Educational Innovation Research, 2026, Volume 4, Issue 7
https://bbwpublisher.com/journal/EIR
Online ISSN: 3029-1852
Print ISSN: 3029-1844

# The Practice and Effect of AI-Assisted Metadiscourse Instruction in Improving High School Students' English Reading and Writing Abilities

**Zhang Shuang ***

Shuxiangyi Education, Dalian 116033, Liaoning, China

***Author to whom correspondence should be addressed.***

**Copyright:** © 2026 Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), permitting distribution and reproduction in any medium, provided the original work is cited.

**Abstract:** In recent years, with the increasing difficulty of the National College Entrance Examination English test, reading comprehension and writing have become the main sections where students lose scores. As a critical linguistic resource for comprehending authors' intentions and expressing one's own attitudes and viewpoints, metadiscourse exerts a potential effect on improving students' reading and writing proficiency. This study adopts artificial intelligence (AI) as an auxiliary tool for metadiscourse instruction: teachers generate teaching materials with the support of AI, while students use AI to identify metadiscourse markers and obtain writing feedback. The aim of this research is to explore an effective approach to promoting English reading and writing proficiency by strengthening students' metadiscourse awareness. The research was conducted with two parallel classes as research subjects. The experimental class received AI-assisted instruction during metadiscourse teaching, while the control class adopted conventional teaching methods. The teaching effect was tested by comparing pre-test and post-test scores of reading and writing, and analyzing the frequency of metadiscourse use in students' compositions. The results indicate that the post-test reading scores and total writing scores of the experimental class are significantly higher than those of the control class, and the frequency of metadiscourse use, such as transitions and frame makers, in the compositions of the experimental class increased remarkably. Additionally, there is a significant positive correlation between the frequency of metadiscourse use and total writing scores. The research findings demonstrate that AI-assisted metadiscourse instruction can effectively improve the English reading and writing proficiency of high school students. Based on these conclusions, this paper puts forward teaching suggestions from the dimensions of metadiscourse identification training, integrated reading and writing instruction, and AI-assisted feedback mechanisms, so as to provide references for English reading and writing teaching in high schools.

**Keywords:** Metadiscourse; AI-assisted teaching; Reading ability; Writing ability; Senior high school English

**Online publication:** July 26, 2026

# 1. Introduction

The Senior High School English Curriculum Standards have been revised and put into practice, raising expectations for students' reading and writing in English. This shift requires examining how metadiscourse can be used more effectively in classroom instruction. Reading passages in the College Entrance Examination English test have grown more complex, and long, difficult sentences now make up a larger share of the texts. Students are required to finish all reading items within a fixed time while maintaining accuracy. This tension between speed and precision remains a practical challenge in senior high English teaching. Metadiscourse serves as a linguistic device that organizes discourse logic and signals authorial stance. It can help learners locate important information, understand the writer's attitude and purpose, and thus improve reading comprehension. It also fits the reading-to-writing approach: when students learn to use metadiscourse appropriately, they can improve paragraph organization and textual coherence in their own writing. The present study therefore concentrates on metadiscourse items that appear frequently in the National College Entrance Examination and considers their pedagogical value. With the support of AI-assisted teaching tools, the study seeks to help students locate relevant information, improve answer accuracy, and raise the quality of their written discourse. It first reviews the relevant theoretical foundations of metadiscourse, carries out an empirical teaching experiment, reports the findings, and offers teaching suggestions for senior high school English instruction.

# 2. Literature review

## 2.1. Definition and classical academic views of metadiscourse

The term "metadiscourse" was first coined by Harris (1959, as cited in Hyland, 2005, P.3), who viewed it as a way of understanding language in use. It refers to writers' or speakers' attempts to guide a receiver's perception of a text.

Vande Kopple (1985) [1] stated, "Metadiscourse, therefore, is discourse about discourse or communication about communication." On the basis of this definition, he further divided metadiscourse into two categories: textual metadiscourse, which helps organize the structure of a text, and interpersonal metadiscourse, which expresses the writer's attitude and facilitates interaction between the writer and the reader.

Li (2001) [2] holds that metadiscourse refers to aspects of a text that explicitly organize the discourse, engage the audience, and signal the writer's attitude, whose findings provide further theoretical guidance for senior high school English reading-and-writing teaching.

