Research Article

Technology Integrated Multiliteracies Pedagogy and Language Education in the Indian Classrooms

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Abstract

In the rapidly changing landscape of education, integrating digital technologies into language education is not merely advantageous: it is essential. There is a shift from traditional print-based learning to the multimodal form of learning. Technology use in education requires adopting and adapting to new pedagogical approaches that integrate various modalities in the teaching-learning process. This paper intends to explore technology integration in multiliteracies pedagogy: A learning-by-design approach in English language education. The concept of multiliteracies, which is written as the plural counterpart of 'multiliteracy', talks of an approach that integrates multiple contexts and multimodal resources for language and literacy practices. This paper examines how the four elements of multiliteracies, i.e., situated practice, overt instruction, critical framing, and transformed practice, can be integrated using multimodal resources by integrating technology to enhance students' learning experiences, their engagement with diverse communication forms and foster critical and creative thinking among students, the essential 21st-century learning skills, How the multiliteracies-learning-by-design approach can provide a formal framework for effective integration of digital literacy into education, enhancing its accessibility and relevance in today's technologically advanced world? The study aims to highlight: what are the key digital tools and how they can be integrated in the teaching-learning processes, and what are the pedagogical benefits and challenges of implementing technology-integrated multiliteracies pedagogy in Indian contexts? The study presents an overview of how the strategic implementation of a multiliteracies learning-by-design approach may provide a structured framework for incorporating digital literacies into education, making learning more inclusive and meaningful in a technologically evolving world.

Keywords: Multiliteracies pedagogy, learning by design, knowledge processes, multimodality, technology integration and digital literacies

Introduction

In today's world, integrating technology is essential for fostering diverse and inclusive learning environments, as the impact of multimedia and digital tools continues to grow in every area of education. Language education is no exception to this trend. Traditionally, language learning and literacy practices were mainly focused on reading and writing print-based texts, which is no longer sufficient in the present-day. UNESCO (2025) defines literacy as "a means of identification, understanding, interpretation, creation, and communication in an increasingly digital, text-mediated, information-rich, rapidly changing world." English serves as a universal language for science,

technology, business, and diplomacy, as well as the primary language for world-wide web (internet). Mastery of this language goes beyond basic communication, and it requires the ability to interpret information critically from a pool of sources to produce and disseminate messages across various media and genres (Vinogradova and Shin, 2020). Literacy education should focus on preparing individuals to navigate diverse socio-linguistic and technological contexts, which are responsible for making constant shifts in the communication processes (Cope and Kalantzis, 2000). The multiliteracies concept was put forward by the New London Group (1996) in view of changing social dynamics, growing linguistic and cultural diversity and explosion of new communication media that resulted from transnational migration and technological advancements which widened the scope of traditional language and literacies to encompass several forms of meaning-making, such as verbal, visual, aural, spatial, gestural, and digital literacies (Cope and Kalantzis, 2009; NLG, 1996). Multiliteracies pedagogical framework recognises the changing nature of communication in the global world that is more interlinked and relies largely on technological advancements to access and evaluate information across various platforms and cultural settings (Cope and Kalantzis, 2009).

The New London Group's (1996) multiliteracies pedagogy proposed a blueprint that provided an alternative approach to education. This approach not only facilitates the connection between life outside the classroom and the curriculum, as proposed by NEP 2020, but also addresses the need for change in communication and meaning-making processes caused by shifting media use. NLG proposed the concept 'multiliteracies' as a plural counterpart to the historical concept of the singular term literacy; two main ideas that defined the concept of multiliteracies were: first, the socio-linguistic diversity, which made crossing the linguistic boundaries essential and second was the major shift in the communication channels brought about by the developing communication technologies. A multiliteracies-focused education calls for students' engagement with multimodal resources and digital technology and integrates diverse socio-linguistic practices in the classroom, allowing learners to understand and participate in the multimodal meaning-making process (Kalantzis and Cope, 2015; Anstey and Bull, 2006; NLG, 1996; Beavis, 2013). Meaning-making has always been a multi-faceted process; however, literacy practices have changed with time to move beyond the traditional, rigid theories and approaches to more dynamic and practical approaches. As digital media continues to rise, literacy now involves navigating the multiple dimensions of plurality, including various sources of information presented in multimodal forms. This shift renders the traditional concepts of literacy increasingly outdated. The earlier generation grew up in an era with locally available newspapers, limited libraries with few permitted publications, and one-size-fits-all textbooks, whereas in the twenty-first century, these have been replaced by an infinite number of different multi-modal voices on the internet and social media in the form of text, video, and audio (Cope and Kalantzis, 2025). The present advancements in communication media and technology have stimulated and necessitated the application of different modalities in understanding and producing meaning. This has transformed pedagogical practices in language and literacy education. Multiliteracies can be regarded as a solution to the educational challenges posed by changing social needs (Kalantzis and Cope, 2008).

