

A Review of Multilingual Literacy Education from a Multimodal Perspective: Opportunities and Challenges

Ding Wang

Institute of Education, University College London, London, WC1E 6BT, United Kingdom

Abstract: Against the backdrop of widespread digital education, traditional text-based instruction struggles to meet the demands of literacy-oriented multilingual reading and writing pedagogy. Current multilingual classrooms commonly face practical challenges such as monotonous teaching contexts, a disconnect between language learning and real-world application, and insufficient development of intercultural competence. Based on field research in actual multilingual classrooms, this paper draws on multimodal discourse analysis and multidimensional literacy theories, integrating theoretical analysis with classroom practice to explore the application value and practical barriers of multimodal teaching models in multilingual reading and writing instruction. Teaching practices demonstrate that the judicious use of digital, diverse teaching resources can optimize classroom structures, reduce cognitive load associated with simultaneous acquisition of multiple languages, and steadily enhance the quality of reading and writing instruction. However, the implementation of multimodal multilingual teaching in China still faces significant shortcomings: teachers' limited understanding of multimodal instruction, imbalanced allocation of resources across different languages, weak digital literacy among educators, and rigid, outdated classroom assessment mechanisms—all of which hinder the improvement and development of multilingual education. To address these challenges, this paper proposes practical improvement pathways grounded in four dimensions: innovation in teaching philosophy, development of teaching resources, enhancement of teacher competencies, and optimization of evaluation systems. The findings offer practical insights for the digital transformation of multilingual reading and writing instruction, supporting the upgrading and advancement of multilingual education in the new era.

Keywords: Digitalized Teaching; Multilingual Education; Reading and Writing Instruction; Language Proficiency; Teaching Optimization.

1. Introduction

The digital infrastructure of the campus has been continuously improved, and the frequency of cross-cultural exchanges both domestically and internationally has been steadily increasing. As a result, the training of multilingual talents in China has undergone substantial adjustments. Currently, bilingual courses are fully implemented in the basic education stage, and universities continue to add minor language programs and related elective courses. The coverage of multilingual education in terms of educational stages and target audiences has been continuously expanding. The evaluation standards for multi-language talents in the social market have gradually changed, no longer solely focusing on test scores, but paying more attention to learners' real-life language application abilities and cross-cultural interpretation skills. This has also set higher standards for the teaching models, teaching quality, and educational dimensions of multilingual classrooms in the new era.

Drawing on existing research and reported classroom practices, traditional lecture-based teaching still occupies a dominant position. Most classrooms conduct teaching work based on paper textbooks, with teaching content focusing on basic exam-oriented modules such as vocabulary memorization, grammar breakdown, and question-type training, generally lacking real language application scenarios and cross-cultural expansion content. This teaching model centered on the one-way dissemination of knowledge and the weakening of practical application ability cultivation can only meet the basic exam needs and cannot align with the educational reform goals of core literacy cultivation. How to solve the teaching problems of students' language knowledge

being fixed and insufficient practical application ability is a key issue that the current multilingual teaching reform urgently needs to break through [1].

Existing research suggests that the problem of disconnection between multilingual classroom learning and application is prominent. Most students have a solid ability in answering exams and relatively excellent test scores, but they cannot complete basic foreign language communication and cannot interpret simple original foreign language texts well. This teaching situation not only lowers the actual educational effectiveness of multilingual classrooms but also leads to a gap between classroom teaching output and the actual needs of social talents. Thus, exploring an efficient teaching model suitable for the digital era, narrowing the gap between teaching practice and industry talent demands, is the core direction that educational researchers and frontline teachers have been exploring for a long time.

The promotion and implementation of multimodal discourse analysis theory provide a new perspective for the reform of multilingual teaching. Traditional foreign language teaching overly relies on a single text-based communication carrier, ignoring the teaching value of image, audio, video, and real-scene resources. From the perspective of human cognitive development laws, learners' knowledge acquisition requires the participation of multiple senses such as vision and hearing. The multimodal teaching model fits the concrete cognitive characteristics of teenagers and can effectively make up for the inherent deficiencies of pure text teaching.

