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A Scoping Review on the Impact of Multimodal Pedagogic Discourse on Student Engagement

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Abstract

Multimodal pedagogic discourse deeply affects the construction of classroom meaning and student engagement by integrating a variety of symbolic resources such as language, gestures, vision and spaces. In order to systematically sort out the research progress in this field, this article reviews 71 empirical studies published between 2010 and the first half of 2025. It is found that multimodal pedagogic discourse can effectively promote students' engagement in the three dimensions of behavior, emotion and cognition through the coordination of various modes and dynamic interaction in the classroom. The existing researches are mostly based on theoretical frameworks such as social semiotics and multimodal discourse analysis, and mainly adopts qualitative or mixed research methods, but there are still obvious shortcomings in the consistency of measuring tools, subject situation coverage, depth of technical integration, and the mechanism of teachers' multimodal arrangement ability. This article suggests that future research should strengthen interdisciplinary comparison, develop dynamic engagement measurement tools, and focus on technology-supported multimodal interactions and teacher professional development to deepen theoretical construction and provide effective references for classroom practice.

Keywords: Multimodal Pedagogic Discourse, Student Classroom Engagement, Scoping Review, Classroom Interaction, Multimodal Resource Integration

Introduction

Multimodal discourse analysis extends the study of language itself to the study of the combination of language with other multimodal resources (such as images, gestures, actions and music) in the process of meaning construction (O'Halloran, 2004). The significance of multimodal discourse analysis is that it can integrate linguistic and non-linguistic information, and fully demonstrate the role of various symbol systems in the process of meaning exchange.

Classroom teaching is a multimodal interactive process. Multimodal researches on classroom discourse show that teaching language is not the only resource for constructing and revealing knowledge (Qin & Wang, 2021). Teachers transmit information in the teaching process not

only including verbal information, but also non-verbal behaviors such as gestures, body posture, vocalizations, physical teaching aids and digital media (Peng, 2019).

Research on multimodal analysis of pedagogic discourse (O'Halloran, 2005; Jewitt, 2008; Franceschi, 2018; Lotherington et al., 2019) challenges the traditional view that "teaching and learning are primarily accomplished through the language of instruction." Understanding of the nature of pedagogic discourse in instructional activities has expanded to encompass what is termed "multimodal pedagogic discourse." Lim (2011) believes that although all discourses are essentially multimodal, strictly speaking, it is not necessary to add the modifier "multimodal" before "pedagogic discourse", but he proposed the term "multimodal pedagogic discourse" in his research to emphasize the multimodality of the pedagogicg discourse studied. The concept of multimodal pedagogic discourse combines the understanding of social semiotics of multimodal discourse (Kress & van Leeuwen, 2001; Jewitt, 2008) and the functional framework of pedagogic discourse (Bernstein, 1990), emphasizing that meaning emerges through the collaborative design and dynamic interaction of multimodal resources. Multimodal pedagogic discourse is not only a way of information transmission, but also an important carrier of classroom meaning construction and social interaction (Jewitt, 2008; Norris, 2011). As the core carrier of classroom meaning construction and social interaction (Jewitt, 2008; Norris, 2011), the quality of the implementation of multimodal pedagogic discourse is directly related to students' classroom engagement. As a key intermediary connecting the teaching process and learning outcomes (Virtanen et al., 2015), the multi-dimensional characteristics of classroom engagement are potentially related to the functional complementarity of multimodal resources.

