



Enhancing High School English Listening and Speaking Skills: A Deep Learning Approach Aligned with Core Competences

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Abstract: Deep learning is an educational approach that develops English Subject Core Competences. Listening and speaking teaching guided by deep learning can effectively implement the goals of cultivating core competences. By integrating deep learning principles and leveraging artificial intelligence (AI), this research aims to cultivate language proficiency, cultural awareness, critical thinking and learning ability within the English classroom. The paper examines methods for embedding core competences into listening and speaking activities through contextual and associative learning, constructing a thematic language knowledge framework, deep processing of content, innovative transfer and problem-solving tasks. AI is utilized to personalize learning experiences and provide timely feedback, thereby transforming traditional English teaching approaches and fostering comprehensive development of students' core competences.

Keywords: Deep Learning, English Listening and Speaking Teaching, Core Competences, Artificial Intelligence (AI)

Introduction

1. Introduction

The General Senior High School English Curriculum Standards (2017 Edition, revised in 2020) emphasizes enhancing students' comprehensive qualities and developing core competences at high school level^[1]. Alongside improving students' listening and speaking skills, it is crucial to cultivate their cultural awareness and critical thinking. The development of English skills prioritizes listening and speaking, followed by reading and writing. However, current teaching faces several challenges. Firstly, the acquisition of information tends to be superficial, with shallow exploration of thematic connotations. Secondly, insufficient attention to cultural information hinders the development of cultural awareness. Thirdly, the lack of depth in critical innovation and comprehensive evaluation fails to support the enhancement of students' critical thinking. Therefore, there is a need to explore a teaching path tailored for English listening and speaking skills.

In response to these issues, deep learning, as a meaningful learning process in which students actively engage in challenging learning tasks guided by core competences, offers a robust approach and a new research perspective for reinforcing ideological and political education. It enhances students' core competences which include four dimensions through immersive engagement in diverse meaningful activities, ultimately leading to the attainment of core competences in English subject^[2].

2. Literature Review

The rapid advancement of artificial intelligence (AI) has significantly impacted English education. The application of deep learning has become a prominent topic in English language teaching research. An integrative analysis of the existing literature reveals that the application of deep learning in English listening and speaking teaching primarily focuses on several areas: the application of deep learning, the integration of AI in pedagogy and innovations in teaching strategies.

Deep learning not only enhances the comprehension of knowledge but also fosters critical thinking, problem-solving skills and the capacity for knowledge transfer. Li Lingling^[3] introduces a model for junior high school English listening and speaking. From the perspective of AI empowerment, Cui et al.^[4] explore practical approaches through which AI enhances junior high school English teaching. Moreover, based on the students' performance in the online English diagnostic learning system, Fu Yongqing^[5] proposes practical strategies for promoting deep learning in high school English listening and speaking through technology. In response to evolving educational philosophies and learning needs, innovative teaching models and strategies have become a focal point of research. Yang et al.^[6] design a high school English curriculum based on deep learning principles. Regarding the research on core competences, Huang Jiantao^[7] has also explored the pathways towards the development of core competences through deep listening and speaking learning, which has a significant impact on this paper.

In conclusion, the preliminary success of deep learning application in basic education is evident. As technology continues to evolve and new teaching philosophies emerge, the integration of deep learning in listening and speaking teaching is expected to become more widespread and profound. Further exploration is required to optimize the synergy between deep learning and practical teaching, aiming for more efficient and individualized English language education.



3. The Definition of Core Concepts

3.1. Deep Learning

The concept of deep learning was first proposed by Chinese scholars He Ling and Li Jiahou who describe it as the process where learners absorb concepts and facts, then critically integrate them into their cognitive framework, making decisions and solve practical problems by applying existing knowledge to new context^[8].

The most widely accepted definition was provided by Guo Hua, who describes deep learning as a meaningful learning process in which students actively engage in challenging learning tasks guided by core competences. Based on this definition, five features of deep learning are identified: association and structure, activity and experience, essence and variation, transfer and application, value and evaluation^[9].

