
Research article

Home literacy and numeracy environment in effective schools with social diversity

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Abstract

The purpose of this study was to examine how parents in effective schools with social diversity enrich the home literacy and numeracy environment, the strategies teachers adopt to support them and the obstacles they face. The research was carried out at two effective but socio-economically and culturally disadvantaged schools in the Basque Autonomous Community through 53 semi-structured interviews with native parents ($n = 24$), migrant parents ($n = 7$) and teachers ($n = 22$). Data were analysed using qualitative descriptive content analysis. Parents reported creating a home environment that fosters their children's literacy and numeracy, whereas teachers perceived that the home environment was not sufficiently enriched. The mechanisms teachers implement to enhance the home literacy and numeracy environment were identified at the school level, such as dynamics that promote library use and an agreed policy on homework, and at the classroom level, the transmission of information and recommendations. Some obstacles at the student level related to limited time and insufficient command of the language were also identified. It is concluded that the initiatives identified by all participants to support literacy and numeracy at home are mainly classroom-level suggestions for

informal activities. Improving parent–teacher communication and implementing more intercultural school-level strategies would be a notable improvement. Understanding how effective schools operate in contexts of socio-economic and cultural diversity can help improve this aspect in other schools, especially those that serve disadvantaged families.

Keywords home environment; family literacy; numeracy; educational inequality; school effectiveness

Introduction

The field of educational effectiveness is grounded in the premise that education should engender positive learning outcomes (Michaelidou et al., 2025). Educational effectiveness research aims to identify which educational practices are effective and why, by analysing factors related to student achievement (Kyriakides et al., 2021; Scheerens and Bosker, 1997).

To strengthen the link between research and the improvement of educational practice, the dynamic model of educational effectiveness (DMEE) was developed (Creemers and Kyriakides, 2008). The DMEE, which adopts a multilevel perspective, is based on effectiveness studies conducted across various educational contexts (Michaelidou et al., 2025; Teddlie and Reynolds, 2000) and posits that the factors influencing students' learning outcomes operate at student, teacher, school and educational system levels (Kyriakides et al., 2025).

We understand effective schools as those that, after controlling for contextual variables, obtain higher residual scores on external assessment tests in academic performance than expected given family characteristics (García-Jiménez et al., 2022; Intxausti et al., 2017). Therefore, schools are considered effective when they foster comprehensive student development beyond what would be predicted from their social, economic and cultural backgrounds, and when such performance is sustained over time (Delgado-Galindo et al., 2024).

However, achieving effectiveness is particularly challenging in contexts characterised by social and cultural diversity. Within the DMEE, certain student-level factors are considered unlikely to change, such as socio-economic status and migrant background (Kyriakides et al., 2021). Those factors have consistently been linked to lower academic results. Previous research indicates that migrant students perform worse than their native peers in mathematics, language and reading (Delgado-Galindo et al., 2021; Gamazo et al., 2018; ISEI-IVEI, 2022; Wolf et al., 2025). A relationship has also been identified between lower levels of parental education and fewer resources, with poorer results in mathematics and reading (Frade-Martínez et al., 2024; Lucas-Oliva et al., 2022; Uno and Ogawa, 2025).

These challenges are especially relevant in the Basque Autonomous Community (BAC), which has a unique demographic and socio-linguistic profile that distinguishes it from other regions in Spain. About 14.1 per cent of its population are migrants, an increase of 21,040 in the past year alone (Ikuspegi, 2025). In the third quarter of 2024, 34.8 per cent of newborns had a migrant mother (Eustat, 2025). At the educational level, around nine out of 10 migrant students belong to the low or medium socio-economic and cultural index (SECI), a proportion that has remained steady (ISEI-IVEI, 2022).

The BAC is a bilingual region where Basque, a minority language, coexists with Spanish (van der Worp, 2019). Both are official languages, and schools offer three linguistic models (A, B and D). The D model, representing complete immersion in Basque, is the most widespread. It uses Basque as the main language of instruction, with Spanish taught as a subject (Martínez de Luna et al., 2023). Even among migrant students, the minority language serves as the main medium of instruction, while Spanish remains the dominant language in society (Soziolinguistika Klusterra, 2019).

