**Journal of Language, Literature, and Cultural Dynamics**
Vol. 3 No. 1 (2026) pp. 22-42
Online ISSN: 3089-5782

*Original Research*

# Reframing Inclusive Language Learning in Indonesian Multilingual Classrooms: A TPACK-Based Model for Meaningful and Transformative Pedagogy

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10.65840/jllcd.v3i1.36

***Article Info***
*Submitted:*
*11/25/2025*
*Revised:*
*01/13/2026*
*Accepted:*
*04/20/2026*
*Available Online:*
*04/24/2026*

***Abstract***. *The complexity of multilingual classrooms and the increasing integration of digital technology in education demand a more inclusive, adaptive, and contextual approach to language learning. However, language learning practices still tend to be dominated by monolingual orientation and the use of instrumental technology, so they have not been able to optimize student involvement, participation, and meaningful learning. This research aims to develop a conceptual model of language learning that integrates the framework of Technological Pedagogical Content Knowledge (TPACK) with the principles of meaningful learning in the context of multilingual classrooms. The research uses a conceptual approach based on literature synthesis to cutting-edge scientific sources to identify theoretical and practical gaps in existing learning approaches, as well as formulate coherent and applicable integrative models. The proposed model places TPACK as the core of a learning system that is operationalized through five dimensions of meaningful learning, namely active, constructive, intentional, authentic, and cooperative, and contextualized in a learning environment that is inclusive and responsive to students' linguistic diversity. In addition, the model is designed in the form of a dynamic implementation cycle, including the activation stages of linguistic experience, technology-based exploration, knowledge construction, collaboration, and reflection. Conceptual findings suggest that integration between TPACK, meaningful learning, and sensitivity to multilingual contexts can result in more adaptive, participatory, and transformative pedagogical frameworks. Thus, this research contributes to the development of language learning theory and practice by offering a model that bridges the integration of technology, pedagogy, and socio-linguistic contexts in a systematic and sustainable manner.*

***Keywords***: *TPACK; meaningful learning; multilingual classes; inclusive language learning; Technology integration*

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## 1. Introduction

The development of education in the 21st century is marked by the increasing integration of digital technology in learning and the increasingly complex characteristics of students, especially in the context of multilingual classrooms. This transformation demands a pedagogical approach that is not only oriented towards content mastery, but also able to accommodate linguistic diversity and make meaningful use of technology (Bentum-Micah et al., 2026; Gusdian et al., 2026; Tong

et al., 2025). In language learning, this challenge becomes increasingly crucial because language not only functions as an object of learning, but also as a medium of social interaction and identity formation (Gao & Zhang, 2026; K. Smith & Culbertson, 2025). Therefore, a learning design that is able to integrate the dimensions of technology, pedagogy, and socio-linguistic contexts simultaneously is needed.

However, language learning practices in various contexts still show a tendency to be less adaptive to students' linguistic diversity. A single language standard-based approach tends to ignore the language repertoire that learners have, thus potentially limiting their participation and engagement (Altunel, 2026; Bohlmann et al., 2025). On the other hand, the integration of technology in learning is often instrumental and disconnected from meaningful pedagogical strategies (Gonzalez-Vidal, 2026; Serrano-Ardila et al., 2026). This condition shows that there is a gap between the potential of technology, learning practices, and the need for multilingual contexts in language education.

The Technological Pedagogical Content Knowledge (TPACK) framework has been widely used to bridge the integration of technology in learning, emphasizing the integration between technological knowledge, pedagogy, and content (Backfisch et al., 2024; Nguyen et al., 2024). A number of studies have shown that the implementation of TPACK can improve the quality of learning and student engagement. However, its implementation still faces limitations in accommodating linguistic diversity and has not been systematically linked to meaningful learning principles, such as active engagement, knowledge construction, clear learning objectives, authentic context, and collaboration (Durham, 2024; Ocak & Caskurlu, 2026). Thus, there is a need to develop a learning model that integrates TPACK with a meaningful learning approach in the context of multilingual classrooms.

Based on these gaps, this study aims to develop a conceptual model of language learning that integrates TPACK with the principles of meaningful learning in an inclusive and contextual learning framework. This model is designed to not only optimize the use of technology in learning, but also to accommodate the linguistic diversity of learners as part of the process of constructing meaning. Thus, this research contributes to the development of a pedagogical framework that connects technology, learning strategies, and socio-linguistic contexts in one coherent and applicable learning system.