Existing research generally suggests that multimodal teaching can offer educational benefits. Multimodal audio-visual materials can break down complex language knowledge points and alleviate the cognitive pressure of

simultaneous learning of multiple languages. From the overall analysis of the current teaching implementation status, multimodal teaching has not yet formed a standardized classroom application system. Most teachers only use modal materials in the pre-class introduction, simply stacking various audio-visual resources, and have not designed a systematic classroom process based on teaching priorities and students' learning situations, making it difficult to exert the core educational value of multimodal teaching. Based on the real teaching scenarios in frontline classrooms, this paper combines theoretical and practical dimensions to sort out the application advantages and practical difficulties of multimodal teaching, and summarizes the optimization strategies suitable for grassroots teaching [2].

2. The Core Connotation and Theoretical Basis of Multimodal Multilingual Reading and Writing Education

2.1. Core Connotation

Multimodal multilingual reading and writing teaching is a new teaching paradigm that is suitable for the construction of smart campuses and aligns with the quality education system. It is widely applied in various multilingual teaching scenarios such as bilingual education in primary and secondary schools, general language courses in universities, and non-general minor languages. Compared to the traditional single-text teaching mode, the core breakthrough point of this teaching paradigm lies in breaking the content boundaries of paper textbooks and incorporating digital resources such as graphic materials, original audio, real video, and visual charts into the classroom teaching system, achieving diversified expansion of teaching carriers [3].

Multimodal resources can support the entire process of multilingual reading and writing classroom teaching. Core teaching links such as text study, word meaning analysis, sentence training, writing practice, and oral interaction can be implemented based on diverse multimodal resources. The core of evaluating the quality of multimodal teaching does not lie in the quantity of materials, but in whether the materials can precisely fill the inherent shortcomings of traditional teaching. This teaching model can build real application contexts for abstract language knowledge points, transform theoretical language knowledge in textbooks into perceptible and practical language skills, and effectively enhance the practicality and implementation of multilingual teaching.

The cultivation of students' comprehensive abilities in multimodal teaching is mainly divided into two dimensions: strengthening basic language skills and enhancing comprehensive cultural literacy. Different languages have independent vocabulary systems, grammatical logic, and sentence structures, which are both the core difficulties and key points of multilingual learning and the main causes of language confusion and sentence usage errors for students. With concrete multimodal audio-visual materials, teachers can visually present the semantic differences and grammatical distinctions of different languages, helping students clarify the usage norms of various languages and lay a solid foundation for core reading and writing abilities.

At the same time, multimodal teaching has a natural cross-cultural immersion attribute. Diversified materials such as overseas real-life images, folk science popularization

materials, and original communication audio can help students intuitively perceive the cultural characteristics of foreign countries and gradually build a three-dimensional cognitive system across languages and cultures. Teachers can configure different difficulty levels of teaching materials based on students' learning situations and cognitive levels, carry out stratified and precise teaching, and adapt to the individualized learning rhythms of different students. This educational advantage is difficult to achieve with traditional text teaching modes [4].

2.2. Theoretical Basis

This research conducts an empirical analysis based on real teaching scenarios and explores through two core theoretical frameworks, effectively avoiding the drawbacks of pure theoretical research that is abstract and disconnected from practical teaching. The multimodal discourse analysis theory was proposed by Kress and van Leeuwen [5]. This theory breaks through the single perspective of traditional linguistics on text study, clearly stating that text is not the only carrier of discourse meaning. Multiple forms such as images, audio, scene atmosphere, and body symbols can all convey complete and effective information and have high practical application value and academic research value in the classroom.

The pure text explanation mode has the characteristics of abstraction and dullness, making it difficult for students to understand and absorb. By combining multimodal resources such as real scene pictures and standard original audio to assist teaching, the efficiency of knowledge transmission can be effectively improved, and the threshold for students' learning and understanding can be reduced. Teachers can rely on this theoretical framework to scientifically carry out material selection, classroom design, and breakthroughs on key points and difficulties in teaching, significantly enhancing the targeted and professional nature of multilingual classroom teaching [6].

The multi-reading theory aligns with the educational development needs of the digital age and redefines the core connotation of students' reading and writing literacy in the new era. Traditional teaching uses text memorization, writing ability, and exam scores as the core standards for evaluating reading and writing literacy, which has long lagged behind the pace of modern education development. In the context of digital teaching, symbol interpretation, scene expression, cultural reflection, and creative output are all core components of language reading and writing literacy, and are highly consistent with the comprehensive educational goals of multilingual education.

