"I was definitely motivated!" – Pupils' perspectives on the use of multilingualism in the classroom

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Abstract

Students' heritage languages often remain untapped as a resource for learning in mainstream classrooms. This mixed-methods study explores how secondary school students in Germany perceive and engage with multilingual practices in science education. Drawing on data from the DFG-funded project "Physics Education in the Context of Linguistic Diversity" (PhyDiv), we combine quantitative survey data (*N*=436) and qualitative interview data (*n*=9) to examine students' attitudes, experiences, and motivations regarding heritage language use in class. Survey data indicate that, in student's experience, the use of languages other than German is typically not permitted in class, making multilingual practices unfamiliar to most of them. Many supported a monolingual classroom policy. However, students who had been explicitly encouraged to use their heritage languages during group work expressed significantly more positive attitudes than their peers. Interview data from multilingual students who used Turkish in partner- and group work highlights that heritage language use was associated with positive emotions, increased engagement, and perceived learning support. At the same time, students' willingness to use their heritage language was shaped by their self-perceived language proficiency and the language skills of peers. Overall, the findings emphasize the potential of multilingual pedagogies to enhance classroom inclusion and challenge monolingual norms—provided that teachers actively support students in viewing their linguistic resources as legitimate and valuable. The study concludes with implications for classroom practice and teacher education, advocating multilingual-inclusive teaching as a strategy not only for language development but also for promoting engagement, well-being, and equity.

Keywords: Multilingualism, content and language integrated learning, linguistic diversity, science teaching, secondary school

Introduction

The migration-related diversification of societies is particularly pronounced in urban areas across the globe: In Hamburg (Germany), for example, more than half of all pupils have a so-called migrant background. In district schools[1], the proportion is over 60% (FHH - Behörde für Schule und Berufsbildung, 2025). Alongside the majority language, German, heritage

[1] There are two types of secondary school in Hamburg: District schools (*Stadtteilschulen*) are comprehensive schools that offer all levels of education from the lower secondary school leaving certificate at the end of year 9 to the general university entrance qualification (*Abitur*) at the end of year 13. Grammar schools (*Gymnasien)* enable pupils to obtain the general university entrance qualification at the end of year 12.

languages play a vital role in the daily lives of many of these students over several generations (Ilić, 2016; Strobel & Kristen, 2015). Recent statistics reveal that nearly 47% of pupils in Hamburg grow up bi- or multilingual, with over 120 different languages being spoken (Brandt, 2024). As a result, a wide range of language experiences is present in Hamburg's schools, from students who start acquiring German only at school entry (e.g., recently immigrated children) to those with advanced literacy skills in multiple languages. Linguistic diversity is therefore a basic condition for teaching and learning in the globalized 21st century.

The use of multilingual resources in the classroom – such as translanguaging (García & Wei, 2014) or language comparisons – is increasingly recognized as beneficial for learning and has been endorsed, for instance, by the German ministry of education and cultural affairs (Kultusministerkonferenz, 2017). In Hamburg, educational curricula (*Bildungspläne*) emphasize the value of multilingualism, recognizing it as a resource for language development and support. They recommend that the language skills of multilingual students be acknowledged in the classroom and used for subject-specific learning whenever possible and further promoted through heritage language lessons (FHH - Behörde für Schule und Berufsbildung, 2022; Böhmer & Safouane, in press).

Educational policy thus provides a basis for integrating multilingual practices into subject teaching. However, such practices are unlikely to be the norm in mainstream classrooms. Empirical studies indicate that a *monolingual habitus* (Gogolin, 2008) and corresponding practices are still prevalent in German schools: Although teachers recognize the general potential of multilingualism, they often remain skeptical about drawing on students' migration-related multilingual resources in the mainstream classroom (Brandt, 2021; Lange et al., 2024; Wamhoff et al., 2022). At the same time, empirical evidence points to multilingual learners making use of their heritage languages in the classroom, even if this is not officially desired or even prohibited (Bührig & Duarte, 2013; Ünsal et al., 2018).

The fear expressed by many teachers that students would take advantage of the situation to engage in private conversations or gossip ("off-task talk", Duarte, 2016) has proven to be largely unfounded. Exploratory studies show that students' use of their heritage languages in class mirrors the use of German in monolingual groups: While occasional gossip and private chatting occur (as in monolingual German conversations), multilingual students predominantly use their heritage language skills for classroom-related purposes ("on-task talk") (Barwell et al., 2016; Bührig & Duarte, 2013; Dirim, 1998; Duarte, 2016). When engaging in problem solving, negotiation, and knowledge construction, students use all available linguistic resources – both receptive and productive – in functional forms (Bührig & Duarte, 2013). Contrary to the common assumption among teachers that students need a high level of academic language proficiency in their heritage languages in order to use them productively in the classroom, previous research on the matter does not support this view: Even if students cannot discuss academic content in their heritage languages at the level of academic or technical language, using their full linguistic repertoire (including colloquial

language and sociolects) can contribute to solving tasks and understanding new content or texts (Duarte, 2016). In addition, teachers express concern that the use of heritage languages in class might exclude monolingual students or lead to group segregation (Bredthauer & Engfer, 2018). However, there is little empirical evidence to support this concern.