A rich home learning environment (HLE) is consistently associated with higher academic achievement (King et al., 2020). Specifically, a rich literacy and numeracy environment at home is a key factor in effective schools (Costa and Araújo, 2018; Delgado-Galindo et al., 2021; Kirss et al., 2021; Ortiz-de-Villate et al., 2021). However, to the best of our knowledge, there has been little research analysing the strategies and difficulties involved in supporting parents of effective schools in developing a rich HLE. This research, thus, differs from previous studies in three main aspects: (a) it shows effective schools are characterised by social diversity, (b) it examines in depth how parents create a rich home

literacy and numeracy environment, the strategies that support parents in doing so and the obstacles they encounter in effective schools, and (c) the study was approached from the perspective of teachers and parents – natives and migrants.

The importance of this work lies in examining effective schools that welcome socio-economically and culturally disadvantaged families. Strategies implemented by effective schools to strengthen the HLE can improve the academic performance of disadvantaged students (Borman and Rachuba, 2001).

Therefore the main objective of this work is to examine how parents in effective schools with social diversity enrich the home literacy and numeracy environment, the strategies teachers adopt to support them and the obstacles they face.

Home literacy and numeracy environment

Children's development is shaped by daily interactions within their immediate environments, particularly the family. Bronfenbrenner's (1979) ecological model places the child at the centre of a dynamic system of interconnected contexts, ranging from local settings such as the HLE and school to broader community and socio-cultural contexts (Niklas et al., 2016). The model also emphasises the reciprocal influences among these contexts – for example, how interactions between the HLE and school contribute to children's development (Niklas et al., 2020).

The HLE is a widely recognised framework that describes the amount and quality of stimulation and support children receive at home (Bradley et al., 2011). Some authors conceptualise it as a multidimensional construct that includes parental resources, beliefs and interactional processes (for example, Kluczniok et al., 2013). In the present study, the focus is on the literacy- and numeracy-related aspects of the HLE. In line with research on home literacy and home numeracy environments, these components are understood as the set of literacy and numeracy resources, activities, attitudes and beliefs that parents promote in everyday life (Dowker, 2021; Niklas et al., 2020). A distinction can be made between formal and informal activities (LeFevre et al., 2009; Sénéchal, 2006).

Previous research shows that native and migrant parents actively cultivate the home literacy environment. Most native parents read with their children nearly every day, particularly during early childhood (Napoli et al., 2021; Pandith et al., 2022), while migrant parents participate in reading activities mainly in their home languages (Coba-Rodriguez and Jarrett, 2022). In the numeracy area, native and migrant parents report counting while cooking, walking and playing board games (Chowbey and Barley, 2022; De Keyser et al., 2020).

Nevertheless, these studies provide only a partial understanding of parents within the context of educational effectiveness. Evidence from this field shows that students in effective schools generally have greater access to books and reading resources at home and are more often encouraged to read for pleasure (Costa and Araújo, 2018; Delgado-Galindo et al., 2021; Kirss et al., 2021). However, this evidence primarily reflects the perspectives of school leaders or students in schools with limited social diversity and focuses exclusively on literacy. In this respect, there is a need to examine further how parents in effective schools with social diversity develop and enhance the home literacy and numeracy environment, drawing on both parental and teacher perspectives.

Alongside this, within the DMEE framework, parents may encounter barriers at the student level that limit their opportunities to provide an enriching HLE. Lower parental education and limited income reduce access to literacy resources, quality books and materials for manipulative play (Altun et al., 2022; Cheung et al., 2021; De Keyser et al., 2020; Ebert et al., 2020; Napoli et al., 2021; Susperreguy et al., 2020, 2021). Parents' working hours can further restrict the time available to foster an enriching environment (Carmona, 2019; Lee and Kim, 2025). Low proficiency in the language of instruction may limit the support that parents can offer in the literacy environment (Boit et al., 2020). Additionally, parents' perceptions of their role – often regarded as less significant – can decrease engagement (Fan et al., 2018; Hoover-Dempsey et al., 2005). Previous studies on parental barriers have not been conducted within the field of educational effectiveness, and little is known about which difficulties persist for parents in socially diverse effective schools.