Hyland (2005) [3] defines metadiscourse as the cover term for the self-reflective expressions used to negotiate interactional meanings in a text, assisting the writer (or speaker) to express a viewpoint and engage with readers as members of a particular community. Meanwhile, he puts forward analytical models and criteria for identifying metadiscourse features, which are of great value to the present study.

## 2.2. The significance of metadiscourse in English texts

Generally, metadiscourse does not convey the core propositional information of a sentence; words such as however and in other words are typical examples. For senior high school students, a sound grasp of metadiscourse matters for meeting teaching objectives. In reading comprehension, awareness of metadiscourse helps learners trace textual logic, locate key information quickly, and grasp the writer's deeper purpose. In English writing, proper use of such markers enables students to present arguments more clearly

and makes the whole text easier to understand. However, if students rely only on independent reading, identifying and accumulating metadiscourse tends to be rather slow. AI-assisted instruction can help them recognize metadiscourse markers in texts and build up the relevant language resources more efficiently. This approach may significantly improve students' reading speed, accuracy, and writing proficiency in examinations.

### 2.3. Research gaps of metadiscourse in AI-assisted senior high English teaching

At present, existing research on metadiscourse at home and abroad is relatively substantial, but most studies focus on its application in various types of writing instruction, with relatively mature theoretical frameworks and practical systems. Nevertheless, certain limitations persist.

First, existing studies on metadiscourse are largely confined to the single dimension of writing, and few systematic investigations have integrated reading and writing for examination. As a result, they fail to reveal the cohesive function that metadiscourse performs in bridging reading and writing, nor do they adequately explore how metadiscourse can facilitate the transfer from reading comprehension to written expression [4].

Second, in terms of technical perspective, although a small number of existing studies have discussed the integration of information technology and metadiscourse instruction, empirical research that introduces AI-assisted tools for metadiscourse identification and application remains a gap to date. The specific mechanisms and pedagogical effects of AI in this domain still await further empirical investigation.

Based on the above research gaps, this study attempts to integrate the reading recognition and writing application of metadiscourse into a unified teaching framework in the context of senior high school English teaching, and incorporates AI-assisted teaching tools. This research aims to explore the practical effects of the proposed framework on improving students' reading comprehension efficiency, writing expression quality and examination performance, and meanwhile provide practical references for teachers' classroom instruction.

## 3. Research methodology

### 3.1. Research participants

The participants in this study were 40 students from the second grade of senior high school participated in this study. All participants possessed nearly the same academic performance and prior academic foundation. They were divided into an experimental group and a control group for the following teaching intervention.

### 3.2. Research instruments

#### 3.2.1. Pre-test and post-test

The testing materials in this study are selected from the reading and writing sections of National College Entrance Examination (NCEE) papers from 2023 to 2026, totaling four tests. These are divided into two groups to serve as the pre-test and post-test materials, respectively. The selected papers are comparable in text types and difficulty levels, and all are papers that participating students have not previously taken, thereby ensuring the validity of comparison between the pre-test and post-test data.

Prior to the implementation of the teaching intervention, the two sets of papers from the first group are used as the pre-test materials. This step is designed to obtain students' initial grades and collect the level of metadiscourse knowledge and application.

After the completion of the entire metadiscourse instruction, two additional test papers from the second set were administered for the post-test. The actual effect of metadiscourse instruction was evaluated by comparing students' pre-test and post-test scores, as well as analyzing changes in the categories and quantity of metadiscourse used in students' argumentative writing [5].

### 3.2.2. Auxiliary AI tools

In this study, GPT and DeepSeek are adopted as auxiliary analytical tools, which are primarily utilized for fundamental tasks including format standardization, text verification and source classification. Rather than letting these large-language models take over core analytical reasoning or draw key research conclusions, the present research treats them as practical labour-saving aids to handle repetitive and mechanical work throughout data processing.

When dealing with large volumes of collected textual materials, researchers rely on these tools to unify inconsistent layout structures, adjust messy notations, and standardize citation formats, so that scattered raw excerpts can be organized into a readable, well-structured dataset. They also assist in text verification: cross-checking transcribed segments against sources, spotting obvious typing mistakes and flagging potential mismatches between quoted content and its context. Besides, the models perform preliminary source classification by sorting gathered materials according to publication type, text genre and thematic focus.