While interest in teacher' professional beliefs about multilingualism has grown in recent years (Lange & Polat, 2024; Lundberg & Brandt, 2023; Polat & Lange, 2025), comparatively little attention has been paid to learners' perspectives on using heritage language skills in the classroom. Yet, attending to students' perspectives provides valuable insight into how pedagogical practices are perceived and experienced by learners, which can inform more accessible instruction, enhance student engagement, and foster a stronger sense of belonging by ensuring that students' identities are recognized and valued. Without these voices, attempts to improve education risk being based on an incomplete picture of classroom life (Cook-Sather, 2006). Putjata and Plöger (2021) thus emphasize the need for research that centers the voices of children and adolescents, as their views on language use, identity, and learning processes are crucial for developing more inclusive and responsive educational practices. However, so far only few studies have explored school students' perspectives[2] on multilingualism and its use in classroom settings:

Haukås et al. (2024) conducted a large(r)-scale survey among Norwegian secondary school students (*N*=593), revealing that participants generally viewed multilingualism as beneficial – particularly for additional language learning – but remained somewhat skeptical about cognitive or economic advantages. Students with a migrant background, experience abroad, and those with multilingual friends reported more favorable beliefs, whereas learning a second foreign language at school or self-identifying as multilingual were not associated with their beliefs. Similarly, in a qualitative interview study by Dewitz et al. (2022), multilingual migrant students attending either upper secondary or vocational school in Germany (*N*=20) expressed largely positive attitudes towards their multilingual abilities – highlighting practical, emotional, and academic benefits – regardless of whether they had recently immigrated or had been raised in Germany. However, students also reported that their linguistic resources were rarely acknowledged or integrated into classroom practice. While some students used their heritage language skills strategically (e.g., for translation or creative tasks), such practices remained mostly private and informal. In addition, students perceived societal and institutional hierarchies between languages, with migrant languages being devalued compared to English. Students who grew up in Germany in particular reported instances of linguistic discrimination, highlighting the discrepancy between their multilingual realities and monolingual school norms.

[2] We use the term *perspectives* as an inclusive concept that captures both students' evaluative stances (e.g., attitudes, beliefs, perceptions) and their lived experiences in multilingual classroom settings. In reporting previous research, we retain the authors' original terms, though these are sometimes used interchangeably and not always explicitly defined.

In addition to these studies, which focus on students' perspectives or experiences in existing classroom settings, some other research has examined students' perspectives on multilingualism in the context of intervention studies that actively integrated multilingual practices into instruction: Reitenbach et al. (2023) and Schastak et al. (2017) examined multilingual primary school students' reasons for using or avoiding their heritage languages in multilingual-inclusive learning environments. Reitenbach et al. (2023) analyzed data from 374 students following a reading intervention that combined reciprocal teaching with multilingual teaching methods, while Schastak et al. (2017) focused on 37 Turkish-German bilingual students who had participated in a bilingual peer learning program. Both studies show that language-related emotions – such as enjoyment, pride, or insecurity – and self-perceived language competence played a central role in students' language use decisions. Reitenbach et al. (2023) emphasize that meaningful inclusion of multilingual practices must consider not only structural conditions but also social, emotional, and contextual factors. Göbel et al. (2024) examined how mono- and multilingual grade 7 students (N=221) perceive and value multilingual teaching activities, including the use of heritage languages, in the context of learning French as a foreign language. Students who experienced a higher-intensity intervention (≥10 multilingual lessons) expressed significantly more positive attitudes toward such teaching approaches than those in the control or low-intensity groups. Multilingual students especially appreciated the recognition of their heritage languages, describing it as motivating and affirming. Monolingual German students also developed more positive attitudes over time, indicating increased openness to linguistic diversity. Qualitative interviews confirmed that students found multilingual activities helpful, enjoyable, and particularly engaging when they could relate to the languages used. These findings suggest that, when given the opportunity, students can engage with and value linguistic diversity in meaningful ways. Van Gorp and Verheyen (2024) conducted two exploratory studies in linguistically and socially diverse primary schools in Flanders, Belgium, where Dutch is the official language of instruction. A total of 66 students (aged 9-13) from four classrooms participated in multilingual tasks designed to explore their experiences of using their full linguistic repertoire in class. In general, students reported feeling happy, calm, and in control when speaking their heritage languages, and some expressed pride in doing so. Others, however, chose not to use their heritage languages because of language-related factors such as perceived language proficiency, language norms, status of the heritage language, and perceived appropriateness of the context. The study highlights both the emotional potential and the complexity of multilingual practices in school settings.

To sum up, existing studies show diverse student perspectives on multilingualism, but consistently emphasize its emotional valence. Across different educational settings, the opportunity to use heritage languages in class tends to be associated with positive emotions, particularly when students feel their linguistic resources are recognized and valued. However, most of the studies discussed either focus on general attitudes toward multilingualism

without addressing its classroom use, or are situated in specific contexts such as primary school, peer learning interventions, bilingual programs, or foreign language instruction. A more comprehensive understanding of how students experience and engage with multilingualism in mainstream secondary school settings — especially in different content subjects — remains lacking.

To address this research gap, the present study aims to explore German secondary school students' perspectives on the use of multilingualism in linguistically diverse school settings. Specifically, we use data that was collected in the context of a subject-specific intervention study to investigate i) mono- and multilingual general students' attitudes towards heritage language use in class ii) how multilingual students perceive and engage in multilingual practices when given the opportunity, and iii) the reasons they give for using – or not using – their heritage languages.

To empirically examine the above questions, we adopted a mixed-methods design that combines quantitative survey data on students' attitudes and self-reported practices with qualitative interviews that provide deeper insight into their motivations and lived experiences. By integrating these perspectives, we seek to gain a more comprehensive understanding of how multilingual language use in class is experienced, enacted, and negotiated by students.