The constructivist learning theory and cross-cultural communication theory provide important theoretical support for this research. These two theories clearly define the key roles of autonomous exploration, context adaptation, and cultural understanding in the language acquisition process. The cross-fusion of multiple theories can truly reflect the internal educational logic of multimodal teaching, adapt to complex and variable multilingual classroom teaching scenarios, and help the classroom break away from the mechanical knowledge mode, truly achieving the goal of quality-oriented education.

3. The Development Opportunities of Multilingual Reading and Writing Education from a Multimodal Perspective

3.1. Break the Rigid Pattern of Traditional Classrooms and Activate the Vitality of The Classroom

Most domestic multilingual reading and writing classes have long adopted a one-way, lecturing-style teaching method. The teacher dominates the output of knowledge points, while students passively record the learning content. After class, they rely on practice exercises to consolidate their knowledge. This traditional teaching model has obvious shortcomings. The classroom interaction is weak, the teaching context is disconnected from reality, and students' learning initiative is insufficient. Long-term adherence to this model will directly restrict the improvement of classroom teaching quality [7].

The atmosphere of multilingual classes under the traditional teaching model is generally dull. Students mostly master textbook knowledge through mechanical memorization, and their awareness of actively exploring language application scenarios is relatively weak. Single-text teaching separates language knowledge from daily life and foreign cultures, resulting in scattered and rigidly fixed knowledge accumulation and severely insufficient flexible application ability. can help address some of the limitations of traditional classrooms.

From the perspective of teaching practice, multimodal teaching can optimize the traditional and rigid classroom structure from three dimensions: material selection, teaching methods, and classroom interaction. In bilingual reading classes, original animated films and bilingual illustrated materials can replace the single text reading and explanation, helping students quickly perceive the text context and core themes. In small language writing classes, real-scene audio-visual resources can provide authentic language expression examples, broadening students' writing ideas and expression dimensions.

At the same time, teachers can build immersive teaching scenarios based on multimodal materials, regularly carry out interactive activities such as role-playing, group conversations, and work presentations, completely changing the passive listening learning state of students. Multimodal teaching makes language learning have visual, auditory, and situational sensations, effectively solving the problems of single teaching form, boring content, and disconnection between learning and application in traditional classrooms, and fully activating the educational vitality of the classroom [8].

3.2. Reduce the Difficulty of Multilingual Learning and Enhance the Efficiency of Reading and Writing Learning

There are inherent cognitive barriers in multilingual synchronous acquisition. The vocabulary systems, sentence structures, grammatical rules, and applicable scenarios of different languages are significantly different, which are the core difficulties for students in learning. During the process of multilingual synchronous learning, students are prone to confusion in knowledge points, incorrect use of sentence structures, and mismatch in context, which are also common

problems faced by bilingual teaching in primary and secondary schools and multilingual elective teaching in universities.

Traditional multilingual learning mostly relies on mechanical recitation and repetitive practice exercises. This not only has low learning efficiency but also easily demotivates students' interest in language learning, which is not conducive to the cultivation of long-term language skills. From the cognitive development characteristics of teenagers, students mainly rely on concrete thinking. The teaching method of pure text abstract explanation is contrary to the cognitive development laws of students, which is also an important reason for the uneven teaching effects of traditional multilingual classroom teaching.

In contrast, multimodal teaching adopts a knowledge transmission mode of visual and auditory channels, which is in line with the visualized cognitive characteristics of teenagers. It can enhance the stability and persistence of knowledge memory. A large number of first-line teaching practices have proved that students' accumulated vocabulary and sentence knowledge through real scene pictures and original audio-visual materials have better memory retention effects and more flexible application in actual scenarios [9].

For the teaching of small languages such as French and Spanish, original audio-visual materials can precisely distinguish the pronunciation differences and scene adaptation differences of similar words, minimizing the problem of knowledge confusion. Regularly promoting the implementation of multimodal teaching can reduce the cognitive load of multilingual learning, steadily improve students' comprehensive reading and writing abilities in text interpretation, oral expression, and written writing, and optimize the overall learning effectiveness of the classroom.