In the classroom learning environment, teachers are always exploring skills to improve the quality of classroom interaction, promote students' engagement in learning and prevent disconnection. As a classroom communication method that integrates a variety of symbolic systems and media, multimodal pedagogic discourse not only affects the expression of teaching content and students' understanding, but also is directly related to students' level of classroom engagement. Engagement is one of the hottest research topics in the field of educational psychology (Krause & Coates, 2008; Ainley, 2012; Virtanen et al., 2015; Rajabalee et al., 2020; Salhab & Daher, 2023). It includes the interaction between personal characteristics and the environment (Thijs & Verkuyten, 2009). Student engagement can be regarded as an indicator of the classroom quality and effectiveness, and it is also an intermediary factor between the teaching process and students' learning outcomes (Virtanen et al., 2015). It not only includes students' observable behavior in classroom activities, such as raising hands, speaking, and completing tasks, but also covers emotional engagement, such as interest, enthusiasm, sense of belonging, and deep cognitive engagement, such as deep thinking, strategic use, critical reflection (Fredricks et al., 2004). Kress & van Leeuwen (2001) believes that teachers' reasonable allocation of different modal resources can significantly promote students' attention, willingness to interact and learning engagement. For example, teachers use gestures and display visual materials to explain, so that students can understand abstract concepts more profoundly. They can effectively guide students' attention by dynamically adjusting their vocal intonation and changing their spatial position during instruction.

In multimodal teaching situations, teachers use multimodal pedagogic discourse strategies to guide students to actively participate in different dimensions, which is the key to promoting the construction of classroom meaning and a common concern in the fields of educational linguistics, applied linguistics and educational technology (Qin & Wang, 2021; Murci A & Sheffield, 2014; Lim, 2023). In recent years, the number of studies on multimodal pedagogic discourse and student classroom engagement has gradually increased, covering different cultural backgrounds, disciplines and learning stages. However, existing studies employ varied methodologies and fragmented theoretical frameworks, including multimodal discourse analysis, sociocultural theory analysis, interaction analysis, etc., which lack a unified analytical perspective. The specific mechanisms linking multimodal pedagogic discourse to various dimensions of student classroom engagement remain under-explored. Although relevant literature studies have revealed the role of different modal resources used by teachers in students' classroom engagement, it is still necessary to conduct a comprehensive and systematic review, presenting the composition of multimodal resources, implementation characteristics, the mechanism of students' classroom engagement, and the theories and methods used in this field.

According to the above research background, this study builds an integrated theoretical framework combining multimodal resource coordination and the three dimensions of classroom engagement to systematically guide literature combing and analysis. First of all, taking social semiotics (Kress & van Leeuwen, 2001) as the underlying logic, multimodal pedagogic discourse is defined as “a semantic synergy system of multiple symbolic resources”, focusing on the metafunctions of different modes, namely ideational function, interpersonal function, textual function, how to serve the construction of classroom meaning. Secondly, in terms of analytical perspective, multimodal discourse analysis (O’Halloran, 2004) and classroom interaction analysis (Walsh, 2011) are integrated. The former is used to analyze the combination rules of modal resources, and the latter is used to capture the immediate effect of modal interaction. In addition, the interpretation of the results is based on the three-dimensional model of classroom engagement of Fredricks et al. (2004), which divides students’ classroom engagement into behavioral, emotional and cognitive engagement, thereby ensuring the theoretical consistency of the analysis dimension. Finally, it incorporates the theory of technical integration (Chapelle et al., 2014) to explain the complementary mechanism of digital mode and traditional mode, and covers the new research trends in recent years. This integrated theoretical framework provides a unified analytical perspective for the subsequent combing of relevant studies, making the logic of this review more systematic.

Guided by the integrated theoretical framework combining multimodal resource coordination and the three dimensions of classroom engagement, this study adopts the method of scoping review to systematically sort out the research findings on the impact of multimodal pedagogic discourse on students' engagement in the classroom from 2010 to the first half of 2025, showing the overall development trend of existing research, identifying gaps, and then providing inspiration for subsequent empirical studies and teachers' classroom teaching practice.

Research Questions

This research revolves around the following issues:

RQ1: What modal resources of multimodal pedagogic discourse have been focused on in existing studies? How is the multimodal pedagogic discourse implemented in the classroom?

RQ2: What is the impact of multimodal pedagogic discourse on students' classroom engagement? What dimensions of engagement are these influences reflected in?