Methodology

Provide sufficient detail for reproducibility, referencing published methods where applicable.
The present study draws on data that was collected as part of the DFG-funded project " "Physics Education in the Context of Linguistic Diversity" (PhyDiv, 2021-2024), an intervention study that investigated the effects of German academic language support and the use of students' multilingual resources in physics teaching in linguistically diverse settings (Brandt et al., 2024, Brandt et al., 2025). Within this larger project, 31 ninth-grade classes (N=607 students) from seven public district schools in socio-economically (rather) disadvantaged areas of Hamburg (Germany) were randomly assigned to one of three instructional conditions (each consisting of six 90-minute physics lessons).

Two of these conditions did not explicitly address students' multilingualism: In the so-called CLIL condition, subject and language learning were combined through *Content and Language Integrated Learning*. Students were provided with German academic language support, but without explicitly including or encouraging multilingual practices. A control group (C) received physics instruction without any explicit focus on language or multilingualism. Only the third condition, CLIL-M, actively integrated students' multilingual resources: Here, multilingual learners were encouraged to use their heritage languages in partner and group work. To facilitate this, students participated in an introductory session on multilingualism, during which they created language portraits (Krumm, 2001). This session aimed to acknowledge and make visible the linguistic diversity within the classroom and served as the basis for a new seating arrangement: where possible, students were placed in linguistically homogeneous groups so that they could communicate in a shared heritage language while working together.

During plenary phases, German remained the language of instruction. For more detailed information on the PhyDiv study see Brandt et al., 2025.

As part of the PhyDiv-Micro substudy (Micro-perspectives on physics lessons in the context of linguistic diversity), two CLIL-M classes were selected for in-depth qualitative analysis involving video recordings and follow-up student interviews to gain a deeper understanding of pupils' multilingual experiences — particularly their use of heritage languages. Selection criteria required that both classes were taught by the same teacher at the same school, in order to minimize contextual variation (school- or teacher differences) and allow for a more focused analysis under comparable instructional conditions. Moreover, a sufficient number of students in both classes had to provide consent for video recordings in order for the classes to be included.

Quantitative and qualitative data from the PhyDiv and PhyDiv-Micro studies are combined to explore students' perspectives with heritage language use in class: Cross-sectional quantitative survey data are used to examine students' general attitudes and self-reported practices, while qualitative interview data provide explanatory insight into multilingual learners' experiences and motivations regarding the use of heritage languages during instruction.

Quantitative Part: Survey on Attitudes and Experiences

The quantitative data used in the present study were collected during the post-test phase of the PhyDiv intervention study, directly following the completion of the six-lesson teaching units. Students completed paper-and-pencil questionnaires in class under supervision of trained research staff. Informed consent was obtained from all students prior to participation.

Participants

For our quantitative analyses, we used data from 438 students (48.0% female, mean age=15.4 years) who answered questions about their attitudes toward and experiences with using multilingualism in the classroom. More than three-quarters (80.3%) of these students have a migration background[3], but the majority (73.3%) was born in Germany. Approximately one-third (63.5%) speak both German and other languages at home. About a quarter (26.5%) reported using other languages exclusively. The sample included more than 40 languages, with Turkish, Russian, Pashto/Dari, Polish, Arabic, Albanian and Kurdish constituting the largest groups.

Instrument and measures

As part of the PhyDiv post-test, students completed a paper-and-pencil questionnaire designed to assess various aspects of their learning experience. It included one item referring to *students' prior experience with multilingual language use* ("We are normally only allowed to speak German in class"), and five items addressed *general attitudes towards the use of multilingualism in the classroom* (example, "German should be the only language spoken in

[3] Student and/or at least one parent born in another country.

class"). All items used a four-point response format ranging from 1 (disagree) to 4 (agree). The attitudinal items were newly developed for this study and informed by theoretical discussions on language ideologies and multilingualism in schools (e.g., Gogolin, 1994; Cummins, 2001; García & Wei, 2014), as well as the authors' experience in multilingual classrooms. A composite score was calculated by averaging the five attitudinal items to reflect students' overall support for multilingual classroom practices. Negatively worded items were reverse-coded prior to computing the composite score, so that higher scores indicate more positive attitudes toward the use of multilingualism in class. The internal consistency of the set of items was acceptable for exploratory purposes (Cronbach's α=.69).

In addition, multilingual students who had been encouraged to use their heritage language skills during partner and group work in CLIL-M were asked about their *experiences with using multilingualism during the intervention* (4 items, example: "Using my heritage language in class was fun"). This was assessed using four newly developed items (e.g., "Using my heritage language in class was fun"), each rated on a four-point answering scale ranging from 1 (disagree) to 4 (agree). A composite score was computed, with higher scores reflecting more positive experiences. The set of items showed acceptable internal consistency (Cronbach's α=.74).

Information on students' socio-demographic background (e.g., gender, age, migration background, home language use) and self-assessed language proficiency in German and the heritage languages were collected as part of the PhyDiv pre-test. To construct a binary indicator for multilingual home language use, students were coded as multilingual (1) if any non-German language was spoken at home, and monolingual (0) if only German was reported. This coding was based primarily on responses to multiple binary items in the pre-test questionnaire that asked whether specific languages (e.g., German, Turkish, Russian, Polish, other) were spoken at home. Responses from a corresponding item at the second measurement point (post-test) were used to impute missing values. This variable asked which languages students spoke at home and offered three response options: (1) only German, (2) German and another language, or (3) only another language. Students selecting option 2 or 3 were also coded as multilingual (1). This stepwise approach ensured the most comprehensive coverage of multilingual home language use based on all available data points.