Wang Qiang^[10] expands features by adding " internalization and communication " which encourages students to internalize knowledge with the theme. Through practical explanatory activities, students reinforce their knowledge structure, transform knowledge into skills and elevate them.

Therefore, deep learning is a complex and cognitive process that transits from lower-order to higher-order thinking. Throughout this process, students are guided from learning and understanding to applying and practising, and finally to transferring and innovating through a series of problems and activities. The degree of integration of deep learning with core competences directly affects the effectiveness of students' comprehensive development.

3.2. Core Competences

Research on core competences in China began later compared with the West. At the beginning of the 21st century, some foreign countries initiated studies to address the challenges of globalization and improve educational quality. The EU proposed *Key Competences for Life-long Learning: A European Reference Framework* which includes eight key elements and elaborates on their connotations^[11]. Singapore's educational reports emphasized cultivating students' self-confidence, autonomous learning, active contribution and enthusiasm^[12]. The United States believed that a robust education system can be established and implemented only through the development of prominent core competences. New Zealand also put forward the main content of core competences^[13].

In 2014, drawing on foreign researches on core competences and national conditions, China's Ministry of Education issued *Opinions on Comprehensively Deepening Curriculum Reform to Implement the Fundamental Task of Cultivating Morality and Talents*, which first introduced the concept of core competences. In 2019, the basic connotation of core competences was clarified as " cultural foundation, autonomous development and social participation " ^[14]. In English education, core competences were reflected in the specific requirements of English disciplines. In 2020, China's Ministry of Education revised the Curriculum Standards again, defining core competences from four dimensions: language ability, cultural awareness, thinking quality and learning ability. Once these concepts were established, they attracted the attention of scholars, sparking extensive research in the field.

4. The Necessity of Deep Learning

The reason that deep learning facilitates the implementation of core competences is twofold. On the one hand, it helps teachers build a structured framework of language knowledge and cultivate thinking and cultural awareness. On the other hand, it aligns well with the Activity-based Approach, which advocates that learning is a process through which students acquire knowledge via activities.

4.1. The Feasibility of Implementing Deep Learning in Listening and Speaking

The commonality of context and the promotion of critical thinking and cultural awareness jointly support the implementation of deep learning in listening and speaking class. Students gradually achieve progressive development through activity chains.

4.1.1. Constructing the Commonality of Context

Deep learning advocates " Interacting with the external environment within specific context facilitates learning, which in turn promotes knowledge transfer and helps solve practical problems " ^[15]. Listening and speaking class, characterized by unpredictability, complexity, interactivity and flexibility, creates complex and authentic situations conducive to problem-solving. And the interactive and real-life scenarios increase the challenges for students, requiring them to flexibly apply their knowledge according to the context and the communicative purposes. For example, students might initially face communication setbacks. Under the teacher's guidance using the " setback-motivation-hunger " model, students gradually develop the ability to judge their own and others' values towards money using four dimensions and sentence patterns.

4.1.2. The Feasibility of Cultivating Thinking Quality and Cultural Awareness

Thinking quality encompasses logical reasoning, critical thinking and innovation abilities. Cultural awareness involves understanding both Chinese and foreign cultures and appreciating excellent cultures. In listening and speaking class, multiple forms of dialogue involving language knowledge, life experiences and emotional cognition are frequent, which promotes students' cognitive development and enhances their thinking skills^[16]. English teaching includes not only the acquisition of language knowledge and listening skills but also the enhancement of cultural awareness^[17]. Students' thinking quality and cultural awareness are cultivated through activities that are graded, deep, comprehensive, relevant and practical. This process enhances critical and creative thinking and fosters cross-cultural understanding and cultural confidence.

