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PEDAGOGICAL SHIFTS IN FLIPPED ESL/EFL CLASSROOMS WITH MULTIMODAL INTEGRATION: AN INTEGRATIVE REVIEW OF DIGITAL TOOLS, ENGAGEMENT, AND ASSESSMENT

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ABSTRACT

This review examines pedagogical shifts in flipped English as a Second or Foreign Language (ESL/EFL) classrooms from a multimodal perspective, focusing on digital tools, student engagement, and assessment. It explores how multimodal technologies are used in flipped ESL/EFL contexts, compares patterns of learner participation, identifies emerging assessment practices, and analyses challenges related to technology, engagement, and evaluation. Using a structured integrative literature review approach, the study synthesises relevant scholarship published between 2015 and 2025. Fifty empirical, review-based, bibliometric, and conceptual studies from diverse international contexts were selected as the core analytical sample because of their relevance to flipped ESL/EFL classrooms, multimodal integration, digital tools, student engagement, assessment practices, and pedagogical change. The findings indicate extensive use of multimodal digital technologies, including AI applications, gamification platforms, learning management systems, and video-based tools, which appear to support learner autonomy and participation. However, their effectiveness is often constrained by infrastructural limitations, unequal access, uneven digital literacy, student readiness, and self-regulation challenges. The reviewed studies also highlight collaborative and interactive teaching practices that may enhance engagement, while showing that multimodal and AI-mediated assessment practices remain underdeveloped in relation to validity, reliability, and standardisation. Overall, the review suggests a shift toward more constructivist and learner-focused pedagogy, while indicating the need for more robust, context-sensitive research and clearer assessment frameworks.

Keywords: *Flipped ESL/EFL classrooms; Multimodal pedagogy; Digital tools integration; Student engagement; Assessment practices.*

1. INTRODUCTION

The concept of flipped teaching in ESL has recently become a subject of interest in research as a result of widespread utilisation of technology, and its reported benefits for learning (Al-Jarf, 2024; Yusoff et al., 2025). Since the 2000s, the approach of flipped teaching has transformed from being a modern teaching practice to a mainstream concept, which reverses the conventional teaching practice from being delivered mainly in class to being introduced before class, thereby allowing class time to be used for interaction, collaboration, and guided practice (Baig & Yadegaridehkordi, 2023; Liu, 2021). All these trends fit well within wider developments in contemporary education, where the approach supports autonomy, equity and the use of technology (Ojong & Addo, 2024; Yue, 2024). Some studies report improvements in language proficiency, participation, and communicative competence, although the magnitude of these gains varies across contexts (Ariani et al., 2024; Turopova, 2025).

Nevertheless, issues persist in appropriately integrating technology, teaching engagement, and assessment in flipped ESL/EFL classrooms (AlManafi et al., 2024; Cao et al., 2024). A central

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challenge concerns unequal adoption of technology and pedagogical innovation, often shaped by differences in teacher expertise, technological access, and student readiness (Lü & Samah, 2024a, 2024b; Yusoff et al., 2025). In addition, despite the potential benefits of multimodal instruction to diversify language learning, research on the deployment of multimodal teaching in a flipped ESL/EFL setting remains scarce (Fadzil & Hashim, 2023; Faridah et al., 2025; Sarvaiya, 2021). For example, debates continue on how much emphasis to allocate to technology deployment as opposed to quality teaching (Han, 2022; Huang, 2025). These disparities may result in uneven instructional quality, underused pedagogical potential, and missed opportunities to integrate multimodal resources for language development (Veettil & Singh, 2024).

The present review is guided by a learner-centred understanding of flipped learning, with attention to pre-class engagement with instructional materials, in class interaction, the use of multiple sensory and semiotic modes to support understanding, and assessment practices that can capture multimodal learning outcomes (Al-Jarf, 2024; Jian, 2023; Liu & Lam, 2025). The integration of these concepts is important because effective flipped pedagogy requires a coherent alignment between multimodal tools, instructional aims, classroom interaction, and technology-supported assessment (Sarvaiya, 2021; Veettil & Singh, 2024).

1.1 Purpose and Scope of the Review

The aim of this review is to analyse available research on pedagogical shifts in flipped ESL/EFL classrooms, particularly focusing on multimodal integration. In this study, particular areas such as the use of technology, the strategies that are used to engage the students and assessment tools will be analyzed. The literature review will analyze the application of the flipped-classroom approach in various settings to help understand how multimodal tools are incorporated in ESL/EFL teaching. The importance of the study lies in the fact that it considers the interaction between pedagogy, technology, engagement and assessment. The analysis will evaluate the existing body of knowledge on the integration of multimodal tools in flipped ESL/EFL settings. Moreover, it will evaluate engagement approaches that are used in flipped ESL/EFL learning environment. In addition, the study will provide an overview of innovative assessment methods that have been developed to fit flipped ESL/EFL instruction.

The purpose of this paper is to be able to serve as a useful source with information that can be used in the classroom setting and contribute to academic discourse on flipping the learning process for English language learners (ELs) (Cao et al., 2024; Michael & Hashim, 2024). In this study, the following questions will be answered:

RQ 1 How are multimodal digital tools and student engagement strategies implemented in flipped ESL/EFL classrooms across different contexts?

RQ 2 What assessment approaches are used to evaluate learning in multimodal flipped ESL/EFL settings, and with what challenges?

RQ 3 What broader pedagogical shifts, contextual constraints and research gaps are evident in this literature?

1.2 Significance of the Synthesis of Findings from a Variety of Studies

The significance of this review comes from the way it has managed to synthesize results from different empirical and review papers, while providing an explanation of how the process of teaching English as a second or foreign language using multimodal approaches is carried out currently and where the gaps exist. As such, it provides an evidence-based framework for developing effective strategies for flipped multimodal ESL/EFL teaching.

2. METHODOLOGY

2.1 Review Design

The present research utilized an integrative literature review approach in order to examine the changes in pedagogy in terms of flipped ESL/EFL classes that have integrated multimodal learning. There were four main themes covered in this review, namely technology, student

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involvement, assessment techniques, and pedagogical changes. Since the current study intended to conduct a qualitative thematic review of previous researches, a meta-analysis and systematic review were not conducted.

2.2 Literature Search

The relevant literature was obtained using academic databases and search engines such as Scopus, Web of Science, ERIC, and Google Scholar. The search covered publications from 2015 to 2025. Keywords were incorporated into the context of the research topic, that is, flipped classroom, flipped learning, ESL, EFL, English language teaching, multimodal pedagogy, digital tools, technology-enhanced learning, student engagement, and assessment.