Data Analysis

Quantitative analyses were conducted using Stata 17. Descriptive statistics were computed to summarize students' responses to individual items. Group differences in ordinal survey items were tested using Wilcoxon rank-sum tests (for differences in the response patterns of mono- and multilingual students) and Kruskal–Wallis tests (for comparisons across more than two groups). Relationships between ordinal variables were assessed using Spearman's Rho.

Group differences in the composite score (general attitudes towards heritage language use in class) were examined using two-sample t-tests. Although the distribution showed slight

deviation from normality (Shapiro–Wilk p=.018), the t-test was deemed appropriate given the large sample size and the robustness of parametric tests. Given the relatively large sample size and the robustness of the t-test to minor violations of normality, parametric comparisons were deemed appropriate. To explore whether students' multilingual instructional experience was associated with their attitudes toward heritage language use in class, while accounting for their language background (mono- vs. multilingual), we conducted a multiple linear regression analysis.

Effect sizes are reported for all inferential tests, including Cohen's d for t-tests, η^2 for Kruskal–Wallis tests, and Spearman's r or rank-based r for non-parametric comparisons. Due to item-level non-response, the number of valid responses varies slightly between individual analyses.

Qualitative Part: Semi-structured Interviews

For the qualitative part of the study, semi-structured interviews were conducted with multilingual pupils who had been filmed while working in shared heritage language groups in CLIL-M. Nine out of the ten filmed pupils agreed to participate in the interviews.

Participants

All nine students (five male, four female) who participated in the qualitative interviews had a migration background, but only two of them were born outside Germany (Turkey and Bulgaria) and immigrated to Germany at a young age. All began learning German at an early age, at the latest during primary school (ages 6–9). All reported speaking both Turkish and German at home, and the pupil from Bulgaria additionally speaks Bulgarian with her family. The fact that all of the students shared Turkish as their heritage language is not surprising, given that Turkish is the most common heritage language in both Hamburg and Germany (Brandt, 2024; Statistisches Bundesamt [Destatis], 2023)

While all interviewees rated their German language competence as high, their self-assessed proficiency in Turkish varied considerably, reflecting individual differences in language use and maintenance. The differences in competence range from mostly oral receptive language skills in Turkish to well-developed abilities in both written and spoken Turkish. Both CLIL-M classes were linguistically diverse: according to classroom-level data, 84% of the pupils reported speaking at least one language other than German at home—either alongside or instead of German.

Interview Procedure

The interviews were conducted by the second and third authors of this article and lasted approximately 22 minutes each. All interviews were audio-recorded and subsequently transcribed for analysis. The interview protocol focused on three main areas: (i) students' language use in everyday school life, (ii) their attitudes toward the use of heritage languages in the classroom, and (iii) their experiences with multilingual practices during the project lessons. It included open-ended questions about language use in everyday school life and during the intervention, a set of emotion-related adjectives to reflect on how it felt to use

heritage languages in class, and a set of attitudinal statements adapted from the student questionnaire. These statements were presented on physical cards and placed along a visual response scale to prompt discussion. This combination of question types was intended to encourage student reflection and ensure comparability with survey data, while allowing for individualized responses.

Data Analysis

To analyse the interview data, we conducted qualitative content analysis following Mayring (2022). A preliminary coding system was developed deductively, drawing on distinctions used by Schastak et al. (2017), Grosjean (2020) and Reitenbach et al. (2023). Specifically, students' reported reasons for using or not using their heritage languages were categorised across three levels: i) individual, ii) interaction partners, and iii) context (e.g. the implicit or explicit language policies of schools). These levels served as the main categories for structuring the analysis.

Subcategories were defined using a deductive-inductive approach. We systematically examined whether the subcategories derived from the aforementioned literature were represented in the material and whether additional categories emerged from the data. All deductively derived subcodes were represented in the data. These included "language competence of interaction partner", "language habits of teaching outside the intervention", "students' own language competence", and "emotional valence". Additional subcodes were developed inductively during the analysis. The complete category system, including all main codes and subcodes, is available in the Appendix.

To ensure coding reliability, two researchers independently coded the entire interview dataset. In an initial round of coding, discrepancies occurred primarily between closely related subcodes (e.g., "learning support for oneself" and "learning support for others"). Based on these findings, the coding system was refined, and conceptually overlapping subcodes were merged. A second round of independent coding was then conducted using the revised system, resulting in a high level of intercoder agreement (Cohen's κ=.86).

Findings

This section presents the findings of our study in two parts: First, we provide a general overview of how students in the PhyDiv study perceived and experienced multilingualism in class based on the quantitative survey data (Sections 3.1 and 3.2). Given the limited prior research on students' perspectives in this context, we report both selected individual items and composite scores and to illustrate key patterns.

We then zoom in on the qualitative interview material to gain deeper insight and explanatory knowledge about the reasons and motivations behind pupils' using or non-use of their heritage languages in the classroom (Section 3.3). Together, these complementary perspectives offer a more comprehensive understanding of how multilingualism is experienced and negotiated by pupils in everyday classroom settings.

Students' Prior Experiences with and Attitudes towards the Use of Multilingualism in Class

Around three quarters (73.7%) of the students who participated in the PhyDiv study indicated that they are normally not allowed to speak languages other than German during regular classroom instruction at their schools (item: "We are normally only allowed to speak German in class", see Figure 1) Although a Kruskal–Wallis test revealed differences across the seven participating schools ($X^2(6)=20.68$, $p=.002$), a small effect size ($\eta^2=.029$) suggests a high degree of consistency in students' reported experiences.