4.2. The Consistency between Deep Learning and Activity-based Approach

The challenging activities in deep learning guide students to uncover the significance and objectives of tasks, transforming the acquisition of knowledge into an experiential process^[18]. Both the Activity-based Approach and deep

learning aim at cultivating core competences. The Activity-based Approach focuses on activities related to text comprehension, in-depth application and innovative transfer beyond the text. These three levels of activities correspond to the six features of deep learning. Comprehension activities based on the text relate to " Association and Structure " . Application and practice activities within the text correspond to " Essence and Variation " . Innovative transfer activities align with " Internalization and Communication " and " Transfer and Application " .

Through immersive participation, students recreate their personalized experiences in activities and express their emotions and viewpoints. This approach is also a key requirement of the Activity-based Approach for classroom design. By engaging in these activities, students are encouraged to apply knowledge in new context.

5. The Application of Deep Learning in English Listening and Speaking Teaching

This paper selects the section of " *Listening and Speaking: A News Report about Returning Lost Money* " from Unit 5 in the required high school English textbook in PEP. The theme of this unit is " People and Self " , involving content related to excellent character and correct life attitudes. This paper designs listening and speaking activities based on deep learning, aiming to stimulate students to connect previous and new knowledge, construct a clear knowledge structure and deeply consider the value of money. The process involves moving from superficial learning to deep understanding and learning, ultimately integrating competences to fulfill the educational goals.

5.1. Teaching material analysis

When interpreting a text, the teacher should address three questions. First, the theme and content of the text. What is it about? Second, the deeper meaning of the text. Why is it written? Third, the stylistic features of the text. How is it presented? Using this text analysis approach, the interpretation is as follows:

[*What*] The genre is a news report, covering the event of Chen Liyan, a cleaner at Taiyuan Railway Station, who found and returned money without taking any for herself.

[*Why*] The article aims to guide students to appreciate the virtue of returning found money without seeking a reward, to establish a correct view of money and life, and to nurture civic duties and responsibilities as well.

[*How*] The article adopts a third-person perspective and unfolds in chronological order, objectively presenting the story of the honest cleaner Chen Liyan, evoking resonance among students.

5.2. Students Analysis

The KWL teaching model, created by Donna Ogle in 1986, activates students' background knowledge about a topic before class. The analysis of students is as follows:

[*What they know*] The target students are high school sophomores. Most students have formed a preliminary view of money, but their deep understanding is still developing. Through previous units, students have already mastered the skill of extensive listening.

[*What they want to find out*] Students have different financial views, ranging from reckless consumption to frugality and saving. These contrasting ideologies may lead to interesting discussions. Additionally, students usually lack reasoning and predictive abilities.

[*What they learned and still need to learn*] The learning objectives include the following aspects.

First, understanding and organizing the process of Chen Liyan's returning the lost money through extensive listening, and deducing the relationships between the four characters through intensive listening. Additionally, using the 5W+1H method and mind maps to present the structured knowledge of the text.

Second, describing Chen Liyan's attitude towards money and summarizing her excellent qualities.

Third, demonstrating the traditional Chinese virtues of " Five Constants " reflected in the characters' actions and analyzing the reasons behind these virtues.

Fourth, engaging in group cooperation to analyze and evaluate different perspectives on money management.

Fifth, comparing different views on money, expressing their own viewpoints on money and new understanding of social responsibility.

5.3. Teaching Procedure

5.3.1. Context and Association: Association and Structure

Spark Interest and Guide Thoughts

Deep learning emphasizes the importance of using students' previous experiences to establish connections with new content, guiding students to integrate the content and form a new knowledge framework. Context plays a crucial role in the initial stages of deep learning, aiming to activate students' existing knowledge and use it as a bridge to new learning.

[Teaching Excerpt]

Before class, the teacher uses AI to create personalized activities, such as a questionnaire and a listening test. These activities investigate students' opinions on money consumption and assess their listening skills. AI promptly conveys the students' interest and proficiency levels to the teacher. This enables the teacher to conduct diagnostic assessments and identify key and difficult points for the lesson.

