

# Teaching Skills Cultivation of Information Technology Normal University Students from the Perspective of Group Intelligence: Research on the Training and Application Optimization of GPT Dialogue Model

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**Abstract:** With the wide application of information technology in education, the cultivation of teaching skills for information technology normal university students is particularly important. However, the traditional teaching model faces challenges, and new methods are needed to improve the teaching ability of normal university students. The purpose of this study is to explore the teaching skills training mode of information technology normal students based on the perspective of group intelligence, and to use GPT dialogue model for training and application optimization, so as to improve the teaching effect and the professional level of normal students. Through the teaching mode from the perspective of group wisdom, normal university students can have more in-depth interaction and cooperation with classmates, teachers and teaching resources, and promote the innovation and improvement of information technology teaching. Using GPT dialogue model for training and application optimization can realize personalized and intelligent teaching assistance, and provide teaching content and methods more close to the needs of students. The results show that the teaching mode based on the perspective of group intelligence and the GPT dialogue model can effectively improve the teaching skills of information technology normal university students, and provide new ideas and methods for the innovation and development in the field of education.

**Keywords:** Generative Artificial Intelligence; Teaching Skills Training for Normal University Students; Large Model; Perspective of Group Intelligence.

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## 1. Introduction

With the wide application of information technology in education, the cultivation of information technology students has become one of the important tasks in the current education field. Information technology, as a comprehensive subject with a strong nature and a fast updated generation, puts forward higher requirements for the teaching ability and professional level of normal university students. The traditional teaching mode often focuses on the transmission of theoretical knowledge, which lacks practicality and individuation, and it is difficult to meet the diverse needs of students. Therefore, it is necessary to explore new teaching models and improve the teaching skills of IT normal students to meet the challenges in the educational field[1].

The teaching mode based on the perspective of group wisdom emphasizes the interaction and cooperation between students and advocates diversified learning methods, which can promote the innovation and improvement of information technology teaching[2]. The perspective of group wisdom emphasizes the collective wisdom and collaborative learning, which can enable normal university students to better understand the teaching content, cultivate their teamwork ability and problem-solving ability, so as to improve their teaching effect.

On the other hand, the development of artificial intelligence technology provides new possibilities for the education field. As a natural language processing technology, GPT dialogue large model has powerful language understanding and generation capabilities, which can simulate human dialogue and realize personalized and

intelligent teaching assistance[3]. The application of GPT dialogue model to information technology teaching can provide normal university students with teaching content and methods more close to students' needs, and improve the teaching effect and students' interest in learning.

Over the past few decades, great progress has been made in the field of information technology teaching. Researchers mainly focus on teaching methods, the use of teaching resources and teaching evaluation. The traditional information technology teaching often focuses on knowledge teaching and ignores the cultivation of students' practical ability and innovative thinking. Therefore, the recent research trend has gradually shifted to the student-centered teaching mode, emphasizing students' independent learning and cooperative learning. At the same time, with the development of information technology, researchers also pay attention to the application of information technology in teaching, such as the application of virtual reality, augmented reality and other technologies, which brings new possibilities for teaching[4].

The continuous development of artificial intelligence technology has brought new opportunities and challenges to the field of education. In the field of education, AI is mainly applied to the personalized recommendation of teaching content, intelligent assisted teaching and the automatic evaluation of learning process. Among them, the application of natural language processing technology in education is particularly prominent. For example, the intelligent teaching assistant, intelligent answer system and other applications have greatly improved the teaching efficiency and teaching quality. In addition, AI can also analyze students' learning behaviors and habits through big data, providing data support for teaching, so as to realize a more personalized teaching

model.

In conclusion, previous studies mainly focused on information technology teaching and the application of artificial intelligence in education. The summary and analysis of these research results can provide theoretical support and practical reference for this study, and provide reference for the construction and optimization of the teaching skills training mode of information technology normal university students based on the perspective of group wisdom.

## **2. Teaching Skills Training of Information Technology Normal University Students Based on the Perspective of Group Wisdom**

### **2.1. Current Situation and Challenges of Information Technology Teaching**

1. Rapid developing technologies: In the field of information technology changes with each passing day, new technologies emerge one after another, such as artificial intelligence, big data, cloud computing, etc. Teachers need to constantly follow up and integrate into teaching practice in time to maintain the frontier and practicability of teaching content.