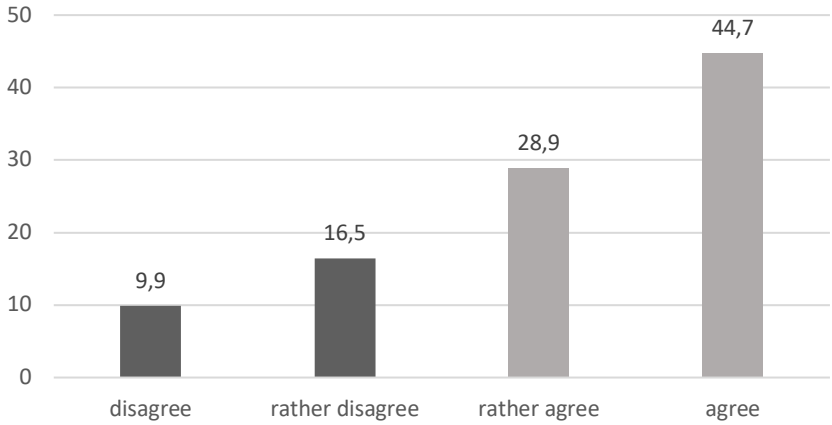

Figure 1. Student responses to the item: "We are normally only allowed to speak German in class" (n=425, in percent)

Just over half of the PhyDiv students (53.8%) (rather) supported a monolingual language policy (item: "German should be the only language spoken in class") (see Figure 2). A significant but modest correlation was found between students' reported experience with monolingual classroom policies and their personal support for such a policy ($\rho=.24$, $p<.001$, n=412), indicating that both are related but not strongly aligned.

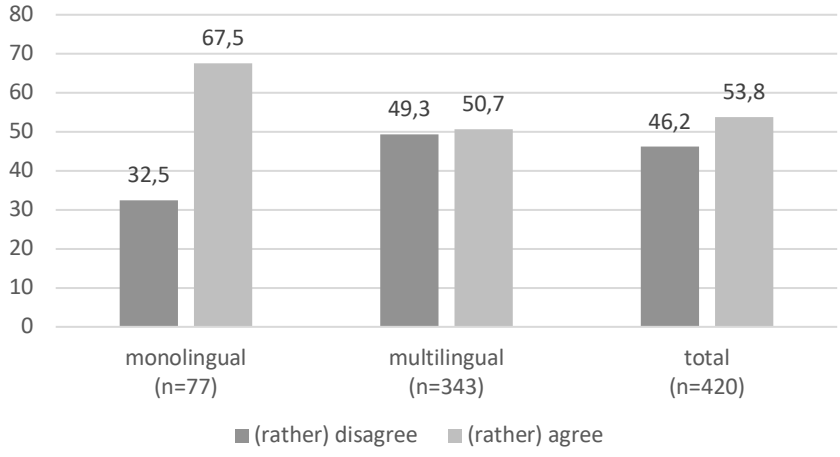

Figure 2. Agreement with the statement "German should be the only language used in class" by language background (in percent)

Pupils' attitudes toward monolingual classroom policies varied by their linguistic background (see Figure 2). Among monolingual students, more than two thirds (67.5%) (rather) agreed

that German should be the only language spoken in class Among multilingual students, opinions were more divided, with roughly half (50.7%) expressing agreement and the other half (49.3%) expressing disagreement. A Wilcoxon rank-sum test confirmed that monolingual students were more supportive of monolingual classroom norms than their multilingual peers (z=2.78, p=.006, (r=.14).

Similarly, students' responses to the item "I find the use of other languages in class exciting" varied markedly by linguistic background, with multilingual students expressing significantly more positive attitudes: While 62.3% of multilingual students (rather) agreed with the statement, only 40.8% of monolingual students did so. Conversely, nearly one third (30.3%) of monolingual students fully disagreed, compared to just 14.9% of multilingual students. The difference was statistically significant (z=–4.12, p<.001, n=426), with a small to moderate effect (r=.20), indicating a greater receptiveness among multilingual students to inclusive language practices in the classroom.

Surprisingly, responses to the item "I feel excluded when other languages are used in class" did not differ significantly by linguistic background (z=1.04, p=.30, n=434). More than three quarters of the respondents (77.2%) (rather) disagreed with the statement, and only a small minority (5.5%) fully agreed. These findings suggest that feelings of exclusion in response to multilingual classroom practices are generally low and do not appear to be systematically linked to students' own language backgrounds.

Overall, students participating in the PhyDiv study expressed moderately positive attitudes towards the use of multilingualism in class (M=2.7, SD=0.70, n=438). Two-sample t-tests revealed statistically significant differences in their attitudes depending on both their language background and the instructional condition: On average, multilingual students expressed more positive attitudes (M=2.82, SD=0.70, n=361) than their monolingual peers (M=2.43, SD=0.63, n=77), t(436)=–4.42, p<.001, d=0.55. Similarly, students who were encouraged to use their heritage languages in the CLIL-M condition reported more positive attitudes (M=2.90, SD=0.67, n=105) than those in the monolingual conditions (CLIL and control combined) (M=2.68, SD=0.70, n=333), t(436)=–3.93, p<.001, d=0.45). A linear regression analysis showed that the positive association between instructional condition and students' attitudes toward heritage language use in class remained statistically significant when controlling for home language use (F(2, 435)=15.58, p<.001, R^2=.07, β=.16).

