

Methodology of Teaching in a Multilingual Environment: Challenges and Solutions

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Abstract

The research is directed toward a systematic comprehension of contemporary challenges and practical responses arising in instruction within a multilingual environment, as well as toward the development of a conceptual integrative model. The methodological basis consists of systems analysis and metasynthesis of scientific publications devoted to translanguaging, Content and Language Integrated Learning (CLIL) and the use of digital educational technologies. The analysis made it possible to identify key difficulties: cognitive overload of learners, insufficient preparedness of teachers, subjectivity of existing assessment systems and barriers to social integration. As a response the Synergetic Model of Multilingual Pedagogy (SMMP) is proposed, synthesizing pedagogical, technological and sociocultural approaches. SMMP integrates the principles of translanguaging and CLIL, strengthening them with digital didactic tools and forming a supportive, inclusive educational ecosystem. The results obtained confirm the hypothesis that the comprehensive implementation of these approaches can improve academic performance and facilitate the successful adaptation of learners. The presented material will be useful to educational researchers, methodologists, administrators of educational institutions and policymakers shaping the educational agenda.

Keywords: multilingual education, translanguaging, Content and Language Integrated Learning (CLIL), teaching methodology, digital pedagogy, educational challenges, sociocultural adaptation, inclusive environment, teacher training, knowledge assessment.

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Introduction

The contemporary educational paradigm is undergoing a profound transformation, driven primarily by the large-scale increase in migration processes. According to data from the Office of the United Nations High Commissioner for Refugees, by mid-2023 the number of forcibly displaced persons exceeded 117 million, and the dynamics continue to demonstrate an upward trend [1]. The direct consequence is an unprecedented linguistic

and cultural diversity in school classrooms. At the same time, traditional systems, shaped by a monolingual ideology and designed for a homogeneous contingent, are entering a phase of systemic imbalance. Outdated methodologies applied in a heterogeneous environment not only slow down the assimilation of educational material but also hinder the social integration of bilingual and multilingual children, provoking academic lag and psycho-emotional stress. The relevance of the problem is confirmed by numerous studies recording an

achievement gap between monolinguals and pupils from migrant families when conventional approaches are used [2].

A scientific vacuum is manifested in the absence of a holistic methodology capable not only of proclaiming the value of multilingualism but also of equipping the teacher with concrete, reproducible tools. Existing models — content and language integrated learning (CLIL) and the translanguaging approach — are often considered in isolation. Scholars either focus on the didactic advantages of multilingual interaction or pay attention to the fusion of language and subject content, ignoring their potential synergistic effect, strengthened by digital technologies. An urgent need arises for theoretical rethinking and consolidation of advanced practices into a single conceptual framework.

The aim of the study is to systematise the challenges facing pedagogy in the context of multilingualism and to develop an integrated methodological model aimed at improving academic outcomes and facilitating the sociocultural adaptation of learners.

The scientific novelty is expressed in the formulation of the Synergistic Model of Multilingual Pedagogy (SMMP) — a comprehensive framework that combines pedagogical (translanguaging, CLIL), technological (digital scaffolding) and sociocultural (formation of an inclusive environment) components.

The hypothesis is put forward that the integrated application of translanguaging, CLIL and digital educational technologies makes it possible to overcome cognitive and affective barriers more effectively than the use of these approaches separately, which, in turn, leads to an increase in academic achievement and the harmonious inclusion of students in the educational space.

Materials and Methods

In recent years, researchers have been striving ever more actively to comprehend the methodology of teaching in a multilingual environment, addressing both the macro level of educational policy and statistics and specific classroom practices. Global reports such as the Global Trends report 2023 [1] and the PISA 2022 results [2] demonstrate a significant increase in the number of multilingual learners as a consequence of migration

processes and the globalization of education. The authors emphasize that the growing linguistic diversity in schools is accompanied by a wide differentiation of learning needs and requires new approaches to ensure economic and social equity in education.