The search string used for this purpose was:

(flipped classroom OR flipped learning) AND (ESL OR EFL) AND (multimodal OR digital tools OR student engagement OR assessment).

Only English-language journal articles and conference papers were included in the search process. Moreover, relevant literature was also discovered by analyzing the references cited in some important publications.

2.4 Selection of Studies

After screening the available literature, 50 studies were selected as the core analytical sample for this review. These studies were chosen because they were directly relevant to flipped ESL/EFL classrooms and contributed to understanding multimodal integration, digital tool use, learner engagement, assessment practices, or contextual challenges. Broader literature was consulted where necessary to support background discussion and contextual interpretation.

2.3 Inclusion and Exclusion Criteria

Eligibility criteria involved research studies that were mainly focused on the ESL/EFL or a similar language learning context, applied to the flipped or similar approach, and concerned one or several key domains of the review. This set of literature comprised empirical research papers, review articles, bibliometric studies, and theoretically oriented papers that could be relevant to the topic under consideration. Non-eligible criteria included research studies devoted exclusively to traditional teaching, unrelated to the ESL/EFL learning context, mentioning technology merely as a marginal issue without any pedagogical implications, or non-academic literature such as editorials, opinion papers, dissertations, theses, etc.

2.5 Data Extraction

The process of information extraction from the articles chosen was conducted using a structured review matrix. Information included in this stage of the analysis comprised the year of publication, geographical location (country or region), educational level of participants, design of the study, technology used, mode of multimodal integration, engagement techniques, evaluation methods, and key results.

2.6 Data Analysis

Thematic synthesis was conducted on the selected articles. At first, each article was carefully analyzed to uncover the repeating ideas related to technology, multimodality, student engagement, assessment techniques, adaptation, and limitations. Further, the repeating ideas were grouped into larger thematic categories. The identified themes guided the organization of the Results and Discussion chapters of the literature review. Thematic synthesis aimed at the discovery of common trends, differences, problems, and lacunae of research in the literature corpus. Due to the presence of heterogeneous articles, emphasis was placed on qualitative rather than quantitative analysis

2.7 Quality Considerations and Limitations

The relevance and quality of the studies used in this review were evaluated during the review process. More weight was attributed to those studies which were specific in their research questions, methodological approaches, reporting, and relevancy to the purpose of the review.

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However, considering the nature of the review – empirical, review, bibliometric, and conceptual – no single tool for evaluation of quality was used for all kinds of sources.

This review has some limitations. Firstly, this is an integrative review and not a systematic review and meta-analysis, thus no statistical results are provided. Secondly, the screening and thematic analysis was performed by one researcher without calculation of inter-rater reliability. Finally, despite the fact that the incorporation of different types of academic publications broadened the scope of this review, it limited its methodological comparison. In spite of these limitations, the application of clear criteria for inclusion of sources and thematic analysis helped to perform a well-balanced review of the field.

3. RESULTS

3.1 Study Profiles

To illustrate the range and nature of the evidence included in this review, this section presents an integrated overview of the 50 studies retained as the core analytical sample through the structured selection process described in the methodology. Rather than discussing each study separately, the studies are organised into broad descriptive groupings to support integrative synthesis across multiple forms of scholarship: (1) classroom-based empirical interventions, (2) assessment-focused investigations, (3) reviews, meta-analyses, and bibliometric studies, (4) conceptual and theoretical contributions, and (5) studies on advanced and blended technology integration, including AI, VR/AR, and social media.

3.1.1 Classroom-based empirical interventions in flipped multimodal ESL/EFL

A substantial subset of studies report classroom interventions in which flipped, technology-enhanced and multimodal practices were implemented with school or university learners. In higher-education and secondary ESL/EFL contexts, multimodal flipped models were used to develop speaking, writing, and audio-visual-oral skills, typically by combining pre-class digital materials with interactive in class tasks. Examples include multimodal pedagogy flipped classrooms using videos and interactive tasks to support speaking and autonomy in Indonesian university EFL (Faridah et al., 2025), the creative use of Flipgrid, Google Classroom and gamification to foster inclusion and motivation in diverse ESL settings (Ojong & Addo, 2024), and multimedia-supported interaction in flipped L2 classrooms (Wang, 2020; Yao, 2015). Studies with school-age learners show parallel patterns: Web 2.0-supported flipped learning with Turkish secondary EFL students (Girgin & Çabaroglu, 2021), LMS-based flipped teaching for Jordanian seventh-graders (Sasa et al., 2024), constructivist flipped models with pre-class digital materials in secondary schools (Turopova, 2025), and blended/flipped designs with collaborative projects for learners from diverse socio-economic backgrounds (Azimov, 2024; Babazade, 2024; Pulatova, 2025).

At tertiary level, further interventions emphasise disciplinary writing and content courses. Studies of flipped digital writing classrooms using Google Classroom, Zoom and other platforms examine the relationships between engagement and writing outcomes (Ariani et al., 2024; Shilaja & Jeyapriya, 2025). Business English writing courses employ technology-supported flipped models with motivation and engagement questionnaires alongside rubric-based writing assessment (Lü & Samah, 2024a). Undergraduate ESL curricula integrate digital multimodal instructional units that allow learners to express ideas through visual and auditory modes despite technical challenges (Khalid & Janjua, 2024). Another study explores technology-enhanced instruction and gamification with undergraduates via online discussions and virtual field trips (Venkateshwarlu, 2024). On the other hand, another study explores the challenges of student preparation and digital distraction in mobile- and computer-mediated flipped higher-education courses (El Kemma, 2024).

3.1.2 Assessment-focused and multimodal composing studies

Another cluster of studies focuses specifically on assessment and multimodal composing in digital and flipped environments. Multimodal Digital Classroom Assessments (MDCAs)

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combining ICT and performance theory are proposed as formative, multimodal complements to traditional assessments in higher-education ESL (Fadzil & Hashim, 2023). In L2 digital composing contexts, research on rubric-referenced feedback, self- and peer-assessment workshops, and gradeless multisource feedback for digital storytelling foregrounds learning-oriented assessment and multiliteracies development (Liu & Lam, 2025). Reviews and empirical work on multimodal assessment frameworks underline both the promise and complexity of evaluating multimodal products that blend linguistic, visual, auditory and interactive modes (Jian, 2023; Sarvaiya, 2021). Complementary studies address technology-assisted evaluation tools and issues of validity and reliability (Veettil & Singh, 2024) and quality-assurance frameworks for assessment in technology-rich, flipped EFL classrooms (Huang, 2025).

