

Learning foreign languages: experiences of persons with disabilities and special educational needs and their teachers

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Learning foreign languages: experiences of persons with disabilities and special educational needs and their teachers

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Editorial: Learning foreign languages: experiences of persons with disabilities and special educational needs and their teachers

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KEYWORDS

foreign language learning and teaching, learners with special educational needs, English as a foreign language, language teacher education, learners with disabilities

Editorial on the Research Topic

[Learning foreign languages: experiences of persons with disabilities and special educational needs and their teachers](#)

Introduction

In an increasingly interconnected world, foreign language proficiency has shifted from an educational advantage to a fundamental necessity. Languages function not only as tools for communication but as gateways to cultural understanding, educational opportunity, and social inclusion. Yet, a critical gap persists in language education research: understanding how students with diverse learning needs and their teachers navigate foreign language classrooms. This Research Topic, *Learning foreign languages: experiences of persons with disabilities and special educational needs and their teachers*, addresses this gap by examining experiences of students with various disabilities and learning challenges across Europe.

This Research Topic presents cross-national perspectives on how students with visual or hearing impairments, physical disabilities, and special educational needs (SEN) engage with foreign language learning. It offers insights into students' attitudes and strategies, while also exploring educational approaches, technological supports, and pedagogical innovations that either facilitate or hinder their progress.

Research context and significance

Foreign language learning presents distinct challenges and opportunities for students with diverse learning needs. Unlike many academic subjects, language learning engages multiple sensory and cognitive processes—from auditory processing and visual recognition to memorization and social interaction. For students with sensory, physical, or cognitive differences, traditional methods may pose substantial barriers to participation and achievement.

Theoretical framework

This research draws on a multidimensional framework integrating inclusive education, foreign language acquisition, motivation theory, and disability studies. Rather than framing SEN as individual deficits, we view them as emerging from the interaction between personal characteristics and environmental contexts.

Students with diverse learning needs are not a homogeneous group. Each brings unique strengths, challenges, and preferences to the language learning process. We have aimed to avoid overgeneralizing findings while still identifying meaningful patterns to inform responsive educational practices.

Research methodologies

The studies employ a complementary mix of methodologies. Readers will find quantitative analyses of engagement, qualitative explorations of student perspectives, case studies of innovative practices, and mixed methods integrating multiple data sources.

This methodological pluralism provides both breadth and depth in understanding inclusive language education. Quantitative data reveal broad patterns, while qualitative components capture contextual nuances and lived experiences.

Special attention was given to making research methods accessible. Traditional approaches often exclude participants with certain disabilities. We adapted instruments and procedures to ensure meaningful participation across varied needs.

Key themes and findings

Several overarching themes emerge, offering insight into inclusive language education in Europe and suggesting paths for improvement.

First, students with diverse learning needs often show positive attitudes toward language learning, even when engagement and achievement vary. Chapter 1, *Beyond Barriers: Exploring Foreign Language Learning Experiences of Students with Diverse Learning Needs in four European countries*, by Karatsiori, Liontou, Domagała-Zysk, Vogt et al., shows that learning attitude scores exceed engagement scores, suggesting barriers are more related to access and delivery than to motivation. This challenges deficit-based assumptions and highlights untapped potential.

Second, assistive technologies can enhance access when properly implemented. As shown in Chapters 2 entitled *Enhancing EFL writing skills for adult Deaf and hard of hearing individuals* written by Chomicz, many students report limited instruction in using these tools, signaling a need for better training and support.

Third, research underscores the critical importance of multimodal and differentiated approaches to language instruction. Traditional methods relying heavily on auditory or visual input create barriers for students with sensory or cognitive impairments. Chapter 3, *Literature for all in Poland? Opportunities and challenges of easy to read standard in special education for the d/Deaf students in primary school - preliminary remarks* by Ruta-Korytowska and Wrześniewska-Pietrzak, chapter 4, “Language means freedom to me” perspectives of Deaf and hard-of-hearing students on their experiences in the English as a foreign language classroom by Urbann et al., chapter 5 *Learning outcomes of project-based learning activities on access to functional diversity terms*, by Campoy-Cubillo, chapter 6, *Teaching a second language to learners with mild intellectual disabilities – a Hungarian case study*, by Nemes, and chapter 7 *English learners with dyslexia benefit from English dyslexia intervention: an observational study of routine intervention practices* by Middleton et al.—each of them explores how diversifying instructional approaches and assessment methods can improve access for all.

Fourth, teacher preparation remains a challenge. Across all countries studied, many educators lack training in adapting instruction for students with SEN. However, Chapter 8, *Learning styles and strategies of D/deaf and hard of hearing students in foreign language acquisition—a research report* by Olszak and Borowicz demonstrates that with appropriate support, teachers can help students to develop effective and creative learning styles and inclusive language strategies.

Finally, motivation is influenced by factors beyond the classroom. Chapter 9, *Internal motivation vs. learning environment support in EFL: evidence from students with diverse learning needs across four European countries*, by Karatsiori, Liontou, Domagała-Zysk, Poredoš et al. draws attention to the fact that internal motivation is not only tied to teacher or peer support, highlighting the crucial role of family encouragement.

Implications and future directions

This research has important implications for policy, teacher preparation, and classroom practice. It challenges narrow views of inclusion as mere physical placement, advocating instead for meaningful participation. Instead, it points toward a more nuanced understanding of inclusive language education that recognizes both common principles and the need for individualized approaches.

We hope this work contributes to systems that support all students in becoming confident, capable users of foreign languages. In a multilingual world, language proficiency is a key to global participation. Students with diverse needs deserve educational pathways that respect both their challenges and capacities.

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"Language means freedom to me" perspectives of Deaf and hard-of-hearing students on their experiences in the English as a foreign language classroom

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Introduction: Teaching English as a foreign language (EFL) to Deaf and hard-of-hearing (DHH) students is regarded as a major challenge. The aim of the study is to examine the perspectives of DHH students regarding their experiences in the EFL classroom.

Methods: Utilizing a qualitative design, semi-structured interviews were conducted with 17 former DHH students who learned English at German schools for the DHH.

Results: The findings reveal various language combinations within the EFL classroom, which entirely depend on the teacher. Several critical aspects of the EFL classes were highlighted, including the insufficient foreign sign language competences of teachers, the juxtaposition of German Sign Language (DGS) signs and spoken English, and the lack of Deaf cultural content and awareness in the teaching. Additionally, the absence of interactive engagement in the EFL classroom was noted as a significant issue. Based on the DHH students' EFL learning experiences, both English and American Sign Language (ASL) served as foreign languages for young DHH individuals, particularly in the context of international communication and social media engagement.

Discussion: This study underscores the importance of integrating ASL into EFL classrooms to better support DHH students' language learning needs. The findings highlight the critical role of teacher training in ASL and the necessity for standardized approaches to EFL instruction. By aligning teaching practices with students' lived experiences and incorporating sign language, educators can foster more inclusive, effective learning environments that not only enhance academic success but also affirm students' identities and rights.

KEYWORDS

Deaf, foreign language, teaching, interview, sign language, students

1 Introduction

This research is based on the understanding of Deaf and hard-of-hearing (DHH) people being bimodal-multilingual learners. Bimodal multilingualism refers to the learning and use of languages in two different modalities: spoken languages, which are conveyed acoustically or in writing, and sign languages, which are expressed manually and perceived visually. While the acquisition of a spoken language is only partially possible for DHH individuals, even with technical support, sign languages are fully accessible to DHH students when offered. Signed

and spoken languages show very little articulatory or perceptual overlap, and signed languages have no standardized, widely-used written systems (Becker and Jaeger, 2019). Despite empirical evidence demonstrating the benefits of sign language proficiency for processing written forms of languages (Villwock et al., 2021), the inclusion of sign language in teaching is not standard practice.

Acquiring English on an intermediate to professional level is a requirement of inclusion, as English competence opens doors to international academic and professional opportunities and enriches leisure activities. The aim of English as a foreign language (EFL) teaching is the preparation for authentic (real-world) language interactions (Berlin Senate Department for Education, Youth, and Science, 2015). In Germany, students mandatorily begin learning English in primary school across all federal states. The same applies to DHH students following the mainstream curriculum: DHH students must acquire a certain (high) level of English proficiency in order to pass nationwide standardized exams, gain entrance to tertiary education and to become - just as their hearing peers - global citizens who are able to navigate international settings of any kind (Bartz and Eitzen, 2016). Despite the importance of the subject, teaching EFL to DHH students has been broadly discussed as a major challenge for teachers (see Urbann, 2020, for an overview). For example, a specific training on how to teach English to DHH students is nonexistent. In the current teacher training programs in Germany, DHH education and the subject of English are studied separately, resulting in a lack of overlap and integrated content. Inadequate teacher education leads to frustration and a wide, inconsistent spectrum of EFL classroom practices. To gain insights into these practices through the perspective of DHH students in Germany, this qualitative interview study was conducted. The following section outlines the potential languages and language systems that may be used in EFL classrooms with DHH students. Additionally, it provides an overview on the current state of research, summarizing existing findings in the field and highlighting the relevance of this study.

2 Background

Sign languages, such as DGS, are fully fledged languages with a distinctive grammar and syntax that differ from languages in spoken and written forms. Sign languages use spatial grammar and rely on visual-spatial modality, incorporating movements of the hands, facial expressions, and body language to convey meaning [see Pfau et al. (2012) for DGS]. Specifically, sign languages used in countries with English as an official language (or a national language and *lingua franca*) are not identical but differ fundamentally in linguistic terms. Broadly speaking, these sign languages include American Sign Language (ASL) and the British-Australian-New Zealand Sign Language (BANZSL; Schembri et al., 2010). BANZSL is further subdivided into British Sign Language (BSL), Australian Sign Language, and New Zealand Sign Language according to the respective countries. ASL is primarily used in the United States and Canada, but also in other countries where individuals with ASL proficiency have influenced the educational landscape, such as in Guatemala or Ghana (Nyst, 2007; Parks and Parks, 2008). Also ASL has been influencing International Sign, which is not a natural language but “a set of conventions [...] that some authors have said are pidgin-like” (World Federation of the Deaf and World Association of Sign Language Interpreters, 2019, 1). Looking at general teaching practices with DHH students again, sign language mixed with spoken language is also used.

On the one hand there exist artificially created combined forms such as Signed Exact English (SEE) or Signed English (SE) that follow prescribed rules. Unlike ASL, these artificially created combined forms follow the English word order and grammar rules. SEE and SE are systems of manual communication by visually representing the English language. These manual communication systems are primarily used in educational settings to support the development of English literacy competencies of DHH students. On the other hand, there is contact signing [also known as Pidgin Sign(ed) English], which combines spoken English with ASL in a free and ‘natural’ form. In addition to using ASL signs, facial expressions are employed to mark different sentence types and emotions, and the signing space is utilized (Baker-Shenk and Cokely, 1996; Reilly and McIntire, 1980; Woodward, 1973). The German equivalent to contact signing is Sign Supported German. Within this system, German signs are used in conjunction with spoken German to provide additional visual information, thereby supporting or clarifying the spoken message. Both Sign Supported German and contact signing do not possess their own grammars but instead follow the grammars of the spoken or written forms of their respective languages (Steinbach et al., 2007). German Signs with English Mouthing appears as a special form that occurs in English as a foreign language teaching in Germany, where spoken English is accompanied by signs from German Sign Language. This mode of communication is not a natural language but rather a type of auxiliary system.

Since the 2000s, (inter-)national empirical work and practice reports on the discourse of “teaching English to DHH students” have been presented, resulting in a broad spectrum of discussion. The methodological approaches vary greatly, which affects the validity of the publications (Kang and Scott, 2021). In certain publications, the authors describe the teaching of English with a specific group of learners, or the authors explain their own teaching approach. More generally, Ay and Şen Bartan (2022, Turkey), Stoppock (2014, Germany) and Ramos Martin-Pozo (2022, Spain), describe didactic-methodological considerations for teaching English and adaptations of curricula for DHH students, especially focussing on the English in its written form, visualizations, and using technological tools. In the German context, the focus lies on the introduction of another sign language, namely ASL, into the EFL classroom. Bartz and Eitzen (2016) discuss the opportunities and limitations of ASL as contact signs in English classes in upper secondary level at a vocational school for the DHH in Germany. Kremp (2015) reports on her enriching ASL use in English classes. Poppendieker (2011) published a paper in which she traced her didactic choices regarding English instruction at the Elbschule in Hamburg, Germany, and discussed the use of SEE in her teaching (Poppendieker, 2011, 25). Bartz and Eitzen (2016), Kremp (2015), and Poppendieker (2011) agree that from a teacher’s perspective, the use of ASL has a positive impact on students’ motivation to learn English. As a result of their experiences, the four teachers also describe their impression that the memorization of English words is increased through the use of ASL signs and that the students can learn new ASL signs quickly and with appropriate methods (for example with the help of dictionaries). According to Poppendieker (2011), the acquisition of ASL signs leads to increased communication in the classroom, making the English class become interactive.

Other research describes how English language instruction is implemented in a school setting, such as an anonymous school in Kazakhstan (Sultanbekova, 2019) or the Dharma Bhakti Dharma Pertiwi Special School in Indonesia (see Puri et al., 2019). Complementary, Ristiani (2018) describes general challenges of

teaching English to DHH students in Indonesia without using the term “sign language” once. Both examples focus on a phonetic and written language approach. As an educator, the question is how to consciously choose an approach keeping in mind the diverse learner group and their individual needs and competencies. The current state of English language teaching with DHH students related to a particular for France country—was surveyed in studies by [Bedoin \(2011\)](#). [Kontra et al. \(2015a\)](#) for Hungary, by [Domagała-Zyśk \(2011, 2019\)](#) for Poland, by [Machová \(2019\)](#) for Czech Republic, by [Nisha and Gill \(2020\)](#) for India, by [Quay \(2005\)](#) for Japan, by [Pritchard \(2004\)](#); [Poppendieker \(2011\)](#) for Norway, and by [Uradarević \(2016\)](#) for Serbia. [Bedoin's \(2011\)](#) research is based on a questionnaire survey in 104 schools, comprising 12 semi-structured interviews with teachers, and 68 classroom observations. She concludes that there is a great diversity in teaching English to DHH students in France. In addition, she describes the challenges for teachers to teach English adequately, due to the lack of professional qualifications for teaching English to DHH students or in view of the great heterogeneity of the learning groups, among other factors. In order to improve the quality of English teaching, [Bedoin \(2011\)](#) calls for improved training of teachers who teach foreign languages to DHH students. All teachers who participated in her study were hearing; perspectives of students on their English instruction were not collected. Following the clear formulation in the introduction of [Bedoin's](#) article, where the author states “(t)he purpose is not to teach them a foreign sign language, such as British sign language (BSL) or American sign language (ASL), but standard written and/or spoken English” ([Bedoin, 2011](#), 160), the use of sign language is not discussed any further. In contrast, [Kontra et al.'s \(2015a\)](#) survey explicitly addresses the central role of sign language for DHH students. As one of the few studies in the field that actually gathered data and evaluated responses from different perspectives, the Hungarian research team conducted a questionnaire survey ($N=105$ students), interviews ($N=10$ teachers and $N=7$ principals), and also classroom observations. Three of the ten teachers interviewed had completed professional training in both English and teaching DHH students, four in one of the two subject areas (either English or Deaf education), and three in neither. Since auditory-verbal instruction was predominant in Hungary at the time of the survey, there was little or no use of sign language in English classes. The teachers interviewed wished to have more competencies in Hungarian sign language in order to have more lively exchanges with their students, as well as appropriate materials and methods for teaching English to DHH students to better motivate students to learn English [also see [Uradarević \(2016\)](#)]. Although students should have reached level A2 (“elementary”) of the “Common European Framework of Reference for Languages” in reading and writing by grade 8, teachers consider level A1 (“beginner”) to be more realistic.

European and international research more and more calls for the explicit integration of national sign languages in English classes. Along with [Kontra et al.'s \(2015b\)](#) call for Hungarian Sign Language, [Machová \(2019\)](#) makes a case for Czech Sign Language, as do [Nisha and Gill \(2020\)](#) for Indian Sign Language, and [Quay \(2005\)](#) for Japanese Sign Language (or ASL). A position contrary to these demands is taken by the Polish researcher ([Domagała-Zyśk 2019](#)). The use of Polish Sign Language should be reduced in English classes, she argues. In her numerous writings, Domagała-Zyśk does not comment on the possible inclusion of a sign language from an English-speaking country. Among other methodological impulses for teaching English to DHH students,

she has developed a modification of the National School Curriculum for English as a subject for DHH students (e. g. by dropping “pronunciation” as a learning objective or adding “getting to know famous DHH people from other countries”). Although English literacy is generally important from an educational perspective, DHH students do not participate in English classes everywhere. For example, in mainstream classes in Hungary, DHH students are excluded from foreign language classes ([Kontra et al., 2015a](#)). In Serbia, special regulations apply, according to which DHH students either do not participate in English classes at all or are taught according to an adapted curriculum ([Uradarević, 2016](#)). Also in Serbia, the focus of English lessons is on written language competence, although according to the author, speech and language exercises are also carried out with the support of a speech therapist, among others, and contrastive work is done with English and Serbian. [Berent \(2001\)](#) also takes up the aspect of the comparison of two written languages and discusses the specific challenges with regard to the acquisition of English grammar by comparing Czech and English. That students can successfully learn BSL was demonstrated by [Pritchard \(2011\)](#) in a small study [$N=29$ students (experimental group: $N=15$ DHH students and without additional disabilities who learned BSL; control group: $N=8$ Swedish bimodal-bilingual taught DHH students without BSL skills and $N=6$ hearing Norwegian students without sign language skills)].

[Pritchard \(2004\)](#) describes the situation of English teaching in Norway differently. In the early 2000s, BSL was introduced in grade 1, and English was not focused on any further than grade 4. In English classes, recordings of BSL-native signers were used as language models. In addition, numerous teachers in Norway were already trained in BSL through corresponding EU programs. In her positive remarks about teaching English with BSL, Pritchard emphasizes the professional quality of the teachers as a central factor for success. They should be competent in both English and BSL in order to be able to function not necessarily as linguistic role models, but primarily as competent learning facilitators. Teachers report that students are highly motivated to learn BSL, regardless of their degree of hearing loss or their preferred mode of communication. The previously mentioned Hungarian group of researchers looked at more in-depth aspects of English language teaching in the Hungarian context. As one of the research group members, [Kontra \(2013\)](#) retrospectively interviewed 23 DHH adults about their experiences in foreign language classes. The statements highlighted the barriers that DHH people face in language learning: An educational landscape that does not sufficiently address the needs of DHH people; a lack of appropriate teaching materials; a lack of well-trained teachers; a lack of sign language use and sign language competencies on the part of the teachers. The respondents were positive about the use of sign language (e. g. ASL) in the foreign language classroom, because it strengthens the motivation to learn the foreign language. The barriers described by [Kontra \(2013\)](#) were confirmed in another study by [Kontra et al. \(2015b\)](#). In this study, 31 DHH students were interviewed about their experiences in foreign language classrooms. The students reported needing extra help in foreign language learning and having to exert more effort, which led to low motivation to learn. In addition, many students felt that their own competence in Hungarian was not sufficient to learn another spoken language. At the same time, they considered the use of Hungarian sign language in foreign language classes as indispensable and highly motivating, which is also confirmed by [Kontra and Csizér 2013](#); ($N=331$) in an extended way

for a foreign sign language and in principle by [Csizér et al. \(2015\)](#). This study, which surveyed 96 DHH students from eight different schools, found that DHH students tend not to consider themselves as language learners and do not develop a positive vision here. This lack of an ideal vision of a ‘desired L2 self’ complicates the foreign language learning process.

Despite the critical descriptions of the current state of English language teaching, from which impulses for the design of English language teaching have been derived, there are hardly any empirical studies to date which examine the effectiveness of English language teaching, for example with regard to the learning level of the students ([Kang and Scott, 2021](#)). [Pritchard \(2004\)](#), for example, surveys students’ BSL competences and provides arguments for its use, but concrete statements on students’ English competences are missing. In addition, it is noticeable that most publications are written by hearing experts without openly reflecting this perspective. Publications that include the perspective of DHH people call for the use of a sign language from an English speaking country in EFL classes because it is assumed that it can increase students’ motivation to learn English and enable spontaneous international communication (for example [Poppendieker, 2011](#); [Kontra and Csizér, 2013](#); [Csizér et al., 2015](#); [Csizér and Kontra, 2020](#)). [Fister \(2017\)](#) states in her research that there is indeed no difference between hearing and DHH students of English in their motivational approach to learning English as a global language. However, the aspect of international communities that use International Sign or written English might be a contributing factor for DHH students that need further assessment in the future. For the sake of completeness, it should be briefly mentioned that some teaching methods were also evaluated. However, without much value for the EFL teaching itself, as they confirm the usage of established methods to teach DHH students in general: Their evaluation of teaching methods in the EFL classroom with DHH students indicates that visual support enhances vocabulary teaching effectiveness ([Birinci and Sarıçoban, 2021](#)), while subtitles and videos also prove to be effective ([Baranowska, 2022](#)).

In summary, the existing research findings include only a very limited number of research projects in the field of bimodal-multilingual EFL teaching. Also, there is a lack of comprehensive, country-specific research on EFL teaching practices to DHH students. While research by [Kontra et al. \(2015a\)](#) in Hungary and [Bedoin \(2011\)](#) in France offers valuable insights, a more comprehensive understanding of the diverse needs of DHH students in various educational settings, such as Germany, is essential. This study aims to examine the perspectives of DHH bimodal-multilingual students in German EFL classrooms.

3 Our study

To explore the perspectives of DHH students on their experiences in the EFL classroom at schools for the DHH in Germany, three research questions were investigated:

- 1 How do DHH students perceive the communication in the EFL classroom?
- 2 What do students perceive as challenges in the EFL classroom?
- 3 How do DHH students relate to English and sign languages from English-speaking countries?

3.1 Methods

To answer the research questions, semi-structured interviews were conducted and analyzed using qualitative content analysis according to [Kuckartz and Rädiker \(2022\)](#). The selection criteria and composition of the sample as well as the process of data collection and data analysis are described in the following.

3.2 Sample

The study’s sample selection criteria were carefully defined to ensure relevance and representativeness. Participants were required to meet the following four criteria: (1) Their everyday mode of communication is DGS, (2) they are at least 18 years old, (3) they left a school for the DHH in Germany not earlier than in 2014, (4) they attended schools for the DHH in Germany for at least ten years. The sample was recruited via Deaf community gatekeepers, e. g. associations of DHH young people. 17 young adults, who met the inclusion criteria and gave their informed consent to the study were included. They were between 20 and 27 years old and came from different federal states in Germany. Altogether, they went to 18 different schools for the DHH in Germany, which corresponds to almost a third of the schools for the DHH in Germany. All but two of the participants were university students. The following table shows the composition of the interview study sample in alphabetical order of the pseudonyms ([Table 1](#)).

3.3 Data collection

In the process of data collection, semi-structured interviews were chosen ([Supplementary material](#)). Due to pragmatic reasons (the interviewees came from different places in Germany) the interviews were conducted and recorded via the software Zoom. The interviews took place in DGS and were led by one of the authors, a native German signer with expertise in empirical interviewing. This person attended schools for the DHH in Germany herself, where she also learned English, following “DEAF-SAME” ([Kusters and Friedner, 2015, x](#)). DEAF SAME “emphasizes at the feeling of deaf similitude and [...] is grounded in experiential ways of being in the world as deaf people with (what are assumed) to be shared [...] experiences” ([Kusters and Friedner, 2015](#)). The basis of the interviews was an interview guideline that had been tested in a preliminary pilot study. This interview guideline can be viewed in the [Supplementary material](#) of this article. After a greeting, informed consent and the collection of some contextual data about the interviewee, the interview developed along the following three blocks of questions, among others: communication in the EFL classroom, criticism of the EFL classroom practices, the meaning of English and a sign language from an English speaking country to the former students. These blocks were assigned to the three research questions. All DGS interviews were translated into German by a professional sign language interpreter. The German translations were subsequently transcribed and cross-verified with the signed originals by two researchers of the team, both fluent in DGS and German, one of whom was the interviewer herself, to ensure accuracy and prevent translation errors.

TABLE 1 Characteristics of Participants

interview no.	age in years	pseudonym	occupation	no. of schools visited	graduation year
1	22	Alex	trainee	1	2019
2	24	Bo	university student	2	2019
3	20	Charly	university student	3	2022
4	26	Dani	employee	2	2017
5	22	Eike	university student	2	2018
6	25	Elis	university student	4	2018
7	27	Jona	employee and university student	3	2017
8	22	Kim	university student	2	2022
9	24	Lian	employee	2	2019
10	22	Lou	university student	3	2022
11	25	Luca	university student	2	2014
12	23	Noa	university student	3	2022
13	27	Rani	university student	2	2016
14	23	Robin	university student	3	2021
15	21	Toni	university student	2	2020
16	24	Willo	university student	3	2021
17	20	Uli	university student	2	2022

3.4 Data analysis

The analysis of the collected contextual data about the interviewees were conducted in tabular form. Before the qualitative analysis of the material, pseudonyms were assigned, and the names of schools, places, and teachers were removed from the transcripts to protect the sensitive data of the participants and shift the focus from the individuals providing the data to the content of the data itself. After that all interviews were summarized in preparation for the content analysis. The qualitative content analysis of the interview transcripts was carried out using MAXQDA 2022 (VERBI Software, 2021). In accordance with the analysis approach of Kuckartz and Rädiker (2022), the category system was initially derived from the research questions and further refined through an inductive analysis of the data material. For each category, a definition and coding rules were recorded in a coding guide, which ensured the uniform assignment of text passages to the categories within the research team. The original text excerpts were first reproduced in their own words (paraphrase). The wealth of statements per category was abstracted by summarizing them into superordinate statements or partial findings (generalization), from which the main findings were then derived. The development of the category system was based on 4 of the 17 interviews, which corresponds to 23.5% of the data material. The other data sets were then coded, whereby the category system was constantly checked and further subcategories were added. The number of subcategories vary according to the complexity of the main category. For example, the main category ‘criticism of English lessons’ has 16 subcategories, whereas the main category ‘importance of languages’ has only 3 subcategories. A tabular overview of the main 4 categories and subcategories can be found in the [Supplementary material](#). Consensual coding was employed throughout the whole process, involving four individuals who worked in alternating tandems to ensure reliability and validity in the coding process. All four researchers are fluent in

both German Sign Language and German. In cases of divergent coding within a tandem, the original material was reviewed, and a consensus was reached among all four researchers.

3.5 Results

The results’ presentation is structured according to the three research questions. Firstly, how DHH students perceive the communication in the EFL classroom.

3.5.1 Various language combinations appear, exclusively depending on the teacher

Overall, the participants described nine different language combinations that are used in the EFL classroom. Besides written English, different sign languages were used: British Sign Language, American Sign Language and German Sign Language. Eike’s description of the continuous change between languages which depended mainly on the teacher was exemplary: “But there we alternated between BSL and ASL, depending on the teacher (...). The written language also alternated between British English and American English.” Also, the interview partners reported that German and English were spoken in the EFL classroom. Besides these two language modalities, mixed forms were also part of the teaching: Signed Exact English, Sign Supported German and German Sign Language with English mouthing. This leads to very diverse EFL teaching practices in which the use of languages depends exclusively on the teacher. The most common form of communication was a combination of German signs with English mouthing. The former students described this combination as highly confusing, for example Dani: “[...] to have German or the German gesture with English mouthing I did not get anything together at all. I did not understand anything.” What the former students recalled as positive and

beneficial throughout was the use of ASL. For example, Bo described the ASL experience as follows: “[...] and then Ms. X came to our class. And she signed ASL. And we sat there and could not believe it. And I just thought to myself: Yes, that’s it.” Despite the language and modality employed by the teacher, the former students naturally gravitated toward using the sign language that felt most intuitive and accessible to them for communication amongst themselves, as elucidated by Rani: “But among ourselves, I think we handled it in DGS and I think if it [classroom language] had been ASL, we probably could have used ASL as well. But we did not adopt this language mix-up among ourselves.”

Secondly, the question what DHH students perceive as challenges in the EFL classroom was addressed.

3.5.2 Insufficient ASL/BSL competences of teachers

In addition to broader criticisms like monotony in the EFL classroom and the pressure to excel, the interviewees mainly criticized the missing or inadequate ASL/BSL competences of their teachers. Elis formulated to the point: “And then, of course, it also requires teachers who can understand everything and that is the difficulty. So, I had teachers who of course did not fully understand me. Therefore, I did not sign fully in ASL, I had to adapt my language level to the teachers’ skills, the language I used had to be limited and these limited language skills were then assessed. In my opinion, that’s absolutely not okay. That’s transgressive in my opinion.”

3.5.3 Juxtaposition of DGS signs and spoken English

Moreover, the former DHH students consistently mentioned concerns about the haphazard and bewildering language mixture employed by teachers, particularly the juxtaposition of DGS signs and spoken English. This confusing language mix hindered comprehension and learning, resulting in demotivation and limited access to foreign language resources. Consequently, students, such as Willo, struggled to acquire language skills effectively. “[...] I simply could not understand everything, that English was spoken and German was signed and I could not get it all together afterwards. And I just sat frustrated at school and had to learn somehow.”

3.5.4 Teachers’ lack of ASL grammar competences

Following this point, the former students also critically highlighted the teachers’ lack of ASL grammar competences, as Lou mentioned in an exemplary way: “Well, the teachers just used this Sign Supported German. That’s why many of them simply did not know about the grammar in ASL.” Although the students criticized the teachers for their perceived lack of competences, they also expressed gratitude for the effort made to learn ASL and incorporate it into their teaching: “And then a new teacher came to our school as a trainee teacher and took over our class and she familiarized herself with ASL and also used ASL quite a lot. She had been learning it somehow for three and a half years and had worked her way into it. It wasn’t full-fledged, but at least it was more than before.” Building upon this criticism the interviewees demanded DHH students to be taught in full-fledged ASL in the EFL classroom.

3.5.5 Lack of Deaf cultural content and awareness

In addition to the absence of foreign sign language skills, the lack of Deaf cultural content in the lessons and the teachers’ insufficient Deaf cultural awareness were also critically noted: “And that you do not just take language and not just hearing culture. I’ve always had the

impression that only hearing people were given a closer look at English-speaking culture and I think as a Deaf person you identify more with Deaf persons and Deaf culture. And that was completely missing.”

3.5.6 Substituting spoken English

In general, the use of spoken language within the EFL classroom was perceived as meaningless by the former DHH students. Most interviewees only considered the use of spoken English of some importance when it came to the issue of spoken language exams and how their school and English teacher(s) dealt with this particular challenge. Some interview partners reported they were sometimes only offered oral exams or listening comprehension exercises. Besides oral exams and listening comprehension exercises, some students, especially the ones with general qualification for university entrance, had chat exams instead of oral exams in their last years of school and highly criticized this exam form as well, e. g. Bo: “At X school we had chat exams. These exams were incredibly criticized. Because the person sitting opposite us, which means the person we chatted with, was drawn by lot. [...] So we were given these tasks. We always dealt with the topics a bit beforehand. We were then allowed to write a text. So it was just a chat. Then at some point the time was up. Then we sent it to one person. And I did not know who it was. This person was sitting in another room and was sent my text. And then I was supposed to take on a role based on a task. Be it the boss, be it the salesperson. Be it person XY. So I looked at the text. And my counterpart was also given a role. And we were supposed to enter into a dialog, but in chat form. [...] And that’s what the exam looked like. The bad thing about it was that, on the one hand, the program, so let us say I typed something and I realized: Oh, no, it’s wrong at the beginning. Then I had to delete everything I had typed so far to correct it. [...] Maybe you were somehow unlucky with your partner, who either did not feel like it or could not do it. [...] And that always meant that there was no other solution. But actually, there probably needs to be a new solution somehow. But then every student would have to have the privilege of learning ASL.”

3.5.7 Missing interaction

Besides the former students’ descriptions of chat exams, the missing meaningfulness and frustration was evident within other instances regarding their EFL classroom experiences, such as missing interaction, as Bo mentioned: “It was only ever written on the blackboard or on the worksheet. And if it was wrong, it was explained to us. So there was never any interaction question, answer, question, answer. None at all. Zero. Always just tasks that we had to complete. Then it was explained why that was the case. Why this tense is used. Why -ed or -ing is used now and so on. This was explained to us in DGS. There was no interaction.”

The challenges perceived by DHH students regarding their English classes highlight several key issues. Firstly, there is dissatisfaction with the insufficient ASL/BSL competencies of teachers, leading to limited linguistic expression and frustration among students. Additionally, concerns arise from the haphazard mixing of DGS signs with spoken English, making comprehension challenging for students. Moreover, the lack of ASL grammar competences among teachers impedes effective instruction, although efforts to incorporate ASL are acknowledged. Furthermore, the absence of Deaf cultural content in lessons and the inadequate awareness of Deaf culture by teachers are

noted, leaving students feeling excluded. The use of spoken language within the EFL classroom is deemed meaningless by former DHH students, who criticize chat exams and the lack of meaningful interaction in lessons. These findings underscore the need for improved teacher training and curriculum development to better support the linguistic and cultural needs of DHH students in English language education. Thirdly, the question was addressed how DHH students relate to English and sign languages from English-speaking countries.

3.5.8 Crucial importance of English and ASL as foreign languages

Generally speaking, both the acquisition of English and specifically ASL as a foreign sign language were highly important to DHH students. English and ASL served as gateways to the world, facilitating access to communication, education, and society for DHH students. Bo clarified: “[...] to communicate with people today without any problems in English [...] that is so pleasant. It’s so valuable to have this broad access. I had some access to the English language before. But to have a much broader one now [with ASL] and to be able to communicate is really nice.” Representatively for most of the interviewed former students, Charly described English as “[...] beautiful. So my perspective on the English language is simple, it’s a world language. It’s omnipresent in my everyday life. As I said, on my phone, on my laptop and even now in my studies, I would say half of it is in English and so it’s just second nature. So I say that I can only express certain things in English and certain things only in German.”

3.5.9 Rare use of English in daily lives and predominantly use on social media platforms

Despite the significant importance of ASL and English, it appears that not all interviewees utilize it regularly in their daily lives. Nine participants mentioned that they either never or rarely use English in their everyday activities. Rani explained: “Sure, when I’m on vacation I have to be able to read English, I have to be able to write English, but otherwise I do not really use it at all. What did I learn it for? No, I mean, of course it’s a world language and when I see my parents who cannot speak it at all, it’s not wrong. But at the moment, in everyday life, I do not use it at all.” One context in which many interviewees predominantly used written English was on social media platforms or when communicating with international friends, as Luca reasoned: “Because I have friends all over the world where I have to chat in English.” The interviewees not only actively engage in using English on social media platforms but also passively encounter it when reading posts. Jona stated: “I follow quite a few accounts that post in English on Instagram.” Some interview partners also highlighted the advantages of written English for studying at university, reading books, at work, watching movies, and traveling.

3.5.10 International contacts through international sign and ASL

International Sign and ASL was mentioned particularly for social contacts and friendships, but also for participation in cultural events and social media engagements to stay up to date. As Luca stated: “And at the moment, when media is distributed around the world, it is also distributed in ASL or International Sign. And that’s why you actually see it every day.”

The acquisition of English and ASL was deemed highly important by DHH students, serving as vital tools for communication, education, and societal integration. As Uli succinctly stated: “Language means freedom to me.” Participants emphasized the value of English as a global language, facilitating broad access to information and communication channels. However, it was noted that not all interviewees regularly utilize English in their daily lives, with many primarily encountering it on social media platforms or when communicating with international friends. Conversely, International Sign and ASL were highlighted as crucial for social contacts, friendships, and participation in cultural events, reflecting their significance in fostering international connections and staying engaged with global media.

3.6 Discussion

In this section, the findings are contextualized within the existing body of research and limitations of the present study are revealed. Most of the studies available to date are general descriptions of English language teaching in a country or in a school. Thus, only few studies have collected data to which reference can be made here. Only in the studies conducted by Kontra (2013) and Kontra et al. (2015b), the perspective of DHH EFL learners were analyzed. In all three studies the insufficient training of teachers was criticized and the use of a foreign sign language in the classroom was positively mentioned. In contrast to findings of the study by Csizér et al. (2015), the former DHH students in this study strongly identified as language learners and highlighted the importance of learning English and ASL as foreign languages in school. They regard these languages as gateways to the world, providing access to communication, education, and society, aligning with the aim of EFL teaching posed by the Berlin Senate Department for Education, Youth, and Science (2015). However, according to the interviewees in this study, who described a lack of interaction in their EFL learning experiences, this objective is not being met.

Other aspects that were emphasized in previous studies are missing concepts and great diversity in teaching English to DHH students as described by Bedoin (2011). Bedoin’s findings are congruent with the experiences of the participants in this study, who describe a total of nine different language combinations whose use depends exclusively on the respective teacher and their respective language skills. The call by Kontra et al. (2015b), Machová (2019), Nisha and Gill (2020) and Quay (2005) for the explicit integration of the national sign language in EFL teaching does not coincide with the experiences of the former students in this study. They tend to cite the integration of national sign language, in this case DGS, as a point of criticism, particularly in combination with spoken English. In alignment with Pritchard (2004); Bedoin (2011), who highlights the professional quality of teachers as a crucial factor for success in foreign language teaching, this study also identifies the insufficient language skills of teachers in ASL as a major point of criticism.

Given that BANZSL and ASL are two distinct language systems, the question which sign language should be integrated into English instruction in (German) schools for the DHH is far more complex than the debate over the preference for British or American English in the EFL classroom with hearing students. Within the discussion about

which sign language should be used, one stated advantage of using BSL in the EFL classroom with DHH students is the geographical proximity of Germany and the United Kingdom, which could theoretically make it easy to establish language contact in face-to-face encounters. The geographical proximity compared to the United States also theoretically enables foreign teachers to be trained in BSL, e. g. with a diploma from the Council for Advancement of Communication with deaf people (Pritchard, 2004, 2011). In addition, there is a greater linguistic contrast between BSL and DGS, which can be used didactically (Poppendieker, 2011), for example, the finger alphabet in BSL is two-handed, in ASL as in DGS it is one-handed. The similarity of the finger alphabets of DGS and ASL can also be seen as an advantage and argument in favor of ASL. Furthermore, ASL dominates social media and is therefore attractive to DHH students. Like Bartz and Eitzen (2016), Kremp (2015), and Poppendieker (2011), who highlight the positive impact of ASL on DHH students' motivation in EFL classrooms from a teacher's perspective, the results of this study further support this assertion from the perspective of the DHH students themselves. ASL also shows a high proximity to International Sign, which is regarded as an argument for its use in the EFL classroom with DHH students (Landesfachkonferenz Englisch HK NRW, 2019). Thus, teaching practice in Germany has effectively surpassed the academic discourse, resulting in only a few schools where BSL is officially used in the EFL classroom with DHH students.

3.7 Limitations

The study has two main limitations. Firstly, the interview data were translated from DGS into German and then after analysis selectively translated into English for this article to incorporate quotations. Although the translations were conducted by professional translators and subsequently reviewed by the research team, it cannot be ruled out that linguistic nuances from the DGS may have been lost in this two-step translation process. These nuances may be attributed to the different linguistic modalities of signed and written languages. Secondly, the predominantly academic background of the participants limits the diversity of experiences represented in the study. Future research should strive to include a more diverse range of educational backgrounds, including vocational and non-traditional learning environments, to capture a broader spectrum of language learning experiences (see 'implications for further research').

3.8 Implications

The results of the study have implications for both EFL classrooms with DHH students and future research.

3.8.1 Implications for the EFL classroom with DHH students

In the EFL classroom, the integration of ASL is paramount for fostering effective communication and language acquisition among DHH students. However, to achieve this goal, future teacher training programs must undergo significant adaptation. Teacher education programs need to incorporate ASL practices and specific didactics to equip educators with the necessary skills and knowledge to effectively teach EFL using sign language. Furthermore, it is essential for all

schools for the DHH to adopt a standardized EFL concept that includes ASL. This standardized approach will ensure consistency and coherence in language instruction across different educational settings, ultimately benefiting students by providing them with a cohesive learning experience. Moreover, it is crucial to tailor EFL instruction to the lived realities of DHH students by actively listening to and incorporating their desires and needs, for example the need for a more inclusive approach in EFL classrooms that recognizes and integrates Deaf culture alongside the hearing English culture traditionally emphasized. By taking into account students' preferences and feedback, educators can create a more inclusive and engaging learning environment that empowers students to succeed academically and develop proficiency in English and ASL.

In summary, the integration of ASL in EFL classrooms, coupled with comprehensive teacher training and the adoption of standardized EFL concepts, is essential for meeting the linguistic and educational needs of DHH students. By aligning teaching practices with students' lived experiences and aspirations, educators can foster a supportive and empowering learning environment that facilitates language acquisition and promotes academic success. Ultimately, this would lead to a transformation of the EFL classroom into an "ASLFL" classroom. In addition to offering insights for EFL classrooms with DHH students, this study also suggests directions for future research.

3.8.2 Implications for future research

Future research should address several key areas to enhance understanding of EFL learning among DHH individuals. Firstly, including DHH students who communicate preferably in spoken language is essential, as their experiences and perspectives may differ significantly from those DHH students who prefer to communicate in sign language. This inclusion would provide a more comprehensive view of language learning challenges within the broader DHH community. Second, incorporating Deaf+ students, who may have additional disabilities or challenges beyond deafness, is crucial. Their exclusion overlooks important insights into the intersectionality of language learning and disability. Including Deaf+ students would provide valuable perspectives on the unique barriers they face in acquiring foreign languages. Third, the current focus on students with DGS as their main language limits the generalizability of the findings. Future research should include a more diverse range of language backgrounds to explore potential variations in language learning experiences and strategies among DHH students from different linguistic backgrounds, including family education and early childhood education. Fourth, a longitudinal study is required to evaluate the outcomes of systematically incorporating ASL into English instruction. Additionally, while student perspectives are valuable, understanding practices in EFL classrooms also requires input from teachers. Interviewing educators and observing their instructional methods would provide a more holistic view of the challenges and opportunities in teaching EFL to DHH students. Future studies should also focus on measuring the objective benefits of the additional use of ASL in the EFL classroom, for example by taking into account their academic achievements in EFL classes and/or co-activation of ASL and English of DHH young language learners. Addressing these areas in future research will contribute to a more nuanced understanding of language learning among DHH individuals and inform the development of more inclusive and effective educational practices.

4 Conclusion

Since DHH students learn EFL in many countries around the world, the issue of EFL teaching to DHH has become a topic of international discussion. Across various educational systems – within schools, across regions, and between nations – there exists significant diversity in how English is taught as a foreign language. This variation in teaching was also reflected in the present study. The findings of this study revealed the diverse language combinations used in EFL classrooms, which are largely dependent on individual teachers' approaches. While a blend of German signs with English mouthing emerged as the most prevalent yet bewildering mode of communication, ASL stood out as the most advantageous form. Further key issues identified include the limited proficiency of teachers in foreign sign languages, specifically ASL, and the absence of Deaf cultural content and awareness in instruction. The lack of interactive and engaging teaching methods was highlighted as a significant barrier to effective learning. In light of their described challenges, the participants elaborated a clear vision of what they perceive as perfect EFL teaching: ASL should be included to enhance the students' foreign language output and interaction within the classroom. Moreover, participants emphasized the importance of creating a supportive learning environment that celebrates Deaf culture and values the unique experiences and perspectives of DHH students in order to utilize intrinsic learner motivation.

Drawing from the experiences of DHH students, this study emphasizes the critical importance of professional training for teachers in ASL, which would lead to the emergence of ASLFL classes. ASLFL classes would replace the current well-intentioned but auto-didactical practice of some teachers who have already embarked on the ASL journey. The former students we interviewed appreciated teaching in ASL and requested that it be used more frequently because they regard sign language as a crucial part of themselves, as Bo stated: "And for me, sign language is the access for everyone. Both in terms of family bonding, in terms of identity issues, in terms of education. So, for me, [sign] language is really everything. Without [sign] language, I probably would not be the person I am today. I would not have my friends. I would not have been in school the way I was. I would have faced a lot of barriers in my everyday life and I do not think I would have the quality of life that I have today." This quote highlights the crucial importance of investing in foreign language acquisition via a high quality EFL and ASLFL teaching for DHH students. It is not merely an educational endeavor but a fundamental human right (United Nations, 2006).

Data availability statement

The original contributions presented in the study are included in the article/[Supplementary material](#), further inquiries can be directed to the corresponding author.

References

- Ay, S., and Şen Barta, Ö. (2022). English language teaching model proposal for Deaf and hard of hearing students. *RumeliDE Dil Ve Edebiyat Araştırmaları Dergisi* 26, 1082–1097. doi: 10.29000/rumelide.1076386
- Baker-Shenk, C., and Cokely, D. (1996). American sign language. A Teacher's resource text on grammar and culture. Washington, DC: Gallaudet University Press.

Author contributions

KU: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Writing – original draft, Writing – review & editing. KG: Data curation, Formal analysis, Methodology, Validation, Writing – original draft, Writing – review & editing. AG: Conceptualization, Data curation, Formal analysis, Validation, Writing – original draft, Writing – review & editing. MK: Formal analysis, Validation, Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

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- Erfahrungen und wissenschaftliche Erkenntnisse. *Hörgeschädigtenpädagogik* 5, 193–199.
- Becker, C., and Jaeger, H. (2019). Deutsche Gebärdensprache. Mehrsprachigkeit mit Laut- und Gebärdensprache. Tübingen: Narr Francke Attempto Verlag.
- Bedoin, D. (2011). English teachers of deaf and hard-of-hearing students in French schools: needs, barriers and strategies. *Eur. J. Spec. Needs Educ.* 26, 159–175. doi: 10.1080/08856257.2011.563605
- Berent, G. P. (2001). “English for deaf students: assessing and addressing learners’ grammar development” in International seminar on teaching English to Deaf and hard-of-hearing students at secondary and tertiary levels of education: Proceedings. ed. D. Janáková (Prague, Czech Republic: Charles University, The Karolinum Press), 124–134.
- Berlin Senate Department for Education, Youth, and Science. (2015). Teil C Moderne Fremdsprachen, Jahrgangsstufen 1–10. Available at: https://bildungsserver.berlin-brandenburg.de/fileadmin/bbb/unterricht/rahmenlehrplaene/Rahmenlehrplanprojekt/amtliche_Fassung/Teil_C_Mod_Fremdsprachen_2015_11_16_web.pdf (Accessed July 7, 2024).
- Birinci, F. G., and Sarıçoban, A. (2021). The effectiveness of visual materials in teaching vocabulary to deaf students of EFL. *Journal of Language and Linguistic Studies* 17, 628–645. doi: 10.52462/jlls.43
- Csizér, K., and Kontra, E. H. (2020). Foreign language learning characteristics of deaf and severely hard-of-hearing students. *Mod. Lang. J.* 104, 233–249. doi: 10.1111/modl.12630
- Csizér, K., Kontra, E. H., and Piniel, K. (2015). An investigation of the self-related concepts and foreign language motivation of young Deaf and hard-of-hearing learners in Hungary. *Studies Second Lang. Learn. Teach.* 5, 229–249. doi: 10.14746/ssl.2015.5.2.3
- Domagała-Zysk, E. (2011). “Students with severe hearing impairment as competent learners of English as a foreign language” in Proceedings of the international conference universal learning design (Brno: Masaryk University), 61–68.
- Domagała-Zysk, E. (2019). “Teaching Deaf and hard of hearing students English as a foreign language in inclusive and integrated primary schools in Poland” in The child with hearing impairment. Implications for theory and practice. eds. A. Zwierchowska, I. Sosnowska-Wieczorek and K. Morawski (Katowice: Akademia Wychowania Fizycznego).
- Fister, I. (2017). Ich will, also kann ich! ‘Eine quantitative Vergleichsstudie über die Motivation beim Englischlernen von Kindern mit und ohne Hörschädigung. *Das Zeichen* 107, 442–453.
- Kang, K. Y., and Scott, J. A. (2021). The experiences of and teaching strategies for Deaf and hard of hearing foreign language learners. *Am. Ann. Deaf* 165, 527–547. doi: 10.1353/aad.2021.0005
- Kontra, E. H. (2013). “Language learning against the odds: retrospective accounts by deaf adults” in English as a foreign language for Deaf and hard-of-hearing persons in Europe – State of the art and future challenges. ed. E. Domagała-Zysk (Wydawnictwo KUL), 93–111.
- Kontra, E. H., and Csiszér, K. (2013). An investigation into the relationship of foreign language learning motivation and sign language use among Deaf and hard of hearing Hungarians. *Int. Rev. Appl. Linguist. Lang. Teach.* 51, 1–22. doi: 10.1515/iral-2013-0001
- Kontra, E. H., Csiszér, K., and Piniel, K. (2015a). “Teaching and learning foreign languages in Hungarian schools for the hearing impaired: a Nationwide study” in Proceedings of ICED (Athens, Greece). 6–9; Available at: <http://www.deaf.elemedu.upatras.gr/index.php/iced-2015-proceedings> (Accessed April 3, 2019).
- Kontra, E. H., Csiszér, K., and Piniel, K. (2015b). The challenge for Deaf and hard-of-hearing students to learn foreign languages in special needs schools. *Eur. J. Spec. Needs Educ.* 30, 141–155. doi: 10.1080/08856257.2014.986905
- Kremp, A. (2015). Englischunterricht in der Klasse 7/8. *Forum-Sonderheft* 23, 180–184.
- Kuckartz, U., and Rädiker, S. (2022). Qualitative Inhaltsanalyse: Methoden, Praxis, Computerunterstützung. 5th Edn: Beltz Juventa.
- Kusters, A. M. J., and Friedner, M. I. (2015). “Introduction: deaf-same and difference in international deaf spaces and encounters” in It’s a small world: International deaf spaces and encounters (ix–xxix). eds. M. Friedner and A. Kusters (Washington, DC: Gallaudet University Press).
- Landesfachkonferenz Englisch HK NRW (2019). Überarbeitetes Positionspapier der Landesfachkonferenz Englisch HK NRW.
- Machová, P. (2019). “Teaching English to students with hearing impairments” in English language teaching through the Lens of experience. eds. C. Haase and N. Orlova (Cambridge Scholars Publishing), 223–238.
- Nisha, M. V., and Gill, J. C. R. (2020). English language teaching approaches to Deaf and hard-of-hearing students in India. *Journal of Xian University of Architecture & Technology* 12, 1992–2001.
- Nyst, V. (2007). A descriptive analysis of Adamorobe sign language (Ghana). Utrecht: LOT.
- Parks, E., and Parks, J. (2008). Sociolinguistic Survey Report of the Deaf Community of Guatemala. SIL International. Available at: https://www.sil.org/system/files/rapdata/89/77/67/89776777358059644860474457686870926463/silesr2008_016.pdf (Accessed June 10, 2020).
- Pfau, R., Steinbach, M., and Woll, B. (2012). Sign language: An international handbook: Walter de Gruyter.
- Poppendieker, R. (2011). Englischunterricht im bilingualen Konzept. Diskussionsrunde: Bilingualer Englischunterricht mit ASL, BSL oder DGS. *DFGS Forum* 19, 24–27.
- Pritchard, P. (2004). TEFL for deaf pupils in Norwegian bilingual schools: Can deaf primary school pupils acquire a foreign sign language? Norwegian University of Science and Technology.
- Pritchard, P. (2011). Using a sign language in the teaching of english to deaf pupils. *DFGS Forum*. 19, 12–23.
- Puri, I. R., Rodiatun, R., and Susanto, S. (2019). An analysis of learning English vocabulary for hearing impaired students at bhakti dharm Pertiwi special school 2017/2018. *J. Eng. Educ. Stud.* 2, 60–66. doi: 10.30653/005.201921.36
- Quay, S. (2005). Education reforms and English teaching for the deaf in Japan. *Deafness Educ. Int.* 7, 139–153. doi: 10.1179/146431505790560338
- Ramos Martin-Pozo, M. (2022). Teaching English as a foreign language to hearing impaired students: a teaching proposal. Available at: https://crea.ujen.es/bitstream/10953.1/13548/1/Ramos_MartinPozo_Mara_TFM_Inglis.pdf (Accessed May 15, 2024).
- Reilly, J., and McIntire, M. L. (1980). American sign language and pidgin sign English: What’s the difference? *Sign Lang. Stud.* 27, 151–192. doi: 10.1353/sls.1980.0021
- Ristiani, A. (2018). Challenges in teaching English for the deaf students. *Elite* 3, 16–20. doi: 10.32528/ellite.v3i1.1773
- Schembri, A., Cormier, K., Johnston, T., McKee, D., McKee, R., and Woll, B. (2010). “Sociolinguistic variation in British, Australian and New Zealand sign languages” in Sign Languages. ed. D. Brentari (Cambridge: Cambridge University Press), 476–498.
- Steinbach, M., Albert, R., Girnth, H., Hohenberger, A., Kümmerling-Meibauer, B., Meibauer, J., et al. (2007). “Gebärdensprache” in Schnittstellen der germanistischen Linguistik. ed. J. B. Metzler (Stuttgart, Metzler), 137–185.
- Stoppock, A. (2014). “Didaktisch-methodische Überlegungen zum Englischunterricht für Schüler mit einer Hörschädigung in der Grundschule” in Im Dialog der Disziplinen. Englischdidaktik – Förderpädagogik – Inklusion. eds. R. Bartosch and A. Rohde (Wissenschaftlicher Verlag Trier), 115–130.
- Sultanbekova, A. (2019). Teaching English as a foreign language to Deaf and hard-of-hearing students at one school in Kazakhstan. Kasachstan: Nazarbayev University Graduate School of Education.
- United Nations (2006). Conventions of the Rights of Persons with Disabilities. Available at: <https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-persons-disabilities> (Accessed May 15, 2024).
- Uradarević, I. (2016). “Teaching English to Deaf and hard-of-hearing students in Serbia: a personal account” in English as a foreign language for Deaf and hard-of-hearing persons: Challenges and strategies. eds. E. Domagała-Zysk and E. H. Kontra (Newcastle upon Tyne: Cambridge Scholar Publishing), 91–108.
- Urbann, K. (2020). (Gebärdensprache im Englischunterricht. Erläuterungen zum Forschungsstand und Kernfragen der aktuellen Praxis. *Das Zeichen* 116, 474–485.
- VERBI Software (2021). MAXQDA 2022, computer program. Berlin: VERBI Software.
- Villwock, A., Wilkinson, E., Piñar, P., and Morford, J. P. (2021). “Language development in deaf bilinguals: deaf middle school students co-activate written English and American sign language during lexical processing” in Cognition, vol. 211, 104642.
- Woodward, J. C. (1973). Some characteristics of pidgin sign English. *Sign Language Studies* 3, 39–46. doi: 10.1353/sls.1973.0006
- World Federation of the Deaf and World Association of Sign Language Interpreters (2019). Frequently Asked Questions about International Sign. Available at: <https://wfdeaf.org/news/resources/faq-international-sign/> (Accessed July 7, 2024).



