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ENHANCING MULTILINGUAL EDUCATION: A COGNITIVE-INCLUSIVE PATH TO LANGUAGE AWARENESS AND EDUCATIONAL EQUITY

Introduction¹

In an educational environment that is constantly adapting to demographic shifts, globalisation, and evolving cultural dynamics, the importance of multilingualism is becoming increasingly apparent. The majority of the world's population is bilingual or multilingual, and according to the European Commission, more than half (59 %) of the European population speaks at least one foreign language, with the percentage even higher among younger people aged 15–24 (79 %) (European Commission, 2024). Nevertheless, data on foreign language proficiency also varies considerably from country to country, and multilingualism is addressed very differently in the education systems of European countries. Statistics for 2022 indicate that 6.5 % of primary school pupils in Europe learn two or more foreign languages, an increase of 1.9 % since 2013. The highest proportion of pupils learning two or more foreign languages is in Luxembourg (79.6 %), followed by Latvia (37.2 %), Greece (34.9 %) and Estonia (33.6 %). The data for Croatia, where this study was conducted, indicates that 18 % of all primary school pupils in this country learn two or more foreign languages (Eurostat, 2024).

Although Croatian language policy aligns with EU requirements and ensures support for bilingual and multilingual education models, there is a gap between legal guarantees and practical application. Since 2003, the learning of foreign languages has been compulsory from the first grade, with the possibility of learning additional foreign languages from the fourth grade

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onwards. However, English dominates limiting linguistic diversity (Lujić, 2016). There are exceptions, particularly in Croatian Istria, where this study was conducted. The languages used in this area are Croatian and Italian, both of which are used in local and regional administrative institutions, schools and educational establishments, the media and publishing. In addition, dialectal variants of both languages are also used, as well as related languages such as Istro-Venetian, a variant of Venetian spoken mainly in the towns on the north-west coast, and Istriot, an autochthonous Romance language, and Istro-Romanian. The official status of Italian, the language of the national minority, is recognised by the Statute of the Istrian Region, which is the only official bilingual region in Croatia. In other parts of the country, the minority languages are officially used only at the local and not at the regional level (Skelin, 2013, 59).

Unlike in other EU countries, learning a second foreign language is not compulsory in primary school in Croatia, which limits the opportunities for personal multilingualism. In fact, the availability of foreign languages depends on school resources and parental preferences, which leads to inequalities in language opportunities. Other constraints on the development of multilingualism in primary schools in Croatia include measures that limit the weekly workload and prioritise English over other languages (Lujić, 2016).

From the perspective of language as a cultural and cognitive mediating tool – shaping thought processes, social interactions, and learning – we recognise that the effects of multilingualism are far-reaching and go beyond communicative and executive functions, affecting memory, emotions, perception and various aspects of human experience. In various non-linguistic fields such as psychology, neuroscience, computer science and education, language is increasingly being included as a fundamental variable of investigation to better understand how the brain processes it and to what extent it influences cognition, personality, perception, and worldview. In a world increasingly dominated by the principles of the global village, multilingualism permeates every pore of an individual's life. Language competences enable us to coexist in a multicultural and multilingual community, offer us better career opportunities at home and abroad, provide a much more authentic travelling experience, widen our circle of acquaintances and the sensitive individual can also learn a lot about themselves when learning foreign languages, as we acquire new languages with the knowledge we have already acquired,

especially in our first language (Große, 2004; Mouboua & Atobatele, 2024). There are also health benefits to mastering multiple languages, as language training has interesting parallels with physical exercise, shaping areas related to sensory processing and executive functions, improving cognitive abilities in old age and delaying the onset of Alzheimer's and dementia by four to six years (Green & Abutalebi, 2016). It is therefore a multifaceted and extremely important competence that not only changes the functioning of the mind, but also the structure of the brain itself. In addition, language, which is closely interwoven with culture, is an important means of transmitting cultural values and perspectives. The close connection between language and cultural heritage also has an impact on the understanding of national identity. We may not be sufficiently aware that when we switch between languages, we also change the cultural or even behavioural framework and that reality is mostly unconsciously based on the linguistic habits of a group of speakers. Especially in multilingual contexts, language becomes an important means of both bridging and limiting the process of integration and inclusion in the educational landscape, and school languages play a key role in this process for pupils with migration background, who very often find themselves in a marginalised position (Čok, 2024).

The increasing diversity in multilingual classrooms and the need to adapt language teaching to this reality make it essential to explore novel approaches to language education. As multilingualism becomes more prevalent, particularly in school settings, there is a growing demand for methods that not only embrace linguistic diversity but also foster intercultural competence. A cognitive-inclusive approach, developed and tested within this study, explores how languages influence the conception of reality, thus giving voice to all members of the school community and offering a valuable framework for developing cross-language awareness. This approach is particularly important as it helps students navigate the cognitive differences between languages and dialects, fostering an environment where linguistic diversity is not just acknowledged but celebrated. In this context, the pilot study presented here aimed to implement a series of classroom interventions that trialled notions from cognitive linguistics, such as construal theory (Langacker, 1987; Talmy, 2000), to increase pupils' cross-language awareness and promote inclusive multilingual education. These approaches are rooted in a collaborative exploration of the cognitive differences among speakers of different languages

within the school community and aim to develop the basic competences necessary for cross-language awareness.

Research context

In the dynamic landscape of contemporary education, theorists and researchers (see Bialystok, 2021; De Angelis, 2021; Dewaele, 2021; Erling et al., 2021; Ginsburgh & Weber, 2020; Okal, 2014; Skutnabb-Kangas & Heugh, 2021; Tannenbaum & Shohamy, 2023) strive to ensure that the benefits of multilingualism in the school community are recognised as essential not only for the growth of the individual, but also for the overall enrichment of the learning environment. Less successful is the transfer of these research findings and theoretical insights into concrete learning environments, and even more lacking is institutional support for decision-makers to better promote the introduction of new approaches and learning methods into the education system that take the multilingual school landscape into account. Čok (2024) presents a case study in Slovenia, showing that approaches to teaching in a multilingual classroom are mostly left to the ingenuity of teachers. While schools provide regular in-service training for teachers, there is relatively little or no training on pedagogical practises in multilingual classrooms.