RQ3: What theoretical perspectives and research methods are adopted in the existing studies? What is their focus in explaining the relationship between "multimodal pedagogic discourse and classroom engagement"?

RQ4: What are the gaps and limitations in the current research?

Method

Search Strategy

This study adopts the method of scoping review and follows the PRISMA-ScR guidelines (Tricco et al., 2018), including identifying research problems, formulating retrieval strategies, screening literature, data extraction and result integration.

The data of this study comes from the four authoritative databases of ERIC, Scopus, Web of Science and CNKI, supplemented by manual retrieval. Search keywords centered on “multimodal pedagogic discourse”, “multimodal classroom talk”, “student engagement” and other keyword combinations.Simultaneously, the restrictions were adjusted according to the characteristics of the database. For example, in order to ensure the quality of studies, the index conditions were re-qualified as SSCI and A&HCI in the Web of science database. The present study limits the time range from 2010 to the first half of 2025, because before 2010, most of the relevant studies were conceptual papers, and rarely directly focused on the variable of classroom engagement. After 2010, the application of multimodal analysis in educational situations gradually systematized, and the research began to shift from theoretical discussion to classroom empirical research. Researches related to multimodal pedagogic discourse and classroom engagement have entered a period of rapid development, and the quantity and quality of research have grown intensively. The cutoff date of the first half of 2025, corresponds to the completion of this study's literature search and data collation, so as to ensure that the inclusion of the literature can reflect the latest research progress in this field. The setting of this period of time can ensure the representativeness and cutting-edge of the review results. Finally, after deduplication and screening, 71 standard-compliant empirical studies were included.

Inclusion and exclusion criteria are as follows:

Inclusion criteria	Exclusion criteria
Studies must be empirical research.	Studies pertain to non-educational contexts (e.g., multimodal analysis of film/video).
The research context must be classroom settings in primary/secondary or higher education.	Non-empirical research, such as theoretical essays and commentary articles.
The study must explicitly involve teachers' multimodal instructional discourse, where multimodality requires the integration of at least two modalities to be included, such as linguistic or verbal modality, gestural or physical modality, visual materials, and digital tools.	Materials in languages other than English or Chinese (based on database limitations)
The study must explicitly examine the relationship between student classroom engagement and multimodal pedagogic discourse.	Single-modality investigations
The study must be published in peer-reviewed journals or academic conferences, or be a high-quality doctoral or master's thesis.	Research irrelevant to engagement variables or lacking multimodal discourse analysis
Full text must be accessible.	Articles failing to explicitly examine causal relationships between multimodal pedagogic discourse and student engagement.

Data Extraction and Analysis

This study followed the scoping review process proposed by Arksey and O'Malley (2005). First, relevant information from all included articles was extracted. This included authors, publication year, research objectives, methodologies, multimodal resources used, theoretical foundations, key findings, and effects on student engagement. The extracted information was organized into tabular formats. Following data extraction, the researcher employed thematic induction analysis to conduct open coding of descriptions relevant to the research questions within the included literature. Initially, each article was read individually, with sentences related to multimodal pedagogic discourse and student classroom engagement annotated and converted into brief, generalizable initial codes. Subsequently, semantically similar or conceptually related codes were merged into thematic categories to reveal the characteristics of multimodal pedagogic discourse and its relationship with student engagement, thereby addressing each research question. Data extraction and coding strictly follow the above-mentioned integrated theoretical framework, so as to ensure the theoretical consistency of the coding standard. Table 1 presents selected literature demonstrating the exemplary process from original text excerpts to initial codes and thematic categories.