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English learners with dyslexia benefit from English dyslexia intervention: an observational study of routine intervention practices

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Introduction: Learning to read when the language of the curriculum differs from one's home language can pose unique challenges. For example, compared to the language spoken at home, the learner may be less familiar with the sound structure and have relatively limited word knowledge in the language of instruction. In the United States, English is the primary language of reading instruction for students who are English Proficient (EP) and for English Learners (EL). Current evidence indicates that for both EP and EL students, code-based competencies and meaning-based skills are important for learning to read. English-language reading interventions have been shown to be beneficial for EPs and ELs with reading problems, though it is not clear if this is also true when the reading problem is a reading disorder like dyslexia.

Methods: The current study addresses this question by comparing EL and EP student's reading profile at baseline and changes over time in response to evidence-based English Language Dyslexia Instruction (ELDI) in public schools. One-hundred eighty-six students with dyslexia were followed over the course of two academic years. Assessments measured code and meaning-based reading skills. Multivariate profile analysis and linear mixed effects modeling were conducted to compare baseline reading profiles as well as growth in targeted skills over time.

Results: Findings reveal similar patterns of reading profiles across EL and EP groups, with more severe baseline deficits emerging for ELs. Groups performed equivalently on target reading skills after two years of intensive multi-componential reading intervention.

Conclusion: Findings confirm and extend previous research, suggesting ELs with Dyslexia can be identified and successfully served through routine practices, including ELDI.

KEYWORDS

English learner, dyslexia, dyslexia intervention, second language, reading outcomes

Introduction

A solid foundation in both oral and written language skills is key for the academic and occupational success of all children. However, not all students begin their academic journey similarly equipped to learn in the language of the educational curriculum. In the United States, where the language of the curriculum is typically English, approximately 1 in every 10 public school

students speaks a language other than English at home and lacks proficiency in English language skills (English Learners, ELs). Across the country this proportion continues to rise, and with it the urgency to discover ways in which to help ELs succeed (National Center for Education Statistics, 2022). Most ELs in the United States are learning English sequentially (i.e., some time after learning their native language) and demonstrate greater proficiency in their native language in one or more language domains compared to English (Rhodes et al., 2005; Rodríguez and Rodríguez, 2017). Multilingualism is associated with various cognitive, social, and linguistic benefits, but these benefits may not extend to those still developing proficiency in the non-native language (L2; Quinteros Baumgart and Billick, 2018; Bialystok et al., 2012). Learning to read in an L2 which is not one's home language poses unique challenges, including being less familiar with the sound structure of the language and limited word knowledge. Students in these situations are thus tasked with simultaneously developing L2 reading skills while still acquiring the L2 language itself. Languages can differ in many ways, including phonological, orthographic, syntactic, and morphological structure. Learning a new language sequentially requires the adjustment the phoneme boundaries of one's native tongue to accommodate the phonemic structure of the L2. For example, allophonic variations of the phoneme /d/ in Spanish (the first and second *d* in *dedo*) are distinct phonemes in English (/d/ in *dog* and /θ/ in *mother*). Additionally, orthographic structure can vary greatly across languages. Children from logographic native orthographies who are learning English will have little knowledge of alphabetic principle, as logographic languages represent whole words and word parts using pictorial symbols with minimal reference to pronunciation. Those from other alphabetic native languages must learn to apply a new set of phoneme-grapheme correspondences and spelling rules to the L2. This process can be particularly arduous when the L2 is a quasiregular "opaque" orthography such as English, with variable consistency in phoneme-grapheme correspondences and spelling patterns. The similarities and differences across languages can impact L2 learning, both facilitating and inhibiting L2 performance (e.g., Frances et al., 2021; Siegel, 2016). Further complicating the picture, some ELs also struggle to develop reading skills due to underlying learning disabilities. Although ELs with learning disabilities are a distinct and identifiable group of students (e.g., Swanson et al., 2020), current identification methods are susceptible to various forms of bias in school settings and may not be well calibrated to identify learning disabilities in a timely and efficient manner for EL students (Hall et al., 2019; Moore, 2022; Odegard et al., 2020). Once identified, however, evidence supports the efficacy of similar intervention methods for ELs as those provided to their non-EL peers (see Goldenberg and Cárdenas-Hagan, 2023; Hall et al., 2019). Toward this end, the current study investigated the profiles of a sample of ELs with dyslexia (EL-DD) students and their English Proficient peers with dyslexia (EP-DD) identified through routine school procedures and receiving routine school-based English Language Dyslexia Intervention.

The simple view of reading and reading instruction

Skilled reading is supported by various underlying component skills, which often are generalized into distinct and broad linguistic categories corresponding to the Simple View of Reading: those related to deciphering a language's written or spoken code, and those related to understanding meaning conveyed by the language itself (Gough

and Tunmer, 1986; Vaughn, 2018). Weaknesses in either of these domains can create significant disruptions in the reading process leading to reading failure. Furthermore, subskills exist within each of these domains which exert both direct and indirect effects on reading outcomes (e.g., Kim, 2017, 2020). The Simple View provides a conceptual framework for identifying broad categories of strengths and weaknesses in component skills across native language status, as well as typically developing and disordered populations.

Code-based competencies utilized in the process of recoding written orthographic information into its phonological counterpart are fundamentally involved in sound-symbol translation (e.g., phonological awareness, letter-sound knowledge, decoding, encoding) and are paramount in establishing accurate word-level reading skill (Byrne, 2014; Hatcher et al., 1994). Foundational to establishing proficiency in reading, code-based skills are acquired early in the typical progression of reading development and are highly predictive of later reading outcomes (Al Otaiba and Fuchs, 2006; Wanzek et al., 2018). Weak code-based skills are characteristic deficits in developmental dyslexia and are associated with disruptions in phonological processing, along with other cognitive and linguistic risk factors (Catts and Petscher, 2022; Ring and Black, 2018). Indeed, the primary characteristics of dyslexia are code-based, and often attributed to weaknesses in phonology, though deficits in meaning-based skills are not uncommon (e.g., Georgiou et al., 2022; Melby-Lervåg et al., 2012; Reis et al., 2020). Weaknesses in phonological processing for ELs have also been observed and may be due to relatively limited exposure to phonological properties of the L2 language. However, with instruction ELs tend to catch up to their peers on phonological processing tasks within a few years (Lesaux et al., 2007; Morrow et al., 2014). The extent to which students from minority language backgrounds tend to demonstrate deficiencies in other code-based skills is also unclear, and may vary as a function of L1 and L2 structure. For example, in a meta-analysis examining effects of native language on various reading skills across first and second language learners, language learners revealed small deficits for code-based skills compared to native speakers (Melby-Lervåg and Lervåg, 2014). Other studies report similar decoding performance across EL and EP groups, and still others report relative strengths for ELs, attributing superior performance to meta-linguistic awareness and flexibility in linguistic code (see August and Shanahan, 2006; Siegel, 2016).

Meaning-based skills leverage competency in oral language skills to support higher order reading skills such as comprehension. The meaning construed by a text—both at the individual word and passage levels—cannot be accessed through code-based skill alone. Rather, meaning is constructed through the integration of an individual's background knowledge, vocabulary, ability to analyze and synthesize information and draw inferences. Relative strengths in these skills can serve protective or promotive functions, allowing a reader to leverage language-based competencies to understand text, particularly in the face of code-based deficits (Haft et al., 2016). Over the course of the developmental timeline, meaning-based skills account for an increasingly large proportion of variance in reading, ultimately surpassing code-based skills as the strongest predictors of ability (Elleman and Oslund, 2019; Fletcher et al., 2018; Lervåg et al., 2017). In this way, meaning-based skills are critical facilitators of skilled reading. Unlike the word-level deficits characteristic of dyslexia, low reading performance in bilingual students was long understood to lie in meaning-based skills, attributable to oral English proficiency (August and Shanahan, 2006; Lesaux and Kieffer, 2010; Spencer and Wagner, 2017). Indeed, meaning-based skills play a larger role in reading outcomes for ELs in comparison to their EP peers,

although code-based skills also contribute significantly for both groups (Cho et al., 2019). Differences related to language acquisition status—specifically, weaknesses in phonological processing and vocabulary—may contribute to difficulties establishing high quality lexical representations for ELs, resulting in poor word reading performance.

Together, proficiency in both code- and meaning-based domains are critical to orchestrate multiple simultaneous cognitive processes in a dynamic fashion to ensure accuracy and understanding while reading. However, less is known about the nature of these subskills and their relations in EL-DDs relative to their EP-DD peers, and whether they respond similarly over the course of ELDI. The current study aims to address this gap in the literature by evaluating similarities and differences across reading profiles of EL-DDs and EP-DDs.

Reading instruction and intervention for English learners

Comprehensive, multicomponent reading instruction addresses deficits in code-based skills such as phonological processing and orthographic pattern recognition, as well as supports meaning-based skills through vocabulary instruction, comprehension strategy instruction, and repeated opportunities for practice and exposure to written text (Castles et al., 2018). Several recent meta-analyses reveal significant positive effects of multicomponent interventions on reading outcomes for elementary students with or at risk for reading disabilities (e.g., Boucher et al., 2024; Gersten et al., 2020; Hall et al., 2023). Given the intensity and comprehensive nature of these interventions, instructional programs such as these include the same instructional targets necessary for supporting the characteristic weaknesses of ELs (i.e., language-based) within the context of remediating characteristic weaknesses of dyslexia (see August and Shanahan, 2006). Explicit instruction in English phonemic awareness can improve knowledge of English phonological structure, leading to improvements in phonological and orthographic domains (Yeung et al., 2013). Explicit, systematic instruction in decoding and encoding can help to elucidate language-specific orthographic patterns and spelling rules. Morphological knowledge and awareness are also critical components of instruction in a morphophonemic language such as English and are addressed through instruction in decoding and encoding of derivatives using combinations of prefixes, suffixes, and common word roots. Finally, activities designed to support reading comprehension may also bolster ELs' facility with language structure including grammar and syntax, inference, non-literal language use, as well as provide repeated opportunities for application and consolidation of learning. Although significant improvements in reading skills are documented in many intervention studies, ELs may need additional instruction to reach similar levels of English achievement as their non-EL peers (see Goldenberg and Cárdenas-Hagan, 2023; Hall et al., 2019).

It is of note that many studies investigating intervention outcomes for ELs with reading difficulties were conducted on early elementary students who received intervention for up to one academic year. EL students demonstrated relatively poor reading comprehension and similar or even superior decoding ability compared to their non-EL peers (e.g., Vaughn et al., 2011; Wanzek and Roberts, 2012). Given the variable nature and severity of deficit profiles in EL-DDs, longer and more extensive instruction may be warranted to address the severity of deficits and improve retention (see Wanzek et al., 2013 for review and discussion of extensive reading interventions).

Reading profiles of students with reading difficulties

Profiles of performance in struggling readers has drawn increasing interest from reading researchers in recent years, with the aim of characterizing specificity and/or severity of deficits for underlying subgroups. Severity of deficits may warrant increased intervention intensity whereas specificity can guide focus of instruction to align with specific weaknesses (Capin et al., 2021; Fuchs et al., 2017). Recent studies using latent profile analysis support multi-factorial reading profiles of struggling readers which differ in both severity and specificity of deficits, depending in part on the characteristics of the sample and the measures used to quantify performance. For example, several studies report global impairments (i.e., profiles marked by severity) for a majority of EP struggling readers, with some studies also reporting subgroups marked by specificity of deficits (e.g., Brasseur-Hock et al., 2011; Capin et al., 2021; Capin et al., 2022; Clemens et al., 2017; O'Connor et al., 2019). Similarly, EL students with reading difficulties are differentiated by both severity and specificity of deficits relative to unimpaired EL readers, with consistent reports of weaknesses in meaning-based skills (e.g., Capin et al., 2024; Li et al., 2022; Miciak et al., 2022; O'Connor et al., 2019). However, many of these studies also report substantial weaknesses in code-based skills for a majority of the sample, suggesting that the reading impairments experienced by ELs is not specific to meaning-based skills, but rather indicative of globally impaired profiles. Indeed, one study investigating latent profiles for a mixed sample of EP and EL students reported similar distributions of the two groups across profiles, suggesting that specificity of impairments may not be unique according to language background (Lesaux and Kieffer, 2010). Furthermore, both code- and meaning-based skills contribute significantly to reading comprehension performance for both EP and EL students (Cho et al., 2019). Taken together, the results of these studies confirm substantial deficits in meaning-based skills for ELs, with mixed results regarding performance on code-based skills, particularly for samples of struggling readers.

Two studies to date that investigated reading profiles for EL students also followed students to evaluate changes in performance over time. The first of these studies differentiated a sample of late elementary EL students into two groups based on severity of impairments: a group with global literacy impairments, and a group of their unimpaired EL peers (Miciak et al., 2022). Authors reported nearly perfect stability of profiles over the course of an academic year, with the achievement gap between groups growing over time. Based on these findings, authors concluded that the global deficit profile of ELs at risk for dyslexia warrants intensive, comprehensive, and long-term interventions to remediate deficits across multiple reading components (i.e., code and meaning-based reading skills). It is important to note, however, that information regarding the instructional supports received by the students identified as impaired readers in this sample were not available in this study.

Heterogeneity in reading profiles of ELs with reading difficulties is also linked to variability in patterns of intervention growth (Capin et al., 2024). In this study, four distinct profiles were reported which demonstrated similar below-average English vocabulary skills but were differentiated by code-based (i.e., word reading) performance. Whereas code-based skill performance suggesting heterogeneity in the reading profiles of this population which were differentiated mainly in word reading performance. Students in all profiles improved in reading comprehension over the course of intervention, but those

belonging to the most impaired group demonstrated the greatest growth. This may be attributable to (1) greatest room for improvement relative to age and grade-level expectancies, and (2) significant deficits in code-based skills which are more readily remediated.

These findings outline both severity and specificity in reading impairments for ELs with reading difficulties. It is important to note, however, that although many students in these samples also demonstrated weaknesses in word reading, these and many other studies of reading profiles operationalize reading difficulties using measures of comprehension. Few studies have explored the differential performance of EPs and ELs identified by the code-based deficits characteristic of dyslexia. Therefore, it is not clear whether and to what extent these findings can be generalized to students identified with dyslexia.

One study examined English intervention outcomes across EL-DD and EP-DD students with specific code-based deficits (i.e., word reading; Lovett et al., 2008). In this study, both EL-DD and EP-DD students benefitted more from a phonologically based reading intervention than from curricular control instruction. Notably, EL-DDs in this sample demonstrated expected inferior oral language skills relative to their EP-DD peers at baseline but demonstrated similar post-intervention performance and similar rates of growth for most reading outcomes as compared to their EP-DD peers. Furthermore, differential performance was observed for phonological processing, such that the EL-DD group demonstrated an accelerated rate of PA growth and marginally superior post-intervention PA performance. These findings provide further evidence that reading impaired students from linguistically diverse backgrounds demonstrate parallel responses to phonologically based reading intervention. Notably, however, the research interventions examined in this study did not address meaning-based skill development, as their focus was centered around developing basic word-reading skills and the application of decoding in passage-level contexts for students. The current study aims to address differences in performance profiles for EL-DDs and EP-DDs, as well as growth in code-based and meaning-based skills over the course of an intensive, extensive, multicomponent English reading intervention delivered to EL-DDs and EP-DDs as part of routine instruction over the course of two academic years.

The current study

We are unaware of any research to date which evaluates reading profiles of elementary-aged EL-DD students who have a school-based classification of dyslexia. Furthermore, no studies to date have specifically compared reading profiles and growth in reading skills for these EL-DD students compared to their EP-DD peers as they progress through intensive multicomponent ELDI. Given the well-established achievement gap between ELs and their non-EL peers, a comparison of intervention growth across these two groups is warranted to examine whether differences related to language classification status (EL, non-EL) are associated with differential patterns of response when dyslexia intervention is provided in English. These findings are particularly important in consideration of the risk of delayed referrals and isolated instruction for ELs in public schools. Understanding any underlying differences in these groups of students, both in terms of reading profiles and intervention

response, can provide additional guidance toward determination of appropriate services for students with dyslexia with diverse language backgrounds. In short, this study aims to contribute to the evidence understanding the viability of standard English language dyslexia instruction for ELs with dyslexia.

Research Question 1: Do EL-DDs demonstrate similar profiles of code- and meaning-based English reading skills as their EP-DD peers prior to intervention?

Hypothesis 1: Reading profiles of EL-DD students will be marked by global weaknesses in component reading skills and will demonstrate more severe deficits compared to EP-DD peers.

Research Question 2: Do EL-DDs demonstrate similar growth in English reading skills as their EP-DD peers over the course of intervention? Specifically, we aimed to investigate comparative performance between EL-DDs and EP-DDs over time, as well as to identify potential areas of weakness that may warrant additional instruction for EL-DDs receiving ELDI.

Hypothesis 2a: EL-DD students receiving ELDI will demonstrate similar growth in reading skills over time in comparison to a sample of EP-DD students.

Hypothesis 2b: Post-intervention performance will be lower for the EL-DD group compared to the EP-DD group.

Methods

Participants

Participants were recruited from the pool of students recently identified by their public school as having developmental dyslexia (DD) and were scheduled to begin dyslexia instruction in one of four public school districts located in the Southwestern United States. Among the group of students newly identified with dyslexia, 19.4% were also identified by their public school as English learners (EL-DD); the remainder were proficient in English (EP-DD). This study targeted intervention outcomes for students in elementary school; thus, eligible students were entering grades 2–5 at time of enrollment to qualify.

Participating districts

Four public school districts participated in the research study. Districts ranged in size from 5,000 to 38,000 students, serving rural, suburban, and urban areas. Demographic characteristics and participation rates for each district are presented in [Table 1](#).

Participating educators

Within each school district, elementary school educators assigned by their school to provide dyslexia instruction to small groups of elementary students newly identified with dyslexia. Educator recruitment was initiated through announcement by a school administrator to eligible educators about the opportunity to participate in the research study and the invitation to attend an information session presented by study personnel. Each educator who participated provided written informed consent. Educators were free to participate

TABLE 1 Demographic characteristics of participating districts.

	District 1	District 2	District 3	District 4
Participants				
Teachers	18	7	10	2
Students	97	50	31	8
NCES locale classification	City: Large	Town: Distant	Suburban: Large	Rural: Fringe
District enrollment data				
Approximate enrollment	38,000	6,000	16,000	5,000
Elementary (%)	57	41	46	55
Minority (%)	70	76	89	65
Economic disadvantage (%)	56	72	72	57
English learners (%)	28	27	17	17
Dyslexia (%)	9	10	6	5

in the research study or not, without penalty or modification of their dyslexia instruction assignment.

A total of 37 educators elected to participate and completed the research study. All educators had fulfilled training and education requirements outlined by their district and the curriculum publishers. From the educator cohort, 15 were credentialed dyslexia therapists; the remaining educators had completed state-mandated dyslexia training courses. All educators were trained in the implementation of the curriculum used in their classrooms. Educators ranged in classroom experience from 5 to 45 years ($M = 19.42$, $SD = 8.91$), with an average of 4 years in their current role ($SD = 3.41$). Fourteen of the 37 educators had EL-DD students in their classrooms. Of the 14, one was a certified bilingual educator, 10 were ESL certified, and certification information was not reported for three educators. Twelve of these educators provided dyslexia instruction to both EL-DD and EP-DD students in the current sample.

Participating students

Students were recruited from the pool of students in grade 2–5, newly identified with dyslexia, and scheduled to receive dyslexia instruction in a small group assigned to one of the participating educators. Recruitment communication with students’ families began with the participating educator who distributed study information, in written and pre-recorded video formats, to parents/guardians of eligible students assigned to the educator’s dyslexia instruction group. Parents/guardians of eligible students in each participating school district were also invited to attend an information session. For each enrolled student, parent/guardian informed consent and student informed assent was obtained. Recruitment materials and information sessions were presented in both English and Spanish. Participating students were enrolled in the study at entry to their dyslexia instruction program and followed for two academic years.

A total of 200 students enrolled in the study across two cohorts at the start of two successive academic school years (Cohort 1: $n = 151$, Cohort 2: $n = 49$). Of these, six did not meet study requirements and were considered screen failures, four were withdrawn by the study team due to changes in campus participation, and an additional four students were excluded due to unavailability of district data. The

aggregate analytic sample was comprised of 186 students with sufficient data for analysis.

The average age of students in the aggregate sample was 8 years 6 months at baseline ($SD = 12$ months) with most students first entering dyslexia instruction at the start of third grade. The sample was 52.2% female, the majority of the sample was white/Caucasian (72.1%), non-Hispanic (62.4%), and economically disadvantaged (i.e., eligible for free/reduced lunch [FRL]; 52.2%). The distribution of student characteristics did not differ across cohorts (all $\chi^2 < 3.5$).

Language learner status

Thirty-six students were reported as having an active EL status at their school; these students were identified with dyslexia by their district using a combination of native language and L2 measures as outlined in their individual education plan and language program model (Texas Education Agency, 2021) and comprised the English learner with Developmental Dyslexia (EL-DD) group. English language proficiency varied within this group based on state assessment scores collected prior to treatment (Texas Education Agency, 2021). Three were identified as having Basic Proficiency, 21 with Intermediate Proficiency, and six with Advanced Proficiency based on a state English language proficiency assessment. Proficiency score was unavailable for six EL students. Native language varied across EL-DD students, with the majority speaking transparent phonemic Indo-European languages (Spanish $n = 27$), two from Semitic home languages (Arabic $n = 1$, Amharic $n = 1$), and the remaining students had unspecified home languages (other/not reported $n = 7$). The remaining 150 students included those without an active EL status, including monolingual English students and former ELs. Thus, these students were considered an English-proficient group (EP-DD). Students in EL-DD and EP-DD groups received the same instruction from the same educators and were often intermixed within instructional classes.

Intervention

All students identified with dyslexia in participating districts, including those enrolled in this study, received high-quality reading

instruction that is based on scientific best practices (National Institute of Child Health and Human Development, 2000; Texas Education Agency, 2021).

Intervention classes were designed to meet daily for 45–60 min depending on campus scheduling structure. All interventions are derived from Orton Gillingham based instruction that provides explicit, systematic, and intensive reading instruction for students with dyslexia. All instruction provided met state standards for dyslexia intervention, including activities to support phonological awareness, sound-symbol association, syllabication, orthography, morphology, reading fluency, reading comprehension, and other aspects of language processing (Texas Education Agency, 2021). Interventions used in the classes included *Take Flight: A Comprehensive Intervention for Students with Dyslexia* (Ring et al., 2017), *Bridges: A Dyslexia Intervention Connecting Teacher, Student and Avatar, Multisensory Teaching Approach* (Vickery et al., 1987), *Neuhaus Basic Language Skills, Language Enrichment* (Carreker et al., 2005), and others. Most students in the sample received instruction in the first two programs; the remaining students received instruction in one or more of the other programs. Growth in reading skills did not differ across instructional methods (all $ps > 0.45$); thus, students from all instructional groups were collapsed into a single sample for analysis.

Classroom observation

Due to the variability in intervention programming across districts, classroom observations were conducted with each participating educator once per semester to document the types of instructional activities completed during intervention sessions, session duration and class size, as well as evidence of teacher knowledge and skill (Varghese et al., 2021). All classroom observations were conducted by a member of the study team who was experienced in the implementation of dyslexia intervention and the nature and types of activities which address various component reading skills. Observations did not include feedback to educators but were intended to provide objective information regarding the structure and scope of instruction provided across classrooms. Observed classes ranged from 25 to 75 min each ($M = 53$, $SD = 8$), with a median class size of four students ($SD = 1.54$). Measured instructional activities included PA, word and sentence level reading, connected text reading, spelling, dictation, and reading comprehension. Any deviations from lesson sequence were noted including omissions, substitutions, or other structural deviations. Of the observations conducted for the study, 97.9% included measured instructional activities. Deviations from intended lesson structure were generally due to time constraints. Measures of instructional quality included whether the educator demonstrated appropriate pacing of the lesson, use of direct and immediate feedback, and educator knowledge; 98.1% of observed lessons were judged as demonstrating appropriate instructional quality.

Outcome measures

Experienced diagnosticians who were blinded to student intervention assignment and EL status completed a comprehensive battery of English language assessments with each participating student. Assessments occurred at each student's home campus at the

start of the intervention year (baseline), at the end of the first intervention year (mid-test), and at the end of the second intervention year (post-test). Measures used included standardized, norm-referenced measures of key component reading skills; standard scores were used for analysis to contextualize skill levels relative to developmental norms. Baseline measures of code- and meaning-based language skills included: PA, word reading, spelling, passage comprehension, listening comprehension, and vocabulary. As primary instructional targets, PA, word reading, and passage comprehension were evaluated as outcomes of interest in the examination of growth.

Phonological awareness

Phonological processing was measured using the Phonological Awareness composite from the Comprehensive Test of Phonological Processing 2nd Edition (CTOPP-2; Wagner et al., 2013). The PA composite score is derived from three subtests. The Elision subtest requires participants to elide individual phonemes from verbally presented words to form real word responses. The Blending Words subtest requires participants to combine verbally presented phonemes to form real word responses. The Phoneme Isolation subtest requires participants to provide the first, last, or middle sound from verbally presented real words. The composite measure has reported internal consistency of $\alpha = 0.92$.

Word identification

Single-word reading was measured using the Woodcock Reading Mastery Test 3rd Edition (WRMT-3; Woodcock, 2011). This test requires participants to read isolated real words with no time constraint. This subtest has an average split-half reliability of 0.98.

Spelling

Spelling was assessed using the Word Identification and Spelling Test (WIST; Wilson and Felton, 2004). The WIST is a nationally standardized assessment designed specifically for students who are struggling with reading and spelling. The Spelling subtest of the WIST includes stimuli sets of both regular and irregular words, allowing for a more granular assessment of spelling ability through error analysis. The Spelling subtest measure has a reported internal consistency of $\alpha = 0.98$, and strong convergent validity with other common and reliable measures of reading and spelling (i.e., WIAT-II, WRMT-R/NU, TWS; all $rs \geq 0.8$).

Reading comprehension

Reading comprehension was measured using the Passage Comprehension subtest of the WRMT-3 (Woodcock, 2011). This test utilizes a cloze-type procedure to measure comprehension of narrative and expository passages and has an average split-half reliability of 0.86.

Listening comprehension

Receptive language was measured using the Listening Comprehension subtest of the WRMT-3 (Woodcock, 2011). This test requires participants to listen to passages and dialogues and respond to orally-presented questions and has an average split-half reliability of 0.88.

Receptive vocabulary

Receptive vocabulary was assessed using the Peabody Picture Vocabulary Test 5th Edition (PPVT-5; Dunn, 2019). This test is an

individually administered instrument that assesses receptive vocabulary in standard American English. The PPVT-5 has reported internal consistencies of 0.89–0.97 and demonstrates convergent validity with other common and reliable measures of vocabulary (i.e., CELF-4, $r = 0.67$ – 0.75 ; EVT-2; $r = 0.80$ – 0.84).

Analyses

Demographic characteristics and intervention eligibility information was first compared across groups. Demographic variables included student age, gender, race, ethnicity, SES (as represented by free/reduced lunch eligibility), and comorbid diagnoses. Continuous variables were examined using Student's t -tests; categorical variables were examined using Pearson's chi-squared analyses. Demographic characteristics of the subgroups are presented in Table 2.

Missing data and data screening

Out of the 186 students included in the aggregate sample, approximately 17% were lost to follow up, with all but two attrited cases occurring within the second academic year after study enrollment (16%). Two students were unable to be evaluated at the baseline time period due to scheduling conflicts; mid- and post-test data were collected for both students. This level of attrition is in line with previous reports estimating attrition rates between 15 and 20% for longitudinal educational studies (Enders, 2003). This may further reflect increased student mobility and transfer rates observed in recent years post-COVID (Schueler and Miller, 2023). Furthermore, attrition rate across groups was similar (EL-DD: 16.7%, EP-DD: 19.4%). Those who completed the two-year study and those who were lost to follow up did not differ in demographic constitution except age (all $\chi^2 < 4.4$). Attrited students were older at study enrollment than those who completed the study $t(184) = 2.96, p = 0.002$. All major analyses were conducted with and without the 32 students who were lost to follow-up, producing similar results. Therefore, to maximize the analytic sample, students who were lost to follow up were included for analysis.

TABLE 2 Demographic characteristics of participant subgroups.

	EL-DD	EP-DD
Demographics		
Age (years; months)	8y; 11 m (1y; 1 m)	8y; 6 m (1y; 1 m)
Gender (Female)	50.0%	52.7%
Race		
White/Caucasian	86.1%	68.7%
African American	8.3%	20.0%
Other/Multiple	5.6%	11.3%
Ethnicity (Hispanic/Latino)	83.3%	25.3%
Free/reduced lunch eligible	97.20%	41.30%
Comorbidities		
ADHD	0.0%	9.3%
Language impairment*	13.9%	8.7%
Other	0.0%	2.0%

*Rates of students formally identified with a Specific Language Impairment or related disorder.

All outcome measures were evaluated for normality and presence of outliers. Four univariate outliers were identified; these values were winsorized to 90% prior to analysis. Outcome measures were normally distributed except for baseline PA and spelling, which were slightly positively skewed. However, data transformations did not impact results of major analyses. Original standard score values were retained to preserve interpretability of model outcomes.

Additionally, early changes in the assessment battery resulted in unavailable baseline standard scores on spelling ($n = 7$) and listening comprehension ($n = 34$) for a total of 36 students with missing baseline data in one or both of these measures; missing baseline scores for these variables were imputed using group means for the analysis related to Research Question 1 (reading profiles). Imputed means were not utilized in the analyses pertaining to Research Question 2 (reading growth), which examined performance in PA, word reading, and passage comprehension over time.

Reading profiles at baseline

Toward the first research question, we aimed to characterize differences in reading profiles across groups by examining baseline scores on code-based and meaning-based outcome measures. To do this, we employed a multivariate profile analysis using GLM repeated measures in SPSS as described in Tabachnick and Fidell (2019). This multivariate approach to repeated measures evaluates profiles across groups in terms of parallelism of profiles (differential performance across groups qualified by an interaction between level and flatness), flatness (deviations in one or more dependent variables compared to the average across measures), and level (group differences in performance averaged over dependent variables). To characterize the reading profiles of EL-DD and EP-DD, multivariate profile analysis was performed on tests of code-based (PA, word reading, spelling) and meaning-based (passage comprehension, listening comprehension, vocabulary) reading skills at baseline, using EL status as the grouping variable. Mean-centered age and FRL status were entered as covariates. Intercorrelations across baseline reading skills are presented in Table 3.

Growth in reading skills

To address the question of comparative growth across groups in reading scores over time, linear mixed effects modeling was used to account for nesting within the data (i.e., time within students). Models were fit using maximum likelihood estimation in the nlme package in R (Pinheiro and Bates, 2000; Pinheiro et al., 2023). Initial null models were built to assess variance accounted for at the student level; the intraclass correlation for each of the outcomes was large, ranging from 0.67 to 0.78. Separate linear mixed-effects models were then conducted to estimate growth for each outcome using the following terms: time, group, grand mean-centered age, FRL status, and time*group interaction. Significant interactions between Group and Time on were probed by running separate mixed effects models for each group independently. The models specified were the same as the full model described above, excluding the main effect of group and group*time interaction. Dichotomous variables were sum coded to aid in the interpretation of fixed effects (i.e., Group: EP-DD = -1 , EL-DD = 1 ; FRL: No = -1 , Yes = 1). Random intercepts and slopes were included in each model. For all models, normality of residuals and random effects were evaluated using histograms and Q-Q plots. Residuals for all models were

TABLE 3 Bivariate correlations among outcome variables at baseline.

	1.	2.	3.	4.	5.	6.
1. Phonological awareness	–					
2. Word identification	0.45***	–				
3. Spelling	0.55***	0.65***	–			
4. Passage comprehension	0.48***	0.75***	0.56***	–		
5. Listening comprehension	0.26**	0.16*	0.19*	0.32***	–	
6. Vocabulary	0.40***	0.34***	0.33***	0.44***	0.54***	–

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

normally distributed with a mean of approximately zero. Subgroup performance across time is presented in Table 4.

Results

Descriptive statistics for the demographic characteristics of subgroups are presented in Table 2. The EL-DD and EP-DD groups did not differ on gender, race, or comorbidities. However, groups did differ in age, ethnicity, and SES. Students in the EL-DD group were approximately 6 months older compared to the EP-DD group at baseline, $t(184) = 2.30$, $p = 0.01$. Furthermore, the grade distribution across groups was weighted more heavily in earlier grades for the EP-DD group compared to later grades for the EL-DD group ($\chi^2(3) = 13.36$, $p = 0.004$). Although the two groups had similar proportions of 3rd and 4th grade students, the EP-DD group was comprised of more 2nd grade students (approximately 38%) than 5th grade students (11%), whereas the opposite pattern was true for the EL-DD group (11% in 2nd grade, 28% in 5th grade). The EL-DD group also represented a greater proportion of Hispanic/Latino students and those from economically disadvantaged households ($ps < 0.001$). Grand mean centered age and FRL status were included in subsequent analyses as covariates.

Reading profiles at baseline

As shown in Figure 1, the profiles across groups were parallel after adjusting for covariates, $F(4,177) = 0.61$, $p = 0.66$, partial $\eta^2 = 0.01$, with 90% confidence limits 0.00–0.03.

When averaged over groups, performance profiles deviated significantly from flatness, suggesting differential performance across code- and meaning-based skills, $F(4,177) = 22.77$, $p < 0.001$, partial $\eta^2 = 0.34$, with confidence limits from 0.24 to 0.41. Relative strengths were found for the combined sample on meaning-based skills relative to code-based skills. Significant heterogeneity was also found across individual measures for code- and meaning-based skills. For the combined sample, students demonstrated significant weaknesses in spelling ($M = 72.81$, $SE = 0.85$) relative to other code-based reading skills (PA: $M = 86.87$, $SE = 1.35$; word reading: $M = 79.68$, $SE = 1.15$; all $ps < 0.001$). Word reading was also a weakness relative to PA ($p < 0.001$). For meaning-based skills, passage comprehension was a significant weakness relative to other measures (passage comprehension: $M = 85.17$, $SE = 1.31$; listening comprehension: $M = 94.86$, $SE = 1.10$; vocabulary: $M = 93.50$, $SE = 1.08$; all $ps < 0.001$). Vocabulary and listening comprehension did not differ at baseline.

For the levels test, groups differed significantly in overall performance when averaged over measures, $F(2,179) = 8.11$, $p < 0.001$, partial $\eta^2 = 0.08$, with confidence limits from 0.03 to 0.15. The EP-DD group outperformed the EL-DD group on the combined dependent variables. EL-DDs demonstrated greater weaknesses relative to EP-DDs in meaning-based skills (partial $\eta^2 = 0.08$) than code-based skills (partial $\eta^2 = 0.03$). The EP-DD group outperformed the EL-DD group on all measures, though these effects were small and did not reach significance after setting alpha to 0.008 to reflect a familywise error rate of 0.05 (see Table 5). The only skills which reliably differentiated groups at this level were passage comprehension ($p = 0.003$) and listening comprehension ($p = 0.001$).

Growth in reading skills

Phonological awareness

Parameter estimates and model fit indices for each of the full models estimating growth in reading skills are presented in Table 6 and depicted in Figure 2. Results of the full model estimating growth in PA skills revealed significant variability in intercepts across participants, $SD = 9.72$, $\chi^2(1) = 252.11$, $p < 0.001$. Slopes did not vary across participants, $SD = 0.58$, $\chi^2(2) = 0.20$, $p = 0.90$. There was a small positive correlation between random slopes and intercepts, $r = 0.12$. Results revealed significant fixed effects of group, $b = -4.02$, $t(182) = -2.50$, $p = 0.01$, and time, $b = 4.04$, $t(333) = 7.66$, $p < 0.001$, qualified by a significant interaction between group and time, $b = 1.52$, $t(333) = 2.88$, $p = 0.004$. The performance gap between EL-DDs and EP-DDs narrowed over time, as the rate of change for EL-DDs was more than double that of EP-DDs (see Figure 2). There was also a significant effect of SES on PA performance; students eligible for free/reduced-price lunches performed significantly below their FRL ineligible peers on PA, $b = -3.41$, $t(182) = -3.32$, $p = 0.001$. There was not a reliable effect of age on PA, $b = -0.002$, $t(182) = -0.04$, $p = 0.97$.

The interaction between group and time on PA was probed by running separate mixed effects models for each group independently. For the EL-DD group, there was a significant effect of time, with standard scores increasing nearly six points per time period on average, $b = 5.58$, $SE = 0.99$, $t(64) = 5.64$, $p < 0.001$. Age and SES did not reliably predict PA for the EL-DD group. For the EP-DD group, the effect of time was also significant and positive, but smaller, $b = 2.52$, $t(268) = 5.54$, $p < 0.001$. The interaction between group and time for PA reflects a difference in slopes across groups, with the EL-DD group improving at over twice the rate estimated for their EP-DD peers. SES was associated with PA performance for the EP-DD group, $b = -3.76$, $SE = 1.06$, $t(147) = -3.54$, $p < 0.001$.

TABLE 4 Average student performance per subgroup on outcome measures across timepoints.

	English Learners with Dyslexia (EL-DD)						English Proficient with Dyslexia (EP-DD)					
	Time 1	n miss	Time 2	n miss	Time 3	n miss	Time 1	n miss	Time 2	n miss	Time 3	n miss
PA	80.81 (11.82)	0	89.25 (12.63)	0	91.62 (13.57)	7	90.25 (14.36)	2	93.98 (14.18)	2	96.53 (14.05)	26
WID	73.89 (12.57)	0	75.14 (12.96)	0	82.79 (14.46)	7	82.62 (12.37)	2	84.14 (13.43)	2	88.49 (13.63)	25
PC	76.06 (12.13)	0	80.50 (10.26)	0	85.24 (10.94)	7	90.55 (14.73)	2	90.42 (13.30)	2	93.23 (14.18)	25

Standard deviations in parentheses.
PA, Phonological Awareness; WID, Word Identification; PC, Passage Comprehension. The number of missing cases at each timepoint for each measure are reported.

Word reading

The relationship between language status and word reading varied significantly across participants, $SD = 11.54$, $\chi^2(1) = 342.18$, $p < 0.001$. Slopes also significantly varied across participants, $SD = 2.95$, $\chi^2(2) = 12.93$, $p = 0.002$. Random intercepts and slopes were negatively correlated, $r = -0.32$. Results revealed significant fixed effects of group, $b = -3.00$, $t(182) = -2.11$, $p = 0.04$, and Time, $b = 3.16$, $t(334) = 6.83$, $p < 0.001$. The EP-DD group significantly outperformed the EL-DD on word reading. However, word reading increased over time for the sample as a whole. The interaction between group and time trended toward significance, $b = 0.80$, $t(334) = 1.72$, $p = 0.09$. There was also a significant effect of SES on word reading performance; students eligible for free/reduced-price lunches performed significantly below their FRL ineligible peers on word reading, $b = -3.51$, $t(182) = -3.65$, $p < 0.001$. A reliable effect of age was found on word reading, $b = -0.20$, $t(182) = -2.90$, $p = 0.004$. Students who were older than the sample mean at baseline tend to score more poorly on word reading, whereas those younger than the sample mean had higher scores.

Passage comprehension

The relationship between language status and passage comprehension varied significantly across participants, $SD = 12.59$, $\chi^2(1) = 173.40$, $p < 0.001$. There was a trend toward significant variability across participants in slope, $SD = 3.06$, $\chi^2(2) = 5.14$, $p = 0.08$. Random intercepts and slopes were negatively correlated, $r = -0.65$. Results of fixed effects revealed a main effect of group, $b = -6.05$, $t(182) = -3.62$, $p < 0.001$, as well as a significant effect of time, $b = 2.75$, $t(334) = 4.61$, $p < 0.001$. The interaction between Group and Time was also significant, $b = -1.85$, $t(334) = 3.10$, $p = 0.002$. A main effect of age was found, $b = -0.23$, $t(182) = -3.51$, $p < 0.001$, such that standard score performance decreased as age increased. Lastly, a significant main effect of FRL status, $b = -4.09$, $t(182) = -4.52$, $p < 0.001$, indicated that students from lower SES homes performed more poorly than their peers from higher SES homes on passage comprehension.

The interaction between group and time on passage comprehension was probed by running separate mixed effects models for each group independently. For the EL-DD group, there was a significant effect of time on passage comprehension ability, with standard scores increasing approximately 4.5 standard score points per time period on average, $b = 4.64$, $SE = 1.03$, $t(64) = 4.49$, $p < 0.001$. There was not a reliable effect of age or SES on passage comprehension for the EL-DD group. For the EP-DD group, the effect of time was also positive and trended toward significance but was smaller, $b = 0.90$, $SE = 0.53$, $t(270) = 1.70$, $p = 0.09$. Thus, the interaction between group and time for passage comprehension reflects a difference in slopes across groups, with the EL-DD group demonstrating a much steeper slope than the EP-DD group.

Discussion

The current study employed an observational comparison of reading achievement across EL and EP students with dyslexia who were receiving routine, evidence-based dyslexia instruction in English. The first goal of the study was to determine whether baseline differences in code- and meaning-based reading skills

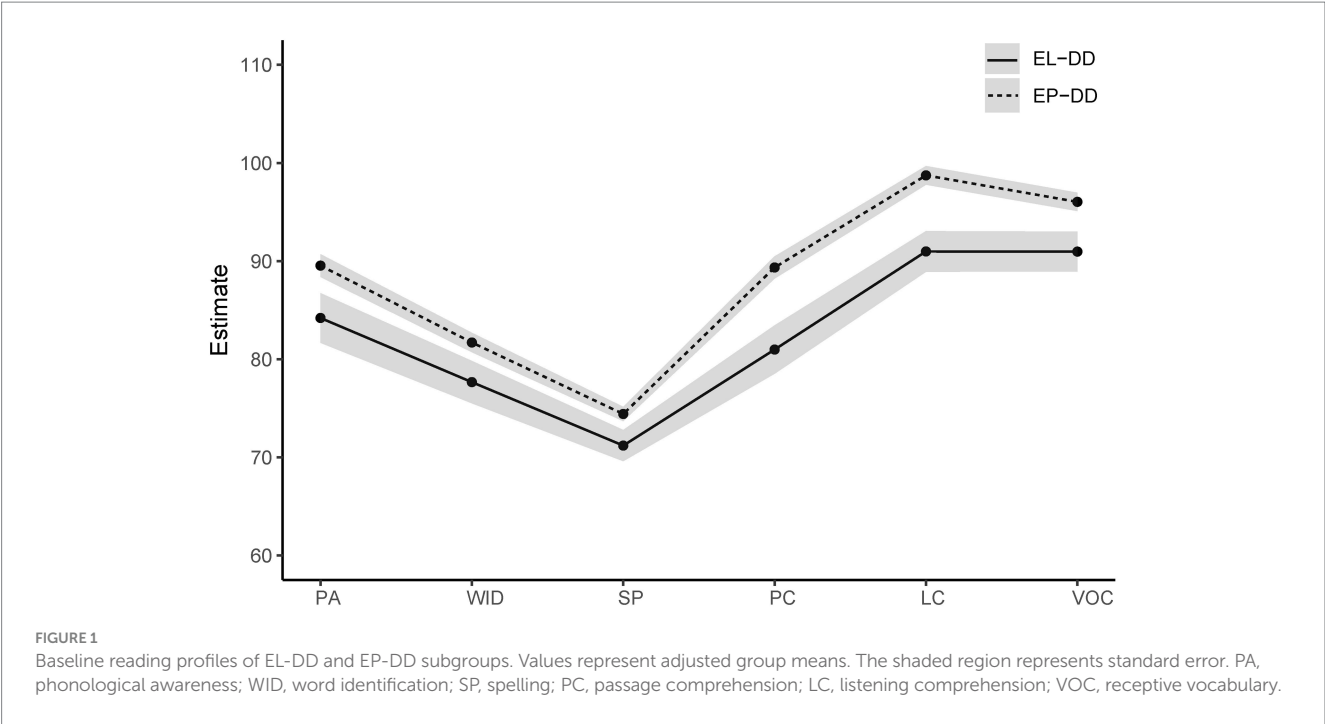


TABLE 5 Results from the multivariate profile analysis, univariate effects of level.

	df1, df2	F	partial η^2
Phonological awareness	1, 180	3.43	0.02
Word identification	1, 180	2.70	0.02
Spelling	1, 180	3.16	0.02
Passage comprehension	1, 180	8.89**	0.05
Listening comprehension	1, 180	10.75**	0.06
Vocabulary	1, 180	4.76*	0.03

* $p < 0.05$, ** $p < 0.01$.

were evident at the onset of intervention. Toward this end, multivariate profile analysis was used to compare performance across EL-DD and EP-DD groups in terms of profile parallelism (similar patterns of scores), levels (between-groups differences in performance), and flatness (differential performance across skills). As expected, and consistent with the literature reporting heterogeneous reading profiles for both EL and EP struggling readers, profiles differed with respect to level, and to some extent flatness, though the lack of an interaction between group and skill indicated parallel profiles. Patterns of relative strengths and weaknesses across reading skills were similar for both the EL-DD and EP-DD groups, with the EL-DD group performing reliably poorer than the EP-DD group on all measures. The second goal of the study was to examine growth in targeted reading skills for the two groups over the course of extensive dyslexia intervention lasting two academic years. A series of linear mixed models revealed significant improvements in standard scores for all outcomes and a trend of differential growth rates favoring the EL-DD group. This study builds upon the extant literature examining reading profiles in samples of ELs with and without risk of reading failure, as well as in comparison to non-EL samples.

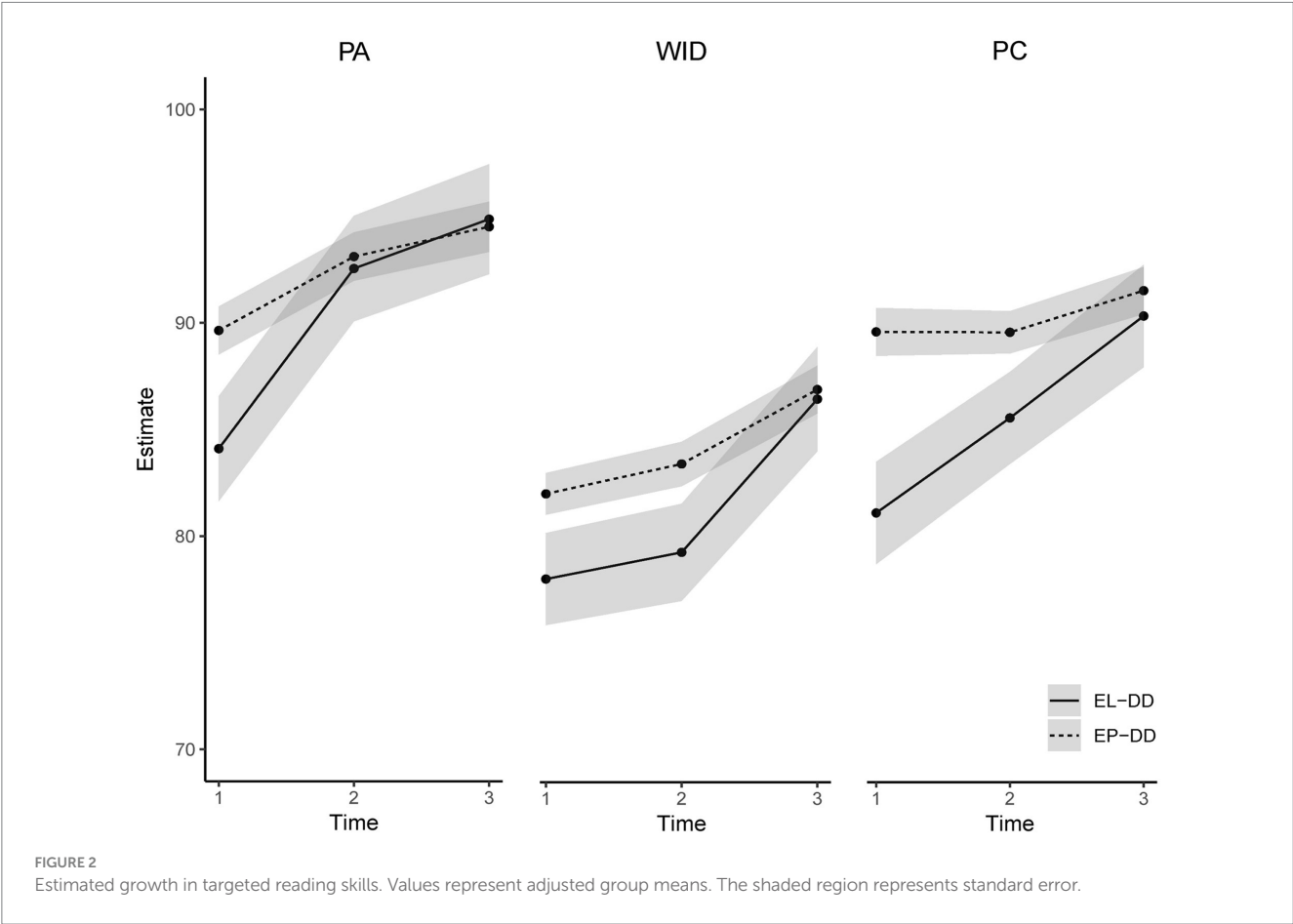
Unlike previous research, the current study examines both code- and meaning-based skills in a sample of ELs identified with dyslexia. Additionally, the current study evaluates growth in target reading skills in these EL-DD students relative to their EP-DD peers over the course of an extensive intervention.