Learning by Design, developed by Kalantzis and Cope, represents a transformative step in the evolution journey of multiliteracies. Taking multiliteracies a step forward, building on the foundational work done by the New London Group (1996), Learning by Design is based on an approach in which teachers and students work with an existing available design, then redesign that available design multiple times, resulting in a complete cycle for multiliteracies development. Learning by Design was proposed to supplement multiliteracies instruction. The Learning by Design framework puts multiliteracies theory into real practice. The transformative power of multiliteracies pedagogy can be realised through the learning by design framework (Kalantzis and Cope, 2015).

Need to use technology-integrated pedagogy

Technology-integrated multiliteracies pedagogy significantly enhances students' learning outcomes by improving teaching practices. Teachers who get engaged in technology-integrated design processes develop confidence in scaffolding students through multimodal teaching and learning activities (Lim, 2023). Authentic and useful digital resources such as multimedia videos, audio clips and digital storytelling tools enable more dynamic and engaging lessons to develop explicit language skills (Hafner and Ho, 2020). Furthermore, technology-rich multimodal teaching practices promote the development of critical, digital and multimodal literacies, reflecting the potential of technology-integrated multiliteracies (Lim et al., 2020). After COVID-19, a positive shift has been observed in teachers' attitudes towards the multimodal use of digital technology in an effective manner rather than as an additional supply; however, without proper orientation, productive integration remains challenging (Nehru and Pal, 2024). Several education systems around the globe, such as Singapore, Finland, Australia, and Brazil, have included the concept of multiliteracies into their curricular frameworks (Cope and Kalantzis, 2025). This reflects different countries' responses to sociocultural and technological transformations and also highlights how traditional literacy practices are becoming outdated in the contemporary world. In this regard, there is a need to investigate the possibility and perspective of technology-integrated multiliteracies pedagogy in a diverse country like India, where a population with varied socio-linguistic and cultural diversity live together with varied learning needs. In this context, this paper seeks to explore:

What are the possible ways of integrating the four components of multiliteracies, namely situated practice, overt instruction, critical framing, and transformed practice, with multimodal resources and digital technology to improve students' English language learning experiences, engagement with various communication forms, and the development of critical and creative thinking, the core 21st century learning skills?

What is the role of technology in multiliteracies: Learning by Design approach, and what are the important available digital tools that can be integrated with multiliteracies pedagogical processes?

What are the pedagogical benefits of applying technology-integrated multiliteracies pedagogy in Indian classrooms?

What are the challenges of applying technology-integrated multiliteracies pedagogy in Indian classrooms?

What strategies can be proposed for the effective implementation of technology-

integrated multiliteracies in the Indian context?

Pedagogy of Multiliteracies: A Learning by Design Approach

New London Group (NLG, 1996), a group of linguists and educators, introduced multiliteracies pedagogy as a framework to overcome the challenges posed by cultural and linguistic diversity and the new mode of communication technology. The focus was to introduce practices that would prepare learners with futuristic skills and knowledge to achieve their aspirations in an advanced society. Today's socio-linguistic setting is characterised by the multiplicity of semiotic systems and communication channels; one has to indulge in internet relay chats, conduct advertisement analysis, use online maps and directories, and critically analyse available data for understanding, discussion, and keeping up with the fast-changing world. So, it becomes important to consider all forms of text and information that can be derived from communication technologies and multimedia resources in literacy education (Kalantzis, Cope and Fehring, 2002). The multiliteracies pedagogy acknowledges the fact that multimodal representations are important in the literacy paradigm, it emphasises that there are various ways to communicate and receive information, and being proficient in these multiple forms enhances literacy. It can be better understood with an example: 'Mountains' may be described as the same subject in different ways and through various forms, for example, we can write, 'the Mountains loomed large.' Alternatively, we might offer a picture of the mountains to which we're referring, or perhaps the actual mountains if they are nearby; in each case, we mean the same thing (Cope and Kalantzis, 2025). In its extended form, multiliteracies can be understood as the plural counterpart of the concept 'Multiliteracy', where the first component is represented as multiple socio-cultural and linguistic contexts and the second one is represented as multiple modes of communication. The second component relates to the multiple communication modes or semiotic systems which may be used to construct meaning, including written and oral, visual, gestural, and aural, with changing socio-linguistic contexts. Using multimedia and multimodal teaching aids in the classroom helps teachers communicate and demonstrate concepts or processes to students in a meaningful and effective way (Haniya et al., 2019; Cope and Kalantzis, 2015). Language usage involves analysing and employing multimodal forms to understand and produce meaning; it is not merely a process of reproducing learnt language forms (Cope and Kalantzis, 2009; 2015).