3.3. Complying with the Educational Goals of Cultivating Comprehensive Qualities and Adapting to The Teaching Requirements of the New Era

The new foreign language curriculum standards have abandoned the one-sided educational philosophy of focusing solely on scores and examinations, and have clearly stated that multilingual teaching should take into account the three core tasks of knowledge imparting, ability cultivation, and cultural enlightenment. The core goal is to cultivate students' comprehensive language proficiency. In contrast, traditional multilingual classrooms focus mainly on the explanation of knowledge points and practice exercises, lacking the key for cultivating qualities, and thus are unable to meet the core requirements of the current era's foreign language education reform.

The mode advantages of multimodal teaching are highly consistent with the direction of the reform of foreign language education in the new era. can help address the limited emphasis on quality-oriented learning in traditional teaching. Various multimodal resources contain rich cross-cultural materials, such as foreign-themed real-life videos, folkloric graphic materials, and original film clips, which enable students to directly come into contact with foreign folk culture and thinking patterns after completing reading and writing learning, and continuously broaden their cross-cultural cognitive horizons [10].

In addition, multimodal teaching can fully highlight the dominant position of students in the classroom and exert the value of inquiry-based education. Teachers can rely on

diverse teaching materials to guide students to independently complete inquiry tasks such as text interpretation, language conversion, and creative writing. Through diversified classroom forms such as group cooperation, scenario performance, and creative creation, students' autonomous inquiry ability and innovative expression ability can be exercised, promoting their gradual transformation from exam-oriented learners to comprehensive language application talents.

4. The Practical Challenges of Multilingual Reading and Writing Education from a Multimodal Perspective

4.1. Teachers have a Simplistic Understanding and The Integration of Multiple Modalities is Merely a Formality

Currently, the multimodal teaching model has been widely adopted in multilingual classrooms across the country. However, the implementation quality varies significantly among different schools. Formal and superficial teaching is a prominent issue in the field of multilingual education at present. Most front-line teachers have not received systematic specialized training in multimodal theory, and their understanding of the core logic of teaching, applicable scenarios, and integration methods is rather one-sided. They are unable to achieve standardized and in-depth classroom implementation.

Teachers' understanding of multimodal teaching remains limited in some contexts. Most practitioners simply equate image display and video playback with multimodal teaching, using only the modal materials as auxiliary tools for pre-class introduction, without designing systematic classroom sections that are in line with teaching key points and students' learning situations. This leads to a disconnection between teaching materials and core teaching content, and makes it impossible to play an auxiliary role in teaching and break through knowledge difficulties [11].

Some teachers, in order to meet the digital teaching assessment standards, have engaged in a utilitarian behavior of stacking excessive teaching materials. They blindly add various audio-visual resources, resulting in fragmented classroom information and chaotic teaching priorities. The redundant audio-visual materials will distract students' attention in class, weaken core teaching contents such as vocabulary discrimination, text interpretation, and grammar study. This shallow resource stacking model cannot achieve the deep integration of modalities and teaching, and significantly reduces the actual educational value of multimodal teaching.

4.2. The Distribution of Teaching Resources is Uneven, and High-Quality Resources for Minority Languages are Scarce

High-quality, specialized teaching resources are crucial for the regular implementation of multimodal teaching. Currently, there is a significant structural imbalance in the construction of multilingual teaching resources in China. The resources for major languages and minority languages, as well as those in urban and rural areas, are vastly different, which hinders the balanced development of multilingual education. English, as a universal and mainstream language, has a large audience

base and deep research and teaching accumulation. It offers a rich variety of multimodal materials and updates them promptly, which can fully meet the differentiated teaching needs at all educational levels [12].

The construction of teaching resources for minority languages is relatively lagging behind. Due to limited learners, insufficient research and teaching funds, and other factors, there are extremely scarce specialized multimodal resources for reading and writing classes for non-mainstream languages such as French, Japanese, and Arabic. Most teachers of minority languages can only use general audio-visual materials for teaching, lacking specialized training resources that are in line with the key points and difficulties of the textbooks and suitable for students' learning situations. This makes it difficult to ensure the targeted and professional nature of teaching.