At the level of pedagogical practice, the main direction is the concept of translanguaging, which proposes the active use of all learners' language competences as a resource for learning. Thus, Wawire B. A., Barnes-Story A. [3] develop multiliteracy strategies that include project-based activities and the creation of multimodal texts, which contribute to the development of integrated skills of reading, writing, and oral expression. Wei L. [4] focuses on the transformative role of translanguaging in the context of social justice and inclusion, describing co-learning practices and transpositioning of knowledge between languages as a means of overcoming barriers and forming critical awareness in learners. Canals L. [7] investigates multimodality in the negotiation of meaning, showing how the combination of verbal and non-verbal resources enables students to achieve deeper understanding and activates their metalinguistic skills.

Another important direction is the CLIL (Content and Language Integrated Learning) methodology. Villabona N., Cenoz J. [5] analyse the challenges of integrating subject and language learning, emphasizing the contradiction between content-driven teachers, who focus on subject matter, and language-driven teachers, concerned with developing students' language skills. In turn, Antropova S., Poveda B., Carrasco Polaino R. [6] assess the effectiveness of the practical implementation of CLIL in primary school, noting that achievements in the field of bilingualism largely depend on the adequate preparation of the teacher and their ability to adapt teaching materials to the language levels of different groups of learners.

The third block of research is related to digital technologies in multilingual education. Dubinina G., Konnova L., Stepanyan I. [8] examine specialized platforms and mobile applications for teaching mathematics, highlighting the importance of a multilingual interface and adaptive algorithms that take into account the user's language background and provide individualized prompts. Ji H., Han I., Ko Y. [9] in their review explore the role of conversational AI in supporting language learning, pointing to the prospects for the collaboration of such systems with teachers to increase classroom interactivity and provide prompt feedback.

Finally, the socio-emotional component is reflected in the works of Bellinzona M. et al. [10], who study students' attitudes toward linguistic diversity using the example of Italian classes. They identify a link between individual student characteristics and educational factors, showing that a positive attitude to multilingualism is closely related to the practice of intercultural exchange and the support of the school community.

The conducted analysis of the existing studies made it possible to identify several contradictions: first, between the ideas of translanguaging as a radically open model of learning and the more traditional CLIL approaches, where the division into language and content is preserved; second, between the high potential of digital technologies and their actual availability in different educational contexts. At the same time, the issues of preparing teachers to integrate multilingual strategies and AI technologies, as well as the long-term effects of translanguaging pedagogy on academic outcomes in different subject areas, are insufficiently covered. In addition, studies focusing on the specifics of multilingual education in the context of inclusion of children with special educational needs are almost absent. In the future, it is advisable to develop interdisciplinary research that combines sociolinguistic, technological, and pedagogical aspects, as well as to conduct longitudinal empirical work to assess the effectiveness of the described approaches in the long term.

Results and Discussion

A review of scientific publications and pedagogical practice made it possible to identify and classify the key

problems arising in a multicultural educational environment, as well as to develop a set of measures to overcome them, culminating in the Synergetic Model of Multilingual Pedagogy (SMMP): Cognitive overload of students. The simultaneous acquisition of new subject content and the language of instruction increases cognitive load, slowing the rate of material assimilation and reducing its depth of understanding [6].

Insufficiency of teachers' professional training. The majority of instructors do not possess the specialised competencies required for work in linguistically heterogeneous classrooms. Methods of language support are often unfamiliar to them, therefore multilingualism is perceived more as an obstacle than as a resource [10].

Inadequacy of existing assessment systems. Standard tests designed for native speakers distort the picture of subject knowledge among multilingual learners, because the final score predominantly reflects the level of language competence rather than the depth of content mastery [8, 9].

Sociocultural and affective barriers. The school language hierarchy, in which the language of instruction occupies a privileged position relative to learners' home languages, fosters feelings of inferiority, embarrassment and alienation, which negatively affects their motivation and social integration [3, 5].