Multilingual Students' Experiences with Multilingual Practices During the PhyDiv Study

Almost three quarters (72.2%) of the multilingual pupils who were given the opportunity to use their heritage languages during physics instruction in CLIL-M enjoyed using their heritage languages in class, and over half (52,7%) believed that doing so was (rather) beneficial to learning the subject content (see Figure 3).

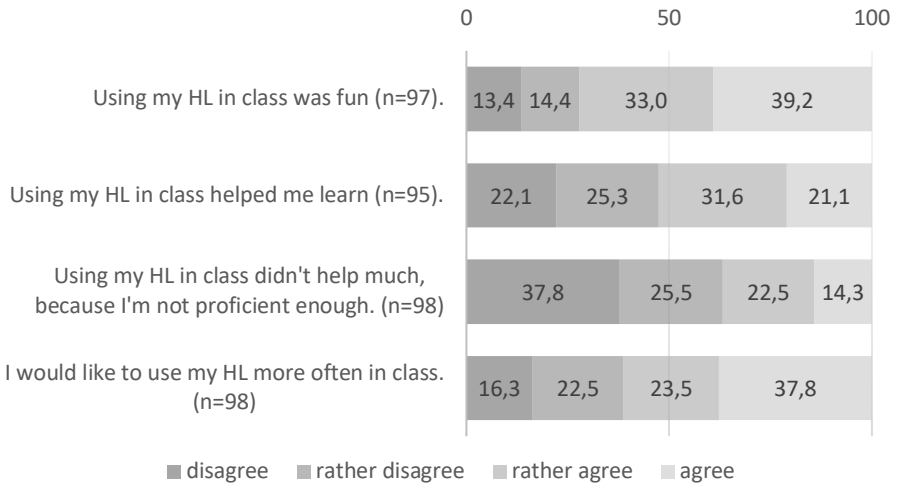

Figure 3. Multilingual students' views on using their heritage languages during the intervention (in percent)

At the same time, some pupils expressed limitations in their ability to use their heritage language for learning. In total, a little over a third (37.96%, *n*=41) of the multilingual students in the CLIL-M group (rather) agreed with the statement "Being allowed to use my heritage language in class did not help me much, because I am not proficient enough". Nonetheless, nearly two thirds (61,2%) expressed a desire to use their heritage language more frequently in the classroom.

The composite score from the four items assessing students' experiences with heritage language use in CLIL-M (see Section 2.1) ranged from 1 to 4 (higher scores = more positive experiences; *n*=108; *M*=2.80; *SD*=0.61). The distribution was skewed towards the positive end: over 70% of students scored 2.75 or higher. These results suggest that, on average, multilingual students reported moderately to highly positive experiences with using their heritage languages in class. At the same time, a smaller group of students reported less favourable experiences, indicating that the opportunity to use their heritage language was not equally beneficial for all.

Zooming in: Students' Reasons for (Not) Using Their Heritage Languages in Class

To better understand the patterns observed in the quantitative data, this section examines students' self-reported reasons for using – or not using – their heritage language Turkish during partner and group work in the CLIL-M setting. Based on the qualitative interviews, the analysis focuses on reasons frequently mentioned, defined here as being referenced by at least five participants. This criterion was used to identify themes that were not only present but recurrently expressed across different interviews, suggesting they reflect shared experiences rather than individual cases. These categories can therefore be interpreted as key factors influencing students' language choices in classroom interaction. The following four themes emerged as particularly salient and will be discussed in the subsequent sections, each illustrated by representative interview excerpts: (1) "emotional valence", (2) "more effective

communication", (3) "learning support" and (4) "language competence" will be discussed in the following using exemplary excerpts from the interviews.[4]

Emotional valence

Motivational and emotional factors for using the heritage language were mentioned by all students in the sample without exception. A total of 43 segments were coded accordingly. Notably, all statements within this category were consistently positive, i.e. pupils described their use of Turkish in class as having a beneficial impact on their emotional well-being, emphasizing feelings of happiness, motivation, and comfort associated with the opportunity to use their heritage language in an educational setting. One student explained:

> Uh, I was definitely happy that we, I mean, that we had the opportunity. I was surprised, because normally we weren't allowed to do that, and I was definitely motivated. (Ijulia, pos. 41)

Like Ijulia, many students highlighted that they were not normally permitted to use Turkish at school, describing the PhyDiv (CLIL-M) lessons as a welcome and positively received change in this respect. The strong positive emotions associated with the use of Turkish can also be interpreted as evidence of a high potential for personal identification with the heritage language. For example, one pupil expressed a sense of pride in being able to speak Turkish, stating: "because it's my mother tongue" (Tarik, pos. 25).

Learning Support

"Learning support" was the code with the highest number of coded segments (n=45) and was named by all students in the sample. In contrast to motivational and emotional factors, which were cited exclusively as reasons *for* using Turkish in the classroom, the category *"learning support"* included both reasons for using and not using the heritage language. A mixed picture emerges: While some of the pupils perceived the use of Turkish as beneficial for their learning ("And it really helps, it really helps a lot when you speak in other languages." (Ijulia, pos. 69), others reported only partial benefits, and a few saw no impact at all. The last aspect becomes clear in the following quote: *"I don't think that helped me, well, it's exactly the same in Turkish."* (Bilge, pos. 88). Like this pupil, the pupils who did not identify a positive effect on the learning process stated that it made no difference whether they used German or Turkish. The use of Turkish in classroom is therefore not a barrier to learning.