The teacher starts the class by sharing a story about a dream she had last night, where she won 100,000 yuan in a lottery. After the students hear the story, the teacher poses the following questions:

Q1: If you were me, what would you like to do with such a large amount of money?

Q2: What are you going to buy? What things can't be bought with money?

[Justification]

This activity reflects the principles of association and structure in deep learning, activating students' existing experiences and integrating this experience into the current teaching process. The activity of activating students' prior knowledge is called "association" and the activity of integrating this experience into the current teaching is called "structure" [19]. When organizing brainstorming activities, the teacher focuses on students' life experiences regarding the value of money, which prepares the students for the protagonists' actions.

5.3.2. Constructing a Thematic Language Knowledge Framework: Essence and Variation

Constructing a Thematic Language Knowledge Framework

The teacher poses comprehensive questions to help students build a language knowledge framework, addressing the difficulties and laying the foundation for enhancing critical thinking.

[Teaching Excerpt]

Q₁: Does money really matter to everyone? Could you give me an example?

Q₂: What makes him/her special?

Q₃: What did she/he do?

Q₄: What is his/her attitude towards money?

Q₅: Does she/he have a sense of responsibility?

Then, the teacher uses AI to present students' examples in a three-dimensional format and engage students in dialogues using these expressions. Through a series of questions, the teacher guides students to provide examples of people who disdain money and understand the four dimensions for judging others' monetary values: qualities, actions, attitudes and responsibility. Ultimately, students generate sentences such as "Somebody puts... above money. Somebody is a responsible individual who...." This activity builds a knowledge framework that students can use to articulate their viewpoints later.

[Justification]

To lead students to naturally express their views on money in the generative phase, the teacher provides a necessary language knowledge framework in the early stages. By increasing the input of multimodal examples, the teacher subtly and imperceptibly enhances students' language abilities within the understanding of language knowledge.

Cultivating Thinking Quality

Comprehensive activities are designed to help students master knowledge systematically. The teacher supports students in achieving deep learning by teaching listening skills and presenting mind maps to help students construct logical relationships and thematic frameworks of listening materials.

[Teaching Excerpt]

Students use the 5W+1H model to extensively listen for main information in the news. They lay a foundation for understanding the relationships between the characters in the subsequent context, as shown in Table 1.

A cleaner made _____	
Who	Chen Liyan, Wang Zheng, Ma Dongbao, Liuxia.
When	Last _____.
Where	Tai Yuan ____ Station; Police Station.
How	Chen returned the lost ¥ ____ to Wang Zheng.
Why/What	Chen was praised for her _____, _____ act.

Table 1: Basic information chart

[Justification]

This model represents the basic elements of news. By employing this model, students are trained in extensive listening skill, organizing scattered information into a systematic structure. This helps students construct structured knowledge and gain a preliminary understanding of the characters' qualities.

[Teaching Excerpt]

The teacher presents a mind map of character relationships. Students are required to complete it during the intensive listening process, organizing the sequence of events and character relationships, as shown in Figure 1.

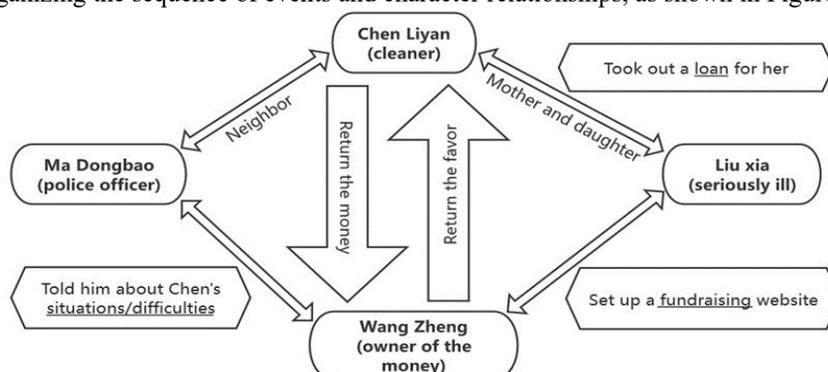


Figure 1: The mind map of protagonist relationships

After finishing the task, the teacher uses AI to help students identify and verify information in the news.