Contemporary pedagogical research offers numerous effective yet fragmented solutions to these problems. In the present study they are systematised into a single concept. Table 1 presents a comparison of the traditional monolingual paradigm with the integrated multilingual approach that underpins the proposed model.

Table 1. Comparative characteristics of educational approaches (compiled by the author based on [3, 5, 9]).

Parameter	Traditional monolingual approach	Integrated multilingual approach (basis of SMMP)
Role of the mother tongue (L1)	Considered an obstacle; its use in class is forbidden or restricted.	Considered a valuable resource for cognition and meaning-making (principle of translanguaging).
Learning objective	Mastering subject content in a single target language.	Simultaneous mastery of subject content and development of language competences (CLIL principle).
Teacher's role	Transmitter of knowledge, controller of linguistic purity.	Facilitator, creator of a supportive environment, architect of the learning process.
Learning materials	Standard, monolingual.	Authentic, multilingual, multimodal.
Assessment approach	The final product is assessed (often only linguistic accuracy).	The process and comprehension of the essence are assessed; the use of L1 is permitted to demonstrate knowledge.
Use of technology	Limited, often for presenting material.	Active use of digital scaffolding for personalisation and support.

The conducted study culminated in the conceptualisation of the Synergetic Model of Multilingual Pedagogy (SMMP). This model does not aim to establish a fundamentally new pedagogical paradigm; rather, it functions as a metaframework that organises and integrates methodologies whose effectiveness has already been confirmed in practice. The scientific

novelty of the SMMP lies in its capacity to synergistically unite these methodologies, smoothing their individual limitations and reinforcing their combined pedagogical potential. A schematic representation of the model's structure is provided in Figure 1.

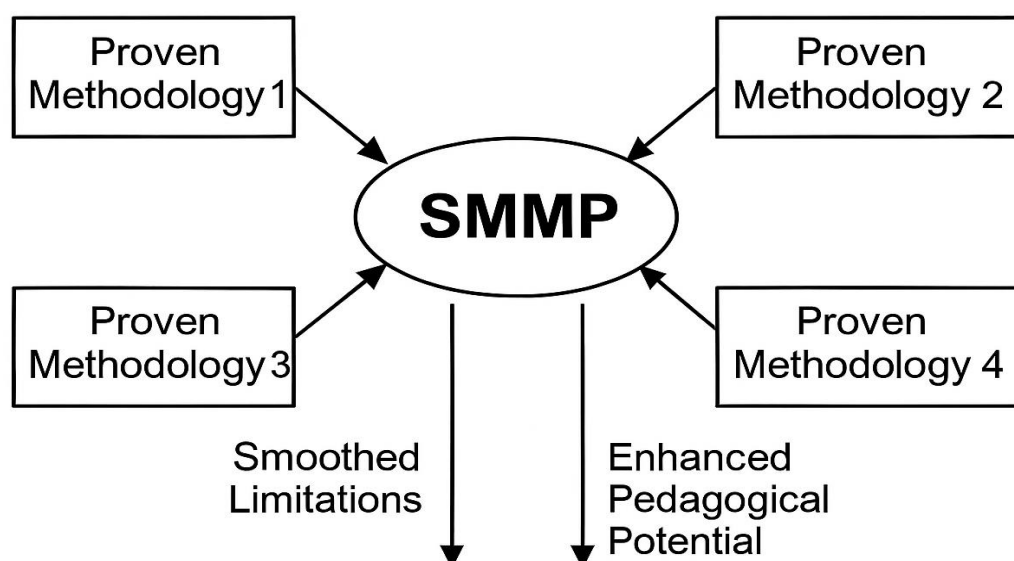


Fig. 1. Synergetic model of multilingual pedagogy (SMMP) (compiled by the author based on [4, 7]).

In the proposed conceptual model, three mutually complementary and inseparable blocks can be distinguished.