### 1.1. Theoretical Framework

#### Applied Linguistics and Inclusive Language Learning

Applied linguistics in the context of language education is no longer understood as a mechanical application of linguistic theory, but rather as an interdisciplinary field that examines the dynamic relationship between language, learning, and social contexts (Abdullah et al., 2025; Burton & Le Foll, 2026; Chau, 2026). In recent developments, applied linguistics emphasizes the importance of a responsive approach to the linguistic and cultural diversity of learners, especially in the context of increasingly multilingual and multicultural education. Thus, language

learning focuses not only on mastering the structure of language, but also on the ability to use language as a means of communication in diverse social contexts.

In an inclusive perspective, language is seen as part of the social and cultural identity of learners. This approach rejects the assumption that only one language variety has academic legitimacy, and instead recognizes the diversity of language practices as a learning resource (Rodríguez Jordá & Di Paolo, 2025; Woźniak et al., 2025). The concept of translanguaging emphasizes that students can utilize their entire linguistic repertoire to build meaning, so that learning becomes more participatory and meaningful (Turner & Tour, 2025; Y. Zhang, Wang, et al., 2026). In this context, inclusivity means not only equal access, but also recognition of students' linguistic identities as part of the learning process.

Furthermore, the principles of inclusive language learning emphasize a non-discriminatory and culturally responsive approach. The non-discriminatory approach aims to avoid learning practices that marginalize a particular language or dialect, while the culturally responsive approach emphasizes the importance of linking learning to students' social and cultural experiences (Alomar, 2025; X. Wang et al., 2026; Wijayanti, 2024). Thus, inclusive language learning not only increases student engagement, but also reinforces the relevance and meaning of the learning process.

**Multilingual Classroom Context**

Multilingual classes are an increasingly common reality in the education system, including in Indonesia, which has a diversity of regional languages and variations in the use of national languages. In this context, students often have different linguistic backgrounds, both in terms of first language, level of competence, and experience of using language in daily life (Ayvaz et al., 2026; Fejzo et al., 2026). This condition creates complex learning dynamics, where language functions not only as a means of communication, but also as a marker of social identity.

One of the main challenges in multilingual classes is the difference in language competency levels between students, which can affect their participation and learning outcomes. In addition, the dominance of standardized language in learning practices often creates linguistic biases that favor some students and marginalize others (Kim et al., 2026; Y. Zhang, Tan, et al., 2026). This bias not only impacts access to learning, but also on students' perceptions of their linguistic identity.

The impact of these conditions on language learning is very significant. Students with different linguistic backgrounds may have difficulty understanding the material, participating in discussions, or expressing their ideas optimally. Therefore, a learning approach is needed that is able to systematically accommodate linguistic diversity and make it a resource in the learning process, not an obstacle (Gallagher & Scrivner, 2025; Lee et al., 2026; Turner & Tour, 2024).

**TPACK Framework**

The Technological Pedagogical Content Knowledge (TPACK) framework is one of the most influential models in examining the integration of technology in learning. TPACK emphasizes that effective learning depends on the interaction

between three main components, namely Technological Knowledge (TK), Pedagogical Knowledge (PK), and Content Knowledge (CK) (Backfisch et al., 2024, 2025; Shambare & Simuja, 2024). The intersection between these three components results in more complex forms of knowledge, such as TPK, TCK, PCK, and at the highest level, TPACK as a whole integration.

Although TPACK has been widely used in various educational contexts, a number of studies have shown that its implementation often pays less attention to the social and cultural context of learning (Deb, 2026; Heath & Moore, 2024). In many cases, TPACK is understood as a technical framework for technology integration, without considering how it interacts with students' linguistic and cultural diversity. This shows that there are limitations in the implementation of TPACK, especially in the context of multilingual classes.

Nevertheless, TPACK has great potential to be developed as a framework that supports inclusive language learning. By strategically integrating technology in context-responsive pedagogical practices, TPACK can be the foundation for designing adaptive, multimodal, and participatory learning (Jiang et al., 2024; Mangundu, 2023). Therefore, it is necessary to expand the TPACK framework that links it to the principles of inclusivity and meaningful learning.

**Meaningful Learning**

The concept of meaningful learning emphasizes that effective learning must actively involve students in the process of knowledge construction (Kostiainen & Pöysä-Tarhonen, 2025; Mannem et al., 2026; Xu et al., 2026). In this framework, there are five main dimensions, namely active, constructive, intentional, authentic, and cooperative learning, which complement each other in creating an immersive learning experience.

In the context of language learning, active learning is reflected in the involvement of students in the use of language in real terms, either through discussions, presentations, or task-based activities. Constructive learning emphasizes that students build understanding through interaction with text, experience, and reflection, so that learning is not passive. Intentional learning refers to students' awareness of learning objectives, which allows them to direct the learning process more effectively.

