

# *Research on a New Model of Cultivating Creative Thinking in the Language Discipline Based on ChatGPT*

## *—Taking Project-based Learning of Senior Secondary Language as an Example*

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**Abstract:** This paper discusses a new model of cultivating creative thinking in the language discipline based on ChatGPT, aiming to provide new ideas and methods for language teaching reform. ChatGPT, an advanced natural language processing technology with powerful language comprehension and generation capabilities, provides new means and methods for language teaching. The study presents a case study of the teaching practice of the new model of creative thinking cultivation in language discipline based on ChatGPT through the casestudy method, which provides guidance for the further improvement and optimization of the new model. The model takes ChatGPT as the core, combines the characteristics of language teaching and students' needs, and designs teaching processes and activities suitable for cultivating students' creative thinking. The study emphasizes the importance of changing teaching concepts when using the Humanistic Version of the senior secondary language textbook, as well as incorporating practical language activities to improve students' core literacy through personalized participation and practice.

**Keywords:** ChatGPT language subjects, Core literacy, Project-based learning, New model of thinking development.

## 1. Introduction

With the rapid development of artificial intelligence technology, natural language processing technology has made great breakthroughs. ChatGPT, as an advanced natural language processing model with powerful language comprehension and generation capabilities, provides new possibilities for language teaching. The purpose of this paper is to explore the new model of creative thinking cultivation in language discipline based on ChatGPT, with a view to providing new ideas and methods for language teaching reform.

In traditional language teaching, teachers often focus on the transmission of knowledge and the training of skills, while neglecting the cultivation of students' creative thinking.[1] However, with the development of society and the progress of science and technology, creativity has become one

of the necessary core competences of talents. Therefore, exploring new teaching modes to cultivate students' creative thinking has become an important task of current language teaching.

ChatGPT, as a natural language processing technology with powerful language comprehension and generation capabilities, provides new means and methods for language teaching. The new model of creative thinking cultivation in language discipline based on ChatGPT can help students better understand and master language knowledge, as well as stimulate students' creativity and imagination and improve their comprehensive quality.

The main content of this study includes the construction of a new model for cultivating creative thinking in language subjects based on ChatGPT. The model takes ChatGPT as the core, combines the characteristics of language teaching and students' needs, and designs teaching processes and activities suitable for cultivating students' creative thinking.

## **2. Overview of ChatGPT**

ChatGPT is a large-scale neural network model developed by the OpenAI team, based on the evolution of the GPT series of models. The GPT model was first released in 2018, and ChatGPT is a natural language processing model that was further developed on the basis of GPT. From GPT-1 to GPT-4 the degree of intelligence is increasing,[2] ChatGPT can be used in a variety of fields, such as customer service, intelligent assistants, chatbots, educational tutoring, creative writing, etc. the background of the development of ChatGPT is the rapid development of deep learning and natural language processing technology. Deep learning is a machine learning technology that simulates the behaviour of neurons in the human brain by building a multi-layer neural network to process and analyse complex data such as images, speech and natural language. Since the introduction of ChatGPT, it has been hotly debated by the world for its powerful human-computer interaction and text communication ability, which brings great convenience to human learning and work. For secondary school language education, the innovative use of ChatGPT in teaching not only improves teachers' work efficiency, but also greatly develops students' thinking in the context of today's language education reform, fosters better thinking patterns and habits, and enables students to respond to the increasingly severe and unknown challenges with a high degree of vigour.

## **3. Standards and Core Literacy Development Requirements for the Senior Secondary Language Discipline**

In 2017, the Ministry of Education released the newly revised general high school curriculum programme and curriculum standards for each subject, which sum up in depth the valuable experience of China's general high school curriculum reform since the 21st century, draw fully on the excellent results of international curriculum reform, and become the programmatic documents guiding the revision of teaching materials for each subject. The curriculum standards condense the core literacy of the language subject into four aspects: language construction and use, thinking development and enhancement, aesthetic appreciation and creation, and cultural inheritance and understanding, which is the ultimate goal to be achieved in the language curriculum. [3]The core language literacy and curriculum standards set up a number of task clusters, and the teaching materials are centred on learning tasks, integrating learning contexts, learning contents, learning methods and learning resources, flexibly designing practical language activities such as reading and appreciation, expression and communication, and sorting out and exploring, and changing the common one-way knowledge transfer-centred or competence-training-centred thinking, so as to guide students to learn and use the language in real situations, and to participate in personalised and practical activities. language, and enhance students' core language literacy through personalised participation and practice.[4]