Several constitutional differences emerged between the EL-DD and EP-DD groups which are in line with previously documented patterns in the EL literature. First, EL-DD students were approximately 6 months older at the start of intervention start in comparison to their English proficient peers. Although baseline age in this study reflects student age at the start of the first intervention year, rather than age at identification, this finding suggests that ELs may be delayed in receiving an identification of dyslexia and, in turn, are beginning services at an older age than EP peers. This difference in age across groups coincides with a differential distribution across grades for EL-DD and EP-DD groups: although similar rates of 3rd and 4th grade students were enrolled in the study across groups, the EL-DD group had fewer 2nd grade students and more 5th grade students than the EP-DD groups. These findings are in line with previous reports of underidentification of EL-DD in early elementary grades due to a tendency for schools to delay identification for ELs in hopes oral

TABLE 6 Parameter estimates for longitudinal models of code-based and meaning-based skills.

Parameters	Phonological awareness	Word identification	Passage comprehension
	B (SE)	B (SE)	B (SE)
Fixed effects			
Intercept	83.47 (1.56)***	76.21 (1.37)***	82.30 (1.63)***
Age	−0.003 (0.07)	−0.20 (0.07)**	−0.23 (0.06)***
FRL	−3.41 (1.03)**	−3.51 (0.96)***	−4.09 (0.91)***
Group	−4.02 (1.61)*	−3.00 (1.42)*	−6.05 (1.67)***
Time	4.04 (0.53)***	3.16 (0.46)***	2.75 (0.60)***
Time*Group	1.52 (0.53)**	0.80 (0.46)+	1.85 (0.60)**
Random effects variance			
Intercept	125.6	137.3	158.55
Time	0.33	9.62	9.37
Residual	54.38	24	53.45
Model Fit			
AIC	3,959.74	3,760.1	3,960.16
BIC	4,002.3	3,802.68	4,002.73
Conditional R ²	0.74	0.87	0.74
Marginal R ²	0.11	0.19	0.23

AIC, Akaike information criterion; BIC, Bayesian information criterion. +*p* < 0.1, **p* < 0.05, ***p* < 0.01, ****p* < 0.001.



language skills will improve over time (Limbos and Geva, 2001; Samson and Lesaux, 2009). Despite the later identification of EL-DD students in the current sample, however, both oral and written language skills remained weak relative to EP-DD students.

Multivariate profile analysis of code- and meaning-based reading skills

The pre-intervention reading profiles reported in the current study are consistent with findings suggesting reading profiles of ELs differ in deficit severity rather than specificity in comparison to their EP peers (e.g., Miciak et al., 2022; O'Connor et al., 2019; Vargas et al., 2023). Global reading deficits found for EL-DDs were evident across code- and meaning-based reading skills. Furthermore, reading deficits for EL-DDs were apparent relative to not only population norms, but also in comparison their proficient English-speaking peers with dyslexia. The effects of native language status on reading outcomes can be difficult to disentangle from effects other risk factors such as SES (see Solari et al., 2014). The current findings revealed a moderate effect of group after controlling for age and SES, indicating additional variability in reading skills is attributable to language status. When examined at the level of individual outcomes, group performance differed only on a measure of passage comprehension, and to a lesser extent, listening comprehension. Future study is warranted to evaluate the relative contribution of these risk factors in larger samples.

Although groups differed in overall skill level, their reading profiles were remarkably similar. Interestingly, PA was a relative strength among code-based skills for both groups. Although PA is often a weakness in students with dyslexia, it is neither necessary nor sufficient to determine the presence of a reading disability (Fletcher et al., 2018; Miciak and Fletcher, 2020). It is not possible to examine whether and to what extent PA and related instructional supports were provided to these students prior to the start of the study which may have influenced PA performance. What is clear, however, is that despite relative strengths in PA, profiles for both groups reflected characteristic code-based weaknesses of dyslexia, including notable weaknesses in word-level reading and spelling skills. These weaknesses exist despite relative strengths in PA and oral language measures (vocabulary and listening comprehension).

Whereas both groups exhibited significant discrepancies between oral language measures and passage comprehension, the EL-DD group demonstrated similar deficit magnitudes for both word-level and passage-level written language measures. The average-level oral language skills of EP-DD may have served as a protective or compensatory mechanism, bolstering reading comprehension for this group (Haft et al., 2016). Conversely, the EL-DD group had globally weaker reading profiles with which to support comprehension. This is in line with previous findings suggesting that both code- and meaning-based skills are associated with comprehension deficits in ELs (Cho et al., 2019; Capin et al., 2024). In line with the Simple View of Reading, however, greater deficit levels for code- and meaning-based skills in the EL-DD group may have led to greater achievement gaps on passage comprehension between the two groups prior to receiving ELDI.

The relative contributions of code- and meaning-based skills to reading comprehension ability varies across ages, skill levels, and

language background. Meaning-based skills play a larger role in comprehension for children in later grades as children solidify code-based skills and the focus of instruction shifts to content knowledge (Chall, 1986). Oral language may also play a larger role in reading difficulties for ELs compared to their non-EL peers (Cho et al., 2019). Interestingly, in the current sample word identification predicted reading comprehension over and above vocabulary and listening comprehension for both EP-DD and EL-DD groups, suggesting that code-based deficits contribute more to comprehension weaknesses than oral language skills for these students (cf., Kim, 2017, 2020). It is important to note that because students in the current sample demonstrated relative strengths in meaning-based skills, these data may not be generalizable to EL-DDs with more pronounced oral language deficits.

Parallel patterns of global deficits across EL-DD and EP-DD profiles further support the differentiation of performance as a function of severity rather than specificity. The global impairments seen in EL-DD students' code- and meaning-based skills support their need for intensive multicomponent intervention toward remediation of various reading skills, including explicit and systematic instruction in phonological awareness, word study, reading comprehension, and oral language. Furthermore, the parallel profiles across groups suggest that these students will require multicomponent interventions to remediate a wide and varied range of reading skills.

Longitudinal evaluation of performance

The second aim of the current study was to examine growth in targeted reading skills across the two groups over the course of intensive ELDI delivered daily for two academic years. Findings support the use of evidence-based ELDI in an instructional setting which includes both EL-DD and EP-DD students without requiring substantial modifications to intervention content or implementation. Students in the current sample significantly improved in standard score performance for code- and meaning-based reading skills, reaching or approaching age-level proficiencies in these skills over the course of intervention. The results of the mixed models estimating growth in PA, word identification, and passage comprehension indicated significant growth in age-based rank status over a two-year intervention period. Importantly, this growth represents a reliable trend in the data reflecting an improvement in targeted skills which reduces deficit magnitude relative to age-based developmental norms. Students in the current sample were below the average range (<90 SS) at baseline across all three targeted reading measures. However, by the end of treatment, mean student performance was within the average range for both PA and passage comprehension, and just below the average range for word identification, narrowing the gap on these measures with their age-equivalent peers with dyslexia. Despite significant growth, however, many students in both groups remained below average at post-test on key reading measures and may require additional intervention supports to achieve age- or grade-level expectations.

Growth in targeted reading skills was qualified by interactions between groups and time. In general, the growth exhibited by the EL-DD group was greater than that of the EP-DD group, with slopes ranging between 1.5 and 5 times steeper for EL-DDs. At the beginning of the intervention, the EL-DD group was well below average in PA whereas the EP-DD group had average baseline scores. Despite these

differences in baseline ability, both groups achieved significant improvements over time, performing within the average range (≥ 90 SS) at the end of the intervention. Additionally, most of the growth exhibited in PA occurred within the first year of intervention, with continued standard score improvements found the second year. This was true for the combined sample and for each group independently, with EL-DDs catching up to EP-DDs by the mid-intervention testing period. Relative weaknesses in PA for ELs is often attributed to reduced familiarity with the phonological structure of the non-native language. However, PA skills are highly malleable and improve rapidly with explicit instruction, even for non-native language learners (e.g., Cirino et al., 2013; for review see Hall et al., 2019). The explicit, systematic PA integrated into the interventions delivered in this study may have contributed to closing this gap by increasing knowledge of phonological structure for EL-DDs. Previous studies report similar findings, with explicit L2 PA instruction leading to significant growth in L2 PA as well as positive reading and spelling outcomes (Yeung et al., 2013).

Consistent with current identification methods for identifying dyslexia, word reading was a significant weakness for both the EL-DD and EP-DD groups prior to intervention. Although the growth rate of the EL-DD group was approximately 1.5 times faster than EP-DDs on word-level reading, this interaction did not reach a level of statistical significance. The severe word-reading deficits experienced by EL-DD and EP-DD students in this sample appear to be malleable and improve over the course of treatment. Like the intervention implemented by Lovett et al. (2008), the interventions utilized in the current study targeted phonemic awareness at various levels of manipulation and integrated phonemic awareness and decoding/encoding activities to improve orthographic knowledge. Thus, the structured approach to decoding instruction integrated within the interventions utilized in this study may have contributed to the greater growth in word reading for EL-DDs by increasing familiarity with the phonological structure of the English language while simultaneously bolstering orthographic knowledge. These effects appear to be cumulative, with greater growth for both groups occurring within the second intervention year. However, students in both groups remained below average in word reading skill at the end of the intervention period and will require additional support to continue to improve these skills and achieve age-appropriate word reading performance.

Growth in meaning-based reading skills, as measured by passage comprehension, revealed a similar pattern of effects. The EP-DD group outperformed the EL-DD group on passage comprehension, but the magnitude of differences across groups narrowed over time as the EL-DD group improved their comprehension skills at a faster rate than the EP-DD group. This is in line with the findings reported by Capin et al. (2024), who reported greatest growth in passage comprehension for the group with the most severe global deficits. The explicit, systematic comprehension instruction provided through the interventions in this study is in line with empirically supported best practices for improving reading comprehension in both EP and EL students, including vocabulary instruction, comprehension monitoring, discourse, grammar, and morphology (August and Shanahan, 2006). Moreover, the structured and repeated practice opportunities embedded in comprehension instruction allow for consolidation of learned skills which may further support the development of language proficiency in non-native speakers (Hall et al., 2019). Importantly, although the passage comprehension

skills of the EL-DD group improved significantly at each timepoint, the severe deficits experienced by this group did not reach the average range until the end of the second year of treatment. The current study extends previous findings by (1) demonstrating significant growth in comprehension skills is evident for ELs with dyslexia over the course of ELDI, and (2) reading comprehension may follow a protracted growth pattern supported directly by explicit instruction in comprehension skills as well as indirectly through the remediation of foundational code-based skills.

Together, the findings of the current study confirm global reading deficiencies for ELs with dyslexia in comparison to their English-proficient peers prior to receiving ELDI. Overall, EL-DDs performed significantly below their EP-DD peers in both code- and meaning-based reading skills prior to intervention, though the achievement gap between groups significantly narrowed by the end of treatment. Whereas phonological skills improved early within the intervention period, growth in word reading and comprehension was more consistent during the second year of instruction, suggesting that both EP-DD and EL-DD students benefit from intensive and extensive multicomponent reading instruction (daily sessions for at least two academic years) to provide opportunity for practice and consolidation of higher order skills such as word reading, spelling, and comprehension. These findings provide additional evidence to suggest that ELs should not be excluded from ELDI on the basis of language status alone. As suggested by Siegel (2016), EL status is not a barrier to achieving proficient literacy skills, even for students with dyslexia. In the current study, EL-DDs benefitted as much or more from English-language instruction in comparison to their EP-DD peers. Although these findings provide encouraging evidence to support ELDI as a practicable approach to remediating the severe reading deficits observed in ELs identified with dyslexia, the generalization of these findings is cautioned given the limitations discussed below.

Limitations

The findings presented should be considered in context of several important caveats and limitations. Primarily, the observational design of this study has inherent experimental limitations that limit what questions the study can inform. It was not possible to standardize the diagnostic criteria and procedures for dyslexia identification and EL status determination across districts. There was limited information available about prior instruction and the length of time from identification to beginning intervention was variable. Educator assignment to curriculum and student assignment to educator was pre-determined by the school and, appropriately, not done so randomly or with any influence from the research team; for example, all the EL-DD students were assigned to educators with appropriate ESL certification.

A significant scientific limitation to the evaluation of intervention outcomes is the lack of a control group that did not receive instruction. This limits generalizability of our findings to some extent. It is not possible to determine from this study how much of the growth in this sample is attributable to the intervention as opposed to maturational effects. Similarly, we are unable to parse the amount of growth demonstrated by the EL-DD group which due to increasing English language proficiency or other factors, such as potential other native language instruction as opposed to the dyslexia intervention. Therefore, the current study cannot answer questions about whether native language instruction would

produce different results, or whether similar patterns of growth would be reflected in the students' native language. Furthermore, the current study does not address how variability in the native language may impact L2 outcomes. However, the naturalistic observation model across school districts of varying sizes does suggest that dyslexia intervention can be beneficial for students of various levels of English language proficiency in routine school functioning where bias cannot, and likely should not, be scientifically managed.

Finally, constitutional differences across groups in age and SES were found across groups in this study, and though they were statistically controlled, these factors may confound findings of group differences in standard scores in several ways. First, although standardized assessments of achievement are becoming increasingly sensitive to diverse populations, a well-documented bias for higher SES and non-minority backgrounds persists (Mancilla-Martinez et al., 2021; Rhodes et al., 2005). Second, ELs in the US are disproportionately from economically disadvantaged households, a factor which is negatively associated with reading achievement (Hoff, 2006; National Center for Education Statistics, 2022; Samson and Lesaux, 2015; Solari et al., 2014). In the current sample, all but one student in the EL-DD group were from economically disadvantaged homes (96.6%), whereas less than half of the EP-DD group fell in this same category. Despite this difference, the EL-DD group demonstrated accelerated growth relative to their EP-DD peers over course of treatment. Lastly, students in the EL-DD group were older than their EP-DD peers at baseline by approximately 6 months. It is of note that the same level of raw performance on a given test will result in a lower age-based standard score as age-level expectations increase. However, the amount of growth achieved by the EL-DD group was greater than that of the EP-DD group, indicating that the EL-DD group was (1) further behind their age-equivalent peers prior to intervention and (2) vastly improved in their rank status relative to age-based norms over two academic years.

Conclusion

The findings of the current study suggest that EL-DDs with at least intermediate proficiency of the English language demonstrate similar patterns of reading performance as their EP-DD peers: significant and substantial deficits in code-based skills with relative strengths in meaning-based skills. Despite similar patterns across reading skills, the EP-DD group consistently outperformed the EL-DD group; these effects persisted after controlling for demographic differences across groups. Whereas the EP-DD group demonstrated average meaning-based skills in comparison to below average code-based skills, both code- and meaning-based skills were below average for the EL-DD group.

Despite significant underperformance relative to their EP-DD peers at the start of the intervention, EL-DDs demonstrated greater rates of growth in code- and meaning-based reading skills over the course of intervention. These findings suggest that EL-DDs can benefit from ELDI, as demonstrated by the current sample achieving similar levels of reading mastery as their EP-DD peers by the end of the intervention across targeted reading skills. This is in line with previous studies reporting significant and large effects of reading interventions for ELs with reading difficulties. Furthermore, the current study demonstrates that these effects were found even in areas of significant pre-intervention weakness for EL-DDs which revealed the greatest amount of growth (i.e., PA and reading comprehension). Weaknesses

in these areas are well documented for ELs, who can experience pronounced difficulties in acquiring phonological and semantic aspects of their non-native language (Melby-Lervåg and Lervåg, 2014). The intensive, multicomponent, and extensive nature of the reading interventions provided in this study may have helped to support the additional instructional needs of the EL-DD group related to language status in addition to characteristic weaknesses of dyslexia. Future studies are warranted which utilize data-based approaches to identifying underlying profiles for EL-DD and EP-DD students, as well as experimental approaches to further understanding the effects of ELDI on the global deficit profiles of EL-DDs.

Finally, disproportionality across groups in terms of grade and age suggests that routine procedures for the identification of dyslexia in ELs may not allow for early identification of students from varied language backgrounds. Earlier identification may help to lessen the severity of deficits prior to intervention, thereby narrowing the magnitude of the differences across groups and giving EL-DDs greater chances for academic success.

Data availability statement

The datasets presented in this article are not readily available because aspects of data are the property of participating districts. Requests to access the datasets should be directed to anna.middleton@tsrh.org.

Ethics statement

The studies involving humans were approved by University of Texas Southwestern Medical Center IRB. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation in this study was provided by the participants' legal guardians/next of kin.

Author contributions

AM: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. MD: Conceptualization, Data curation, Project administration, Writing – review & editing. SF: Conceptualization, Funding acquisition, Investigation, Supervision, Writing – review & editing.

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References

- Al Otaiba, S., and Fuchs, D. (2006). Who are the young children for whom best practices in reading are ineffective? An experimental and longitudinal study. *J. Learn. Disabil.* 39, 414–431.
- August, D., and Shanahan, M. A. (2006). Developing literacy in second-language learners: report of the national literacy panel on language-minority children and youth. New York, NY: Routledge.
- Bialystok, E., Craik, F. I., and Luk, G. (2012). Bilingualism: consequences for mind and brain. *Trends Cogn. Sci.* 16, 240–250. doi: 10.1016/j.tics.2012.03.001
- Boucher, A. N., Bhat, B. H., Clemens, N. H., Vaughn, S., and O'Donnell, K. (2024). Reading interventions for students in grades 3–12 with significant word reading difficulties. *J. Learn. Disabil.* 57, 203–223. doi: 10.1177/00222194231207556
- Brasseur-Hock, I. F., Hock, M. F., Kieffer, M. J., Biancarosa, G., and Deshler, D. D. (2011). Adolescent struggling readers in urban schools: results of a latent class analysis. *Learn. Individ. Differ.* 21, 438–452. doi: 10.1016/j.lindif.2011.01.008
- Byrne, B. (2014). The foundation of literacy: the child's acquisition of the alphabetic principle. London: Psychology Press.
- Capin, P., Cho, E., Miciak, J., Roberts, G., and Vaughn, S. (2021). Examining the reading and cognitive profiles of students with significant reading comprehension difficulties. *Learn. Disabil. Q.* 44, 183–196. doi: 10.1177/0731948721989973
- Capin, P., Gillam, S. L., Fall, A. M., Roberts, G., Dille, J. T., and Gillam, R. B. (2022). Understanding the nature and severity of reading difficulties among students with language and reading comprehension difficulties. *Ann. Dyslexia* 72, 249–275. doi: 10.1007/s11881-022-00255-3
- Capin, P., Vaughn, S., Miller, J. E., Miciak, J., Fall, A. M., Roberts, G., et al. (2024). Investigating the reading profiles of middle school emergent bilinguals with significant reading comprehension difficulties. *Sci. Stud. Read.* 28, 190–213. doi: 10.1080/10888438.2023.2254871
- Carreker, S. H., Swank, P. R., Tillman-Dowdy, L., Neuhaus, G. F., Monfils, M. J., Montemayor, M. L., et al. (2005). Language enrichment teacher preparation and practice predicts third grade reading comprehension. *Read. Psychol.* 26, 401–432. doi: 10.1080/02702710500285771
- Castles, A., Rastle, K., and Nation, K. (2018). Ending the reading wars: reading acquisition from novice to expert. *Psychol. Sci. Public Interest* 19, 5–51. doi: 10.1177/1529100618772271
- Catts, H. W., and Petcher, Y. (2022). A cumulative risk and resilience model of dyslexia. *J. Learn. Disabil.* 55, 171–184. doi: 10.1177/00222194211037062
- Chall, J. S. (1986). The teacher as scholar. *Read. Teach.* 39, 792–797.
- Cho, E., Capin, P., Roberts, G., Roberts, G. J., and Vaughn, S. (2019). Examining sources and mechanisms of reading comprehension difficulties: comparing English learners and non-English learners within the simple view of reading. *J. Educ. Psychol.* 111, 982–1000. doi: 10.1037/edu0000332
- Cirino, P. T., Romain, M. A., Barth, A. E., Tolar, T. D., Fletcher, J. M., and Vaughn, S. (2013). Reading skill components and impairments in middle school struggling readers. *Read. Writ.* 26, 1059–1086. doi: 10.1007/s11145-012-9406-3
- Clemens, N. H., Simmons, D., Simmons, L. E., Wang, H., and Kwok, O. M. (2017). The prevalence of reading fluency and vocabulary difficulties among adolescents struggling with reading comprehension. *J. Psychoeduc. Assess.* 35, 785–798. doi: 10.1177/0734282916662120
- Dunn, D. M. (2019). Peabody picture vocabulary test. Fifth Edn. Bloomington, MN: NCS Pearson.
- Elleman, A. M., and Oslund, E. L. (2019). Reading comprehension research: implications for practice and policy. *Policy Insights Behav. Brain Sci.* 6, 3–11. doi: 10.1177/2372732218816339
- Enders, C. K. (2003). Using the expectation maximization algorithm to estimate coefficient alpha for scales with item-level missing data. *Psychol. Methods* 8, 322–337. doi: 10.1037/1082-989X.8.3.322
- Fletcher, J. M., Lyon, G. R., Fuchs, L. S., and Barnes, M. A. (2018). Learning disabilities: from identification to intervention. (2nd ed.). New York, NY: Guilford Publications.
- Frances, C., Navarra-Barindelli, E., and Martin, C. D. (2021). Inhibitory and facilitatory effects of phonological and orthographic similarity on L2 word recognition across modalities in bilinguals. *Sci. Rep.* 11:12812. doi: 10.1038/s41598-021-92259-z
- Fuchs, L. S., Fuchs, D., and Malone, A. S. (2017). The taxonomy of intervention intensity. *TEACHING Exceptional Children*. 50, 35–43. doi: 10.1177/0040059917703962
- Georgiou, G. K., Martinez, D., Vieira, A. P. A., Antoniuik, A., Romero, S., and Guo, K. (2022). A meta-analytic review of comprehension deficits in students with dyslexia. *Ann. Dyslexia* 72, 204–248. doi: 10.1007/s11881-021-00244-y
- Gersten, R., Haymond, K., Newman-Gonchar, R., Dimino, J., and Jayanthi, M. (2020). Meta-analysis of the impact of reading interventions for students in the primary grades. *J. Res. Educ. Effect.* 13, 401–427. doi: 10.1080/19345747.2019.1689591
- Goldenberg, C., and Cárdenas-Hagan, E. (2023). Literacy research on English learners: past, present, and future. *Read. League* 4, 12–21.
- Gough, P. B., and Tunmer, W. E. (1986). Decoding, reading, and reading disability. *Remedial Spec. Educ.* 7, 6–10. doi: 10.1177/074193258600700104
- Haft, S. L., Myers, C. A., and Hoeft, F. (2016). Socio-emotional and cognitive resilience in children with reading disabilities. *Curr. Opin. Behav. Sci.* 10, 133–141. doi: 10.1016/j.cobeha.2016.06.005
- Hall, C., Dahl-Leonard, K., Cho, E., Solari, E. J., Capin, P., Conner, C. L., et al. (2023). Forty years of reading intervention research for elementary students with or at risk for dyslexia: a systematic review and meta-analysis. *Read. Res. Q.* 58, 285–312. doi: 10.1002/rrq.477
- Hall, C., Steinle, P. K., and Vaughn, S. (2019). Reading instruction for English learners with learning disabilities: what do we already know, and what do we still need to learn? *New Dir. Child Adolesc. Dev.* 2019, 145–189. doi: 10.1002/cad.20302
- Hatcher, P. J., Hulme, C., and Ellis, A. W. (1994). Ameliorating early reading failure by integrating the teaching of reading and phonological skills: the phonological linkage hypothesis. *Child Dev.* 65, 41–57. doi: 10.2307/1131364
- Hoff, E. (2006). How social contexts support and shape language development. *Dev. Rev.* 26, 55–88. doi: 10.1016/j.dr.2005.11.002
- Kim, Y. S. G. (2017). Why the simple view of reading is not simplistic: unpacking component skills of reading using a direct and indirect effect model of reading (DIER). *Sci. Stud. Read.* 21, 310–333. doi: 10.1080/10888438.2017.1291643
- Kim, Y. S. G. (2020). Toward integrative reading science: the direct and indirect effects model of reading. *J. Learn. Disabil.* 53, 469–491. doi: 10.1177/0022219420908239
- Lervåg, A., Hulme, C., and Melby-Lervåg, M. (2017). Unpicking the developmental relationship between oral language skills and reading comprehension: it's simple, but complex. *Child Dev.* 89, 1821–1838. doi: 10.1111/cdev.12861
- Lesaux, N. K., and Kieffer, M. J. (2010). Exploring sources of reading comprehension difficulties among language minority learners and their classmates in early adolescence. *Am. Educ. Res. J.* 47, 596–632. doi: 10.3102/0002831209355469
- Lesaux, N. K., Rupp, A. A., and Siegel, L. S. (2007). Growth in reading skills of children from diverse linguistic backgrounds: findings from a 5-year longitudinal study. *J. Educ. Psychol.* 99, 821–834. doi: 10.1037/0022-0663.99.4.821
- Li, M., Kirby, J. R., Geva, E., Koh, P. W., and Zhang, H. (2022). Profiles of poor decoders, poor comprehenders, and typically developing readers in adolescents learning English as a second language. *J. Learn. Disabil.* 55, 306–324. doi: 10.1177/00222194211023200
- Limbo, M. M., and Geva, E. (2001). Accuracy of teacher assessments of second-language students at risk for reading disability. *J. Learn. Disabil.* 34, 136–151. doi: 10.1177/002221940103400204
- Lovett, M. W., De Palma, M., Frijters, J., Steinbach, K., Temple, M., Benson, N., et al. (2008). Interventions for reading difficulties: a comparison of response to intervention by ELL and EFL struggling readers. *J. Learn. Disabil.* 41, 333–352. doi: 10.1177/0022219408317859
- Mancilla-Martinez, J., Hwang, J. K., and Oh, M. H. (2021). Assessment selection for multilingual learners' reading development. *The Reading Teacher*. 75, 351–362. doi: 10.1002/trtr.2053
- Melby-Lervåg, M., and Lervåg, A. (2014). Reading comprehension and its underlying components in second-language learners: a meta-analysis of studies comparing first- and second-language learners. *Psychol. Bull.* 140, 409–433. doi: 10.1037/a0033890
- Melby-Lervåg, M., Lyster, S. A. H., and Hulme, C. (2012). Phonological skills and their role in learning to read: a meta-analytic review. *Psychol. Bull.* 138, 322–352. doi: 10.1037/a0026744
- Miciak, J., Ahmed, Y., Capin, P., and Francis, D. J. (2022). The reading profiles of late elementary English learners with and without risk for dyslexia. *Ann. Dyslexia* 72, 276–300. doi: 10.1007/s11881-022-00254-4
- Miciak, J., and Fletcher, J. M. (2020). The critical role of instructional response for identifying dyslexia and other learning disabilities. *J. Learn. Disabil.* 53, 343–353. doi: 10.1177/0022219420906801

- Moore, K. A. (2022). The identification and prevalence of dyslexia among English learners (Doctoral dissertation): Texas A&M University.
- Morrow, A., Goldstein, B. A., Gilhool, A., and Paradis, J. (2014). Phonological skills in English language learners. *Lang. Speech Hear. Serv. Sch.* 45, 26–39. doi: 10.1044/2013_LSHSS-13-0009
- National Center for Education Statistics (2022). Nation's report card reading—2022. Washington, DC: Institute of Education Sciences, U.S. Department of Education.
- National Institute of Child Health and Human Development (2000). NIH, DHHS. *Report of the National Reading Panel: Teaching Children to Read: Reports of the Subgroups (00-4754)*. Washington, DC: U.S. Government Printing Office.
- O'Connor, M., Geva, E., and Koh, P. W. (2019). Examining reading comprehension profiles of grade 5 monolinguals and English language learners through the lexical quality hypothesis lens. *J. Learn. Disabil.* 52, 232–246. doi: 10.1177/0022219418815646
- Odegard, T. N., Farris, E. A., Middleton, A. E., Oslund, E., and Rimrodt-Frierson, S. (2020). Characteristics of students identified with dyslexia within the context of state legislation. *J. Learn. Disabil.* 53, 366–379. doi: 10.1177/0022219420914551
- Pinheiro, J. C., and Bates, D. M. (2000). Mixed-effects models in S and S-PLUS. New York: Springer.
- Pinheiro, J., Bates, D., and R Core Team (2023). Nlme: linear and nonlinear mixed effects models. R package version 3.1–163. Available at: <https://CRAN.R-project.org/package=nlme> (Accessed June 01, 2024).
- Quinteros Baumgart, C., and Billick, S. B. (2018). Positive cognitive effects of bilingualism and multilingualism on cerebral function: a review. *Psychiatry Q.* 89, 273–283. doi: 10.1007/s1126-017-9532-9
- Reis, A., Araújo, S., Morais, I. S., and Faísca, L. (2020). Reading and reading-related skills in adults with dyslexia from different orthographic systems: a review and meta-analysis. *Ann. Dyslexia* 70, 339–368. doi: 10.1007/s11881-020-00205-x
- Rhodes, R. L., Ochoa, S. H., and Ortiz, S. O. (2005). Assessing culturally and linguistically diverse students: A practical guide. New York, NY: Guilford Press.
- Ring, J. J., Avrit, K. J., and Black, J. L. (2017). Take flight: the evolution of an Orton Gillingham-based curriculum. *Ann. Dyslexia* 67, 383–400. doi: 10.1007/s11881-017-0151-9
- Ring, J., and Black, J. L. (2018). The multiple deficit model of dyslexia: what does it mean for identification and intervention? *Ann. Dyslexia* 68, 104–125. doi: 10.1007/s11881-018-0157-y
- Rodríguez, A., and Rodríguez, D. (2017). English learners with learning disabilities: what is the current state? *Insights Learn. Disabil.* 14, 97–112.
- Samson, J. F., and Lesaux, N. K. (2009). Language-minority learners in special education: rates and predictors of identification for services. *J. Learn. Disabil.* 42, 148–162. doi: 10.1177/0022219408326221
- Samson, J. F., and Lesaux, N. (2015). Disadvantaged language minority students and their teachers: a national picture. *Teach. Coll. Rec.* 117, 1–26. doi: 10.1177/016146811511700205
- Schueler, B. E., and Miller, L. C. (2023). Post-pandemic onset public school enrollment and mobility: evidence from Virginia. *Educ. Eval. Policy Anal.* doi: 10.3102/01623737231178299
- Siegel, L. (2016). Bilingualism and dyslexia: the case of children learning English as an additional language. *Multilingualism, Literacy and Dyslexia. 2nd ed.*, eds L. Peer and G. Reid (New York, NY: Routledge), 137–147. doi: 10.4324/9781315708478
- Solari, E. J., Petscher, Y., and Folsom, J. S. (2014). Differentiating literacy growth of ELL students with LD from other high-risk subgroups and general education peers: evidence from grades 3–10. *J. Learn. Disabil.* 47, 329–348. doi: 10.1177/0022219412463435
- Spencer, M., and Wagner, R. K. (2017). The comprehension problems for second-language learners with poor reading comprehension despite adequate decoding: a meta-analysis. *J. Res. Read.* 40, 199–217. doi: 10.1111/1467-9817.12080
- Swanson, H. L., Kong, J., Petcu, S. D., and Asencio Pimentel, M. F. (2020). Can difficulties in language acquisition and specific learning disabilities be separated among English learners? *Except. Child.* 86, 293–309. doi: 10.1177/0014402919893931
- Tabachnick, B. G., and Fidell, L. S. (2019). Using multivariate statistics. 7th Edn. Boston: Pearson.
- Texas Education Agency (2021). Dyslexia handbook: Procedures concerning Dyslexia and related disorders. Available at: <https://tea.texas.gov/academics/special-student-populations/dyslexia-and-related-disorders> (Accessed June 01, 2024).
- Vargas, I., Daucourt, M. C., Hall, C., Hart, S. A., and Solari, E. J. (2023). Examining the heterogeneous early literacy profiles of first-grade students who are English learners. *Read. Writ.* 37, 1931–1953. doi: 10.1007/s11145-023-10452-0
- Varghese, C., Bratsch-Hines, M., Aiken, H., and Vernon-Feagans, L. (2021). Elementary teachers' intervention fidelity in relation to reading and vocabulary outcomes for students at risk for reading-related disabilities. *J. Learn. Disabil.* 54, 484–496. doi: 10.1177/0022219421999844
- Vaughn, S. (2018). Introduction to the special issue on the simple view of reading from pre-K to grade 12. *Remedial Spec. Educ.* 39:259. doi: 10.1177/0741932518772912
- Vaughn, S., Wexler, J., Roberts, G., Barth, A. A., Cirino, P. T., Romain, M. A., et al. (2011). Effects of individualized and standardized interventions on middle school students with reading disabilities. *Except. Child.* 77, 391–407. doi: 10.1177/001440291107700401
- Vickery, K. S., Reynolds, V. A., and Cochran, S. W. (1987). Multisensory teaching approach for reading, spelling, and handwriting, Orton-Gillingham based curriculum, in a public school setting. *Ann. Dyslexia* 37, 189–200. doi: 10.1007/BF02648066
- Wagner, R. K., Torgesen, J. K., Rashotte, C. A., and Pearson, N. A. (2013). Comprehensive test of phonological processing. Second Edn. Austin, TX: Pro-Ed.
- Wanzek, J., and Roberts, G. (2012). Reading interventions with varying instructional emphases for fourth graders with reading difficulties. *Learn. Disabil. Q.* 35, 90–101. doi: 10.1177/0731948711434047
- Wanzek, J., Stevens, E. A., Williams, K. J., Scammarca, N., Vaughn, S., and Sargent, K. (2018). Current evidence on the effects of intensive early reading interventions. *J. Learn. Disabil.* 51, 612–624. doi: 10.1177/0022219418775110
- Wanzek, J., Vaughn, S., Scammarca, N. K., Metz, K., Murray, C. S., Roberts, G., et al. (2013). Extensive reading interventions for students with reading difficulties after grade 3. *Rev. Educ. Res.* 83, 163–195. doi: 10.3102/0034654313477212
- Wilson, B. A., and Felton, R. H. (2004). Word identification and spelling test: examiner's manual. Austin, TX: Pro-Ed.
- Woodcock, R. W. (2011). Woodcock reading mastery tests. Third Edn. Bloomington, MN: Pearson.
- Yeung, S. S., Siegel, L. S., and Chan, C. K. (2013). Effects of a phonological awareness program on English reading and spelling among Hong Kong Chinese ESL children. *Read. Writ.* 26, 681–704. doi: 10.1007/s11145-012-9383-6



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Teaching a second language to learners with mild intellectual disabilities – a Hungarian case study

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The present paper deals with the issues of teaching a second language to school-aged children in Hungary with mild intellectual disabilities. The frameworks for language teaching are described in the National Core Curriculum and the Frame Curriculum. In our research we conducted semi-structured interviews with open-ended questions featuring 11 language teachers, and asked for their experience in teaching a second language to children with mild intellectual disabilities. Moreover, our research involves a focus group discussion in spring 2023 featuring 8 children in Grade 7 with mild intellectual disabilities. We came to the conclusion that teachers pay attention to individual development and playful, communicative language teaching, even though it is challenging to teach English to children with such disabilities, as they often have difficulties in their mother tongue. The research has revealed there is a need for teachers to display creativity because these children require a lot of revision. The children asked do not encounter English at home and only a few of them listen to music in English. However, they all think learning English is important for their future, especially in the areas of work and travel. Our experience underlines that it is beneficial for learners with mild intellectual disabilities to get to know a foreign language, even though they will not be independent users of the language and might not use this knowledge in the future.

KEYWORDS

English, individual abilities, teachers' perspectives, methodological approach, learning experiences of students with mild intellectual disabilities, motivation, personal factors, creativity

1 Introduction

Nowadays, thanks to the acceleration of technological progress and the constant flow of information from many directions, a basic knowledge of at least one foreign language is essential. This is why foreign language teaching in schools has become a priority worldwide, and why it must be made available to all, in the framework of equal opportunities. English is not only the *lingua franca* but is also the modern means to communicate, opening up job and career opportunities.

Teaching English is now inclusive in nature, which means everyone is involved and nobody is left behind. In addition to education, it is also vitally important that students learn the content effectively so that they can apply it in the future.

The European Commission has made foreign language education a priority and has made a commitment to foreign language teaching for children with disabilities. It believes that all children, regardless of the type of educational institution which they attend, have the right to learn a foreign language (European Commission, 2005). This field is really new in language pedagogy and, due to the students' different abilities, an accepted, overarching methodology has yet to be developed (Coşkun, 2013; Pokrivčáková, 2015). However, not every strategy works with

pupils with mild intellectual disabilities (MID), which is the main emphasis of this research. Due to the particular characteristics of pupils with MID, they are not as effective in learning as their peers in mainstream schools. In England, pupils aged 11–14 with MID have had the opportunity to learn a modern foreign language for over 20 years (Wilson, 2014 as cited in Meggyesné Hosszu, 2019). Nemes and Rózsa (2021) provides information about teaching German to students with MID within the Hungarian system and in an international context. The research involves an overview of several European countries (Germany, Austria, Switzerland, Romania, Poland, Russia, Estonia, and Italy). The authors contacted specific institutions in those countries and asked for their experiences of teaching a second language to children with MID. Also, English lessons are mandatory in the curriculum of Indonesian children with MID (Lestari et al., 2022).

The present paper deals with the issues of teaching a second language to school-aged children with MID, focusing on Hungary. Since Hungary's accession to the European Union in 2004, foreign language teaching has assumed a prominent role in education. Aligning with the European Commission's 2005 declaration of every child's right to language learning, the European Union identified key competences, including foreign languages, as essential for the 21st century. The overarching aim of foreign language instruction is to equip children with age-appropriate and practical language skills. Act CXC of 2011 on Public Education mandates twice-weekly foreign language lessons for students with learning difficulties, commencing in Grade 7. English as a Foreign Language (EFL) generally means teaching English to non-native speakers in an environment where English is not the primary language. Teaching English involves the 4 basic language skills: speaking, listening, reading and writing. As for teaching English, there have been new and innovative methods and approaches to enhance overall language competence among students. Meggyesné Hosszu (2019) defines foreign languages as those not central to learners' immediate lives but taught in guided settings such as schools.

In Hungary, based on the European Commission's recommendation, from the 2015/2016 school year foreign language teaching has been compulsory for children with MID in segregated schools from the seventh grade onwards for 2 hours per week (144 h per year) (Meggyesné Hosszu, 2015). The segregated schools have been designed for learners with MID. Special Educators teach in the classes of which the size is small (maximum 10 children) to provide individual attention to each learners. The teaching process is usually supported by the help of a Teacher Assistant. Since the subject "Foreign Language" is not performance-oriented, the appropriate stress-free learning environment plays an important role in the success of language learning. For this purpose, visual reinforcement/support, repetition, breaking down the learning material into small parts and continuous praise and reward are important working methods.

The current research aims to explore the experience of Hungarian teachers concerning compulsory language teaching for children with MID. However, there has been no consensus among professionals, parents and language teachers on the teaching of languages to learners with MID.

Some stakeholders (local authorities, language teachers, Special Educators) express concerns that language learning may pose an unnecessary burden for students with MID, as their first language (L1)

skills are limited and foreign language lessons are not necessary. Students quickly forget what they have learned in class, so there is little measurable progress, their vocabulary and grammar do not expand, and students do not become independent language users or real conversational partners. Others argue that success can also be achieved with this population. Some learners will be able to communicate at a basic level (A1), using simple language tools to make themselves understood on familiar topics. For learners with MID, the aim is not to pass language and school-leaving exams, but to build up a basic everyday vocabulary, to raise interest in the target language and to develop and maintain a positive attitude towards language learning (Meggyesné Hosszu, 2018a,b).

2 The threads in my head are tangled – characteristics of pupils with learning disabilities

In Hungary, the assessment of Special Educational Needs adheres to a multi-level expert examination process as mandated by Act CXC of 2011 on Public Education.¹ The assessment of Special Educational Needs (SEN) necessitates a comprehensive evaluation conducted by a multidisciplinary team comprising medical professionals, psychologists, and educators. Students identified as having SEN are legally entitled to additional rights and support within public educational institutions. The legislation defines SEN broadly, encompassing a range of disabilities, including motor, sensory (visual and auditory), intellectual, speech, cumulative disabilities, autism spectrum disorder, and other mental development disorders such as severe learning, attention, or behavioral difficulties. This process incorporates a mechanism for parental appeal and potential referral to specialized services if disagreements arise concerning the diagnosis or procedural aspects. In the case of intellectual disability, the assessment unfolds at both the county and national levels. While parental cooperation is integral throughout the procedure, parents retain the right of appeal to the local Government Office should they disagree with the expert opinion or any procedural elements. Upon such an appeal, the assessment may be repeated, or the case may be referred to the ELTE National Pedagogical Service for further evaluation and adjudication.

According to the following important definition by Mesterházi (1997): "The group of children defined as educationally challenged includes those whose reduced functionality can be traced back to biological and/or genetic deficiencies in their nervous systems, or to the impact of environmental disadvantages leading to ongoing and persistent learning difficulties, expressed through inconsistent abilities in the processing and application of skills." It is important to note that the Hungarian term "tanulásban akadályozott" (educationally challenged) is the equivalent of "mild educational disabilities", as used in an international context. It is believed that 3–6% of the school-ages

1 2011. évi CXC. törvény a nemzeti köznevelésről <https://net.jogtar.hu/jogszabaly?docid=a1100190.tv> (2023. február 4).

population in Hungary falls into the category of “tanulástan akadályozott” (educationally challenged).

A diagnosis of intellectual disability requires the existence of significant limitations in the areas of intellectual functioning and in adaptive behaviour (conceptual, social, practical adaptive skills) and a verification that the disability started in the early years, during the developmental period. The severity is classified as mild (with IQ range of 55 to 69), moderate (IQ range of 35 to 51), severe (IQ range of 20 to 35) and profound (IQ range <20) based on several indicators of functioning and clinical judgement. There are several characteristics of intellectual disability which affect learners' academic and non-academic lives. For children with MID, it takes longer to learn to talk, but communicate well once they know how. It has an impact on the child's ability to communicate at school and outside the classroom. A deficit in language skills can be seen as a characteristic that distinguishes children with intellectual disabilities (Lestari et al., 2022). According to the American Psychiatric Association, DSM-5 Task Force (2013), for children with MID, it can be seen that the social domains in the form of communication, conversation, and language are not in accordance with their actual age and there are difficulties in abstract thinking skills. They have memory and attention problems due to the delayed intellectual development. As for self-regulation, they may have symptoms such as self-harming behaviour, aggression and difficulty with sleep. Also, children find it difficult to control their emotions, which may cause problems in the classroom. However, they can be fully independent in self-care and home activities when they get older, though they show social immaturity. In later life, they experience increased difficulty with the responsibilities of marriage or parenting. People with MID are able to learn simple skills and enter the world of work where they usually get unskilled jobs. Their participation in education is highly important because if they get a job, they can become independent adults and can live without depending on others.

However, education must be based on their individual abilities and characteristics in order to develop. It is vital to develop language and social skills to be able to carry out social interactions, have self-confidence to interact and express opinions in their everyday lives. The learning process itself is impacted across multiple dimensions: perception, executive functions, and emotional well-being. Learners with MID have problems with reading and writing affecting academic achievements. Perceptual disturbances can affect visual, auditory, tactile-kinesthetic, and balance perception, as well as memory functions. Difficulties in shape-background discrimination, shape and space perception, tactile sensitivities (either heightened or diminished), and balance are common. Memory impairments may affect attention, working memory, and long-term recall. Executive function challenges are manifest in muscle weakness or stiffness, hindering both fine and gross motor skills. Additionally, emotional and social factors, such as shyness, anxiety, hyperactivity, lack of self-confidence and motivation, further impede the learning process (Czibere and Kisvári, 2006). Low learning motivation can be in connection with past experiences of failure and anxiety (Shree and Shukla, 2016). As a result, such children pay less attention during the learning and teaching activities.

3 The introduction of foreign language teaching for pupils with MID in Hungary

3.1 The principles of language teaching in the National curricula and the framework curricula

The National Core Curriculum (NAT)² in Hungary serves as the foundational document governing the educational process, outlining the knowledge, skills, abilities, and objectives to be attained in various subjects. The National Core Curriculum forms the basis for the Framework Curriculum³, which acts as an intermediary between the National Core Curriculum and local curricula. The National Core Curriculum and Framework Curriculum establish the principles for teaching foreign languages to students with Special Educational Needs (SEN). Foreign language learning is mandatory from the seventh grade in segregated schools but can commence earlier for interested students, though participation cannot be enforced. The overarching goal is to tailor language learning to individual needs, reinforcing existing skills and fostering self-awareness and confidence. The Framework Curriculum emphasizes practical communication through playful, action-based learning activities such as dialogues, role-plays, and movement exercises. It prioritizes listening comprehension and speaking skills, building upon first language (L1) competence. The focus is on everyday topics and situations, utilizing simple vocabulary and structures.

The curriculum recommends developing auditory perception, speaking skills, attention, and verbal memory. This involves repetition and practice, leading to understanding and responding to simple questions in open dialogues. Reading and writing are less emphasized, and grammar is taught implicitly through contextualized usage rather than explicit rules. Hungarian language support is permitted throughout the teaching-learning process.

Group and cooperative learning activities are encouraged to enhance social competence alongside knowledge and intellectual skills. The primary aim is to facilitate the automatic use of essential vocabulary through engaging activities like movement and sorting tasks, word cards, and games. Assessment focuses on students' willingness and motivation to communicate.

The curriculum does not prescribe specific language levels or output requirements, allowing for individualized pacing and adaptation to diverse learning abilities. It recommends six core thematic areas: human relations, family and social environment, the target country, the natural environment, shopping, and a healthy lifestyle.

2 <https://www.oktatas2030.hu/wp-content/uploads/2020/02/nat2020-5-2020.-korm.-rendelet.pdf>

3 51/2012. (XII.21.) számú EMMI rendelet 11. melléklete Kerettantervek a sajátos nevelési igényű tanulókat oktató nevelési-oktatási intézmények számára - Kerettantervek az enyhén értelmi fogyatékos gyermekek számára (1–8. évfolyam) - Idegen nyelv. Web. http://kerettan.terv.ofi.hu/11_melleklet_sni/enyhe/index_sni_enyhe.html Downloaded: 2019.10.15.

Student motivation is influenced by various factors, including family environment, attitudes towards education, socio-economic status, school resources, and teacher qualities. Teachers play a crucial role in stimulating interest and providing a sense of achievement through differentiation and engaging activities. Additionally, learning about the target language culture and fostering intercultural competence contribute to motivation and overall language development.

Foreign language lessons can complement other subjects by providing opportunities for cross-curricular integration and expanding students' knowledge in various domains. The use of technology, such as interactive whiteboards, tablets, and smartphones, further enriches the learning experience and promotes engagement.

3.2 The issue of which language to teach

In Hungary during the 1990s, Western languages, particularly English and German, gained prominence. Data from the Central Statistical Office (KSH) indicates English as the most studied foreign language across all school types, while German's popularity has declined.⁴ The framework curriculum for students with mild intellectual disabilities does not stipulate a specific language, granting institutions autonomy in selecting among English, German, or Romani, contingent upon the availability of qualified staff.

English enjoys widespread appeal among young people due to its prevalence in popular culture, international communication, and the online sphere. Its vocabulary frequently infiltrates everyday language and appears in online platforms (e.g., *play, join, error, accept, volume, download, power, leave, (dis)connect, close*), brand names (e.g., *Nivea Men, Magnum Almond*), and even food or other packaging (e.g., *salted, pepper, shampoo, body milk, shower gel, cream, invisible, strong, body, hair, face*).

German, on the other hand, offers advantages such as easier letter-sound correspondence (e.g., *Mutter, Kind, Vase*), pronunciation-aligned spelling, and a phoneme system similar to Hungarian. Additionally, shared cultural elements and the presence of German companies (e.g., BMW, Einhell) in Hungary contribute to its relevance. However, challenges for learners include complex sentence structures, intricate grammar, and word order differences from Hungarian.

A Hungarian study on foreign language motivation among eighth-graders in mainstream schools revealed a preference for English as the first foreign language, driven by its use in music, social media, entertainment, and video games (Nikolov, 2011). Nevertheless, the question remains as to which foreign language best suits the specific needs of learners with MID.

3.3 The issue of learning materials for pupils with learning disabilities

English lessons are provided for children with MID in many countries. However, based on the cognitive characteristics, the material is different from children at the same age attending

mainstream schools (also Nemes and Rózsa, 2021). In Indonesia, for students with MID in senior high school, the teaching and learning material is equivalent to 6th grade elementary school English material. The adaptation of the material to the students' needs and abilities is crucial. Furthermore, to promote academic achievement providing appropriate, sensory, hands-on experience is essential. Based on their observations, field notes and interviews, Lestari et al. (2022) states that children with MID in Indonesia are taught simple English nouns, verbs, adjectives and adverbs in daily use. Children are trained to combine 2–3 words to form sentences, take turns in a conversation and respond appropriately to simple questions. However, sometimes they face difficulty finding the English word they want to say.

Meggyesné Hosszu (2015) research in Hungary identified a prevalent use of self-created materials in language instruction for learners with MID, attributed to the scarcity of textbooks catering to their specific needs. However, a significant advancement was realized between 2018 and 2021 with the publication of the “Let us do it” foreign language textbook series, designed for grades 7–12 (e.g., Meggyesné Hosszu, 2018a,b; Sári, 2019). This comprehensive series encompasses textbooks, audio materials, workbooks, syllabi, and methodological manuals, all readily accessible online. An accompanying online smart book with interactive exercises further enriches the learning experience.⁵ The series comprehensively addresses the topics outlined in the framework curriculum, adopting a competence-based pedagogical approach that acknowledges the unique cognitive characteristics of the target student population. The “Let us do it” series incorporates age-appropriate illustrations, photographs, diagrams, maps, word and picture cards, and a sticker booklet to enhance engagement and facilitate learning. While the “Let us do it” series effectively addresses the demand for English language materials, there remains a notable gap in the availability of comparable high-quality, engaging, and accessible resources for German language instruction for adolescent learners with learning difficulties.

3.4 The issue of the teacher

Ideally, a teacher must have teaching qualifications that match the subject being taught as well as appropriate knowledge about children with Special Needs. In Indonesia the Decree of Minister of National Education Number 16 (2007) declared that teachers need to have a BA degree in English Language Teaching in order to teach in a school. However, when working with children with SEN, communication is an essential skill in terms of academic performance, psychological and physical development of the students (Sab'na et al., 2024). Moreover, strategies used in the classroom are very important. However, many teachers do not pay attention to the conditions of the learners. The authors underline that teachers who teach English to children with SEN need various and relevant training to know how to handle challenges during the teaching process.

In Hungary, the provision of this specialized instruction can be undertaken by either Special Educational Needs (SEN) teachers possessing advanced language certifications (C1 level) or language teachers, preferably with additional SEN qualifications to address the

⁴ https://www.ksh.hu/stadat_files/okt/hu/okt0009.html

⁵ https://www.nkp.hu/tankonyv/angol_nyelv_7_tanak/

unique learning needs of this population. Language teachers must adapt their pedagogical approaches, prioritizing oral communication and positive reinforcement while minimizing reliance on written language instruction.