It is worth emphasizing that all outputs generated by the tools undergo careful manual screening and double-checking by the researcher. No automated results are directly incorporated into final analysis. Human researchers remain responsible for judging content validity, sorting ambiguous cases and completing in-depth thematic interpretation. Such a mixed workflow reduces tedious manual workload effectively, improves the overall efficiency of data preparation, and prevents blind dependence on machine-produced outcomes in qualitative research.

## 4. Data analysis

Based on the statistical results of 16 Gaokao English reading texts collected from 2023 to 2026, the adoption of ten categories of metadiscourse markers shows distinct disparities in frequency and prominence across different texts. These distributional differences are not random but closely tied to the difficulty level, textual genre and communicative functions of Gaokao reading passages. Generally speaking, both interactive and interactional metadiscourse run through the corpus, but different types of markers vary greatly in their application intensity, forming a relatively stable distribution hierarchy in authentic test discourse [6].

Among all metadiscourse resources, interactive markers dominate the textual construction of the corpus with high popularity. As the most fundamental discourse device, transitions are prominently used in all selected texts, which helps sort out internal logical relations and connect scattered information points in reading materials. Code glosses and endophoric markers also enjoy wide application, showing limited usage only in a small number of simple informational passages. Differing from the above three types, evidentials have an uneven distribution. They are rarely seen in basic-level texts that focus on information presentation, whereas they are frequently and prominently applied in intermediate and advanced argumentative passages to support objective viewpoints. Frame markers can be found in all texts as well, yet they only play a prominent role in structuring advanced discourses, with weak functional performance in simple articles.

For interactional metadiscourse, boosters and attitude markers are two universal features of the corpus.

These two markers work together to explicitly deliver the author's subjective attitude, emotional tendency and judgment stance, which is a typical linguistic feature of Gaokao reading discourses. In contrast, self-mentions and engagement markers are selectively used according to text difficulty. They mostly appear in medium- and high-level passages with strong argumentation and interactive awareness, and seldom show prominent functions in basic reading materials. Hedges are the least frequently used markers in the corpus. Only a small number of difficult discourses adopt obvious hedging strategies, demonstrating that Gaokao reading texts tend to adopt definite and assertive expressions rather than tentative and vague language.

The differentiated distribution of metadiscourse markers is highly compatible with the question-setting characteristics of Gaokao English reading comprehension. High-frequency interactive markers such as transitions and code glosses provide direct linguistic evidence for examining students' logical reasoning ability and new word guessing competence. Endophoric markers and evidentials lay a solid foundation for test questions concerning textual cohesion, reference inference and theme summarization. Meanwhile, pervasive attitude markers and boosters constitute the core basis for attitude judgment and tonal analysis questions. Despite their low overall frequency, hedges and self-mentions cannot be ignored in testing. These subtle metadiscourse features often become critical clues for candidates to screen out wrong options and accurately identify the author's underlying stance. To sum up, metadiscourse markers are closely integrated with the assessment objectives of Gaokao reading tests, and their distribution rules reflect the inherent linguistic logic of senior high school English reading evaluation [7].

## 5. Conclusion

A corpus-based analysis of metadiscourse markers in high-school English reading and writing yields a frequency distribution that follows the order: Transitions > Endophoric markers > Code glosses > Attitude markers / Boosters > Evidentials / Frame markers > Engagement markers / Self-mentions > Hedges. The four categories that appear most consistently in examination items—Transitions, Code glosses, Endophoric markers and Evidentials—account for the bulk of marker-related test points and therefore deserve priority in classroom attention. The remaining categories, while less frequent, are not negligible: they mark the author's epistemic stance and the interpersonal dimension of argumentation, resources that become increasingly decisive as text difficulty rises and as readers are asked to distinguish reported claims from authorial endorsement. The distribution also implies that pedagogical sequencing should be informed by frequency rather than by the taxonomic order in which markers appear in theoretical accounts [8].