The findings of numerous studies (see Achaa-Amankwaa et al., 2023; Alshewiter et al., 2024; Bialystok, 2021; Dolas et al., 2022; Mechelli, 2004; Mendez, 2023; Pliatsikas et al., 2015) grounded in cognitive and neurocognitive research traditions, demonstrating the cognitive benefits of multilingualism – such as enhanced executive function, cognitive flexibility, and neuroplasticity – across different age groups (children, adults and the elderly). These findings provide an inspiring basis for exploring the complex cognitive landscape of learners in multilingual educational settings. The recognition that language is more than a means of communication underpins the methodology used, which is rooted in the belief that languages significantly shape thinking and influence people's cognitive processes. The fundamental advantage we recognise in language as a tool for promoting tolerance among peers, fostering good and positive relationships, preventing conflicts and respecting linguistic and cultural diversity is also its neutrality, which we believe is greater than that of culture, specifically when viewed as systems of communication and cognition. Culture as a system of values, rules, attitudes, beliefs,

common characteristics of a certain group of people can also be strongly charged with value judgements. Language is less often subject to this kind of superiority complex, especially in a time and world where learning and knowing several languages is a personal advantage and a universal value.

In the next section, we present the three main methodological principles of the research, namely cross-language awareness, cognitive divergences between languages and collaborative learning, which were used to develop the classroom activities carried out in the pilot project.

Exploring the richness of multilingualism through cross-language awareness

Similar to the development of intercultural awareness, a very established principle in education, the development of cross-language awareness is about understanding the difference, uniqueness and otherness of the people around us. In language comparison, however, we do this by delving deep into each other's mental systems through language and comparing potential discrepancies in the way we see the world around us through the structures and connections it reveals. Through a variety of activities designed specifically for the purposes of the study, we have explored the extent to which and in what areas of thought we can observe the role of language as a filter through which we think, and which defines our thoughts and ideas. The importance of developing cross-language awareness lies in its ability to deepen learners' understanding of linguistic differences, which in turn fosters a more nuanced appreciation of intercultural diversity. The principle of cross-language awareness focuses on making students aware of the linguistic differences and similarities between the languages they speak. By understanding and comparing different linguistic structures and concepts, students can appreciate the richness of multilingualism and develop a deeper awareness of the cultural diversity around them. This approach helps students to recognise the value of their own linguistic background and that of their classmates promoting a more inclusive and respectful atmosphere in the classroom.

The principle of cross-language awareness, as we have defined it in our research, is a term adapted to the contemporary needs of educators in multilingual classrooms and the differs linguistic backgrounds of their students. While

cross-language awareness is rooted in the principles of comparative analysis between languages, this field of linguistics is often primarily concerned with the comparison of language systems and their structures. The underlying goal of these comparisons is to look for similarities and differences that form the basis for patterns of language use that influence potential systematic errors in language learning, particularly when learners transfer structures from one language to another in ways that do not align with target language norms. Due to experiential learning, which involves applying previously acquired knowledge to new learning situations, learners often engage in language – sometimes resulting in negative transfer, where structures or rules from one language are inappropriately applied to another, leading to errors (Odlin, 1989). The aim of contrastive analysis is to identify typical transfers between languages and prevent their fossilisation. Although cross-language awareness is based on the theoretical principles of contrastive analysis, it aims not only to identify potential discrepancies between languages, but also to recognise and understand their origins and, more importantly, to examine their impact on how speakers of different languages conceptualise and represent the world. The scope of cross-language awareness therefore goes beyond facilitating the learning process of language acquisition and seeks to encompass the entire experience of contact between languages and cultures.

Cognitive divergences between languages as a basis for inclusive learning

To understand the origins and impact of divergences between languages, it is often necessary to learn more about the cognitive patterns that emerge in speakers' interactions with language, considering both individual linguistic processing and broader tendencies observed within language communities. In this regard, we have drawn on the insights of cognitive linguistics in the development of cross-language awareness training activities. The advantage of engaging with cognitive linguistics is the strong empirical basis of research and experiments (see Boroditsky, 2001; Boroditsky et al., 2003, on spatial cognition; Chabal & Marian, 2015; Marian & Kaushanskaya, 2008; 2011, on bilingual memory effects; Dewaele, 2008; Hayakawa et al., 2016, on emotion and language; Gao et al., 2015; Samuel et al., 2019, on language processing and category formation in multilinguals) that empirically illustrate the perceptual patterns of universal categories in different languages in a systematic

way. The divergences between languages, which can have wider implications as they also shape the thinking patterns of their speakers, were explored jointly by the pupils and teacher involved in the research as part of specially designed learning units or activities, with the aim of further building on existing knowledge with new perspectives and their engagement with knowledge.

In the present study, we place language at the centre of our investigations, but we do not suppress the importance of culture as a dynamic system of shared beliefs, values, and practices that shape individuals' interactions to the development of a positive sensitivity to otherness. Rather, we focus on the complementarity of the two and their mutual influences and interactions. The linguist and philosopher Leonard Talmy (2000) argues that in newborns the cultural and linguistic cognitive systems develop in a similar way and even partly simultaneously. This is a very important finding for linguistically and culturally sensitive education, as it helps to understand how language and culture are learnt and how intercultural and linguistic competences are acquired. The acquisition of foreign language competences rarely reaches the level of mastery of the first language. Talmy offers us an excellent starting point for thinking about the acquisition of cultural competences as well. Teachers who wish to follow the principles of linguistically and culturally responsive pedagogy – an approach that acknowledges and integrates students' diverse linguistic and cultural backgrounds to create more inclusive and effective learning environments – need to be aware that promoting intercultural awareness, much like foreign language acquisition, is not about expecting learners to ever fully understand the more intrinsic aspects of other cultures, still less to internalise and adopt them as their own.