Table 1

Literature	Key Information	Initial Codes	Thematic Category
Learner Initiative Through Multimodal Communication Resources in the English Classroom	Young learners proactively initiate interactions using multimodal resources such as "finger-folding counting," "raising hands + name tags," and "eye contact."	"Finger folding," "name tag raising," "eye contact initiating interaction"	Student Active Engagement
Multimodal Interaction Analysis: A Powerful Tool for Examining Plurilingual Students' Engagement in Science Practices	Teachers employ gestures, facial expressions, intonation, and multilingual resources to help multilingual students synchronize interactions with peers and successfully use classroom language.	"nonverbal strategies," "multilingual resources," "interaction synchronization"	Promoting Emotional Engagement
Teacher interaction strategies and situated willingness to communicate	Teachers employ open-ended questions, extended waiting time, monitoring of private speech, and multimodal cues to sustain students' willingness to communicate.	"Referential questioning," "waiting time," "monitoring multimodal cues"	Promoting Teacher-Student Interaction
Effects of digital citizenship educational game on teenagers' learning achievement, motivation, cognitive load, and behavioral patterns	Utilizing a digital citizenship educational game system stimulates engagement among low-motivation students; behavioral sequence analysis reveals positive changes in their learning patterns.	"Educational game," "behavioral sequence analysis," "stimulating low-motivation students"	Digital tools expand engagement dimensions
The effects of teacher-introduced multimodal representations and discourse on students' task engagement and scientific language	Highly effective teachers frequently employ physical representations, probe students' understanding, and guide thinking. Students spend more time engaged in their classrooms and use richer scientific language.	"Physical representations," "questioning understanding," "guiding thinking"	Promoting cognitive engagement

Furthermore, to present the macro-level distribution characteristics of the research, this study also conducted frequency statistics and descriptive analysis on the publication years and research methods of the literature to supplement the results of the thematic analysis, as shown in Tables 2 and 3.

Table 2

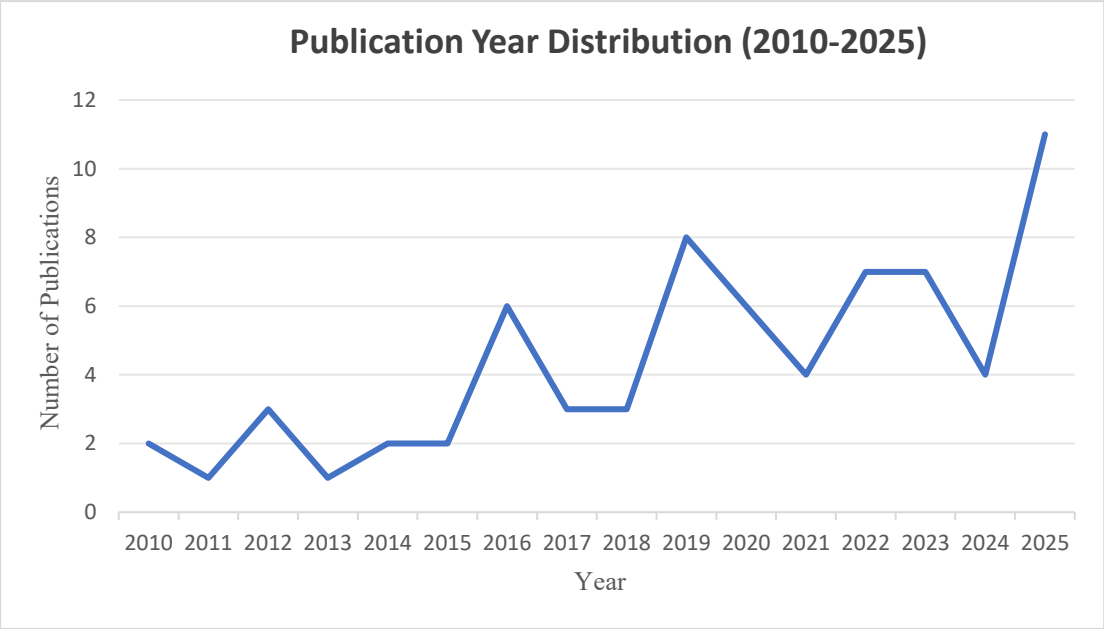
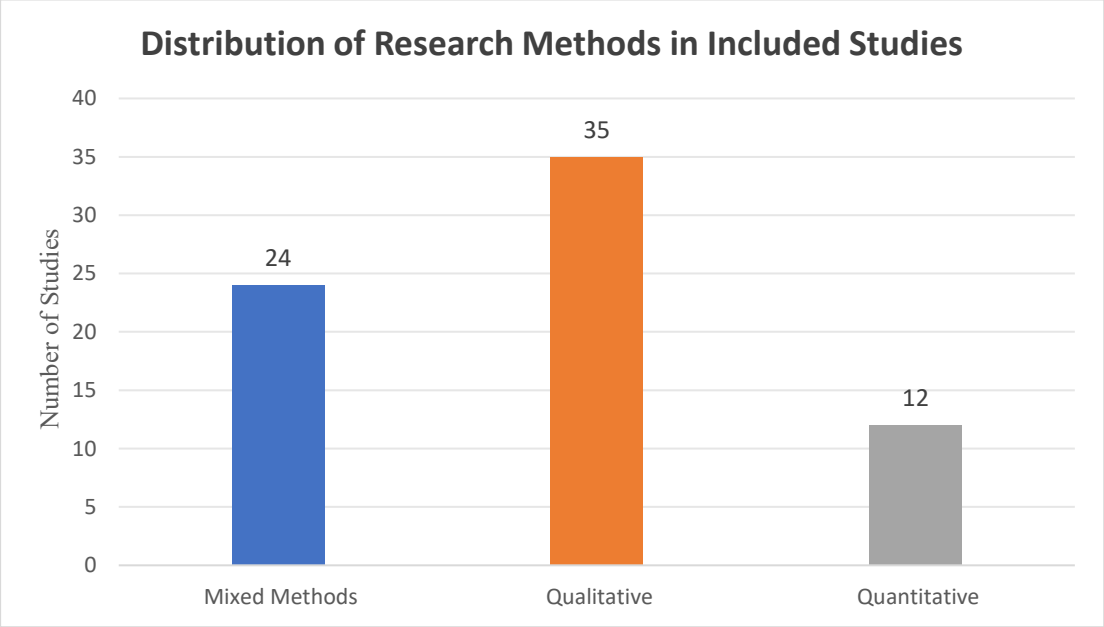