Pedagogical core – integration of CLIL and translanguaging. The fundamental methodological conflict between content and language integrated learning (CLIL) and translanguaging is resolved through their hybrid application. The main framework of the lesson is built according to CLIL principles: the subject content (for example, biology) is presented in the target language. However, at key moments of the lesson – when introducing complex concepts, during group discussions, brainstorming sessions or reflection – the students' mother tongue is deliberately and legitimately included. The ability to think through ideas in L1, draft and ask clarifying questions minimizes cognitive load while simultaneously deepening comprehension of the material [3, 7].

Technological scaffolding – digital support. Digital tools act as a dynamic scaffold, enabling the implementation of the pedagogical core described above. As an illustration one can mention:

- immersive readers (Microsoft Immersive Reader, etc.) that provide text-to-speech, lexical

translation and grammatical markup, thereby facilitating work with specialised academic sources [9];

- collaborative creative environments (Padlet, Google Docs) where learners create multimodal projects, combining different languages, visual and video materials, thus uncovering the full communicative potential [8];

- AI platforms that offer instant differentiated feedback on both content and language components, personalising the learning process [10].

Sociocultural foundation – an inclusive environment. Without institutional support, the previous two blocks lose effectiveness. At the school level, an attitude is formed in which linguistic diversity is perceived as a resource. This includes a linguistic landscape policy (multilingual signage, announcements, library collections). Project activities devoted to the cultures and languages of the students themselves, as well as systematic professional development of teachers aimed at fostering a positive attitude towards multilingualism.

For the practical implementation of CMMII, a lesson design algorithm has been developed, presented in Figure 2.