[Justification]

The activity embodies the cultivation of students' critical reasoning abilities. Students organize the sequence and determine the relationships between the parts of the news. This activity indicates the end of the superficial understanding of learning and there is a gradual transition towards the application and practice of deep learning, laying the foundation for internalization and communication.

5.3.3. In-depth Processing of Listening and Speaking Content: Internalization and Communication

Appreciation and Affirmation of Excellent Culture

Cultural awareness plays a guiding role in the value orientation of English Subject Core Competences. Listening and speaking class is a primary avenue for disseminating Chinese and foreign cultures. Teachers should be adept at uncovering the educational value in the text to achieve the goal of nurturing virtue through education.

[Teaching Excerpt]

After students complete comprehensive activities, the teacher guides them to delve deeper into the listening material and continues to pose the following questions. Subsequently, an online quiz is assigned to test their knowledge about traditional Chinese virtues.

Q1: What's Chen's attitude towards money?

Q2: What traditional Chinese virtues are reflected in the story?

These questions go beyond mere understanding and aim to comprehensively cultivate students' cultural awareness. The story exemplifies the typical Chinese traditional virtue of "Honesty in returning lost property" and students learn about the connotations of "Five Constants" from Dong Zhongshu.

[Justification]

A chain of questions is a primary method to promote students' higher-order thinking. These are all divergent reasoning questions designed to guide students to highlight integrity in returning found property, as reflected in Chen Liyan's action. Chen Liyan is a microcosm of the Chinese people, whose personal qualities reflect the national character.

Comparative Understanding of Chinese and Foreign Cultures

Building on divergent reasoning, students reflect on the similarities and differences between Chinese and foreign cultures. Through comparison, they deepen their understanding of cultural nuances, which helps them become individuals with civilized literacy and a sense of social responsibility.

[Teaching Excerpt]

After learning the connotations of "Five Constants", the teacher lists famous quotes from abroad related to these concepts and organizes an online competition focusing on the traditional cultures of China and other countries..

[Justification]

The teacher uses macro unit instruction to resonate with the unit theme "Money is a good servant and a bad master.", guiding students to correctly leverage the value of money and take on social responsibilities.

In-depth Thinking and Oral Expression

Oral expressions require activities that facilitate "internalization and communication", prompting students to internalize and externalize new knowledge structures. The teacher guides students to describe and explain these new knowledge structures, gradually internalizing language and cultural knowledge.

[Teaching Excerpt]

The teacher explains the connotations of "Five Constants" and uses technology for effective student-computer interaction. This enables students to select one character and analyze the traditional virtues he possesses based on the definitions (see Figure 2). Then, AI analyzes students' oral test feedback to intelligently group them for targeted speaking skill development.

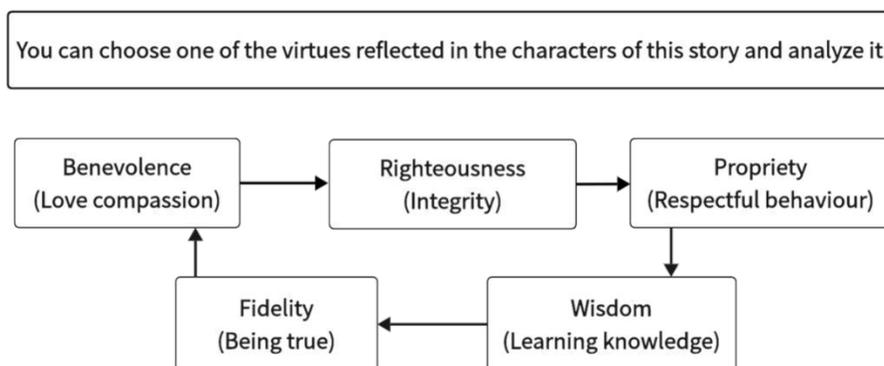


Figure 2: The definition of "Five Constants"