Furthermore, authentic learning relates learning to the real-life context, so that language is learned as a communication tool that is relevant to students' experiences. Meanwhile, cooperative learning emphasizes the importance of social interaction in learning, where students learn through collaboration and negotiation of meaning with others (Alemu et al., 2025; Sukidin et al., 2026). The integration of these five dimensions allows for the creation of language learning that is not only informative, but also transformative.

## 2. Research Methodology

### 2.1. Research Design

This research uses a qualitative approach with conceptual research design which aims to develop a language learning model based on the integration of the TPACK framework, meaningful learning, and linguistic inclusivity. The conceptual approach was chosen because the main focus of this study is not on hypothesis testing or empirical data analysis, but on the construction of theoretical models that are able to answer gaps in language learning practice and literature in multilingual classrooms. Within this framework, research is carried out through a systematic theoretical synthesis process, by integrating various key concepts from relevant literature to produce a coherent, applicative, and contextual learning model (Hämäläinen et al., 2026; Y. Wang et al., 2026).

### 2.2. Data Sources and Literature Selection

The data in this study is in the form of scientific literature sources obtained from internationally reputable journal articles (Scopus-indexed), academic books, and scientific publications relevant to the research topic. The literature used has been prioritized for publication in the last five years to ensure relevance to the latest developments in the fields of educational technology, language learning, and multilingual education.

The literature selection criteria include: (1) relevance to the TPACK framework, meaningful learning, and linguistic inclusivity; (2) contribution to the development of learning theories or practices; (3) the credibility of the sources indexed in reputable scientific databases.

Through this selection process, the literature used not only serves as a theoretical basis, but also as a source of analysis in identifying research gaps and opportunities for the development of new models.

### 2.3. Data Analysis

Data analysis is carried out through conceptual thematic analysis techniques, which aim to identify, group, and integrate the main concepts of the selected literature. The analysis process is carried out in three main stages, namely:

1. Identify key concepts, by extracting key ideas related to TPACK, meaningful learning, and inclusive language learning.
2. Categorization and integration of concepts, by grouping concepts based on similarities and theoretical relationships, and identifying relationships between concepts.
3. Synthesis of conceptual models, by combining the concepts that have been analyzed into a structured and systematic learning model framework.

This approach allows researchers to build models that are not only theory-based, but also responsive to practical needs in language learning.

### 2.4. Model Development Procedure

Model development is carried out through an iterative process that involves critical analysis of the literature and conceptual synthesis. This process includes several stages, namely:

1. Exploration of key theories, which include TPACK, meaningful learning, and multilingual education.
2. Identify gaps, by analyzing the limitations of existing approaches in the literature and learning practices.
3. Design of the model structure, by determining the main components and the relationships between the components in the proposed model.
4. Development of implementation mechanisms, by formulating operational stages that can be applied in language learning.

Through these stages, the resulting model not only has a strong theoretical basis, but also has the potential for implementation in the context of real learning.

### 2.5. Trustworthiness and Rigor

To ensure conceptual validity, this study prioritizes the principle of theoretical rigor through the use of credible, relevant, and up-to-date literature. In addition, the analysis process is carried out systematically and transparently to minimize bias in interpretation. Consistency between theoretical frameworks, analyses, and resulting models is also maintained to ensure internal coherence of research (Hämäläinen et al., 2026; Y. Wang et al., 2026).

## 3. Results and Discussion

### 3.1. Basic Principles of the Model

The conceptual model proposed in this study builds on the integration of three main foundations, namely linguistic inclusivity, the TPACK framework, and the principles of meaningful learning. The three foundations are positioned as an interconnected conceptual foundation in responding to the complexity of language learning in multilingual classrooms, especially in the Indonesian context which is characterized by the diversity of students' linguistic backgrounds. This approach departs from the assumption that linguistic diversity is not an obstacle to learning, but rather an epistemic resource that can enrich the process of constructing meaning (Hao et al., 2026; Khouri et al., 2023).

The principle of linguistic inclusivity emphasizes the importance of acknowledging the language repertoire that students possess as part of their social identity and practices. In this perspective, language learning is no longer oriented towards the dominance of one standard language variety, but rather provides space for translanguaging practices that allow students to utilize all of their linguistic resources to understand and express meaning. Thus, language diversity is seen as a pedagogical asset that can support more responsive and participatory learning (Kole, 2026; Naidoo & Chadha, 2025).