A pilot study in 2014 conducted by Meggyesné et al. revealed a discrepancy between the legal requirements for teacher qualifications and the actual qualifications of those providing foreign language instruction to students with learning difficulties (UNICEF, 2000). Of the 17 respondents, only five met the stipulated qualifications, highlighting a potential area for improvement in teacher training and professional development to ensure compliance with educational standards (Meggyesné Hosszu and Lesznyák, 2017).

4 Research methodology

The aim of this research study was to investigate the conditions under which students with MID acquire foreign language skills, as well as the teaching methods and tools employed in educational settings. We had the following research questions:

What specific, practical tasks work in the language lessons of MID learners?

What seems to retain and how to test MID learners’ language competence in class?

To achieve this aim, semi-structured in-depth interviews were conducted with eleven SEN teachers and language teachers who instruct foreign languages to this specific student population. The eleven interviewed teachers represented a range of ages and geographical locations. Two teachers were between 20 and 30 years old, two between 30 and 40, five between 40 and 50, and two over 50. Regarding location, three resided in the capital city, four in other cities, and four in smaller towns. In terms of qualifications, four held degrees in special needs education, three of whom possessed C1-level foreign language certifications. The remaining four were language teachers, with one currently pursuing additional studies in special education specializing in MID and psycho-pedagogy (Table 1).

Data collection took place between January and March 2022, utilizing both online platforms (e.g., Google Meet, Facebook Messenger) and in-person meetings (face-to face interviews were conducted, usually in a school). A set of 25 questions, with minor variations as needed, guided the interviews. The first topics of the interview were qualifications and teaching experiences, teaching methods, strategies and dimensions of teaching. The researcher prepared the questions for the interview based on the specific information the researcher wanted to know: the challenges and solutions that occur during the English teaching process of children with learning disabilities. Researchers guided interviewees in the process whenever they strayed from the main topic and enquiries were made to enrich the data. To analyze the data, the researcher used the six-step thematic analysis of Braun and Clarke (2006): familiarizing with the data, generating initial codes, searching for themes, reviewing themes, defining themes, writing the report. As the first step, we have read the transcript of the interviews and then coded them manually (e.g., learning games; retaining new material). Later on, we organised the codes into themes (e.g., traditional games, online games; spelling,

TABLE 1 Age, qualification, and place of living of the participant.

Interview	Age	Qualification	Place of living
1.	52	SEN Educator BA	Town
		English C1	
2.	29	SEN Educator BA	Capital
		English and Slovak C1	
3.	44	English Teacher BA	Capital
4.	39	SEN Educator BA	Town
5.	28	SEN Educator BA	Capital
		English C1	
6.	50	English Teacher BA	City
7.	44	English Teacher BA (a student of Special Education BA, psycho-pedagogy)	Town
8.	48	German Teacher BA	City
		English Teacher BA	
9.	56	German Teacher MA	Town
10.	35	German Teacher BA (a student of Special Education BA)	City
11.	45	German Teacher BA	City

listening, pronunciation, motivation; course material). After that we did some fine-tuning such as vocabulary based games, tactile games; influence of L1, classroom management. Later on, we did some more coding and refined our codes with the help of mindmaps looking for interesting and meaningful information. Finally, we started working on the text itself embedding vivid examples from the interviews.

A qualitative approach was considered to be useful to achieve the objectives of the study as it helps to explore data in-depth, analyze emerging phenomena and find meaningful values by understanding variables that arise in the process of research activities. When writing about our results, we have decided to add extracts from the interviews to illustrate the analytic claims.

In order to give a more complex picture about teaching English to MID learners, we carried out interviews in a focus group discussion in 2023 with 8 seventh-grade students, aged 13–15 in a segregated primary school in Eastern Hungary. We strongly believe the learners’ perspectives and attitudes provide important information about the learning process. In this particular case, we also had a research question:

According to the children, what is the practical usefulness of learning a foreign language?

When analyzing the transcript of the focus group interviews, we used the same flexible method that has been described earlier (codes, themes, and definitions).

The research adhered to ethical guidelines, with participants fully informed about the purpose of the study and their rights as participants. Before doing our research with underaged children, we asked and received parental consents as well as the approval from the head teacher of the school.

5 Results

5.1 Start and focus of foreign language instruction

While the 2011 National Act CXC mandates foreign language instruction for students with MID from the seventh grade onwards, this research explored the possibility of earlier initiation. Findings indicated that in integrated settings, nearly all students began foreign language learning before the legally required age, often as early as first or third grade. However, in segregated institutions, adherence to the legal mandate was the norm, with limited exceptions for students with autism or psychiatric developmental disorders. Barriers to earlier language instruction in segregated settings included insufficient teacher availability and lack of student interest.

Regarding the prioritization of language skills, all teachers emphasized the importance of developing communication skills and fostering the confidence to speak the foreign language. Listening comprehension was also highlighted, while reading and writing were generally viewed as secondary, reinforcing the primary oral skills. Some teachers emphasized vocabulary development and the role of language learning in enhancing cognitive skills like attention, memory, and logic.

5.2 Methods used for language teaching

The investigation into teachers' approaches to introducing new content and transferring knowledge revealed a consistent emphasis on reviewing previously learned material before introducing new concepts. Vocabulary acquisition involves learning and storing words, including their meanings and usage in different context. Indonesian research also revealed the importance of repetition to ensure all students understand the material. The teacher involved in the research project used the drill method for repetition. Moreover, she mentioned the grill method which means repeating several times the most frequently used words such as the days of the week, greetings and numbers, either orally or in writing in every class (Sab'na et al., 2024; Bawa and Osei, 2018). Learning English vocabulary can be challenging for every learner. Some learners in Hungarian mainstream and segregated schools also have a vocabulary notebook where they write the new words in every class.

Furthermore, a near-unanimous preference for utilizing visual aids, playful exercises, and objects (e.g., word cards, realia, flashcards) emerged as a strategy to engage students and facilitate comprehension. According to Irfan et al. (2021), *tangible, real objects or artifacts, serve as a bridge between abstract language concepts and everyday items, making the learning experience more engaging and effective for young learners* (cited in Cando Yáñez et al., 2024: p. 93). However, realia can be employed to teach vocabulary to learners with MID too. The Indonesian teacher participating in the research used fun methods to attract students' attention and tried to connect the material to the students' lives (Sab'na et al., 2024).

Many foreign language teachers use the Total Physical Response (TPR) method, e.g., in Ecuador (Cando Yáñez et al., 2024) and in Hungary too. Total Physical Response (TPR) is a method or strategy which uses the connection between brain and muscle memory, combines physical movement with language

acquisition. Also, the combination of TPR and using realia's is beneficial as real-like objects enhance the learning process and provide better understanding. However, realia can take up too much space in the classroom, can be expensive and may get damaged over time.

Online resources such as videos and games were also incorporated into instruction in Hungary and Indonesia (Sab'na et al., 2024).

One Hungarian participant highlighted the importance of engaging multiple sensory modalities and experiences concurrently, stating, "It is very important to 'attack' through as many sensory channels as possible, preferably at the same time! Let the child see, hear, say, and move throughout the entire lesson, if possible, in addition to writing it down" (Interview 7). It is interesting to note, that the four teachers involved in a research project in Ghana had knowledge about multiple intelligence theory, though did not use it due to the lack of resources and time (Bawa and Osei, 2018).

Another Hungarian teacher emphasized that methodological choices should be tailored to individual learners' needs, often drawing insights from colleagues who teach core subjects to ascertain effective learning strategies. This teacher specifically highlighted the efficacy of the MIM-MEM (Mimicry-Memorization) method (Interview 9). The MIM-MEM method, originally developed for language acquisition by soldiers during World War II, involves mimicking and memorizing phrases and sentences in the target language (Tulus and Rihanatul, 2021). The teacher provides a model, and students practice through repetition, initially in small groups or pairs to minimize errors (Ahyatul, 2021). The method focuses on oral communication, emphasizing listening comprehension, speaking skills, and memorization. Grammar instruction is embedded within pre-selected example sentences, and activities often involve discussion or dramatization.

5.3 Motivating learners

When questioned about strategies and tools for motivating students with MID in foreign language learning situations, teachers frequently cited the use of information and communication technology (ICT) tools and online games and exercises. Specific platforms mentioned included Kahoot, Wordwall, Quizlet, PurposeGames, and LearningApps. One participant emphasized that Kahoot games were an indispensable component of every lesson (Interview 2), while another highlighted the effectiveness of online memory games across age groups (Interview 5). Students with MID tend to forget easily the previous material due to their low concentration and memory span as a result they need a lot of repetition in varied forms. Activities involving the use of realia can be fun and engaging resulting in a more positive learning environment and reduced anxiety level (Cando Yáñez et al., 2024). Videos embedded within the curriculum were also noted as motivational tools (Interview 6).

Beyond digital resources, teachers identified several non-technological motivators. In one classroom, earning a top grade through the accumulation of points was found to be effective (Interview 1). Positive feedback, praise, and the sharing of experiences were also cited as key factors. One teacher elaborated, stating, "They do not care about marks. [Motivation comes] with praise, with immediate feedback. Little sweets if you are very clever. With giving

an experience. If something is going well, they go down to the canteen and cook" (Interview 4).

5.4 Games and toys in the language classroom

Teachers employed a variety of games and toys to enhance student engagement and learning. These ranged from traditional activities like crossword puzzles, word searches and quizzes, to digital platforms like Baamboozle, an online platform offering a range of customizable games for language learning. Teachers also designed unique vocabulary-based activities, such as letter-search exercises, and incorporated movement through games like "pacing" and "Simon says".

Tactile learning was facilitated through activities involving objects hidden in a bag, which students had to identify through touch. The use of sensory experiences, realia and instructional materials is crucial as they help to attract and sustain pupils' attention and facilitate their active participation in the class (Cando Yáñez et al., 2024). Children with MID may have attention deficit disorder, hyperactivity, mood swings or temper tantrums (American Psychiatric Association, DSM-5 Task Force, 2013) which are reflected in low attention span, an inability to sit still and unpredictable outbursts during the class. To sum up, teachers have to deal with mental and/or emotional challenges as well during their English lessons. Nonetheless, interesting, engaging and appealing teaching materials may ease the situation for both parties.

Some teachers tailored games to students' specific interests, such as using pictures of Roma musicians to introduce new vocabulary. Memory games, BINGO, LOTTO, pairing games, true/false games, torpedo, solo dancing, object identification, ball throwing, and role-playing were also commonly utilized. One teacher even incorporated the classic arcade game Pac-Man into the classroom environment.

5.5 Grading and evaluation of assessment

Teachers' approaches to assessing student knowledge and assigning grades varied. Some preferred oral assessments (Interviews 1, 4), with one teacher emphasizing the use of alternative tasks for written assessments, such as matching exercises or drawing/coloring activities (Interview 4).

Many teachers aimed to provide students with equal opportunities to demonstrate their knowledge through both oral and written assessments, while also considering their classroom performance. However, one teacher expressed a preference for written assessment, reserving oral evaluations for infrequent occasions (Interview 5).

The assessment of classroom activity was highlighted by several teachers as a means of encouraging active participation. One teacher described using the electronic record system (KRÉTA) to assign grades for classroom work, believing this fostered discipline and motivation due to perceived fairness (Interview 6). Conversely, another teacher reported that students were not motivated by grades for classwork but were deterred by penalties for missed homework (Interview 4).

A different approach involved awarding "small marks" for completed homework assignments or sub-tasks, with five such marks accumulating to a "big mark" in KRÉTA (Interview 8).

Similarly, oral vocabulary test scores were averaged across three word lists to produce a single grade. Several teachers also emphasized the importance of positive feedback and a sense of achievement, allowing students to revisit previously mastered worksheets (Interview 3).

5.6 Perceived importance of language learning for students with mild intellectual disability

The majority of interviewed teachers affirmed the importance of foreign language learning for students with mild intellectual disability, citing a variety of justifications. Two teachers emphasized the potential for future travel or work opportunities abroad, arguing that even basic foreign language proficiency could prove invaluable in such situations (Interviews 1, 2). Others highlighted the potential for foreign language learning to foster development in other areas, such as time management and social skills (Interviews 4, 7, 8). Learning a foreign language, even at a basic level, can help students with mild intellectual disabilities navigate an increasingly interconnected world, especially with additional support during their secondary education.

The interview findings highlight the potential benefits of introducing foreign language learning to students with MID. Teachers predominantly expressed a positive outlook, citing advantages such as enhanced self-confidence, increased ability to navigate a globalized world, and the acquisition of practical vocabulary applicable to everyday situations.

The benefits extend beyond immediate academic applications. Early exposure to foreign language learning can foster a sense of accomplishment and self-efficacy in students, promoting personal development and potentially sparking future interests or pursuits. While some teachers believed that students with MID might not pursue careers requiring foreign language skills, others emphasized that early exposure could be beneficial for future learning or personal interests. The process of learning a new language can boost learners' self-confidence and sense of accomplishment.

Additionally, basic vocabulary acquisition can aid in understanding foreign terms encountered in various contexts, such as online gaming or travel, thus enriching their engagement with the wider world. However, it might be difficult to find new and inviting material for the learners who are 13–16 years old since the materials focusing on the basics and simple sentences (e.g., numbers 1–100, food and drinks, means of transport, colours, clothes; *I like/I dislike*) are generally for young learners. The teenage learners find the materials and worksheets designed for pre-teens childish and do not take them seriously.

While some teachers acknowledged the potential challenges associated with language acquisition for students with MID, the overall consensus emphasized the importance of providing individualized support and adapting instruction to meet the specific needs of each learner. Collaboration with special education professionals can ensure that these students receive the necessary scaffolding to participate fully and reap the rewards of foreign language learning. Additional support from special education professionals may be necessary to ensure that students with MID are able to successfully participate in and benefit from foreign language learning.

Overall, the findings suggest that introducing foreign language learning to students with MID can have a positive impact on their personal development, self-confidence, and ability to engage with the wider world. Also, learning English can help to widen the world for MID learners as they hear about different and new sports, hobbies (such as darts), customs (e.g., drinking tea with milk), school life and way of living in general.

In terms of teaching strategies, the instructional approach has to move from a teacher-centred to a learner-centred one because this facilitates easy understanding of concepts as pupils construct meanings on their own by participating fully in the lesson (Bawa and Osei, 2018). UNICEF also underlines that a teacher has to be skillful enough to control any class using different methods in order to facilitate quality education of the child (UNICEF, 2000). According to Hungarian respondents, by tailoring instruction and providing appropriate support, educators can unlock the potential of these learners and equip them with valuable skills for navigating an increasingly interconnected world. The specific needs and abilities of individual students should be taken into account when designing foreign language instruction for learners with MID.

In conclusion, the introduction of foreign language learning to students with MID holds promise for fostering personal growth, enhancing self-confidence, and promoting engagement with a globalized society.

5.7 Teachers' experiences of joy and success

The majority of teachers derived a sense of professional fulfillment and accomplishment from witnessing the tangible impact of their instruction on students' language development and overall well-being. For some, this manifested as the superior performance of their former students in higher grades compared to peers from other schools (Interview 1). Others found gratification in observing students spontaneously applying their language skills in real-world contexts (Interview 4). Success was also perceived in smaller, everyday victories, such as unexpected recall of previously learned material or active participation in classroom activities (Interview 5).

A recurring theme among the teachers was the profound satisfaction gained from witnessing students' enjoyment of language lessons, their enthusiasm for participation, and their active engagement in the learning process. This was exemplified by one teacher's account of a collaborative effort between the language and music teachers, culminating in a successful student performance of a song in English at a school event. This anecdote underscores the power of language learning to foster not only linguistic competence but also a sense of community and shared accomplishment.

5.8 Difficulties in teaching languages to students with learning difficulties

Teachers identify several challenges in teaching foreign languages to students with learning difficulties. Utami et al. (2021) conducted some research about teachers' problems and solutions in teaching English to students with ID involving interviews with five teachers in Indonesia. The teachers were uncertain about what methods to use

and lack of memory and lack of confidence to speak of the students were also problems. The teachers came up with different solutions to overcome the problems. First, they explained the material in details and used videos and smartphones to provide examples of the right pronunciation. Also, they used drills, handmade posters and smartphone applications to explain the material and to help students remember the vocabulary. Moreover, songs and realia were used for better understanding (cited in Sab'na et al., 2024).

Another piece of research undertaken by Fazira in Indonesia in 2023 found problems in four different areas: curriculum, attitudes and behaviour of students, material and learning models and media. The teachers did not have the necessary experience and found it difficult to attract the focus of their students. Also, the teachers had difficulties when teaching reading and writing. Finally, they experienced the lack of learning support media. According to the author, to overcome these problems, the government needs to provide the right training for the teachers. Also, teachers must be very patient and understand the characteristics of their students. Teachers must reduce the material and modify their teaching techniques (cited in Sab'na et al., 2024).

As for student-related challenges in Hungary, teachers mentioned the difficulty in retaining new material, necessitating frequent repetition (Interviews 1, 2, 4, 5). Sab'na et al. (2024) asked an English teacher in an Indonesian middle school asking about differences experienced when teaching English to students with MID. After conducting the interview and the observation, they found five challenges: classroom management, students' lack of general cognition, lack of focus, students' short memory and English pronunciation, e.g., the learners pronounced the same English word several times in an inaccurate way. The teacher decided to provide pronunciation of words very slowly or per syllable, later repeating them or using the grill method. Hungarian teachers also experience challenges with pronunciation and spelling, particularly in English, often attributed to difficulties with the native language (Interviews 1, 2, 7). As Shree and Shukla (2016) points out, this is in connection with delayed language development and comprehension difficulties.

Students have difficulties interpreting foreign language texts, despite understanding individual words (Interview 5) and they have difficulties transferring language structures to new contexts (Interview 9) due to an inability or problems with abstract thinking. Absenteeism, hindering progress and classroom integration were also mentioned (Interviews 2, 4, 5) as well as the lack of motivation or negative self-beliefs about language learning ability (Interview 11). The issue of truancy on the part of pupils and general discipline problems affecting learning English were raised in research in Ghana too (Bawa and Osei, 2018). The researchers observed that pupils' participation in English lessons was very poor: they did not pay attention or participate actively in the lessons.

The influence of native language skills on foreign language acquisition was a point of contention among Hungarian teachers. While the majority acknowledged a negative impact, citing issues with speech understanding, listening, inductive reasoning, vocabulary, and mental lexicon stability, two teachers argued for the independence of the two processes (Interviews 6, 7). One attributed potential difficulties to heightened expectations for students proficient in their first language (L1), while the other emphasized fundamental differences between first and second language acquisition processes.

We could also observe teacher-related challenges such as frustration due to the perceived mechanical nature of student learning

and lack of visible progress (Interview 2). Our respondents also mentioned challenges in differentiating instruction to address varying student needs and absences (Interview 4). Another issue was the lack of preparation time and prior knowledge about students, particularly in new teaching situations (Interview 5). The results of Sab'na et al. (2024) raise the issue of classroom management, since some students can be very active, while others are passive, or else students disturb each other, which can lead to disruption of the class. Sometimes the English teacher needs to deal with conflicts occurring between the students in the class. The solution of the teacher in question was to diagnose the abilities of each student in order to choose the appropriate learning model for the student. One of the Hungarian participants also mentioned initial difficulties with classroom management and adapting teaching methods (Interview 6). A respondent added the limited time to build rapport with challenging students (Interview 7). Also, socio-cultural disparities among students and a limited support from teaching assistants who may not understand the target language (Interview 1) is a challenge in the classroom.

When analyzing our data, we could find resource and systemic challenges too. One German language teacher cited the lack of appropriate teaching materials, digital resources, and a foreign language curriculum specific to students with MID as hindrances to effective instruction. This sentiment was echoed by other German language teachers who relied on supplementary materials from various sources to differentiate instruction. However, the collection and adaptation of these materials were time-consuming and highlighted the need for specialized textbooks with accompanying workbooks and audio resources. Both German teachers added the increased workload due to the need to collect and adapt materials (e.g., Kotzné Havas and Szendy, 2009; Krulak-Kempisty et al., 2014; Angeli et al., 2017) to address diverse student abilities and interests (Interviews 10, 11).

Overall, these findings align with previous research by Meggyesné Hosszu (2015), indicating that existing German language textbooks for special schools are often misaligned with the interests and developmental needs of older students with learning difficulties.

6 Opinion of learners with MID about learning a foreign language

In terms of implementing a case study design, a focus group discussion took place in 2023 with 8 seventh-grade Hungarian students with MID. This specific case study offered an opportunity to reveal a nuanced and more complex picture of the situation, specifically from the English learners' perspectives. The research was conducted in a segregated primary school in Eastern Hungary because the school provides learning services for children with MID. The group consisted of four boys and four girls with MID, aged between 13 and 15. The conversations were audio-recorded with the written consent of the head teacher and parents. The instrument used in this part of the study provided learners' actual words, offering new views on the study topic. The next step after collecting the data from the learners was to analyze it. In this research, the data were analyzed qualitatively consisting of data reduction, data display and concluding.

During the conversation, students mentioned several foreign languages: English, German, Romanian, Russian, Ukrainian, Japanese and Chinese. The students acknowledged the potential benefits of

English for future employment and travel, recognizing its practical applications in daily life: 'If we go to work somewhere else, we should understand that language. You can make friends. If we go on a trip, we can understand what they say; we can ask about jobs, like delivery or whatever'. Referring to computers and everyday language, one student mentioned English terms such as *Welcome, support, pink, telephone, dislike*, and then added *I can always see "milk" on milk*. However, they also identified challenges related to vocabulary acquisition, grammar, and pronunciation because "you have to learn the words and how to write and count in another language" and "you have to learn to speak, read, write and count in English".

Opinions regarding the frequency and timing of English lessons were mixed, with some students expressing a desire for more frequent or earlier instruction. Some children say it would be good to start learning languages earlier, even in fifth grade. Another student said that it would be better to have English lessons in the morning rather than in the afternoon, because they would not be tired.

Engagement with English outside of school was limited, primarily consisting of listening to English music for a few students. Unlike the majority of children, they do not watch English language videos, films and TV series. Only one pupil mentioned that he watches films in Hungarian with English subtitles. This student says "Good morning" to his family in the morning, or when I go to shower in the morning, I say "go to shower".

The findings suggest a complex interplay between the perceived value of English and the challenges inherent in language learning for students with MID. While these students recognize the potential advantages of acquiring English proficiency, their learning needs and preferences may not be fully met by current instructional practices.

7 Summary

Teachers in Hungary perceive foreign language learning as an avenue for students with learning disabilities to develop holistically, fostering personal growth, social skills, and self-confidence. They emphasize cross-curricular connections and the cultivation of intercultural competence. However, the diverse range of abilities and interests among students necessitates differentiated instruction, prompting teachers to focus on positive reinforcement and encouragement. The integration of technology, such as interactive whiteboards and mobile devices, allows for the incorporation of varied and engaging activities into lessons.

In Hungary, foreign language instruction for students with MID is characterized by institutional autonomy and a nascent pedagogical approach. Educators adapt teaching the English content to align with societal expectations and individual student needs, often employing playful and engaging activities to enhance motivation. One of the most important challenges is that learners with MID not only require extra time and patience, but also, they demand specific educational strategies in a well-structured, specific learning environment and strategies that increase their motivation for learning. Sometimes teachers feel it is a boring and unpromising job. However, it is important to note that these learners are also able to learn, though need different instructions and methods.

The limited availability of specialized teaching materials necessitates teacher creativity and resourcefulness, often leading to the adaptation of materials designed for mainstream education.

Experiential learning and playful exercises are employed to maintain student engagement, with board games being particularly effective for promoting cooperation and tolerance.

The primary objective of foreign language instruction for students with MID is not solely linguistic proficiency, but also the enhancement of motivation, self-awareness, and self-esteem. Learning a language can help learners with MID to navigate in a globalized world. Moreover, basic vocabulary can aid students in understanding foreign terms encountered in everyday life, such as those found in internet games or while traveling.

Teaching foreign languages to students with learning disabilities presents both challenges and opportunities for educators. Teachers identified a range of challenges in their practice, including,

student-related challenges, teacher-related challenges, resource and systemic challenges as well as linguistic challenges. However, teachers involved in the research strive to create enjoyable and stimulating lessons that foster personal growth and push students beyond their perceived limitations. Teachers prioritize repetition and practice over error correction, recognizing that language learning contributes to overall cognitive development and increased self-confidence. Therefore, multiple sensory experiences must be used to support encoding information with vision, hearing and/or movement as we remember best when multiple brain functions are stimulated. Using real objects can increase motivation, reduce anxiety and facilitate a more effective and meaningful learning environment.

By focusing on positive reinforcement and individualized instruction, teachers can empower students with learning disabilities to overcome challenges and develop valuable language skills.

This study highlights the importance of tailoring foreign language instruction to the specific needs of students with MID. Incorporating engaging activities, leveraging their interests, and providing opportunities for real-world application could enhance motivation and facilitate language acquisition. However, as intellectual disability has an impact on communication and social behaviour, sincere support from the family and the wider community, including employers, are still needed. Additionally, fostering exposure to English through music, media, or other extracurricular activities may cultivate a more positive attitude towards language learning, thereby increasing the likelihood of long-term success.

It has become clear to us from a focus group discussion that students acknowledge the importance of language learning and generally enjoy the lessons, they encounter difficulties due to linguistic differences between their native and target languages. In language lessons, children enjoy talking, playing games and listening to songs. Children want to learn English because it can be useful for working

and traveling (e.g., shopping) in the future: “I want to go to Russia because it’s good there.” They enjoy movement activities (e.g., Simon says) rather less.

Our research has its limits in terms of the number of teachers and learners involved in the research. Further research is still required to explore effective pedagogical approaches and strategies for teaching foreign languages to students with learning disabilities. Only by understanding their unique learning profiles and addressing their specific challenges, educators can unlock their potential and empower them to become functioning foreign language users.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. The patients/participants legal guardian/next of kin provided written informed consent to participate in this study.

Author contributions

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References

- Ahyatul, U. (2021): The influence of using mimicry memorization method towards students’ vocabulary mastery at the eighth grade of SMP N 1Cukuh Balak at the first semester in the academic year of 2020/2021. Available at: <http://repository.radenintan.ac.id/14899/2/PUSAT%20BAB%201%202.pdf>. (accessed April 22, 2023)
- American Psychiatric Association, DSM-5 Task Force. (2013). Diagnostic and statistical manual of mental disorders: DSM-5™ (5th ed.). Washington DC: American Psychiatric Publishing.
- Angeli, É., Bihari, M., Lajos, J., and Jécsai, Z. (2017). *Wir lernen Deutsch 4*. Budapest: EKE OFI.
- Bawa, A., and Osei, M. (2018). English language education and children with intellectual disabilities. *Int. J. Dev. Sustain.* 7, 2704–2715.
- Braun, V., and Clarke, V. (2006). Using thematic analysis in psychology. *Qual. Res. Psychol.* 3, 77–101. doi: 10.1191/1478088706qp0630a
- Cando Yáñez, R. E., Andrade Morán, J. I., and Cando Guanoluiza, F. S. (2024). Using realia in teaching English vocabulary to a mildly intellectually disabled student. *Revista Científica De Innovación Educativa Y Sociedad Actual "ALCON"* 4, 91–104. doi: 10.62305/alcon.v4i4.210
- Coşkun, A. (2013). Teaching English to non-native learners of English with mild cognitive impairment. *Mod. J. Lang. Teach. Methods* 3, 8–16.

- Czibere, C., and Kisvári, A. (2006). *Inkluzív nevelés. Ajánlások tanulásban akadályozott gyermekek, tanulók kompetencia alapú fejlesztéséhez*. Budapest: SuliNova Közoktatás-fejlesztési és Pedagógus-továbbképzési Kht.
- European Commission (2005). *Special educational needs in Europe. The teaching and learning of languages. Insights and innovation. Teaching languages to learners with special needs*. Available at: <https://incpill.com/wp-content/uploads/2017/01/eudxamfl.pdf>
- Irfan, F., Awan, T. H., Bashir, T., and Ahmed, H. R. (2021). Using realia to improve English vocabulary at primary level. *Multicult. Educ.* 7, 340–354. doi: 10.5281/ZENODO.4647933
- Kotzné Havas, E., and Szendy, J. (2009). *Konfetti*. Budapest: Nemzedékek Tudása Tankönyvkiadó.
- Krulak-Kempisty, E., Reitzig, L., Erndt, E., Sárvari, T., and Gyuris, E. (2014). *Hallo, Max I*. Budapest: Klett. Kiadó.
- Lestari, Z. W., Koeriah, N., and Nur'aeni, N. (2022). English language learning for mild intellectual disability students during pandemic. *J. Engl. Educ. Teach.* 6, 89–102. doi: 10.33369/jeet.6.1.89-102
- Meggyesné Hosszu, T. (2015). *A tanulásban akadályozott gyermekek idegen nyelv tanításának kérdései*. Szeged: Szegedi Tudomány Egyetem JGYPK Gyógypedagógus-képző Intézet.
- Meggyesné Hosszu, T. (2018b). *Let's do it. Angol nyelvkönyv 7*. Eger: Eszterházy Károly Egyetem.
- Meggyesné Hosszu, T. (2019). *Enyhén értelmi fogyatékos tanulók idegennyelv-tanulási motivációja az eltérő tantervű általános iskolák 8. osztályában (PhD dissertation)*. Manuscript. Available at: <https://pea.lib.pte.hu/bitstream/handle/pea/23486/meggyesne-hosszu-timea-phd-2020.pdf>.
- Meggyesné Hosszu, T. (2018a). Esélyt nyújtunk vagy túlterheljük az enyhén értelmi fogyatékos a kötelező idegennyelv-tanulással? in *Gyógypedagógia – dialógusban Fogyatékossgal élő gyermekek, fiatalok és felnőttek egyéni megsegítésének lehetőségei*. ed. B. Rita, 357–366. Available at: https://www.academia.edu/121259598/Gy%C3%B3gypedag%C3%B3gia_dial%C3%B3gusban_Fogyat%C3%A9koss%C3%A1lgal_%C3%A9l%C5%91_gyermekek_fiatalok_%C3%A9s_feln%C5%91ttek_egy%C3%A9ni_megseg%C3%ADt%C3%A9s%C3%A9nek_lehet%C5%91s%C3%A9gei (accessed April 22, 2023)
- Meggyesné Hosszu, T., and Lesznyák, M. (2017). Az idegen nyelvet tanító pedagógusok módszertani repertoárja a tanulásban akadályozott gyermekek iskoláiban. *Modern Nyelvoktatás* 23, 22–42.
- Mesterházi, Zs. (1997). “Tanulási akadályozottság” in *Pedagógiai Lexikon III*. eds. Z. Báthory and I. Falus (Budapest: Keraban Könyvkiadó), 17–20.
- Nemes, M., and Rózsa, H. (2021). A tanulásban akadályozott tanulók német nyelvoktatásának helyzete – hazai és nemzetközi kitekintés. *Különleges Bánásmód* 7, 55–67. doi: 10.18458/KB.2021.4.55
- Nikolov, M. (2011). Az idegen nyelv tanulása és a nyelvtudás. *Magy. Tud.* 2011, 1048–1057.
- Pokrivčáková, S. (2015). Foreign language education of learners with special educational needs in Slovakia. *Int. J. Arts Commer.* 2, 115–126. doi: 10.17846/SEN.2015.7-28
- Sab'na, S., Nasrullah, N., and Rosalina, E. (2024). English Teacher's challenges and solutions in teaching intellectual disability students: case study. *Interaction* 11, 116–128. doi: 10.36232/jurnalpendidikanbahasa.v11i1.6130
- Sári, É. (2019). *Let's do it. Angol nyelvkönyv 8*. Eger: Eszterházy Károly Egyetem.
- Shree, A., and Shukla, P. C. (2016). Intellectual disability: definition, classification, causes and characteristics. *Learn. Community Int. J. Educ. Soc. Dev.* 7, 9–20. doi: 10.5958/2231-458X.2016.00002.6
- Tulus, M., and Rihanatul, F. (2021). Arabic phonological interventions with mimicry-memorization learning method: a review on evidence-based treatment. *J. Pendidikan* 6, 96–102. doi: 10.17977/jptpp.v6i1.14396
- UNICEF (2000). *Quality in education: A paper presented by UNICEF at the meeting of the. Italy: International Working Group on Education Florence*.
- Utami, R. P., Suhardi, K. P., and Astuti, U. P. (2021). EFL teachers' problems and solutions in teaching English to students with intellectual and developmental disability. *Indones. J. Appl. Linguist.* 6, 173–188. doi: 10.21093/ijelt.v6i1.912
- Wilson, D. (2014). Language learning and students with special educational needs. *Responses to questions for publication in Marianne Smedley's article 'Focus on: How language learning can help students with special educational needs', Languages Today, Spring 2014*, 14–16.



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Literature for all in Poland? Opportunities and challenges of easy to read standard in special education for the d/Deaf students in primary school - preliminary remarks

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The article discusses the development and challenges of the easy to read (EtR) standard in Poland. The research described in the article aims to evaluate the effectiveness of EtR texts for students with special communication needs, particularly those who are deaf or have aphasia. Conducted as a pilot study, it focuses on whether selected literary texts from the Integrated Educational Platform are understandable for these students and examines the features that may hinder comprehension. The study, carried out during the 2023/2024 school year, involved analyzing selected texts and conducting comprehension assessments with students. The authors chose “The Nightingale” by Hans Christian Andersen and “The Barrel Organ” by Bolesław Prus to gauge understanding among fourth and sixth graders, respectively. The research highlighted that comprehension varies widely within heterogeneous student groups, necessitating further differentiation in text adaptation to meet diverse communication needs. Key findings indicate that vocabulary selection plays a critical role in comprehension, with many terms being unfamiliar or outdated for students. Additionally, low social awareness of EtR’s purpose can lead to stigmatization of easy language, particularly as it is often associated with individuals with intellectual disabilities. The article suggests that more inclusive approaches, such as involving target groups in adapting texts and creating materials suited to different levels of proficiency, could enhance the educational effectiveness of EtR texts. It emphasizes the need for unified guidelines to address the specific needs of various audiences, ensuring better communication and understanding in educational settings.

KEYWORDS

special education, communication needs, d/Deaf, literature, easy to read

1 Standard easy to read—what it is and for whom? In the context of access to literature and education

In Poland, the first easy to read and understand text was published in 2002 in the journal “Społeczeństwo dla Wszystkich,” issued by the Polish Association for Persons with Intellectual Disabilities (PSOUU).¹ This association is the most active organization in Poland utilizing the easy to read (EtR) standard for communication with audiences and has been preparing publications in the “Biblioteka self-adwokata” series. In 2010, PSONI, a member of Inclusion

1 Today, it is known as the Polish Association for Persons with Intellectual Disabilities—PSONI.

Europe, translated the European standards for preparing easy to read texts (Information for All)² into Polish. Currently, plain language appears more frequently in the public communication than easy language. Many public administration units are changing their communication models with audiences.³ However, despite the existence of relevant legal regulations,⁴ few of them implement the easy to read standard. There are still no widely available and commonly used standards in Poland that have been tailored to the specifics of the Polish language (including its syntax, inflection, etc.). Easy to read and understand texts that have been produced in Poland to date most often adhere to the guidelines set forth by Inclusion Europe. However, it is important to note that these are merely recommendations and authors of easy texts are not obligated to follow them. Furthermore, there are currently no studies that confirm the effectiveness of applying these guidelines in enhancing comprehension of the content.

Therefore, as noted by Agnieszka Przybyła-Wilkin, when easy to read information is produced, it is often of poor quality. This is primarily a consequence of the lack of training for those creating these texts, as well as the aforementioned absence of coherent guidelines suitable for the Polish language (Przybyła-Wilkin, 2021, p. 406).

The differences between Standard Polish and Easy Polish are illustrated in the following example (Przybyła-Wilkin, 2021, pp. 411–412) (see Table 1).

The below examples illustrate the differences between the two standards: plain language and easy to read text. These differences are evident at every level: lexical, syntactic, as well as graphic and editorial. The following example⁵ illustrates these differences.

Plain language

Koronawirus zaczął się w Chinach, ale zaraziły się nim już miliony osób na całym świecie. Najczęstszymi objawami tego wirusa są: gorączka, kaszel i problemy z oddychaniem. Jeśli od jakiegoś czasu odczuwasz te dolegliwości, zadzwoń do lekarza lub sanepidu.

2 Information for All. European Standards for Preparing easy to read and Understand Texts, translated by Boruc (2010). Additionally, there is a publication titled *Easy to Read and Understand Text: Guidelines for Creating and Using Educational and Exercise Materials*, prepared by PSONI in 2021 as part of the initiative "I read and I know – Easy to Read Texts in Schools." This document includes the development and dissemination of educational and exercise materials in an easy to read format, guidelines for their creation and use with students, and recommendations for implementing these solutions into school practice. Available at: <https://zpe.gov.pl/b/tekst-latwy-do-czytania-i-zrozumienia-instrukcja/P17lb7LYC> (accessed September 1, 2024). See also: Abramowska (2015). More on this topic is written by Abramowska et al. (2021).

3 These changes pertain to the lexical and syntactic layers, as well as text composition, sender-receiver relationships, language etiquette, and polite expressions.

4 The respect for human rights and equal treatment is established in the Universal Declaration of Human Rights, proclaimed on December 10, 1948. It is also worth mentioning other legal instruments addressing accessibility, such as the UN Convention on the Rights of Persons with Disabilities, the European Accessibility Act, and in Polish legislation, aside from the Constitution, the Accessibility Act of July 19, 2019.

5 https://psoni.org.pl/wp-content/uploads/2020/06/ETR_o-epidemii_17.06.2020.pdf (accessed October 25, 2024).

Adres najbliższego sanepidu znajdziesz w internecie pod adresem: <https://gis.gov.pl/mapa/>. Aby chronić się przed zachorowaniem, myj często ręce wodą i mydłem. Jeśli kichasz i kaszlesz, to zasłoń usta chusteczką higieniczną lub w zgięte ramię.

Przestrzegaj też kilku zasad:

- 1 unikaj dużych grup ludzi. W miejscach, w których są inni ludzie, musisz zakładać maseczkę albo przyłbicę.
- 2 na ulicy zachowaj dwumetrowy odstęp od innej osoby. Obecnie sytuacja pandemiczna w kraju jest dynamiczna. Warto słuchać aktualnych ogłoszeń w radiu lub telewizji i stosować się do zaleceń.

Easy to read text



Koronawirus zaczął się w Chinach. Z powodu tego wirusa zachorowało już bardzo dużo osób na całym świecie. To się nazywa **epidemia**.

Osoby z koronawirusem mają:

- gorączkę
- kaszel
- problemy z oddychaniem.

Jeśli tak się czujesz, zadzwoń do lekarza lub sanepidu. Najbliższy sanepid znajdziesz w internecie pod adresem: <https://gis.gov.pl/mapa/>

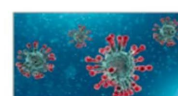
Żeby nie zachorować:

- często myj ręce wodą i mydłem przez co najmniej pół minuty
- nie dotykaj twarzy
- jeśli kichasz i kaszlesz to w chusteczkę higieniczną lub w zgięte ramię.

Przestrzegaj kilku zasad:

- unikaj dużych grup ludzi
- w miejscach, w których są inni ludzie musisz zakładać maseczkę albo przyłbicę. Przyłbica to przezroczysta ochrona na całą twarz.
- na ulicy zachowaj duży odstęp od innej osoby - 2 metry.

Sytuacja w kraju się zmienia. Słuchaj aktualnych ogłoszeń w radiu lub telewizji. Wykonuj zalecenia!



There is still no single term to describe this language standard. In Polish, one may encounter phrases such as “easy to read and understand language” or the borrowed term from English “easy to read” (also used as “EtR”).⁶ Furthermore, there is no unified definition, and the challenges in creating one are evident not only in the Polish context.⁷

6 In German, the term *Leichte Sprache* is used, which translates to *easy language*. In Croatia, the dominant term is *lako čitljivi tekstovi* (easy to read texts), while in the Czech Republic, it is referred to as *snadno čitelné a srozumitelné formy* (forms that are easy to read and understand). In Sweden, the term used is *Lättläst* (easy to read).

7 In some countries, such as Belgium, the definitions of the two terms plain language and easy to read text do not differ from one another. See: Vandehinste et al. (2021, p. 60).

TABLE 1 Comparison of the standard Polish with Easy Polish, developed by Agnieszka Przybyła-Wilkin.

Standard Polish	Easy Polish
<p>W ciągu ostatnich czterech lat Polskie Stowarzyszenie na rzecz Osób z Niepełnosprawnością Intelleksualną przeobraziło się (...).</p> <p>Po pierwsze, w każdym Kole PSONI unoszą się słowa o „niezależnym życiu osób z niepełnosprawnością intelektualną” „samostanowienia” i „podmiotowości”</p> <p>Po drugie, w każdym Kole PSONI działa grupa self-advokatów i self-advokatek, wspierająca Zarządy Kół w działaniach, reprezentująca swoje stanowisko w każdej sprawie dotyczącej osób z niepełnosprawnością intelektualną (...)</p> <p>Tak powinno brzmieć podsumowanie kadencji Zarządu Głównego PSONI 2020–2024 (...).</p>	<p>Co chce robić Zarząd Główny?</p> <p>Zarząd Główny pracuje dla Stowarzyszenia. W Zarządzie Głównym są ludzie z różnych miast w Polsce. Będą razem pracować przez 4 lata.</p> <p>W naszym Stowarzyszeniu najważniejsze są osoby z niepełnosprawnością intelektualną. Zarząd Główny chce, żeby każda osoba z niepełnosprawnością intelektualną mogła niezależnie żyć. To znaczy mieć mieszkanie, pracę i znajomych, decydować o sobie.</p> <p>Osoby z niepełnosprawnością intelektualną mogą decydować o Stowarzyszeniu. Na przykład brać udział w ważnych spotkaniach, mówić co dla nich jest ważne. Mówić czego im najbardziej potrzeba.</p> <p>Source: Zima-Parjaszewska, Monika. „Jak działać ‘na rzecz’? Co chce robić Zarząd Główny?” [How to work „for” [people with intellectual disabilities]? What does the National Board want to do?]. <i>Spoleczeństwo dla wszystkich [Society for all]</i> September 2020: 2. Web. 22 February 2021.</p>
<p>[Over the last four years, the Polish Society for People with Intellectual Disability (PSONI) has been transformed (...).</p> <p>First, every PSONI branch has the terms ‘independent life of people with intellectual disabilities’, ‘self-determination’ and ‘subjectivity’.</p> <p>Second, in every PSONI branch, a group of self-advocates is at work, supporting the Branch Boards in their actions, presenting their position on every matter concerning people with intellectual disability (...)</p> <p>This is what the summary of the PSONI National Board term 2020–2024 should sound like (...).</p>	<p>What does the National Board want to do?</p> <p>The National Board works for the Society. In the National Board there are people from different cities in Poland. They will work together for 4 years.</p> <p>In our Society, people with intellectual disabilities are the most important. The National Board wants every person with intellectual disabilities to be able to live independently. This means: to have a home, a job and friends, and to decide for themselves.</p> <p>People with intellectual disabilities can make decisions about their Society. For example [they can] take part in important meetings, say what is important to them. [They can] say what they need most.]</p>

The most significant distinguishing factor between plain language text and easy language text is that easy language texts must always be co-created with individuals with intellectual disabilities or representatives from other target groups to whom the text is addressed. Easy language text involves not only increasing font size, using simpler words and sentences, and incorporating graphics, but also consulting with the individual for whom the text is being adapted to ensure that the content is accessible to them.

Easy to read texts are primarily intended for individuals with complex communication needs. Functionally describing this group, it is essential to distinguish between those who have experienced communication difficulties from birth and those who have developed such difficulties later in life due to accidents or illnesses. Thus, the group includes:

- 1 persons with disabilities who require easy to read texts on a continuous basis,
- 2 readers with limited language or reading skills who may need easy to read texts for a period of time, such as foreigners learning the language of the country they are in.

Representatives from various European countries in the *Handbook of Easy Languages in Europe* indicate that individuals who can particularly benefit from texts developed in the easy to read and understand standard include individuals with clear cognitive impairments (e.g., developmental disabilities, memory disorders), people with various learning disabilities, neurocognitive disorders (e.g., ADHD, autism spectrum disorders) or functional illiteracy.

However, it is important to note that the target group for easy texts is, in fact, a very extensive and open collection. As stated in the introduction to the *Handbook of Easy Languages in Europe*:

In some cases, Easy Language has also supplanted the standard language as a language format for the general public. When the Satakunta Hospital District in Finland introduced Easy Language patient instructions, no one wanted to use the standard language patient instructions anymore. One answer to the question of who

the Easy Language target groups are is: everyone. Each individual should have the right to choose whether they want information in Easy Language or in standard language. It is important to ensure that Easy Language is a publicly available, neutral and non-stigmatized option for all public communication in society (Lindholm and Vanhatalo, 2021, p. 60).

2 Easy to read in literature and education

When discussing easy to read texts in education, it is essential to mention the concept of universal literature,⁸ which appears to be realized by organizations as Leser søker bok in Norway (Books for Everyone) (Bovim Bugge et al., 2021, p. 373). This term refers to a type of literary text that can be read and understood by individuals for whom the standard version is not accessible for various reasons. Universal literature can be seen as a specific adaptation of the original text, but it can also arise when an author creates such a text as an original work, with the intention that the reader may have special communication needs.

In the previously mentioned publications, that outline European standards for creating easy to read and understand texts, there are no guidelines specifically addressing the creation of literature (both poetry and prose). This is significant, as one of the rules states that metaphors should not appear in easy to read texts. This requirement is particularly challenging to apply in literature, considering the essential role that stylistic devices, such as figures of speech and allusions, play in the meaning and interpretation of a text. It should also be noted that the literary texts included in the canon obligatory

8 This concept has not yet been defined in the relevant literature. We propose to introduce it as a synonymous term to the descriptive concept of “books in easy language,” which is used, among others, in Finland, Sweden, and Norway. See: *Handbook of Easy Languages in Europe*, op. cit.

at school come from different eras. Therefore, we are not always dealing with texts written in contemporary language.

Moreover, when creating universal literature in an easy to read format, the sender typically addresses the recipient using the informal “you.” In poetry, the author does not necessarily need to be identical to the lyrical subject or the protagonist. Additionally, the guideline to avoid repeating information and including unnecessary content is complex; what constitutes unnecessary content in informational texts differs from that in literary texts. In the case of adapting existing literary texts into an easy to read format, there remains the question of how to express levels of semantic depth.

Adapting original texts to the easy to read (EtR) guidelines carry the risk of oversimplifying the message and potentially failing to engage readers with the content. It is crucial, as highlighted by Maaß (2020) in her book, that EtR texts are inclusive while also avoiding the basis for stigmatization in the pursuit of a high level of reader comprehension.

The development of universal literature varies significantly from country to country. In the Scandinavian countries, the first literary publication in EtR was produced in the 1960s.⁹

In Poland, adaptations of literary texts have emerged through various projects implemented by different organizations. One such initiative is the project “I read and I know – Easy to Read Texts in Schools”.¹⁰ This project, carried out by the Polish Association for Persons with Intellectual Disabilities (PSONI) on behalf of the Ministry of Education and Science, resulted in the creation of 35 sets of educational and exercise materials in an easy to read format, as well as guidelines for creating and using these texts in teaching.

Additionally, it is worth mentioning the efforts of the Sign Language Linguistics Laboratory at the University of Warsaw, which, since 2014, funded by the Ministry of National Education, has been working on the Integrated Educational Platform, which features educational materials from various school subjects developed in accordance with EtR standards, as well as a series called “Accessible Readings”.¹¹ Approximately 60 literary works have been adapted as part of the project. Among the selected works are pieces by both Polish authors, such as Adam Mickiewicz, Bolesław Leśmian, and Jan Kochanowski, as well as international authors¹² like Mark Twain and others. It is important to note that these readings were created in different eras, making the original text an example of the language of its time, which

can pose a barrier to understanding even for Polish-speaking students who do not require communication adaptations.¹³ These materials are presented in the form of multimedia books available online. For each reading, a package of materials has been prepared, including: a video recording translating the text into Polish Sign Language (PJM), the reading content presented in the easy to read standard, graphic materials where the reading content is presented in comic form and worksheets for students, worksheets with PCS symbols, and communication boards featuring PCS symbols. The authors aim for these educational aids was to support the consolidation of knowledge and skills outlined in the general curriculum for primary schools.

3 Description of the research procedure

The aim of the research, the results of which are described in the following sections of the article, was to open a discussion on the effectiveness (or lack thereof) and the legitimacy of using easy to read texts in the education of students with special communication needs. It is important to emphasize that the research was designed as a pilot study. Therefore, the conclusions drawn are not meant to be generalized; rather, they serve to initiate further steps necessary for a thorough verification of the hypotheses posed.

The subsequent part of the article will present the research findings aimed at addressing the following research questions:

- 1 Are the literary texts available on the Integrated Educational Platform understandable for deaf and hard-of-hearing students, as well as students with aphasia?
- 2 What features of the analysed texts developed according to the EtR standard may make them difficult for these groups of primary school students to understand?
- 3 What are the risks and opportunities of using literary texts developed according to the EtR standard in education?

The research procedure was carried out in stages, including:

- a) selection of material from the educational platform and its critical analysis;
- b) conducting the study with a group of students from a school for the deaf and characterizing the research group and the results;
- c) presentation of research results and discussion of conclusions from the conducted study.

4 Characteristics and analysis of the research material

To address the research questions, the authors designed an experimental study conducted during the 2023/2024 school year at the School and Education Center in Poznań. The study aimed to

9 The title of this book is *Summer with Monika*. It was published in 1968, and the original author is Per Anders Fogelström, who wrote it in 1951.

10 In this project, for the first time, easy to read and easy to understand standards were applied to the development of educational and practice materials for educational stages involving students with special educational needs, specifically the first and second stages of primary school. This includes materials for students with moderate and severe intellectual disabilities, as well as for vocational preparation schools and first level vocational schools. As part of the project, materials were developed for subjects including Polish language, mathematics, physics, biology, chemistry, and computer science, as well as for courses on personal and social functioning, ethics, entrepreneurship, communication, and creativity. See: https://psoni.org.pl/czytam_i_wiem/ (accessed September 21, 2024).

11 The materials are available in the section “Accessible Readings” at the following link: <https://www.gov.pl/web/edukacja/lektury-dostepne> (accessed September 21, 2024).

12 It is important to note that the emerging easy to read text is prepared based on a translated version of the original.

13 It is noteworthy that, within the context of school education, Polish language teachers are increasingly turning to the comics developed as part of the “Accessible Readings” project to help students understand the meaning of texts where the language presents significant barriers to comprehension (cf. Rybka and Wrześniewska-Pietrzak, 2022).

assess the level of comprehension of easy to read (EtR) materials available on the Integrated Educational Platform. After consulting with teachers, two texts were selected for the study: the fairy tale “The Nightingale” by Hans Christian Andersen and the positivist novella “The Barrel Organ” by Bolesław Prus. Although these texts belong to different literary genres, both are written in prose. Despite the differences between a fairy tale and a positivist short story, it is important to note that both works feature a clear structure, with a single main plot presented in a coherent, chronological narrative, which also carries a didactic message. In the school curriculum, fairy tales are typically introduced to students at the beginning of the second stage of education, while short stories are usually discussed in higher grades. Following further consultation with teachers, the authors have decided to assess the comprehension of the fairy tale among fourth-grade students, and the comprehension of the short story among sixth-grade students.