3.1.3 Reviews, meta-analyses and bibliometric mappings

A third group comprises systematic reviews, meta-analyses and bibliometric studies that synthesise broader patterns in flipped multimodal ESL/EFL research. Reviews of flipped classroom tools, techno-pedagogical integration and higher-education implementation document the shift from lecture-based teaching to technology-enhanced, student-centred approaches, while also cataloguing persistent challenges such as workload, infrastructure and teacher preparedness (Baig & Yadegaridehkordi, 2023; Cao et al., 2024; Leong et al., 2024; Yusoff et al., 2025; Zain, 2022). A systematic review (Lü & Samah, 2024b) collates benefits and challenges of flipped English instruction, and others (AlManafi et al., 2024; Qi et al., 2024) highlight advanced technologies, LMS integration, digital literacy and professional development needs across international ESL/EFL contexts. Meta-analytic work synthesising data from hundreds of participants supports the effectiveness of flipped digital tools for language proficiency (Jantakoon et al., 2024). Bibliometric analyses map research trends in multimodality, flipped learning for speaking, and ESL flipped classrooms more generally, showing evolving thematic emphases and collaboration networks over time (Tuilan et al., 2024; Yue, 2024; Yusoff et al., 2025). Additional narrative reviews situate flipped technology adoption within teachers' perceptions and professional realities (Michael & Hashim, 2024; Sandiarsa & Firman, 2024).

3.1.4 Conceptual and theoretical contributions

A number of studies make significant contributions in terms of concept and theory. Liu (2021) presents a multimodal approach to the design of flipped classrooms based on a socially constructed dynamic learning environment. Jian (2023) provides a theoretically inclined review of digital multimodal composing that is guided by social semiotic theory, whereas Sarvaiya (2021) develops a theoretical framework for assessment in multimodal pedagogy within the context of modern-day ESL classes.

3.1.5 Advanced technologies, AI, VR/AR, social media and blended models

The field of flipped ESL/EFL teaching is being subjected to an increasing scholarly inquiry into advanced and innovative technology use. In-class research and analysis of real-life situations investigate the use of artificial intelligence applications, in particular ChatGPT, for personalized preparation of pre-class material, adaptive feedback, and AI-based evaluation, focusing on speaking proficiency and student satisfaction (Choudhary et al., 2025; Dung, 2024; Khan, 2024; Newham et al., 2024). Further literature looks at the application of immersive technologies in the form of virtual reality (VR) and augmented reality (AR) along with online and mobile platforms and gamification, pointing out the aspects of personalized and immersive learning, policies, curriculum design, and equality issues (Bang, 2024; Jameer & Narra, 2024). Social media and collaborative platforms are used to facilitate interactions, content creation and exchange, and peer collaboration in higher education flipped language classes, posing both adaptation and workload problems (Al-Jarf, 2024; Han, 2022; Khatri, 2024). Complementary studies investigate blended models that combine face-to-face and online components to address

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diverse learner needs and mitigate some of the difficulties associated with fully flipped implementations (Babazade, 2024; Pulatova, 2025).

Taken together, these clustered profiles show that the 50 core studies span multiple educational levels (secondary to tertiary), regions, and methodological approaches, while converging on key concerns around digital tool integration, student engagement, assessment innovation, and context-sensitive pedagogical adaptation. The subsequent thematic, chronological, and critical analyses in this review draw directly on this diverse yet interconnected evidence base.

3.2 Cross-Study Patterns in Core Pedagogical Dimensions

As described in the study profiles highlighted in the previous paragraphs, individual profiles allow for an in-depth look at the application of flipped ESL/EFL learning environments using multiple media. To take the findings from individual studies further to develop an interpretive approach, this section highlights some key themes from the five identified dimensions of analysis resulting from data extraction and integration synthesis: (1) digital tools, (2) student engagement approaches, (3) assessment procedures, (4) pedagogical modifications, and (5) context. The five identified themes provide information not only on the different media used when integrating technology into flipped language learning environments but also on some of the constraints faced during this process.

3.2.1 Digital Tool Utilisation

Numerous studies have been conducted on the use of digital tools. Dung (2024) and Faridah et al. (2025) report the incorporation of a variety of online tools such as LMS, video platforms, AI (ChatGPT), Web 2.0, gamification software and multimodal media in the implementation of flipped ESL/EFL teaching. Studies (Bang, 2024; Jameer & Narra, 2024; Newham et al., 2024) point to the convergence of emerging technologies, such as VR, AR, and AI, for enhancing language-learning experiences. Another set of studies (Al-Jarf, 2024; Jian, 2023; Liu & Lam, 2025) encompasses multimodal digital composing and video tools, for the improvement of language abilities as well as learner autonomy. However, problems associated with technological access, infrastructure, and digital literacy remain recurring constraints in tool use (AlManafi et al., 2024; Yusoff et al., 2025).

3.2.2 Student Engagement Techniques

Studies show (Azimov, 2024; Girgin & Çabaroglu, 2021; Ojong & Addo, 2024) that active learning techniques such as collaborative activities, role-play, gamification, and inquiry-based learning are used to enhance motivation and participation. Ariani et al. (2024), Faridah et al. (2025), and Shilaja, and Jeyapriya (2025) also highlight the use of pre-class video lectures along with interactive class activities to encourage engagement as well as autonomy. Han (2022) and Khatri (2024) further show that social networking sites and Web 2.0 tools are used to improve teamwork, creativity, and communication skills. However, El Kemma (2024) and Lü and Samah (2024a, 2024b) identify difficulties faced by learners in preparation and participation due to digital distraction or a lack of motivation.

3.2.3 Assessment Methods

Multiple studies (Fadzil & Hashim, 2023; Liu & Lam, 2025) show innovative multimodal assessment techniques including multimodal digital assessments in the classroom, gradeless peer/self-assessment and AI-assisted assessment techniques. Although traditional pre- and post-tests remain common, they are sometimes supplemented by formative and technology-enhanced assessment tools (Faridah et al., 2025; Huang et al., 2024a, 2024b; Veettil & Singh, 2024). Other works (Lü & Samah, 2024b; Sarvaiya, 2021) recommend standardised, valid, and reliable assessment frameworks to be designed specifically for the multimodal flipped ESL/EFL environment. On the other hand, studies (Sarvaiya, 2021; Veettil & Singh, 2024) also highlight the evaluation challenges including crafting criteria for creative products, and the reliability of the technologies used.