Cooperative learning and the enhancement of multilingual education

The methods and approaches of cooperative learning, which are well known and established in linguistically and culturally responsive education, were integrated into the project. For instance, Bećirović (2023) explored the role of cooperative learning in fostering intercultural competence, while Johnson & Johnson (2018) provided foundational work on the cooperative learning model's impact on group dynamics and social skills. Samuels (2018) examined how cooperative learning promotes inclusive education, and Sharan (2010)

focused on its effectiveness in diverse classrooms. Additionally, Yoon (2023) highlighted recent advancements in cooperative learning strategies, considering the evolving teaching and learning realities. Together, these scholars have legitimised cooperative learning as a contemporary approach with great potential for enhancing multilingual education. The fact that artificial intelligence and various language technologies are penetrating people's everyday lives means that, in the long term, the school environment will have to embrace the new reality and implement it in its curriculum. Teachers and students will need to soundly familiarise themselves with the operation and use of digital technologies and large language models in order to successfully harness their benefits and protect themselves from potential dangers and negative effects. With the increasing accessibility of online information and use of digital tools, part of the teacher's role has shifted from being a facilitator of information to a designer of active learning processes, environments and experiences that promote learner engagement (Johnson & Johnson, 2018), and a facilitator who enables learners to make the most effective use of freely available information to build their knowledge. Educators who are afraid of being replaced by ever more efficient and productive models need to realise that there are areas and professions where AI cannot currently make much difference and perhaps never will because they are characterised by a subtle and intrinsic human predisposition that people may also lack if they have not developed certain aptitudes throughout their lives. The development of cross-language awareness, a central point of the present research, is one of these competences. Since the approaches and methods used to develop this competence place the teacher in the active role of content creator and activity performer, the collaborative approach requires the teacher to occasionally become part of a group in which they also learn from their pupils. In this way, they actively create a collaborative environment in which positive interdependence, individual responsibility, stimulating interaction, social skills and group consideration are built (Johnson & Johnson, 2018). It is this positive motivation and its effects on students' desire to enrich their own learning and that of others, without having to be competitive, that makes collaborative learning so important for the development of cross-language awareness competence.

Although there is a wealth of theory-based studies on multilingual and plurilingual teaching (Fleming et al., 2022; Kucukali, 2021), the transfer of these insightful research findings has not developed into a comprehensive

and curriculum-based teaching method in Croatia, Slovenia and beyond. To ensure that the present study does not also end up on a list of interesting but unexploited methodological approaches, we have identified the potential of grounded theory to further test and develop a practically informed theoretical framework for the proposed cognitive model for inclusive multilingualism, in line with the experiences and results of in-depth practical work in a multilingual classroom.

Materials and Methods

Study Design

Guided by the central research question How does a cognitive-inclusive approach to developing cross-language awareness contribute to the development of more linguistically and culturally responsive teaching in multilingual classrooms? we designed a series of classroom interventions that were implemented by the classroom teacher. The research is underpinned by a cognitive-inclusive approach, which combines principles from cognitive linguistics, cross-language awareness, and inclusive pedagogy. This approach is grounded in research that emphasises the relationship between language and cognition, drawing on theories that recognise how the structure and use of language influence thought processes. (e.g. Bialystok, 2021; Boroditsky, 2001) In terms of methodology, we align with grounded theory principles, focusing on data-driven analysis and iterative development of theory based on classroom practices and student interactions (Glaser, 2001). Additionally, our approach incorporates elements from sociocultural theory, which emphasises the role of collaborative learning and social interaction in cognitive and linguistic development (Vygotsky, 1978).

The in-class interventions comprised six units, which were designed and implemented as ready-made worksheets. These activities were intended as supplementary material that built on the previously covered content and complemented it in terms of cross-language awareness and consideration of the class's multilingual identity. The six units comprised an introductory quiz to assess initial levels of cross-language awareness, four thematic units and a final peer-assessment activity to check the growth in cross-language awareness. The thematic units addressed the following linguistic categories: kinship

terminology, abstract concepts, grammatical gender and tense, and the conceptualisation of colours. The activities in each unit, which correspond to a worksheet, range from individual tasks that encourage intuitive and experiential familiarisation with the topic, to pair or group work for the establishment of linguistic, social, cultural, cognitive or other comparisons, to group reflections and tasks to consolidate the knowledge acquired. The activities were presented to the teacher by the researcher in advance for review in order to prepare and assess the appropriateness of the proposed tasks. Before starting the project activities, the teacher was informed about the project design, its methodological principles and approaches and received a short training on the cognitive model for inclusive multilingualism, designed and provided by the researcher. Each unit was performed by the teacher at sporadic intervals between November 2023 and June 2024, as the project activities had to be integrated into regular lessons. The irregularity of the implementation was therefore due to the fact that the curriculum work took precedence over the project activities. After completing each activity, the teacher completed a grid recording their observations and assessment of performance and sent it to the researcher's e-mail in encrypted form along with the pupils' scanned, anonymised worksheets.

Participants and Context

The participants in the study were a teacher and pupils who carried out activities to raise cross-language awareness across languages. The teacher is an Italian language and philosophy graduate, with Croatian being their first and Italian their second language. They have also spoken the Istrian-Venetian dialect at home since childhood.

The pupils, 12 in total, were in 6th and 7th grade of primary school at the time of the study, with an age range of 12 and 13 years. The pupils stated that their first languages were Croatian (7), Croatian dialect (4) and Italian (1). When indicating their knowledge of other foreign languages, they indicated English (12), Italian (11), German (3), Croatian (2), Russian (1), Slovenian (2), Serbian (2), Bosnian (2).