Due to the fact that our analysis aims were focused both on the adaptation of the literary text to EtR standards and its functionality in education, as well as on the comprehensibility of the prepared materials, it is necessary to begin by presenting and characterizing the materials selected for the study. Both texts and the exercises designed to assess reading comprehension were prepared by the same team. The EtR texts were authored by Piotr Mostowski, while the worksheets were developed by Małgorzata Skuza and Agnieszka Bajewska-Kołodziejek. As the authors of the materials indicate:

The easy to read text (EtR) was developed in accordance with the IFLA Guidelines for Easy-to-Read Materials and the publication ‘Information for All: European Standards for the Preparation of Easy-to-Read and Understand Texts’. Its purpose is to make the content of the reading accessible to readers who, for various reasons, are unable to comprehend the original text. These are primarily students with aphasia or intellectual disabilities, although an easy to read text can be helpful for any child who faces a language barrier or an overload of content. The changes made in the EtR version affect two layers: language and content. The linguistic layer was modified in terms of vocabulary and syntax – frequently used words that are easy to understand were applied, and information was presented mainly in simple sentences, following the principle: 1 line of text = 1 sentence. Subplots were removed from the original text, and subheadings were added in longer texts. (Information from the introduction to the exercise materials available in each set of educational materials).

It should be noted that the authors only adapted the texts linguistically; they were not accompanied by illustrative material, which is a necessary element in the EtR standard. Although the authors do not explicitly state this, it is likely that illustrations facilitating text comprehension were replaced by comic strips that visually depict the content in accordance with the conventions of the comic genre. According to the authors, these illustrations aim to make the text content more accessible to students. They note that:

Teachers can refer to the proposed illustrations while working with the text – using either the entire comic strip or selected elements. For students, this aids in visually reconstructing the plot of the work and in memorizing it. For some, the short texts in the frames are the only form of engagement with the reading. (Information from the introduction).

Nevertheless, the authors of these materials assume that working with the reading text can also be done without referring to illustrations. Thus, it can be observed that in the series of available readings, the EtR standard is primarily perceived as an adaptation of the linguistic layer, with visual elements being considered redundant.

A semantic analysis of both works evokes several questions that are crucial when adapting literary texts to the needs of students and the educational context. One such question concerns the criteria for omitting content and limiting the semantic layer to the main plot. Both texts have a didactic nature. The structure of the fairy tale, for instance, is based on contrast (axiologically marked opposition, fitting into the framework of good versus evil). In the case of “The Nightingale” this contrast has been reduced to the juxtaposition of the real and mechanical birds. However, a crucial element concerning life in captivity (imprisonment) *versus* freedom, as well as the idea that something perceived as a reward (a golden cage) by one might signify captivity and suffering for another, has been omitted. This omission is evident when comparing the content of the EtR version of the work with the questions related to the text, which include interrogative sentences such as “What was the highest reward for the nightingale?” and “Where did the mechanical nightingale come from?” The reader, however, will not find answers to these questions in the text.

Similar issues can be observed in the relationship between the content of B. Prus’s “The Barrel Organ” and the questions related to it. One of the questions testing text comprehension requires students to eliminate a false statement from two options given in the sentence. This question makes students identify the amount of money Mr. Tomasz gave to the caretaker to prevent the organ-grinder from entering the yard. However, the developed text contains no information about the transfer of money to the custodian. Due to this, the authors of this article decided to remove this question from the questionnaire addressed to the sixth-grade students in this study.

It can thus be observed that the developed materials were not reviewed, and the division of tasks among different authors, in the case of the relationship between the text and comprehension questions, may have contributed to the identified shortcomings. Based on this observation, one can conclude that a good practice in the process of preparing educational materials correlated with a literary work should involve the principle of having the same authors or team of authors develop these interrelated texts.

Given that the target audience assumed by the authors of the developed materials were students with disabilities who have learning and/or communication difficulties, including those who are deaf, hard of hearing, intellectually disabled, or have autism or aphasia, and who attend elementary school,¹⁴ it must be assumed that the content adaptation should also consider the cognitive and communicative abilities of this age group. Both texts included lexemes such as *cesarz* [‘emperor’], *słowik* [‘nightingale’], *kataryniarz* [‘organ grinder’], and *katarynka* [‘barrel organ’], whose familiarity among students, particularly within this target group, may be questionable. These are low-frequency lexemes, as evidenced by the results obtained from entering these lexemes into Google (*cesarz* /‘emperor’—63,100, *słowik* /‘nightingale’—62,200, *kataryniarz* /‘organ grinder’—17,100, *katarynka*

¹⁴ It should be emphasized that the authors of the materials did not precisely define the target group, even though the indicated recipient groups are mostly internally diverse, also in terms of communication methods.

/'barrel organ'—19,900, *adwokat* 'lawyer'—58,800, *ptak* 'bird'—210,000, *instrument* 'instrument'—2,270,000, *władca* 'ruler'—76,200, *król* 'king'—246,000, *prawnik* 'lawyer'—149,000).¹⁵ It should be added at this point that the keywords for the literary text are absent from the Minimum Vocabulary Dictionary of the Polish Language, which lists 2,144 entries that should be known to individuals learning Polish at levels A1 and A2 (Zgółka, 2013). An easy to read text devoid of explanations (and illustrations) of key words crucial to the literary text will be significantly more challenging for readers with lower communicative competencies.

At this point, it is also worth noting that in the comprehension materials developed for Bolesław Prus's short story, the word *stróż* ('caretaker') was used, which is a synonym for *dozorca* ('custodian'). Both lexemes are infrequently used, and their occurrence in Polish is limited. A child in school may encounter someone performing similar duties who is referred to as a *portier* 'porter', while those responsible for maintaining order or enforcing rules in places like supermarkets or other public spaces are usually called *ochroniarz* or *ochrona* 'security guards'. Due to this, the authors decided to remove this task from the questionnaire. Furthermore, since the developed text did not include information about the activities

performed by the blind protagonist's mother, the sentence: *The girl's mother made stockings/socks*. Was also removed.

The analysis of the tasks accompanying the developed texts demonstrates how crucial the correspondence between the text and its associated tasks is, as well as the importance of lexical choices that align with the cognitive abilities of today's elementary school students. To verify the authors' observations, an additional task was included in the sixth-grade task set, focusing on understanding key words for comprehending the short story: *być skoncentrowanym* ('to be focused'), *dozorca* ('custodian'), *obserwować* ('to observe'), *nienawidzić* ('to hate'), *katarynka* ('barrel organ') and *adwokat* ('lawyer'). Meanwhile, the test checking comprehension of Hans Christian Andersen's "The Nightingale" involved a task in which fourth-grade students were asked to compare the real nightingale with the mechanical one. This task was proposed by the authors of the materials published on an online platform. However, the article's authors made one modification—removing the illustrations of the two birds from the table, as the EtR-adapted fairy tale text did not include illustrations. Both worksheets were similar in length. Each consisted of three pages, with the first one and a half pages containing the reading text, followed by printed questions.

The detailed questions for the sixth-grade students, translated into English, were as follows (see Figure 1).

¹⁵ Data from 3rd September 2024.

Task 1. Answer the questions:

- What is the title of the work?
- Who wrote this work?
- Where is the action of the work set? |
- Who are the characters in the work?

Task 2. Answer the questions:

- How did the emperor learn about the nightingale's beautiful singing?
- How did the emperor want to reward the nightingale?
- What was the greatest reward for the nightingale?
- Where did the mechanical nightingale come from?
- For whom did the mechanical nightingale sing?
- Why did people love the real nightingale?
- Who turned out to be the emperor's true friend during his illness?

Task 3.

Based on the text, compare the nightingale and the artificial nightingale. How do they differ from each other?

the nightingale	the artificial nightingale

FIGURE 1
Questions referring to the fairy tale *Stowik* by H.Ch. Andersen translated into English.

Task 1. Fill in the blanks

The author of the novella "The Barrel Organ" is
 The main character of the novella is
 He was a lawyer, lived alone, and most of all, he disliked
 Nearby, moved in with
 The girl was
 She often looked out the and was sad.
 One day, an entered the courtyard.
 Mr. Tomasz wanted to chase him away, but he saw that the girl was
 and dancing.
 From that time on, the was allowed to come to the courtyard and play
 for
 Mr. Tomasz decided to help and find for the girl.

Task 2. Cross out the unnecessary words

- Mr. Tomasz was a lawyer / salesman.
- He lived in Krakow / Warsaw.
- Mr. Tomasz really liked organ grinders / disliked organ grinders.
- Near Mr. Tomasz, two / four women and a girl moved in.
- The girl was deaf / blind.
- The girl was often happy / sad.
- When the girl heard the organ grinder, she laughed and danced / cried and was sad.
- Mr. Tomasz chased away / did not chase away the organ grinder because he saw the happy girl.
- Mr. Tomasz wanted / did not want to help the girl.

Task 3. Answer the questions:

- Where did Mr. Tomasz live?
- What was Mr. Tomasz interested in?
- What did Mr. Tomasz dislike?
- Who did not let the organ grinder into the yard?
- Who lived across from Mr. Tomasz?
- Since when had the girl been blind?

Task 4. Explain the meanings of these words:

be concentrated –
 caretaker –
 to observe –
 to hate –
 organ grinder –
 lawyer –

Task 5. How do you think the story of the blind girl could have ended? Write your own ending.

.....

FIGURE 2

Questions referring to "The Barrel Organ" by B. Prus translated into English.

The English translation of the questions developed for the short story "The Barrel Organ" is displayed in Figure 2.

5 How did the students cope with the literary texts in the EtR standard?

The authors of the analyzed materials identified individuals with aphasia and d/Deaf individuals as the target audience. Therefore, the authors of the article decided to examine how students from a school for the Deaf in Poznań would cope with the materials described above. It is worth noting here that, since the subject of this article is literary texts prepared in the easy to read format, the students worked only with written texts. They were not previously introduced to any version of the text in sign language, nor did they work with visual materials (illustrations, comics).

The described study was conducted in two classes – fourth and sixth grade. A detailed characterization of the research group is presented in Table 2.

In each group there were students who were deaf or hard of hearing¹⁶ (4 students in the fourth grade and 6 students in the sixth grade), who typically communicated using both spoken language (Polish) and sign language (2 students from the fourth grade and 5 students from the sixth grade); however, all of them communicate orally in Polish. The analyzed groups also included students with aphasia (6 in the fourth grade and 3 in the sixth grade). Additionally, 3 students with aphasia from the fourth grade have diagnoses indicating hearing impairment. This diversity within the research group suggests that the analyses should be regarded as examples of specific case studies, allowing for conclusions about the communicative abilities of the students. Although the students were in different grades, their ages were comparable, as individuals with disabilities often start their education later or follow a longer educational path than their peers. It is worth noting, however, that in each class group, there were students whose shared characteristic was their stage of education. It should be noted that the students had not previously been tested for their reading comprehension skills. The authors assumed that their level of proficiency should meet the requirements set in the educational programs for grades 4 and 6 of primary school. It must also be emphasized that each of the students communicated using Polish language (which was sometimes indicated as their only form of communication). According to the curriculum, by grade 4, students should have mastered basic reading and writing skills, especially since Polish is the dominant language of education in Poland (Raport, 2020: 32).

Given the topic of this article, the authors focused not on the characteristics of individual students but on attempting to answer the question of whether the adaptation of materials in the form of a text developed according to the EtR standard enabled the correct completion of tasks related to text comprehension by students with aphasia and those with hearing impairments. At this point, it is important to emphasize that the students who read the developed texts and completed the tasks prepared by the authors of "Lektury dostępne" ("Accessible literature") were the intended target audience for these educational materials. Thus, assessing how they performed in reading comprehension of the selected texts can be considered a means of evaluating the effectiveness of these materials in educational practice. It should be emphasized that the authors of the materials did not indicate that they worked with individuals from the intended target group when developing the literary texts in the easy to read (EtR) format.

For the purposes of this study, the authors present the results obtained by the students. The number of correct answers will serve as an indicator of the comprehensibility of the literary text adapted to the EtR standard and the comprehension-checking tasks prepared for it.

General results for each class are as follows (see Tables 3, 4).

¹⁶ This information was pointed out by teachers who described the students as hard of hearing or deaf according to their diagnoses.

TABLE 2 Characterization of the research group.

	4th grade students	6th grade students
Number of students	10	9
Gender	8 boys	6 boys
	2 girls	3 girls
Age, ways of communication and characteristic of the communication	1 student: 10 years old (deaf, communicates using sign language and orally) 3 students: 11 years old (2 with aphasia, 1 deaf, they communicate using sign language and orally) 4 students: 12 years old (3 with aphasia and communicate orally, 1 deaf—communicate orally) 2 students: 13 years old (1 with aphasia, 1 hard-of-hearing—both communicate orally)	2 students: 14 years old, deaf, communicate using sign language and orally 1 student: 13 years old, deaf, communicates using sign language and orally 2 students: 14 years old, hard-of-hearing, communicate using sign language and orally 1 student: 14 years old, with aphasia, communicates orally, answers to the questions are written by a teacher 1 student: 12 years old, with aphasia, communicates orally 1 student: 13 years old, hard-of-hearing, communicates orally 1 student: 13 years old, with aphasia, communicates orally

TABLE 3 Results obtained by the fourth-grade students.

Fourth-grade students max. number of points—13	Number of students	Age	Gender	Language of communication	
0	1	11	Boy	P	A
	1	10	Boy	P + S	D
	1	13	Boy	P	HoH
2,5	1	12	Boy	P	A
3,5	1	12	Boy	P	A
5,5	1	12	Girl	P	D
6	1	11	Boy	P	A
9	1	11	Boy	P + S	D
10	1	12	Boy	P	A
	1	13	Girl	P	A

P—Polish; S—sign language; A—aphasia; HoH—hard of hearing; D—deaf.

TABLE 4 Results obtained by the sixth-grade students.

Sixth-grade students max. number of points—31	Number of students	Age	Gender	Language of communication	
3	1	14	Boy	P + S	D
	1	14	Boy	P + S	D
6	1	13	Girl	P + S	D
9	1	14	Girl	P + S	HoH
14	1	14	Boy	P + S	HoH
24	1	14	Boy	P (answers are noted by a teacher)	A
27	1	12	Girl	P	A
	1	13	Girl	P	HoH
28	1	13	Boy	P	A

P—Polish; S—sign language; A—aphasia; HoH—hard of hearing; D—deaf.

As the data shows, the highest scores (indicating over 50% correct answers) in both classes were achieved by students with aphasia, while the results of deaf and hard-of-hearing students, particularly in the sixth grade, were significantly lower. In the fourth grade, this difference is not as visible, as the weakest results were obtained by both students with aphasia and those who were hard-of-hearing or deaf. This may be related to the varied language acquisition processes in the group of students with aphasia and hearing impairments. The writing style and responses of deaf students clearly demonstrate difficulties characteristic of this group of Polish language learners. In the responses from both fourth- and sixth-grade students, there were instances of copied

text fragments that did not correspond to the question, incorrectly written words (phonetically distorted, inflected improperly), or word forms inappropriate for the question, such as confusing the words *słowik* ('nightingale') and *słownik* ('dictionary'), or *kataryniarz* ('organ grinder') and *katarynka* ('barrel organ'). Sixth-grade students performed much better on the task that required choosing the correct answer from two contrasting options. The solution to this task involved finding the specific answer in the text (sometimes simply locating the appropriate text fragment), allowing five students to answer these questions correctly. A detailed analysis of the provided answers will be the subject of a separate study; here, the authors focus on elements related to the comprehension of the adapted text and an evaluation of the choices made by the authors of the materials.

The concerns raised earlier in this article regarding the selection of words that, according to the authors, may have been unclear to the students, are confirmed by the results of the task comparing the real and mechanical nightingale in the fourth grade, as well as the sixth-grade students' definitions of selected key words necessary for understanding the short story. In the fourth-grade group, three students did not complete this task, leaving the answer blank. One student wrote only the word *słowik* ('nightingale'). Of the remaining seven responses, five were correct. Three students fully distinguished between the real and mechanical nightingale, noting not only the difference in color and the number of songs sung by both birds but also recognizing other characteristics of the two characters (living/mechanical bird, true friend of the emperor).

The results obtained by the sixth-grade students, whose task was to explain the meaning of six lexical items, are presented in the table below. Incorrect or ambiguous answers indicating unclear definitions are marked with an asterisk (*) (see Table 5).

The presented results show that the word from the title (*katarynka* /'barrel organ') was understood by only one person, while the remaining students provided incorrect answers or none at all. Three of the responses suggest a correlation between the *barrel organ* and sounds (music, noise, singing), indicating that these students likely tried to infer the word's meaning from the context of the text they were reading. However, the information and explanations provided in the text were insufficient.

A simplistic interpretation of these results might lead to the conclusion that the texts, as developed, are not effective for the group of students under study. However, this conclusion would be an oversimplification, as various factors may have influenced the students' performance. The variation in students' results suggests that a single way of adapting the text in the EtR standard may meet the communication needs of different subsets of even a narrowly defined group of recipients at varying levels. In this situation, the preparation of a single EtR text for such a diverse group requires teachers to use additional educational materials or strategies to prepare students for working with this type of literary text. Otherwise, the adapted EtR text is accessible and comprehensible only to those whose communication proficiency is higher.

6 Is EtR the solution?

In light of the conducted research, the titular question about the challenges and opportunities associated with using the EtR standard

TABLE 5 The results of sixth-grade students indicating the understanding of key words for the short story *Barrel Organ* by B. Prus—own elaboration.

Word to be explained	Definitions provided by students	Number of students who did not provide any answer
być skoncentrowanym [to be concentrated/ focused]	<ul style="list-style-type: none"> - skupić się [to be concentrated/focused], - skupionym [concentrated/ focused], - być skupionym na jednej rzeczy^a [to be concentrated/focused on one thing], - być skupiony [be concentrated/focused], - *nie wiedział, jak to zrobić^b [he did not know how to do it], 	4
dozorca [caretaker / janitor]	<ul style="list-style-type: none"> - ochroniarz [security guard] 	8
obserwować [to observe]	<ul style="list-style-type: none"> - patrzeć [to look at], - patrzeć na jedną rzecz/kogoś i no [to look at one thing/person], - *Pan Tomasz mieszkał naprzeciwko [Mr Tomasz has lived across the street], 	3 + 1 unreadable answer
nienawidzić [to hate]	<ul style="list-style-type: none"> - nie lubić [to not like/ dislike], - *katarynka grała głośno [a barrel organ has played loud], - bardzo nie lubić [to dislike very much/ to really not like], - nie lubić kogoś [to dislike/ not like someone] 	4
katarynka [organ grinder (or barrel organ)]	<ul style="list-style-type: none"> - *do śpiewania [something to sing], - *robi hałas [it makes noise], - *głośna muzyka [loud music], - instrument^c na którym się gra [instrument that one plays], - *kupować piękne meble [to buy beautiful furniture], - *ludzie śpiewają [people are singing] 	4
adwokat [lawyer]	<ul style="list-style-type: none"> - *pracownik [employee], - chroni w sądzie [protects in court], - pomaga w sądzie [helps in court] 	6

^aSpelling mistake: proper form in Polish is: *rzeczy*.

^bA student made a spelling mistake. It should be *zrobić* ['to do'] instead of *zrodzić* ['give birth to'].

^cSpelling mistake, proper form in Polish is: *instrument* [instrument].

to adapt literary texts for educational use in schools requires addressing several key issues. The first is recognizing that the group of students participating in the study would not have been able to work independently with the original literary text, which—in the case of both "The Nightingale" and "The Barrel Organ"—is significantly longer and written in a language that is distant from contemporary Polish. The analysis of both the texts and the tasks selected for the study revealed several key difficulties, the most important being the heterogeneity of the target groups and their differing communication needs, which should be reflected in the text. When creating materials for younger recipients, it is crucial to understand the cognitive and communicative functioning of the target group and to adapt the vocabulary to their perceptual capabilities and life experiences.

Moreover, the analysis of the educational materials used also revealed difficulties in establishing criteria for determining which content elements of the original text to omit and how these

omissions might affect the reception of the author’s intended message. Since the *Accessible Readers* initiative aims to enable the realization of curriculum content, it should be noted that this function may influence how the literary text is adapted to the EtR standard. Additionally, a best practice would be to promote close collaboration among the team preparing the various materials related to the EtR-adapted text, ensuring thorough content verification.

The analysis of literary texts in the easy to read (EtR) standard highlighted the necessity of establishing unified guidelines that address the needs of the intended audience. The absence of such criteria may lead to inconsistencies in the material set and contribute to errors within them.

The conducted analysis on a diverse target group confirmed that a group with heterogeneous communication needs will achieve varying results when using the tested materials. These differences, however, are primarily associated with the type of disability and the accompanying level of linguistic proficiency of the student. The results obtained suggest that the adapted texts are significantly better understood by students with more advanced communication skills. The lower scores of Deaf students indicate that these materials should be subject to further research to develop even simpler texts that meet the communication needs of Deaf individuals.

Considering the characteristics of the analyzed texts that may have hindered comprehension of the content and tasks, particular attention should be paid to vocabulary selection. The choice of words, often unfamiliar to students, is due to their low frequency in the Polish language or their characterization as outdated or archaic. Vocabulary selection appears to be one of the key elements determining the level of text comprehension.

In attempting to address questions about the challenges and possibilities of using EtR-standard texts in education, it is worth noting one of the major difficulties: the low level of social awareness regarding the function of this standard. The low level of social awareness may lead to the stigmatization of easy language. When asked what features of easy language might lead to stigmatization, the primary response would be that it is often directed toward individuals with intellectual disabilities. Consideration should also be given to how to write and what to write (content and form) in a way that does not stigmatize or discriminate. Solutions to these issues can be found in HiLo books, which maintain content that is interesting for the reader while presenting complex information (high-content/low-skills) in a manner accessible to those with low reading proficiency. A potential threat in developing EtR-standard books is the infantilization of content and form, which may be inappropriate for teenage or adult readers. A remedy to this problem could involve including the target groups in the process of adapting original literary works.

A potential solution to the issue of text differentiation, depending on the communicative proficiency of the readers, is to attempt to differentiate levels of easy texts based on the target group. While the current approach covers a very broad audience, special education increasingly requires the individualization of the teaching process, which also entails the need to adapt educational materials to the needs and capabilities of each student.

For example, Slovenia has developed such levels based on the CEFR (Common European Framework of Reference for Languages)¹⁷:

Poziom	Symbol	Wskaźniki poziomu
Poziom 1		<ul style="list-style-type: none">• Brak słów pisanych• Słowa mówione używane przy opowiadaniu• Używanie zdjęć jest możliwe (ale nieczęste)• Używanie obiektów rzeczywistych• Stymulacja multisensoryczna
Poziom 2		<ul style="list-style-type: none">• Niewiele lub bez tekstu• Wielkie lub małe litery (A,a)• Zdania proste• Każde zdanie rozpoczynane od nowej linii• Do pięciu słów w zdaniu (linii)• Wiele ilustracji• Bardzo uproszczona treść• Bardzo łatwy do zrozumienia
		<ul style="list-style-type: none">• Bardzo prosty tekst• Wielkie lub małe litery (A,a)• Zdania mogą być złożone, ale każde zdanie składowe musi rozpoczynać się od nowego wiersza• Od 5-7 słów w zdaniu, wiersie• Odpowiednia znaki interpunkcyjne mogą być używane: kropka, wykrzyknik, znak zapytania, Ale należy raczej unikać
		<ul style="list-style-type: none">• innych znaków niż kropka (preferowana)• Dialogi mogą być używane
		<ul style="list-style-type: none">• Małe litery jako reguła (a)• Dłuższe, ale jasne i zrozumiałe zdania są dozwolone• Zdanie pojedyncze może się składać z 10 i więcej słów• Zdania (w tym złożone) nie powinny przekraczać 20 słów• Znaki interpunkcyjne dozwolone

In the German-speaking context, the *Capito*¹⁸ model operates within the framework of *Leicht Lesen* (Easy/Light Reading), which offers three levels of text preparation. Readers can choose the level that is most appropriate for them. These levels are based on the diversity of cognitive abilities but also take into account the reader’s prior knowledge and experience. Based on 90 different criteria, three levels of ‘easy reading’ have been distinguished. Similarly, *Easy Finnish* includes three levels, defined as:

17 An example of good practice in this area might be Slovenia: <http://www.blizjknjigi.si/Knjige/Ogled/13559-cvetje-in-ogenj> (accessed September 1, 2024). The analysis based on the *Handbook of Easy Languages in Europe* comes from an unpublished thesis by Elżbieta Grądział titled *Literature in the easy to read and Understand Standard in Poland and Other European Countries: Current Research and Practical Experience*.
18 <https://www.capito.eu/en/easy-language/> (accessed September 01, 2024).

Easiest Easy Finnish, Basic Easy Finnish, and Advanced Easy Finnish.

The main challenges for creators adapting educational materials according to the EtR standard are primarily the costs of preparation and profitability. Despite the high costs, it is worth noting that preparing literature accessible to all may, at some stage, contribute to it gaining the same status as, for example, children's literature today. It is also important to note that in some countries, a method for publishing EtR books has been developed – sometimes these are commercial publishers, and in other cases, organizations are created to handle these activities, funded by national governments.¹⁹

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

19 As good practices, one can point to the activities of the Swedish organization Easy Language Group, the British organization Beyond Words, which publishes books using only images, and the Norwegian organization Books for Everyone.

References

- Abramowska, E. (2015). "Easy to read and understand text" in *The Person with Intellectual Disabilities in Judicial Proceedings and Before Other Authorities: A Practical Guide*. ed. M. Zima-Parjaszewska (Warszawa: PSONI), 159–164.
- Abramowska, B. E., Makowiecka, K., Czarkowska, M. L., and Zima-Parjaszewska, M. (2021). Easy to read and understand text. A guide for creating and using educational and exercise materials, prepared by PSONI in 2021 as part of the initiative "I Read and Know – Easy to Read and Understand Text in Schools." The development and dissemination of educational and exercise materials in an easy-to-read and understand version, guidelines for creating and using them in work with students, and recommendations for implementing solutions into school practice. <https://zpe.gov.pl/b/tekst-latwy-do-czytania-i-zrozumienia-instrukcja/P17Ib7LYC> (accessed September 01, 2024).
- Boruc, M. (2010). Polish Association for Persons with Intellectual Disabilities. Warsaw: Office of the Government Plenipotentiary for Persons with Disabilities.
- Bovim Bugge, H., Berget, G., and Vindenes, E. (2021). "Easy Language in Norway" in *Handbook of Easy Languages in Europe*. eds. C. Lindholm and U. Vanhatalo (Berlin: Frank & Timme).
- Lindholm, C., and Vanhatalo, U. (2021). "Introduction" in *Handbook of Easy Languages in Europe*. eds. C. Lindholm and U. Vanhatalo (Berlin: Frank & Timme).
- Maaß, C. (2020). *Easy language – Plain language – Easy language plus*. Berlin: Frank&Timme.
- Przybyła-Wilkin, A. (2021). "Easy Language in Poland" in *Handbook of Easy Languages in Europe*. eds. C. Lindholm and U. Vanhatalo (Berlin: Frank & Timme).
- Raport (2020). Osoby głuche w Polsce 2020. Wyzwania i rekomendacje. Raport Komisji Ekspertów ds. osób głuchych, Warszawa.
- Rybka, M., and Wrześniewska-Pietrzak, M. (2022). "Uczeń cudzoziemski wobec języka staropolskich tekstów przed egzaminem ósmoklasisty – perspektywa glottodydaktyczna" in *Język staropolskich tekstów. Nowe odczytania, analizy, interpretacje*. eds. A. Słoboda and M. K. Poznań, (Rys Publishing House) 183–220.
- Vandehinste, V., Müller, A., Francois, T., and de Clercq, O. (2021). "Easy Language in Belgium" in *Handbook of Easy Languages in Europe*. eds. C. Lindholm and U. Vanhatalo (Berlin: Frank & Timme).
- Zgółka, H. (2013). *Słownik minimum języka polskiego*, Kraków.

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Enhancing EFL writing skills for adult Deaf and hard of hearing individuals

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The paper examines how Deaf and hard of hearing (D/HH) learners use information technology to develop English as a Foreign Language (EFL) writing skills. Conducted during two EU-funded summer schools, one in Italy and one in Poland, the research explores how internet tools like Google Translate, ChatGPT, and online dictionaries affect writing quality and confidence among 18 adult D/HH participants. The findings indicate that participants perceived these tools as improving vocabulary, grammar, coherence, and writing confidence. Moreover, the study highlights the creative strategies D/HH learners use to overcome linguistic challenges, such as employing simple and direct language, imaginative storytelling, and using visual imagery. Participants demonstrated resourcefulness in conveying complex ideas despite limitations in vocabulary and grammar, even when writing without technology. With the aid of internet tools, these strategies were further enhanced, helping to improve the clarity and structure of their texts. However, the research acknowledges limitations of relying heavily on technology, as it may limit opportunities for independent language growth. The study emphasizes the need for a balanced approach that integrates both technology and traditional methods to foster comprehensive EFL skill development.

KEYWORDS

Deaf and hard of hearing (DHH), writing strategies, artificial intelligence (AI), English as a Foreign Language (EFL), technology in the classroom, writing errors, learning English, writing skills

1 Introduction

In today's digital age, information technology has become an essential component of education, offering both opportunities and challenges, especially for learners with special educational needs. This paper explores the effects of using information technology on the writing skills of Deaf and hard of hearing (D/HH) individuals learning English as a Foreign Language (EFL). It focuses on how internet tools influence the quality of writing and the confidence of D/HH learners, as well as the potential drawbacks of relying on such tools.

Research indicates that hearing impairment may significantly impact language development (Krakowiak, 2012; Malik, 2019), including challenges with reading (Dłużniewska, 2021) and writing (Antia et al., 2005; Andrews et al., 2011; Kontra and Csizer, 2020). Phonological awareness is often reduced in D/HH learners, leading to difficulties in spelling, reading, and writing (Mather et al., 2009). On the other hand, there is a body of research confirming good language (and sometimes also speech) competencies of DHH individuals (Domagała-Zyśk and Podlewska, 2021, 2024; Nunn et al., 2022; Lewandowska, 2024).

Writing in a foreign language is important, as it is an essential aspect of language acquisition, fostering both cognitive and academic development. Writing in a foreign language is one of the four essential skills, alongside listening, speaking, and reading, acquired by language learners. In the mid-20th century, writing was considered secondary to speaking (de Saussure, 1961; Bloomfield, 1933). However, scholars such as Ong (1982) began studying the transition from oral to written culture, demonstrating that literacy is just as important as speaking proficiency. Today, the importance of effective writing is widely recognized. Mastery of written communication, both in one's native language and in foreign languages, is essential for active participation in social, academic, and professional life. In the era of social media, writing has become even more crucial, particularly for D/HH individuals, who, through writing proficiency, can communicate with the world (Mayer and Trezek, 2019). Moreover, writing has been shown to positively impact cognitive development (Kellogg, 2008; Arnold et al., 2017; Łompiński, 2015; Haider, 2016; Mayer and Trezek, 2019; Nückles et al., 2020).

While some research highlights how D/HH learners can achieve comparable writing levels to their hearing peers (Antia et al., 2005; Kluwin, 1993; Gärdenfors, 2023), there is limited research on how these learners engage with EFL writing specifically. This study seeks to address this gap by examining how adult D/HH learners use internet tools to improve their EFL writing skills. The goal is to understand the challenges they face, the strategies they employ, and the overall impact of these tools on their writing proficiency.

2 Research study

2.1 Research objectives and questions

The study aimed to investigate how information technology affects the development of EFL writing skills among adult D/HH individuals. The primary research questions were:

1. Which internet tools are most frequently used by D/HH learners to improve their EFL writing?
2. How does the use of these tools affect their confidence in writing?
3. How does the use of these tools impact the overall quality of their writing?

2.2 Tools

Participants were asked to complete a questionnaire that gathered data on the internet tools they used, such as search engines, online dictionaries, thesauruses, grammar checkers, ChatGPT, Google Translate, and DeepL. The questionnaire assessed participants' confidence in their writing abilities with and without technology and asked for a comparison of their writing experiences. Participants were also asked to write short compositions in English, one without using their smartphones and one using their smartphones.

2.3 Procedure

The study was conducted during two separate summer schools held in July 2024, one in Siena, Italy, and the other in Motycz Leśny, Poland. Both summer schools were part of the European Union projects: LangSkills (organized by various institutions, including the Catholic University of Lublin, Masaryk University Brno, Siena School of Liberal Arts), and the SUITA Association.

During the summer school in Siena, participants visited the Pinacoteca Nazionale, where they were instructed to take photographs of objects that interested them. Upon returning, they were asked to write short compositions (5–10 sentences) based on the photographed objects without using smartphones. Afterward, they rewrote the same compositions using smartphones. A similar procedure was followed during the summer school in Motycz Leśny, with the photographs taken in the training center and surrounding garden.

2.4 Participants

Eighteen participants from Poland, Italy, Sweden, Georgia, and the Czech Republic took part in the study, comprising 6 Deaf and 12 Hard of hearing individuals aged 19 to 34. They were university students and young working adults. The group's diversity provided a comprehensive basis for analyzing the impact of internet tools on D/HH learners' EFL writing skills.

3 Results

3.1 Statistical analysis of questionnaire results

The study employed a questionnaire designed to assess the impact of internet tools on the writing process of D/HH participants. The questionnaire collected demographic information, including the participants' ages and hearing status (Deaf or hard of hearing). It also explored the internet tools used by participants to enhance their compositions, asking them to select all applicable tools from a list that included search engines, online dictionaries, thesauruses, grammar checkers, ChatGPT, and Google Translator, with an option to specify other tools used. Participants were then asked to evaluate their experience with these tools, rating the ease of finding useful information and the helpfulness of the tools in improving their writing on a five-point scale. The questionnaire also included a comparison of the participants' confidence levels in their compositions written without and with the help of the internet, using a similar five-point scale. Finally, participants were prompted to describe the most significant difference they noticed between their two stories, providing qualitative insights.

Participants generally found it easy to locate useful information online, with 65% describing the process as "Very Easy" or "Easy," and only a small fraction (15%) finding it "Difficult" or "Very Difficult."

Moreover, 75% of respondents rated the internet tools as either “Very Helpful” or “Helpful,” with none considering them “Not Helpful at All.” These results indicate that internet tools are not only accessible but also perceived as highly effective in aiding language comprehension and production, aligning with studies like those by Abdoulaye and Ziyad (2020), which highlight the critical role of educational technology in supporting language learning for D/HH students.

Confidence levels among participants showed a notable increase when using the internet. With internet access, 70% felt “Very Confident” or “Confident,” compared to only 40% without it. Conversely, the percentage of participants who felt “Not Confident” or “Not Confident at All” dropped from 35% without internet to just 10% with it. This boost in confidence suggests that internet tools not only support the technical aspects of writing but also empower learners by providing them with resources that make language tasks more manageable.

Qualitative improvements in writing were also noted, with participants reporting enhanced vocabulary (60%), better grammar (55%), increased confidence in writing (50%), and improved structure and coherence in their texts (45%) when using internet tools. These findings support the idea that technology can significantly improve the quality of language output, which is consistent with broader research on the impact of technology on education.

These findings reflect participants’ perceptions, not direct measures of improvement, as the study relied on self-reported data. Also, when analyzing the results by hearing status and age, some limitations arise due to the small sample size.

Hard of hearing participants more frequently used search engines, online dictionaries, and ChatGPT, and found it easier to access useful information, and Deaf participants showed a preference for grammar checkers. These observations cannot be deemed statistically significant. Similarly, age-related differences, such as younger participants favoring more interactive tools like ChatGPT, while older participants leaned toward established tools like Google Translator, require further investigation with larger participant pools. These findings should be considered as signals for future research rather than conclusive evidence, highlighting the need for tailored educational approaches based on individual characteristics like age and hearing status.

Furthermore, it is essential to consider the potential limitations of relying heavily on these tools. As highlighted by Kaliknazarova (2023), while internet tools like automatic grammar checkers can improve accuracy, they may also hinder the development of independent language skills if overused. This suggests that while these tools are indispensable for fostering writing proficiency among D/HH students, they should be balanced with traditional teaching methods to ensure sustained language growth and autonomy.

In conclusion, the findings of this study emphasize the critical role of internet tools in enhancing the EFL writing skills of D/HH learners. The effective use of tools such as Google Translator, search engines, and ChatGPT has been shown to improve vocabulary, grammar, and overall writing coherence, while also boosting confidence. These outcomes underscore the necessity of integrating technology into language learning for D/HH, as also suggested by Abdoulaye and Ziyad (2020). However, as noted by Kaliknazarova

(2023), it is crucial to balance the use of these tools with traditional methods to foster independent language skills. Future research should continue to explore how these tools can be further refined and tailored to meet the diverse needs of learners in these communities.

3.2 Written compositions: a comparative analysis

This section provides an analysis of the written compositions produced by participants both without and with the use of internet tools. Fifteen composition pairs were analyzed. The analysis focuses on the strategies that students used in their texts when writing without technological support, communicating effectively despite linguistic challenges. However, only 15 pairs of written compositions were included in the analysis. The composition labeled as 16a was written in Georgian, a case that is described in more detail later in the article. Additionally, the texts from participants 17 and 18 were produced in only one version each, therefore they were excluded from the analysis.

Table 1 shows the comparison between error patterns in versions a and b of the 15 texts.

3.2.1 Communication strategies and creativity in texts without technology

When analyzing the texts written without the aid of technology (Version a) it is evident that the D/HH participants demonstrated noteworthy creativity and communication skills. Despite the presence of linguistic errors, they were able to express their ideas clearly and engage the reader through various storytelling strategies. This is a significant success, as it shows their ability to navigate the complexities of a foreign language without technological assistance. These strategies resonate with the findings of Kołodziejczyk (2021), who explores communication strategies used by D/HH children that enable them to communicate effectively despite linguistic challenges. While Kołodziejczyk’s research focuses on spoken language, similar strategies are also employed by D/HH individuals in written language.

Here are examples of strategies used by the participants:

1. Simplicity and Directness: Many participants used simple and direct language to convey their stories. In Text 1a, the participant successfully creates a scene with:

“One day bed dragon scared small city. The dragon lived the mountains. No nobody arrive to the dragon.”

While there are grammatical mistakes, the message is clear: a dragon is threatening a small city. The participant effectively employs basic language to build suspense and engage the reader.

2. Imaginative Storytelling: Despite language barriers, participants were able to craft imaginative and engaging narratives. In Text 5a, the participant tells a quirky story with a humorous twist:

“Once I wean’t outsaid and soe a single pice of bread an old taier and some big bosches. Then I did nothing with data informaision and wean’t back in said.”

TABLE 1 Error patterns.

Text pair	Errors without technology (Version a)	Errors with technology (Version b)
1	9 spelling errors, 4 grammatical errors, incomplete sentences	3 spelling errors, 1 grammatical error, smoother narrative
2	7 grammatical errors, 5 spelling errors, awkward phrasing	4 grammatical errors, better structure, 2 spelling errors
3	6 grammatical errors, 3 spelling errors, coherence issues	2 grammatical errors, no spelling errors, better coherence
4	8 grammatical errors, awkward phrasing, inconsistent tenses	4 grammatical errors, improved coherence and sentence flow
5	11 spelling errors, 5 grammatical errors, disjointed narrative	3 spelling errors, more fluid and coherent structure
6	5 grammatical errors, inconsistent tense usage	2 grammatical errors, improved narrative flow
7	6 spelling errors, 5 grammatical errors, awkward sentence structures	3 spelling errors, improved readability and structure
8	7 grammatical errors, lack of narrative coherence	3 grammatical errors, improved structure and readability
9	4 grammatical errors, incomplete sentences	2 grammatical errors, smoother flow
10	5 grammatical errors, incomplete ideas, awkward sentence transitions	2 grammatical errors, improved transitions and coherence
11	6 grammatical errors, disjointed sentence flow	2 grammatical errors, smoother narrative
12	7 grammatical errors, incomplete phrasing	3 grammatical errors, better sentence structure and readability
13	5 grammatical errors, awkward sentence flow	2 grammatical errors, improved coherence and flow
14	4 grammatical errors, awkward phrasing	2 grammatical errors, smoother narrative
15	6 grammatical errors, spelling inconsistencies	3 grammatical errors, improved sentence fluidity

The participant’s creativity shines through, transforming a simple observation into an amusing anecdote. Even with spelling errors, the story’s charm and originality are evident.

3. Use of Vivid Imagery: Many participants successfully used descriptive language to create vivid mental images. In Text 6a, the participant wrote:

“He then saw many red and round fruits hanging on the trees, waiting to be taken.”

This sentence effectively creates a visual of “red and round fruits” demonstrating the participant’s ability to paint a clear picture, even without perfect grammar.

4. Narrative Progression: The participants showed a strong grasp of how to structure a narrative with a beginning, middle, and end. In Text 7a, the participant describes a woman’s adventure with clear, simple language:

“A woman, her name is Flowerangel. She work on long road and see the book. the book is strange for me but she try to take it and open book.”

Despite grammatical errors, the participant establishes the protagonist, the conflict, and the start of the adventure. The story progresses logically, showing a grasp of narrative structure.

5. Expressing Emotions: Participants were able to use their writing to express emotions, creating a connection with the reader. In Text 14a, the participant wrote about Mary’s empathy for a poor fisherman:

“She wish him more luck in life and feeling really sad about him, so she pray for him.”

The participant effectively communicates Mary’s sadness and her desire to help, drawing the reader into the emotional core of the story.

6. Creativity in Language Use: Some participants employed creative language strategies to convey their ideas. In Text 15a, the participant wrote:

“Yellow flowers shiver a bit, moved by wind dot there be sat on another sort of flowers, pink ones.”

Though phrasing is awkward, the image of “yellow flowers shivering in the wind” is poetic, showing the participant’s creative approach to describing nature.

7. Exploration of Complex Ideas: Some participants tackled deeper, more philosophical themes. In Text 3a, the participant reflected on the story of Lucifer, saying:

“Not many people know his name origin Lux means light just like we do not know the background of people we thought we knew.”

Despite grammatical errors, the participant explores a complex idea about human nature and symbolism, showing their ability to engage with profound concepts.

3.2.2 Linguistic issues analysis and text quality comparison

When comparing the texts written without technology (Version a) and those written with the help of internet tools (Version b), it is evident that technology use enhanced clarity, coherence, and accuracy. However, even in Version a, the participants demonstrated a strong ability to communicate their ideas despite errors. Below is a breakdown of the errors and improvements observed across all 15 text pairs.

The linguistic issues identified in the study fall into several key categories: spelling errors, grammatical inconsistencies, word order problems, vocabulary limitations, and narrative coherence issues. The shift from Version a to Version b demonstrates clear improvements in these areas. Below, there are examples from different texts to highlight specific types of errors and strategies for improvement.

1. Spelling Errors

Spelling was a particularly prevalent issue in Version a texts. D/HH learners often struggle with spelling. The use of internet tools in Version b allowed participants to correct these mistakes.

Example from Text 5:

- Version a:
“Once I wean’t outsaid and soe a single pice of bread.”
- Version b:
“Once I went outside and saw a single piece of bread.”

All misspellings were corrected in Version b, improving clarity.

Example from Text 1:

- Version a:

"The witch said to take her cote and they went to dragon and give red ring."

- Version b:

"The witch said to take her coat and go to the dragon to give it the red ring."

All misspellings were corrected in Version b, improving clarity.

2. Grammatical Inconsistencies

Grammatical errors were frequent in Version a, particularly in terms of verb tenses, subject-verb agreement, and article usage.

Example from Text 2:

- Version a:

"At night, a magical book in a library. When someone find it on the library, it will sall a paining show gold and colors a person."

- Version b:

"At night, there is a magical book in the library. When someone finds it, the painting shows golden colors and a person."

Version b adds a missing verb, corrects subject-verb agreement, and refines phrasing.

Example from Text 3:

- Version a:

"He was the closest angel to god until he had decided to throw rocks at humans and became the face of the devils we know of today."

- Version b:

"Lucifer was the closest angel to God until he made the choice to harm humans by throwing rocks at them, becoming the embodiment of evil we know today."

Version b enhances clarity and coherence by addressing tense inconsistency ("had decided" and "became"), refining the subject's description, and improving phrasing. The awkward expression "the face of the devils we know of today" is replaced with "the embodiment of evil," creating a more polished and precise sentence. These changes improve readability and make the narrative flow more naturally.

3. Word Order Problems

D/HH learners also frequently struggled with word order.

Example from Text 1:

- Version a:

"No nobody arrive to the dragon."

- Version b:

"Nobody arrived at the dragon."

Version b smooths transitions and ensures correct tense usage.

Example from Text 6:

- Version a:

"The man follow it through the woods, the fields and finally he find the apple trees."

- Version b:

"The man followed the sound through the woods and fields, finally finding the apple trees."

Version b smooths transitions and ensures correct tense usage.

4. Vocabulary Limitations

In Version a, many participants demonstrated limited vocabulary, relying on simple or repetitive words. Internet tools in Version b helped participants expand their lexical choices, leading to more varied and precise language.

Example from Text 6:

- Version a:

"He saw many red and round fruits hanging on the trees."

- Version b:

"He noticed the bright red apples hanging from the trees, ripe and ready to be picked."

Version b enriches description, making it more vivid.

Example from Text 9:

- Version a:

"There were very long stairs, and a painting of a woman and people under her coat."

- Version b:

"The long spiral stairs led to a painting of the Virgin Mary, with people seeking shelter under her protective cloak."

Version b enriches description, making it more vivid.

5. Narrative Coherence and Structure

Many participants had difficulty maintaining coherent and well-structured narratives in Version a, particularly when dealing with longer texts or more complex ideas. With the help of technology, their texts became more logically organized and cohesive.

Example from Text 10:

- Version a:

"The princess fight the monster. The monster become small. The princess keep it like a bird."

- Version b:

"The princess bravely fought the monster, and to her surprise, it began to shrink. She decided to keep the tiny creature, which was no bigger than a bird."

Version b improves flow and expands on the narrative.

Example from Text 15:

- Version A:

"Yellow flowers shiver a bit, moved by wind dot there be sat on another sort of flowers, pink ones."

- Version B:

"Yellow flowers swayed gently in the breeze, their bright color contrasting with the soft pink blooms beside them."

Version b improves flow and expands on the narrative.

Additionally, one participant (texts 16a and 16b) took a unique approach when completing the task without the use of technology. Instead of writing in English, she created a drawing accompanied by a few sentences in her native language, Georgian. When the task was repeated with the aid of technology, she utilized Google Translator to translate these sentences into English.

While this approach highlights the flexibility and adaptability of technology in supporting language learning, particularly for DHH individuals, it also raises some concerns. On the one hand, the participant's use of a visual medium combined with her native language illustrates a creative strategy to overcome the initial barrier of writing in a foreign language. By leveraging translation

tools like Google Translator, she was able to produce an English text that effectively communicated her original ideas, allowing her to engage with the language in a way that felt accessible and manageable.

On the other hand, it is noteworthy that without the use of technology, the participant did not even attempt to write a word in English, potentially indicating a sense of defeat or lack of motivation. This could be concerning, as it suggests that the availability of technology might sometimes reduce the incentive to actively engage with the language learning process. If students rely too heavily on tools like Google Translator for translation, they may miss opportunities to practice and develop their own language skills, potentially leading to a decrease in motivation to learn and improve in the long term.

This example underscores the dual-edged nature of technology in education. While it provides powerful support and can make learning more accessible (cf. Domagała-Zyśk, 2013b), it is crucial to ensure that it complements rather than replaces the active learning process. Educators should be mindful of balancing the use of technology with traditional language learning methods to foster both confidence and independence in students' EFL writing skills.

Generally, the comparison between Version a and Version b texts highlights the critical role that internet tools play in enhancing the writing quality of D/HH learners. While Version a texts contained more spelling and grammatical errors, the participants still demonstrated creativity, strong narrative structures, and the ability to communicate their ideas effectively.

With the help of technology in Version b, participants were able to reduce linguistic errors and improve the clarity and coherence of their texts. Spelling errors were significantly reduced, grammatical consistency was improved, and overall narrative flow became smoother and more engaging. However, even without technology, the participants' ability to tell compelling stories, express emotions, and convey complex ideas reflects their strong language-learning potential and resourcefulness. These successes underscore the importance of combining traditional language instruction with technological tools to support comprehensive language development for D/HH EFL learners.

These findings suggest that technology plays a crucial role in enhancing the writing skills of D/HH individuals learning EFL, providing support that leads to improvements in vocabulary, grammar, coherence, and overall writing quality.

4 Discussion and conclusion

The findings from these two EU-funded projects provide valuable insights into the role of information technology in enhancing the EFL writing skills of D/HH students. The studies conducted during the summer schools in Siena and Motycz Leśny have shown that the integration of internet tools into the writing process significantly improves the quality of written compositions. These tools not only aid in vocabulary enrichment and grammatical accuracy but also contribute to greater coherence and confidence in writing.

The analysis of the compositions without technology revealed a spectrum of writing abilities among the participants. Those with higher proficiency demonstrated a strong command of

English, utilizing complex sentence structures, rich vocabulary, and sophisticated narrative techniques. Their texts reflect the benefits of prior exposure to English, likely through diverse learning experiences and consistent practice. On the other hand, the compositions from participants with lower proficiency levels, although marked by grammatical and structural errors, displayed creative and communicative strategies that allowed them to convey their ideas effectively. These texts, while less polished, underscore the importance of continued support and targeted interventions to further develop their language skills.

The introduction of technology into the writing process yielded noticeable improvements across all levels of proficiency. The use of tools like Google Translator, ChatGPT, DeepL, and grammar checkers enabled participants to refine their language use, correct errors, and enhance the overall quality of their writing. The technology also provided a means for participants to engage more deeply with the writing process, encouraging experimentation with language and fostering greater confidence in their abilities.

The differences observed between D/HH participants, as well as across age groups, highlight the need for tailored educational approaches that account for individual preferences and learning styles. Younger participants' inclination toward interactive, AI-driven tools like DeepL or ChatGPT, compared to older participants' preference for more traditional resources like Google Translator, suggests that educational interventions should be adaptable and responsive to these varying needs.

These findings align closely with the work of Domagała-Zyśk, who emphasizes the importance of considering both the linguistic challenges and the cognitive abilities of D/HH learners in EFL education. As Domagała-Zyśk (2013a) notes, writing produced by individuals with hearing impairments often reveals language difficulties experienced by the authors, yet these difficulties do not necessarily correlate with lower cognitive abilities. Instead, the focus should be on evaluating the communicative success of the written discourse and the degree to which students achieve the intended communicative function of the language, rather than merely the grammatical form.

Domagała-Zyśk's (2013a) work also suggests that despite the linguistic challenges Deaf and Hard of hearing students face—such as difficulties with complex syntactic structures, verb forms, and functional words—their cognitive potential can be fully realized through individualized teaching approaches. This is particularly relevant when considering the integration of internet tools into EFL instruction. These tools, when used appropriately, can support students in overcoming specific linguistic barriers while fostering their overall communicative competence.

Moreover, the study underscores the importance of balancing the use of technology with traditional teaching methods. While internet tools offer significant benefits, there is a risk of over-reliance, which could hinder the development of independent language skills. As noted in previous research, such as that by Kaliknazarova (2023), the automatic correction of grammar by these tools can sometimes limit students' opportunities to learn from their mistakes. The Siena Motycz Leśny study further supports this caution, advocating for a balanced approach that incorporates technology as a complement to, rather than a replacement for, foundational language learning practices.

In conclusion, the integration of information technology into EFL instruction for DHH students is both beneficial and essential. These tools provide critical support in overcoming the unique challenges faced by these learners, helping to enhance their writing skills and build their confidence. However, the effectiveness of these tools varies based on individual factors such as age, hearing status, and personal preferences, indicating that a one-size-fits-all approach is insufficient. Future research and educational practices should continue to explore and develop more personalized, adaptable resources that address the specific needs of DHH learners, ensuring that all students can achieve their full potential in language learning.