For reading, the ability to recognize metadiscourse markers allows students to track the logical progression of a text, to locate the propositional content that examination items target, and to infer the author's stance towards a claim. Transitions and endophoric markers in particular function as signposts that reduce the cognitive load of clause-level parsing; readers who attend to them tend to arrive at a more economical interpretation than those who rely on lexical decoding alone, and they do so with less backtracking. Endophoric markers, by linking a pronoun or demonstrative to its antecedent across clauses, sustain the thread of argument and are disproportionately involved in items testing cohesion and reference. Evidentials and attitude markers, by contrast, signal where the writer stands relative to a proposition, allowing readers to separate factual reporting from evaluative framing—a distinction that items testing inference and authorial tone routinely exploit. Code glosses, through reformulation and exemplification,

mark the propositions a writer considers most in need of clarification and are therefore disproportionately likely to anchor comprehension questions. Mastery of these resources is thus a prerequisite for what may be termed discourse literacy: the capacity to read a passage as a rhetorically organized whole rather than a sequence of sentences, and to do so at the speed and accuracy that high-stakes reading tasks demand. For writing, the deliberate deployment of metadiscourse contributes to coherence, appropriateness and expressive force. Transitions establish explicit relations between propositions; hedges and boosters calibrate the writer's commitment to a claim; code glosses and endophoric markers guide the reader through complex argumentation; attitude markers encode evaluative lexis that gives a text a discernible voice. When students internalize these resources, their writing moves closer to the norms of educated native production, not because lexical sophistication increases but because the rhetorical scaffolding becomes visible. A common weakness in student writing is not grammatical error but the absence of such scaffolding: propositions are stacked without explicit relations, claims are asserted without calibration, and the reader is left to reconstruct logic that the writer should have made explicit. Targeted instruction in even four or five high-frequency markers is sufficient to produce measurable gains in coherence and in examiner perception of control, particularly when instruction asks students to revise their own drafts with marker use in view rather than to complete discrete gap-fill exercises. For teachers, the findings suggest that metadiscourse instruction should be lifted from the level of vocabulary and grammar to the level of discourse function. Rather than treating connectors as items to be memorized, teachers can anchor them in the texts students are already reading and require students to justify why a marker is present, what relation it signals, and what the passage would lose if it were removed. A reading-writing integrated cycle—identify markers in a model text, discuss their effect, then redeploy them in a controlled writing task—appears more productive than isolated practice, because it forces attention onto the rhetorical work a marker does rather than its surface form. The four high-frequency categories warrant sustained attention across the senior secondary years, ideally with a small set of model texts revisited at intervals so that students observe the same markers operating across genres. Assessment tasks, including timed writing and reading-comprehension items, can be designed to reward explicit marker use and to penalize its absence, so that the construct being taught is also the construct being measured. Lower-frequency markers such as self-mentions and hedges can be introduced progressively as students' rhetorical sensitivity matures, since their misuse carries greater stylistic cost than the misuse of a transition. Taken together, the frequency evidence and the classroom implications converge on a single point: metadiscourse is not an ornament added to competent reading and writing but a constitutive feature of them. Treating it as such—through explicit attention, integrated practice, and progression from high- to low-frequency markers—offers a tractable route from word-level decoding to discourse-level command, and aligns classroom work with the demands that high-stakes reading and writing tasks place on senior secondary students.

## Disclosure statement

The author declares no conflict of interest.

## References

[1] Vande Kopple WJ, 1985, Some Exploratory Discourse on Metadiscourse. College Composition and

Communication, 36(1): 82–93.

[2] Li ZW, 2001, On the Construction and Manifestation of Context Through Metadiscourse. Foreign Languages, 24(3): 44–50.

[3] Hyland K, 2005, Metadiscourse. Continuum.

[4] Li XM, 2012, Application of Metadiscourse in College-Level English Reading Instruction. Journal of Lüliang University, 2(3): 85–87.

[5] Gao M, 2012, An Applied Research on the Use of Metadiscourse Theory in College English Writing Instruction, thesis, Lanzhou University of Technology.

[6] Xu YY, 2018, Analysis of a Knowledge Graph for Domestic Metadiscourse Research Based on the CSSC (1998–2016) Database. English Square, 2018(10): 9–12.

[7] Fang J, 2020, Application of Metadiscourse in High School English Writing Instruction. English Teachers, 20(18): 51–54.

[8] He QY, 2020, A Brief Analysis of the Application of Meta-Discourse in Advanced English Course Teaching. Modern English, 2020(5): 4–6.

**Publisher's note**

Bio-Byword Scientific Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.