The project activities were carried out during Italian lessons, which are taught as an elective subject at the Primary School studied in Croatian Istria. The

class is formed specifically for Italian lessons, consists of pupils in grades 6 and 7 and the contact hours are scheduled once a week at the end of the regular school day for 1.5 hours, i.e. two school hours of 45 minutes each. The teacher carried out the project activities with the pupils in the second half of the course. They usually spent up to 30 minutes on the activity.

Data Collection

From the first meeting with the teacher who participated in the research, data was collected through the notes of the first meeting, electronic communication with the teacher to coordinate the implementation of the activities, followed by the observation memos and the researcher's reflections. The activities in the project were carried out using activity worksheets, which also served as documents for data analysis, with a memo for each activity containing the teacher's impressions and observations. The researcher made a memo of the final peer evaluation activity conducted with the pupils in the classroom at the teacher's invitation. The research data also includes the transcript of the final interview with the teacher.

The activities implemented in this study were based on thematic units that focused on linguistic categories (kinship terminology, abstract concepts, grammatical gender and tense, and the conceptualisation of colours). Each unit was represented by a worksheet, which consisted of tasks designed to engage the pupils in both linguistic and cultural exploration. The worksheets were structured to guide the students through a sequence of activities that began with an introductory task, placing the topic in the linguistic and cultural context of the class. This initial task typically took the form of a teacher-led discussion, aimed at encouraging students to consider the topic through the lens of different languages and cultures.

Following the introductory discussion, the activities progressed into exercises that actively involved the pupils, often through pair or small group work. These exercises were designed to promote collaboration and peer interaction, allowing students to exchange ideas and perspectives. The final part of each activity focused on reflection, where the teacher would facilitate a discussion to resolve any ambiguities and encourage students to share and build on their experiences.

The exercises varied in format to maintain engagement and encourage a range of cognitive and motor activities. Some exercises were oral, fostering dialogue and verbal exchange between students, while others required students to write down their ideas, thoughts, or findings, which they then compared and discussed with their peers. In some cases, students were also physically active, moving around the classroom to gather and share information.

All of the tasks were carefully designed to stimulate critical thinking, self-reflection, and the exploration of cognitive, linguistic, and cultural differences. Students were encouraged to identify similarities and differences between the languages they spoke, while also reflecting on how language can shape cognitive processes, cultural contexts, habits, and ways of thinking. By examining how different languages structure thought and influence perception, students were prompted to engage in metacognitive reflection about their own language use and cognitive habits. This approach aimed not only to enhance their cross-language awareness but also to foster cognitive flexibility, encouraging students to approach problems and situations from multiple linguistic and cultural perspectives. Ultimately, the goal was to deepen their understanding of multilingualism and its cognitive implications, while promoting a more inclusive and responsive learning environment that values the diverse ways language shapes thought and communication.

Due to the participation of underage children in the study, the data obtained from the classroom activities may be of a sensitive nature. To avoid potential risks and to ensure the ethical integrity of the project activities and the preparation of data for publication, our study, which was part of a larger project Strengthening a (socio)constructivist approach in Slovenian border regions Primary Neighbouring Language (NL) teaching and learning through a co-constructed extension and evaluation of the CoBlaLT model, was approved by the Committee for Ethical Issues of the Scientific and Research Centre Koper on the basis of the prepared proposal for the planned activities. In order to minimise any risk, the schools, the participants or their parents or guardians were informed about the nature of the study before the start of classroom interventions, their consent was obtained and the possibility of withdrawal from the project activities was ensured. The data collected during the project activities were for the use of the researcher only and were not shared with third parties. The handling and storage of the data was in accordance with the applicable national regulations on the protection of personal data,

the General Data Protection Regulation (GDPR) and the Ethical Protocol and Scientific Ethics in the Humanities. We ensured the anonymity of the project participants' data by not mentioning anywhere the first and last names and other sensitive information of the children and the teacher. Sensitive data that could not be masked (photos, drawings, etc.) and raw data before anonymisation will not be published. When carrying out the project activities, we also ensured that there was a protocol for dealing with unexpected, compromising findings. These were not encountered during the implementation of the activities.

Data Analysis

The choice of grounded theory (GT) in data collection and analysis stems from its suitability for educational research, where the focus is on still poorly understood or particularly complex phenomena that require a holistic perspective to discover or develop theories based on data, and where there are no explanations for the educational phenomenon under study, but an existing but incomplete theory on a topic that has not yet been thoroughly investigated (Natalini, 2023). In the case of our research, the original theoretical principles are known but, to our knowledge, have never been brought together in a new methodological framework to develop new approaches to linguistically and culturally responsive education in multilingual classrooms using a cognitive-inclusive framework.

In contrast to the principles of the classical version of GT, which is based on the guidelines of its founders Glaser and Strauss (1967) and presupposes a complete limitation of literature review and investigation prior to the actual research, the need to develop a methodology for classroom interventions led us to review the literature related to the three basic principles (cross-language awareness, cognitive aspects of acquisition and collaborative learning). However, we refrained from reviewing literature that in any way referred to these aspects as a basis for developing a new responsive methodology before the research began. Accordingly, and consistent with this and some other features of the application of GT in our research, we can say that we have followed the Straussian typology of grounded theory, which to some extent provides a sensitisation to the necessary literature in defining the problem (Hunter et al., 2011).

The Straussian typology of GT was also followed in the data analysis, as we further coded the data as open coding, making an initial identification of concepts and assigning separate codes to the data fragments, then axial coding, which helped us to organise the codes into categories and explore the links between them, and finally selective coding, which fine-tuned and linked the categories and identified a central category into which we could integrate all the others to create a unified and coherent theoretical model. The data analysis was carried out manually, without the help of specially developed software.