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3.2.4 Pedagogical Adaptations

Liu (2021) and Yusoff et al. (2025) indicate a change from teacher-centered lecturing to a student-centred approach enabled by technology, as well as the use of multimodal instruction. Other studies (Huang et al., 2024a, 2024b; Khatri, 2024) show that the integration of inquiry-based, collaborative, and multimodal learning reflects a shift in curriculum design trends. Dung (2024), Khan (2024), and Newham et al. (2024) also show that AI and digital technologies can reshape teaching roles and make personalised learning and interactive feedback more feasible. On the other hand, several studies (Azimov, 2024; Jameer & Narra, 2024) suggest combining traditional teaching styles with modern approaches using hybrid models.

3.2.5 Contextual Influences

The reviewed studies cover varied contexts, including secondary schools and higher-education institutions in countries such as Indonesia, Turkey, Pakistan, and Jordan (Choudhary et al., 2025; Faridah et al., 2025; Girgin & Çabaroglu, 2021). AlManafi et al. (2024), Leong et al. (2024), and Yusoff et al. (2025) show that resources, teacher skills, and institutional support affect the implementation and outcomes of flipped classrooms. Other factors include learner demographics, including age, level of English proficiency, and cultural background, which affect participation and technology use (Fang, 2025; Shilaja & Jeyapriya, 2025; Tuilan et al., 2024). Yue (2024) also suggests that external factors, including the COVID-19 pandemic, accelerated multimodal learning and technology integration in language teaching.

Even though the thematic analysis indicates the main preoccupations and some prevalent trends in the whole set of sources, it does not give a complete representation of how these preoccupations have evolved. To overcome this issue, Section 3.3 provides a chronological review of the research.

3.3 Chronological Review of Literature

Studies on flipped ESL/EFL learning environments integrating multimodal elements indicate a distinct development in teaching methodologies, and the adoption of technology over the years. Earlier studies mainly concentrated on multimodal video resources and foundational flipped-learning applications in language acquisition. Later studies expanded the field by examining online literacies, engagement challenges, assessment innovation, AI-supported tools, and broader implementation issues. The development of the literature is summarised below:

3.3.1 2015-2020 (Foundational Multimodal and Flipped Classroom Applications)

The early research primarily aimed at the use of multimodal video-driven materials and technology-supported flipped learning approaches to advance ESL students' audiovisual skills and speaking skills. The initial qualitative research introduced a flipped model concept, exploring technology-supported multimodal resources to facilitate interactivity among students in a second language setting.

3.3.2 2021-2022 (Theoretical Frameworks and Systematic Reviews on Flipped ESL)

The literature from this period included integrating multimodal theories within the context of flipped classroom design. The systematic reviews demonstrated an interest in exploring the advantages as well as the disadvantages of the flipped classroom approach within ESL/EFL teaching, particularly in relation to technology use, student engagement, and shifts in teaching.

3.3.3 2023-2024 (Expansion of Digital Tools, Assessment Practices, and AI Integration)

Studies were also conducted to encompass innovative digital applications such as Web 2.0, learning management systems, and AI-driven applications such as ChatGPT, aiming to upgrade the flipped ESL/EFL classroom. Motivation, participation, inclusivity, and composing using formative assessment and gradeless assessment, were considered. Meta-analyses, and bibliometric research, were conducted to gain perspectives on the efficiency of flipped learning, views of educators, and variability in methodologies, while focusing on challenges in digital literacy.

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3.3.4 2025 (Advanced AI, Technology Integration, and Pedagogical Innovations)

Recent research has highlighted the need for integrating advanced AI tools and digital multimodal platforms to enhance the flipped ESL/EFL classroom. Research focuses on AI-supported development of English speaking skills, integrating technology in the classroom, and strategic frameworks on sustainability. Applications include dealing with digital divides, maximizing autonomy, as well as adapting multimodal teaching for diverse learner populations.

The combined results of both thematic as well as chronological analyses not only identify the main areas of research but also clarify the development of the field within the past ten years. The next section analyses the degree of convergence as well as divergence of the research findings.

3.4 Agreement and Divergence Across Studies

The reviewed studies generally converge on the pedagogical value of digital tools and multimodal integration in flipped ESL/EFL classrooms, particularly in relation to student engagement, language development, and learner autonomy. Across the core sample, many studies report positive associations between technology-enhanced active learning, formative assessment, and increased learner motivation and interaction. At the same time, the evidence also reveals important areas of divergence, especially regarding technology access, teacher readiness, implementation demands, and the longer-term sustainability of flipped models across different educational contexts. Differences are also evident in assessment practices, particularly in the extent to which multimodal and technology-mediated approaches are integrated with, or continue to be supported by, more traditional forms of evaluation.

Table 1. Comparison of converging and diverging findings across core dimensions of multimodal flipped ESL/EFL pedagogy

Comparison Criterion	Studies in Agreement	Studies in Divergence	Potential Explanations
Digital Tool Utilisation	Many studies report the use of video lectures, LMS platforms, digital storytelling, gamification, AI tools such as ChatGPT, Web 2.0 applications, and multimodal platforms to support pre-class learning and active in class tasks (Al-Jarf, 2024; Baig & Yadegaridehkordi, 2023; Choudhary et al., 2025; Faridah et al., 2025; Girgin & Çabaroglu, 2021; Newham et al., 2024). Some studies further suggest that the integration of synchronous and asynchronous tools can enhance flexibility and learner autonomy (Shilaja & Jeyapriya, 2025).	Other studies raise concerns about over-reliance on technology, noting risks such as student disengagement and increased teacher workload (Han, 2022; Huang et al., 2024a, 2024b; Huang, 2025). Additional research emphasises limited access to reliable internet, devices, and technical support as major barriers to implementation (AlManafi et al., 2024; Yusoff et al., 2025).	These differences may be explained by variation in technological infrastructure, resource availability, educational level, and teacher preparedness across contexts.