Given these difficulties, schools can play a crucial role in supporting parents in enriching the home literacy and numeracy environment. At the school level, they can improve parents' access to learning resources (Altun et al., 2022) and materials (Lobo et al., 2025). An important practice is to promote book borrowing (Chowbey and Barley, 2022) and to encourage parents to become familiar with local libraries (Campana et al., 2022). It may also be beneficial to ensure that collections include multilingual and

culturally representative books that reflect migrant families (Garcia and Hasson, 2004), enabling parents to read in the language with which they are most comfortable (Boit et al., 2020). Evidence from effective schools with low social diversity shows that they have well-equipped school libraries (Delgado-Galindo et al., 2024). However, these strategies have not yet been examined in effective schools with higher levels of social diversity.

Another relevant school-level strategy identified in effective schools with low social diversity is a shared commitment to cooperation with parents (Celedón et al., 2022; Intxausti et al., 2017), reflected in consistent teacher–parent coordinated approaches to homework to encourage parents to engage in shared reading or counting activities at home (Aierbe-Barandiaran et al., 2023; Delgado-Galindo et al., 2024). However, little is known about how these dynamics operate in socially diverse effective schools.

At the classroom level, Napoli et al. (2021) and van der Sande et al. (2023) highlight the importance of the teacher providing concrete activity suggestions. Moreover, recent studies emphasise the relevance of cooperative approaches in which parents contribute ideas for home activities rather than merely receiving information (Sari et al., 2025). For migrant and socio-economically disadvantaged parents, promoting shared play, manipulative activities (Tong et al., 2021; Williams and Williams, 2021) and joint reading with children (Niklas et al., 2020) appears to be particularly beneficial. However, little is known about what specific recommendations teachers in socially diverse and effective schools implement at the classroom level, and how they do so, to foster literacy and numeracy environments at home.

We aim to answer the following research questions:

- (1) How do parents of students at effective schools with social diversity enrich the home literacy and numeracy environment?
- (2) What strategies do teachers at these schools implement to support parents in enriching the home environment?
- (3) What difficulties do parents of students at these schools encounter in enriching the home literacy and numeracy environment?

Materials and methods

The research methodology was qualitative. In line with its objectives, the present research was grounded in the constructivist paradigm (Creswell and Creswell, 2018), which aims to understand the specific contexts in which people live and act, as well as to capture the subjective meanings of their experiences. One of the strengths of this study was its inclusion of both parents and teachers to examine the complexity of how parents enrich the home literacy and numeracy environment, as well as the obstacles they face and the strategies teachers implement.

In the school effectiveness research line, it is common practice to conduct a multiple-case study when seeking to deepen one's understanding of effective schools (Bellei et al., 2020; Curry et al., 2009). We conducted a multiple-case study in which two cases were selected to examine both individual and common characteristics that contribute to their effectiveness (Day, 2017; Lodico et al., 2010; Stake, 2005).

Participants

In collaboration with the technical staff of the ISEI-IVEI of the Department of Education of the Basque Government, the most effective early childhood and primary education schools in the BAC were chosen. The following criteria were established: (1) they scored more than five points of added value in mathematical and scientific competence on their 2015 and 2017 diagnostic assessments, the two most recent diagnostic assessments with systematised results at that time; (2) more than 25 per cent of the students had low SECI scores; (3) more than 10 per cent of the students were migrants; and (4) there were more than 30 students in fourth grade.

Three schools in the BAC met the criteria. The technical staff at ISEI-IVEI prepared and provided us with a list of these schools, identified by codes to protect their confidentiality. For our part, we selected the two schools with the highest added values on the aforementioned diagnostic assessments. Table 1 shows the characteristics of the participating schools.