Multiliteracies pedagogy has two fundamental aspects, as stated above:

(i) Multiplicity of resources – communication nowadays is increasingly multimodal, where multiple media and resources are used to convey the information – text, image, sound, video, audio and other interactive elements. In today's digitally enabled society, it becomes essential to interpret and create meaning through various modes (Kress, 2010).

(ii) Multiplicity of contexts – This aspect of multiliteracies focuses on multiple ways in which meaning is created in different social and cultural contexts. Globalisation has posed a challenge in interacting with diverse linguistic and cultural settings. This form of communication requires an expanded form of language and literacy (Cope and Kalantzis, 2000).

To implement multiliteracies in

language education, the New London Group proposed four related pedagogical practices known as knowledge processes- Experiencing, Conceptualising, Analysing, and Applying. These knowledge processes serve as the foundation for fostering deep and transformative learning. All four interdependent knowledge processes structure how learners construct meaning, how they interact with the diverse forms of knowledge, and how this knowledge can be transformed to understand cross cultural contexts. It provides a comprehensive framework that can support learners in navigating complex forms of multimodal environments. It can also promote critical engagement and practical application of that knowledge (NLG, 1996).

The four components of multiliteracies: Situated Practice, Overt Instruction, Critical Framing and Transformed Practice, and their linked knowledge processes are explained below with examples for classroom integration:

(i) Situated practice (Experiencing) - This enables students to engage with the real world and get meaningful learning experiences, which are reflected by their own cultural and linguistic backgrounds. It allows the students to base their new knowledge on their prior knowledge.

Experiencing the known: Learners draw on their personal, cultural and community knowledge or experience. We can take one example in a classroom situation, where students share their observations on climate change and different kind of pollution in their neighbourhood while discussing a unit on environmental issues.

Experiencing the new: Learners encounter unfamiliar knowledge, ideas, texts or perspectives. Watching a video, observing a photograph, or reading an article about the Arctic ecosystem, located at the top of the earth, near north-pole and characterised by extreme climatic conditions with limited vegetation, and unique adaptation by the living organism, can introduce one to the concept of biodiversity and ecosystem. An ecosystem is a community of living things (plants, animals, and tiny organisms) and their immediate environment, which supports life (air, water, and soil), working together as a system.

(ii) Overt instruction (Conceptualising) – Overt instruction means open and explicit instructions for teaching and understanding of meta-language for the development of vocabulary, language and conceptual tools for meaning making.

Conceptualising by naming: Identifying the key terms, categories or patterns in language or texts. For example, students identify features of persuasive writing, such as rhetorical questions or emotive language. We can take another example of identifying grammar rules or literary devices, such as similes and metaphors, in the reading session of poems.

Conceptualising with theory: This means understanding how language functions in different contexts through explicit instructions. For example, how the tone and register change in the formal and informal writings. This makes the learners clearly understand the rules and the structure of the language in different contexts.

(iii) Critical Framing (Analysing) – In this step, students are engaged in critical thinking. Teachers engage students to critically analyse and question different socio-cultural, political and other aspects through different texts and media.

Analysing functionally: This makes the learners clearly understand the rules and the structure of the language in different contexts. An example would be to analyse a business report or some scientific study to break down its structure to understand its components, like introduction, problem statement, intervention, measures or methods of control, results and discussion, etc.

Analysing critically: Analysing the texts to uncover the biases, persuasive techniques, representation and identity of genders. It may also involve questioning the assumptions, values and power relations in different contexts.

(iv) Transformed practice (Applying) – This is the most important knowledge process as it enables the student to apply the knowledge and skill learned in the classroom in their real life with a fresh and innovative outlook by working collaboratively, using digital tools and creating multimodal information. This also allows them to communicate ideas effectively.