2. Uneven of educational resources: In some areas, information technology teaching resources are insufficient, school facilities and teaching equipment are limited, and teachers are insufficient, leading to uneven quality of information technology teaching.

3. Students' skills differences: Students' information technology level and skills vary greatly. Some students may already have a high level of skills, while some students may lack basic information technology knowledge and skills, which brings challenges to teachers' teaching design and personalized teaching.

4. Difficulties in updating the teaching content: The teaching content of information technology is updated rapidly, and the traditional teaching content is difficult to meet the needs of the current technological development. The update cycle of teaching materials is long, so teachers need to constantly update and optimize the teaching content to meet the development and application needs of technology.

5. Mismatching between teaching methods and technical tools: Traditional information technology teaching methods and technical tools may lag behind and cannot well meet the learning needs and teaching objectives of modern students. Teachers need to constantly explore and try new teaching methods and technical tools to improve the teaching effect and attract students' interest.

6. Imperfect education evaluation system: The current information technology education evaluation system is relatively imperfect, and lacks scientific and effective evaluation methods and index system, so it is difficult to objectively evaluate students' information technology level and ability, which affects the improvement of teaching quality and education effect.

In response to these challenges, the educational community needs to constantly explore and innovate, adopt a variety of strategies and measures, such as improving the quality of teachers, optimizing the allocation of teaching resources, updating teaching contents and methods, and establishing a scientific and effective evaluation system, so as to promote the development of information technology education and

improve the quality of education[5]. At the same time, combining with the development of new technologies, such as artificial intelligence, big data analysis, etc., exploring innovative teaching modes and teaching tools are as to inject new vitality and impetus into information technology education.

### **2.2. The Application of Group Wisdom Perspective in Education**

1. Collaborative learning: The perspective of group wisdom emphasizes the cooperation and cooperation between students. Through group discussion and team projects, we can stimulate the wisdom collision between students, solve problems together, and promote knowledge sharing and communication.

2. Collective wisdom: Teachers can use the perspective of group wisdom to organize students into a wisdom group, and solve complex problems and challenges by pooling wisdom. This can be achieved through group discussion, collective decision-making, so as to promote students' thinking development and problem solving ability.

3. Crowdsourcing learning: Educators can use the perspective of group wisdom, regard students as a resource-rich group, and use their wisdom and knowledge to solve practical problems. Through crowdsourcing learning programs, students can participate in real-world problem solving and gain practical experience and skill improvement.

4. Sharing resources and knowledge: From the perspective of group wisdom, learners are encouraged to share resources and knowledge. In education, students can share their learning experience, resources and knowledge by building sharing platforms and establishing online communities, so as to realize knowledge sharing and transmission.

5. Group evaluation and feedback: Educators can use the perspective of group wisdom to regard students as a group of evaluation and feedback. Through group evaluation, they can promote the interaction and communication between students, and help them better understand and reflect on their learning results, so as to realize the improvement of learning effect.

6. Group dynamic adjustment and optimization: Educators can use the perspective of group wisdom to dynamically adjust and optimize the teaching contents and methods according to the feedback and performance of students, so as to adapt to the needs and characteristics of students and improve the teaching effect and education quality.

The perspective of group wisdom has important application significance in education, which can promote the cooperation and cooperation between students, stimulate collective wisdom, promote the sharing and transmission of knowledge[6], so as to achieve more efficient and meaningful goals of education.

### **2.3. Exploration of the Teaching Skill Training Mode of Information Technology Normal University Students based on the Perspective of Group Wisdom**

The exploration of the teaching skills training mode of IT students from the perspective of group wisdom aims to cultivate the teaching skills and innovation ability of IT students with the help of collective wisdom and cooperation. This model emphasizes the collaboration and sharing between normal university students, as well as the interaction with teachers and students, to build a community of learning and

growing together. In this mode, normal university students can jointly solve problems encountered in teaching practice, share teaching experience and resources, and inspire and promote each other[7]. At the same time, teachers play the role of guide and organizer, through encouraging the cooperation and communication between students, guide them to jointly explore and discover new methods and new ideas of teaching. This model can also promote the communication and interaction between normal university students by building online communities and carrying out collective evaluation and feedback, and help them better understand and apply information technology teaching theory and practice, so as to improve their teaching ability and professional quality.