The Technological Pedagogical Content Knowledge (TPACK) framework functions as a structural foundation that integrates the dimensions of technology, pedagogy, and content in a single learning unit. In this context, the effectiveness of learning is not only determined by mastery of the material or teaching strategy, but also by the teacher's ability to integrate technology in a contextual and meaningful way (Perales & Bedoya Ulla, 2025; Zhao et al., 2026). This integration allows for the

creation of more flexible, differentiated, and multimodal learning, so that it can accommodate diverse learning needs in multilingual classes.

Meanwhile, the principle of meaningful learning refers to the five main dimensions namely active, constructive, intentional, authentic, and cooperative learning (Kostiainen & Pöysä-Tarhonen, 2022, 2025). These five dimensions provide operational direction in designing learning activities that place students as active subjects in the learning process. Active and constructive learning encourages students to build knowledge through experience, while the deliberate dimension emphasizes the importance of awareness of learning objectives. The authentic dimension connects learning to real-life contexts, while the cooperative dimension emphasizes the role of social interaction in the formation of meaning.

Conceptually, the integration of linguistic inclusivity, TPACK, and meaningful learning results in a holistic and dynamic learning framework. The framework emphasizes that effective language learning must be able to combine sensitivity to linguistic diversity, strategic use of technology, and the application of meaningful pedagogical principles in a coherent system. Thus, the proposed model is not only theoretical, but also has the potential to be operationalized in adaptive and contextual learning practices. The relationships between components in this conceptual framework are further described more systematically in the structural part of the model, and visualized in their entirety in the visual part of the model.

### 3.2. Model Structure

The model structure proposed in this study is built through conceptual integration between the Technological Pedagogical Content Knowledge (TPACK) framework and the five dimensions of meaningful learning. This integration is not understood as a linear or additive relationship, but rather as an interdependent and dynamic relationship, where each component in TPACK contributes simultaneously to strengthening the quality of learning in the context of a multilingual classroom. Thus, this model not only combines the two theoretical frameworks, but also reconfigures pedagogical practice towards a more adaptive, contextual, and transformative approach.

In this structure, Technological Knowledge (TK) functions as the main driver in creating an active and authentic learning environment. Technology is no longer positioned as an additional tool, but rather as an epistemological medium that allows students to engage in the exploration of meaning through a variety of multimodal representations, such as digital, audio, and interactive visual texts. In the context of multilingual classrooms, the use of technology also opens up spaces for students to access and produce language in various forms, thus enriching learning experiences that are contextual and relevant to real life (Jayashankar et al., 2025; Rowe & Pennington, 2025). Therefore, kindergarten contributes directly to strengthening the dimensions of active learning and authentic learning.

Furthermore, Pedagogical Knowledge (PK) plays a role as an operational framework in organizing constructive and cooperative learning interactions. PK allows teachers to design learning strategies that encourage students to build knowledge through a process of reflection, discussion, and collaboration. In this

perspective, learning is no longer oriented to one-way information transfer, but rather to the process of negotiating meaning that involves intensive social interaction. This is in line with the view that knowledge is socially constructed through meaningful interaction and learning experiences (Kim et al., 2026; Lee et al., 2026). Thus, PK is the main foundation in developing the dimensions of constructive learning and cooperative learning.

Meanwhile, Content Knowledge (CK) ensures that learning materials have linguistic and cultural relevance to the students' backgrounds. In the context of inclusive language learning, CK includes not only mastery of formal language structures, but also an understanding of language variations, communication practices, and the social context of their use. The selection of relevant content allows students to learn more intentionally, as learning objectives become more meaningful and connected to their real experiences. This approach also reinforces the position of language as a dynamic social practice, not just a static system of rules (Fejzo et al., 2026).

The integration of these three components achieves the most optimal form in TPACK, which represents the meeting of technology, pedagogy, and content in a whole. At this level, all dimensions of meaningful learning—active, constructive, intentional, authentic, and cooperative—are no longer understood as separate elements, but as pedagogical practices that are integrated into a single learning system. TPACK allows teachers to design learning experiences that are not only instructionally effective, but also responsive to the linguistic and social diversity of learners (Çelik et al., 2026; Dogan, 2026). To clarify the integrative relationship between TPACK components and the dimension of meaningful learning, conceptual mapping is presented in the following Table 1.