The following excerpt illustrates how students linked the perceived learning benefits of using the heritage language with positive emotional experiences:

> Yes, it really was, it was very helpful for us, so, definitely. I know that it was really helpful for my classmates who were sitting next to me, and that made the lessons really fun (Ijulia, pos. 117)

Effective Communication

[4] A full account of all categories, including less frequently mentioned reasons, is provided in the PhD thesis of author 2 (in preparation).

Pupils often *(n*=14) mentioned enhanced communication as a central reason why they perceived the use of Turkish as supportive of their learning. In particular, students reported using Turkish flexibly in moments when German expressions were not readily accessible, allowing them to maintain communication and complete tasks more smoothly. As one student explained:

> So, if there were words in German that I couldn't think of, I just said them in Turkish and told my friends, and otherwise we sometimes only did the tasks in Turkish, otherwise always in German, and if we couldn't think of words that we could say in German, we just said them in Turkish, and since we all understand the same language, it was easy to work with each other. (Noyan, pos. 29)

From the pupils´ perspective, translanguaging supported effective collaboration during group work by enabling fluid movement between languages. Conversely, the monolingual norm hinders communication and learning as described in this extract:

> Well, I think other teachers should also allow the pupils to speak their mother tongue, because it's helpful, and if someone can't speak the words in German, and we're not allowed to use mobile phones either, and we can't translate all the time […] then you're confused all the time. You can't do the task. That's why I think it's better, if it's allowed, to translate with a mobile phone, for example, or to ask all the time, to speak in Turkish or other languages (Ijulia, pos. 123)

Language proficiency (own and that of interaction partners)

The language competence of the students and their interaction partners was mentioned frequently (*n*=33) by nearly all participants (8 out of 9 students) as a reason for using or not using Turkish during peer interactions. The perceived language competence also influenced whether the use of Turkish was perceived as beneficial for learning. Pupils who assessed their Turkish skills as strong were more likely to view it's use as supportive of their learning. When students did not perceive their own use of Turkish as helpful for learning, this was often attributed to their limited academic language proficiency. One student explained:

> […] If you are a person who speaks the language well, then it will probab-, well, then it will probably help you. I mean, I do speak my mother tongue well, but not so well that I could talk about such topics like physics and so on because there are also new terms, my, I mean new terms, I also learned in physics class, for example, and I didn't know these terms before […] then I don't know the term in Turkish either. That's why, **if** you know the language, then it's probably a good thing, we should rather do it more often. But I think most pupils can't speak Turkish that well […] since we were actually born and grew up here […] most of us. (Aslan, pos. 93)

This statement reflects the student's differentiated view: while he values Turkish as a potential learning resource, he simultaneously identifies a lack of subject-specific vocabulary as a key barrier to using it in academic contexts. He notes that many of these terms were new to him even in German, having only encountered them for the first time in class. Since he grew up and was educated entirely in Germany, he had no opportunity to learn these concepts in Turkish.

In addition to their own language skills, students also expressed that the (perceived) language proficiency of their peers also influenced whether and how they used their heritage language during partner and group work: In most cases where the participants referred to the language skills of their partners, having a language-competent interaction partner encouraged their use of Turkish. Of the total of four students who referred to their partners' language skills, only one student mentioned that she was unable to benefit from using Turkish due to her partners' limited competence in the language.

Discussion

In both the quantitative and qualitative data of our study, the monolingual habitus of the German school system (Gogolin, 1994) was evident: For most students, being explicitly encouraged to draw on their multilingual repertoires during partner and group work was a new and unfamiliar experience. This highlights that multilingual language use is still far from being an established part of mainstream classroom practice. Furthermore, the survey results reveal that many students appear to have internalized that German is the only legitimate language of classroom communication. This is hardly surprising given that most of these 9th-graders have spent their entire schooling within a system shaped by monolingual norms. These findings point to the lasting influence of such norms in shaping not only institutional practices but also students' own language ideologies and self-perceptions.

At the same time, our data also point to the potential of multilingual pedagogical approaches to disrupt such deeply embedded norms. Students in the CLIL-M group, who were explicitly encouraged to use their heritage languages during classroom activities, reported more positive attitudes toward multilingualism than their peers in the other conditions. Although this difference only approached statistical significance, the trend suggests that providing space for multilingual language use may foster more open and affirming attitudes. However, due to the lack of pre-test data, we are unable to assess whether students' perspectives changed over the course of the intervention. This interpretation is nevertheless supported by the qualitative findings: all students interviewed referred to motivational and emotional factors when discussing their use of Turkish, and these were uniformly positive. Students described feeling happy, motivated, and proud, emphasizing how meaningful it was for them to be able to use their heritage language in an educational setting. Others expressed a sense of pride in being able to speak Turkish in school, highlighting the role of heritage language use in affirming personal identity. These findings indicate that creating structured opportunities for

multilingual language use in everyday instruction can not only foster engagement and inclusion but also begin to shift students' internalized experiences of language use in school.