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Student Engagement Techniques	Many studies indicate that flipped classrooms can promote active learning through collaborative projects, gamification, peer interaction, and inquiry-based activities, often with reported improvements in learner motivation and participation (Ariani et al., 2024; Huang et al., 2024a, 2024b; Khatri, 2024; Ojong & Addo, 2024; Shilaja & Jeyapriya, 2025). The use of interactive digital tools has also been associated with higher engagement and self-efficacy in several studies (Dung, 2024; Tuilan et al., 2024).	Some studies, however, point to challenges in student preparedness for pre-class tasks and to uneven levels of engagement, sometimes linked to learners' prior habituation to traditional methods or to digital distraction (Han, 2022).	Divergence may stem from differences in learner demographics, cultural attitudes toward technology use, and variation in the scaffolding and support provided for student adaptation.
Assessment Methods	Many studies report the use of multimodal and digital assessment practices combining peer, self-, and teacher feedback, alongside formative technology-enhanced assessment and rubric-based evaluation informed by multiliteracies perspectives (AlManafi et al., 2024; Fadzil & Hashim, 2023; Huang et al., 2024a, 2024b; Liu & Lam, 2025; Sarvaiya, 2021). Some studies also suggest that authentic, performance-based, and technology-assisted assessments may support validity and learner reflection (Sarvaiya, 2021; Veettil & Singh, 2024).	Divergence remains regarding the relationship between traditional assessment techniques and newer technology-supported approaches. Some researchers continue to foreground conventional assessment strategies, whereas others emphasise the complexity of evaluating multimodal productions and digitally mediated performance (Liu & Lam, 2025; Lü & Samah, 2024a, 2024b).	These differences may reflect variation in institutional policy, teacher assessment literacy, and familiarity with multimodal or technology-based assessment frameworks.
Pedagogical Adaptations	Many studies describe flipped ESL/EFL classrooms as being associated with shifts from teacher-centred, transmission-based instruction toward more inquiry-based, collaborative, autonomous, and authentic uses of the target language. These studies also note that a wide	Some studies note resistance to pedagogical change among both teachers and students, citing increased workload, unfamiliarity, and adjustment difficulties during	Variations in teacher training, institutional support, and cultural acceptance of pedagogical innovation may

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	range of resources, including digital tools, are mobilised to support such pedagogical change (Faridah et al., 2025; Michael & Hashim, 2024; Sandiarsa & Firman, 2024). Some studies additionally support blended models that retain selected traditional practices, including grammar-focused instruction, within a broader flipped framework.	implementation (AlManafi et al., 2024; Huang, 2025; Yusoff et al., 2025).	help explain differences in adoption and effectiveness.
Contextual Influences	Many studies recognise that contextual factors-including technological infrastructure, learner age, cultural background, and institutional support-significantly shape the outcomes of flipped classroom implementation (AlManafi et al., 2024; Babazade, 2024; Fang, 2025; Pulatova, 2025; Turopova, 2025; Yusoff et al., 2024, 2025). Several studies also suggest that tailored solutions and ongoing professional development are important conditions for success (Cao et al., 2024; Michael & Hashim, 2024).	Divergence is evident in the relationship between contextual disadvantage and instructional effectiveness. Some settings report productive implementation despite limited resources, whereas others struggle substantially with access, continuity, and support (AlManafi et al., 2024; Pulatova, 2025).	These discrepancies may be attributed to the heterogeneity of educational environments across regions, including urban-rural divides, economic inequalities, and differing institutional ecologies.

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The convergences and divergences outlined above do more than summarizing the current evidence base; they also indicate how the reviewed literature supports, qualifies, or complicates existing assumptions about language learning, teaching, and classroom practice in multimodal flipped environments. Considered together, these patterns point to the need for a more critical examination of the theoretical shifts underpinning multimodal flipped ESL/EFL pedagogy.

4. DISCUSSION

4.1 Critical Analysis and Synthesis

The literature on pedagogical transformations in flipped ESL/EFL classrooms integrating multimodal elements shows a clear and sustained interest in technology-mediated learning environments as sites for enhancing student engagement, learner autonomy, and English language development. Across the reviewed studies, notable strengths include the diverse use of digital tools, the expansion of multimodal learning practices, and the emergence of more learner-centered forms of assessment and classroom participation. At the same time, the literature also reveals recurring constraints, particularly in relation to technology access, teacher preparedness, implementation variability, and the continuing difficulty of evaluating multimodal student production in consistent and pedagogically meaningful ways. In addition, methodological limitations across the evidence base-such as small samples, short intervention periods, and uneven research designs-restrict the generalizability of many reported findings. Taken together, the literature suggests the considerable pedagogical promise of multimodal flipped learning, while also indicating the need for more methodologically robust and context-sensitive research.

Building on the cross-study patterns identified in the previous section, this part of the review offers an integrative critical synthesis of the literature. Rather than listing tools, techniques, or settings in descriptive isolation, it evaluates converging and diverging trends across four major dimensions: multimodal digital tool use, engagement strategies, assessment practices, and broader pedagogical transformation.

4.1.1 Integration of Multimodal Digital Tools

Across the reviewed literature, a variety of digital resources, from video lectures to interactive tools, AI assistants such as ChatGPT, as well as gamification tools, are reported to support English as a Second or Foreign Language skills and autonomy in a flipped classroom environment (Dung, 2024; Faridah et al., 2025; Venkateshwarlu, 2024). These resources are used within a multimodal context, which incorporates a variety of senses and encourages interactive learning, including immediate feedback, as well as multimodal inputs, as discussed by Al-Jarf (2024) and Yue (2024).

Nevertheless, the literature also identifies constraints that complicate this positive picture. Inequitable access to technology and limited connectivity remain important barriers, making it difficult to make multimodal learning scalable and equity-oriented (AlManafi et al., 2024; Turopova, 2025; Yusoff et al., 2025). The benefits of advanced tools may therefore be uneven, especially in resource-constrained or rural settings. Additionally, some researchers have indicated potential negative effects, such as overwhelming students, because of overdependence on technology, without a solid foundation in educational philosophy, which may limit their impact on learning outcomes (Huang, 2025).

4.1.2 Student Engagement Techniques

Research on flipped ESL/EFL classroom environments consistently points to the use of collaborative projects, inquiry-based learning, and online interactive tools which can enhance levels of student engagement and motivation within the class environment (Ariani et al., 2024; Huang et al., 2024a, 2024b; Khatri, 2024; Ojong & Addo, 2024). Gamification, group work, digital storytelling, as well as peer interaction, are used to make pre-class preparation and class time much more interactive, thereby making it more learner-focused. The use of social

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networking sites and peer-feedback systems enables the development of a collaborative class environment, in which students co-construct knowledge, share their artefacts, and provide feedback on peers' work, thereby cultivating a sense of learning community within the class setting (Han, 2022; Liu & Lam, 2025).

Nevertheless, this level of engagement is not assured. A common theme here is that participation depends on learners' digital literacy, self-regulation, and adaptability. It has been observed in many studies that some learners do not fully engage because they neglect pre-class work or having difficulty coping with the flipped model's high level of self-directed learning expectations (El Kemma, 2024; Lü & Samah, 2024a). Teacher resistance to pedagogical change, especially those working within a teacher-fronted setting, and the added workload for creating and supervising interactive learning, have also been identified as challenges to the flipped model implementation process (Han, 2022; Yusoff et al., 2025).