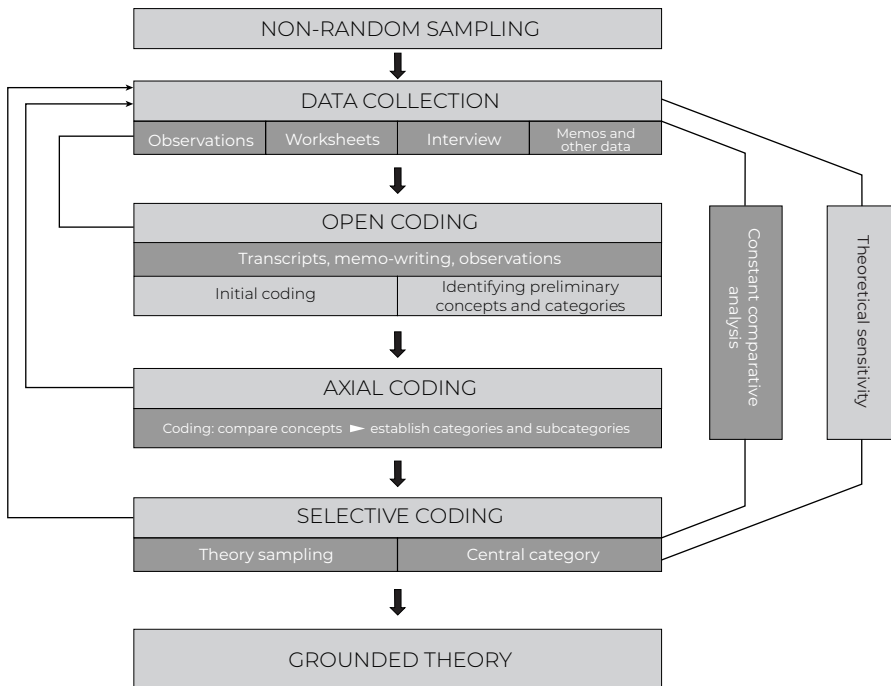


Figure 1. Research design framework (adapted from Tie et al., 2019).

The coding process was carried out in the following steps: We copied the original data and brought it together in one place. We systematically compiled the original data in a single repository, allowing for a comprehensive examination. Through an iterative process, we identified recurring patterns and key concepts within the data, which we then documented as structured observations. We then coded the data extracted from the original information, using additional verbatim quotes to preserve the original meaning of the data. Although open coding (Table 1 shows part of the open coding process) is precisely the step in which data analysis encourages the researcher to reflect on their own subjectivity, our approach aimed to maintain analytical rigour by ensuring that coding was primarily data-driven rather than influenced by personal biases. To achieve this, we followed a systematic process: first, we conducted initial open coding to identify recurring themes; and second, we engaged in constant comparison to refine and validate codes against the data (Vander Linden & Palmieri, 2023). We continued with axial coding, extracting more general meanings from the codes and defining them as categories. We then looked at the individual categories through the prism of potential relationships and similarities and made connections between them. While in open coding we analysed the data for each typology separately (worksheets, emails, researcher observations, participant observations, etc.), in axial coding we already compared the concepts (152), established links between them, grouped them into categories (10) and subcategories (15) and recorded their properties. In the final phase, we carried out selective coding. This phase helped us to identify central themes, such as flexibility, language awareness, epistemic and environmental anchoring, knowledge integration, as well as the contexts that influence these reactions (e.g. learning strategies, teaching approaches, attitudes, etc.). Here, we reviewed the categories we had identified during the open and axial coding and at the same time identified a central category that was relevant to our central research question, namely transformative multilingual learning strategies and pedagogical competence. We have now also included all other categories in the central category, providing the basis for a comprehensive theoretical framework that helps to clarify the central aim of the research, its underlying processes and the relationships between the categories.

Table 1. Examples of the open coding of interview data from the teacher (original interview in Italian, transcribed into Slovenian for the analysis).

Original information	Step coding	Conceptualise
I have only provided an introduction to the topic. Even when we did activities during Italian lessons (e.g. Friendship, colours). 5–10 minute. I didn't explain the worksheets, but I tried to bring them closer to the topic of the worksheet. I didn't do an introduction to the perspective that the worksheet introduces. Maybe I was doing it wrong, because they asked me a lot of questions afterwards. Since they had to do the exercises independently, maybe it was better that way. It was not usually as confusing as it is today, it was more organised. I think it went well anyway. It looks like the pupils did their best and also had fun. At the beginning it looked like they were afraid. They don't speak Italian very well, they are not used to other people. They definitely found you interesting.	1. Provided only a short introduction to the topic. 2. Did not give explanations related to the worksheets. 3. Found that there were a lot of questions. 4. Questioning whether this was done in the right way. 5. They had to do the exercises independently. 6. Find the performance of the activity confusing but interesting, fun. 7. Researcher is an interesting element in the classroom. 8. Pupils felt scared at the beginning because of researcher being new and speaking Italian.	1. Short introduction only, no context or explanation. 2. Unclear directions. 3. Questioning the approach. 4. Encouraging independence. 5. Confusing but interesting. 6. Outsider is intimidating but interesting.

Although we are aware that a particular strength of GT is that it also processes and refines data through an iterative process of successive phases of analysis, enquiry and data collection [...] (Charmaz, 2008), the nature of our study—structured as a sequence of preplanned classroom interventions—imposed practical constraints that limited the possibility of real-time recursive analysis. Since the interventions were integrated into regular classroom instruction and followed a set curriculum, most of the data were systematically analysed only after all interventions had been completed, rather than influencing the design of subsequent activities. Iterativity was particularly considered and implemented in the ongoing processing of the data obtained from the completed worksheets, which was taken into account in the design of subsequent activities and worksheets. We also introduced iterativity and the principles of comparative analysis as presented in Corbin & Strauss (2008) by constantly comparing the data obtained through the analysis and comparing different forms of data, e.g. by constantly taking notes and reflecting, coding

and transcribing the interview to document the development of ideas, relationships and theoretical insights during the analysis. Rigour in analysing the data was ensured not only through systematic coding, but also by recording thoughts and paying attention to emerging patterns.

