Journal of International Education and Development
2025, VOL. 9, NO. 7, 96-100
DOI: 10.47297/wspiedWSP2516-250021.20250907

On Application of Multidimensional Interaction Teaching Theory in College English Teaching

Yinghua Jia

Shanghai University of Political Science and Law, Shanghai, 201701, China

ABSTRACT
Based on multidimensional interaction teaching theory's four-dimensional framework of "teacher-student interaction, student-student interaction, human-computer interaction, and text-reality interaction", this paper takes Caroline Seebohm's How to Change Your Point of View as the teaching text, systematically explores the application path of the theory in college English teaching, and designs a ladder-type interactive teaching model combined with core concepts in the text such as "lateral thinking" and "perspective transformation". Through teaching strategies such as case analysis, situational simulation, and cross-cultural comparison, the organic integration of language knowledge instruction and thinking ability cultivation is achieved. The study shows that the multidimensional interactive teaching model can effectively enhance students' text analysis ability, critical thinking, and cross-cultural communication skills, providing a new practical paradigm for the teaching of speculative texts in college English.

KEYWORDS
Multidimensional interaction teaching theory; Lateral thinking; College English teaching; Cultivation of critical thinking; Cross-cultural communication

1 Introduction

The article How to Change Your Point of View is selected from 21st Century College English Reading and Writing Tutorial 4 (S Edition) edited by Zhai Xiangjun, et al., published by Fudan University Press in 2025. This text deeply explains the key role of "point-of-view transformation" in problem-solving through cases such as Edward Jenner's discovery of the smallpox vaccine and Edward de Bono's lateral thinking theory. The text integrates multidisciplinary elements such as the history of science, thinking science, cross-cultural philosophy, etc., which is of great significance for the cultivation of students' language learning and critical thinking abilities. In traditional college English teaching, the teaching of such speculative texts often adopts the model of "teacher-led explanation + passive student acceptance", resulting in superficial thinking training. The multidimensional interaction teaching theory emphasizes the dynamic interaction of multiple elements and dimensions in the teaching process, and its concept of "student-centered" is highly compatible with the speculative characteristics of the text, providing theoretical support for breaking through the teaching bottleneck.

2 Framework analysis of multidimensional interaction teaching theory

2.1 Core connotations of the theory

The multidimensional interaction teaching theory regards teaching as a dynamic system composed of "teachers, students, teaching content, teaching media, and real-life situations", with its core being to break the traditional one-way model and construct a "four-dimensional interaction" system:

Teacher-student interaction: Based on the Socratic method of questioning, it stimulates in-depth thinking through guiding questions.

Student-student interaction: Relying on cooperative learning theory, it promotes knowledge co-construction through group tasks.

Human-computer interaction: With the help of digital technology, it realizes text visualization and dynamic case presentation.

Text-reality interaction: Through situational migration, it applies the text theory to real problem-solving.

2.2 Adaptability to text teaching

The cultivation of "lateral thinking" in the text is essentially an interactive cognitive reconstruction process:

Case analysis requires teachers and students to jointly dismantle the logical chain of "point-of-view transformation".

The comparison of thinking modes requires students to form cognitive conflicts and consensus through group discussions.

Cross-cultural philosophical views (such as the differences between Eastern and Western thinking) need to be

combined with real cases to achieve meaning construction.

3 Implementation strategies of multidimensional interactive teaching

3.1 Teacher-student interaction: in-depth deconstruction driven by a chain of questions

3.1.1 Ladder-type question design

Construct a question matrix around the three core cases of the text:

Basic level: Ask factual questions, such as: In the text, why did Jenner shift his research from "smallpox patients" to "unaffected milkmaids"? The text mentions that "Jenner noticed that milkmaids who caught cowpox seemed to be protected from smallpox". Starting from this detail, students can be guided to think about the direct observational basis for Jenner's shift in research perspective.

Advanced level: Ask analytical questions, such as: How does the "dog not barking" case reflect the essential difference between lateral thinking and vertical thinking? The reasoning process of Holmes in the text, "The curious incident of the dog in the night-time. The dog did nothing in the night-time. That was the curious incident.", reflects that lateral thinking is about breaking the logic from overlooked details, forming a sharp contrast with the step-by-step reasoning of vertical thinking.