Domagała-Zyśk's (2013a,b) findings emphasize that educators must focus on the communicative success of DHH students rather than solely on their grammatical accuracy. This approach allows for a more nuanced understanding of their language abilities and acknowledges the complexity of their learning processes. The projects discussed in this study illustrate the potential of technology to assist in this endeavor, offering tools that help bridge the gap between linguistic challenges and cognitive potential. As such, continued exploration and refinement of these tools will be crucial in advancing the field of EFL education for DHH students.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

Ethical approval was not required for the studies involving humans as it involved no invasive procedures, medical interventions, or the collection of sensitive personal data. The research was conducted during educational summer schools where participants voluntarily engaged in language learning activities using publicly available internet tools. All data were anonymized, and participants provided informed consent to participate in

the study and for their data to be used for research purposes. The study adhered to general ethical guidelines for educational research, ensuring the well-being and privacy of all participants. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

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References

- Abdoulaye, K., and Ziyad, E. (2020). Exploring the use of educational technology among deaf students in the United Arab Emirates. *Univ. J. Educ. Res.* 8, 4845–4852. doi: 10.13189/ujer.2020.081056
- Andrews, J. F., Shaw, P. C., and Lomas, G. (2011). "Deaf and hard of hearing students," in *Handbook of Special Education*, eds J. M. Kauffman and D. P. Hallahan (New York, NY: Routledge).
- Antia, S. D., Reed, S., and Kreimeyer, K. H. (2005). Written language of deaf and hard-of-hearing students in public schools. *J. Deaf Stud. Deaf Educ.* 10, 244–255. doi: 10.1093/deafed/eni026
- Arnold, K. M., Umanath, S., Thio, K., Reilly, W. B., McDaniel, M. A., and Marsh, E. J. (2017). Understanding the cognitive processes involved in writing to learn. *J. Experi. Psychol. Appl.* 23, 115–127. doi: 10.1037/xap0000119
- Bloomfield, L. (1933). *Language*. New York, NY: Holt, Rinehart & Winston.
- de Saussure, F. (1961). *Kurs językoznawstwa ogólnego*. Warszawa: PWN.
- Dłużniewska, A. (2021). *Rozumienie tekstów literackich przez uczniów z uszkodzeniami słuchu*. Kraków.
- Domagała-Zyśk, E. (2013a). *Wielojęzyczni. Studenci niesłyszący i słabosłyszący w procesie uczenia się nauczania języków obcych*. Lublin: Wydawnictwo KUL.
- Domagała-Zyśk, E. (2013b). "Using technology to teach English as a foreign language to the deaf and hard of hearing," in *Inclusive Language Education and Digital Technology*, eds E. Vilar Beltran, C. H. Abbott, J. Jones (Bristol: Multilingual Matters), 84–102. doi: 10.21832/9781847699749-007
- Domagała-Zyśk, E., and Podlowska, A. (2021). "A challenge, a must, an adventure: English as a Foreign language for deaf and hard of hearing students," in *International Perspectives on Diversity in ELT*, eds D. L. Banegas, G. Beacon, and G. Perez Berbain (Palgrave Macmillan), 265–281. doi: 10.1007/978-3-030-74981-1_15
- Domagała-Zyśk, E., and Podlowska, A. (2024). "Enhancing listening skills of hard of hearing learners," in *Second Language Acquisition and Listening*, eds E. Wagner, O. A. Batty, and E. Galaczi (London: Routledge), 268–279. doi: 10.4324/9781003219552-23

- Gärdenfors, M. (2023). Empirical manuscript writing development in DHH students: a bimodal bilingual approach. *J. Deaf Stud. Deaf Educ.* 28, 211–225. doi: 10.1093/deafed/enac045
- Haider, G. (2016). An investigation of the writing processes of students with hearing loss: implications for teaching of writing. *Int. Online J. Primary Educ.* 5, 110.
- Kalikhazarova, Q. (2023). The role of internet technology in improving students' writing skill. *Am. J. Philol. Sci.* 3, 142–146. doi: 10.37547/ajps/Volume03Issue 06-23
- Kellogg, R. T. (2008). Training writing skills: a cognitive developmental perspective. *J. Writing Res.* 1:1. doi: 10.17239/jowr-2008.01.01.1
- Kluwin, T. (1993). Cumulative effects of mainstreaming on the achievement of deaf adolescents. *Except. Child.* 60:107. doi: 10.1177/001440299306000107
- Kołodziejczyk, R. (2021). *Jak dzieci z uszkodzeniami słuchu radzą sobie z trudnościami językowymi?* Lublin: Wydawnictwo KUL.
- Kontra, E., and Csizer, K. (2020). Foreign language learning characteristics of deaf and severely hard-of-hearing students. *Modern Lang. J.* 104, 233–249. doi: 10.1111/modl.12630
- Krakowiak, K. (2012). *Dar języka. Podrecznik metodyki wychowania językowego dzieci i młodzieży z uszkodzeniami narządu słuchu.* Lublin.
- Lewandowska, P. (2024). "Unlocking language potential: a multicultural journey at LangSkills II international summer school in Lublin," in *Księga Katedry Pedagogiki Specjalnej KUL w czterdziestolecie powstania Katedry*, eds E. Domagała-Zyśk and A. Borowicz (Lublin: Episteme), 443–454. doi: 10.54253/E2024.06.20
- Łompię, J. B. (2015). Kognitywne konsekwencje tworzenia tekstów pisanych. *Lingwistyka Stosowana* 15, 61–73. Available at: https://bazhum.muzhp.pl/media/files/Lingwistyka_Stosowana_Applied_Linguistics_Angewandte_Linguistik/Lingwistyka_Stosowana_Applied_Linguistics_Angewandte_Linguistik-r2015-t-n15/Lingwistyka_Stosowana_Applied_Linguistics_Angewandte_Linguistik-r2015-t-n15-s61-73/Lingwistyka_Stosowana_Applied_Linguistics_Angewandte_Linguistik-r2015-t-n15-s61-73.pdf
- Malik, M. (2019). Writing skills development among students with deafness at elementary level. *Bullet. Educ. Res.* 41, 1–16. Available at: https://www.researchgate.net/publication/340732480_Writing_Skills_Development_among_Students_with_Deafness_at_Elementary_Level
- Mather, N., Wendling, B. J., and Roberts, R. (2009). *Writing Assessment and Instruction for Students with Learning Disabilities*. San Francisco, CA: Jossey-Bass/John Wiley.
- Mayer, C., and Trezek, B. (2019). Writing and deafness: state of the evidence and implications for research and practice. *Educ. Sci.* 9:185. doi: 10.3390/educsci9030185
- Nückles, M., Roelle, J., Glogger-Frey, I., Waldeyer, J., and Renkl, A. (2020). The self-regulation-view in writing-to-learn: using journal writing to optimize cognitive load in self-regulated learning. *Educ. Psychol. Rev.* 32, 1089–1126. doi: 10.1007/s10648-020-09541-1
- Nunn, N., Sedlackova, J., Tothova, L., and Yang, J. (2022). *Definitely English: Online Materials for Teachers of English as a Foreign Language for Deaf, Deaf and Hard of Hearing Students*. Brno: Masaryk University. doi: 10.5817/CZ.MUNI.M280-0141-2022
- Ong, W. J. (1982). *Orality and Literacy: The Technologizing of the Word*. London; New York, NY: Methuen.



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Learning outcomes of project-based learning activities on access to functional diversity terms

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Introduction: This article presents a project-based classroom practice of transformative language teaching and learning for sustainability (TLS). Sustainable Development Goal 10 (SDG10) was approached paying close attention to the use of language in relation to (in)equality-related terms. This use of language is also defended as SDG18 in recent research in a debate about the importance of language use as a transversal sustainable development goal.

Methodology: A task-based methodology is employed to examine students' perception on functional diversity terms and how their understanding changed throughout the practice developed in the study. Qualitative data in this study are drawn from a group of students ($n = 20$) who were finishing their degree in English Studies. Students participated in a task to analyze five functional diversity terms (Special Educational Needs, disability, deaf, blind, and Asperger's). A qualitative research questionnaire asked the participants to reflect on their learning process in this task.

Results and discussion: The report of our findings shows how students developed their lexicographic and conceptual competence regarding FD terms. Results illustrate how TLS transformed students' concepts and ideas underlying functional diversity concepts and helped promote sustainable language use.

KEYWORDS

functional diversity (FD), accessibility, education for sustainable development (ESD), transformative language teaching for sustainability (TLS), lexicography, language learning and teaching (LLT), action competence (AC), SDG10

1 Introduction

A key issue in functional diversity is accessibility. The idea of accessibility revolves around how different individuals access information and information tools as well as on making information meaningful and useful. In the case of language teaching and specifically the teaching of lexicography, this is achieved by teaching and learning how to make an informed use of lexis and the elaboration of adequate, useful definitions. Functional diversity is a social construct and in this sense, the use and definition of concepts play a relevant role in our culture. In this study, this meaningful use of language is developed through a teaching proposal approach that promotes transformative language teaching and learning for sustainability (TLS) where the key tools are the development of action competence (Sass et al., 2020) and lexicography as mediation (CEFR Mediation Strategies).

The Convention on the Rights of Persons with Disabilities, adopted in United Nations (2016), states the necessity of "Recognizing that disability is an evolving concept and that disability results from the interaction between persons with impairments and attitudinal and environmental barriers that hinder their full and effective participation in society on an equal basis with others." This idea points out two important issues:

- Disability is an evolving concept
- The concept results from the interaction between persons with functional diversity and (a) attitudinal barriers and (b) environmental barriers

This recognition that functional diversity is an evolving concept is an important statement when we work with lexicographical sources of information. Lexicography is the practice of creating dictionaries and other lexical databases and is concerned with the study of the meaning, evolution, and function of lexical items. The fact that functional diversity (Romañach and Lobato, 2005) is an evolving concept implies that its definition must be revised and updated in all languages. If we have to consider attitudinal barriers and how these can be reduced or broken down, this will affect how functional diversity (FD)¹ is defined and, in turn, definitions will influence how people understand FD. In this sense, it is important to note the importance of sustainability concepts but also where those concepts are presented and to whom they are presented (Weder, 2023; Nayak and Raval, 2024). Different cultures and societies may also have their own definition and understanding of terms related to functional disability (Alduais and Deng, 2022; Cooms, 2023; Shume, 2023). Moreover, people with FD are frequently excluded from participating as informants in the scientific literature even though they are the subject of study (Palacios et al., 2012; Rabang et al., 2023).

The framework for this article is supported by transformative language teaching for sustainability. Within this framework, action competence plays an important role as well as conceptualization as a mediation strategy.

1.1 Transformative language teaching for sustainability

As highlighted in Campoy-Cubillo (2019) and Maijala et al. (2024), in an educational setting it is important to pay attention to teachers' knowledge of what is accessibility, how to teach it, and how it relates to their subject (also how it relates to a specific degree or specialization in university contexts). In this sense, the present article studies first what a lexicography subject could consider in relation to FD. The basic consideration should be how to define terms that are relevant in sustainability, in our case FD terms. It should also consider the cognitive process and conceptual competence involved in defining such terms (Andreou and Galantomos, 2009; Higginbotham, 1998). Second, the task designed for the classroom project intends to promote *Transformative Language Teaching for Sustainability* (TLS).

TLS is a new didactic model to teaching promoted by the Ethical and Sustainable Language Teaching project (Eettisesti kestävä kielten opetus (EKKO)) at the University of Turku. It studies how the principles of ethics and sustainability can be built in language teaching and pre-service teacher education. Its goal is "to help teachers to find new ways to combine education for sustainable development (ESD) with language teaching"².

Political and institutional understanding of accessibility in relation to functional diversity in education is an important part of designing an education for all systems based on quality education (Sustainable Development Goal 4) and reduced inequalities (Sustainable Development Goal 10). In the multidimensional relationship of the student with functional diversity with his/her own educational and sociocultural context (Campoy-Cubillo, 2019), one of the smallest units in the system is the classroom, where what is taught and how this is taught matters as much as attending special needs students in the classroom and the relationship among all members of the class (students and teachers).

For students who want to become language teachers, it is important to fully understand the meaning of functional diversity terms and how to use them. This is, in my opinion, a fundamental step in understanding accessibility. Teachers should first know what FD terms mean and how to use them before they start thinking of creating materials for the classroom. Steps in accessibility design and implementation are illustrated in Figure 1.

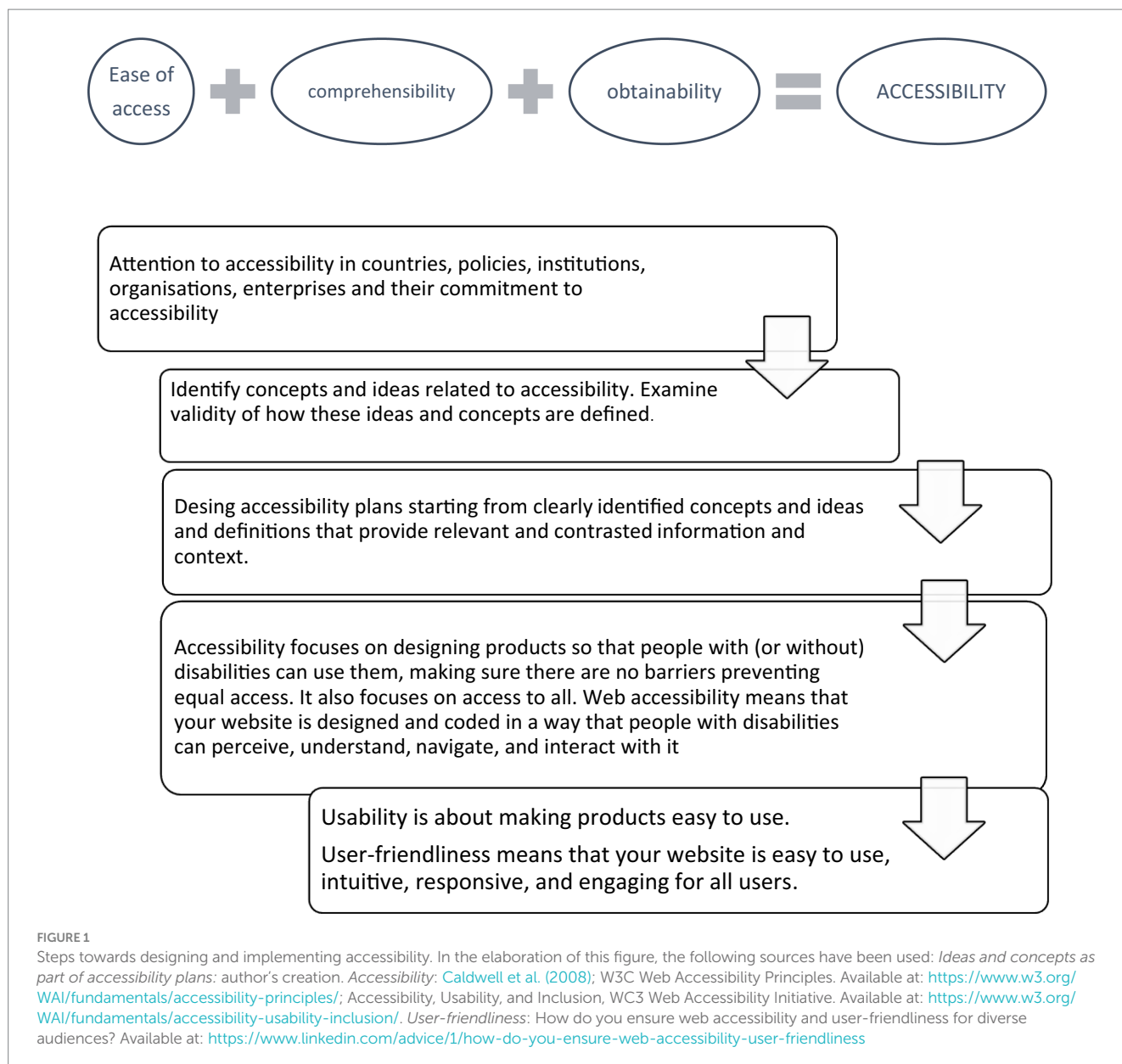
Thus, recognizing and comprehending concepts and ideas related to accessibility is the first step toward awareness raising in accessibility and for building strategies that are in line with how terms are defined in a given community, country, service, institution, or enterprise. In their proposal for transformative language teaching for sustainability, Maijala et al. (2024) suggest that integration, identification, and awareness-raising should conform to the teaching cycle in Education for Sustainable Development (ESD). They reinforce the relevance of their method stating that there is a lack of language teacher training in sustainability as well as a scarcity of materials. They also claim that action competence needs to be included in ESD. Action-oriented activities increase learner participation and develop important skills such as critical thinking and decision making, which are needed to take action in sustainability-related issues. According to Sass et al. (2020, p. 9):

"Someone is action competent when they are committed and passionate about solving a societal issue, have the relevant knowledge about the issue at stake as well as about democratic processes, take a critical but positive stance toward different ways for solving it, and have confidence in their own skills and capacities for changing the conditions for the better."

The TLS framework discusses how the language subject differs from other subjects: it represents the goal and, in the communicative approaches, the way to reach this goal. Language is most of the times both the medium and the content. In the case of teaching lexicography, this is particularly so, as lexical items are analyzed for communication purposes. Dictionaries provide lexical item information and not only

1 Functional diversity is defined by Palacios et al. (2012, p. 122) as: "Functional diversity implies different ways (neither better nor worse; neither more capacity, nor less) to live daily; it expresses the creativity of those who must do daily things in a different way of what is considered standard, because they require non-conventional tools (both human and technical). It expresses potential creativity of the group in a positive way; as long as all negative connotations, still associated to the conception of functional diversity as illness, are abandoned. In this case, the body is no longer a submission and control object, and becomes a potential innovation device, in a transformation, advance and improvement platform, that improves society."

2 <https://sites.utu.fi/ekko/>



define those items but also indicate adequate usage of the items, and present selected examples of use. They may also include pragmatic information and visual resources that may provide important additional information (Nied Curcio, 2023).

1.2 Conceptualization as a mediation strategy

Dictionaries are repositories of conceptualizations of a language, and they are concise pieces of work where each word or phrase is analyzed in detail as a dictionary entry. The most relevant part of the entry is the definition of the word or phrase which has the purpose of clarifying meaning. But there are other parts in the entry, such as usage information, pragmatic and cultural aspects, or examples of use. All these parts have a specific weight when dealing with FD terms and are relevant to fully understanding the terms and their use. In

dictionaries, special care should be given to sensitive terms, such as those related to FD, and for that reason, the role of lexicographers as mediators is relevant.

When compiling a dictionary or any lexicographical resource, a good lexicographer should construct or mediate meaning and can also mediate from one language to another. This is especially so with sensitive language (Norri, 2018) and the reason why lexicographers may act as mediators of concepts and ideas (Nied Curcio, 2023; Council of Europe (CEFR), 2018). Norri (2018), for instance, examines the treatment of disability and illness terms at length in 20 dictionaries, discussing the different labels and usage notes given in their entries and how they differ as well as the influence of the person-first language in the design of the definitions.

As stated by Nied Curcio (2023, p. 202):

“Of particular concern to the lexicographer as a mediator are mediating a text, mediating communication, and effectively using

mediation strategies while describing the meaning of cultural items.” (...) “The mediator—and this is also valid when preparing a lexicographic article—must first select from the vast volume of information available and then transfer it to the target person in a more condensed but still truthful/accurate form.”

1.3 Action competence and the common European framework of reference for languages (CEFR)

In this study, a pedagogical proposal to work with understanding FD concepts and ideas is presented and the results of its implementation are analyzed. Following Sinakou et al. (2019) and the CEFR, the tasks designed for this study were framed in those aspects of the CEFR guidelines that were consonant with the TLS approach, specifically those related to action competence. Those are based on the development of communicative competence, cultural competence, and sharing ideas in the form of forum discussions and reflections; project-based learning (dictionary project); discovery/investigation (reading bibliographical sources; use of corpus linguistics); and questionnaire responses (surveys). Peer interaction and student leadership (part of the TLS approach) were promoted in the form of interaction strategies and collaborative learning (concept mediation strategies) and learner-centered, autonomous learning, and reflection through the questionnaire.

It should be noted that the aim of the study and the task it reviews is not to create perfect definitions but rather to create the best possible definitions for FD terms dealt with in the study in accordance with the student's language proficiency level and prior knowledge of the field (SEN). It is also the objective of this study to show how the proposed task is useful to improve students' knowledge and understanding of FD terms and this is exemplified in the evolution observed in the different tasks and in their final project. A personal vision of the usefulness of the task is also given by students at the end of the semester in the final questionnaire.

2 Materials, methods, and participants

The present study is based on the implementation of a task-based lexicographical practice and the analysis of student's progress throughout the activities performed in class.³ One of the classroom instructors compiled and anonymized student forum data, answers to assignments, and dictionary projects. An anonymous questionnaire was also used at the end of the semester. These anonymized data were then analyzed by the second instructor. Nunan's definition of the task

as: “a piece of classroom work which involves learners in comprehending, manipulating, producing or interacting in the target language while their attention is principally focused on meaning rather than on form” (Nunan, 1989, p. 10), different classroom activities were designed around functional diversity terms which main goal was to work on word meaning and use.

In order to implement this curriculum idea, 20 students who were enrolled in the Lexicology and Lexicography subject in the fourth year of their English Studies degree participated in this study. The study aimed to enhance participants' awareness of functional diversity both as a social construct and as a reality in their professional future. It is also intended to promote appropriate linguistic choice and to make participants aware of the importance of properly defining concepts and ideas. The tasks they performed were conducted in a language laboratory that facilitated computer use as well as the possibility of removing access to Internet browsers. While performing certain tasks, students were required to use their previous knowledge and skills rather than carry out internet searches. All tasks were completed in the Moodle⁴ system in their subject's virtual classroom.

This lexicographical practice is twofold: on the one hand, it is rooted in students' previous knowledge, further developed by peer discussion in forums; on the other hand, it is reinforced by study materials and corpus use training. The study is also supported by a qualitative analysis of a final questionnaire that is divided into two sections: questions posed from a lexicographic perspective and those related to critical reflection on FD concepts. The lexicographic perspective gives us data related to the development of lexicographic and mediation competence. The second part of the questionnaire sheds light on transformational language teaching and learning issues.

Students were provided with the following lexical items: “disability,” “Special Educational Needs,” “blind,” “deaf,” and “Asperger” and had to decide which lemma they would use in their dictionaries as an entry's headword. Proficient students were expected to understand that “Special Educational Needs” is a concept and can be given entry status. They would also consider whether having this entry is a better choice than including this phrase under the entry for “needs.” In the same way, given the lemma “Asperger,” they had to observe its usage and this could lead them to understand that “Asperger's” or “Asperger's syndrome” were possible headwords. They should also consider the fact that dictionary users would be more interested in knowing about what the syndrome is about rather than knowing about the pediatrician who gave the name to the syndrome (which could be an entry in an encyclopedia). Another possible choice they could make was to use Asperger as headword and include “Asperger's syndrome” and/or “Asperger's” as in Manuel Seco's *Diccionario del español actual*, where the meanings of the lexical unit studied are distributed within the article in primary groups according to the different syntactic categories in which this unit is inscribed according to its functioning.⁵ Students' mother tongue, Spanish, could be a factor leading them to choose this last option.

It should be noted that the idea of the project was to work with particular conceptualizations of the words and, in this sense, they worked with the social and medical conceptualizations of the word

³ Students were informed that: The confidentiality of the information provided in this study is fully guaranteed. The results of the study will be stored and protected with the security measures required by current legislation (Ley Orgánica 3/2018, de 5 de diciembre, de Protección de Datos Personales y garantía de los derechos digitales; modificación BOE núm.110, del 9/5/2023). No personal data allowing your identification will be accessible to any person of the study or outside of it, nor may they be disclosed by any means, hence keeping at all times your confidentiality.

⁴ <https://moodle.org/>

⁵ <https://www.fbbva.es/diccionario/Asperger/>

“disability.” The following step should have been to introduce the biopsychological model of disability. In order to do this, more material would have been needed as well as more class time which was already too tight for the project. Moreover, students worked with corpus data and the idea was that they should work with the information they found in corpora. Finding information about and understanding the biopsychological model would be really challenging. The biopsychological model cannot be easily found as part of the collocational and example analysis in the corpora students used. This is a theoretical model and is not easy to find through text analysis alone. Thus, students were given material that they could relate to the corpus findings. Introducing the biopsychological definition of disability could be part of the classroom input but outside the task proposed here.

It is important to mention that (future) teachers are mediators of values and beliefs in their classroom and to this extent, the practice developed for this study enabled students to develop mediation skills that can be very helpful in their future careers. More specifically, mediating sensitive terms such as those related to FD is a relevant professional skill for secondary school teachers. CEFR-CV mediation strategies (Stathopoulou et al., 2023) that were used for mediating concepts in the development of the task were as follows: (1) linking to previous knowledge (use questions to encourage people to activate prior knowledge; make comparisons and/or links between new and prior knowledge; provide examples and definitions), (2) adapting language, and (3) amplifying a dense text (give examples and provide labels and usage notes).

Materials used during the task implementation were online dictionaries and activities designed by the instructor, including Moodle forums and assignments as well as thematic documents informing about the five terms studied that are used by students to inform their final dictionary project. In order to inform their dictionary project, students were also trained in the use of the corpus tool *Sketch Engine*⁶ (Kilgarrieff et al., 2014) by performing a few classroom activities with the tool using several of the corpora contained made accessible through the *Sketch Engine*. Students were also guided into corpus use by using the embedded pedagogical videos contained in the *Sketch Engine* webpage.

The task devised for this study differs from traditional TLS because it is completely aimed at teaching sustainability (SDG10) both in language form and content. Most ESD materials in language teaching solely present topics related to sustainability but are seldom related to transformational teaching. Sustainability topics as part of ESD usually lack the transformative profile of TLS and do not include action competencies that are related to the professional profile of students (as is the case of the pedagogical proposal presented and discussed in this article). Participants in the study: (1) defined terms in FD, (2) discussed the group definitions in forums, (3) critically analyzed the content of the defined FD terms in several lexicographical resources, (4) read materials succinctly informing about these terms containing selected excerpts dealing with these FD terms and used corpus linguistics tools for lexicographic research, (5) elaborated a dictionary project with definitions for FD terms with the experience

gained from the previous steps and created dictionary entries for those terms, and (6) answered a short questionnaire to reflect on and analyze what they learned in this task.

3 Results

This section will first illustrate the results obtained in the different parts of the task and then present the results of the final questionnaire.

3.1 Task results

Task results correspond to the six activities (Sections 3.1.1–3.1.6) that formed part of the task. These were sequenced from the easiest to the most complex and were intended to build students' knowledge on the terms they worked with.

3.1.1 Defining functional diversity terms as a lexicographic practice

Students were asked to work with five terms related to functional diversity. Participants were simply asked to define each word using their own knowledge and without using any dictionary or information source; that is, students used only their previous knowledge and competencies to write their definitions. Student's computers had access to browsers blocked during the task. The first two terms, “disability” and “Special Educational Needs,” were used to introduce the topic and foster discussions on what they mean as well as different ways to refer to the same reality (e.g., handicap/disability/functional diversity).

The activity development was carried out during 5 weeks in which one of the five terms was introduced per week. They were asked to define one of the terms and the definitions were individually submitted by each student using the Assignment option in Moodle. All students answered at the same time, not being able to see other students' definitions until the task was over.

The concepts selected for the task were as follows: *disability*, *Special Educational Needs*, *blind*, *deaf*, and *Asperger's*. The following definition examples illustrate how these terms were defined, and the definitions selected represent the different ways students decided to define these words. It should be noted that what the participants say in their definitions does not necessarily coincide completely with what they intended to say as they are all learners of the English language. They may even use words because they think it “sounds better” when they use difficult or uncommon words. Therefore, we need to remember that students are not only learning about the terms they are defining but also about the English language and how to express the meaning of concepts and ideas. The definitions presented below may also respond to different senses of the words instead of the sense that is related to functional diversity. Definitions are reproduced verbatim.

3.1.1.1 Definitions for disability

S3. It is a term that defines the lack of characteristics or capabilities of a person or an object.

S1. It is a physical or mental handicap that makes it difficult for someone living a full, normal life or from holding a gainful job; incapacity.

6 <http://www.sketchengine.eu/>; <https://data.europa.eu/en/publications/use-cases/sketch-engine>

S12. It is the lack of capability of aptitudes regarding a certain physical or psychological aspect of the human body.

S14. It is a mental or physical condition that limits a person's movement, capacity of thinking...

S5. Lack of (physical or mental) capacity to think or act as is required in any situation.

S2. The inability to do something. It may refer to either a physical or mental condition that characterizes a person and which may prevent him or her from developing a certain action.

3.1.1.2 Definitions for special educational needs

S15. Are the specific needs in the educational sector used to teach people with any disability Educational Needs.

S9. Special educational needs encompass different tools to carry out the learning in those students that under personal circumstances cannot follow the same educational system than the others.

S6. (n.) Special educational needs represent a set of necessities or supports which some learners, during the process of learning, must have at their disposal when difficulties arise along the process.

S8. (n. pl.) It refers to the set of cognitive individual characteristics or factors of learners that may affect pedagogical instruction in classroom settings.

S12. Special educational needs: it is the amount of specific means that are used to process the information given more appropriately to disable people.

S14. It may refer to those educational aspects students need to develop in order to deal with the learning process.

3.1.1.3 Definitions for blind

S16. Adjective. It refers to the incapacity to see or perceive things through sight. For example: He needs to walk with a stick because he is blind.

S12. It is the disability to not see totally or partially.

S11. It is a term that is used in order to describe a person or an animal who has a lack of vision. It can be total or partial.

S17. A person which is not able to see.

S13. A disability that characterises people that are not able to use the sense of sight.

S6. It is an adjective that makes reference to the inability to see or watch that anyone can suffer, either people nor animals.

3.1.1.4 Definitions for deaf

S14. It may refer to a person's unwillingness to hear.

S2. Deaf is the person who suffers hearing problems total or partially.

S13. A disability that characterizes people that are not able to use the sense of hearing.

S5. Lack of the ability of audition which can be attributed to any living thing.

S7. It is the physical inability to hear.

S4. It is a disability related to the listening in which a person is not capable to listen.

3.1.1.5 Definitions for Asperger's

S3. It is a personality disorder that some people have which makes a person to behave or react in a particular way. The name comes from a scientist who discovered this issue.

S16. Syndrome which is characterized by a disorder of the personality of a person with respect to socializing with other people and understanding daily things.

S8. It refers to the cognitive disability regarding individual lack or problems of expression, emotion, attention or affection.

S20. Mental condition included in the Autism Spectrum Disorder which affects communication skills and social relations. People with Asperger's usually develop very restrictive interests on specific subjects.

S15. Neurobiological disability compared to autism. People who suffer this disorder have an alteration of the behaviour and they tend to be clever in a specific sector.

S5. Mental disorder of a human being which leads to the incapacity to socialize and think or act as required in any kind of situation. This disorder is also characterized by over developed brain which results in high academic achievement.

As can be seen from the above examples, there are different degrees of understanding of the five terms. Participants also differ in their skill to define with more or less accuracy (for instance, being able to understand that SEN refers to the needs and not to the people with those needs). The level of understanding also differs from one term to the other, and it seems the group understands the concept "Asperger's" more clearly than the other terms. This may be related to the fact that in their university there is a high number of students with Asperger's (31.8%) as compared to other SEN students (visual difficulties 22.7% and hearing difficulties 40.9%, where only a few students are totally blind and no student with severe or profound hearing loss, and those with hearing difficulties enrolled in language programs are not students with an important hearing loss).⁷ Being able to relate with students with Asperger's may have made them understand this condition more fully than others, particularly when other types of diversity do not interfere with communication among students and affect students with SEN more deeply than it may affect their relationship with their partners.

3.1.2 Forum discussions

Asking students to discuss in forums which of the (anonymized) definitions they had previously submitted were best for each defined term. The forum discussions activated for this task provided a space of debate where different participants contributed to what the others knew about functional diversity.

Once all definitions were submitted, the teacher would choose eight anonymous student definitions different in form, content, and information types and created a forum in Moodle for each term. Students were then asked to say which was, in their opinion, the best definition in the list and why. After students submitted their own definitions, forum discussions were used to compare possible term comprehension and ways to express what they wanted to define. The terms were dealt with one by one, each term had a dedicated forum. It should be noted that as the participants go on with the tasks along the course, they become more and more aware of the susceptibility of the terms being used and this creates a visible difference between the first terms defined and the last terms they worked with.

Table 1 shows part of the discussions for all terms.

⁷ The nomenclature used in this paragraph is employed by the University Diversity and Disability Unit.

TABLE 1 Debate samples taken from the forum for the different terms.

<p>DEBATE ON BLIND</p> <p>Which is the best definition for “blind”?</p> <p>With your classmates, discuss which is the best possible definition for the word “blind” from those given below. Give your reasons:</p> <p>Blind</p> <ol style="list-style-type: none">1. People who suffer blindness have lost sight well since they were born or during adult life due to accident or illness2. The inability to see in human beings or animals, e.g., to be blind means that a person cannot see due to a problem in their eyes.3. (adj.) It refers to the condition a person may have in which a partial or full inability of sight.4. Blind: Lack of the ability of sight which can be attributed to any living thing.5. Blind: It is a cognitive disability of the sight sense which does not allow a person or animal the ability to see. <p>ANSWERS</p> <p>Re: Which is the best definition for “blind”?</p> <p>A1</p> <p>1, 2, and 3 are not correct definitions to describe this word. They lack of content and inappropriate presentation of the word. Therefore, I think 4 and 5 are the most accurate definitions in spite of the fact that they both contain little errors. For example, the number 4 mentions “any living thing” and it is too abstract; and number 5 uses repetition in “disability of the sight” and “ability to see.” For this reason, I propose a mix of 4 and 5 with the best elements of each one.</p> <p>A2</p> <p>Personally, the proper definition would be number 2, or 5 if it was modified into a less repetitive way. The case of number 2 being more appropriate is because of the detailed definition given to the adjective ‘blind’; it gives the explanation of what it is, to whom it affects and an example to fully comprehend it.</p> <p>The other ones either do not include animals (as they can also suffer blindness) or include all living things, which is not the case, as a plant is a living thing and cannot be blind. Other definitions can be quite repetitive or have a lack of information.</p> <p>A3</p> <p>Among the five options, I would firstly choose number 2 as it includes the fact that both human beings and animals can be blind. However, I am not sure if it is appropriate to include an example or to paraphrase what you have just said in a dictionary entry (“e.g., To be blind means that a person cannot see due to a problem in their eyes”). Then, I would combine it with part of definition number 1. More specifically, I would use the chunk “since they were born or during adult life due to accident or illness” as it mentions the possible causes of blindness.</p>
<p>DEBATE ON DEAF</p> <p>Which is the best definition for “deaf”?</p> <p>With your classmates, discuss which is the best possible definition for the word “deaf” from those given below. Give your reasons:</p> <p>Deaf</p> <ol style="list-style-type: none">1. Deaf is the person who suffers hearing problems total or partially.2. People who partially or wholly lacking or deprived of the sense of hearing; they are unable to hear.3. It may refer to a person’s unwillingness to hear.4. It is a term that is used in order to describe a person or an animal who is unable to hear sound and words. It can be total or partial.5. It is a cognitive disability of the listening sense which does not allow a person or an animal to perceive sounds. <p>ANSWERS</p> <p>Re: Which is the best definition for “deaf”?</p> <p>A1</p> <p>Number 4 is the most appropriate definition for the term ‘deaf’ because it makes reference to “a person or an animal,” which is the only one who takes into account both of them. The rest of the definitions only refer to people. Furthermore, this definition distinguished between the two types of ‘deafness’: total or partial. It is very important to mention it because people or animals can be partially deaf and it does not mean that they are unable to hear anything.</p> <p>The other definitions are incomplete for the following reasons:</p> <ol style="list-style-type: none">1. Number 1 does not refer to animals.2. Number 2 does not refer to animals and the definition makes no sense because the verb “lacking” is wrongly conjugated, it should be “lack.”3. Number 3 uses the word “may,” which is not appropriate for a definition. In addition, it does not mention animals either.5. Number 5 is well written and makes sense but it does not mention the types of deafness (partial and total). <p>A2</p> <p>In this case, I would say that the best possible definition for the concept “deaf” is the first one: Deaf is the person who suffers hearing problems, totally or partially. However, I would suggest changing the verb “suffer,” as we have seen that it may have some negative connotations and, especially, in the context of functional diversity.</p> <p>A3</p> <p>As far as I’m concerned, the most appropriate definition among 1,2,3,4 is number 4 and the most inappropriate number 5 for the reason that “deaf” refers to a person, so it is not a cognitive disability. Therefore, from my point of view number 4 is a complete definition.</p> <p>A4</p> <p>Improved definition for number 5: It is a disability of the hearing sense which does not allow a person or an animal to perceive sounds. It can be total or partial.</p>

(Continued)

TABLE 1 (Continued)

DEBATE ON SPECIAL EDUCATIONAL NEEDS

Which is the best definition for “special educational needs”?

With your classmates, discuss which is the best possible definition for the word “blind” from those given below. Give your reasons:

Special educational needs

1. People who suffer a disability need a special education in order to develop his brains, improve intellectual level
2. Particular and distinctive learning adaptations that students may need depending on different aspects such as proficiency, culture or mental ability, among others.
3. It is a term that is used in order to characterize kids, who suffers from different problems related to the mental and educational growth.
4. It is a set of personal factors that need to be taken into account in order to address appropriately students' specific characteristics in terms of learning processing.
5. It is a condition that is set for individuals who require some special attention, treatment or reinforcement in an educational setting.

ANSWERS**Re: Which is the best definition for “Special Educational Needs”?****A1**

I think that the best definition is number 2, because it is very complete and gives examples of the different aspects that affect the student who needs special education.

A2

The first definition is not appropriate because special educational needs of students do not require improving intelligence, but the focus is on the specific requirements of individuals that have difficulties in learning. The second definition is more accurate since learning problems do not only include mental problems, but difficulties in learning, such as proficiency, culture or mental ability, among others, as it is stated in this definition. The third definition I do not consider it to be correct because special educational needs is not a characteristic of kids, but of academic learning. Moreover, the fourth definition is more accurate than the second and more technical words. Moreover, this definition includes key words such as: personal factors, students' specific characteristics, and learning processing. Nevertheless, the second includes some of the aspects that may be regarded as special needs, so it is more specific. The last definition is accurate enough, but I would say the second is better. The last definition does not include different aspects as the second, which are important to understand that special educational needs is not only a matter of treatment or reinforcement, but of appropriate adaptations regarding different aspects of education. Therefore, any individual can require of specific needs regarding education, including children who have a high intelligence level, and not only those with mental disabilities.

A3

In my opinion, I would say that definition number 4 is the best one since it widely describes the term of “special educational needs.” On the one hand, I like that this person has not used words such as “disability,” but “personal factors,” which makes it sound more inclusive and less discriminatory. On the other hand, I especially like the fact that, in contrast to other definitions, it does not include words such as “problem” (in number 2), “suffer from” (in number 3), or “treatment” (in number 5), which may give a negative connotation to the term.

DEBATE ON ASPERGER

Which is the best definition for “Asperger”?

With your classmates, discuss which is the best possible definition for the word “Asperger” from those given below. Give your reasons:

Asperger

1. Asperger Syndrome is a kind of autism, patients present inability to express emotions, to relate with other people, to accept noise and violence among other symptoms
2. It is a developmental disorder of autism in which someone does not develop impaired social skills or repetitive behaviours. Moreover, he/she is often very interested in one particular subject, but this disorder does not involve delayed development of linguistic and cognitive abilities.
3. It is a medical term used to define the psychological disorder, which is characterized by an alteration of the behaviour. It affects especially kids.
4. Neurobiological disability compared to autism. People who suffer this disorder have an alteration of the behaviour and they tend to be clever in a specific sector.
5. Mental disorder of a human being which leads to the incapacity to socialize and think or act as required in any kind of situation. This disorder is also characterised by over developed brain which results in high academic achievement

Re: Which is the best definition for “Asperger”**A1**

From my point of view, the best definition for the term ‘Asperger’ is the fifth one. This definition presents a proper explanation of the term ‘Asperger’ classifying this disorder as a ‘mental one of human beings’. However, definition fourth is more detailed in terms of classifying this disorder, i.e., ‘neurobiological’ so this classification can complement the fifth definition to further explain the term ‘Asperger’. (The student is trying to say “However definition number 4 provides a better understanding because it specifies that “it is a neurobiological disability that affects behaviour” and the student thinks that this should be added to definition 5 so that it is more specific).

A2

I think Asperger is very difficult to define since it is not clear-cut what having Asperger involves. (The student believes Asperger's is a very complex condition and would not fit into a simple definition, the student thinks defining it is an impossible task probably because it involves people and varies from one person to another).

Nevertheless, I think that the fifth definition provides a more detailed explanation of the term and characteristics of the Asperger Syndrome and the third option provides a more positive definition of the syndrome since it defines as ‘a medical term used to define the psychological disorder’.

Thus, I would like to highlight the fact that all these definitions use some words with have negative connotations such as ‘mental disorder’, ‘disability’, ‘suffer’, or ‘incapacity’, which may be offensive for people with ‘Asperger’.

A3

In my opinion, I would choose both definitions (1) and (2) to mix them together, as they include the most outstanding aspects to mention.

On the one hand, we have the word syndrome (in definition 1) and developmental disorder of autism (in definition 2), which are key to explaining what Asperger is and its relationship with Autism.

On the other hand, I like the fact that definition 1 comprises information related to the different symptoms that characterise Asperger Syndrome, such as inability to express emotions or lack of social skills to relate with people. However, I would substitute the word patients for a person/people, to avoid any negative connotation.

We also need to mention that this disorder does not involve delayed development of linguistic and cognitive abilities (in definition 2), since Asperger is also known as a “high functioning” form of Autism.

The selected forum answers show how students focused on a number of interesting questions. First and most important, they paid attention to the extent to which the group's definitions clearly explained the text. Second, they paid attention to the accuracy of the definitions (whether the information was correct) and to the fullness of the definitions (whether they lacked information). Third, they suggested improvements to the definitions and started thinking about how much more information they would include in their dictionary projects. Hence, they paid attention to grammar and grammatical categories and language choice and also suggested the inclusion of usage notes.

3.1.3 Analysis of terms in online lexicographical resources

Students examined and analyzed the content of the defined FD terms in a number of lexicographical resources, namely, three online dictionaries that provided different definitions and treatment of the terms. Differences in format and how to present information as well as amount and quality of the information presented in dictionary entries were important to further enhance students' comprehension of FD terms and the ways information about concepts can be presented. The selected works to contrast FD term definitions were as follows:

- Longman Dictionary of Contemporary English.⁸
- Merriam Webster Dictionary.⁹
- Oxford Advanced Learner's Dictionary.¹⁰

The different entries for disability, Special Educational Needs, blind, deaf, and Asperger's were simply contrasted in the three dictionaries, and students closely examined how information was presented and the amount and type of information presented. Figure 2 exemplifies how one of these terms, disability, is presented in the dictionary entries:

Not all information contained in these dictionaries is included in this figure, but the figure shows dictionary features that may be compared. For example, the definition in the Oxford dictionary talks about "a physical or mental condition" and includes "learning disability" as a separate phrase and entry. The Longman dictionary defines disability as "a physical or mental condition" and suggests as possible frequent phrases "learning/physical/mental etc. disability." The Merriam-Webster definition talks about "a physical, mental, cognitive, or developmental condition" and includes "intellectual disability" and "learning disability" as separate phrases and entries. Additionally, the Oxford dictionary includes a usage note (Which word?) with extensive information on the differences of the terms disabled/handicapped and provides further information on the uses of learning disability vs. learning difficulty in American and British English. Finally, Oxford and Longman dictionaries differ in the way they present the topics that are linked with the entry for disability. While Oxford addresses the entry reader to Disability as a topic and presents a list of searchable words in the dictionary including terms such as blind, blindness, sign language, and learning disability, the

Longman Dictionary links the disability entry with Disability and Illness as a topic. This takes the dictionary user to a very varied list of searchable entries including for instance: specimen, hard of hearing, self-examination, coma, bellyache, dialysis, bruise, blood transfusion, sexually transmitted disease, disorder, or palsy. These terms are visualized in a cloud of words where letter size indicates term frequency.

The word disability in two of the dictionaries is related to the topic of illness, thus giving a medical view of the term. The Oxford Dictionary, however, provides more useful related terms by relating it to disability terms only, taking a social approach to the term.

3.1.4 Reading excerpts on FD terms

Reading materials prepared by the instructor were selected excerpts from different sources used as samples to know more about those terms. These materials were intended to represent specialized source materials used for lexicographic consultation but are by no means exhaustive. They were created for the students to understand that for specialized terms they need to look up specialized sources of information. These materials were intended to be comprehensible input in the sense that the selection of excerpts was made to provide additional information on the terms but at the same time students read excerpts instead of the full text to reduce their learning load. The aim of these documents was thus to be informative, but the length of the texts was reduced to meaningful excerpts with the aim that students would not lose their motivation to read the texts, which could in all instances be accessed in full in case they wanted to read the whole text for each excerpt. A sample of this material for the term "disability" is shown in Appendix 1.

3.1.5 Corpus analysis

The final activity was programmed to train students on how to find information using corpora in the *Sketch Engine* tool to design their dictionary entries. A linguistic corpus may be defined as a collection of digitalized texts that users of that corpus may interrogate through the use of corpus tools in order to gain knowledge about words and their linguistic patterns. One of the uses of corpora, particularly with philology or translation students, is its pedagogical use (Lőrincz, 2024; O'keeffe et al., 2007; McEnery and Xiao, 2011) where learners explore digital texts and learn about word and pattern usage, while gaining in-depth knowledge on word meaning due to the analysis of corpus concordances in the form of key word in context (KWIC or strings of text where a key word appears) and by accessing to the paragraph or text the concordance comes from. Collocational pattern information (recurrent use of word combinations) also aids comprehension of a word or phrase, as typical collocations expose the co-text and ideas related to a specific term.

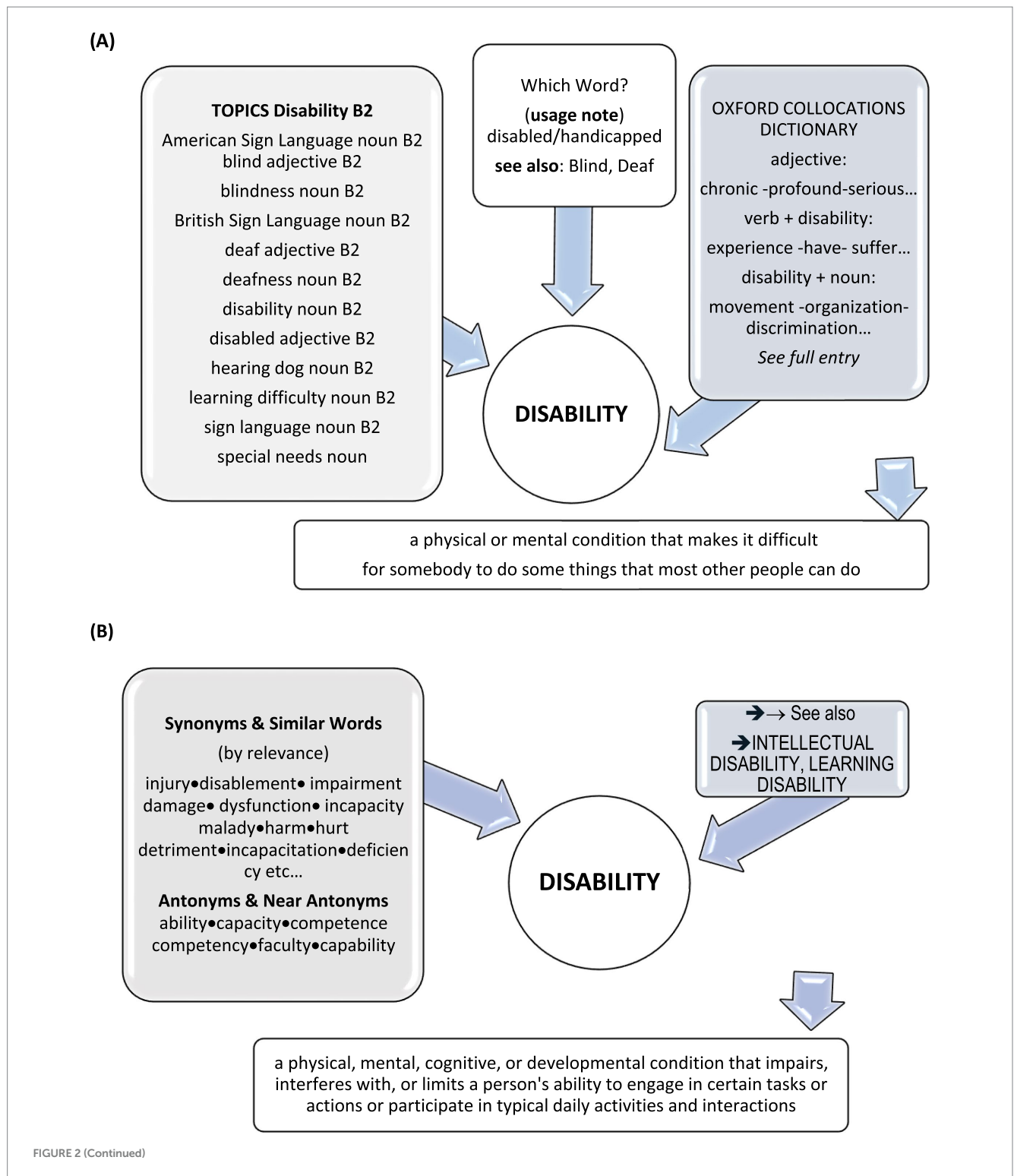
Within pedagogical corpus linguistics, this study aligns with what Ma et al. (2022, p. 7) suggest as ways forward in corpus-based language pedagogy (CBLP) when they talk about "integrating corpus technology with their pedagogical reasoning into their teaching." In this sense, the study combines CBLP with concept understanding to raise awareness of what is functional diversity and how people talk about and understand it.