As the study is of a pilot nature and was limited to a relatively short period of time, we did not conduct theoretical sampling that would have allowed for theoretical saturation in the GT sense (Corbin & Strauss (2008), which is very different from saturation in other qualitative research methods. This point of no new information emerging in the data analysis was partially ensured within our sample when we found recurring concepts among the categories, some of that were related to each other. However, we will be able to determine it more precisely in future analyses when we have completed a more extensive investigation, which is currently ongoing and to which the results of the pilot study will make a meaningful contribution as they will be used to compare events, allowing the identification of different properties of the sample as long as no new properties of the sample emerge (Glaser, 2001, 191).

Notwithstanding these limitations, grounded theory—proven valuable in numerous studies in didactics and educational science—remains a highly effective methodology for analysing classroom activities, especially when these also focus on interpersonal relationships and behaviours in the school community.

Results

The categories identified during axial coding that relate to the typology of the data from which we obtained our information are (i) holistic multilingual competence, (ii) multilingual reflective learning process, (iii) reflection on language mediation, (iv) fostered autonomy and adaptability in implementation, (v) challenges in sustaining learner engagement, (vi) transformative potential of project-based pedagogical practices, (vii) strengthening cognitive, social and cultural endowments, (viii) pedagogical innovations as barriers, (ix) adaptability to new practices as a challenge (x) favouring intuitive, playful and oral pedagogy. The process of determining theoretical sensitivity was based on the main categories. Namely, in these we identified what is

meaningful in the data and of importance for theory development (Tie et al, 2019), which was guided by our overarching research question.

Holistic multilingual competence (i): This category stems from data that showed patterns of thinking or engaging with linguistic, cultural, intuitive and social knowledge. Classroom activities helped develop multilingual flexibility and adaptation, language was used as a conceptual framework, which fostered knowledge transfer and integration, tasks that embodied language awareness helped raise critical awareness of linguistic diversity (e.g. The task on gender helped the pupils to reflect on grammatical and biological gender, how they often do not coincide, but also how grammatical gender guides us when we conceptualise inanimate nouns or when we transfer grammatical gender between languages). Activities further stimulated cultural mediation and cultural framing of learning experiences. Pupils showed the ability to navigate and integrate intuitive and epistemic knowledge patterns, which supported epistemic anchoring and flexibility, integration of cognitive and affective processes, and balancing individual and universal perspectives. The external environment has also had some influence on their learning, which created a framework for environmental anchoring and awareness of language.

Multilingual reflective learning process (ii): In this category we grouped data on the different techniques, methods and approaches used by the pupils during the activities, observed by the teacher and the researcher and recorded in the memos. The observed techniques showed that activities stimulate on active engagement, critical reflection and the activation of the interplay of linguistic and cognitive diversity awareness. We further observed approaches such as translanguaging and anthropocentrism (i.e. the centrality of human experience), that reflects a multifaceted pedagogical framework that considers linguistic fluidity and validate our project activities that emphasise inclusivity and learner engagement and enhance multilingual competence and developmental sensitivity. The fact that cross-language awareness activities were project-based made their delivery somewhat different from regular classes and therefore in some ways more appealing. Project-based learning therefore offers a hands-on, enquiry-based approach that immerses pupils in real-world contexts and cultivates a dynamic and out-of-box enhanced engagement.

Reflection on language mediation (iii): This category is a collection of concepts relating to how language(s) as a means of mediating and acquiring language(s) was considered, thought about and reflected upon by pupils. It showed that the activities promoted their reflections on the value of language, for which they attributed only a positive meaning to it, on the role of language in their lives, and on the benefits of language knowledge. Pupils expressed these reflections in their own words: “For me, languages are knowledge and wealth, a gift we are destined to receive.”; “When someone speaks another language that is not spoken in the city where that person is located, it is something perfect for me.”; “For me, being aware of the differences between languages and their speakers is very important, because that’s how people identify themselves.” This confirmed that activities encouraged a multi-faceted language mediation, which recognises that pupils understand language as a dynamic and multi-layered entity that simultaneously serves as a medium for personal, social and cultural engagement as well as a means of acquiring knowledge and communicating. This perspective encompasses the intrinsic value of language, its role in the formation of identity and worldview and its practical use in fostering understanding, relationships and tolerance.

Challenges in sustaining learner engagement (iv): In this category we gathered the data related to the participants various degree of engagement. The data showed that some activities had shortcomings in the design, however the less intensive engagement was also sometimes attributed to inactivity of the teacher in giving context, directions and stimulating discussions. The dynamics of participants’ engagement show that engagement is a fluid and multifactorial phenomenon, strongly influenced by the synergy (or lack thereof) between instructional design, teacher engagement and the alignment of pedagogical approaches with pupils’ expectations and experiences.

Fostered autonomy and adaptability in implementation (v): This category relates to the teacher’s approach towards the implementation of the project activities, which was characterised by learner-centred, minimalist but supportive approach, with an emphasis on exploration, adaptability of the classroom and encouragement through positive reinforcement. The teacher approached the implementation of project activities by promoting autonomous inquiry, thus emphasised a pedagogical approach that balances more independence and less support. They used adaptive classroom dynamics and try to create an

environment in which learners are empowered to actively explore, question and co-construct knowledge.

Transformative potential of project-based pedagogical practices (vi): This category is represented by the analysis of the teacher's observations, emails and written memos on the implementation of the activities, that help us understand the teacher's attitude towards the project activities and define the strengths and weaknesses of the proposed cognitive model for inclusive multilingualism as well as the competences the teacher must have to implement the activities properly. The reflective development in the teacher's engagement with cognitive-inclusive approach highlights the dynamic interplay between the teacher's initial detachment, the challenges of delivering the activity and the subsequent reflective processes. Data shows that working with the project activities gave transformative potential of reflective practices and professional development in improving teacher engagement and effectiveness.