#### **4. Teaching methods for improving the teaching of language subjects towards a new model of thinking development**

Teachers should pay attention to changing their teaching concepts when using the Humanistic Version of the senior secondary language textbook. Compared with the previous textbook, this textbook has obvious changes and improvements from the concept of writing, structure and style, to the selection and arrangement of texts and content design, which will bring great challenges to teaching and learning.[5]

##### **4.1. Tasks**

The "learning task group" proposed in the curriculum standard is a distillation of more than 10 years' experience in curriculum reform and a new thing explored in teaching practice. As a matter of fact, in actual teaching, teachers have been trying different degrees of "theme teaching", "thematic teaching", "comprehensive learning", "extended reading", "comparative reading", "comparative reading", and so on. "Comparative reading", "group reading" and so on, these practices and "learning task group" have something in common. In fact, "learning task group" is a kind of unit teaching, or classroom teaching, or to teach listening, listening, reading and writing, but changed a way, this way is to "task" as the lead. Therefore, before designing a teaching programme, it is necessary to make clear what the "tasks" undertaken by the unit are, to see what resources are provided around the task and what requirements are prompted, and then use the "tasks" to drive the teaching of the whole unit.

##### **4.2. Language practice activities**

Practical activities are closely related to tasks, and it is the pursuit of the textbook writers to develop and improve students' core literacy through certain practical activities to complete specific tasks in real-life contexts. The "tasks" in the "Unit Learning Tasks" of the textbook are all designed with "activities" as the main focus, aiming at letting students go to "do things" in a certain context with problems. The purpose is to let students with the problem in a certain context to "do things", do what we often say reading and appreciation, expression and communication, sorting and exploration.

##### **4.3. Context**

Learning "activities" should be as far as possible "context", not only to stimulate interest, but also in order to provide a background, conditions and atmosphere for the development of "activities". Sometimes the "situation" is the "context" of the classroom content. This situation or context must be real to the students' learning activities, close to their life experiences, and able to promote deep learning.

##### **4.4. Integration**

Integration is more related to the task, high school language advocates "learning task group" teaching, hoping to "learning task" to integrate unit teaching, highlighting the unity, breaking through the barrier of single reading, so that students in the independent language practice will learn to learn, and construct language core literacy. The first step is to make sure that the students can learn and construct the core language literacy in their own language practice. Therefore, when designing the teaching, attention should be paid to the connection between the texts of each group in each unit, the connection between each text in each group, and how to complete the core tasks of the unit and achieve the overall core literacy goals through the integrated reading and appreciation,

expression and communication, sorting and exploration and other comprehensive language practice activities.

#### 4.5. Subject core literacy

On the whole, disciplinary core literacy is the highest pursuit of teaching and learning. The design of tasks, the arrangement of activities, the setting up of resources, the cultivation of basic knowledge and key competencies, and the ultimate goal is the development of core literacy.

### 5. Project-based learning teaching programme in the context of ChatGPT technology

When teaching the text *The Blessing*, ChatGPT technology can be fully utilised to enrich and deepen students' learning experience. Through the personalised pre-reading materials provided by ChatGPT, students will be able to have a basic knowledge of the historical background, author's information and thematic ideas of the work.[6]In the Literature Reading and Writing Task Group, students will learn how to analyse the plot, characterisation and themes of a novel, and through group discussion, they will explore in depth the interaction between character and social environment, as well as the social criticality of the work. The text analysis function of ChatGPT can help students understand the use of artistic techniques and the author's intention in the novel, as well as meticulously exploring the novel's image, plot and language. In addition, using ChatGPT's literary knowledge base, students can appreciate novels of different genres and develop cross-cultural understanding and awareness of literary diversity. In the practice of reading summaries and notes, ChatGPT can assist students in recording and organising their personal reading feelings and reflections. Teachers should encourage students to select materials from their personal life experiences and try to create complex narrative essays. At the end of the course, teachers evaluate students' writing work, provide constructive feedback, and encourage students to self-evaluate and reflect on the gains and losses in the writing process in order to improve their creative writing skills . Using the interactive Q&A function of ChatGPT, teachers can organise students to discuss topics and promote the development of critical thinking. Based on students' learning progress, ChatGPT provides personalised learning suggestions and resources to help students overcome learning difficulties. Teachers can also use ChatGPT to design innovative interdisciplinary learning projects, combining knowledge from history, sociology, psychology and other disciplines to broaden students' learning horizons, and using multimedia resources such as film and theatre, which can enhance students' perception of fictional situations. Finally, teachers can encourage students to come up with innovative problems and solutions to develop their creative thinking and problem-solving skills. Through these steps, ChatGPT technology will be fully utilised to promote students' active learning, in-depth thinking and creative ability, and to achieve an overall improvement in language literacy.