Applying appropriately: Using language or practising language in real-world contexts. An example would be to write a formal letter to a local newspaper editor or a local authority to solve any local problem.

Applying creatively: Here, applying creatively means transforming gained knowledge into something original, which may be used in a different context but meaningful and appropriate, such as writing a script for a school drama or podcast, which blends narrative and dialogue to explore different themes. Writing quotes for pictures, posters, advertisements, etc.

Table 1: Knowledge Processing Framework adapted from (Yelland, Kalantzis and Cope, 2008)

Stages	Dimensions
Experiencing	The known – reviewing the knowledge and experience of the students
	The new experience of unfamiliar information on the topic
Conceptualising	By naming, categorising, classifying, and defining existing terms, sequence, etc.
	With theory – generalising and connecting the topic into theories.
Analysing	Functionally – reasoning, inferring, concluding, and establishing functional relations (connections, cause and effect, logical analysis, etc.)
	Critically evaluating one's own perspectives and those of others, and comparing them to enrich critical lenses.
Applying	Appropriately applying knowledge and ideas in a real-world context, as well as validating them.
	Creatively – innovating something new, creatively based on interests, experiences, and aspirations

Multiliteracies Integrated Lesson Plan (Exemplar)

Grade Level: 6-8	Subject: English
Topic: Creating a short story	**Length of Period: 45 minutes**

Curricular Overall/General Expectation

- To develop, gather and organise ideas to construct meaning by relating them to previous knowledge.
- To use previous knowledge and connect it to the present knowledge to draft and revise to write/create a meaningful and coherent piece of writing.
- To develop creativity and imagination with an aesthetic sense to appreciate.

Curricular Specific Expectations:

- To develop an ability to generate, explore, analyse and create ideas for writing assignments.
- To develop an understanding of and ability to use multimodal resources as per need.
- To develop a distinctive identity in the students' writing by modifying language and tone according to their identity.
- To develop an ability to use appropriate vocabulary, phrases, and literary expressions to make students' writing correct in form, vivid, and interesting.

Learning Objective:

Students

- List the parts of a story: beginning, middle and end.
- Summarise the ideas to write the story.
- Use their identities to create their stories by recalling and connecting to their own life experiences.
- Create a story using different media that emphasise a variety of learning styles.

Learning outcomes:

Students

- Write meaningful stories using the resources (online/offline), prompts and instructions that have been provided.
- Include parts of their identity (culture, ethnicity, gender, etc.) and their personal experiences and prior knowledge in their stories.

Learning Process

Students will be put into groups according to their preferred learning styles and work at a variety of story stations where they will be given resources to create stories with prompts that target 6 modalities/learning styles (textual/linguistic station, visual station, auditory station, gestural station, tactile station and spatial station). The group will spend 25 minutes at the story station during this lesson. Teachers will discuss the activity in the first 10 minutes, and in the last 10 minutes, the teacher will collect the exit tickets and assign the homework. The other 3 stations would take place during the subsequent lesson.

Lesson structure

Knowledge processes	Teachers' activity	Students' activity	Resource integration	Assessment as/for learning
		Experiencing		
Experiencing the known	The teacher discusses the activity of picture story writing and divides the students into groups based on their preferred learning styles (textual/linguistic, visual, and auditory).	Students help the teacher in group division according to their learning preferences. They also discuss among themselves the parts of a story: beginning, middle and end.		

Knowledge processes	Teachers' activity	Students' activity	Resource integration	Assessment as/for learning
Experiencing				
Experiencing the New	The teacher makes the students understand the process of doing the activity of story writing by giving them descriptions of the available resources.	The students try to observe/listen/ read their prompt and try to connect it to their prior knowledge.	The teacher discloses the available resources to the students for the activity: Picture cards, a glossary with magnetic words, pen and paper, and a desktop with an audio clip of a picture description.	The teacher observes the students for their learning preferences and their negotiation with the peer group.
Conceptualising				
Conceptualising by naming	The teacher prompts students to start thinking about how they can use the information to proceed further.	Students discuss among themselves how they can use the available information to build the story.		The teacher observes the students' activities and facilitates them wherever required.
Conceptualising with theory	The teacher prompts the students to start building the framework of the story.	Students try to build the framework of their story by summarising the ideas for the beginning, middle and ending of the story.	Students can use their pen and paper to jot down their ideas. They can also use the computer to record their primary ideas as a Word document.	
Analysing				
Analysing functionally		Students organise the ideas to form a meaningful story.	Students use the available resources.	The teacher is observing the participation and involvement of the students in the group task. The teacher makes a note of the observation to analyse the collaboration among the students.
Analysing critically		Students discuss the story outline among themselves to analyse the closeness of the whole story to the prompt provided and its meaning and structure.		
Applying				
Applying appropriately	The teacher facilitates the students to correct the sentence structure and grammar	Students write the whole story based on the prompt and analyse the structure and the grammar of the text. They also analyse the text for the message it provides		