Table 1. Characteristics of the participating schools

	Low SECI	Minority ethnic background	Added value Maths DA17	Added value Maths DA15	Added value Science DA15	Added value Science DA17	Number of students in fourth grade
School A	26.7%	10.05%	+14.48	+17.41	+14.21	+24.22	32
School B	29.5%	11.85%	+18.15	+6.91	+17.21	+17.91	50

We used convenience sampling. The following inclusion criteria were applied to the participating parents: (1) the group of parents reflect the socio-economic and origin diversity of the schools; (2) these parents have varying levels of involvement in the school. The president of the family association at School A and the principal of School B compiled lists of parents who met these requirements. One of the authors contacted the parents and conducted the interviews with participants' informed consent.

In School A, 16 families were interviewed (14 mothers and 3 fathers); in School B, 18 families were interviewed (17 mothers and 3 fathers). Most interviewees were women; this proportion reflects the social reality of who participates more, and similar distributions are observed in other research studies (Barquín et al., 2022; Quintas-Quintas et al., 2022). Table 2 shows the characteristics of the participating parents.

Table 2. Characteristics of the participating parents

	School A			School B		
Origin	71% native (n = 12)	29% migrant (n = 5)		70% native (n = 14)	30% migrant (n = 6)	
Gender	82% women (n = 14)	18% men (n = 3)		85% women (n = 17)	15% men (n = 3)	
Level of education	47% uni. (n = 8)	35% vocational training (n = 6)	18% basic (n = 3)	10% university (n = 2)	75% vocational training (n = 15)	15% basic (n = 3)
Employment status	82% employed (n = 14)	18% unemployed (n = 3)		65% employed (n = 13)	35% unemployed (n = 7)	
Type of interview	94% indivi. (n = 15)	6% pairs (n = 1)	0% group (n = 0)	80% indivi. (n = 12)	13% pairs (n = 2)	0.7% group (n = 1)
Subsidised	25% yes (n = 4)	75% no (n = 12)		33% yes (n = 6)	66% no (n = 12)	
School Council representative	29% yes (n = 5)	69% no (n = 11)		17% yes (n = 3)	83% no (n = 15)	
Parents' Association representative	31% yes (n = 5)	69% no (n = 14)		33% yes (n = 6)	67% no (n = 12)	
Parents' Association member	100% yes (n = 16)	0% no (n = 0)		89% yes (n = 16)	11% no (n = 2)	

Notes: Rows 1–4 show details per participant. Rows 6–9 show details per family.

When selecting the teachers, the following criteria were considered: (1) the group of teachers should include a tutor from each cycle, a specialist teacher and the management team (director, head of studies and secretary); and (2) the teachers should have varying levels of seniority. The principals of the two schools compiled lists of teachers who met these requirements and organised the interviews. The interviews were conducted with the participants' informed consent.

At each of the two schools, 11 teachers were interviewed: the three management team members, four early childhood education teachers, three primary education tutors and a music teacher. All interviewees were women (there was only one male teacher across both schools).

Data collection instruments and procedures

Data were gathered through semi-structured interviews (n = 53). At School A, the dataset included 11 individual interviews with teachers, 15 individual interviews with parents and one paired interview with both parents from the same family.

At School B, we conducted 11 individual interviews with teachers, 12 individual interviews with parents, two paired interviews with both parents from the same family and one group interview with four mothers representing four different families.

The interview guide covered the following thematic areas: the families' life contexts, the HLE, parent-teacher relationships and parental involvement in the school's activities. This article examines how parents enhance the home literacy and numeracy environment, as well as the obstacles and strategies that shape this process.

The 53 interviews ranged from 37 to 130 minutes and were audio recorded. They were conducted in Basque ($n = 41$) or Spanish ($n = 12$), depending on the participants' preference.

Data analysis procedure

The transcriptions were analysed using qualitative descriptive content analysis, following Ruiz Olabúnaga (1999), with the support of MAXQDA software (version 20.0.8b).

A deductive-inductive coding process was applied. Initially, a deductive approach was used to develop an initial list of codes based on the scientific literature. Two researchers analysed one interview from School B, first independently and then jointly, reaching agreement on the preliminary codes.

Second, an inductive approach was applied. These initial codes were applied to all interviews from School B. As additional transcripts were examined, new codes emerged, and some existing codes were refined.