4.1.3 Assessment Methods in Multimodal Flipped ESL

In relation to assessment, innovation is apparent from the literature. The literature identifies several emerging approaches, including rubric-related multisource feedback, formative assessment supported by technology, and gradeless assessment systems to properly evaluate multimodal competencies (Fadzil & Hashim, 2023; Liu & Lam, 2025; Sarvaiya, 2021). These assessment systems support reflection, regulation, self-assessment, and peer assessment, thereby supporting multimodal teaching because they emphasize a variety of semiotic means as well as process learning (Jian, 2023). In addition, they make use of technology to generate more immediate and diverse assessment information than paper-and-pencil measures alone.

Nevertheless, such progress coexists with challenges. The literature also highlights challenges in developing valid, reliable, and unbiased assessment tools for multimodal productions, especially due to the linguistic, visual, audio, and interactive components being closely integrated within student products (Sarvaiya, 2021). Multimodal flipped ESL/EFL environments are frequently described as lacking unified assessment tools, thereby creating disparities in assessment among classrooms and institutions (Lü & Samah, 2024a). Moreover, expert knowledge on the applicability of multimodal and technology-driven, assessment remains a time-consuming process, beyond some educators' current expertise (Fadzil & Hashim, 2023; Veettil & Singh, 2024).

4.1.4 Pedagogical Shifts and Theoretical Foundations

Taken together, the reviewed studies indicate a broader pedagogical shift from teacher-centred, lecture-dominated approaches toward more learner-centred models that emphasise autonomy, collaboration, participation, and more authentic language use (Liu, 2021; Zain, 2022). Within this literature, multimodal flipped learning environments are commonly interpreted through the lenses of social constructivism, multiliteracies, and social semiotics, which collectively support the view that language learning is shaped through interaction, meaning-making, and the use of multiple semiotic resources in socially situated contexts (Jian, 2023; Sarvaiya, 2021). Across the reviewed studies, these theoretical perspectives are reflected in observable pedagogical variables such as collaborative task design, multimodal composition, learner autonomy, peer interaction, digital meaning-making, and formative feedback practices. In this respect, the literature positions multimodal learning, technology integration, and collaboration not as peripheral additions, but as increasingly central features of contemporary ESL/EFL pedagogy.

At the same time, the empirical foundation supporting these pedagogical transformations remains uneven. Many intervention-based studies are short in duration, often spanning only a lesson sequence, a course unit, or a single semester, which limits confidence in claims about the long-term sustainability of gains in proficiency, autonomy, or engagement (Qi et al., 2024; Tuilan et al., 2024). Longitudinal evidence involving larger and more diverse participant groups remains comparatively limited. In addition, a number of studies give insufficient attention to cultural and contextual variables-such as institutional expectations, assessment

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regimes, curricular traditions, and local conceptions of effective teaching-which can significantly shape how flipped and multimodal approaches are interpreted and implemented in practice (AlManafi et al., 2024). As a result, although the theoretical rationale for these pedagogical shifts is strong, the empirical base remains less consistent than the conceptual framing might suggest.

4.1.5 Methodological Rigor and Research Design

With respect to research methodology, the field contains several methodologically useful contributions. The use of mixed-methods research, and systematic reviews, enable a well-rounded perspective on the use of flipped multimodal ESL/EFL classrooms, both through quantitative data on proficiency levels and qualitative data on perceptions, attitudes, and processes within the classroom environment (Azimov, 2024; Faridah et al., 2025; Huang et al., 2024a, 2024b). Bibliometric and metadata-based studies have helped map research trends, thematic areas, and patterns of publication, to inform a more evidence-driven approach to teaching practice (Tuilan et al., 2024; Yusoff et al., 2024).

Nevertheless, methodological weaknesses still limit the strength of the evidence. Many empirical investigations have relied on small convenience samples, which have limited demographic diversity, thereby impacting the level of generalisability (Azimov, 2024; Lü & Samah, 2024a; Sasa et al., 2024). The interventions conducted have been short term, thereby making it difficult to measure long-term retention of positive outcomes. In addition, variation in teacher expertise, as well as inconsistent implementation levels, which are often inadequately measured in empirical research, make it difficult to interpret findings (Azimov, 2024; Michael & Hashim, 2024).

4.1.6 Contextual and Implementation Challenges

The literature recognises the need for context-informed implementation of flipped ESL/EFL teaching. A number of sources underline the significance of continuous professional development, infrastructure, and context-sensitive design in dealing with challenges like a lack of expertise, resource constraints, and changes in curriculum requirements. A number of studies (Baig & Yadegaridehkordi, 2023; Han, 2022) go beyond identifying challenges, instead suggesting ways of dealing with issues related to teacher workload, transitioning to a flipped setting, as well as resolving technical issues.

Nevertheless, a set of implementation challenges have persisted. Digital divides, both institutional and individual, have continued to affect equal access to multimodal learning experiences, especially in disadvantaged rural areas (AlManafi et al., 2024; El Kemma, 2024; Yusoff et al., 2025). Limited willingness among educators, students, or institutions, together with insufficient organisational support, can impede implementation. Moreover, integrating technology-rich, multimodal learning experiences with more traditional pedagogies is a continuing challenge (Bang, 2024; Pulatova, 2025).

4.1.7 Practical Applications

Despite these challenges, several useful lessons can be drawn for classroom practice. The literature suggests that AI support can be used for personalised learning, particularly in oral and written communication, while inquiry-based formative assessment can be embedded within flipped tasks. Collaborative multimodal projects can also support language proficiency and learner autonomy when they are carefully scaffolded (Dung, 2024; Huang et al., 2024a, 2024b; Khan, 2024). The literature further emphasises the value of well-designed hybrid approaches that combine explicit instruction with multimodal, technology-supported learning experiences (Azimov, 2024; Huang, 2025).

These practical suggestions point to several significant areas for future research. There appears to be a substantial lack of longitudinal, cross-cultural research on the sustainability and applicability of multimodal flipped-learning models within diverse ESL environments (Qi et al., 2024; Tuilan et al., 2024). Research on the standard, environment-specific assessment

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processes associated with multimodal productions is an emerging area, while issues of data privacy, AI, and algorithmic biases within technology-mediated environments remain insufficiently explored from an ethical perspective (Khan, 2024; Sarvaiya, 2021).