Knowledge processes	Teachers' activity	Students' activity	Resource integration	Assessment as/for learning
Experiencing				
Applying creatively	The teacher facilitates the students to make the story locally relevant by connecting it to local places, people, things, festivals and social settings.	After the final discussion, the students try to rewrite the story by contextualising the text by giving the characters, places and things local names, if not given earlier	Students can use the online resources and digital applications such as Grammarly to analyse the language and grammar of the written text. They can also do the spelling correction. Students can use various digital tools like Google Docs and Padlet to collaborate with their teachers and their peer group.	The teacher will collect the exit ticket, i.e. the students' reflection on the activity regarding the overall learning experience of the students.

Home assignments

- Write the story in the form of a comic and take the feedback from the parents and the teachers. Students can use digital resources like Canva, Padlet, StoryBird and Google Docs.
- Record the story in your own voice with a dramatic effect, share it with your friends, and collect their feedback. Digital resources like Flipgrid can be used.
- Try to imagine the story in another social setting (place, state, and country) and write the same story by contextualising it to that social setting. Students may search for information regarding the identities of new and different social settings.

**The students must have learned using these digital tools before conducting this activity in the classroom.

Assessment

- The purpose of the assessment: assessment for and as learning.
- Observation and feedback by the teacher for assessment for and as learning.
- Parental feedback and involvement to gauge the learning progress.
- Students will fill out an exit ticket as a reflection of their experience with the story stations. This will allow the teacher to gauge student learning.
- When the students reflect on their learning experience in the exit tickets, they are involved in self-assessment.
- Peer feedback for assessment as learning

Prompts used for different stations

- A glossary with magnetic words for the linguistic station.
- Picture cards for the visual station.
- An audio clip describing a picture or scene for the auditory station.
- Pen, paper and a desktop for writing at every station.

Differential Instruction

- Activities catering to different learning styles are integrated into this lesson plan.
- Flexibility in the task completion in online and offline modes is provided.

**The next lessons will cover the remaining stations (gestural station, tactile station, and spatial station).

Role of technology in multiliteracies: Learning by Design

The multiliteracies concept has highlighted how people are engaged in meaning-making. Acknowledging cultural, social and linguistic diversity

is the main focus. This approach emphasises learners' engagement in knowledge construction while using technology as a transformative tool (Esperat, 2024). Integrating technology within the multiliteracies framework facilitates very meaningful and multimodal learning experiences.

Technology use enhances multimodal engagement – It enhances multimodal engagement by providing learners access to diverse platforms to interact, including text visuals, audio, video and interactive simulations, e.g. digital storytelling and online video creation tools help learners navigate and create complex multimodal communication.

Fostering collaboration and communication – Various collaborative tools like Google Workspace and Microsoft Teams offer opportunities for real-time collaboration in the same way Google Docs and Google Forms can be used for collaborative projects.

Individualised learning experience – Technology allows us to get individualised learning experiences. There are various tools to cater to different learning needs and styles. Various adaptive learning platforms help to deliver a customised or individualised learning experience using data analytics and machine learning algorithms (Kabudi et al., 2021).

Accessibility and inclusion – there are various assistive tools to ensure digital accessibility to students with different disabilities. It makes the learning environment more inclusive and student-centric.

All these points are relevant for any teaching-learning space and with every kind of pedagogy in use; however, for learning by design, technology can be integrated with every knowledge process in the following ways –

Experiencing through immersive technology

There are various digital tools available that can give a real-life experience to the learners, such as virtual reality (VR) and augmented reality (AR). These tools may enable learners to experience diverse cultural and linguistic landscapes worldwide, fostering global understanding. These digital tools make learning more experiential and interactive; at the same time, they can also enhance motivation for learning, retention of the learned facts and effective transfer of learning.