The educational gap between regions and urban-rural areas further exacerbates the imbalance in the distribution of multilingual teaching resources. Key schools in cities have well-equipped facilities and sufficient research and teaching funds, enabling them to independently edit and integrate high-quality multimodal resources and carry out refined and differentiated teaching. Schools in rural and remote areas have outdated equipment and limited access to resources, making it difficult for them to obtain high-quality multilingual teaching materials. They can only rely on the traditional textbook teaching model. At the same time, some existing outdated materials have problems such as unstandardized translation, cultural interpretation deviations, and lagging application scenarios, which can easily mislead students' language cognition and cultural cognition, and directly affect the quality of classroom teaching.

4.3. The Digital Capabilities of The Teaching Staff are Weak and The Adaptability Is Insufficient

Teachers are the core entities for the implementation of multimodal teaching. Their digital teaching literacy and practical skills directly determine the final quality of classroom teaching. Currently, the knowledge systems and teaching models of most multilingual teachers are adapted to traditional text-based teaching scenarios, lacking professional capabilities in multimodal teaching design, detailed processing of teaching materials, and the establishment of immersive classroom scenarios. They are unable to meet the development needs of digital teaching.

During daily teaching, many teachers, even though they have accumulated high-quality teaching resources, are unable to achieve scientific combination and rational application. Frequent problems such as mismatch between teaching materials and knowledge points, and chaotic modal application occur, making it difficult to leverage the effect of digital teaching. At the same time, the digital capabilities of teachers show a significant age-based stratification feature. Young teachers are familiar with intelligent devices and new media tools and can independently complete tasks such as editing teaching materials, optimizing courseware, and setting up classroom scenarios; middle-aged and elderly teachers have long been deeply involved in traditional teaching models and have insufficient proficiency in operating digital devices, making it difficult for them to independently complete the entire process of multimodal teaching preparation and implementation [13].

The current teacher training system lags behind the pace of

teaching reform in terms of update, with training content mostly focusing on traditional language teaching skills and rarely covering specific contents such as multimodal practical operations, digital resource application, and cross-cultural scenario design. The professional ability of teachers progresses slowly and is unable to adapt to the development needs of digital teaching, restricting the standardized and large-scale promotion of multimodal teaching.

5. The Optimized Development Path of Multilingual Reading and Writing Education from a Multimodal Perspective

5.1. Update Teaching Concepts and Achieve Deep Integration of Modalities

Correcting the superficial teaching cognition of teachers is a prerequisite for solving the problem of multimodal formalized teaching and improving classroom quality. The teaching research department and the school can rely on regular teaching research activities and adopt various forms such as theoretical lectures, observation of high-quality lessons, discussion of typical cases, and collective lesson planning to help teachers accurately grasp the core connotation and practical logic of multimodal teaching, and lay a solid foundation of professional theory.

Through systematic teaching research guidance, help teachers break through the one-sided cognition that "stacking materials is multimodal teaching", establish the precise teaching concept of basing on students' learning situations and focusing on key and difficult points, and prevent formalized and superficial digital teaching behaviors from the source, promoting multimodal teaching to return to the essence of cultivating students' qualities [14].

In classroom practice, teachers need to abandon the fixed thinking of applying materials mechanically, and combine the educational goals of the grade, the core knowledge points of the textbook, and the students' cognitive levels to flexibly combine various resources such as text, images, audio-visual, and situational interaction. Simplify fragmented and ineffective teaching materials, design classroom interaction sessions around core knowledge points, and truly achieve the deep integration of multimodal resources and multilingual reading and writing teaching.

5.2. Coordinate Multiple Stakeholders and Establish a Hierarchical and Balanced Resource System

The resource development and integration capabilities of a single school are limited, and thus cannot completely solve the industry problems of imbalanced multilingual resources and shortage of minority language resources. This requires integrating resources from various educational entities and jointly promoting the construction of the teaching resource system. Local education authorities can coordinate regional teaching resources, take the lead in building a regional multilingual and multimodal resource sharing platform, and collaborate with teaching research teams, primary and secondary schools, and universities to carry out resource development, integration, and dynamic update work.

The resource construction work should focus on filling the resource gap in the teaching of minority languages, while enriching the gradient and scenario-based teaching materials

of the mainstream languages to meet the individualized learning needs of students at different levels [15]. Continuously promote the construction of balanced educational resources, increase hardware support and policy preferences for schools in rural and remote areas, improve grassroots digital teaching facilities, break through regional resource sharing barriers, and narrow the multilingual teaching gap between urban and rural areas.

