently fails to do so. The self-own experiences (as a student or as a teacher) as well as other's advice can also be integrated into the lesson plans making process.

To prove, Hancy proposed: *"I designed my lesson plan with my own experience. When making the lesson plan, I would imagine myself as a student listening to this lesson and imagine what I hope to gain in this class from a student's perspective, and then take these as the basis for my lesson plan."*

Based on all the excerpts from the interviewees, it didn't hard to tell that compared to those advanced technology, humans could easily combine more emotions and experiences, making flexible changes in time after all.

## 4.2 How did Novice Teachers Perceive Lesson Plans Generated by Chatgpt?

Compared to its deficiencies, what worth being further explored is that, to what extent can ChatGPT inspire novice teachers regarding making lesson plans. Through interviews and researches, ChatGPT can be regarded as a mentor as well as a competitor peer to novice teachers.

### 4.2.1 ChatGPT Being Considered as a Mentor

ChatGPT can serve as a mentor to novice teachers. Hancy, for instance, mentioned: *"ChatGPT's lesson plans, rich with advanced teaching strategies, arouse my desire to explore those novel educational methods that I've never think of ..... ChatGPT feels like an experienced mentor who can offer joint work as well as on-the-job training to novice teachers off working time and brainstorm new ideas together, which further arouse their curiosity and passion towards teaching. In addition, ChatGPT can make teachers' work more effectively which in turn leave them more room to explore the deeper level of teaching."*

In fact, ChatGPT renders novice teachers a platform to dig deeper into the true essence of teaching. As they noted:

*"Nowadays lesson plans made by human beings still tend to be traditional as usual. The time left for teachers to teach in a lesson is too long and thus a small portion of chances left for students to absorb and think."* – Ryan.

*"In the lesson plan made by ChatGPT, it designs multiple activities such as group work, 'self-evaluation table', etc., which tends to arouse academic innovation through timely interactions and make the students-center as the main stream."* – Hanna.

*"The stratified teaching method can also be reflected to a certain extent through students' self-check owing to answers vary from every student and thus gives teachers more chances to know every student's characteristic and truly promote the development of students' personality into practice as much as possible."* – Hancy.

Moreover, the synergy between the innovative spirit and the New Bloom's Taxonomy is affirmed by respondents' observations that the implementation of a "self-assessment matrix" enables learners to more effectively discern their own proficiencies and deficits. Hence, this self-awareness facilitates the identification of individualized

pathways for enhancement that are in alignment with the evaluating level of New Bloom's Taxonomy. Furthermore, the participatory dynamic engendered by collaborative endeavors serves as a fertile ground for the germination of novel conceptions through mutual inspiration. The interactive educational environment thus established provides a conducive context for the assimilation and orchestration of divergent viewpoints, which inherently fosters the capacity for problem-solving. This pedagogical approach unmistakably mirrors the 'creating tier of Bloom's Taxonomy, wherein students are encouraged to synthesize knowledge and generate original outputs.

#### **4.2.2 ChatGPT Being Considered as a Competitor**

The results further suggest the emergence of a novel competitive dynamic between teachers and artificial intelligence systems. Participants in the study posited that by integrating the merits of lesson plans formulated by ChatGPT, teachers could experience enhanced motivation. This motivational surge is anticipated to act as a driving force, intensifying educators' competitive spirit and stimulating their aspiration to excel beyond the capabilities of ChatGPT.

Such a constructive competitive environment aligns with the prevailing trajectory of scientific and technological evolution, offering a platform for mutual advancement of both human instructors and artificial intelligence systems. As Yuna noted: *"New ideas provided by ChatGPT are conducive to the progress of teachers; at the same time, the continuous progress of teachers will also bring pressure as well as motivation to generative artificial intelligence, and it must input more data to further improve. These two complement each other."*

## **5 Conclusions**

The research finding suggests that out of 25 students, 24 believed lesson plans created by human teachers were better. Hence, two essential findings can be classified. Firstly, human plans provided more comprehensive details, and secondly, teachers could tailor plans based on students' needs. Teachers also considered ChatGPT as serving as a mentor and a competitor peer. This finding extends from the previous literature, in which ChatGPT was considered as an interlocutor, content provider, teaching assistant and evaluator (Jeon & Lee, 2023) [14]. Upon examining the utilization of ChatGPT for the development of lesson plans, educators might gain insights into designing autonomous student activities while dedicating increased attention to the personal growth of students, taking into account their unique attributes.

The methodological constraints of this investigation are chiefly attributable to the narrow scope of the dataset, which encompasses a limited number of students and derives from a period shortly after ChatGPT's inception. It is conceivable that student perceptions would vary with systematic instruction or mentorship. This preliminary inquiry provides foundational insights, yet necessitates extensive, in-depth research to ascertain the degree to which ChatGPT can invigorate novice teachers with enthusiasm and motivational impetus from a pedagogically psychological standpoint. In light of the findings from this exploratory study, it is proposed that teacher-educators should

incorporate ChatGPT into their instructional methodology courses provided to student teachers, instructing them in the effective utilization of various prompts to foster a heightened interest and fervor for the field of education.

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