[Justification]

The newly formed knowledge structure, known as "Five Constants", aligns with the language knowledge framework established at the beginning of the class. The essence of these constants fosters flexible oral expressions, which are beneficial for strengthening practical application and enhancing students' oral expression abilities. With the help of AI, students can strengthen their ability to extract information and build a divergent thinking framework, facilitating innovative transfer activities.

5.3.4. Innovative Transfer and Problem Solving: Value and Judgment & Transfer and Application

Multidimensional Value Judgment

Value judgment refers to the students' assessment of the content and process of learning, connecting knowledge with social context and human development^[20].

[Teaching Excerpt]

The teacher presents four roles along with corresponding views on money. Through a video featuring Zhang Guimei, Elon Musk, an ordinary girl and Chen Liyan, students match and evaluate the characters with the roles using four dimensions (see Table 2).

Attitudes to money	
The spender	You only live once.
The giver	It's better to give than to receive.
The builder	Make it so.
The saver	A bird in the hand is worth two in the bush.

Table 2: Money consumption views

[Justification]

Deep learning and core competences are unified in educational value. Teachers should not be confined to textbook knowledge but provide more real-life examples for students. For instance, using the cases of Zhang Guimei and an ordinary girl creates a contrast that prompts students to reflect on the value of money.

Connecting with Reality to Creatively Solve Problems

At the advanced output stage, students have a clear understanding of structured knowledge. The teacher needs to create a new context that allows students to apply what they have learned and internalize correct life values.

[Teaching Excerpt]

After evaluating the four individuals, the teacher asks students to use AI to gather additional materials on different perspectives on consumption. Students then apply the four dimensions to create and deliver a personal presentation.

[Justification]

This approach not only helps students consolidate their language knowledge but also encourages them to reflect on their own attitudes towards money consumption. By expressing their views, students gain a deeper understanding of the value of money and their responsibilities.

Self-assessment and Peer Assessment

Self-assessment and peer assessment are used to explicitly evaluate language knowledge and implicitly assess cultural awareness and critical thinking skills.

[Teaching Excerpt]

Students conduct various assessments based on an evaluation form shown as below which is divided into multiple dimensions. This form closely aligns with the objectives of this class, considering language use, cultivation of cultural awareness and critical thinking (see Table 3).

Lesson Objective Checklist							
Evaluation Form	Evaluation Criteria			Score (Full Marks for Each Item: 5 points)		Teacher's Suggestions	
				Self-	Peer		
				Evaluation	assessment		
Language Ability	Students	will	engage	in	5	4	Students provided a profound analysis of Chen Liyan's
	extensive	listening	to				Chen Liyan's
	meticulously	organize	the				
	process	of	Chen	Liyan			
	returning	the	lost	money.			
	Additionally,	they	will				

	<p>practise intensive listening by using the 5W +1H method and mind maps to analyze the relationships between characters.</p> <p>They will also describe and interpret Chen Liyan's attitude towards money, and summarize her admirable qualities.</p>			<p>honesty and selflessness.</p> <p>However, please pay closer attention to the details to ensure the accuracy of the information.</p>
Expressive Ability	<p>Students will demonstrate fluency in applying the four dimensions for evaluating monetary values, and will express their own views on money and their understanding of social responsibility.</p>	4	4	<p>The students' application of the four dimensions in evaluating monetary values is admirable.</p>
Cultural Awareness	<p>Students will demonstrate traditional Chinese virtues and conduct a thorough analysis of the underlying values behind behaviors.</p>	5	5	<p>Students' demonstration of traditional Chinese virtues is impressive and thoughtful.</p>
Thinking Quality	<p>Students will analyze, critique and evaluate different people's choices and perspectives on money from various viewpoints.</p>	4	3	<p>Students have provided a nuanced critique of different perspectives on money.</p>
Learning Ability	<p>Students will learn from and draw inspiration from their classmates' excellent qualities, fostering their deeper understanding and appreciation. After class, they will gather more stories of traditional Chinese</p>	3	5	<p>Students' commendable efforts include learning from their classmates' qualities.</p>