Table 3



Statistical analysis of publication years indicates that research on the impact of multimodal pedagogic discourse on student engagement was scarce between 2010 and 2015 (9 studies total), averaging fewer than 2 publications annually, reflecting an exploratory phase in this field. Following 2016, the number of studies began showing steady growth. Publication volume remained high in 2022 (n=7) and 2023 (n=7), peaking in 2024 (n=10) and 2025 (n=11, data collected through July 31). This trend clearly indicates sustained academic interest in this topic over the past fifteen years, establishing it as an active area within contemporary educational research.

Statistical analysis of research methodologies across the 71 included studies reveals qualitative research as the most prevalent (n=35), followed by mixed method research (n=24),

and quantitative research accounted for the lowest proportion (n=12). This distribution feature shows that the research on multimodal pedagogic discourse and classroom engagement is generally more inclined to adopt qualitative methods to explain the detailed use of language, gestures, PPT and other multimodal pedagogic discourses used by teachers and their impact on student engagement. The number of mixed-method research is also relatively large, which reflects that while researchers are committed to in-depth analysis of the application of multimodal pedagogic discourse and the impact on students' engagement, they verify the observation findings with the help of quantitative statistical results, so as to improve the explanatory and persuasiveness of the research. Although quantitative research accounts for the lowest proportion, it focuses on measuring quantifiable variables such as student engagement and learning effectiveness, and has unique advantages in verifying the effect of intervention and comparing different multimodal teaching strategies.