The teaching tasks of *The Blessing* are next divided into five parts. Task 1: Students are asked to sort out the chronology of Xianglin's wife's tragic life and analyse the plot structure of the novel. Task 2: Students are asked to find the saddest moments through group discussion and create a script for stage performance. Task 3: Students are asked to analyse the characters in the text and explore the psychological process of the characters in the incident. Task 4: Students are asked to analyse the cause of Xianglin's wife's death and organise a debate. Task 5: Students are asked to realise the feelings of the author Lu Xun and to think about the ills of contemporary society and the solutions to them. These tasks are designed to help students understand the content of the text in depth, develop a sense of multi-angle and multi-level thinking, and stimulate students' desire for knowledge and sense of responsibility.

For the project-based learning of the novel *The Blessing*, in the case of ChatGPT4, which was released in March 2023, it covers hundreds of billions of parameters, and the content of its huge database precisely determines its ability to provide a huge amount of information for high school language learning. Information can be accessed quickly and questions can be answered according to learners' needs, providing a new and more interactive way of accessing information. Therefore, ChatGPT will play a pivotal supporting role in the face of Task I, Task II and Task V. In Task 1, ChatGPT's huge database can quickly guide students to recall the content of the writing techniques they have learnt, thus making the development of Task 1 smoother. In the process of writing a script in Task 2, ChatGPT can play the role of a guide, which can guide students in writing a script and teach them how to use the script to express emotions and narrate events. What's more, it can also write simple scripts for students' reference in response to their requests, so that students can improve their abilities and think more widely in the process of continuous practice. Task 5 requires us to realise the emotional appeal of a text in the context of its time, which is often not highlighted in a text. At this point, ChatGPT's huge database will be useful again, which will show the current situation of the times to the students through a huge database. By presenting the historical splendour and the dust of the years to the students, ChatGPT enables them to deeply understand the background of the times, deepen their understanding of the times, and better understand the emotions of the characters, so that they can comprehend the humanistic theme of the unit. On this basis, students are able to make a better analysis of the article and carry out a series of open-ended creation to improve their practical ability.

Secondly, ChatGPT can give different answers to the same question, for the same question, ChatGPT will dynamically generate different answers through the big model each time, ChatGPT's diversified answers can provide ideas for thinking and promote the creation and generation of new ideas. Based on this feature of ChatGPT, when students use ChatGPT for project-based learning, they can ask ChatGPT questions and get different ideas from the guidelines or relevant answers given by ChatGPT, which will break the inherent thinking of students, and enable them to enhance and diversify the level and scope of their thinking, and greatly enhance their creativity. Back to "*The Blessing*", we can see that ChatGPT can be applied in Task 4 and even Task 5. In the analysis and debate of Task 4, ChatGPT provides students with ideas and inspirations, which opens up students' thoughts and constantly disperses their thinking. Based on the characteristics of ChatGPT, when students use ChatGPT for project-based learning, students ask it questions and get different ideas from the guidelines or relevant answers given by it, which will break the students' inherent thinking, and can make the students' thinking level and even the scope of their thinking to be improved and dispersed, and greatly enhance their creativity.

Finally, ChatGPT's dialogue engine is equipped with intelligent Q&A capabilities, providing accurate and personalised answers to students' questions and needs. Based on this feature, ChatGPT can simulate real-life scenarios or roles for students to conduct dialogues, guide students to practical thinking and problem solving, and constantly ask students follow-up questions to prompt them to think deeply and analyse the problems. We can see that ChatGPT's dialogue engine, as a powerful tool to stimulate students' thinking, is a personalized and guided learning experience, with creative learning interactions that constantly divert students' thinking and promote the continuous development of students' core literacy.

## 6. Conclusion

ChatGPT has an active role in enabling personalised teaching and empowering education and teaching. It can provide customised teaching support and feedback according to students' individual needs and learning styles, helping students to understand and master knowledge more deeply and improve their learning efficiency. Meanwhile, ChatGPT can also enrich teachers' teaching resources

and help them better prepare and deliver lessons. It provides new means and methods for education and teaching. With the continuous development and improvement of technology ChatGPT will play a greater role in language teaching and provide more support and help to cultivate students' creative thinking. At the same time, the new model also needs more practice and research to continuously optimise and improve the effect of its application in teaching.

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