4.2 Theoretical and Practical Implications

4.2.1 Theoretical Implications

The use of multimodal digital tools in flipped ESL/EFL instruction supports the need to move away from the conventional teaching method and adopt more innovative learning models. It also supports the view that language learning can be strengthened through multimodal communication, since multiple sensory and semiotic modes may encourage learner autonomy and deeper engagement (Al-Jarf, 2024; Faridah et al., 2025; Liu, 2021).

The evidence supports the theoretical assumptions about multimodal discourse for increased cognitive engagement and multiliteracies beyond linguistic literacy skill sets to visual, auditory, or digital literacy skill sets. It also aligns with social semiotic perspectives. This review contextualises different multiliteracies models, which emphasize the importance of diverse semiotic resources for language learning (Jian, 2023; Khalid & Janjua, 2024; Sarvaiya, 2021). The evidence challenges traditional paradigms related to formative assessment in multimodal methodologies that attend not only to linguistic skills but also to creativity and multimodal meaning-making (Fadzil & Hashim, 2023; Liu & Lam, 2025; Sarvaiya, 2021). The integration of AI tools like ChatGPT into flipped classrooms has introduced new theoretical interpretations with regard to hyper-personalization tools and techniques by highlighting a shift from traditional teacher-led models towards more adaptive models supported by natural language processing tools (Choudhary et al., 2025; Dung, 2024; Newham et al., 2024). The blend of inquiry-based learning and technology-enhanced formative assessment in a flipped ESL/EFL writing class supports the theories proposed, encouraging motivated, inquiry-based, and feedback-rich learning environments, thus improving writing quality (Huang et al., 2024a, 2024b).

The comparison between modern and conventional pedagogical approaches suggests a degree of convergence, according to which a blended approach incorporating multimodal, flipped, and traditional grammar teaching, could potentially provide a more comprehensive approach to teaching ESL students (Azimov, 2024).

4.2.2 Practical Implications

Teachers are encouraged to make use of multimodal learning in the flipped classroom approach featuring a variety of online tools such as videos, podcasts, and gamification software, which has been reported to increase learner engagement, autonomy and linguistic proficiency, as supported in current research findings (Al-Jarf, 2024; Ariani et al., 2024; Faridah et al., 2025).

Professional development and teacher training are important to overcome challenges associated with technology, pedagogy, and assessment in order to implement multimodal flipped ESL/EFL lessons successfully (Cao et al., 2024; Leong et al., 2024; Yusoff et al., 2025).

The use of AI tools such as ChatGPT can be useful in personalising learning, offering immediate feedback and enhancing pre-class as well as in class interactive activities, thus optimizing English speaking skills as well as levels of satisfaction among ESL/EFL learners (Choudhary et al., 2025; Dung, 2024; Newham et al., 2024).

Institutions need to provide strong technological infrastructure support to overcome challenges posed by digital divides, limitations of internet accessibility and technological issues, which would result in the formation of a barrier to the success of flipped as well as multimodal teaching (AlManafi et al., 2024; Lü & Samah, 2024a, 2024b; Yusoff et al., 2025).

Assessment in flipped ESL/EFL classrooms needs to be transformed to include digital assessments and gradeless multisource feedback systems, to encourage learner reflection, regulation and multiliteracy development (Fadzil & Hashim, 2023; Liu & Lam, 2025; Lü & Samah, 2024b).

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It has been suggested that a blended approach be developed to integrate conventional teaching of the grammatical structure associated with language, as well as innovative teaching supported by technology, in order to maximize benefits from language learning (Azimov, 2024; Qi et al., 2024).

5. LIMITATIONS OF THE EXISTING LITERATURE

The studies reviewed have cumulatively contributed to understanding multimodal flipped ESL/EFL classrooms; however, a number of recurring limitations are evident across the literature.

A high proportion of the research consists of small-scale studies, often based on convenience sampling, which limits external validity and makes it difficult to generalise findings to the broader ESL/EFL population (Azimov, 2024; Faridah et al., 2025; Lü & Samah, 2024b; Sasa et al., 2024). In addition, some interventions are short term, often limited to a single course or semester, making it difficult to determine the long-term sustainability of teaching practices or learning outcomes (Azimov, 2024; Lü & Samah, 2024a; Qi et al., 2024).

Inaccessibility to technology is another problem facing the education system. Inequity in access to quality technology equipment and good internet facilities and support affects not only the performance of the flipped class concept but also learning in general (AlManafi et al., 2024; Babazade, 2024; Pulatova, 2025; Yusoff et al., 2025). This means that complex multimodal strategies become difficult to implement.

Furthermore, there is a lack of adequate professional development for teachers who use these two teaching techniques. Inadequate professional development of these teachers can have an impact on their digital literacy, competence, and assessment literacy, which results in varying outcomes due to different level of competence among teachers (AlManafi et al., 2024; El Kemma, 2024; Lü & Samah, 2024a, 2024b; Yusoff et al., 2025).

Despite there being many high-quality studies that involve qualitative designs, mixed methods, and reviews, there is more quantitative work done than any other type. Due to the smaller number of qualitative and mixed-methods studies, further examination of the reasons for success and failure in regard to engagement, motivation, and multimodal learning becomes difficult (Jian, 2023; Michael & Hashim, 2024; Qi et al., 2024).

Another gap lies in the fact that much of the work done is concentrated on the tertiary level. There has not been sufficient research conducted on primary, secondary, and community-based settings. Such concentration along with ignoring the age of learners, their proficiency, and culture leads to reduced generalisability (Jian, 2023; Qi et al., 2024; Tuilan et al., 2024).

Assessment continues to be one of the fields facing certain problems. Most assessment approaches that currently exist do not take into account the outcomes expected from multimodal learning, and they also do not give due consideration to the linguistic, visual, auditory, and interactive modes. As a result, learners' proficiency in multimodal settings may not always be properly assessed (Fadzil & Hashim, 2023; Liu & Lam, 2025; Sarvaiya, 2021).

Flipped classroom effectiveness can depend on the level of preparation and engagement of students prior to the classes. Certain aspects such as lower motivation, digital distractions, and adjustment issues can affect the quality of implementation of this approach as well as its overall effectiveness (El Kemma, 2024; Han, 2022; Lü & Samah, 2024a, 2024b).

Despite the growing presence of AI and other data-intensive technologies, emerging ethical and privacy concerns remain insufficiently examined in much of the literature. Issues of data security, consent, transparency in AI systems, and algorithmic bias are acknowledged in some studies but not explored in sufficient depth, even though they may shape learner trust and willingness to engage with these technologies (AlManafi et al., 2024; Khan, 2024).