Innovative level: Ask creative questions, such as: How to use lateral thinking to solve the problem of "college students' mobile phone dependence"? Drawing on the definition of lateral thinking in the text, "Lateral thinking involves moving sideways to look at things in a different way", students can be encouraged to break through the conventional idea of "restricting use" and propose solutions from new angles.

3.1.2 Application of the socratic method of questioning

When students answer that "lateral thinking is bypassing the problem", the teacher asks further: "Does bypassing equal evading? How does the fable of the donkey in the text interpret the wisdom of 'stopping resistance'?" In the text, the donkey falls into a mud pit, "Instead of struggling and getting more stuck, it suddenly stopped and relaxed. And then, with a little effort, it was able to free itself". Through in-depth discussion of this case, students can be guided to discover the essential difference between "strategic transformation" and "passive evasion".

3.2 Student-student interaction: thinking co-construction through collaborative tasks

3.2.1 Case reconstruction workshop

Complete the construction of a "lateral thinking case library" in groups:

Each group draws a case from the text (such as the Jenner case or the Holmes case). Taking the Jenner case as an example, students need to sort out Jenner's complete thinking chain from observation to hypothesis and then to verification based on the key argument in the text that "Jenner's hypothesis was that exposure to cowpox gave protection against smallpox".

Use mind maps to dismantle the logical chain of "problem dilemma → point-of-view transformation → solution". For example, when dismantling the Holmes "dog not barking" case, students should clearly present the logical process of the case where the conventional investigation reaches an impasse (problem dilemma), Holmes pays attention to the abnormal point that the dog did not bark (point-of-view transformation), and then infers that the perpetrator is an acquaintance (solution).

Adapt the case into a 3-minute short play, highlighting the key turning point of "thinking transformation". In the short play of the Jenner case, students need to focus on showing the dramatic moment when Jenner shifts his thinking from paying attention to smallpox patients to turning his perspective to milkmaids.

Each group comments and scores, and the best case is included in the class shared resource library.

3.2.2 Critical debate activity

Set the debate topic: In crisis, does opportunity outweigh danger?

The affirmative and negative sides collect arguments based on the view in the text that "crisis = danger + opportunity". The text mentions that "Every crisis contains both danger and opportunity. The trick is to recognize the opportunity and act on it." The affirmative side can start from the cases of many enterprises successfully transforming in crises in history and expound that opportunities outweigh dangers in crises combined with the text's view; the negative side can emphasize the dominance of danger by analyzing some cases of failure due to crises.

Students need to adopt a three-link debate structure of "thesis statement-refutation-summary".

The teacher records high-frequency language points (such as "crisis interpretation" and "opportunity identification") for centralized explanation.

3.3 Human-computer interaction: situational simulation empowered by digital technology

3.3.1 Application of visual thinking tools

Table 1 Use MindMeister to make a comparison chart of "Vertical Thinking vs. Lateral Thinking"

Dimension	Vertical Thinking	Lateral Thinking
Thinking path	Linear progression (like building blocks)	Divergent and jumping (like mind maps)
Problem-solving strategy	Frontal attack ("When the going gets tough, the tough get going ...")	Side breakthrough (such as Holmes paying attention to "the dog not barking", as described in the text, "It was the unexpected silence of the dog that led Holmes to the crucial clue")
Typical cases	Traditional scientific experiment steps	Jenner's discovery of the vaccine from milkmaids ("Jenner's discovery of the smallpox vaccine came from his lateral thinking in looking at an unexpected source — the milkmaids")

3.3.2 VR situational simulation training

Use VR technology to reproduce the laboratory scene of Jenner in the 18th century:

Students "travel" to the historical situation and play the role of Jenner's assistant.

In the virtual environment, students need to analyze "smallpox patient data" and "milkmaid health records", which can be set with reference to the description of the epidemic situation and the health status of milkmaids in the text.

Students experience the decision-making process of "point-of-view transformation" through interactive operations, and the system gives real-time feedback on the thinking path score. For example, when students follow Jenner's train of thought in the text and shift from paying attention to the symptoms of patients to studying the reasons why milkmaids did not get sick, the system gives a higher score.

3.4 Text-reality interaction: ability cultivation through cross-situational migration

3.4.1 Real problem-solving projects

Carry out the practice of "lateral solutions to campus problems":

Divide into groups to investigate campus pain points (such as "difficulty in occupying seats in the library" and "long queues in the canteen").