Results and Discussion

Modal Resources and Classroom Implementation of Multimodal Pedagogic Discourse

After combing the studies, it is found that the modal use involved in multimodal pedagogic discourse is increasingly abundant, including language mode, such as language explanation, questions, etc. (Chapelle et al., 2014; Kwak, 2023); Body mode, such as gestures, facial expressions, gaze, postures, etc. (Peng, et al., 2017; Wu,2025); Visual mode, such as board books, videos, PPT displays, etc. (Peng, 2019; Badem-Korkmaz & Balaman, 2024); Paralanguage mode , such as intonation, volume, etc. (Kim, 2020; Wilmes & Siry, 2021); Physical and spatial resources, such as teachers' position and movement in the classroom, student seat layout, etc. (Kwak, 2023; Kim, 2020; Mills & Exley, 2014; Zhang, 2022); Tactile and physical mode, such as experimental equipment, models, toys, etc. (Regalla & Peker, 2016; Fernández et al., 2020). In recent years, the application of digital resources such as interactive whiteboards, collaborative platforms, and even AR exploration tools combined with brain-computer interfaces has gradually increased. The use of these resources provides a wider space-time range for teacher-student interaction (Chapelle et al., 2014; Hinkelman, 20 Sixteen).

In the process of classroom organization, teachers' multiple modal resources are not used in isolation, but form complementarity and synergy through integration. After sorting out the relevant studies, it is found that teachers often integrate spoken language, gestures and visual prompts when explaining concepts to highlight the key points and help students understand the discourse information (Kwak, 2023; Peng, et al., 2017). The teacher’s language mode serves as the core interpretation function. The body mode is used to emphasize and guide students’ attention to participate. In addition, teachers will also use physical space movement and eye scheduling to guide the discussion focus of the classroom and achieve multi-center interaction (Mills & Exley, 2014). In addition, the specific characteristics of multimodal resources are various in different disciplines and task types. In the science classroom, teachers tend to combine experimental operation, physical display and language description to explain (Zhang, 2022). In the language classroom, teachers mostly supplement verbal mode with tone changes, gestures, etc. to assist students' understanding of second language (Park, 20 17). In the digital environment, online collaboration tools not only present information, but also provide a platform for teacher-student discourse interaction, forming a “cross-time and space dialogue” engagement structure (Hinkelman, 2016).

Generally speaking, existing studies jointly emphasize that teachers consciously integrate and use different modes to promote the effective implementation of multimodal pedagogic discourse.

The Impact of Multimodal Pedagogic Discourse on Student Classroom Engagement

The promotion of multimodal pedagogic discourse to students' classroom engagement is multi-dimensional and cooperative. In terms of behavioral engagement, the coordination of teachers' language and gestures, gaze and object operation has significantly improved the coherence of student group collaboration and promoted more topics initiated by students (Kwak, 2023). For example, the study of Gillies & Baffour (2017) shows that teachers' frequent use of multimodal strategies such as body characterization can significantly increase students' time invested in tasks. Clark and Trofimovich (2016) found that gesture-based teaching elevated students' classroom engagement rate from 38% to 86%-100%. This shows that teachers' multimodal discourse has played a positive role in promoting students' behavioral engagement. In terms of emotional engagement, teachers' paralanguage mode, such as volume, rhythm, pitch, and the coordination of action modes can effectively focus students' attention in the classroom, with reported interest and engagement levels generally increasing (Kim, 2020; Mills & Exley, 2014). Teachers create a more friendly classroom atmosphere through rich modal forms, especially the use of smiling expressions, which reduces students' anxiety (Kartchava & Mohamed, 2020). For example, Peng et al.(2017) pointed out that multimodal resources can reduce anxiety and improve communication willingness. Hisey, et al. (2024) found that interactive storytelling videos improve students' short-term emotional engagement. In terms of cognitive engagement, cross-modal tasks link "explanation", "example", "operation", "restatement" into a visual chain of meaning to promote students' conceptual construction and strategic processing (Varaporn & Sitthitikul, 2019). The combination of pictures, actions and sounds used by teachers in language learning has significantly improved students' memory retention and migration of vocabulary (Zhang, 2022). The complementarity between digital technology and teachers' language used, gestures and visual displays further supports students' deep understanding (Chapelle et al., 2014). Cai et al. (2022) demonstrated that brain-computer interface-based AR tools significantly enhance science learning performance and flow experiences.