Strengthening cognitive, social and cultural endowments (vii): This and the three remaining categories include concepts identified during the interview with the teacher at the end of the project. The category of strengths includes the dimension of anonymity related to the activity worksheets, the visual aids in the activities, the pair work, the positive impact on the overall dynamics of the class, the networking effect on the pupils, the involvement of the researcher in some activities, being part of a research project, the highlighting and reflection of the divergence of languages and the sensitisation of the teacher to the topic. All these synergistic benefits of the activities in promoting linguistically responsive teaching combine the cognitive, social and cultural strengths of the project activities and demonstrate their potential to enhance both individual and collective learning processes.

Pedagogical innovations as barriers (viii): Among the weaknesses that the teacher pointed out in the interview were that activities required too much writing, discussions prompted by questions and discussions in general were not well received by pupils, the novelty of teaching approaches was sometimes discouraging, class interventions were too few and sporadic. These obvious barriers to the effectiveness of innovative pedagogical practices integrate the logistical, pedagogical and psychological factors that hindered the full potential of the project activities. It recognises the tension between innovation and

accessibility and highlight the need for careful planning, teacher involvement and adaptable task design.

Adaptability to new practices as a challenge (ix): While some challenges have already been mentioned in category viii, this category deals specifically with the teacher's perspective on the challenges and obstacles encountered. The main challenge recognised by the teacher was to deviate from the established teaching method, especially the reflective approaches used in the activities. They had problems with pupils not always understanding the instructions, also pointed to lack of time and poor timing (the very last lesson of the day) and argued that more training was needed. These adaptive challenges for teachers in innovative pedagogical practices captures the multiple obstacles teachers face in transitioning from conventional teaching methods to reflective, inquiry-based, and cognitive-inclusive approaches. These data help us to better understand the interplay between teacher readiness, pupil behaviour, logistical constraints and the evolving demands of innovative pedagogical strategies.

Favouring intuitive, playful and oral pedagogy (x): Part of the interview was also dedicated to the possibilities of implementing the activities in the curriculum in the future and what improvements this would require. The answers reflect their vision to optimise the design and implementation of the project activities to better match the pupils' needs, preferences and abilities (e.g. more stress on intuitive learning, more playful and game-orientated activities, more oral and less written tasks). They rate the level of sensitisation as moderate but see great potential for the inclusion of these activities in the regular curriculum.

Discussion

We will now proceed by synthesising the theoretical concepts presented in the results section and comparing them with the existing literature, focusing on the implications contained in the research question.

As the results showed, the project activities aimed at developing a higher level of cross-language awareness through the implementation of the cognitive

model for inclusive multilingualism had an impact on both pupils and teachers on several levels.

Among the strategies that the learners activated rather unconsciously was certainly multilingual flexibility and adaptation in the sense of switching between languages, integrating dialects and using linguistic diversity to enrich their understanding and responses. The activities succeeded in stimulating the underlying strategies otherwise advocated by experts in multilingual education, such as translanguaging, which empowers both the learner and the teacher, transforms the power relations, and focuses the process of teaching and learning on making meaning, enhancing experience, and developing identity (Wei, 2017). Although language as a cognitive tool strongly dominated the activities, the proposed conceptual framework also influenced a more intensive learning experience characterised by cultural mediation and cultural framing. By learning new linguistic and cultural patterns, but also building on familiar patterns and making new mental connections, they simultaneously developed and enriched their multilingual awareness, which they also critically considered. In this way, the proposed cognitive model for inclusive multilingualism offers a new confirmation of the holistic approach to multilingual education proposed by Cenoz & Gorter, which aims at integrating the curricula of the different languages so as to activate the resources multilingual speakers have. In this way multilingual students can use their resources cross linguistically and become more efficient language learners than when languages are taught separately (Cenoz & Gorter, 2015, 4).

In the development of linguistically and culturally responsive learning, the success of approaches of this type of education is strongly influenced by the willingness, knowledge and flexibility of the teacher. This is a prerequisite for the implementation of responsive teaching. The teacher must have a sense of how the classroom “breathes” and utilise the otherwise prescribed or defined elements to this end. The way the teacher sets this up in the classroom must be based on the teacher’s ability to think outside the box (Hollie, 2017). In our case, we can see that the teacher strongly emphasised learner autonomy in the implementation of the activities and adapted the work to the dynamics of the classroom. They also had a high degree of autonomy and pedagogical choices in the activities, which sometimes affected the poorer performance of the activity itself, as the learners sometimes needed more context and contextual background to understand the objectives and procedures of the activity.

As the teacher had a similar linguistic, cultural and social background to the pupils, one would expect them to be more engaged in activating pupils' prior knowledge by asking them to discuss what they know about a particular topic. The data obtained from the project activities confirmed studies that argued that teachers in general are poorly prepared to work in multilingual environments (Villegas, 2018) and that training for working in such classrooms appears to be too little or not targeted enough (Čok, 2024). However, the project activities have at least partially contributed to self-reflection on the difficulties encountered and to recognising that 'navigating the shift' needs to be supported by a lot of work and training in the future.

The evaluation of the effectiveness of the cognitive model for inclusive multilingualism as a modality whose approaches could contribute to the development of a more linguistically and culturally responsive teaching in multilingual classrooms is mainly based on the analysis of the approaches and techniques found in the implementation of the proposed activities. According to the data, it can be confirmed that the project activities contributed to an increase in linguistic sensitivity, also through the co-construction of reflective knowledge, which was strongly characterised by collaborative learning, the active acquisition of cross-language awareness and the perception of the diversity of the environment, even in a classroom that was not extremely culturally diverse. On the other hand, the environment in which the pilot study was conducted is linguistically very specific and varied. Istria has always been a crossroads of history, which has also left deep traces in the identity of its inhabitants. The link between languages (including dialects) and identity of the class showed that it is a multilingual sample, as the pupils identified themselves as such. The specificity of the environment in which the project was set also led to interesting ecological perspectives on language learning. Project activities that have fostered also epistemic flexibility and environmental anchoring are in line with ecological theories that see language learning as interconnected with cognitive, emotional, and social systems (van Lier, 2004).