Corpus use with the help of the *Sketch Engine* tool provided students with an ample repertoire of real examples that could be used to understand term usage and exemplify terms in their dictionary projects. The concordance tool yielded typical word

⁸ <https://www.ldoce.com>

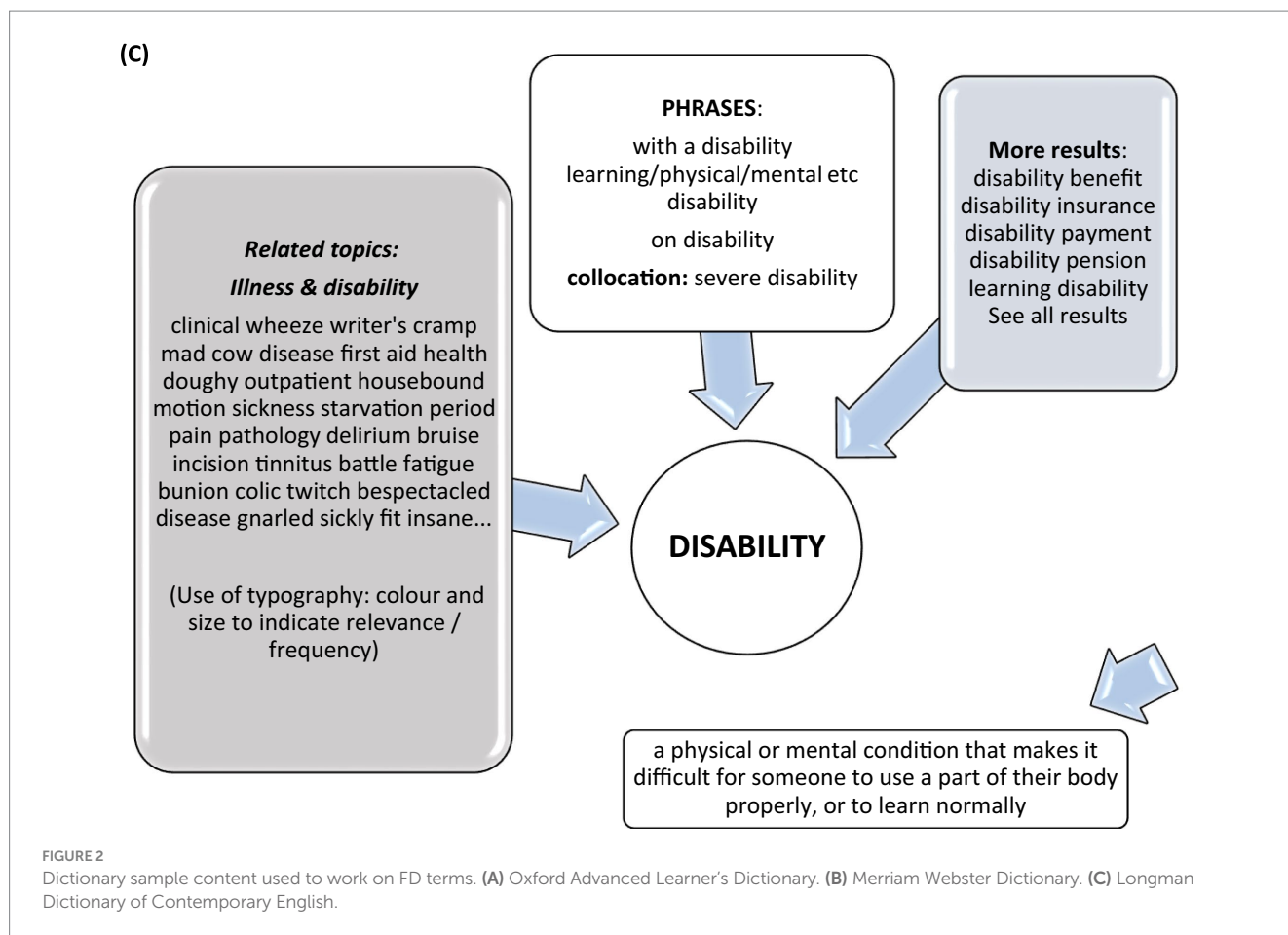
⁹ <https://www.merriam-webster.com/>

¹⁰ <https://www.oxfordlearnersdictionaries.com/>



combinations with the selected terms, such as “learning disability,” “partially deaf,” or “Asperger’s spectrum.” These combinations show different realities and situations students had to consider for their final dictionary projects. It also allowed for the comparison of the use of terms like “disorder” and “disability” where they could see how the typical attributes for “disorder” were diagnosis, syndrome, and illness, while the attributes related

to “disability” were burden, impairment, inability, barrier, or limitation. As part of corpus analysis students used both General and Specialized corpora, showing a preference for the *enTenTen* corpus (English web corpus) as representative of speech used by the majority of speakers. Participants had to take into consideration statistical data in corpus investigation results (word combination significance and frequency).



3.1.6 Dictionary project

Students had to compile a small dictionary (containing 45 entries) with the help of corpora, using the *Sketch Engine* tool. For the five chosen terms, apart from corpora use they had all the material developed and discussed in the previous activities. In this project, they elaborated definitions for FD terms and created dictionary entries for those terms. This section compares the final entry in the dictionary project (Section 3.1.5.) with the first definition they created in the first activity (Section 3.1.1) which was writing their own definition using their previous knowledge without using any source. In the case of the project they had a lot of information they could rely on, and this logically yields more complete definitions. However, the interesting part of the comparison is their choice of information for the dictionary entries and how much they changed their initial definition of the terms. To this end, Table 2 provides a comparison¹¹ of the first and last definitions of the task. This table shows how students implemented what they learnt throughout the task with different degrees of success. This means that the change of words in their dictionary project may not be the best one but still show some awareness that the previous wording was not adequate. It may also be the case that the change of word implies no improvement.

As an example, one student changed word choice from “handicap,” “normal life,” “incapacity” to “dysfunction,” “develop certain tasks.” Another example presents a change from “physical inability” to “sensory condition that implies physical inability.” They may also provide more informed definitions, for example, from “a person’s lack of vision” to “person’s low vision or the loss of it, either from birth or as a result of an injury, illness, or by age” also specifying that blindness “can vary from low vision, partially sighted, to legally blind and totally blind.” Generally speaking, students also became aware of the different contexts where the terms were used, such as medical contexts or educational contexts, as well as idiomatic or figurative use of the terms.

3.2 Questionnaire results

Appendix 2 shows the questionnaire that was used at the end of the semester after students had gone through all the activities proposed in the task. This section comments on and exemplifies different aspects of this classroom experience representing the answers of the whole group. The questionnaire has two parts: the first part contains questions from a lexicographic perspective, interrogating participants on their task completion and practice in designing entries for special educational needs terms; the second part deals with a reflection on FD concepts and how this may relate to their professional future. The coding of responses means student (S)

¹¹ Participants were given a number in the anonymized documents that allowed for this comparison without revealing their identities.

TABLE 2 Comparison of the first and last definitions in the task.

First definition	Dictionary project/last definition
DISABILITY	
Disability: The inability to do something.	<p>It is a functional diversity, which can include physical, sensory, cognitive and psychological characteristics that differs from the majority of the members of a society. For example, a blind person who cannot see. The term can be considered as offensive.</p> <p>COLLOCATIONS:</p> <p>Noun</p> <p>has a [...] disability</p> <p>suffer from a [...] disability</p> <p>treatment for a [...] disability</p> <p>Noun as adjective</p> <p>[gets, receives] a disability [benefit, allowance]</p> <p>is on disability pay</p>
It is a mental or physical condition that limits a person's movement, capacity of thinking...	<p>1. It is a socially constructed term, frequently used from a medical perspective, which refers to a person's functional diversity in terms of physical, sensory, psychological, and cognitive features. <i>Excluded were residents of institutions, mentally handicapped people, and those whose primary disability was deafness or blindness.</i></p> <p>2. (Related to medicine). A person's physical, sensory, psychological, or cognitive limitation or lack of ability (dis-) to perform certain tasks or actions, either from birth or resulted from an injury.</p> <p><u>Frequent COLLOCATIONS</u></p> <p><u>Modifiers of 'disability' Nouns modified by 'disability'</u></p> <ul style="list-style-type: none"> - with developmental disabilities - learning disabilities - physical disabilities - permanent disability - disability insurance - disability discrimination - disability compensation - disability benefits - with learning disabilities <p><u>Verbs with 'disability' as an object</u></p> <ul style="list-style-type: none"> - diagnosed disability - perceived disability - suffer a disability <p><u>Verbs with 'disability' as a subject.</u></p> <ul style="list-style-type: none"> - disability prevents - disability resulting from - disability benefits - disability impacts


(Continued)

TABLE 2 (Continued)

First definition	Dictionary project/last definition
Disability: a term that define the lack of a certain ability or more.	<p>It is a term that defines a person when he lacks a skill or more. It refers to a physical, cognitive or psychological alteration that a person may suffer performing certain tasks, such as moving or listening.</p> <p>E.g., <i>She is blind, but her disability does not prevent her from doing everything she wants. / Many public places are not prepared for people with disabilities.</i></p> <p>COLLOCATIONS:</p> <p>Has a (hearing, sight, physical, mental, learning) disability</p> <p>Suffers from a (hearing) disability</p> <p>(Undergoing) treatment for a [hearing] disability</p> <p>Has a (partial, full, severe) disability</p>
DISABILITY: It is a physical or mental handicap that makes it difficult for someone living a full, normal life or from holding a gainful job; incapacity.	<p>DISABILITY /,dis.ə'bil.ə.ti/ /,dis.ə'bil.ə.tj/ ● (n.) It refers to the physical, cognitive or psychological dysfunction a person may experience to develop certain tasks such as moving or hearing. ● Gerald, who is wheelchair bound, was competing in the men's recurve event in the Disability Sport England competition. ● Most rheumatic disorders present with pain, stiffness or disability.</p> <p>COLLOCATIONS</p> <p>❖ NOUNS</p> <p>1. Insurance ● If you have fallen ill and had to take time off from work to heal, you know how important disability insurance is. ● Here is the information that you have to consider when purchasing a disability insurance plan.</p> <p>2. Benefits ● An attorney can provide assistance for seniors when they are making a claim their Social Security or disability benefits. ● This job openings include systems analysts, security consultants, disability benefits specialists, and auditors.</p> <p>3. Allowance ● I am getting paid a disability allowance. ● The company offers my a disability allowance.</p> <p>4. Sport ● James, who is wheelchair bound, is going to competition the men's recurve event in the Disability Sport England competition. ● I wish I can participate in the recurve event in the Disability Sport England competition.</p> <p>5. Pension ● My grandmother gets a disability pension from the Government because of her disabilities in a car accident. ● Andrew had never received his disability pension.</p> <p>❖ VERBS</p> <p>1. Learn ● Accommodations in schools should be made for students with learning disabilities. ● Jimmy's mother stated that he may have some learning disabilities.</p> <p>2. Cause ● Her disability caused this thing to fail. ● Disability caused by a pre-existing medical condition.</p> <p>THESAURUS</p> <p>+ Synonyms: ❖ Ailment ❖ Affliction ❖ Defect ❖ Disqualification ❖ Impairment ❖ Infirmary ❖ Injury</p> <p>– Antonyms: ❖ Ability ❖ Advantage ❖ Benefit ❖ Health ❖ Strength</p>

(Continued)

TABLE 2 (Continued)

First definition	Dictionary project/last definition
It may refer to either a physical or mental condition that characterises a person and which may prevent him or her from developing a certain action.	<p>DISABILITY (noun) pl. disabilities, countable</p> <p>It is a socially constructed term, frequently used from a medical perspective, which refers to a person's functional diversity in terms of physical, sensory, psychological, and cognitive features.</p> <p><i>Stuart Miller is training to be a pilot and says once you are in the air there is no disability (Disability: BBC News).</i></p> <p> Usage notes: The prefix dis- in <i>disability</i> and <i>disabled</i> entails a negative connotation to the term that makes it an offensive and pejorative word to use. Instead, <i>functional diversity</i> is recommended.</p> <p>MEDICAL SENSE</p> <p>A person's physical, sensory, psychological, or cognitive limitation either, from birth or resulted from an injury, to perform certain tasks or actions.</p> <p><i>Excluded were residents of institutions, mentally handicapped people, and those whose primary disability was deafness or blindness (BNC Medicine Corpus).</i></p> <p>FREQUENT COLLOCATIONS:</p> <div> <div> <p>With nouns</p> <p><u>Pension</u> disability</p> <p>Disability <u>insurance</u></p> <p>Disability <u>discrimination</u></p> </div> <div> <p>+ adjectives</p> <p><u>Developmental/ Physical</u> disability</p> <p><u>Cognitive/ Sensory</u> disability</p> <p><u>Learning</u> disabilities</p> <p><u>Functional</u> disabilities</p> </div> </div> <p>Thesaurus (synonyms): functional diversity (related words): blind, challenged, deaf, disabled, impaired, retarded.</p> <p>See also: Functional diversity, Special Educational Needs</p>
BLIND	
It may refer to a person's lack of vision	<p>1. A sensory condition that implies a person's low vision or the loss of it, either from birth or as a result of an injury, illness, or by age. <i>John Bramblitt went blind over a decade ago due to complications from epilepsy, but that has not stopped him from making art and being an inspirational figure. (Scene360).</i></p> <p>2. (Related to medicine). Vision impairment that can vary from low vision, partially sighted, to legally blind and totally blind. <i>Students who are blind, visually impaired, deaf or hard of hearing are now able to access children's television programs with closed captioning and video descriptions through the Department of Education Described and Captioned Media Program (DCMP) (enTenTen13).</i></p>
It is the physical inability to see.	<p>BLIND (adjective)</p> <p>Having a sensory condition that implies a person's low vision or the loss of it, either from birth or as a result of an injury, illness, or by age.</p> <ul style="list-style-type: none"> • Ray Charles Robinson became permanently blind from glaucoma when he was seven (The Independent). <p>Medical sense</p> <p>Having a vision impairment or inability to see that can vary from low vision, partially sighted, to legally blind and totally blind.</p> <ul style="list-style-type: none"> • The current sensation in the Apple store is a new puzzle game for the people who are visually impaired or blind (English Web, 2015). <p>Figurative sense</p> <p>Reluctant to see or accept the truth.</p> <ul style="list-style-type: none"> • Even Einstein said that science is blind without religion (ScienceBlogs).

and the number they were given in the anonymization process. Responses from all students are chosen for one answer to a question or another and are representative in content (i.e., one answer has been chosen and there were five answers providing the same information)

Q1. You have been working with special needs vocabulary. What have you learnt about this topic that you didn't know before?

S6. Regarding special needs vocabulary, I have learnt how to express myself correctly when dealing with specific terms regarding this type of vocabulary, which may require, in some way, consideration and acceptance. Since terms within this topic need to be defined in the most accurate and proper way, how to choose proper words for doing so without sounding neither disrespectful nor rude, has to be considered and developed in the most conscious manner.

Thus, leading with this kind of vocabulary in our final projects (dictionaries) may have influenced us to be more considered and conscious when writing or expressing ourselves and knowing how to do it in its most precise and polite way.

S11. I learnt how to explain myself in a neutral way, because everything that I supposed it was “normal” it can be offensive for another one maybe. Neutral definitions.

S14. While working with the topic of special needs I have discovered a huge amount of terms related to the field that I have never considered before. In fact, I realized that some of them have negative connotations and for that reason, people with that particular disabilities tend to create new ones that involve more positive connotations. Moreover, I found out that there are many related terms for just one single concept, that made me understand the lexical complexity of the topic.

S20. It became interesting to me how vocabulary related to this does yet have negative connotations at many of its instances. I find the main issue to be the misinformation people have on many of these terms. It is easier to address, for instance, Asperger syndrome as a disability or an illness rather than speaking of diversity. We do have as well terms such as “disorder” which, despite seeming more formal, are still perceived to contain a negative connotation and, as such, influence on the perception of special needs or “neurodiversity.” Should we at some point assimilate that “disorder” does not necessarily mean “disadvantage,” the integration of people with special needs will be easier. It is not only about the conditions of certain people themselves, but it is as well about what connotation do we provide to the language used, for what promoting contexts in which these words’ usage is further positive will result in a great help. Nevertheless (and adding my two cents as a diagnosed “aspie”), trying to simply positivize certain meanings will have a surrealistic impact on the collectives these address as well as for the words connotations themselves.

Q2. Separate forums were designed to work with the terms: Asperger's, blind, deaf, disability, and special needs. How does lexicography help you understand these concepts better?

S4. They have helped me as I could see the other companions’ responses to the forum, so I could learn directly from them as well as from the definitions firstly provided in the forum.

S6. Lexicography helps us to understand these concepts better by word choice, although how the sentence and these words are introduced in the sentence structure play a big role here. Choosing the best word option to express ourselves would not be useful as long as we do not fit it correctly into the sentence. By participating in these forums and discussing with other classmates which was the best option for a word’s definition, made us notice different mistakes that maybe by our own could not, or maybe, by considering different aspects of each definition, a new one made by the combination of others could be made up, or a new definition by taking ideas of what had been read in other definitions.

S8. The participation in the forums has allowed us to share different opinions and points of view and question the word choices and etymology of each word, providing opportunities to improve this definition using inclusive language. I think that these forums have been an excellent activity to activate our critical thinking, encouraging to question the different words used in society.

S12. Lexicography helped to understand those concepts better as we had to elaborate our own definitions for each of them, by selecting the most appropriate aspects to include. Moreover, we needed to provide examples, collocations, a thesaurus, related terms, usage notes, and phraseology, among others. Therefore, we have acquired lot of knowledge of each word and also of the use of particular online resources in order to find the information.

S18. I was familiar with the terms blind and deaf, as mostly everybody I guess, but I did not exactly know what was Asperger or how exactly can disability be defined. I think that learning their meaning has made me develop a more inclusive mentality, especially in the classroom area, where we will be dealing with young people.

Q3. Which part of your entry for each of these terms helped you the most to add sociocultural information?

S2. The part where I gave some examples. Examples from the real world form part of the contextualizing process that makes us aware of the real world. The notes in which we have to add extra information to clarify or avoid misunderstandings. And then the definition, as we tried to be accurate and faithful to what these terms actually mean.

S5. The parts of examples, usage and phraseology are the ones which are more socioculturally related, since they include different usages of the same word in context. For example, informal usage, or idioms.

S8. I think usage note in an entry, which can be in a different section or included in the definition, may serve to add information regarding subtle differences concerning sociocultural information.

S9. In my case, the section of creating the definition was the most enriching for me because I had a limited knowing about these words, so thanks to this project I learnt much more information.

S10. Disability for sure. As the time goes by, the definition of disability and the word itself has been changing. Hence, the language is necessary that it gets adapted to the society.

S11. Probably the socio-cultural information is added to the senses and collocations. Collocations are very important since they add connotations to the meaning of the word.

Q4. Which part of your entry do you think will help the users of your dictionary to employ the term correctly in any (sociocultural) situation?

S2. In my view, the part of my entry that will help the users of my dictionary to employ the term correctly is the definition part. Moreover, the example part is also relevant in order to contextualize the term, complement and clarify the definition.

S3. The notes which provides relevant information and also proper examples of each definitions.

S4. The collocations part, I think it is the most complete, as it helps to understand the many ways in which a word can be combined.

S10. I think the section of the examples is very helpful because the term is already included in different contexts to show people how to use it.

Q5. Explain which information types you designed to complement the information given in the definition for one of these entries and try to explain what you used each of these information types for.

S9. All the dictionary entries contain the definition, thesaurus, useful collocations and usage in order to provide more information regarding their usage. Additionally, some entries such as in the word “blind” or “deaf” I included the section “Phraseology” which provides information regarding metaphors or idioms frequently used with this term. Thus, this section gives extra information about their usage.

S15. I designed some usage notes since they give the reader lots of advice helping them to avoid making some of the most common mistakes of usage. For example, in the entry for the term ‘deaf’, I added a usage note to make the distinction between ‘deaf and ‘Deaf’. Deaf people (with capitalized D) refers to dead persons belonging to this community.

Q6. Consider your practice in designing entries for special needs terms. In which ways is lexicography useful for a philologist? How does it make you more professional? Does it give you a new perspective to understand the world?

S4. As human beings, we use language in our community in order to communicate and satisfy so our needs. The language that we employ should be inclusive, that makes us to take into consideration everything which is the reason why we have to treat the language carefully. By not adding a term, we are in a way excluding some minor groups in the society that have the right to be visible. For this, I consider that philologists have to know lexicography not only to be more professional in order to be more accurate or formal but also more human in reflecting the society in his totality and taking into account the diversity there exists.

S9. Lexicography has allowed me to delve into the words, their usage, construction, connotations and the effects words have in the society, competencies needed for a philologist. Thus, this course has helped me to understand how powerful words are and to question every word I see. Thus, I am more conscious regarding the importance of the word choices made, the negative connotations a word may have and the effects of words when interacting in society.

S13. My practice with special needs vocabulary was necessary for my upbringing as philologist since I took conscious of the serious and important task of defining tricky words that seem not to be ordinary. I also appreciate the professional look of lexicography. Being familiarized more often with dictionaries makes the student more aware of the dangers of using vocabulary. In fact, the usage of dictionaries is positive

for the development of a student who will need skills related to the words. For this reason, it gives a new perspective to understand the world as examples like special needs vocabulary help to understand the current situation of different groups of people who may suffer discrimination or unfair episodes due to misunderstandings.”

S14. Lexicography is very useful for a philologist as it just not only provides us with information about definitions, but it also helps us to translate, understand different topics in detail, acquire knowledge of how to use a particular term, find very specific types of information, work with professional online programs and understand that words and meanings are very important in our lives. Therefore, lexicography has made us more professional philologists. In fact, it has given me a new perspective to understand the world as now I am more conscious about the real use of language, the different meanings that we can create when communicating and the importance of words in society and life.

S18. In my opinion, this subject has made me understand that lexicography is a key aspect for a philologist, something I wasn’t aware of before. I think so because learning exactly how to use a certain word, in which contexts to use a word or another, or how to define it if we are teaching and a student has a doubt, is very important for us. Besides, getting to know different words, especially those related with special needs, has made me have a broader perspective of the world, and understand different situations I wasn’t aware of.

Question 7 to 11 relate to the transformative language for sustainability (TLS) part of the project, the reflection on what was learnt regarding FD concepts and how we use them to communicate.

Q7. Were you acquainted with the term “functional diversity” prior to this course? Will you be incorporating it in your vocabulary from now on as an alternative to disability?

S7. I did not know so many things I have learnt this course, which are highly important, that at least if I cannot remember that term when talking about it, I for sure, will be more conscious and careful with my words and the message I want to transmit. But it has been a pleasure being able to improve my speech by knowing more and new words.

S9. Although I had heard before the term “functional diversity” in educational contexts, I have not been aware of the importance of word choices and the different connotations a word or expression can have.

S14. I have discovered the term functional diversity during the sociolinguistics subject as we had to find information about the language used in society and we found a very useful example in a poster regarding people with functional diversity. However, in lexicography I have developed my knowledge on the term and of course, I am going to incorporate it as an alternative to disability because I consider that, as it is a concept created by people who suffer that problem, they would prefer the rest of the society to employ it rather than the previous one (disability) as it can involve some negative connotations.

S15. No, I was not acquainted enough with the term functional diversity prior to this course. From now on I will make use of this word as an alternative to disability since the term functional diversity, which is a social term that embraces each individual’s complex and diverse way of being, behaving, and functioning from a physical, psychological and cognitive perspective promotes respect and social acceptance of those who are seen as ‘disabled’ people.

Q8. Knowing that the term disability is a socially constructed concept, do you think your perception towards it has changed?

S1. Yes, I do. As I said before, I was aware of some of these terms but in my language. These concepts are socially constructed concepts that we accept as correct. After this course, my perception has changed, I have introduced new concepts and added new vocabulary, which is very useful today.

S15. The term disability seems to be not rationally defined but socially construed since 'disability' is determined by the social meanings people attach to a particular physical or mental impairment. My perception of the term 'disability' has changed since working with the topic of special needs made me evaluate, criticize and reflect upon the term 'disability'. Nowadays, the term 'disability' is seen as something 'abnormal', 'bad', 'problematic', as a 'tragedy', in few words, using the term 'disability' discriminates this community. Therefore, people should stop treating people with special needs as less than human, and stop seeing them as 'abnormal' or 'problematic' people.

S16. No, I still think the same. By having a disability, you are no less than someone who does not.

S18. Yes, my perspective has totally changed since I believed that the term disability was not a socially constructed concept and therefore was the appropriate one to refer to functionally diverse people. Now, I am mindful of this fact. Therefore, now I am more interested in looking for words which could be the same and that increases my motivation for learning more vocabulary.

Q9. Language matters. How we refer to people affects the way they are seen by others and the way in which they feel about themselves. Do you think that being mindful of this fact will prevail in choosing how to address people with functional diversity? What can you say about this as a philologist?

S1. Definitely. Language does not only define words but also people. In other words, language tells what we really are. We could state that being mindful of this fact we have the chance to address functionally diverse people in a way they could feel respected and comfortable. As a philologist, we must support that people feel respected and give people the opportunity to find these terms to make humans beings proud of themselves.

S3. We have to be careful of how we use language since many times we qualify and that makes us highlight the positive and negative aspects of things or people. It may be done unconsciously for something cultural, but it would be good if we could realize what we say and what we do not say as well, if we make it with objects it is not a big deal but with people is a different story because its emotional stability is at stake and his integrity as a person as well.

S16. Yes, I think this will affect for the best how we refer to people with functional diversity, since we will be able to put ourselves in their place. As a future philologist I think that change is in us and not in the way we give a word a different meaning.

S17. Yes, I think this will affect for the best how we refer to people with functional diversity, since we will be able to put ourselves in their place. As a future philologist I think that change is in us and not in the way we give a word a different meaning.

Q10. Societal attitudes towards people with disability in history have been predominantly negative, conveyed by means of language that

portrays them as negative, as a problem. Is it right to think that a disability is an attribute of an individual that refers to the "lack of (dis-)" something?

S12. No, it is not true that disability is part of him or her but it cannot be labeled as disabled only because "lacks of something," people are more than a simple label. However, this label affected considerably people who suffer from functional diversity, and they are misjudged by the lack of something and they are isolated from the society.

S13. I think it is right since we cannot change the patterns of nature. Vocabulary is needed to describe this kind of processes within nature, therefore words like disability are correctly used to explain a feature (or lack of feature).

S18. It is important to think about what we are saying before we say it since it can hurt someone [hurt]. Therefore, societal attitudes towards disabled people are negative and people should be aware of it. In many cases, a disability does not necessarily mean that a person lacks of something. Instead, it can mean that the person has not developed an ability to the extent of the rest. Therefore, it is not right to think that the word disability refers to the lack of an ability since the meaning is not that one.

S19. People with disabilities have always been treated differently from the rest, especially years ago. But nowadays in most countries a person with a disability is treated just like a person who is not.

Q11. Teaching diversity to students has hitherto included individual differences along the dimensions of race, ethnicity, and gender. Do you think it is important to incorporate teaching functional diversity in the school curriculum? Why?

S4. Yes, educational settings have to be accommodated and allow blind people have the same opportunities as the others. What might be an impairment at first sight for us, might not be an impairment for them as they have adjusted to their reality and we have to make the effort to adapt our system for them as well. Therefore, materials have to be accommodated, furniture, equipment, the mainstream classmates have to be aware, etc.

S8. Try to organize classes-physical classes that is—to be as comfortable as possible for that student, make sure the sound can be heard properly for the student to be able to follow the class. Organize the subjects so they all include a huge percentage of the skill the blind student will need the most to improve. Try to include practices more inclined to the need the student might have, more related to listening and speaking and, those related to reading and writing should allow the student to have more time taking into account the difficulties the student might find regarding time. Include the student into discussions. Find all the material a blind student might need and offer it to him.

S15. In general, the university, the department, teacher, classmates, staff and so on should accommodate this students' environment in order to make he/she feel included in society and make he/she feel comfortable. In this sense, it is important to change the medium used, e.g., braille, large print, audiotape, electronic text and oral testing/scribing use are recommended. Moreover, verbal descriptions of visual aids, raised-line drawings and tactile models of graphic materials should be provided to this blind student.

S19. In my opinion, I think that a person with a disability has to be treated equally to other people. In this case, a blind person can perfectly follow a class since much can be learned with the ear. Where if you could have difficulties, and therefore have some help, it is when doing work, individually or in groups, or when doing exams.

4 Discussion and conclusion

This study has presented a way to introduce functional diversity terms in the classroom as part of transformative language teaching for sustainability. As expected in a TLS practice, students actively participated in the study and the fact that many of the activities were challenging led them to engage in discussions and be motivated to improve their knowledge and use of the English language as well as the knowledge of ideas around sustainability concepts (FD terms). The different activities contained in the task proved to have a useful sequence design as they involved students little by little, from the simplest task of defining with their own words and knowledge to the forum discussions and further elaboration of full dictionary entries. This also enabled them to mediate concepts with other members of the class and in their final project. The definition practice throughout the task and the consultation of specialized readings and linguistic database resources showed them ways to be informed about words, their meaning, and their use. They also allowed for consultation regarding the sources of examples taken from corpora (whether the source was a political or an educational text, for example). The fact that all activities were put in common created a collaborative atmosphere where students learned from each other and were all able to gain new conceptual and linguistic knowledge while developing their know-how skills. The forums were valuable to the extent that they made students become aware of how clear they are (or not) when they speak and write (in this case definitions), how much they know about specific terms and the ways in which information can be expanded in a definition. The role of usage notes and information on collocations was clearly perceived as very useful to increase their knowledge about terms and how to use them. This expansion would finally reach an optimum level in their final dictionary project with different degrees of efficiency. They were also able to contrast how the five analyzed terms were dealt with in the three online dictionaries they examined further developing their critical thinking skills. The specialized readings immersed the students in a deeper understanding of the terms while being informed of other social and cultural aspects they might be unaware of.

The results from the questionnaire also point in the direction that students felt they had become more proficient in understanding and explaining concepts (mediating concepts) as well as being able to manage definitions from a respectful perspective becoming conscious of the importance of properly defining sensitive terms. Participants increased their lexical range and depth as is shown in their task results and the answers to the questionnaire. The practice as a whole has also made them become aware of professional competencies developed in the subject of lexicography, as they felt they are now more accurate in the way they define and have also gained abilities in using corpus tools that will provide them the

opportunity to keep investigating linguistic issues in their future as professionals. The answers to the second part of the questionnaire suggest that they have amplified their understanding of diversity and made them provide strong opinions on how educational institutions should deal with diverse students.

This is the sense that is given to the proposal of defining and developing a new SDG, SDG18, where language and communication for all is revealed as an urgent need to achieve a paradigm shift in the direction of language and communication oriented toward sustainable social change. This understanding of the use of language in general, and the use of the English language in particular has an important role in achieving the SDGs (United Nations, 2015). Recent research points in this direction in studies that reveal new ways to understand the world that are related to language use, interpretation, and communication (Burenhult, 2023; Buts et al., 2023; Nayak and Raval, 2024; Servaes and Yusha'u, 2023; Yusha'u and Servaes, 2023).

5 Limitations of the study

This study is a step toward finding ways to deal with functional diversity in the university classroom through TLS. It should be noted that only 20 students participated in the study and that the same experience with a different and/or larger group of students could have different results. Eagerness to participate in the experience is also not necessarily the same with different groups and not all students give full explanations and responses when confronted with questionnaires. In this sense, this particular group of students was exceptional and provided the researcher with valuable insights regarding the proposed task.

The aim of the study was not to reach perfect definitions, the tasks developed in class were intended to be a starting point for making students understand the complexity of terms while giving them tools to better understand them. This study has methodological limitations as it is a classroom qualitative experience and it is not based on experimental quantitative methodologies. In this sense, organizing similar classroom experiences using different educational theories and methods could provide more information on how to deal with diversity in educational settings. The study presented here is a qualitative analysis and as such is limited by the quantity and in this case the diversity of the data. The small number of participants limits the representativeness of the data collected in the study. Further research replicating similar classroom formulas and studies with a higher number of participants could lead to statistical analysis of results that could be relevant to build upon this proposal.

6 Further research

Further research can be implemented with other sustainability-related terms in relation to the SDGs and contemplating the SDG18 of communication as an interdisciplinary field needed to enact all other goals. The same task procedures may be followed with different SDG terms, different participants, and larger numbers of participants with different geographical provenance. Lexicographical approaches to FD terms from a theoretical perspective (Norri, 2018; Rice and Zorn, 2021; Nied Curcio, 2023) may also yield the foundation for classroom

practices. The same happens with translation and with interpretation studies, such as Buts et al., 2023; Cooms, 2023; Lomas, 2016.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Author contributions

MC-C: Conceptualization, Formal analysis, Investigation, Methodology, Resources, Visualization, Writing – original draft, Writing – review & editing.

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References

- Alduais, A., and Deng, M. (2022). Conceptualising, defining and providing special education in China: stakeholder perspectives. *J. Res. Spec. Educ. Needs*, 22, 352–367.
- Andreou, G., and Galantomos, I. (2009). Conceptual competence as a component of second language fluency. *J. Psycholinguist. Res.* 38, 587–591. doi: 10.1007/s10936-009-9122-6
- Burenhult, N. (2023). Sustainability and semantic diversity: a view from the Malayan rainforest. *Top. Cogn. Sci.* 15, 546–559. doi: 10.1111/tops.12654
- Buts, J., Pięta, H., Ivaska, L., and Hadley, J. (2023). Indirect translation and sustainable development. *Transl. Spaces* 12, 167–176. doi: 10.1075/ts.00031.but
- Caldwell, B., Cooper, M., Reid, L. G., Vanderheiden, G., Chisholm, W., Slatin, J., et al. (2008). Web content accessibility guidelines (WCAG) 2.0. *WWW Consortium (W3C)* 290, 5–12.
- Campoy-Cubillo, M. C. (2019). “Multidimensional networks for functional diversity in higher education: the case of second language education” in *Second language acquisition-pedagogies, practices and perspectives*. ed. C. Savvidou (London: Intech Open).
- Cooms, S. (2023). Decolonising disability: weaving a Quandamooka conceptualisation of disability and care. *Disabil. Soc.*, 1–24. doi: 10.1080/09687599.2023.2287409
- Council of Europe (CEFR). (2018). Common European framework of reference for languages: learning, teaching, assessment. Companion volume with new descriptors. Strasbourg, France: Council of Europe (Modern Languages Division).
- Higginbotham, J. (1998). Conceptual competence. *Philos. Issues* 9, 149–162. doi: 10.2307/1522965
- Kilgariff, A., Baisa, V., Bušta, J., Jakubíček, M., Kovář, V., Michelfeit, J., et al. (2014). The sketch engine: ten years on. *Lexicography* 1, 7–36. doi: 10.1007/s40607-014-0009-9
- Lomas, T. (2016). Towards a positive cross-cultural lexicography: enriching our emotional landscape through 216 ‘untranslatable’ words pertaining to well-being. *J. Posit. Psychol.* 11, 546–558. doi: 10.1080/17439760.2015.1127993
- Lőrincz, M. L. (2024). Language teaching challenges through the lens of corpus linguistics. *TEFLIN J.* 35, 40–65. doi: 10.15639/teflinjournal.v35i1/40-65
- Ma, Q., Yuan, R. E., Cheung, L. M. E., and Yang, J. (2022). Teacher paths for developing corpus-based language pedagogy: a case study. *Comput. Assist. Lang. Learn.* 37, 461–492. doi: 10.1080/09588221.2022.2040537
- Maijala, M., Gericke, N., Kuusalu, S. R., Heikkola, L. M., Mutta, M., Mäntylä, K., et al. (2024). Conceptualising transformative language teaching for sustainability and why it is needed. *Environ. Educ. Res.* 30, 377–396. doi: 10.1080/13504622.2023.2167941
- McEnery, T., and Xiao, R. (2011). “What corpora can offer in language teaching and learning” in *Handbook of research in second language teaching and learning* (vol. 2). ed. E. Hinkel (London: Routledge), 364–380.
- Nayak, P. S., and Raval, R. J. (2024). Fostering global sustainability: the role of English language in development. *Educ. Admin. Theory Pract.* 30, 1782–1785. doi: 10.53555/kuey.v30i1.6589
- Nied Curcio, M. (2023). Lexicography, culture and mediation. Or why a good lexicographer must also be a good cultural mediator. *Lexikos* 33, 95–106.
- Norri, J. (2018). Definitions of some sensitive medical words in dictionaries of English. *Int. J. Lexicogr.* 31, 253–273.
- Nunan, D. (1989). Designing tasks for the communicative classroom. Cambridge: Cambridge University Press.
- O’keefe, A., McCarthy, M., Carter, R. (2007). From corpus to classroom: language use and language teaching. Cambridge University Press.
- Palacios, A., Romañach, J., Vázquez Ferreira, M. A., and Ferrante, C. (2012). Functional diversity, bioethics and sociological theory: a new approach to disability. *Intersticios Rev. Sociol. Pensamiento Crítico* 6, 115–130.
- Rabang, N. J., West, A. E., Kurtz, E., Warne, J., and Hiratsuka, V. Y. (2023). Disability decolonized: indigenous peoples enacting self-determination. *Dev. Disabil. Network J.* 3, 132–145. doi: 10.59620/2694-1104.1069

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Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/feduc.2024.1450096/full#supplementary-material>

APPENDIX 1

Text on disability (reading resource, part of the learning task).

APPENDIX 2

Questionnaire on functional diversity tasks.

- Rice, D. R., and Zorn, C. (2021). Corpus-based dictionaries for sentiment analysis of specialized vocabularies. *Political Sci. Res. Methods* 9, 20–35. doi: 10.1017/psrm.2019.10
- Romañach, J., and Lobato, M. (2005). “Functional diversity, a new term in the struggle for dignity in the diversity of the human being” in Independent Living Forum (vol. 10) (Valencia, Spain: European Network on Independent Living).
- Sass, W., Boeve-de Pauw, J., Olsson, D., Gericke, N., De Maeyer, S., and Van Petegem, P. (2020). Redefining action competence: the case of sustainable development. *J. Environ. Educ.* 51, 292–305. doi: 10.1080/00958964.2020.1765132
- Servaes, J., and Yusha'u, M. J. (Eds.) (2023). *SDG18 communication for all: The missing link between SDGs and global agendas*. London: Palgrave Macmillan.
- Shume, T. J. (2023). Conceptualising disability: a critical discourse analysis of a teacher education textbook. *Int. J. Incl. Educ.* 27, 257–272. doi: 10.1080/13603116.2020.1839796
- Sinakou, E., Donche, V., Boeve-de Pauw, J., and Van Petegem, P. (2019). Designing powerful learning environments in education for sustainable development: a conceptual framework. *Sustain. For.* 11:5994. doi: 10.3390/su11215994
- Stathopoulou, M., Gauci, P., Liontou, M., and Melo-Pfeifer, S. (2023). *Mediation in teaching, Learning and Assessment (METLA): A teaching guide for language educators*. Strasbourg, France: Council of Europe.
- United Nations. (2015). Sustainable development goals (SDGs) and disability. Available at: <https://social.desa.un.org/issues/disability/sustainable-development-goals-sdgs-and-disability> (Accessed June 28, 2024).
- United Nations. (2016). Convention on the rights of persons with disabilities. ADOPTED 12 December 2006 by sixty-first session of the general assembly by resolution a/RES/61/106. Office of the High Commissioner for human rights (OHCHR) 1996–2024. Accessed at: <https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-persons-disabilities> (Accessed June 16, 2024).
- Weder, F. (2023). Cultivation of sustainability in a discourse of change: perspectives on communication for sustainability as new “norm” and principle of action in socio-ecological transformation processes. *J. Lang. Politics* 22, 577–600. doi: 10.1075/jlp.22122.wed
- Yusha'u, M. J., and Servaes, J. (2023). “Conclusion: SDG18-communication for all—neither too late, nor too early” in SDG18 communication for all, Volume 2. Sustainable Development Goals Series. eds. J. Servaes and M. J. Yusha'u (London: Palgrave Macmillan).



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Beyond barriers: exploring foreign language learning experiences of students with diverse learning needs in four European countries

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While foreign language learning is increasingly recognized as crucial for educational and social inclusion, the experiences of students with diverse learning needs in foreign language classrooms remain understudied. This study investigated the relationship between Personal Engagement (PE) and Learning Attitudes (LA) among students with diverse learning needs in foreign language learning contexts across four European countries (Greece, Germany, Slovenia, and Poland). The study involved 95 students (aged 8–25) with various learning needs: visual impairment ($n = 16$), deafness/hard of hearing ($n = 14$), physical/motor impairment ($n = 32$), and learning difficulties ($n = 33$). Data were collected through interviews and standardized questionnaires examining both PE and LA, with findings analyzed using both qualitative and quantitative methods. Results revealed that LA scores consistently exceeded PE scores across all groups, with students with physical impairments showing the strongest correlation between engagement and attitudes ($r = 0.674$, $p < 0.001$), while students with visual impairments demonstrated high LA despite moderate engagement levels. Students with diverse learning needs maintain remarkably positive attitudes toward foreign language learning despite varying engagement levels, suggesting that educational barriers may be more related to access and delivery methods than to students' willingness to learn. This emphasizes the need for tailored support strategies that can transform positive attitudes into fuller engagement across different types of learning needs.

KEYWORDS

foreign language learning, diverse learning needs, personal engagement, learning attitude, inclusive education, cross-national study, EFL

1 Introduction

Foreign language learning represents a fundamental aspect of modern education, yet its accessibility and effectiveness for students with diverse learning needs remains a significant challenge in educational systems worldwide. We use the term 'students with diverse learning needs' rather than 'students with disabilities' to recognize that each learner brings unique strengths to the language learning process. As defined by Chilla et al. (2024, p. 6), diverse learning needs encompass "various backgrounds, developmental stages, skills and abilities,

identities, and general physiological and psychological features of learners that might affect the current learning process or hinder the accessibility of content.” This terminology aligns with contemporary inclusive education principles that view learning differences as natural human variation rather than limitations to overcome.

While students with diverse needs have been shown to have the same educational needs as their peers without any diagnosed learning needs, these needs often remain unmet to a significant extent (Groce, 2004). Research has demonstrated that students receiving foreign language instruction exhibit cognitive benefits in reasoning, attentional focus, oral language skills, and overall school performance (Wight, 2015). Despite these documented benefits, access to quality foreign language instruction is frequently limited for students with diverse learning needs (Sparks, 2016). Much of the existing research has focused predominantly on learning challenges rather than exploring the potential benefits students with diverse needs may derive from foreign language learning. This limitation mindset has perpetuated concerns that students with diverse learning needs might become confused by learning a foreign language, potentially affecting their first language development and overall academic progress. However, strong evidence suggests that students with diverse needs can successfully acquire a second language when provided with appropriate accommodation and sufficient time (Simon-Cerejido and Gutierrez-Clellen, 2014).

A significant gap exists in our understanding of how these diverse needs interact with students’ Personal Engagement (PE) and Learning Attitudes (LA) in foreign language contexts. While previous research has explored various aspects of foreign language learning for specific disability groups, few studies have attempted to compare experiences across different types of disabilities or examine these experiences in multiple national contexts. Furthermore, the relationship between students’ engagement with foreign language learning and their attitudes toward it remains largely unexplored for learners with diverse needs.

This study, conducted as part of the SPLENDID project (Supporting Foreign Language Learning for Students with Disabilities, grant agreement 2022-1-EL01-KA220-SCH-000089364) funded by the Hellenic National Authority IKY of the Erasmus+ programme, aims to address these gaps by investigating the foreign language learning experiences of students with diverse needs across four European countries. The project, led by the University of Macedonia, brings together nine partners, including five universities: the National and Kapodistrian University of Athens, Pädagogische Hochschule Heidelberg PHHD (Heidelberg University of Education), the John Paul II Catholic University of Lublin in Poland, and the University of Ljubljana in Slovenia.

Through this investigation, we seek to contribute to a more nuanced understanding of how different types of learning needs influence foreign language learning experiences, ultimately informing more effective and inclusive pedagogical practices. This research represents a step toward understanding the actual aspirations, motivations and challenges, of students with diverse learning needs, ultimately contributing to the development of more inclusive and effective foreign language learning opportunities that benefit all learners.

2 Literature review

The concept of inclusive pedagogy in education has gained significant attention in recent years. According to Stentiford and Koutsouris (2021), two-thirds of studies on inclusive pedagogy in

Higher Education were published between 2010 and 2018, highlighting the growing interest in this field. At its core, inclusive pedagogy represents an approach that views “every learner as an equally unique individual deserving of enhanced learning opportunities and support” (Florian, 2015a). This perspective moves away from treating students with diverse learning needs as ‘others’ who require special treatment. A significant body of research challenges the common belief that teaching students with diverse learning needs requires specialized expertise. Studies have shown that successful pedagogical practices in special education settings closely mirror those required in mainstream classrooms (Davis and Florian, 2004; Florian and Linklater, 2010). Historically, teachers’ beliefs about inclusive education have evolved considerably. Early studies (Lyser et al., 1994; Avramidis et al., 2000; Marshall et al., 2002; Campbell et al., 2003) documented how teachers generally believed that supporting students with diverse learning needs required specialized teaching approaches. However, contemporary research demonstrates that effective teaching practices can benefit all students when properly implemented, regardless of their individual needs (Florian and Linklater, 2010). This understanding is particularly relevant for foreign language education, where teachers often express concerns about their ability to support learners with diverse learning needs.

Learning a foreign language involves not only cognitive competencies but also social and emotional factors that significantly impact the learning process (Domagała-Zyśk and Podlowska, 2024). As Krashen (1985) emphasized, foreign language learning is accompanied by an “emotional filter” that can lead to either success or failure depending on the emotions involved. Recent research has shifted focus from studying only difficulties and anxiety to exploring the joy and inner motivation of foreign language learning (Dewaele and MacIntyre, 2014, 2016). In the context of positive psychology in education, key principles include using positive emotions, fostering engagement, building relationships, and experiencing achievements (Seligman, 2018). For foreign language learning specifically, factors such as student well-being, empathetic communication, and mindfulness have been identified as crucial elements (Dewaele and MacIntyre, 2014). Studies have shown that positive emotions correlate with better foreign language learning outcomes (Liu and Wang, 2021), higher student engagement (Pekrun et al., 2007), and increased willingness to communicate in a foreign language (Khajavy et al., 2018). The joy of learning has been found to manifest in three dimensions: positive learning environment, positive personal attitude, and positive relationships with teachers and other students (Dewaele and MacIntyre, 2016).

The importance of these emotional and psychological factors becomes particularly crucial when considering students with diverse learning needs in foreign language learning. As Rødbroe and Janssen (2006) note, sensory impairments can significantly impact the creation and maintenance of interpersonal relationships, which are fundamental to the language learning process. When students have the ability to influence both the content and methods of their learning, they are more likely to participate actively—a factor that is vital for re-engaging those at risk of dropping out (Barry and Choules, 2017). The development of warm, secure, and trusting relationships between teachers and students becomes especially crucial for educating these students (Clark, 2000), as these relationships can significantly influence student motivation and engagement in foreign language learning (Deci et al., 1991).

Among students with diverse learning needs, those with sensory impairments face unique challenges in the foreign language classroom. Visual impairments significantly impact foreign language learning, as students miss out on incidental learning opportunities that sighted students naturally acquire through observation (Corn and Erin, 2010; D'Andrea and Siu, 2015). Research highlights the crucial role of implementing new methodological approaches, including Information Communication Technology (ICT) and assistive technology, to enhance foreign language teaching practices for visually impaired students, though this requires proper professional development and management (Al Siyabi et al., 2022; Cárdenas and Inga, 2021). Similarly, for students who are deaf or hard of hearing, foreign language learning presents both unique challenges and opportunities for growth (Domagała-Zyśk et al., 2021). Recent studies have explored various aspects of language acquisition for these students, including reading comprehension, writing skills, and visual listening strategies (Domagała-Zyśk and Podlowska, 2024).

Learning disabilities, particularly dyslexia, present another significant area of consideration in foreign language education. Research indicates that dyslexia affects not only first language acquisition but also significantly impacts foreign language learning, requiring special consideration of learners' needs and appropriately trained teachers (Nijakowska, 2019). Learners with dyslexia experience varying degrees of difficulty in foreign language literacy, both in mainstream and special education settings (Kormos, 2017a, 2017b; Nijakowska, 2020; Reid, 2016), with challenges particularly pronounced in languages with deep orthographic systems like English (Nijakowska et al., 2016). However, most dyslexic students can be successfully integrated into foreign language education with appropriate adjustments and thoughtful implementation of language learning strategies (Nijakowska et al., 2016). Multi-sensory teaching approaches have proven particularly effective, helping these learners process information through their strongest learning channels while strengthening weaker areas (Sparks and Miller, 2000; Birsh, 2005). Additionally, the development of technology-assisted learning tools has shown promise in supporting dyslexic learners' foreign language acquisition (Crombie, 2013).

Students with physical disabilities represent another group requiring specific consideration in foreign language education. These students experience diverse challenges in foreign language learning, with their performance spectrum ranging from normal giftedness to varying cognitive abilities (Boenisch, 2016). While many demonstrate advanced communicative skills, they often require additional support with structured learning, frequent revision, and may face challenges with self-directed learning and information transfer (Bergeest et al., 2019). The contemporary understanding of language errors has evolved to view mistakes as a natural part of the learning process rather than failures (Pawlak, 2020), a perspective that has helped reduce anxiety and increase confidence among all learners with diverse educational needs.

3 Methodology

This exploratory mixed-methods study employed a cross-national approach to explore the foreign language learning experiences of students with diverse learning needs. Based on the identified gaps in current research and the need for better understanding of foreign

language learning experiences among students with diverse learning needs, this study aimed to investigate the following research questions:

RQ1: What is the relationship between PE and LA across different types of learning needs in the foreign language classroom?

RQ2: How do PE and LA in foreign language learning compare across the four European countries (Greece, Germany, Slovenia, and Poland) for students with diverse learning needs?

RQ3: To what extent do educational factors (length of language study, school type, and language proficiency level) influence PE and LAs among students with diverse learning needs who learn EFL?

3.1 Ethical considerations

The study received ethical approval from research committees in all four participating countries (Greece, Germany, Slovenia, and Poland), following their respective institutional and national guidelines for research with vulnerable populations. Ethical protocols were strictly followed to protect participant privacy and ensure data integrity. All student names were replaced with numerical codes during data collection and analysis, and any potentially identifying details were removed from interview transcripts. For all participants, parental consent was obtained alongside student assent. To validate interview data authenticity, all interviews were audio-recorded with permission and transcribed verbatim, with translations verified by bilingual researchers from each participating country. Interview protocols were standardized across all four countries to ensure consistency in data collection.

3.2 Participants

The study included 95 participants across four European countries (Greece: 16, Germany: 24, Slovenia: 23, Poland: 32). The study's age range was set at 8–18 to target primary and secondary students. However, an evidence-based exception was implemented for the Slovenian cohort. Specifically, seven secondary students aged 18–25 who had visual impairments, learning difficulties and mobility impairments, attending special education secondary school were included in the sample. This methodological decision aligns with established special education frameworks that acknowledge extended educational trajectories for students with disabilities, particularly in secondary settings where individualized learning pace takes precedence over standardized age progression. In special education settings, particularly at the secondary level, it is common and pedagogically appropriate to find students who are older than the typical age range for their educational level, as these students often require additional time to complete their education while accommodating their individual learning pace and specific needs. Participants represented diverse learning needs including visual impairment ($n = 16$), Deafness/Hard of Hearing ($n = 14$), physical/motor impairment ($n = 32$), and specific learning difficulties ($n = 33$). Some participants had comorbidities. Such participants were placed in one of the groups (e.g. a Slovenian deaf student was placed in the group with physical/motor impairments). It should be noted that a

broad conceptualization of specific learning difficulties (SpLD) as an umbrella term encompassing overlapping challenges was adapted. While SpLD traditionally includes conditions such as dyslexia, dyspraxia/DCD, dyscalculia, and ADHD, we also included 6 students from Poland with Autism Spectrum Disorder (ASD) in this category for analytical purposes. This pragmatic grouping is supported by both research and policy frameworks. A meta-analysis of 11 studies by Foti et al. (2015) found that individuals with ASD show implicit learning patterns similar to those with other learning differences, demonstrating important commonalities in learning processes. Furthermore, the Individuals with Disabilities Education Act (IDEA) defines specific learning disabilities as “a disorder in one or more of the basic psychological processes involved in understanding or in using language” (Old Colony Regional Vocational Technical High School, n.d.). While IDEA distinguishes between categories of disabilities, the shared cognitive processing patterns and high comorbidity rate justify examining ASD within this broader analytical framework, particularly for educational research purposes. This broader classification approach was important for ensuring robust statistical comparisons across our cross-national sample, while recognizing that these conditions share common features in how they affect information processing, ranging from mild to severe impacts on literacy, language, and organizational skills. A variety of sampling methods, tailored to the context of each country, were used to ensure the inclusion of students with a range of challenges, including visual impairments, Deafness/Hard of Hearing, learning difficulties, and mobility/physical impairments. The study's inclusion criteria required participants to be officially diagnosed with a disability by their respective national authorities, to be actively learning at least one foreign language and to be enrolled in primary or secondary education

in any type of school (i.e., mainstream, special school). While the study was open to students learning any foreign language, all participants were learning English, with some additionally studying other languages such as German or French.