Finally, cross-sectional designs remain prevalent. The lack of longitudinal research on learners' language proficiency, multiliteracies, and engagement over extended periods within multimodal flipped learning environments remains a significant limitation of the field (Jian,

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2023; Qi et al., 2024; Tuilan et al., 2024). Without such evidence, it remains difficult to determine the long-term durability of reported benefits.

The present review also has several limitations that should be acknowledged. Although it employed a structured integrative literature review approach to organise the identification, selection, and synthesis of relevant studies, it did not undertake a meta-analysis or effect-size aggregation. Screening, coding, and interpretation were conducted by the first author, and formal inter-rater reliability statistics were therefore not calculated. In addition, because the evidence base included empirical, review-based, bibliometric, and conceptual studies, quality appraisal was conducted through an adapted comparative framework rather than a single standardised tool. Accordingly, the findings should be interpreted as a structured qualitative and descriptive synthesis of the field rather than as statistically pooled evidence.

6. GAPS AND DIRECTIONS FOR FUTURE RESEARCH

These shortcomings indicate a set of strategic gaps, which should be addressed in future research. The following areas seem especially relevant, some of which may be considered high-priority research agendas.

Owing to the preponderance of short-term and cross-sectional research, a compelling need arises for longitudinal research. Longitudinal research would involve exploring the long-term impact on the participants across a number of semesters or years. The assessment would encompass elements such as proficiency, participant engagement, autonomy and multiliteracies, particularly within the ESL setting, as a means of ascertaining the long-term effectiveness of the multimodal flipped approach (Azimov, 2024; Ojong & Addo, 2024; Tuilan et al., 2024).

The lack of credible assessment instruments for multimodal composition has been a significant challenge. Future research can be based on the development of multimodal assessment rubrics, frameworks, and instruments that encompass linguistic as well as semiotic skills. This would cover AI-supported feedback, and peer and self-assessment. This would overcome challenges concerning equity, validity and comparisons between environments, as indicated from Fadzil and Hashim (2023), Liu and Lam (2025) and Sarvaiya (2021).

Research can be conducted on designing and testing professional development initiatives on multimodal teaching, digital literacy, AI, and assessment techniques for ESL/EFL teachers. It would be important to understand how training can be used to maximize the development of teachers' competencies as it would be important for scaling up multimodal flipped education, as proposed in research studies conducted in 2025 and 2024.

Future research should address scalable, contextually informed remedies for infrastructural inequalities, such as limited bandwidth alternatives, shared resource agreements, and organisational policies. The future of research on mechanisms, funding, and policies mitigating the digital divide will play a crucial role in making multimodal flipped ESL/EFL teaching practice accessible to those outside well-funded contexts (AlManafi et al., 2024; El Kemma, 2024; Yusoff et al., 2025).

Given the significance of learner readiness in a flipped-class setting, it is a high priority to design, develop, and research scaffolds, motivational, and digital literacy aids for enhancing pre-class preparation. Research should be conducted on viewing guides, elements of accountability, training students on metacognition concerning digital distractions, among others (El Kemma, 2024; Lü & Samah, 2024a, 2024b).

Affective experiences, including feelings of anxiety, enjoyment, frustration, and control, associated with online learners composing and participating in flipped class activities, remain relatively unexplored. A mixed-methods approach investigating those affective elements could contribute to more human-centered and supportive learning design (Jian, 2023).

It is necessary to conduct cross-cultural research to find context-dependent factors facilitating as well as impeding the application of an effective flipped model. Cross-cultural research can

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contribute to making a flipped ESL/EFL approach more contextually relevant rather than purely universal, and therefore fulfils the criteria of inclusivity (Faridah et al., 2025; Girgin & Çabaroglu, 2021; Shilaja & Jeyapriya, 2025).

The processes underlying cognitive, social, and behavioural phenomena associated with digital multimodal composition remain a kind of "black box". Ethnographic, process tracing, as well as learning analytics research could be used to trace how students coordinate a range of semiotic resources, and tools. The findings would inform scaffolding and tool development (Jian, 2023).

More studies need to be conducted on blending both the explicit, grammar-focused approach and the multimodal, interactive approach to flipped instruction. How a blend impacts proficiency, confidence, and the degree to which it results in language transfer could be interesting areas of exploration, as well as how teachers can make adjustments to calibrate the balance according to their students' needs (Jameer & Narra, 2024; Azimov, 2024).

7. CONCLUSION

The body of research on pedagogical transformation in flipped ESL/EFL environments highlights a clear trend towards using multimodal digital tools to support language learning. These tools range from learning management systems, video platforms, and Web 2.0 applications to more advanced AI technologies and virtual/augmented reality. Their multimodal nature enhances engagement by appealing to multiple sensory channels, fostering learner autonomy and enabling more personalised learning. At the same time, persistent challenges remain around digital accessibility, infrastructure, and differing levels of digital literacy.

Student engagement in multimodal flipped ESL/EFL settings is largely driven by active learning strategies such as collaboration, gamification, digital storytelling, and inquiry-based tasks. By relocating direct instruction to pre-class online spaces, the flipped model opens up class time for interaction, practice, and higher-order learning. Social networks and structured peer feedback further enrich these collaborative environments. However, learner readiness for flipped learning, online distractions, reluctance to adopt new pedagogies, and increased teacher workload can all constrain successful implementation.

Assessment practices have begun to adapt to the complexities of multimodal production through classroom-based digital assessments, peer and self-assessment (including gradeless approaches), and AI-supported feedback. These developments align well with learner-centered, process-oriented teaching. Nevertheless, there is still no widely adopted set of indicators to capture multimodal literacy comprehensively, and many teachers lack the expertise and time to design robust instruments. Questions of validity, equity, and technological reliability remain pressing.

Overall, the literature points to a pedagogical shift from conventional, lecture-dominated instruction towards constructivist, learner-focused approaches that foreground inquiry, collaboration, and multimodal learning. The teacher's role is being reconfigured, especially as AI makes more personalised feedback and adaptive support feasible. Many studies advocate a hybrid approach that blends explicit, traditional instruction with technology-supported multimodal activities as a pragmatic way forward.

In sum, multimodal flipped ESL/EFL classrooms appear to offer promising gains in learner interest, autonomy, and proficiency, but their impact is contingent on context, infrastructure, and teacher capacity. Future research should prioritise longitudinal and cross-cultural studies, the development of robust multimodal assessment frameworks, and strategies to mitigate digital and pedagogical inequalities. For practitioners, a balanced approach-integrating digital innovation while remaining mindful of local constraints-seems the most sustainable path to optimising flipped, multimodal language teaching.

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