**Table 1**. Mapping TPACK Components and Meaningful Learning Dimensions

| TPACK Components | Meaningful Learning Dimension | Role in Inclusive Language Learning |
|---|---|---|
| Technological Knowledge (TK) | Active Learning | Encourage student engagement through interactive digital media and multimodal exploration |
| Technological Knowledge (TK) | Authentic Learning | Bring real-world context through simulations, videos, and contextual digital resources |
| Pedagogical Knowledge (PK) | Constructive Learning | Facilitate the construction of knowledge through reflection, discussion, and experiential assignments |
| Pedagogical Knowledge (PK) | Cooperative Learning | Develop collaboration and negotiation of meaning in social interactions |

| TPACK Components | Meaningful Learning Dimension | Role in Inclusive Language Learning |
|---|---|---|
| Content Knowledge (CK) | Intentional Learning | Provide linguistically and culturally relevant content for clear learning purposes |
| TPACK (Integrative) | All dimensions | Integrate technology, pedagogy, and content as a whole to deliver meaningful and inclusive learning |

Overall, the structure of this model shows that the main strength lies in the integration between the components, not in the individual elements separately. Through this integration, language learning in multilingual classrooms not only becomes more adaptive to diversity, but also has transformative potential in shaping more meaningful, reflective, and contextual learning experiences.

### 3.3. Model Implementation Mechanism

The implementation mechanism of this model is designed as an integrative and continuous learning cycle, which operationalizes the relationship between TPACK and the five dimensions of meaningful learning in the context of a multilingual classroom. Each stage not only represents a procedural step, but also contains pedagogical and epistemological dimensions that are interconnected, so that learning takes place actively, reflectively, and contextually.

The first stage is the activation of students' linguistic experiences, which aims to explore the initial knowledge and language repertoire that students have. At this stage, the teacher facilitates students to relate their language experience to the material to be learned through initial discussions, spark questions, or exploration of personal experiences. This approach is in line with the practice of translanguaging that places the entire linguistic resource of students as part of the process of constructing meaning (Gao & Zhang, 2026; Malgoubri, 2026). This stage strengthens the dimensions of constructive and intentional learning.

The second stage is technology-based exploration, where students engage in learning activities that utilize technology to access and understand information in a multimodal manner. Teachers can use videos, digital learning platforms, or online resources to present authentic context. In this stage, Technological Knowledge (TK) plays an important role in supporting active and authentic learning, as students interact directly with relevant and contextual learning resources (Tschönhens et al., 2024).

The third stage is knowledge construction, where students process the information obtained to build new understanding. Activities at this stage can be text analysis, reflective writing, or project-based assignments. The integration between Content Knowledge (CK) and Pedagogical Knowledge (PK) is crucial in ensuring that learning is not only conceptually meaningful, but also linguistically relevant (Wiafe et

al., 2025; Wiese et al., 2025). The dimension of constructive learning is central in this stage.

The fourth stage is collaboration, which emphasizes the importance of social interaction in the learning process. Students work in groups to discuss and refine their understanding. In the context of a multilingual class, this stage allows for the negotiation of meaning between students with different language backgrounds. The cooperative learning dimension has become dominant, with the support of pedagogical strategies that are systematically designed (Jang, 2024; S. M. Smith, 2025).

The last stage is reflection, which serves to strengthen students' metacognitive awareness of the learning process and outcomes. Reflection can be done through study journals, class discussions, or technology-based evaluations. This stage reinforces the intentional dimension of learning and ensures that learning does not stop at the activity, but results in deep understanding. To clarify the flow of the operational implementation of the model, a visualization of the learning stages is presented in the following Figure 1.