Several social media platforms have curated channels that provide access to authentic videos, documentaries and audio from around the world. These may provide a near-real-life experience to the learners.

Conceptualising with collaborative tools

There are several cloud-based softwares which are freely available and allow learners to co-construct knowledge and collaborate through brainstorming discussions and shared resources. For example, Microsoft Whiteboard can seamlessly be integrated with Microsoft Teams in both classroom and remote teaching for collaborative work. Micro, FigJam, and Lucidspark can help in the visual collaboration and brainstorming sessions. These are mind-mapping digital tools that aid in organising and visualising ideas. Padlet is a digital tool that can help teachers and students to collaborate by sharing their ideas, videos and documents.

Several applications are available for language learning. It allows the learner to work on their vocabulary and also learn the structure of languages. It also provides scope to practice language skills in a simulated learning environment. For example, Duolingo and Babbel

provide structured and practical lessons and Rosetta-Stone for immersive audio-visual learning. Read Lang is a digital tool that can help improve learners' reading skills. It provides instant translations and vocabulary support while reading online texts. Flipgrid is another digital tool that can help students practice speaking skills by making short video clips. Using StoryBird, which provides a library of illustrations, students can create their own digital stories, and it may enhance their creative skills of the students.

Analysing through digital media

There are software and digital tools that may help learners to dissect information, evaluate their sources and challenge biases, if any. For example, Grammarly is a writing assistant tool that can help learners in analysing their written text for quality and correctness of the content, and also helps in improving the same. Another digital tool is Seesaw, which is an interactive platform where the students can showcase their work and assignments in all forms (written, audio and video). This tool allows communication and collaboration among the students, teachers and parents.

Applying through multimodal digital media

Technology also enables learners to create by applying their learnt skills and knowledge, e.g., infographics, digital stories, documentaries, presentations, etc.

Tools like online coding platforms and Adobe Creative Suite have empowered learners to apply their knowledge in innovative ways.

There are specialised digital platforms for the teachers too, which help them in creating various engaging learning and assessment tools. For example, Quizlet is a versatile tool that can create various flashcards and vocabulary games, and it can also help in creating quizzes. Another similar tool is Kahoot.

Pedagogical benefit of multiliteracies in the Indian classroom

Inclusivity and linguistic diversity: Collaboration and partnership among the stakeholders may address the need for equity and inclusion in technology integration. The multiliteracies framework, which uses multimodal strategies for language education and supports learners facing any difficulty in language learning, can bridge learners' literacy gaps, fostering inclusion using a more flexible student-centric approach (Drewry et al., 2019).

Engagement and learning motivation: While implementing multiliteracies, the classroom interaction is not only text and print-based, but it is multimodal, i.e., it includes the interaction with images, videos, audios, gestures, postures and the spatial designs. The multimodal approach allows us to cater to the varying learning needs and learning styles. A multiliteracies integrated approach in the classroom results in enhanced motivation and learning engagement, and encourages students to take responsibility and ownership of their learning (Rajendram, 2020).

Boosts critical and creative thinking: Technology is a powerful tool that can promote critical thinking, creativity and problem-solving. For this, there is a need to design learning experiences in a way that can motivate and encourage the students to think critically, analyse information and generate solutions to the day-to-day problems (Calavia et al., 2021). There is empirical evidence that multiliteracies mediated learning, which uses multimodality for effective learning, helps in enhancing critical and creative thinking among the learners

(Missa, Purwati and Retnaningdyah, 2022; Navehebrahim, 2011; Schmerbeck and Lucht, 2017)

Teacher empowerment: Enhancement in pedagogical depth through insight into the multiliteracies practices and pedagogies will better inform the language teachers about expanding literacy ideas beyond the traditional print media-based education (Boche, 2014).

Digital literacy and future readiness: There is a need to adapt to the digital platforms and their uses by navigating, creating and producing content. It makes the learner's future ready in this digitally and technologically evolving world. Multimodality enhances the scope for integration of technology and digital tools in the real classroom environment. The multiliteracies approach makes learning significant for the learners by connecting it to their needs, interests and understanding of the world, and the multiliterate learners become future-ready (Navehebrahim, 2011)

Students' empowerment and identity formation: Multiliteracies pedagogy allows learners to express themselves through various modes, and they act as both consumers and creators of knowledge in the classroom. It makes them empowered as learners and helps in their identity formation (Cope and Kalantzis, 2009; Rahman et al., 2022; Levy, 2009; Rajendram, 2020)

Challenges of implementing technology-integrated multiliteracies pedagogy in Indian classrooms

Digital divide- India is diverse not only in its sociocultural and geographical environment, but also in the distribution and access to resources. Even till now, access to basic infrastructure such as roads, electricity, internet and digital devices is restricted in the rural and remote areas. Inequality in access to technology can further worsen the persisting inequalities in education. Students from a lower socio-economic background are affected by the limited access to digital devices and internet connection (Banerjee, 2022).