Finally, once the coding system was agreed upon, all interviews were recoded. The analysis focused on reporting participants' statements verbatim, and the frequency of each code was calculated to provide a descriptive overview of the data. For clarity, deductive codes are presented in lowercase and inductive codes in uppercase in Table 3.

Table 3. List of codes related to our objectives

Dimension	Code	Description
HLE	Home literacy environment	The set of literacy resources, activities, attitudes and beliefs that parents promote in everyday life
	Home numeracy environment	The set of numeracy resources, activities, attitudes and beliefs that parents promote in everyday life
Strategies	Home literacy environment	Strategies implemented by teachers to support parents in enriching the home literacy environment
	Home numeracy environment	Strategies implemented by teachers to support parents in enriching the home numeracy environment
Difficulties	Age of the children	Decreased enrichment in the HLE due to the children being very young or getting older
	Lack of interest	Lack of motivation to promote the activities on the part of parent or child
	Student low achievement	Decreased enrichment in the HLE due to negative learning outcomes for students
	Parental role	Difficulties arising from the perception that parents are not significant in enriching the HLE
	Language barriers	Language constraints that make it difficult to support the HLE: low proficiency in Basque (the language of instruction) or Spanish
	Time and energy	Difficulties related to parents' work schedule or to activity overload on the part of the children

During the recoding phase, the quality of the data analysis was assessed through inter-observer reliability. Two experts from the research team acted as independent judges and analysed two interviews: one of a mother from School B and one of a teacher from School A. A total of 765 citations were classified into 121 codes.

Inter-observer reliability was calculated using the Brennan–Prediger kappa coefficient, which yielded a value of 0.86, indicating a high level of agreement. Once consensus on the coding system was reached, the remaining interviews were analysed. Throughout this process, the researchers met regularly to verify the categorised citations and resolve any doubts.

Abbreviations are used to protect participants' anonymity (NP = native parent; MP = migrant parent; T = teacher).

Results

Home literacy and numeracy environment

The dimension appears 73 times across both schools (35 in School A and 38 in School B). Specifically, 53 references concern the home literacy environment (24 in A, 29 in B) and 20 involve numeracy (11 in A, nine in B).

In both schools, participating parents report creating a home environment that fosters their children's literacy and numeracy. Migrant and native parents explain that they promote reading (31 references: 13 in A, 18 in B) through reading together, reading in the language of instruction and in their own language, setting reading routines before bedtime, organising sibling support and maintaining access to books, whether purchased or borrowed from the library. Parents in School A additionally act as reading models and design structured reading plans, whereas parents in School B refer to reading posters and catalogues outside the home.

I do it often [read] ... The little one looks at me like I'm from outer space ... And I tell him, 'Yeah, I like it, it's relaxing.' (NP4, School A)

Parents in School B also describe how they support their children's writing: practising writing, teaching the alphabet of their own language and checking their children's writing on homework (four references).

Parents in both schools – migrants and natives – report helping their children with arithmetic (17 references: nine in A, eight in B) through informal activities: teaching Excel, playing the Goose Game, playing cards, doing puzzles and cooking. Parents in School A emphasise explaining the value and usefulness of arithmetic in everyday life. Conversely, parents in School B focus on teaching multiplication tables.

My little boy ... loves cooking. He loves it! We make cookies every weekend with him. (MP5, School B)

Although the home literacy and numeracy environment is generally established and promoted, some native parents report limited contributions. In School A, a few native parents do not engage in reading activities because they do not enjoy reading (two references). In School B, one native mother explains that she does not support her child with arithmetic because teachers consider the child's level to be sufficient (one reference).

Some parents use books to get their children to fall asleep; I use massage, and that's all. Well ... it depends on whether you have that interest. (NP5, School A)

However, most teachers perceive that the home literacy and numeracy environment – among migrant and native parents – is not sufficiently enriched (13 references: nine in A, four in B). Teachers at School A explain that the HLE is often limited, either due to perceived resistance or to an inability to support it. In School B, teachers note that the students who struggle the most are precisely those who receive the least enrichment.