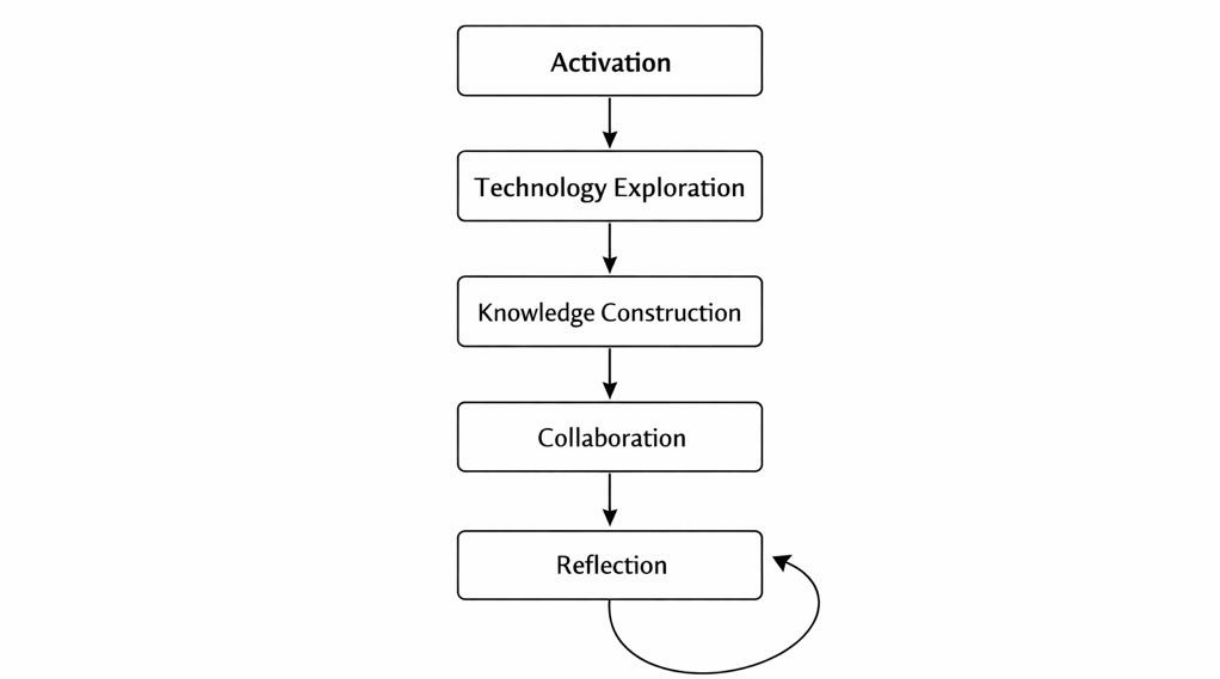


**Figure 1**. Implementation Flow of the TPACK-Based Inclusive Language Learning Model

Figure 1 shows that the five stages of learning are arranged hierarchically from activation to reflection, with cyclical relationships. The arrow that connects the reflection stage back to the activation stage confirms that learning is an ongoing process, where the results of reflection become the basis for designing the next learning experience. This structure shows that learning does not stop at the achievement of results, but continues to evolve through a continuous process of evaluation and improvement. To provide a more operational overview of the

implementation of the model in learning practice, activity mapping, the role of TPACK, and the use of technology are presented in Table 2 below.

**Table 2**. Implementation of the Model in Classroom Practice

| Stages | Learning Activities | The Role of TPACK | Digital Tools (Examples) |
|---|---|---|---|
| Activation | Language experience discussion, brainstorming | PK | Padlet, Mentimeter |
| Exploration | Watch videos, read digital sources | Kindergarten | YouTube, Google Classroom |
| Construction | Writing, text analysis, projects | CK + HP | Google Docs, Canva |
| Collaboration | Group discussions, peer feedback | PK + TPK | Zoom, Google Meet |
| Reflection | Journal of study, self-evaluation | TPACK | Google Forms, LMS |

Table 2 shows that each learning stage not only has specific activities, but is also directly related to the components within the TPACK framework and is supported by the use of relevant technologies. This emphasizes that the implementation of the model is not abstract, but can be applied concretely in language learning practices in multilingual classrooms.

Overall, this implementation mechanism shows that the integration between TPACK and meaningful learning can be operationalized through systematic and flexible stages. The resulting learning cycle allows teachers to design learning experiences that are not only adaptive to linguistic diversity, but also encourage active engagement, collaboration, and deep reflection. Thus, this model has the potential to transform language learning practices to be more inclusive, contextual, and sustainable.

### 3.4. Visual Models

As a synthesis of the conceptual foundations, integrative structures, and implementation mechanisms that have been described earlier, the proposed model is visualized in the form of a conceptual diagram to clarify the relationships between the components in their entirety. This visualization places TPACK at the core of the system, surrounded by five dimensions of meaningful learning, namely active, constructive, intentional, authentic, and cooperative learning, and is based on a multilingual classroom context and an inclusive language learning environment. Thus, this visual model represents the interconnectedness between the teacher's foundation of knowledge, pedagogical principles, and the socio-linguistic reality of students. To clarify the relationship between these components, a visualization of the model is presented in the following Figure 2.