Constant multilingual reflection has moreover enhanced their sensitivity to cultural and linguistic nuances and fostered a more inclusive and open mindset. The emphasis on a collaborative approach to learning, which provided many more opportunities for pupils to meet, compare, co-create knowledge and reflect on each other, also contributed to dynamic and multidimensional learning, so that the project activities became a unifying element that led to

the formation of a strong classroom community. The importance of community in learning is a long-established principle based on the theories of Vygotsky (1978), who emphasises that a student's learning is derived from the community of learners made up of other students.

Among the benefits of the project, some of which have already been pinpointed above, it is certainly important to mention that the activities of the project have greatly increased the presence of reflection on the divergence between languages, which is also one of the central approaches of the cognitive model for inclusive multilingualism. It has also already been noted that the acquisition of divergent conceptual structures being the most overlooked aspect in foreign language acquisition (Čok, 2023), but the importance of it is not to be neglected, as perceiving and developing cross-language awareness, means admitting that communication in different languages proceeds from different conceptual perspectives and linguistic (syntactic and lexical) features that produce divergent semantic results (Kellerman, 1995).

The project activities have also shown many weaknesses and challenges, but this is characteristic of most novel approaches in the field of language acquisition, especially in the context of multilingual education. It seems that the complexity of this area creates a lengthy process of trial and error, probably because there is no one-size-fits-all solution. Our study, in which one of the objective was also to test approaches and techniques with classroom interventions, has confirmed the suitability of the approaches but also some weaknesses of the techniques used. In particular, the use of discussion to stimulate reflection was problematic, and the discussions were also sometimes led by questions, which were identified as being too numerous. As we needed written information (answers, notes, thoughts etc.) that could be analysed for the purposes of this study, we asked pupils to take notes. This was also perceived as a distraction during the course of the project. As for the criticism of the use of discussion and the resulting lack of motivation for activities centred on developing critical discussion, we would say that this was also due to the approach of the teacher, who was rarely involved in the activity. Kagan & Kagan (2009) emphasise the use of discussion as an important element of responsive classroom management, and Johnson & Johnson (2018) and Johnson et al. (1994) have written extensively about the active central role of the teacher in collaborative learning approaches.

The challenges and suggestions for improvement identified in the data analysis are particularly interesting for further implications for teaching practices. In particular, there is a need for more and more comprehensive training for teachers focussing on working with multilingual classes in the future. This training should include preparing teachers to move away from the established way of working, the established way of thinking, the readiness to jump between different roles in the classroom (facilitator, mentor, collaborator, learner, mediator, etc.). We also see the adaptation of lesson content (tasks and activities) to reduce the proportion of written work and increase the proportion of playful activities as a major challenge.

As integrating new approaches and content into the official school curricula is a lengthy and complex process with no guarantee of success, we see training teachers and sensitising them to the notions of cross-linguistic awareness as a better and faster way to establish modern approaches to multilingual education with a focus on linguistically and culturally responsive teaching.

We are aware of some limitations of our study that may have affected data interpretation. The main limitation we see is the fact that only one class and only one teacher participated in the pilot study. Although it can be read in Green & Thorogood, 2018; Guest et al., 2006; Morse, 2015 that grounded theory often cites 9 to 30 participants as the number of participants necessary for theoretical saturation, we consider the inclusion of only one teacher in particular to be a weakness, as it is unclear to what extent some of the implementation dynamics of the classroom activities can be attributed to the teacher's attitude towards the project and the activities. This limitation will be analysed in the future when the results of this pilot study are compared with the results of a larger ongoing study and a better overview and comparison of the approaches of the teachers who are part of this study can be obtained. Part of the limitation is the fact that the classroom involved in the study does not have a typical multicultural structure, especially with regard to the inclusion of children with an immigrant background. This aspect was partially offset by the very diverse linguistic structure, which for the purposes of the study provided a sufficiently diverse environment to test the approaches. Finally, we should of course reiterate that the analysis of the research was conducted according to the principles of grounded theory, following the steps of Strauss's approaches. However, due to the project nature of the research and the research design, theoretical saturation was principally achieved through

theoretical sampling within the data we collected over the duration of the project.

Conclusions

Educational environments around the world and at all levels of education are becoming increasingly multilingual, while teaching approaches in such environments are not evolving at the same pace and do not universally provide the quality of delivery that would allow all learners to be treated equally and thus create a linguistically and culturally responsive education. In this paper, we explore the implications of the proposed cognitive model for inclusive multilingualism, focussing on the development of cross-language awareness, for the establishment of linguistically and culturally responsive teaching in multilingual classrooms. Using grounded theory, we analysed the data collected in the study and identified the underlying categories. From this, we have developed a theoretical framework that shows that the approaches used succeeded in developing multilingual and epistemic flexibility for co-constructed and actively acquired knowledge and awareness of otherness. The didactics proved to be suitable for the further development of linguistically and culturally responsive education. The study also contributed to the dissemination of the application of grounded theory and research in the field of multilingualism and contemporary pedagogical practices by applying it to a context that has not been widely explored using grounded theory, namely, the development of cross-language awareness in multilingual classrooms. By using grounded theory to analyse classroom interventions and teacher-student interactions in multilingual settings, we demonstrated how this methodology can be applied in educational research to investigate complex, context-specific phenomena. This application of grounded theory in the study of multilingualism and pedagogical practices offers a novel perspective on how to address linguistic diversity in classrooms. Additionally, our findings contribute to the field by offering insights into how grounded theory can be used to refine teaching strategies and curriculum design for multilingual education, which is an important area of contemporary pedagogical research. As the present study is a pilot study, it is only the beginning for our research. In the future, we plan to analyse the effects of the proposed didactics in more detail on a larger sample. In particular, we see a need for further research in the following areas: introduction of the approaches into the regular curriculum,

formal training of teachers in the approach and introduction of the approaches in more culturally and linguistically diverse groups.

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