### 3. Training and Application Optimization of GPT Dialogue Large Model

The GPT (Generative Pre-trained Transformer) dialogue large model is a generative pre-training model based on the Transformer architecture, developed by OpenAI. It learns language models through pre-training of large-scale text data, and is able to generate coherent and logical text. The GPT dialogue large model is optimized and adjusted for the dialogue scene, and it has the ability to better understand the dialogue context and generate a more reasonable response. The GPT dialogue large model has a leading level in natural language understanding and generation, which provides a strong foundation and support for the development and application of the dialogue system.

The GPT dialogue grand model has a wide application

potential in the field of education. First, it can be used as a tool for personalized teaching. By analyzing students' learning history, needs and feedback, GPT can provide a customized learning experience for each student, including answering questions and personalized teaching resource recommendation. Secondly, GPT can also be used for the development of intelligent teaching auxiliary systems. It can act as a virtual teaching assistant, answering students' questions, explaining knowledge points, and providing real-time learning advice and feedback. In addition, the GPT can also be used for language learning and writing aids. It can simulate having conversations with students and help them practice their oral expression and writing skills. Finally, the GPT can also be used for educational research and teaching evaluation. By analyzing a large amount of teaching data and student feedback, GPT can help educational researchers and educational institutions better understand teaching effects and student needs, so as to optimize teaching methods and resource allocation[8]. To sum up, the GPT dialogue large model has a wide application prospect in the field of education, and can provide more intelligent and personalized solutions for education and teaching.

The training methods of GPT dialogue large model include data collection, data preprocessing, adopting Transformer architecture, self-supervised learning, and multi-task learning. Through the preprocessing of large amounts of dialogue data and the design of the model architecture, the model utilizes self-supervised learning to predict the next word in the text sequence, while adopting multi-task learning to improve the generalization ability of the model. Finally, the fine-tuning can be further optimized to adapt the model to different application scenarios and task requirements.