Overall, the synergistic integration of linguistic modes, physical modes, and visual display resources employed by teachers effectively promotes students' behavioral, emotional and cognitive engagement.

Theoretical Perspectives, Research Methods, and Interpretive Focus

Broadly speaking, macro-level approaches such as social semiotics and multimodal discourse analysis, alongside micro-level interaction analysis and conversation analysis, constitute the primary theoretical pathways in this research. Social semiotics and multimodal theory focus on the meaning-making functions of different modalities (Kress & van Leeuwen, 2001). For instance, they examine the organization and semantic functions of text, images, actions, and space (Mills & Exley, 2014; Park, 2017). Micro-level interaction and conversation analysis emphasizes time series and turn organization, and pays attention to how participants actually show their input and engagement in the instant interaction process through nonverbal behaviors such as gestures, gaze and object manipulation (Kwak,2023). Classroom discourse analysis frameworks (Sinclair & Coulthard, 1975; Walsh, 2011) dissects discourse structures and interaction patterns, examining the functional distribution of modalities in classroom

communication. Regarding learner engagement, theories of learning motivation and engagement, such as Self-Determination Theory (Ryan & Daci, 2000) and Fredricks et al.'s (2004) three-dimensional model of classroom engagement, explain the psychological mechanisms linking multimodal discourse to heightened engagement.

Additionally, two further mechanistic perspectives exist. The first is the orientation of willingness to communicate (WTC), explaining how multimodal availability can lower the threshold of expression and improve visibility, thus improving engagement (Peng, et al., 2017). The second is the complementary orientation of technology and discourse, which regards digital tools as an amplifier of discourse and emphasizes the complementary effect of technology and spoken language, gestures and vision. (Chapelle et al., 2014; Hinkelman, 2016).

In terms of research methods, qualitative research, such as classroom observation, video, micro-coding of voice and action, etc., dominates in this field, and its advantage is that it can capture the process and context (Kwak, 2023). Quantitative research is mostly used to test operable engagement indicators and learning results, emphasizing causal inference (Zhang, 2022). It is also used to verify the gain of tools and engagement in technical situations (Chapelle et al., 2014). The mixed method combines qualitative research methods, such as interviews and discourse analysis, with questionnaires or learning performance measurement, and focuses on connecting the classroom process with quantifiable results (Park, 2017; Mills & Exley, 2014). In recent years, the application of mixed methods has become increasingly prevalent. At the same time, the number of technically assisted analysis has also gradually increased. These progresses have collectively promoted research to reveal the relationship between multimodal pedagogic discourse and learning engagement in a more detailed way.

Research Gaps and Limitations

Limitations of Situation, Discipline and Perspective

There is sufficient evidence for relevant research in language situations (Mills & Exley, 2014; Park, 2017; Peng, et al., 2017; Zhang, 2022; Kim, 2020). However, the study of multimodal discourse in science and engineering, interdisciplinary situations is still insufficient, which limits the generalizability of the research conclusion. In addition, although some studies focus on students' perspectives through interviews, logs, etc., most studies still center on teachers' speech and behavior. Their systematic analysis of how students perceive, interpret and actively use multimodal resources to build their own engagement process remain insufficient.

Lack of Longitudinal Evidence of Technological Integration

Many studies have affirmed the complementarity of technology, discourse, gestures and vision (Chapelle et al., 2014; Hinkelman, 2016), but the evidence of duration and migration is limited. Few studies explore the long-term role of multimodal discourse of technical support in engagement stability and learning migration, nor do they address the feasibility and training needs of teachers' long-term use of digital mode. In addition, the depth of technology integration is not enough. Although digital tools are used frequently, there is no consensus on their deep integration with traditional modal resources and teaching design principles. Finally, the research on emerging technologies such as AR/VR and AI-assisted discourse interaction has initially shown potential, but it is still in the exploration stage, and its application mode and effectiveness need more empirical tests.