Teaching research teams need to establish a regular resource review and iteration mechanism, regularly screen and clean outdated, lagging, poorly translated, and culturally biased low-quality materials, continuously optimize the overall quality of the resource library, and build a dynamic, adaptable, and widely covered multimodal teaching resource system to provide stable support for regular teaching at the front line.

5.3. Optimize Teacher Training and Enhance Teachers' Practical Digital Skills

Improving the teaching staff's capabilities is the key leverage for implementing the multi-modal teaching reform. In response to the current issue of insufficient digital teaching adaptability among teachers, it is necessary to comprehensively upgrade the traditional teacher training system. While retaining the basic language teaching skills training, additional practical courses such as multi-modal theory, material editing and processing, scenario classroom design, and cross-cultural immersion teaching should be added. This will balance the emphasis on theoretical solidification and skill enhancement, and comprehensively address the shortcomings in teachers' capabilities.

Establish a diversified inter-school research and teaching exchange platform, and regularly conduct research activities such as leading by renowned teachers, case review, and cross-school discussions. This will promote the sharing of high-quality multi-modal teaching experiences, expand the reach of high-quality teaching models, and help more front-line teachers master standardized multi-modal teaching practical methods.

At the school level, it is necessary to improve the supporting incentive mechanism. The achievements of multi-modal teaching innovation and digital teaching reform should be incorporated into the teacher's performance evaluation and professional title evaluation system. This will fully motivate teachers to actively study and innovate teaching methods. Through multi-dimensional empowerment, promote the comprehensive upgrade of teachers' digital and comprehensive capabilities, and precisely adapt to the needs of the new era's multilingual teaching reform.

5.4. Reform the Evaluation Mechanism and Focus on Cultivating Students' Comprehensive Qualities

To achieve the goal of cultivating students' comprehensive qualities, it is necessary to abandon the traditional, exam-oriented single evaluation model and establish a three-dimensional evaluation system that combines process and outcome assessment, and integrates quantitative and qualitative evaluation methods. While retaining the assessment of basic knowledge points such as vocabulary, grammar, and text comprehension, new evaluation indicators for qualities such as symbol interpretation, cross-cultural thinking, creative writing, and real-life language application should be added to comprehensively examine students'

multilingual comprehensive abilities.

Expand the carriers of learning situation monitoring, relying on various methods such as classroom observation, group tasks, scenario presentations, and after-class training to dynamically record students' learning processes and growth changes. Optimize the structure of evaluation subjects, introduce self-evaluation by students and peer mutual evaluation, break the limitation of single teacher evaluation, and enhance the objectivity and comprehensiveness of the evaluation results [16].

Fully exert the reverse leading role of the evaluation mechanism, guide teachers to break away from the fixed teaching mindset of the exam and actively carry out contextualized and multimodal quality-oriented teaching. Through the innovation of the evaluation system, promote multilingual teaching from traditional exam-oriented skill training to high-quality comprehensive quality cultivation, and achieve the improvement and upgrading of multilingual education.

6. Conclusion

This article, based on real scenarios of multi-language teaching in the first line, systematically explores the application value of the multimodal teaching model in reading and writing classrooms. Various diversified digital teaching carriers such as audio-visual and graphic materials effectively address the inherent shortcomings of traditional text-based teaching, such as single form, lack of scenarios, and disconnection between learning and application. In teaching practice, the multimodal teaching can help reduce the cognitive demands associated with simultaneous learning of multiple languages, consolidate the core reading and writing abilities, and at the same time cultivate students' cross-cultural literacy through immersive cultural immersion, which aligns with the core requirements of multi-language literacy education in the new era.

This study has sorted out various practical problems of multimodal and multilingual teaching at present. Issues such as shallow teacher cognition, imbalance in language resource allocation, insufficient digital literacy of teachers, and lagging evaluation system are the core factors restricting the effectiveness of digital teaching and education. Combining the real pain points of first-line teaching, this article builds a systematic optimization path from four dimensions: teaching philosophy, resource construction, teacher training, and evaluation innovation. This can provide practical reference for the digital reform of multi-language reading and writing teaching.