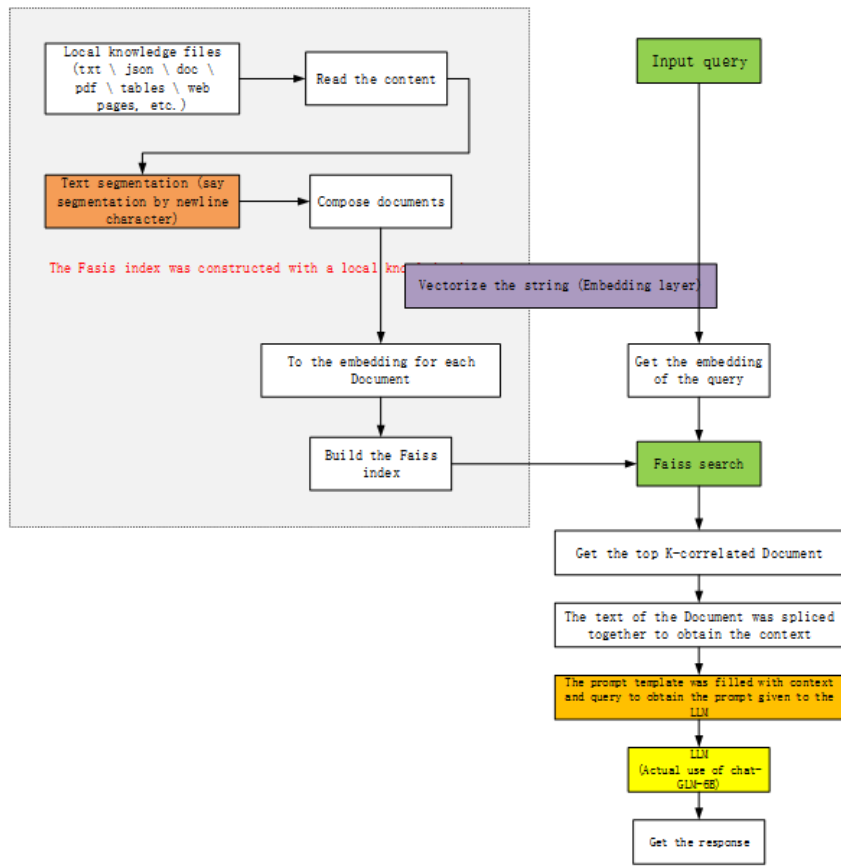


Figure 1. Architecture diagram of the project langchain-ChatGLM

In information technology teaching, GPT dialogue large model can be used in many application scenarios. For example, it can serve as a virtual teaching assistant to provide students with real-time answer and answer services to help them understand complex concepts and technologies. In addition, GPT can be used in the development of intelligent teaching assistance systems, recommend personalized learning resources based on their learning history and feedback, and provide customized learning plans and feedback. In addition, GPT can also be used for the generation and automatic evaluation of teaching content, to help teachers quickly create teaching materials and evaluate students' learning performance. In general, the application of GPT dialogue large model in information technology teaching can provide personalized and efficient learning experience, and help to improve students' learning effectiveness and teaching efficiency[9].

#### 4. Study Results and Discussion

In the teaching skills training of IT normal university students, the application of GPT dialogue model can bring multiple benefits. First, by simulating the dialogue scene, the model can provide normal university students with a lot of virtual practice opportunities to help them get familiar with the process and skills of teaching dialogue. Secondly, the model can provide immediate teaching guidance and suggestions based on the questions and feedback of normal university students, so as to help them better understand the teaching theories and methods. In addition, the model can also provide personalized learning plans and feedback according to the normal university students' learning history and performance, so as to help them improve their targeted teaching skills[10]. To sum up, the application of GPT dialogue large model can effectively assist the teaching skills training of information technology normal university students, and improve their teaching level and professional quality.

Combining the field of education has its advantages and limitations. First of all, group wisdom can gather the wisdom and experience of multiple parties, promote knowledge sharing and cooperation, can provide richer and diversified data sources for GPT, and improve the accuracy and intelligence of the model. At the same time, Qunwisdom can also enable more people to participate in the creation and evaluation of educational content through crowdsourcing, so as to achieve more extensive participation and feedback. However, there are also some challenges and limitations, such as how to effectively manage and integrate large amounts of information, and how to solve the problem of the quality and credibility of the information[11]. Moreover, group intelligence may be limited by the participants' subjective awareness and background knowledge, with the risk of information asymmetry and misinformation. To sum up, the combination of group intelligence and GPT dialogue large model has broad application prospects in the field of education, but it also needs to consider its advantages and limitations comprehensively, in order to better achieve the goal of education and teaching[12].

#### 5. Conclusion

The main findings and conclusions of the paper show that the GPT dialogue large model has important application potential in information technology education. The model can

be used as a virtual teaching assistant to provide students with real-time question-answering and clarifying services to facilitate their understanding of complex concepts. At the same time, the model also plays an important role in the teaching skills of IT students, providing virtual practice opportunities and providing personalized guidance based on feedback. Future research should deeply explore the application effect of models in different disciplines and scenarios, and strengthen the research on personalization and privacy protection. It is suggested that educational institutions strengthen cooperate to promote the application of models in the field of education, and provide relevant training for teachers and students to realize the teaching potential of the models.

Looking forward to the future research direction and development trend, we can first further explore the application effect of GPT dialogue model in different disciplines and teaching scenarios, especially the teaching support ability in language, mathematics, science and other fields. In addition, it is also an important research direction to strengthen the personalization and adaptability of the model. By combining students' personalized characteristics and learning preferences, the response strategy and recommendation system of the model are optimized to provide more personalized and accurate teaching services. At the same time, it is necessary to solve the ethical and privacy issues of the model, design effective privacy protection mechanism and data security strategy, to ensure the credibility and sustainable development of the model. It is suggested that educational institutions strengthen cooperation to jointly promote the research and application of the GPT dialogue grand model in the field of education, and provide relevant training to fully realize the teaching potential of the model.

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