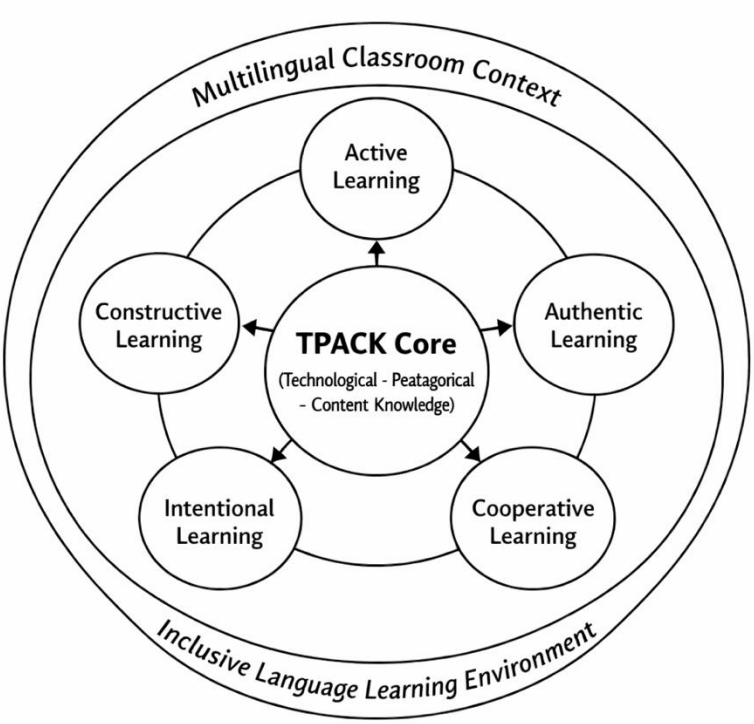


**Figure 2**. A Conceptual Model of Inclusive Language Learning Integrating TPACK and Meaningful Learning in Multilingual Classrooms

Figure 2 shows that TPACK serves as an integration center that connects the dimensions of technology, pedagogy, and content in one complete learning framework (Mishra & Koehler, 2006). This central position emphasizes that the effectiveness of language learning does not depend on one component alone, but on the ability of teachers to integrate technology, learning strategies, and teaching materials in a contextual and meaningful manner. Around the core, the five dimensions of meaningful learning act as operational principles that guide how learning experiences are designed and implemented (Diana et al., 2025; Jang, 2024; S. M. Smith, 2025).

The outermost layer in the model represents the context of a multilingual classroom and an inclusive learning environment, which emphasizes that the implementation of the model must be based on the linguistic diversity of learners. In this context, language is understood not solely as an object of formal learning, but as a social and cultural resource that shapes the way students understand, interpret, and use meaning (Shambare & Simuja, 2024). Therefore, this model is not abstract, but is directly directed to answer the needs of language learning in heterogeneous classrooms.

Overall, the visual model confirms that inclusive and meaningful language learning can only be achieved through the integration of TPACK frameworks, principles of meaningful learning, and sensitivity to multilingual contexts. This visualization also shows that the proposed model is not just a combination of

theoretical elements, but a coherent, applicative, and potentially transformative pedagogical system.

### 3.5. Model Advantages

The learning model proposed in this study has a number of conceptual and pedagogical advantages that distinguish it from conventional language learning approaches and pre-existing integrative models. This advantage lies in its ability to combine the TPACK framework, principles of meaningful learning, and sensitivity to multilingual classroom contexts into one coherent and operational learning system.

First, this model is adaptive, because it is designed to respond to the diversity of students' characteristics, both in terms of linguistic background, competency level, and learning style. The integration of technology within the framework of TPACK allows teachers to tailor learning strategies through the use of a variety of media and flexible digital platforms. This adaptivity is important in the context of multilingual classrooms, where uniform learning approaches are often unable to accommodate diverse learning needs (Gonzalez-Vidal, 2026; Kole, 2026). Thus, this model provides room for more effective differentiation of learning.

Second, this model is contextual, as it places students' experiences and socio-linguistic realities as an integral part of the learning process. Through the principles of meaningful learning, especially the authentic learning dimension, learning activities are designed to be connected to students' real-life situations. This allows students to understand language not only as a formal system, but as a means of communication that lives in a specific social context. This contextual approach also reinforces the relevance of learning and increases student involvement in the learning process (Jang, 2024; Panjaburee et al., 2025; S. M. Smith, 2025).

Third, this model has an inclusive character, which is reflected in the recognition of the diversity of students' language repertoire as a learning resource. In contrast to traditional approaches that tend to emphasize single-language standards, this model accommodates the practice of translanguaging as a pedagogical strategy that allows students to use all of their linguistic resources in constructing meaning (B. Zhang & Jiang, 2024). Thus, learning becomes more participatory and provides equal opportunities for all students to be actively involved in the learning process.

Fourth, this model is transformative, as it focuses not only on improving learning outcomes, but also on changing the way students understand and use language. Through the integration of meaningful learning and reflection as part of the learning cycle, students are encouraged to develop metacognitive awareness as well as critical thinking skills towards their language practices. In addition, the role of teachers has also undergone a transformation, from just a conveyor of information to a facilitator who designs a meaningful and inclusive learning experience (Delmas et al., 2025; Kostiainen & Pöysä-Tarhonen, 2025).