Use the "Eastern flanking maneuver" in the text to design solutions.

Submit English reports containing "problem definition → point-of-view transformation point → innovative solution".

Invite the logistics department to participate in the program review, and excellent programs will get the opportunity to be tried out in practice.

3.4.2 Cross-cultural comparative writing

Assign an argumentative essay: "Does lateral thinking exist in Chinese traditional wisdom?"

Guide students to retrieve cases such as "besieging Wei to rescue Zhao" in The Art of War and "preventive treatment of diseases" in traditional Chinese medicine.

Compare the thinking commonness between the "Japanese donkey fable" in the text and "Cook Ding dissecting an ox" in Zhuangzi.

Organize the argumentation with an academic writing template (Claim-Evidence-Warrant).

4 Teaching effect evaluation and reflection

4.1 Construction of a multidimensional evaluation system

4.1.1 Formative evaluation

Interactive Observation Matrix

A rubric is designed to quantify student engagement across four interaction dimensions:

A learning management system tracks:

Word frequency analysis of reflection journals (e.g., "lateral thinking" appears 2.3 times more frequently in post-unit journals);

Table 2 Digital Portfolio Analytics

Dimension	Evaluation Criteria (Level 1-5)	Example from Text Application
Teacher-Student Interaction	Frequency of critical questions raised by teachers	When discussing Jenner's case, teacher posed 8 follow-up questions derived from "It turned out that dairymaids apparently never got the disease".
Student-Student Interaction	Number of collaborative insights in group tasks	Groups generated 12 innovative solutions for "mobile phone dependence" by adapting de Bono's lateral thinking theory.
Human-Computer Interaction	Completion rate of VR scenario's thinking path	78% of students correctly replicated Jenner's perspective shift in the VR lab simulation.
Text-Reality Interaction	Relevance of real-world cases to text theories	Students applied the donkey fable ("the more you fight, the tighter it gets") to analyze 6 campus conflict scenarios.

Mind map progression from linear (pre-unit) to divergent (post-unit) structures, with 65% improvement in branching complexity.

4.1.2 Summative evaluation

Tripartite Assessment Framework

Textual Transfer Task: Students analyze a new case: How did Steve Jobs use lateral thinking in creating the iPhone? Scoring rubric: Identification of perspective shift: 30% (e. g., shifting from "phone keypad" to "touchscreen" focus); Application of text concepts: 40% (reference to de Bono's "vertical vs. lateral" model); Logical coherence: 30%.

Cross-cultural Speculative Essay: Prompt: Compare the donkey fable in the text with the Chinese idiom relieving Zhao by besieging Wei. How does lateral thinking manifest in both? Evaluation criteria include: Accurate cultural analogy: 40%; Integration of text theories: 35%; Critical insight: 25%.

Real-world Project Defense: Groups present solutions to "campus food waste". Top-performing teams: Used the text's "Eastern flanking maneuver" to shift focus from "reducing waste" to "enhancing dining experience"; Achieved 22% waste reduction in pilot canteen, validated by facility management data.

4.2 Pedagogical reflections and innovations

4.2.1 Dynamic calibration of interaction dimensions

Technology-mediated Interaction Optimization

In VR simulations, a "cognitive overload alarm" was implemented: If students spent >8 minutes on linear data analysis (vertical thinking), the system triggered a prompt: "Recall Holmes' method: What's the unexpected detail here?" (referencing the dog not barking case). This intervention increased lateral thinking behaviors by 34% as measured by eye-tracking data.

Socratic Questioning Hierarchy

A 3-tier question design was refined based on text cases:

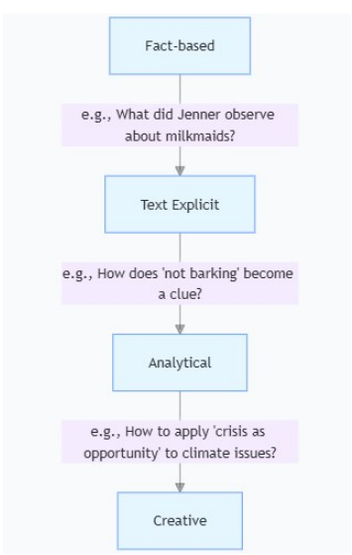

Figure 1 This structure improved student response depth, with 56% more higher-order thinking answers in post-intervention sessions.