Limitations of Teachers' Multimodal Arrangement Ability

Existing research has made it clear that teachers' multimodal arrangement ability is a key variable that affects the pedagogical outcomes, and the fine regulation of modal timing, density and sequence of this ability is the core premise for the positive effect of multimodal teaching (Kwak, 2023; Kim, 2020). However, there are still obvious gaps in the current research. On the one hand, the definition of teachers' multimodal arrangement ability is mostly at the abstract description level, and has not been transformed into an observable and measurable specific operational dimension, resulting in a lack of clear quantitative basis for the connotation and boundaries of the ability. On the other hand, the relationship mechanism between this ability and students' classroom engagement and academic performance has not been deeply explored. It has not been clarified whether it plays an intermediary role between multimodal teaching and students' learning results, nor whether it has a regulating effect, so that the practical teaching value and function logic of this ability have not been fully revealed.

Existing Shortcomings in the Application of Methods in Multimodal Classroom Teaching Research

Although the current multimodal classroom teaching research relies on the advantages of qualitative methods and can accurately capture detailed information in the teaching process, this kind of research has significant limitations. On the one hand, its research conclusions are mostly based on the in-depth analysis of small sample cases, and there is a lack of quantitative verification supported by large sample data, which leads to the lack of universality of the research findings and the difficulty of promoting to a wider range of teaching scenarios. On the other hand, the existing research has failed to effectively integrate the advantages of qualitative and quantitative methods. It neither fails to establish a corresponding association with quantifiable indicators such as speech round, gaze stay time, teaching tool click flow, etc., nor does it introduce semi-automatic or automatic multimodal identification technology to improve data processing efficiency. At the same time, it is difficult to completely retain the in-depth explanation of the teaching context in the process of strengthening quantitative analysis, which ultimately leads to the lack of reproducible and systematic evidence chain support between classroom teaching process, student engagement behavior, and learning results.

Conclusion

This review systematically examined the empirical research on the impact of multimodal pedagogic discourse on students' classroom engagement in recent years with the scoping review method, and mainly focused on the resource composition, implementation characteristics, student engagement effect, theoretical basis and methodological characteristics of multimodal pedagogic discourse in the classroom. Through the analysis of 71 studies from different countries, different stages of education and disciplines, the following conclusions can be drawn. Multimodal pedagogic discourse resources and strategies are rich and diverse, covering a variety of modes such as language, body movements, visual symbols, physical environment and digital tools, and often show synergy in classroom interaction. Moreover, it is not a simple superposition between different modes, but through teaching goal-driven, discourse structure organization and interaction mode, it realizes the stimulation of meaning construction and students' engagement in the classroom. The influence dimension of classroom engagement is mainly reflected in the three aspects of learners' behavior, emotion and cognitive engagement. Research shows that multimodal

pedagogic discourse can not only effectively improve students' behavioral, emotional and cognitive engagement, but also improve the classroom atmosphere and learning results to a certain extent. Different modes have a differentiated effect in promoting the engagement of different dimensions. Finally, the existing research draws on social semiotics, multimodal discourse analysis, classroom interaction theory and other perspectives, and adopts qualitative, quantitative and mixed methods, but it is still insufficient in situational expansion and technical application.

There is no doubt that every study has its limitations, and the present scoping review only selected articles covering the period from 2010 to the first half of 2025. Future research can be deeply promoted in interdisciplinary situations, mixed method design, dynamic engagement measurement and teacher professional development, and combine AI tools and learning analysis technology to realize real-time capture and feedback on multimodal interaction. At the same time, strengthen the development and verification of quantitative measurement tools. This not only helps to improve the theoretical system of multimodal pedagogic discourse and deeply analyze its relationship with learners' classroom engagement, but also provides teachers with more targeted and operable teaching design references.

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