Relaxing with them, ... playing cards, parcheesi, games like that ... And I think things like that are being lost, yes, it certainly seems so. (T1, School A)

Only a minority of teachers describe enriched home literacy and numeracy environments (five references: two in A, three in B), referring to parents who regularly provide literacy or numeracy experiences at home.

I think it gets done, yes. We ask the children whether they read every night, and most do. (T3, School B)

School strategies to enrich the home literacy and numeracy environment

We found 84 examples of this code (42 in School A and 42 in School B). Parents and teachers from both schools refer to the mechanisms teachers put in place to enrich the home literacy (36 in A, 36 in B) and numeracy environments (six in each).

At the school level, both schools link homework to promoting a home literacy and numeracy environment (17 references: six in A, 11 in B). Native parents and teachers explain that both schools have an agreed policy stating that daily reading constitutes homework; students record in their personal planners that they must read for 10 minutes each day. Additionally, primary school teachers in School A assign written mathematics exercises, whereas those in School B assign multiplication table reviews. However, migrant parents do not mention homework as a strategy.

They read and review the times tables every day in fourth grade. And then there's another worksheet, I wouldn't say every day, sometimes about a reading, or sometimes it's a maths worksheet. (T6, School B)

Another school-level strategy mentioned by native parents and teachers, but not by migrant parents, is structured collaboration with the municipal library (13 references: six in A, seven in B). Every Friday, teachers send a note to a family asking them to bring a book borrowed from the municipal library to class.

It links the school, the family, the love of reading and the library. The children carry a backpack on Fridays; they must go to the library with their family. Those who don't have a library card can get one right away, free of charge. (T4, School B)

In the following excerpt, one interviewee from School A describes the cosy classroom library – a feature currently being systematised in that school – and explains how its warm décor fosters a love of reading. In both schools, however, students choose a book from the classroom library each week and take it home. Similarly, in both cases, the school library allows students to borrow books in Basque (12 references: eight in A, four in B).

This year ... they set up an area as a 'library corner'. They have a corner there with mats and blankets and they have reading time This year, she's reading more than in other years. She's reading a lot, because she wants to, not because she must. (NP3, School A)

At the classroom level, parents – migrants and natives – and teachers refer to the dissemination of recommendations and information (42 references: 22 in A, 20 in B). Both schools report that teachers advise parents to select texts and topics that match children's interests and age. Additionally, teachers suggest that parents set aside daily, cosy, quiet moments for reading with their children. Regarding numeracy, teachers from both schools propose manipulative activities and games such as *Parcheesi* or card games. Furthermore, in School A, information on the development of mathematical competence is transmitted primarily through individual meetings and evaluation reports.

Yes, they tell us how ... how to do it ... You put chickpeas on the table and say 'two plus five' ... They see it and count, and then it's easier. (NP10, School B)

Obstacles to the home literacy and numeracy environment

A total of 19 examples of this code were identified (12 in School A and seven in School B).

In these effective schools with social diversity, interviewees mentioned several obstacles at the student level. The obstacle most frequently cited by native and migrant parents, as well as by teachers in both schools, is children's lack of interest (seven references: three in A, four in B). It is difficult to encourage the habit of reading when their children show no interest in it.

They don't like me to read to them. I'd like to, but neither my older child nor the younger one likes it. (MP3, School A)

A second difficulty pointed out by native parents and teachers in both schools is the lack of time (six references: three in each), whether due to children's extracurricular activities or parents' work schedules. Families often arrive home too late and are too exhausted to participate in literacy and numeracy activities.

They must read every day. But of course, there are times when it's difficult. They go to the pool, they get home, it gets late ... Well, the child reads in bed, even if it's just a page, one page. (NP3, School B)

At School A, teachers also attribute migrant parents' limited enrichment in the home literacy environment to language barriers (four references). Some parents do not have a good command of the language of instruction, Basque. Therefore, parents cannot accurately assess children's reading abilities in Basque. Additionally, teachers find it challenging to convey the importance of reading to some parents due to a lack of shared language.