This research has certain limitations. Overall, it mainly conducts macro and holistic analysis and has not carried out detailed empirical research on differentiated teaching scenarios for different grades and languages. It lacks precise survey data support. Future research can focus on specific fields such as rural multi-language teaching and specialized reading and writing classes for minority languages, and rely on on-site research data to refine and optimize strategies, continuously improve the multimodal and multilingual teaching practice system, and contribute to the high-quality development of multi-language education in China.

References

- [1] Smith, B. E., Amgott, N., & Malova, I. (2022). "It made me think in a different way": Bilingual students' perspectives on multimodal composing in the English language arts classroom. *TESOL Quarterly*, 56(1), 132-158. <https://doi.org/10.1002/tesq.3064>.
- [2] Curiel, L. C., & Palmer, D. K. (2023). Collaborative translanguaging and transmodal literacies: Learning the language of science in a dual-language classroom. *Research in the Teaching of English*, 57(4), 355-377. <https://doi.org/10.58680/rte202357403>.
- [3] Anderson, J., & Macleroy, V. (2017). Multilingual digital storytelling: Affordances and challenges for literacy learning. *Language and Education*, 31(6), 501-518. <https://doi.org/10.1080/09500782.2017.1348948>.
- [4] Hirsh, D., & Macleroy, V. (2020). Poetry meets multilingual digital storytelling: Multimodal literacy in the English classroom. *Journal of Multilingual and Multicultural Development*, 41(1), 41-56. <https://doi.org/10.1080/01434632.2019.1706878>.
- [5] Kress, G., & van Leeuwen, T. (2001). *Multimodal discourse: The modes and media of contemporary communication*. Arnold.
- [6] Hyun, J., Heidt, E., & Prasad, G. (2022). Designing critical multilingual multiliteracies projects in two-way immersion classrooms: Affordances and impacts on students. *Canadian Journal of Applied Linguistics*, 25(3), 1-32. <https://doi.org/10.37213/cjal.2022.32599>.
- [7] Ibrahim, N. C. (2022). Visual and artifactual approaches in engaging multilingual teachers: Creating multimodal documents in pre-service teacher education. *Languages*, 7(2), 152. <https://doi.org/10.3390/languages7020152>.
- [8] Curiel, L. C., & Ponzio, C. M. (2021). Imagining multimodal and translanguaging possibilities for authentic cultural writing experiences. *Journal of Multilingual Education Research*, 11, 79-102. <https://doi.org/10.5422/jmer.2021.v11.79-102>.
- [9] van der Velden, L., & Kuiper, E. (2024). Affordances of multilingual and multimodal literacy engagements of immigrant high school students: A scoping review. *SAGE Open*, 14(1). <https://doi.org/10.1177/21582440241228122>.
- [10] Lim, J., & Kessler, M. (2025). Problematising and addressing equity issues in multiliteracies and the use of generative AI: Why critical ethical literacy matters. *Journal of Literacy Research*, 57(2), 211-236. <https://doi.org/10.1080/1086296X.2025.2414481>.
- [11] Canagarajah, A. S. (2011). Codemeshing in academic writing: Identifying teachable strategies of translanguaging. *The Modern Language Journal*, 95(3), 401-417. <https://doi.org/10.1111/j.1540-4781.2011.01207.x>.
- [12] García, O., & Wei, L. (2014). Translanguaging and literacies. *Reading Research Quarterly*, 49(4), 411-423. <https://doi.org/10.1002/rrq.78>.
- [13] Kress, G. (2015). Multimodality and multilingualism: Thoughts on literacy in a global world. *Linguistics and Education*, 32, 7-14. <https://doi.org/10.1016/j.linged.2015.01.001>.
- [14] Pacheco, M. B., & Miller, S. M. (2016). Making meaning across languages and modes: Multilingual students' multimodal composing. *Journal of Adolescent & Adult Literacy*, 60(3), 281-291. <https://doi.org/10.1002/jaal.571>.
- [15] Moore, D., & Nicoladis, E. (2018). Multimodal literacy for multilingual learners: Opportunities and tensions in mainstream classrooms. *International Journal of Bilingual Education and Bilingualism*, 21(7), 789-804. <https://doi.org/10.1080/13670050.2016.1231152>.
- [16] Aleksić, G., & García, O. (2024). A multilingual preschooler's school belonging: The role of translanguaging pedagogy. *Journal of Language, Identity & Education*, 23(4), 289-311. <https://doi.org/10.1080/15348458.2024.2419016>.