As in previous studies, both the quantitative and qualitative findings of this study show that students' perceptions of their own language proficiency—and that of their peers—played a significant role in their decision to use (or not use) their heritage language during group work. Some students refrained from using Turkish because they felt they lacked the academic vocabulary needed to engage with physics content (Sections 3.2 and 3.3.2). This is hardly surprising: even students with strong overall proficiency in their heritage language are unlikely to have acquired academic vocabulary in that language—particularly when their entire formal education has taken place in German. Nevertheless, teachers often argue against the use of heritage languages in mainstream classrooms by claiming that students lack the necessary academic language proficiency and therefore cannot use these languages effectively for content learning. This reasoning, however, overlooks the differentiated communicative demands of classroom discourse. Academic language is not uniformly required throughout a lesson (Bührig & Duarte, 2013). For example, during peer experiments, group work, or exploratory phases of learning, students usually rely on everyday, informal language—also when working in the language of instruction. These phases prioritize observation, negotiation, and shared understanding rather than precise academic articulation (Brandt & Böhmer, 2024). As shown in our study, heritage languages can serve important functions in these moments: they support communication, collaboration, and emotional engagement among students.

These findings have clear pedagogical implications: creating space for multilingual practices can enhance not only cognitive engagement but also emotional safety and peer collaboration. However, as our interview data show, students' willingness to use their heritage language also depends on whether they see it as a legitimate and competent resource. A central challenge for teachers, then, is to counteract students' internalized deficit views and to actively frame multilingualism as a strength. This requires both a shift in teacher beliefs and structural support, such as appropriate materials, seating strategies, and inclusive language practices across the school.

Our findings must be interpreted in light of several contextual limitations. With regard to the learning-related aspects of language use, it is important to note that the intervention was short-term—limited to six 90-minute lessons—and confined to a single subject area, namely physics. The broader school environment remained monolingual, which may have limited the scope of change in students' perspectives or practices. According to the teaching development steps for multilingual-inclusive teaching by Redder et al. (2022), our teaching is also at the lowest level of development, as the use of heritage languages is only permitted in class and not supported, for example, by multilingual or partially multilingual teaching materials.

Several characteristics of the study sample should be considered when interpreting the findings. The study focused on a cohort of ninth-grade students who—unlike younger pupils

in primary school—had already been exposed to the monolingual habitus of the German school system for most of their educational careers. As a result, their perspectives and practices regarding language use in school may already have been strongly shaped by institutional norms that privilege German as the sole language of instruction. We can only hypothesize what effects might emerge if such approaches were embedded more systematically and introduced earlier in students' educational trajectories. For future projects, it would therefore be promising to begin interventions at the start of secondary education (e.g., in Year 5), when students are newly forming peer networks and adapting to a new school environment. It is also important to note that the study was conducted as part of a targeted intervention in classrooms with a high degree of linguistic diversity, with the majority of students being multilingual. As such, the findings cannot be generalized to other (less diverse) learning environments. Moreover, the interviews were conducted exclusively with multilingual students who had the opportunity to use their heritage language during instruction. We are therefore unable to draw conclusions about the emotional valence of multilingual practices for monolingual students or for multilingual students without a heritage language partner in class. Also, it should be borne in mind that our data is based on self-reports from interviews and questionnaires. As part of an ongoing doctoral project, the second author will conduct a detailed analysis of the corresponding video recordings to examine how, and to what extent, students actually used their multilingual resources during instruction. This will allow for a comparison between students' reported practices and their observed language use, offering deeper insight into the relationship between multilingual beliefs and behavior.

Last but not least, it is important to acknowledge that the quantitative scales used to assess students' attitudes toward and experiences with multilingualism in the classroom do not claim to be exhaustive. They represent a first attempt to operationalize these constructs and are intended as a starting point for further refinement. We invite future research to build on, adapt, and expand these instruments.

Conclusion

This study shows that allowing students to draw on their multilingual repertoires during partner and group work was a novel experience to most students that they received very positively and would like to make more often. Both the quantitative and qualitative findings indicate that the use of heritage languages in classroom interaction serves not only cognitive and instructional functions, but also emotional and motivational ones. Recognizing and including students' heritage languages as working languages in the classroom appears to foster greater engagement and a stronger sense of belonging.

Importantly, the positive effects observed were not limited to those who made frequent use of their additional languages. Simply having the opportunity to use their full linguistic repertoire contributed to a more inclusive and affirming learning environment. Multilingual-inclusive teaching should therefore be considered not only as a strategy for academic support, but also

as a means of improving classroom climate, supporting student well-being, and strengthening teacher–student relationships. In doing so, it can contribute to a more equitable and discrimination-sensitive education system that values linguistic diversity as a resource.

The mixed-methods approach used in this study enabled us to combine descriptive breadth with explanatory depth. While the survey data provided insights into broader patterns of students' attitudes and self-reported practices, the interviews allowed for a more nuanced understanding of the meanings students attributed to their language use. In particular, the qualitative findings helped to contextualize and explain the emotional and social dimensions of multilingualism that are not easily captured through standardised survey items. Future research on multilingual-inclusive teaching would benefit from similarly combining quantitative and qualitative approaches to capture the complexity of students' language practices and the conditions that shape them.

Conflict of interest

The authors declare no conflict of interest.

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Appendix

Table 1. Coding system „Reasons for using or not using multilingualism"

Main Code	Subcode	Sub-subcode
Context	Macro-level (education system and society)	Career prospects
	Meso-level (lessons)	Allowing the use of multiple languages
		Constructing a private sphere
Interaction partner	Language competence of interaction partner	
	Effective communication	
Individual	Cognitive demands or challenges associated with multilingualism	
	Emotional valence	
	Learning support	Learning support for self/ own group
		No learning support
	Language competence	Language competence supports heritage language use
		Language competence does not support heritage language use
	Expansion of heritage language skills	
	Language habits outside the intervention	Regular heritage language use
		Mostly German