If the Senegalese child goes to read a book or a story, who will help him at home? His father? His mother? He'll read, 'you read, or the teacher will scold you'. But what we don't have is: 'you read well', 'you're reading so well'. (T5, School A)

Other difficulties are also mentioned in School A. A teacher emphasises the role of parents (one reference). Some parents prioritise avoiding complaints and frustration, so they do not press their children to engage in these activities. Additionally, a native parent notes that, as children grow older, they are read to less at home and at school (one reference).

There were half a dozen or so, for whom it was difficult to get them involved in reading ... There's such a liberal culture today, please, don't say that to my little darling, don't force them ... I don't want my child to get frustrated ... I don't want my child to feel bad. (T5, School A)

In School B, another obstacle is mentioned. One teacher notes that the parents of students with the lowest levels of achievement tend to support home literacy and numeracy the least (one reference).

Discussion

The present study examines how parents in effective schools with social diversity enrich the home literacy and numeracy environment, the strategies teachers adopt to support parents and the obstacles they face. A consistent finding in the literature on effective schools with low social diversity is that parents tend to foster a rich home literacy and numeracy environment (Costa and Araújo, 2018; Delgado-Galindo et al., 2021; Kirss et al., 2021; Ortiz-de-Villate et al., 2021). This study shows that this feature is also present in effective schools with social diversity, while adding a novel perspective: previous research had not incorporated parents' voices. Native and migrant parents mention multiple ways they support reading and numeracy. The strategies – reading daily with their children in the home language or embedding numeracy into cooking or playing games – have been documented outside the field of educational effectiveness (Chowbey and Barley, 2022; Coba-Rodriguez and Jarrett, 2022; De Keyser et al., 2020; Napoli et al., 2021; Pandith et al., 2022). This research confirms their presence within effective schools with social diversity.

Significantly, our study also shows that parents describe less well-documented forms of literacy and numeracy enrichment. Parents in both schools mention establishing reading routines before bedtime, organising sibling support for reading, teaching children how to use Excel and keeping books at home. These practices suggest that parents in effective schools can mobilise resources available within their municipalities and family networks. This contrasts with previous studies that point out limited access to resources among migrant or socio-economically disadvantaged parents (Cheung et al., 2021; Ebert et al., 2020). In our study, such limitations appear to have been mitigated, possibly due to the strategies implemented by the effective schools.

The study also reveals case-specific ways in which parents support literacy and numeracy at home. In School A, parents try to convey the importance of literacy and numeracy through modelling and parent–child interactions. At School B, parents are more limited to formal and informal reading, writing and arithmetic activities.

Teachers' views on how parents support literacy and numeracy at home differ notably from parents' own accounts. While most teachers reported that parents are rarely involved, parents reported implementing multiple strategies. One plausible explanation for this discrepancy is limited or ineffective communication between the two parties. Parents may be making significant efforts that go unrecognised by teachers.

Turning to the strategies implemented by teachers and organising them using the DMEE, at the school level, both schools in this study address resource constraints by encouraging the use of libraries. These mechanisms ensure that families have access to texts in the language of instruction. This finding aligns with studies that highlight the importance of providing resources to enrich the home literacy environment (Altun et al., 2022; Chowbey and Barley, 2022; Lobo et al., 2025). It also aligns with research on effective schools with low social diversity, which shows that they maintain well-equipped libraries (Aierbe-Barandiaran et al., 2023; Delgado-Galindo et al., 2024; Intxausti et al., 2017). The present study suggests that similar strategies are implemented in socially diverse effective schools. However, migrant families did not recognise these library-related actions as the school's strategies. This may indicate the need to ensure multilingual and culturally representative collections (Boit et al., 2020; Garcia and Hasson, 2004), especially given that migrant families often promote reading at home in their family language.

Homework also emerges as a school-level strategy. Teachers and native parents mentioned it, but migrant parents did not. This absence may reflect the difficulties they face when helping their children with such tasks. Research on effective schools with low social diversity has shown that cooperation with parents, agreeing on how homework should be organised, is a key strategy (Celedón et al., 2022; Delgado-Galindo et al., 2024; Intxausti et al., 2017). However, in this study, although both schools have a shared homework literacy and numeracy policy, it was not created in collaboration with parents. These findings indicate that patterns of cooperation may vary between effective schools with higher and lower levels of social diversity.