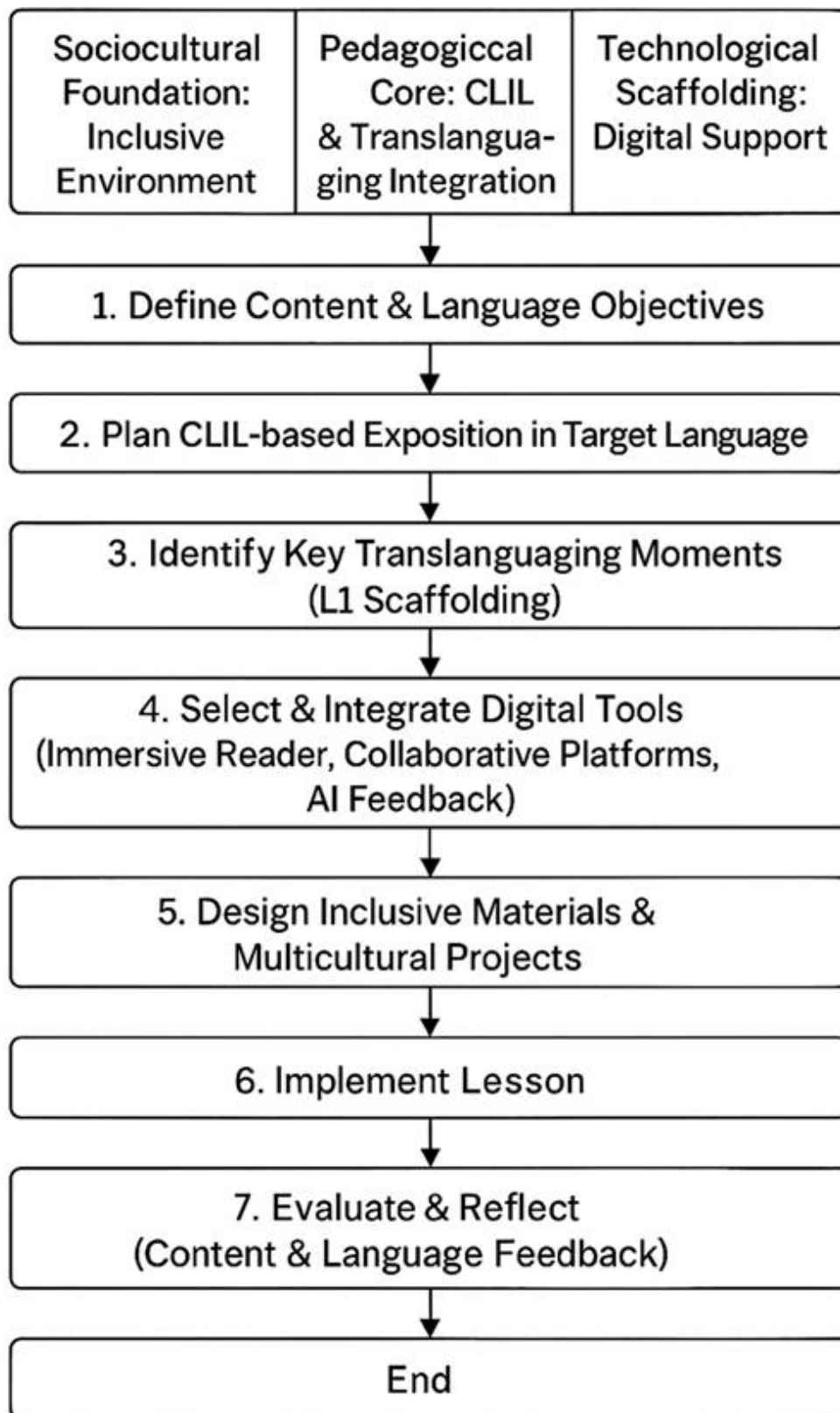


Fig. 2. Lesson planning algorithm within the framework of the SMMP model (compiled by the author based on the analysis of [3, 7, 8, 9]).

The algorithm illustrates how an instructor can vary languages of communication and digital tools at each phase of a lesson, thereby enhancing learners' comprehension and motivation. During the activation of prior knowledge, it is reasonable to turn to the pupils' native languages while discussing their previous conceptions of photosynthesis. Subsequently, new information is presented in the target language in a CLIL format, drawing on electronic dictionaries that serve as technological scaffolding. During the practical task, students interact in small groups, freely choosing the language for discussion (translanguaging), yet the final collaborative product—such as a schematic representation of the process—is produced in the target language. Mastery checking may take the form of a short essay in the target language or an oral explanation in the native language, if the aim is to assess disciplinary content rather than linguistic competence.

The research results confirm that effective multilingual instruction is achieved not through the search for a single universal method, but through flexible, well-designed combinations of diverse approaches. In this sense, the Synergetic Model of Multilingual Pedagogy (SMMP) functions as a theoretical framework that takes into account cognitive, technological and sociocultural aspects of the educational process. The model does not claim the status of a dogmatic scheme. On the contrary, it operates as a construction set that the teacher adapts to a specific class, student composition and subject specificity. Further studies should be directed toward empirical validation of the SMMP in diverse educational settings and toward the development of detailed methodological recommendations for instructors of different disciplines.

Conclusion

The conducted study allowed us to identify and systematize the main problem areas and advanced methodological practices in the course of teaching in a linguistically heterogeneous school. A comprehensive analysis of contemporary publications showed that classical monolingual methods do not fully meet the needs of the educational process under conditions of multilingualism, whereas innovative approaches — translanguaging and CLIL — are often applied separately, which significantly limits their effectiveness.

The result of the work was the development of the author's Synergistic Model of Multilingual Pedagogy (SMMP), which constitutes the scientific and methodological novelty of the study. This model integrates three interrelated elements:

- the pedagogical core, in which a dynamic combination of CLIL and translanguaging principles is implemented;
- the technological scaffolding, which ensures the integration of digital tools supporting the learning process;
- the sociocultural foundation, aimed at forming an inclusive environment that recognizes and encourages multilingualism.

The study's findings confirm the put-forward hypothesis that the synergistic integration of the considered approaches allows cognitive and emotional barriers to be overcome more effectively than their separate application. SMMP expands the boundaries of traditional subject teaching in a non-native language, turning the learner's linguistic repertoire into an active instrument of cognition while creating psychologically comfortable and technologically enriched learning conditions. Prospects for further research are seen in the empirical verification of the proposed model and in the creation, on its basis, of teacher professional development programmes.

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