Teacher preparedness- Limited training to teachers in technology integration and multimodal approaches can be one of the challenges, as effective knowledge and skills are required on the teachers' part to integrate technology in their teaching practices. It is important to ensure that the teachers are well-trained to use technology effectively in the teaching and learning process, promoting equitable access to educational opportunity (Haleem et al., 2022)

Assessment and evaluation complexity- The Indian system of assessment is primarily pen-and-paper-based, so the assessment of multimodal output may become a complex task for the teachers without changes in the assessment policies and orientation of the teachers.

Challenges in content creation- creating culturally relevant, multilingual and multimodal content for teacher support might be a complex task.

Curricular fragmentation and barrier- this approach is wide and needs a holistic approach for integrating various modalities in the teaching learning process. It may act as a curricular load in the overcrowded and diverse classrooms of India.

Strategies for effective implementation of technology-integrated multiliteracies

For effective integration of technology in the classroom processes, it is important to work and plan based on an effective pedagogical framework. The multiliteracies pedagogical framework provides a holistic approach for

integrating technology, working through four components of multiliteracies and related knowledge processes.

Technology integration in the classroom teaching-learning can be done for individualised as well as collaborative learning and assessment. Lesson plans, assessment plans and rubrics are required for the same. Integrating technology at every step makes the overall process systematic and aligned.

Encouraging collaborative learning and a peer feedback system can make classroom processes easy and effective with technology use. In this regard, online groups can be created for a dedicated task, such as deciding a script, providing feedback and inputs, by teachers as well as students, as coordinated efforts from all the stakeholders are required for collaborative learning.

Creating multilingual and multimodal resource banks to curate regionally adaptable digital content in multiple Indian languages may help all the stakeholders. It will provide readily available resources for the teachers to apply in the classroom and will save their time and effort. It will also make the classroom processes standardised.

Aligning the objectives of multiliteracies pedagogy with the goals of NEP 2020, enabling tech-integrated experiential learning. To align the goals of the national education policy with the objectives & intended outcomes of multiliteracies pedagogy in the classroom, there is a need to adopt plans and procedures for tech-integrated experiential learning, and the multiliteracies pedagogical framework provides enough opportunity for the same.

Assimilation of the technology-integrated multiliteracies pedagogical practices through the wide curriculum with special focus on language learning will make the process more effective, integrated and inclusive.

Developing high-quality training programmes and workshops for teachers is important to help them develop proficiency in integrating technology and pedagogy.

Infrastructure and resources are required to bring about desired changes in the teaching-learning landscape. Prioritising funds and resources towards developing inclusive and equitable technology infrastructure is essential in this regard.

Conclusion

With the changing needs and aspirations all around the world, with the introduction and integration of technology in every sphere of life, there is a shift in the traditional print-based learning approach to a multimodal approach in every field of education and language education is not an exception. The concept of multiliteracies, introduced by the New London Group (1996), expands the definition of literacy to include diverse forms of communication (multimodal) - verbal, visual, digital, spatial, and gestural including multiple socio-cultural contexts, which enable students to engage with various meaning-making processes. This approach is about embracing a transformative way of learning, which enables the learners to navigate and thrive in this interconnected world. By incorporating the technology into the components of multiliteracies, i.e., situated practice, overt instruction, critical framing and transformed practice, teachers can enhance students' learning experience, foster their motivation and engagement for learning, and nurture their critical and creative thinking skills. Key digital tools may have significant pedagogical benefits in Indian educational contexts by providing an inclusive learning environment. There are challenges as well for implementing multiliteracies

in the country due to its diverse distribution of resources. There is a need to understand and study the available frameworks for language and literacy development critically and develop strategies for their effective integration. It will help in developing a structured framework for language learning in a more inclusive and meaningful way in a technologically evolving world. This is the crucial time to re-evaluate and reimagine the approaches in the field of language education to equip the future generation for accommodating the diverse communication forms of the twenty-first century.

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