Classroom-level strategies that promote the home literacy and numeracy environment have received limited attention in research on effective schools. In our study, teachers and parents – native and migrant – emphasised the importance of teachers' recommendations to parents. Notably, for migrant families, these recommendations were the only strategy to support literacy and numeracy at home. This shows that, in socially diverse effective schools, teachers' recommendations for informal home literacy and numeracy practices are central to enriching the HLE, reinforcing and extending prior evidence of their pivotal role (Napoli et al., 2021; van der Sande et al., 2023; Williams and Williams, 2021).

The difficulties identified by participants correspond to the student-level factor within the DMEE. Lack of time and interest appear in both schools. Each school also reported specific obstacles: limited proficiency in the language of instruction, uncertainties about parental roles, and the belief that parental support declines as children age or when academic performance is low. These findings reinforce and extend earlier work (for example, Boit et al., 2020; Carmona, 2019; Fan et al., 2018; Hoover-Dempsey et al., 2005) by situating these difficulties within an educational effectiveness framework.

Conclusions

Our study examined the home literacy and numeracy environment in two effective schools with social diversity. Among our conclusions, informal literacy and numeracy activities recommended by teachers at the classroom level closely reflect those that parents report implementing at home. Better communication between parents and teachers would enable teachers to better understand parents' everyday practices, promoting more aligned perceptions.

The most effective strategies are implemented at the classroom level. In contrast, school-level strategies, such as homework policies or the structured use of libraries, seem to be significant mainly for native parents and teachers. Immigrant parents do not perceive them as relevant, suggesting that current systematised strategies need modification to be meaningful to all parents.

Teachers have established processes that enrich the home literacy and numeracy environment, supporting economically disadvantaged parents in fostering a stimulating and supportive home setting.

Teachers not only make the school's resources accessible to families and capitalise on opportunities offered by the municipality but also have established dynamics that obligatorily link parents to these resources, thereby adding value.

Despite these efforts, several student-level difficulties persist in both effective schools. Lack of time and children's lack of interest emerge as shared challenges. Linguistic limitations appear to be an additional obstacle, though they are more pronounced in one school, despite both schools having a similar proportion of migrants. This suggests that language-related barriers depend not only on family background but also on how schools respond to the needs of multilingual families.

Regarding study limitations, research was conducted in only two schools, and migrant parents who do not speak either of the two official languages of the Basque Country were not interviewed. Including more migrant parents in future studies could yield further insights into the challenges of supporting children's education.

Implications

The findings have several practical and policy implications. Effective schools with social diversity can serve as models for other schools. Sharing knowledge and strategies enables others to adapt what is most appropriate to their contexts and to systematise what is most successful. This suggests the need for greater effort by educational administration when considering resources to promote networks among schools.

School policies should promote mutual listening, cooperation and joint decision-making between parents and teachers. School-level strategies need to be adapted to a stronger intercultural focus to ensure that all parents, particularly migrants, can engage meaningfully.

Homework and other recommended activities should be redesigned or rethought. Teachers must be aware that not all parents can help with homework in the same way. The proposed homework should either not require parental collaboration or be of a type that allows parents of all kinds to collaborate.

Addressing some difficulties, especially linguistic barriers, requires not only school communities but also other municipal agents to respond, particularly during time spent outside of school.

Research could be extended to a larger number of schools, including low-performing ones, and could incorporate the perspectives of all members of the school community. All of this would help to deepen understanding of the HLE and to identify the most effective practices.

Declarations and conflicts of interest

Research ethics statement

The authors declare that this research was reviewed and approved by the Research Ethics Committee of the university at which the project was carried out (HUHEZIT-21-26-PEIES).

Consent for publication statement

Not applicable to this article.

Conflicts of interest statement

The authors declare no conflicts of interest with this work. All efforts to sufficiently anonymise the authors during peer review of this article have been made. The authors declare no further conflicts with this article.

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