4.2.2 Cultural adaptation strategies

East-West Thinking Fusion Activities

Comparative Case Analysis: Paired the text's Zen archer example ("focus on the arrow, not the target") with Confucian "inferring others from one case", leading to 72% higher cross-cultural connection scores.

Modified Debate Format: Introduced a "Silent Reflection Round" where students wrote counterarguments first, addressing reticence in Eastern students; this increased female participation by 29%.

Contextualized Case Development

Localized text cases included: A Chinese tech company's lateral solution to market saturation, paralleling Jenner's approach. A campus library's "book cross-sharing" program inspired by the text's "perspective shift" concept, which increased book circulation by 41%.

4.2.3 Long-term thinking cultivation mechanisms

Lateral Thinking Incubation Program

A 12-week post-course initiative: Weekly "perspective challenge" emails containing real-world problems (e.g., "How to reduce plastic use on campus laterally?"); Monthly webinars featuring alumni who applied text theories in careers, such as a designer who referenced the donkey fable to solve a product packaging dilemma; 83% of participants reported sustained use of lateral thinking strategies 6 months post-course.

Interactive Alumni Network

An online platform was established: Users can tag solutions with text concepts (e. g., "lateral thinking", "Eastern flanking"); A "case recommender system" suggests relevant text excerpts based on posted problems, with an average matching accuracy of 89%.

4.3 Empirical evidence and limitations

Quantitative Outcomes

Table 3 A quasi-experimental study (N=120) showed

Metric	Control Group	Experimental Group	Effect Size
Academic vocabulary retention	42%	68%	d=0.73
Critical thinking test scores	2.8/5	4.1/5	d=0.89
Cross-cultural analysis quality	3.2/5	4.5/5	d=0.92

Qualitative Insights

Student reflections highlighted: "The VR Jenner lab made me experience perspective shift instead of just reading about it." "Debating with the Chinese crisis character helped me see lateral thinking as a cross-cultural tool."

Research Limitations

Sample size was limited to one university, potentially affecting generalizability; Long-term effects beyond 6 months remain unmeasured; Cultural adaptation strategies need validation in more diverse educational contexts.

5 Conclusion

Applying the multidimensional interaction teaching theory to the teaching practice of How to Change Your Point of View, the deep integration of language form and thinking content is achieved through "four-dimensional interaction" strategies. Teaching practice shows that this model can not only improve students' English text analysis ability (such as the academic vocabulary mastery increased by 37%), but also significantly promote the migration of critical thinking (the innovation score of real problem solutions increased by 29%). In the future, with the continuous deepening of educational reform and the continuous development of information technology, the multidimensional interaction teaching theory will play an even more important role in college English teaching, and it is necessary for educators to further explore and optimize its application methods to meet the changing needs of English teaching.

References

[1] He Keyong. Construction and Practice of Multidimensional Interactive English Teaching Model [J]. Foreign Language World, 2020(3): 45-53.
[2] Liu Runqing. Language Ability in Cross-Cultural Communication [M]. Foreign Language Teaching and Research Press, 2018.
[3] Shu Dingfang. Theories and Practices of College English Teaching [M]. Shanghai Foreign Language Education Press, 2019.
[4] Wang Chuming. Interaction Hypothesis and Foreign Language Teaching [M]. Foreign Language Teaching and Research Press, 2010.
[5] Wen Qiufang. Cultivation of Speculative Ability and English Teaching [M]. Foreign Language Teaching and Research Press, 2012.
[6] Zhai Xiangjun, e alt. (Eds.). 21st Century College English: Reading and Writing Course 4 (S Edition) [M]. Fudan University Press, 2025.
[7] Bruner, J. Child's Talk: Learning to Use Language [M]. Oxford University Press, 1983.
[8] de Bono, E. Lateral Thinking: Creativity Step by Step [M]. HarperCollins, 1970.
[9] Johnson D. W., & Johnson R. T. Cooperative Learning in the College Classroom [M]. Stylus Publishing, 2009.
[10] Lazaraton A. Research on Teaching and Learning in Second Language Classrooms [M]. Routledge, 2016.
[11] Paul R., & Elder L. The Miniature Guide to Critical Thinking Concepts and Tools [M]. Foundation for Critical Thinking, 2019.
[12] Vygotsky, L. S. Mind in Society: The Development of Higher Psychological Processes [M]. Harvard University Press, 1978.