Overall, the four advantages show that the proposed model is not only theoretically relevant, but also has high implementability potential in the context of language learning in multilingual classrooms. By combining adaptivity, contextuality, inclusivity, and transformative properties in one integrated framework, the model

offers a more comprehensive approach to addressing language learning challenges in the digital age and multilingual society.

### 3.6. Discussion

This research develops a conceptual model of language learning that seeks to answer the complexity of multilingual classrooms through the integration of the TPACK framework and the principles of meaningful learning. Conceptual findings suggest that effective language learning can no longer be understood as a linear process centered on knowledge transmission, but rather as a pedagogical system that simultaneously integrates technology, learning strategies, and socio-linguistic contexts. This approach is in line with recent developments in language education research that emphasize the importance of learning design that is responsive to linguistic diversity and educational digitalization (Delmas et al., 2025; Wijayanti, 2024).

Theoretically, the results of this study strengthen the argument that the integration of technology in learning will only be effective if it is supported by a meaningful pedagogical framework. Recent studies show that the development of TPACK contributes significantly to improving the quality of learning through the design of activities that are interactive, reflective, and student-centered (Çelik et al., 2026; Shambare & Simuja, 2024). In addition, the integration of technology associated with meaningful learning has been shown to improve cognitive engagement and the quality of student comprehension in language learning. Thus, the proposed model places technology not just as an aid, but as an integral part of a learning ecosystem that supports the construction of meaning in depth.

In the context of linguistic inclusivity, this model is in line with the translanguaging approach and multilingual education that is gaining increasing attention in the international literature. Research shows that recognition of students' language repertoire can improve their participation, confidence, and learning outcomes (Gusdian et al., 2026; Y. Zhang, Wang, et al., 2026). Furthermore, the integration of culturally responsive approaches in language learning has also been proven to be able to create a learning environment that is more inclusive and relevant to students' experiences (Gao & Zhang, 2026; Wijayanti, 2024). By accommodating linguistic diversity, this model not only increases the effectiveness of learning, but also strengthens students' linguistic identities in the learning process.

From a pedagogical perspective, this model has significant implications for the transformation of the teacher's role. Teachers no longer function as conveyors of information, but as designers of learning experiences that are able to integrate technology, pedagogy, and content contextually. Research shows that teachers' TPACK competencies are positively correlated with their ability to create innovative, collaborative, and student-centered learning (Tschönhens et al., 2024). In addition, the use of technology allows for more effective differentiation of learning, so that it can accommodate the learning needs of students in multilingual classrooms (Deniz, 2025; Rowe & Pennington, 2025). This shows that the proposed model is not only conceptually relevant, but also applicable in learning practice.

However, this study has limitations because it is conceptual and has not been empirically tested. Therefore, further research needs to test the effectiveness of these models through empirical approaches, such as experiments or longitudinal studies in the context of multilingual classes. In addition, the development of TPACK-based evaluation instruments and meaningful learning is also needed to measure the impact of the model on student learning outcomes. In line with the development of educational technology, further research can also explore the integration of artificial intelligence within the framework of TPACK to support more adaptive and personalized learning (Backfisch et al., 2024; Çelik et al., 2026; Jiang et al., 2024).

## 4. Conclusion

This research develops a conceptual model of language learning that integrates the TPACK framework, the principles of meaningful learning, and the context of the multilingual classroom in one coherent pedagogical system. Conceptual findings suggest that effective language learning is not only determined by mastery of technology or learning strategies in isolation, but by the ability to contextually integrate the dimensions of technology, pedagogy, and content by taking into account the linguistic diversity of learners. Through such integration, the proposed model offers an approach that is not only adaptive to technological developments, but also responsive to the socio-linguistic realities of multilingual classes. Thus, the main contribution of this research lies in the provision of a conceptual framework that connects TPACK with meaningful learning and linguistic inclusivity in a single structured and operational model.

In practical terms, this model provides important implications for language learning design, especially in the context of increasingly multilingual and digitized education. Teachers can leverage this model as a guide in designing more flexible, contextual, and student-centered learning, by strategically leveraging technology to support engagement and collaboration. In addition, this model opens up opportunities for further development through empirical testing in various educational contexts to test its effectiveness on student learning outcomes. Further research can also explore the integration of more advanced technologies, such as artificial intelligence, within the framework of TPACK to create more adaptive, personalized, and sustainable language learning. As such, this model is not only theoretically relevant, but also has significant potential to be developed in language learning practices in the future.

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