Table 3: Lesson objective checklist

Later, the teacher leverages AI to provide individualized feedback to students from both AI and the teacher. This enables students to discern their developmental trajectory after the lesson.

[Justification]

Following the design of activities, educators must swiftly develop evaluation criteria aligned with the lesson objectives. These criteria should assess student performance to determine if the instructional goals have been achieved.

Imaginative Creativity

Homework assignments serve as extensions of the students' imaginative capabilities. Assignments should adhere to a fundamental principle, relate to real-life situations and be practically implemented.

[Teaching Excerpt]

The teacher leads the students in organizing a debate on consumption concepts, dividing them into two opposing teams online. The proponents argue for pursuing brand names, while the opponents advocate prioritizing practicality. The teacher delivers debate resources online, applying tiered teaching method to help students internalize and apply knowledge.

[Justification]

In the context of transfer, the essence lies in effectively transforming accumulated experiences into applicable knowledge for the new context. High school students usually overconsume under peer influence, straining their finances. This debate aims not only to cultivate students' critical thinking and prompt reflection on the value of money, but also to instill gratitude for parental sacrifices, thereby fulfilling educational objectives. At the same time, the teacher uses AI to track students' task completion, test scores and proficiency levels, and offer comprehensive feedback on their language learning.

6. Suggestions for the Application of Deep Learning in English Listening and Speaking Teaching

It has been observed that the application of deep learning poses challenges to teachers, specifically in the areas of technological integration, student engagement, assessment and feedback. Therefore, this study proposes the following suggestions for better implementing deep learning.

6.1 Integration of Technology and Pedagogy

Teachers can use technologies such as speech recognition software to provide personalized learning experiences for students. For instance, intelligent speech analysis tools can be employed for students to practise pronunciation and receive immediate feedback. Moreover, leveraging online forums can encourage students to engage in discussions, thereby enhancing their oral communication skills.

6.2 Adoption of the POA (Production-Oriented Approach)

The POA posits that production can enhance language acquisition. It encourages students to generate language through various communicative tasks, which leads to noticing their learning gaps. Teachers can provide opportunities for students to practise speaking, such as through presentations and collaborative projects, ensuring that the output is both meaningful and challenging.

6.3 Enhancement of Critical Thinking

Incorporating the cultivation of critical thinking into listening and speaking activities can encourage students to analyze, evaluate and generate information rather than passively receive it. Through discussions and reflective activities, students learn how to express their viewpoints, which is essential for improving in-depth language comprehension.

7. Conclusion

Deep learning provides a fresh perspective for developing core competences in English listening and speaking teaching at high school. To overcome certain constraints, researchers can enhance its classroom teaching credibility through further empirical studies. Educators can adopt the Activity-based Approach to cultivate these competences and foster personal character.

Therefore, it is essential to explore implicit information that goes beyond literal meaning, construct thematic knowledge structures, refine cultural connotations and enhance critical thinking. The design of activities and context should be hierarchical, effective and realistic. Only by conducting listening and speaking activities within specific, realistic context that resonate with students' life can we integrate cultural awareness and improve thinking quality in the classroom. This approach ensures that students fully engage in challenging activities, supported by both independent initiative and teacher's guidance, thereby facilitating deep learning and the development of core competences.

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