3.3 Greece

In Greece, 16 students with visual impairments, Deafness/Hard of Hearing or hard of hearing, learning difficulties, and mobility impairments were recruited from mainstream schools, primary or/and secondary education. Ten students attended mainstream classrooms with a shadow teacher, who is a certified Learning Support Assistant (LSA), by their side, providing continuous support throughout all classes (Table 1).

3.4 Germany

The data from the German context presents information about 24 students with diverse needs learning English as a foreign language. The sample includes students aged 9 to 18 years, with the largest group comprising students with physical/motor impairments including ADHD (13 students) and 3 with epilepsy. The remaining students are distributed across specific learning difficulties (6 students), Deafness/Hard of Hearing (2 students). Germany has no participant who has visual impairment. Most students attend either special needs schools (primarily those with physical impairments) or mainstream secondary schools, and demonstrate a wide range of language proficiency levels from A1 to B2, with A1 being the most common level (Table 2).

TABLE 1 Profile of Greek students with diverse needs in EFL education ($N = 16$).

Type of disability	Sex	Age	CEFR level	Years learning English	Type of school
Visual Impairment	F (2), M (2)	15, 15, 17, 17	A2 (3), B2 (1)	4–6 years (2), 7–10 years (2)	Mainstream class with LSA (2), Mainstream class (2)
Deafness/Hard of hearing	F (3), M (1)	11, 14, 14, 16	A1 (1), A1 (1), B2 (1), C1 (1)	1–3 years (1), 7–10 years (3)	Mainstream class with LSA (2), Mainstream class (2)
Specific learning difficulties (Dyslexia)	F (1), M (3)	13, 14, 17, 18	B1 (1), B2 (2), C1 (1)	4–6 years (1), 7–10 years (3)	Mainstream class with LSA (4)
Mobility/Physical disabilities (inc. ADHD)	F (1), M (3)	12, 12, 15, 17	A2 (1), B1 (2), C1 (1)	4–6 years (3), 7–10 years (1)	Mainstream class (2), Mainstream class with LSA (2)

TABLE 2 Profile of German students with diverse needs in EFL education ($N = 24$).

Type of disability	Sex	Age	CEFR level	Years learning English	Type of school
Physical/Motor Impairments (inc. ADHD)	F (3), M (10)	10, 11, 11, 11, 12, 13, 13, 14, 14, 15, 16, 16, 18	A1 (2), A1 (8), A2 (1), B1 (2)	1–3 years (2), 4–6 years (6), 7–10 years (5)	Special needs (8), Mainstream-Secondary (5)
- Epilepsy	F (2), M (1)	13, 13, 14	A1 (1), A1 (2)	1–3 years (1), 4–6 years (2)	Special needs (3)
Specific learning difficulties (Dyslexia)	F (2), M (4)	11, 12, 15, 16, 16, 16	A1 (1), A2 (1), B1 (3)	4–6 years (2), 7–10 years (4)	Mainstream-secondary (6)
Deafness/Hard of hearing	M (2)	9, 17	A1 (1), B2 (1)	1–3 years (1), 7–10 years (1)	Special needs (1), Mainstream Secondary (1)

3.5 Poland

The data presents information about 32 Polish students with diverse needs learning English as a foreign language. The students range in age from 8 to 17 years, attending both mainstream and special education settings. The sample represents five distinct categories of disabilities: visual impairments (8 students), Deafness/Hard of Hearing (7 students), learning disabilities (10 students), autistic spectrum disorder (6 students), and physical disabilities (1 student). For analytical purposes, students with autism ($n = 6$) were included in the broader category of specific learning difficulties. This decision was made to ensure more robust statistical comparisons (Table 3).

3.6 Slovenia

The data presents a comprehensive overview of 23 Slovenian students with diverse needs studying English as a foreign language. The students range in age from 9 to 25 years, attending mainstream primary and secondary schools. The age limit for the study was 8–18, to include primary and secondary students, but, as there were 7 students in secondary education who were over 18, they were also integrated into the sample. Slovenia has no participant, who would be only deaf or hard of hearing, since a deaf student was placed in the group with motor/physical impairments due to present comorbidity. The sample includes three types of disabilities: physical impairments (8 students), visual impairments (4 students), specific learning difficulties (11 students) (Table 4).

3.7 Data collection and analysis

Data was collected through semi-structured interviews lasting 30–60 min. The interviews gathered both qualitative and quantitative

data, including information about participants' language learning contexts and proficiency levels. Students' experiences were assessed using items from the Foreign Language Enjoyment Scale (Dewaele and MacIntyre, 2014), with responses recorded on a 5-point Likert scale. The qualitative analysis focused on three key questions: what students enjoy most about English, what makes English learning difficult for them, and their future plans for language learning.

3.7.1 Quantitative analysis

For this study, we constructed two distinct variables—PE and LA—by selecting and categorizing specific items from Dewaele and MacIntyre's (2014) Foreign Language Enjoyment (FLE) scale. While the original FLE scale is more extensive, we focused on items that specifically addressed individual engagement and attitudinal aspects of language learning for students with diverse needs.

The PE variable was constructed using six items from the FLE scale that specifically capture active involvement and personal investment in learning ("I can be creative," "I do not get bored"), emotional connection ("I enjoy learning," "I feel as though I'm a different person"), and achievement experiences ("I've learnt interesting things," "I feel proud of my accomplishments"). The LA variable was formed using seven items that reflect broader attitudes toward the learning environment and process, including error acceptance, sense of belonging, and classroom atmosphere.

The reliability analysis supported this two-construct approach, with both scales showing good internal consistency (PE: $\alpha = 0.752$; LA: $\alpha = 0.731$). To analyze these two constructs, the following statistical approaches were employed. Paired t-tests were used to examine differences between PE and LA scores within the four types of diverse learning needs, while Pearson correlations assessed the relationships between PE and LA scores within each type of learning need. The non-parametric Kruskal-Wallis test was selected to analyze differences in PE and LA scores across geographical contexts and

TABLE 3 Profile of Polish students with diverse needs in EFL education ($N = 32$).

Type of disability	Sex	Ages (in years)	CEFR level	Years learning English	Type of school/setting
Visual impairments	F (4), M (4)	13, 13, 13, 13, 13, 14, 14, 14	A1 (6), B1 (2)	7–10 years (8)	Special education (7), Mainstream (1)
Deafness/Hard of hearing	F (3), M (4)	9, 12, 12, 16, 16, 17, 17	A1 (1), A2 (2), B2 (4)	4–6 years (2), 7–10 years (2), >10 years (3)	Special education (5), Mainstream (2)
Specific learning difficulties	F (3), M (7)	8, 10, 11, 11, 11, 14, 14, 14, 15, 16	pre-A1 (1), A1 (4), A2 (1), B1 (2), B2 (2)	1–3 years (1), 4–6 years (4), 7–10 years (5)	Mainstream classroom (10)
Autistic spectrum disorder	F (1), M (5)	11, 11, 12, 12, 13, 15	A1 (5), A2 (1), C1 (1)	4–6 years (4), 7–10 years (2)	Special education (4), Mainstream (2)
Physical disabilities (ADHD)	M (1)	13	A2	4–6 years	Mainstream classroom (1)

TABLE 4 Profile of Slovenian students with diverse needs in EFL education ($N = 23$).

Type of disability	Sex	Ages	CEFR level	Years learning English	Type of school
Physical impairments (a deaf/hard of hearing student is included in this group)	F (3), M (5)	16, 16, 17, 17, 19, 20, 21, 23	A2 (4), B1 (2), B2 (2)	4–6 years (1), 7–10 years (3), >10 years (4)	Primary (1), Secondary (7)
Visual impairments	F (2), M (2)	9, 12, 13, 21	A1 (2), B2 (1), C2 (1)	1–3 years (2), >10 years (2)	Primary (3), Secondary (1)
Specific learning difficulties (inc. ADD)	F (3), M (8)	10, 11, 11, 13, 13, 13, 14, 15, 16, 20, 25	A1 (1), A2 (4), B1 (1), B2 (3), C2 (1)	1–3 years (1), 4–6 years (2), 7–10 years (7), >10 years (1)	Primary (7), Secondary (4)

types of diverse learning needs. Where significant differences were found, DSCF pairwise comparisons were conducted for post-hoc analysis. Additional Kruskal-Wallis tests examined potential differences based on educational factors including length of language study, school type, and language proficiency level.

3.7.2 Qualitative analysis

The qualitative data from interviews were analyzed using thematic analysis following a systematic approach. Initial deductive analysis was guided by three main categories derived from the interview questions: sources of Foreign Language Enjoyment (Q1: “What do you enjoy most about English?”), perceived challenges in language learning (Q2: “What makes it hard/difficult for you to learn English?”), and future language learning aspirations (Q3: “What are your plans for learning/using languages in the future?”). Within each disability type, responses were coded and analyzed to identify recurring patterns and themes. To ensure authenticity in representing student voices, direct quotes were selected and contextualized with relevant demographic information including age, CEFR level, country, and educational setting.

4 Results

4.1 Statistical analysis of PE and LA

To answer the 1st research question “What is the relationship between PE and LA across different types of learning needs in the foreign language classroom?” the analysis, presented in Table 5, reveals distinct patterns across different learning needs groups. The relationship between PEPE and LA varies significantly across different types of learning needs, revealing distinct patterns for each group while maintaining some consistent trends.

The analysis revealed distinct patterns in both the relationship between PE and LA scores (measured by correlations) and the difference between these scores (measured by paired *t*-tests) across disability types. The paired *t*-tests examined whether the differences between PE and LA scores within each group were statistically significant, while the correlations assessed the strength and significance of the relationship between these two measures.

The Physical Impairment group ($N = 32$) demonstrates the strongest correlation between PE and LA ($r = 0.674$, $p < 0.001$), showing a robust and highly significant relationship. This group achieved both high PE scores ($M = 3.64$, $SD = 0.86$) and high LA scores ($M = 3.99$, $SD = 0.79$). The *t*-test results ($t = 1.63$, $p = 0.104$) indicate that the difference between PE and LA scores was not

statistically significant, suggesting relatively balanced levels of engagement and attitudes. This strong, significant correlation suggests that for students with physical impairments, their level of engagement is closely tied to their attitudes toward language learning.

The Learning Difficulties group ($N = 33$) shows a moderate to strong correlation ($r = 0.515$, $p = 0.001$), despite having the lowest PE scores ($M = 2.99$, $SD = 0.73$) among all groups. While maintaining relatively positive LA ($M = 3.56$, $SD = 0.67$), the significant *t*-test result ($t = 3.09$, $p = 0.002$) indicates a meaningful difference between PE and LA scores. The significant correlation indicates that even with lower overall engagement, there is a consistent relationship between how these students engage with and feel about language learning.

The Visual Impairment group ($N = 16$) presents an interesting pattern with a weak, non-significant correlation between PE and LA ($r = 0.152$, $p = 0.565$). Despite showing moderate PE scores ($M = 3.41$, $SD = 0.65$), this group achieved the highest LA scores ($M = 4.00$, $SD = 0.39$). The significant *t*-test result ($t = 3.04$, $p = 0.002$) confirms that the difference between PE and LA scores is statistically meaningful. The non-significant correlation suggests that for students with visual impairments, positive attitudes toward language learning persist regardless of their level of engagement.

The Deaf and Hard of Hearing group ($N = 14$) shows a moderate but non-significant correlation ($r = 0.313$, $p = 0.289$) and demonstrates relatively balanced scores between PE ($M = 3.40$, $SD = 0.84$) and LA ($M = 3.79$, $SD = 0.52$). The *t*-test results ($t = 1.38$, $p = 0.169$) indicate that the difference between PE and LA scores is not statistically significant. However, given the smaller sample size and non-significant correlation, we should interpret this relationship cautiously.

A consistent pattern emerges across all disability types: LA scores are invariably higher than PE scores, though this difference reaches statistical significance only for the Visual Impairment and Learning Difficulties groups ($p = 0.002$ for both). The Physical Impairment and Learning Difficulties groups, with the largest sample sizes ($N = 32$ and $N = 33$ respectively), provide the most robust evidence of the engagement-attitude relationship, showing significant correlations ($p < 0.001$ and $p = 0.001$ respectively). This suggests that while students generally maintain positive attitudes toward language learning, the strength and nature of the relationship between engagement and attitudes varies substantially based on the type of learning need.

These findings emphasize that while positive relationships between engagement and attitudes exist across all groups, the significant variations in the strength and nature of these relationships based on learning needs necessitate carefully tailored approaches. Such approaches should focus on leveraging the existing positive

TABLE 5 Comparison of PE and LA scores across different disability types: means, standard deviations, *t*-test results, and Pearson correlations.

Disability type	<i>N</i>	Personal engagement	Learning attitude	<i>t</i> -value	<i>p</i> (<i>t</i> -test)	Correlation (<i>r</i>)	<i>p</i> (corr)
Visual impairment	16	3.41 (0.65)	4.00 (0.39)	3.04	0.002*	0.152	0.565
Deaf and hard of hearing	14	3.40 (0.84)	3.79 (0.52)	1.38	0.169	0.313	0.289
Learning difficulties	33	2.99 (0.73)	3.56 (0.67)	3.09	0.002*	0.515	0.001**
Physical impairment	32	3.64 (0.86)	3.99 (0.79)	1.63	0.104	0.674	<0.001**

Values in parentheses represent standard deviations. *p*(*t*-test) indicates significance of paired *t*-tests comparing PE and LA scores within each group. Nnn(corr) indicates significance of Pearson correlations between PE and LA scores.

attitudes while addressing specific engagement challenges unique to each type of learning need, ultimately fostering more effective inclusive foreign language learning environments.

The strength of this correlation gains particular significance when considering the diverse characteristics of our sample. The sample at hand encompasses remarkable heterogeneity, including various types of learning challenges, a wide age range spanning from 8 to 25 years, and different educational settings ranging from mainstream to special needs schools across four distinct national educational contexts. Moreover, the robustness of this correlation becomes even more noteworthy when considering the potential additional barriers these students face in foreign language learning compared to typical learners. The cross-cultural nature of our data further strengthens these findings, as the relationship between engagement and attitude appears to transcend national educational systems, suggesting a universal pattern in how students with diverse learning needs experience foreign language learning. This consistency across such a heterogeneous sample provides compelling evidence for the fundamental relationship between PE and LA in inclusive foreign language education.

Figure 1 presents the analysis of PE and LA scores. All scores for both measures consistently fall within a moderate to high range (approximately 3.0 to 4.0 on a 5-point scale), indicating generally positive experiences across all groups. A noticeable trend is the slightly higher LA scores relative to PE scores across all groups, indicating that while students exhibit a positive attitude toward learning—such as motivation and resilience—their engagement, defined as active involvement and participation, may be less intense. This gap may reflect underlying challenges in engaging students fully, though it is important to note that engagement levels remain positive. Examining each group reveals nuanced differences. Students with visual impairments exhibit relatively high LA scores, implying particularly positive attitudes toward language learning, possibly due to effective

adaptive strategies or strong intrinsic motivation within this group. In contrast, students who are deaf or hard of hearing show lower PE scores (~ 3.40), hinting at potential engagement challenges that could stem from communication barriers or limited accessibility to language instruction. Similarly, students with learning difficulties report the lowest PE scores (~ 2.99), suggesting potential difficulties in maintaining engagement, possibly due to challenges in comprehension or processing that impact active participation. Students with physical impairments display the most balanced relationship between PE and LA scores, indicating that physical limitations may not significantly affect their engagement or attitudes toward language learning.

For the Visual Impairment group, the mean PE score is 3.41 with a relatively moderate SD of ± 0.67 , while the LA mean is higher at 4.00 with a low SD of ± 0.41 . This indicates that although students with visual impairments generally show varied levels of engagement, their attitudes toward learning are notably consistent and positive. The Deaf and Hard of Hearing group shows slightly more variability. The mean PE score is 3.40 with a higher SD of ± 0.88 , and the LA mean is 3.79 with an SD of ± 0.55 . The higher SD in PE indicates a broad range of engagement levels, reflecting individual differences in how students connect with their learning experiences. However, the lower variability in LA (± 0.55) suggests that, like the Visual Impairment group, students who are deaf or hard of hearing tend to have a relatively consistent and positive LA, despite differences in their engagement levels. In the Learning Difficulties group, the dispersion is more pronounced, with a mean PE score of 2.99 and a high SD of ± 0.74 . The LA mean is 3.56, with an SD of ± 0.68 . This higher variability in both PE and LA suggests a diverse range of experiences within this group. Some students with learning difficulties feel positively engaged and maintain a positive LA, while others struggle in both areas. This diversity implies that students with learning difficulties may benefit from more individualized support to address the wide range of engagement and attitude

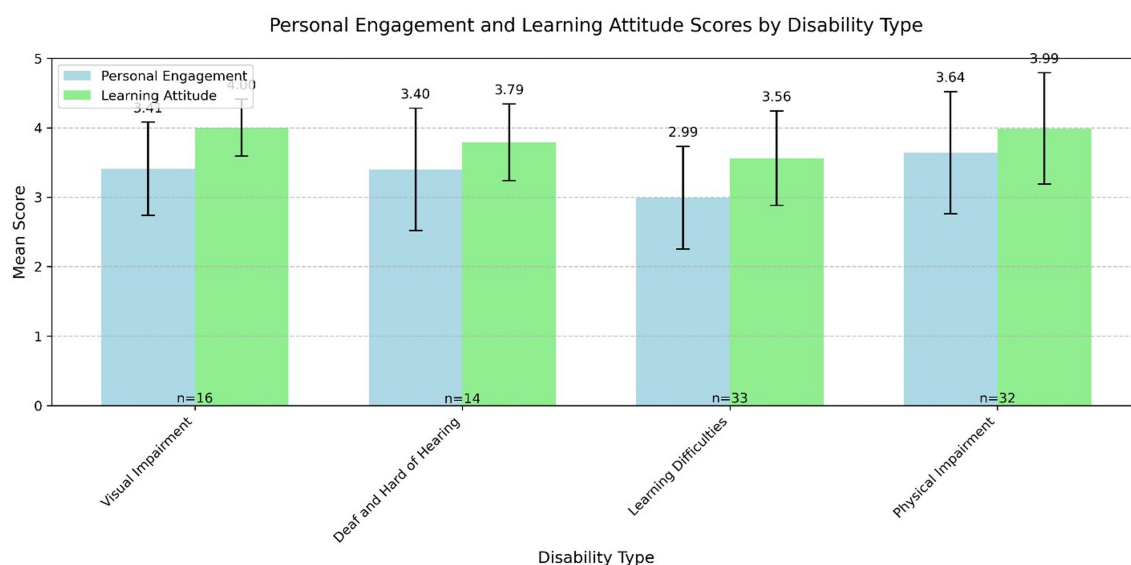


FIGURE 1

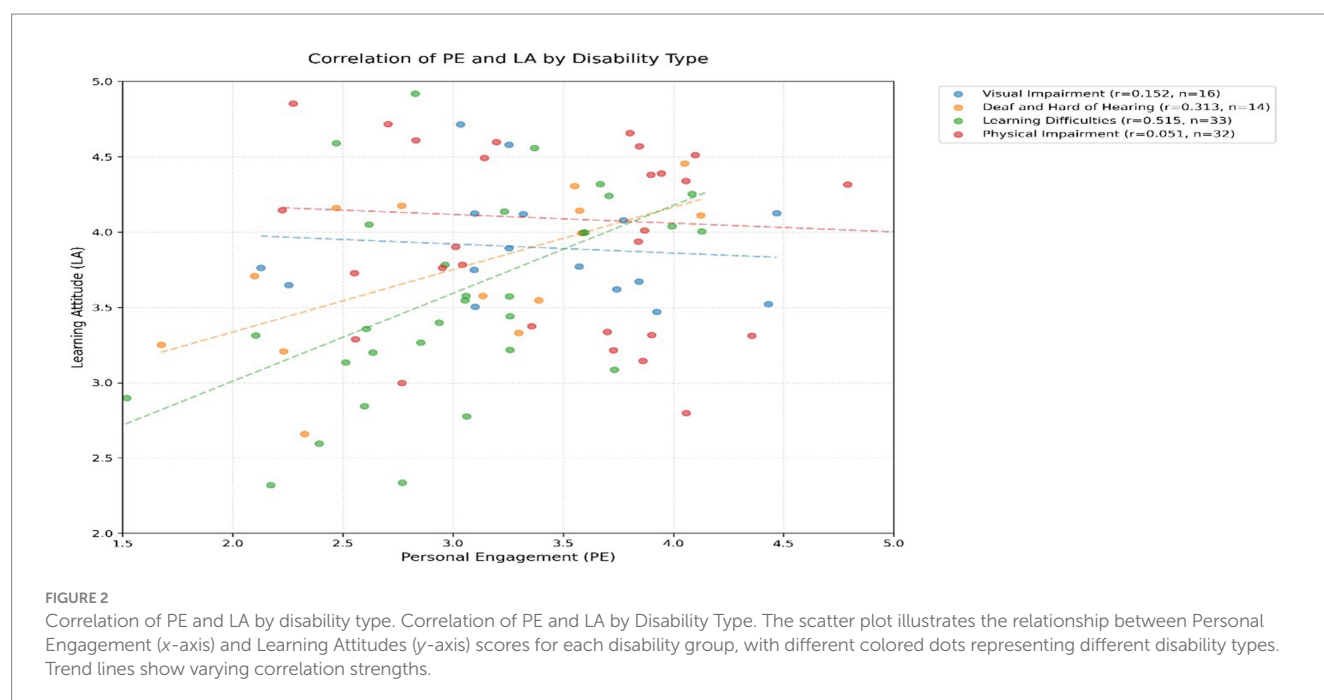
PE and LA scores by disability type. The bar graph displays mean scores on a 5-point Likert scale across four disability groups (Visual Impairment, Deaf/Hard of Hearing, Learning Difficulties, Physical Impairment). PE scores (blue bars) and LA scores (green bars) are compared, showing consistently higher LA scores across all groups, with error bars indicating standard deviations.

levels. For the Physical Impairment group, the mean PE score is 3.64 with a high SD of ± 0.88 , while the LA mean is 3.99 with a relatively low SD of ± 0.80 . The broad spread in PE scores shows that engagement levels vary widely within this group, likely reflecting individual differences in how physical limitations impact classroom participation and interaction. However, the more consistent LA scores (± 0.80) suggest that, on the whole, students with physical impairments share a generally positive and stable LA. This consistency in attitude, even with variable engagement, could indicate resilience or effective support strategies that help these students maintain a positive outlook on learning.

The presence of overlapping error bars across all groups implies that while differences in PE and LA scores exist, they are subtle and not likely statistically significant. This overlap suggests that students with different types of disabilities may share more similarities than differences in their foreign language learning experiences. The consistent, moderate-to-high scores across all groups indicate that, despite diverse needs, students generally approach language learning with a positive outlook. From an educational perspective, these findings suggest a need to focus on fostering engagement, particularly among students with hearing impairments or learning difficulties, while also acknowledging the generally positive attitude toward language learning observed across all groups.

Figure 2 shows the correlation between PE and LA across different disability types. The scatter plot reveals varying relationships between PE and LA for each group. Learning Difficulties shows a moderately strong positive correlation ($r = 0.515$), with points forming an upward trend as PE increases. The Visual Impairment group displays a weak correlation ($r = 0.152$), shown by a nearly flat trend line. The Deaf and Hard of Hearing group shows a moderate correlation ($r = 0.313$). The Physical Impairment group's data points suggest a strong positive correlation ($r = 0.674$), indicating that for these students, higher personal engagement is strongly associated with more positive learning attitudes.

For the Visual Impairment group, the mean PE score is 3.41 with a relatively moderate SD of ± 0.67 , while the LA mean is higher at 4.00 with a low SD of ± 0.41 . This indicates that although students with visual impairments generally show varied levels of engagement, their attitudes toward learning are notably consistent and positive. The Deaf and Hard of Hearing group shows slightly more variability. The mean PE score is 3.40 with a higher SD of ± 0.88 , and the LA mean is 3.79 with an SD of ± 0.55 . The higher SD in PE indicates a broad range of engagement levels, reflecting individual differences in how students connect with their learning experiences. However, the lower variability in LA (± 0.55) suggests that, like the Visual Impairment group, students who are deaf or hard of hearing tend to have a relatively consistent and positive learning attitude, despite differences in their engagement levels. In the Learning Difficulties group, the dispersion is more pronounced, with a mean PE score of 2.99 and a high SD of ± 0.74 . The LA mean is 3.56, with an SD of ± 0.68 . This higher variability in both PE and LA suggests a diverse range of experiences within this group. Some students with learning difficulties feel positively engaged and maintain a positive learning attitude, while others struggle in both areas. This diversity implies that students with learning difficulties may benefit from more individualized support to address the wide range of engagement and attitude levels. For the Physical Impairment group, the mean PE score is 3.64 with a high SD of ± 0.88 , while the LA mean is 3.99 with a relatively low SD of ± 0.80 . The broad spread in PE scores shows that engagement levels vary widely within this group, likely reflecting individual differences in how physical limitations impact classroom participation and interaction. However, the more consistent LA scores (± 0.80) suggest that, on the whole, students with physical impairments share a generally positive and stable learning attitude. This consistency in attitude, even with variable engagement, could indicate resilience or effective support strategies that help these students maintain a positive outlook on learning.



Overall, examining SD across these groups highlights notable patterns: while LA scores are generally consistent within most groups (especially Visual Impairment and Deaf and Hard of Hearing), PE varies more widely, particularly for students with Learning Difficulties and Physical Impairments. These findings suggest that while many students maintain positive learning attitudes, individualized strategies might be necessary to address diverse engagement needs, especially in groups with high PE variability. Perhaps the most significant finding is that despite varying levels of personal engagement, all groups maintain remarkably positive learning attitudes, suggesting that students across all types of learning needs retain a positive disposition toward language learning, even when their personal engagement levels might be lower. This pattern indicates that positive attitudes toward language learning persist independently of engagement challenges associated with different learning needs and types of disability.

Figure 3 illustrates the analysis of PE questions across different types of disabilities. Students with mobility impairments consistently demonstrated higher engagement scores across most items, with particularly strong responses in feeling “proud of accomplishments” ($M = 4.22$). In contrast, the learning difficulties group generally reported the lowest engagement scores, with notably low scores in the area of “do not get bored” ($M = 2.60$). Students with visual impairments showed a unique pattern, reporting exceptionally high scores for “learnt interesting things” ($M = 4.19$), while students with deafness/hard of hearing demonstrated relatively consistent moderate scores across most questions (ranging from 3.36 to 3.79). Interestingly, the question about feeling “as though I’m a different person” received consistently low scores (ranging from 2.06 to 2.71) across all disability types, suggesting this aspect of engagement might be less relevant or relatable for students with diverse learning needs, or for our sample, the meaning of the item was not clear to most of the respondents.

Figure 4 presents the analysis of LA questions across different types of disabilities. Students with visual impairments reported the highest scores for “It’s cool to know English” ($M = 4.56$) and “Making errors is part of the learning process” ($M = 4.50$). In contrast, students

with learning difficulties generally reported lower scores, particularly in “English classes—it’s fun” ($M = 3.15$). Students with mobility impairments showed strong scores in “It’s a positive environment” ($M = 4.25$) and “There is a good atmosphere” ($M = 4.00$). Meanwhile, students with deafness/hard of hearing had moderate scores across most items, with a notable peak in “English classes—it’s fun” ($M = 3.93$). These findings suggest that LA vary across disability types, with certain groups enjoying specific areas of the learning process while facing challenges in others.

To answer the second research question “How do PE and LA in foreign language learning compare across the four European countries (Greece, Germany, Slovenia, and Poland) for students with diverse learning needs?” the analysis reveals distinct patterns in how national contexts interact with diverse learning needs.

Table 6 presents the analysis of PE and LA across countries. There are strong positive correlations between PE and LA in several specific groups: Slovenia’s Learning Difficulties group ($r = 0.870$, $p = 0.002$), Visual Impairment group ($r = 0.808$, $p = 0.002$), and Physical Impairment group ($r = 0.684$, $p = 0.042$), Germany’s Physical Impairment group ($r = 0.514$, $p = 0.042$), Greece’s Hearing Impairment group ($r = 0.915$, $p = 0.002$), and Poland’s Hearing Impairment group ($r = 0.856$, $p = 0.002$). A consistent pattern emerged across all countries and disability types, where Learning Attitudes scores were invariably higher than Personal Engagement scores, with LA means ranging from 3.50 to 4.25 and PE means from 2.00 to 4.04. Greek students generally showed high attitude scores (LA = 4.14–4.25), while Polish students tended to report lower scores (PE = 2.77–3.33, LA = 3.50–3.88). However, it’s important to note that sample sizes varied considerably ($N = 1$ to $N = 16$), which affects the reliability of some measurements, particularly in groups with fewer than three participants where correlations could not be calculated. The analysis of Greek students’ data revealed an intriguing pattern: negative correlations between PE and LA for students with Visual Impairment ($r = -0.902$, $p = 0.002$) and Learning Difficulties ($r = -0.798$, $p = 0.002$). While these students reported relatively lower PE scores

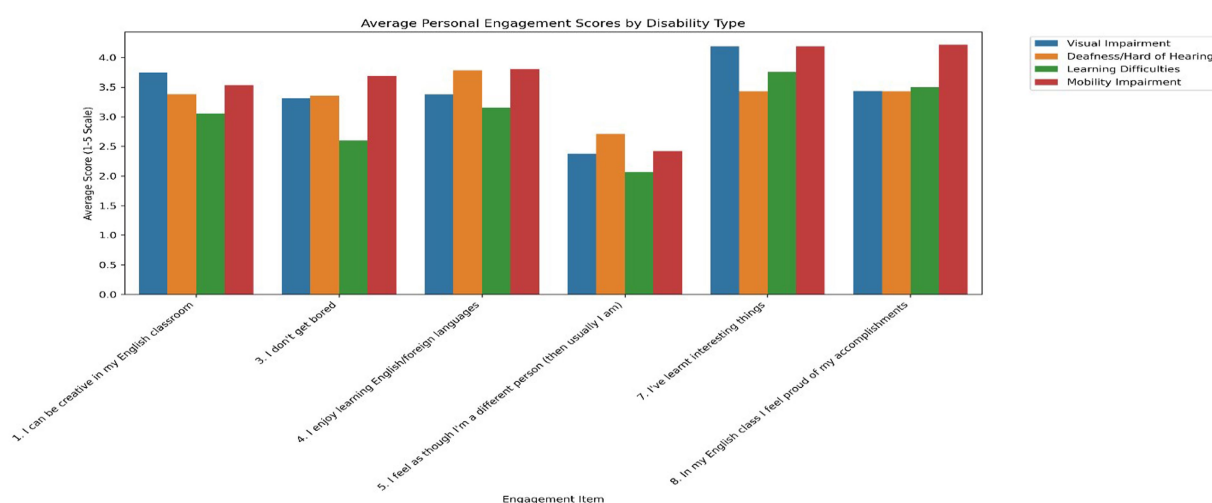


FIGURE 3

PE questions by disability type. The bar graph compares mean scores on six Personal Engagement questions across four disability categories (Visual Impairment, Deaf/Hard of Hearing, Learning Difficulties, Physical Impairment). Questions assess aspects like learning enjoyment, creativity, boredom, and sense of accomplishment, with scores ranging from 1 to 5 on a Likert scale.

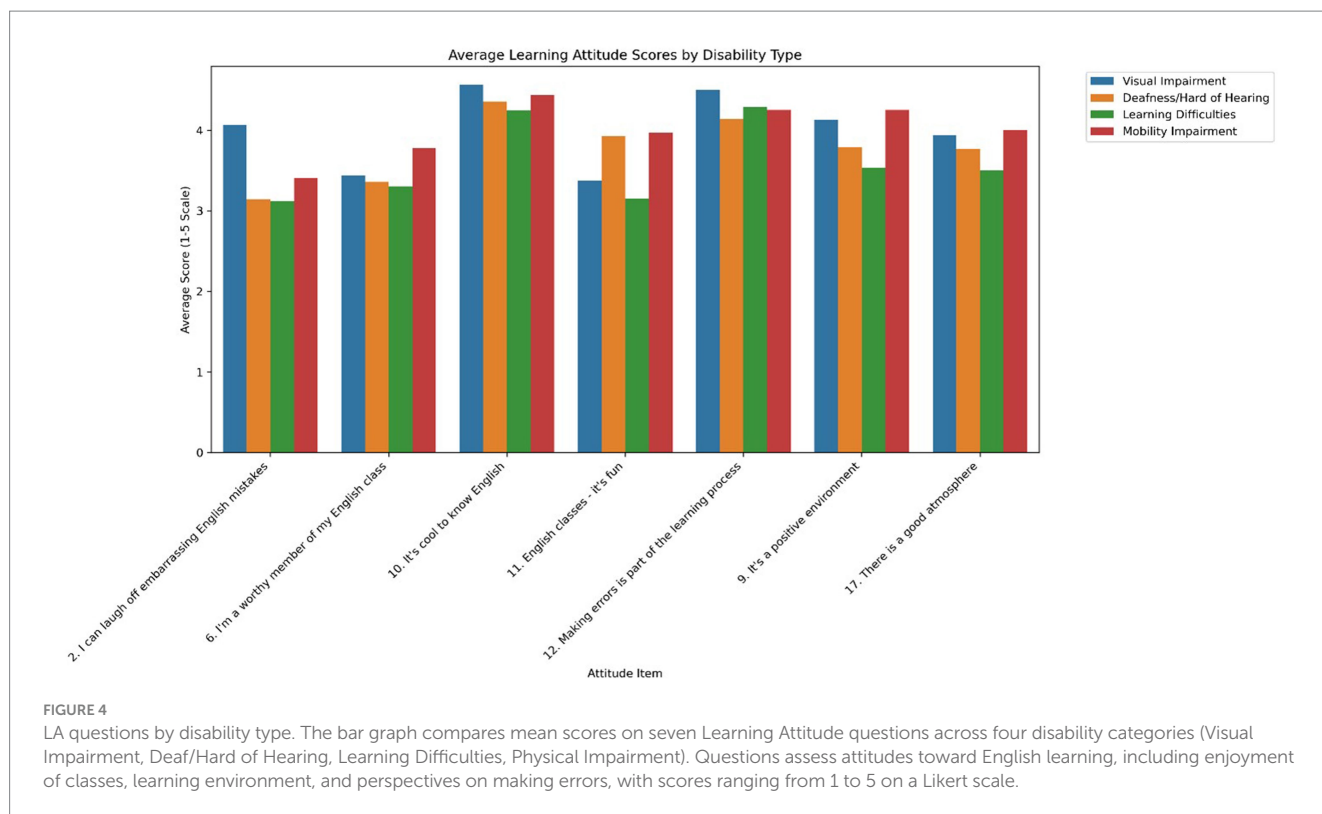


TABLE 6 PE and LA correlations across four European countries: analysis by disability type and country.

Country	Disability type	N	PE mean	LA mean	Correlation (<i>p</i> -value)
Slovenia	Learning difficulties	11	2.60	3.95	0.870 (<i>p</i> = 0.002)*
Slovenia	Visual impairment	4	4.04	3.93	0.808 (<i>p</i> = 0.002)*
Slovenia	Physical impairment	8	3.65	3.91	0.684 (<i>p</i> = 0.042)*
Germany	Learning difficulties	6	3.14	3.75	0.632 (<i>p</i> = 0.178)
Germany	Hearing impairment	2	3.33	4.00	–
Germany	Physical impairment	16	3.53	4.15	0.514 (<i>p</i> = 0.042)*
Greece	Hearing impairment	4	3.88	4.14	0.915 (<i>p</i> = 0.002)*
Greece	Visual impairment	4	3.04	4.21	–0.902 (<i>p</i> = 0.002)*
Greece	Learning difficulties	4	3.54	4.25	–0.798 (<i>p</i> = 0.002)*
Greece	Physical impairment	4	3.87	4.21	0.423 (<i>p</i> = 0.178)
Poland	Physical impairment	1	3.17	3.67	–
Poland	Hearing impairment	7	3.17	3.62	0.856 (<i>p</i> = 0.002)*
Poland	Learning difficulties	16	2.77	3.50	0.708 (<i>p</i> = 0.124)
Poland	Visual impairment	8	3.33	3.88	0.450 (<i>p</i> = 1.127)

(PE = 3.04 and 3.54 respectively), they maintained notably high LAs (LA = 4.21 and 4.25). This seemingly paradoxical relationship suggests that students might develop positive LAs (such as accepting mistakes, valuing English knowledge, and appreciating the learning environment) even when they experience challenges with PE (creativity, enjoyment, and personal accomplishment in class). This pattern could be attributed to effective support systems in Greek schools, where teachers might create supportive, positive learning environments that help students maintain optimistic attitudes toward language learning, even when they struggle with personal engagement.

Ten students (out of 16) in Greek mainstream classrooms were supported by Learning Support Assistants (LSAs), certified shadow teachers providing continuous support. This individualized support may explain the paradoxical relationship observed between personal engagement and learning attitudes among Greek students, contributing to positive attitudes despite lower engagement levels. The individualized support provided by LSAs may contribute to creating a positive and supportive learning environment, which could help students maintain positive attitudes towards language learning despite their lower levels of personal engagement. This finding is particularly

interesting because it might suggest these students have developed a resilient attitude toward learning despite their PE challenges. It could indicate that while they might struggle with active participation and feeling successful, they have maintained a positive mindset about learning English in general. These findings highlight the importance of distinguishing between PE and LAs in educational support strategies, as they can appear to operate independently rather than in parallel.

To further analyze the findings, Figure 5 presents the overall country means of LA and PE per country. The non-parametric Kruskal-Wallis test revealed statistically significant differences in participants' LAs across different countries at a significant level of $p < 0.001$. Analysis of LAs across the four participating countries revealed significant variations in mean scores, with Greek participants demonstrating the highest LA ($M = 4.21$), followed by German participants ($M = 3.96$), Slovenian participants ($M = 3.76$), and Polish participants ($M = 3.58$). DSCF pairwise comparisons identified two statistically significant differences: German participants showed significantly more positive LA compared to Polish participants ($p = 0.046$), and Greek participants demonstrated significantly higher LA than Polish participants ($p = 0.001$). While Slovenian participants' scores fell between those of Germany and Poland, these differences did not reach statistical significance. This pattern could suggest a north-south gradient in LA, with southern European participants (Greece) showing the most positive attitudes, central European participants (Germany, Slovenia) demonstrating moderately positive attitudes, and eastern European participants (Poland) reporting relatively lower, though still positive, LA. However, it's important to note that Poland had the largest sample size among all countries, which might influence these results, as larger samples tend to show more varied responses and potentially lower average scores compared to smaller samples which might skew toward more extreme positive values. If we do not take into account this important methodological consideration, the results might suggest meaningful cross-national differences in LA among students with diverse learning needs, with Greek and German students demonstrating particularly positive orientations toward foreign language learning compared to their

Polish counterparts. This pattern should be interpreted with consideration of the varying sample sizes across countries and their potential impact on the observed differences in attitudes.

The analysis revealed a similar pattern of variation in PE scores, with Greek participants demonstrating the highest mean engagement ($M = 3.58$), followed closely by German ($M = 3.50$) and Slovenian participants ($M = 3.46$), while Polish participants showed notably lower engagement scores ($M = 3.06$). The Kruskal-Wallis test indicated a significant overall difference between countries ($p = 0.034$), but subsequent pairwise comparisons with Bonferroni correction did not yield statistically significant differences between specific country pairs at the $p < 0.05$ level. The comparisons between Poland and Germany ($p = 0.215$) and between Poland and Greece ($p = 0.169$) approached but did not reach statistical significance. This pattern suggests that while there are observable differences in PE levels across countries, these differences are more subtle and less pronounced than those found in LA. This indicates that national educational contexts might have a more moderate influence on PE compared to their impact on LA. Additionally, the larger sample size in Poland compared to other countries may suggest that educational settings do not significantly influence the PE of students with diverse needs learning English as a Foreign Language (EFL). It is very probable that there are no meaningful differences between countries, so the second research question cannot be answered with precision.

To address the third research question "To what extent do educational factors (length of language study, school type, and language proficiency level) influence PE and LA among students with diverse learning needs?" additional statistical analyses were conducted to examine potential differences based on these three key educational variables. The Kruskal-Wallis tests revealed no statistically significant differences ($p > 0.05$) among groups for any of these variables. Specifically, neither the duration of foreign language learning experience, nor the educational level (primary vs. secondary education), nor the language proficiency level (from A1 to C2) appeared to significantly influence students' PE or LA. Additionally, the Kruskal-Wallis test revealed no statistically significant differences ($p > 0.05$) between male and female students in terms of PE or LA, suggesting that sex did not

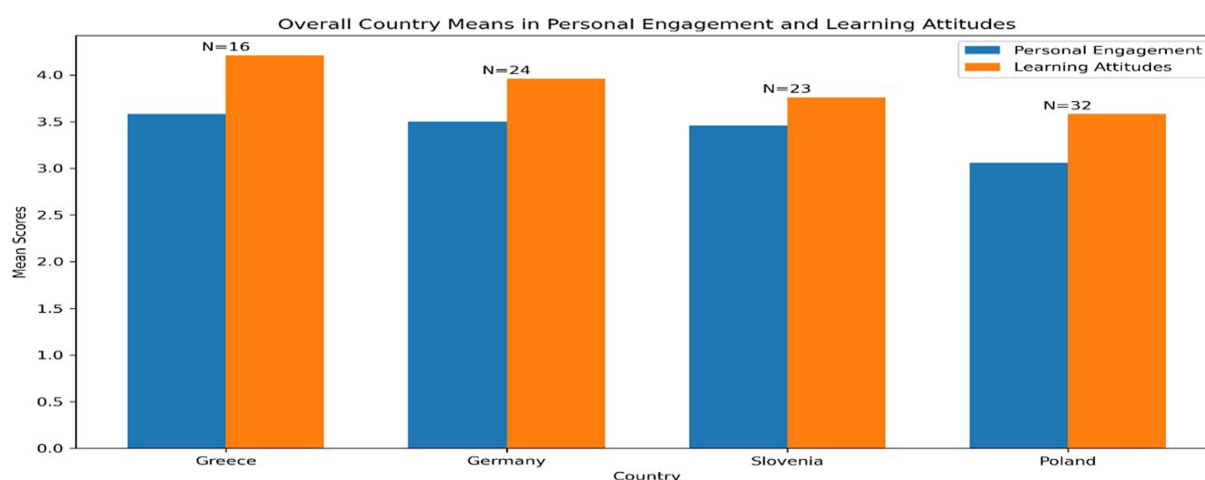


FIGURE 5

PE & LA mean score by country. The graph compares average PE and LA scores across four European countries (Greece, Germany, Slovenia, and Poland), with blue and orange bars representing the two measures.

significantly influence these variables in the context of this study. These findings suggest that the relationships between PE and LA observed in this study are relatively stable across different lengths of language learning experience, educational levels, and language proficiency levels, indicating that these variables may be more strongly influenced by the type of learning need rather than these contextual educational factors.

4.2 Thematic analysis of students' experiences

The analysis of three questions during the interview (Q1: What do you enjoy most about English?, (Q2 What makes it hard/difficult for you to learn English?), and (Q3: What are your plans for learning/using languages in the future?) provides valuable insights into the relationship between PE and LA among students with diverse learning needs. These three questions directly address the research questions in several ways. Regarding RQ1, the responses to Q1 reveal how different types of learning needs influence engagement patterns—for instance, visually impaired students show strong engagement with audio-based activities, while hearing-impaired students demonstrate higher engagement with written tasks, indicating that PE is closely tied to accessibility and learning modality preferences. The responses to Q2 highlight how different challenges across disability types affect LA, with these challenges often shaping students' approach to language learning. Concerning RQ2, cross-country analysis of these responses reveals interesting patterns—for example, students from Greece and Germany often express more career-oriented motivations in their Q3 responses, while Polish and Slovenian students more frequently mention travel and social communication as future goals. This suggests cultural and educational system differences influence both engagement and attitudes. Finally, addressing RQ3, the responses, particularly to Q1 and Q3, demonstrate how educational factors impact engagement and attitudes—students with longer language study experience (7–10 years) typically express more sophisticated engagement patterns and future aspirations, while school type (mainstream vs. special needs) appears to influence the types of activities students find engaging and their perceived barriers to learning. The CEFR level notably correlates with both engagement patterns and future aspirations, with higher-level students generally expressing more complex and academically-oriented goals in their Q3 responses, suggesting a positive relationship between language proficiency and learning engagement. Below, a more detailed thematic analysis per disability type is presented.

4.3 Visual impairments

4.3.1 What do you enjoy in EFL? (Q1)

The responses of students with visual impairments revealed significant insights into learning enjoyment. Students across three countries (Greece, Poland, Slovenia), particularly those aged 13–15, demonstrated enthusiasm for practical aspects of language acquisition, expressing explicitly their preference for audio-based activities, and a number of them mentioning listening activities as their favorite. The responses highlight a strong connection between enjoyment and tangible progress, with students expressing satisfaction in vocabulary expansion and improved reading comprehension. Notably, learners from special needs schools in Poland showed particular motivation

tied to future travel opportunities, while students at various CEFR levels (A1–A2) appreciated the gradual development of their language skills. This pattern of responses suggests that students find the most satisfaction in learning experiences that combine practical skill development with clear indicators of progress, regardless of their educational setting or initial proficiency level.

4.3.2 Making students' voices heard

“Learning new words, improving reading skills, developing creativity.”

Age: 13 | CEFR: A1 | Poland | Special Needs School

“It is pleasure for me to think that if I go somewhere out of Poland, I will know the language.”

Age: 14 | CEFR: A1 | Poland | Special Needs School

“Learning new words and that I understand more with time.”

Age: 15 | CEFR: A2 | Greece | Secondary School

4.3.3 What is the greatest challenge in EFL? (Q2)

Students with visual impairments face distinct challenges that fundamentally impact their engagement with written language learning materials. The analysis reveals consistent challenges with text accessibility as a primary barrier, with students across Greece, Germany and Slovenia reporting significant difficulties in accessing standard text formats. This is particularly evidenced by a student from Greece (Age 15, CEFR B2) who noted, “I find it difficult to read long texts, my vision is blurred. The lighting conditions play a big role,” highlighting how environmental factors intersect with accessibility needs. Difficulties with reading speed and comprehension emerge not from cognitive processing issues, but rather from the physical challenges of accessing text, with students requiring additional time to process written materials due to their visual limitations. Issues with standard text formats are particularly prominent, as demonstrated by a Polish student (Age 13, CEFR A1) who observed, “For example we cannot see well and some letters are blending together,” indicating how conventional text presentations can become barriers to learning. The need for adapted materials emerges as a crucial theme, with students requiring various accommodations such as enlarged print, specific color contrasts, or digital formats with zoom capabilities. However, these adaptations sometimes present their own challenges, as illustrated by one student's comment about enlarged print books being “so big, like all table,” suggesting that solutions must balance accessibility with practicality. These findings highlight the critical importance of thoughtful material adaptation while considering the practical implications of different accessibility solutions.

4.3.4 Making students' voices heard

“I find it difficult to read long texts, my vision is blurred. The lighting conditions play a big role.”

Age: 15 | CEFR: B2 | Greece | Secondary School

"For example we cannot see well and some letters are blending together."

Age: 13 | CEFR: A1 | Poland | Special Needs School

"Words that I hear for the first time. I cannot read them very well."

Age: 13 | CEFR: A1 | Poland | Special Needs School

4.3.5 What are your future plans with foreign languages? (Q3)

Students with visual impairments demonstrate goal-oriented and pragmatic aspirations for their future language use, with patterns emerging across different countries and educational contexts. The focus on practical communication skills appears as a primary theme, with students expressing clear awareness of language as a tool for real-world interaction. This is exemplified by a student from Poland (Age 14, CEFR A1) who expressed, "If I can go to England I will use my English skills," showing how they connect language learning to concrete future applications. Interest in higher education emerges as another significant theme, particularly among students at secondary level, as evidenced by a Greek student (Age 15, CEFR A2) stating, "I would like to continue and get a language certificate and study in UK," demonstrating how language proficiency is viewed as a pathway to academic advancement. Travel-related goals feature prominently in students' responses, suggesting they view their visual impairment not as a barrier to mobility but as a factor to be accommodated in their international aspirations. Professional development aspirations also emerge strongly, with students across different CEFR levels expressing clear connections between language skills and career opportunities. Notably, these findings suggest that visual impairment may influence the specific strategies students envision for achieving their goals, but does not fundamentally limit their academic or professional ambitions. This pattern of responses indicates a high level of self-efficacy and future-oriented thinking among visually impaired students, despite the additional challenges they face in language learning.

4.3.6 Making students' voices heard

"I would like to continue and get a language certificate and study in UK."

Age: 15 | CEFR: A2 | Greece | Secondary School

"If I can go to England I will use my English skills."

Age: 14 | CEFR: A1 | Poland | Special Needs School

"To reach as high a level as possible and improve my communication skills."

Age: 13 | CEFR: B1 | Poland | Special Needs School

"I have plans to keep learning new languages...I have French in my plans. But I notice that I'm also a little bit drawn to Macedonian

because of one singer, this one Tosha Proeski...I do not necessarily have to have a teacher for all these languages. You can put yourself on YouTube, you have got these different apps...I want to be an example to other people with disabilities that anything can be achieved if you have the motivation."

Age: 21 | CEFR: B2 | Slovenia | Secondary school

4.4 Deafness and hard of hearing

4.4.1 What do you enjoy in EFL? (Q1)

Students with Deafness/Hard of Hearings demonstrate distinct preferences in their language learning enjoyment, with patterns that clearly align with their sensory strengths and learning needs. The preference for visual learning methods emerges as a dominant theme across different ages and proficiency levels, serving as a primary channel for language acquisition and engagement. This is particularly evident in the response of a student from Greece (Age 17, CEFR B2) who emphasized "learning new vocabulary, learning grammar, learning about English culture," highlighting how visual approaches facilitate comprehensive language learning. The enjoyment of written activities features prominently, with students like one from Poland (Age 16, CEFR C1) expressing satisfaction in "creating my own statements in a foreign language," demonstrating how written expression provides a means of confident language production. Interest in cultural aspects emerges as a significant motivator, suggesting that deaf and hard of hearing students view language learning not merely as linguistic acquisition but as a gateway to broader cultural understanding. The appreciation of interactive exercises, particularly those that do not rely heavily on auditory input, indicates that these students actively engage in language learning when activities are appropriately adapted. Notably, these preferences appear consistent across different educational settings and all three countries (Greece, Germany, Poland), suggesting that the enjoyment patterns are more closely tied to the nature of Deafness/ Hard of Hearing itself rather than specific educational contexts. This understanding has important implications for pedagogical approaches, suggesting that enjoyment in language learning for these students is maximized when visual and written elements are prominently featured while maintaining interactive and culturally rich content.

4.4.2 Making students' voices heard

"Learning new vocabulary, learning grammar, learning about English culture."

Age: 17 | CEFR: B2 | Greece | Secondary School

"I like creating my own statements in a foreign language."

Age: 16 | CEFR: C1 | Poland | Secondary School

"I like watching films with subtitles."

Age: 12 | CEFR: A2 | Poland | Primary School

4.4.3 What is the greatest challenge in EFL? (Q2)

Students who are deaf or hard of hearing encounter specific challenges in language learning that are directly related to the auditory aspects of language acquisition. Significant pronunciation challenges emerge as a fundamental barrier, evidenced by a student from Poland (Age 17, CEFR C1) who explained “For me a big problem is pronunciation. You write a different thing—and pronounce a different one,” highlighting the disconnect between written and spoken forms when auditory input is limited. Difficulties with listening comprehension represent a core challenge, illustrated by another student (Age 12, CEFR A2) noting “sometimes the recordings are blurry and then I cannot hear everything,” demonstrating how traditional listening activities in language learning can pose significant barriers. Problems with oral communication are particularly prominent, as students struggle with producing spoken language without full access to auditory feedback. This is further complicated by challenges with accent variation, where different speakers’ pronunciations create additional layers of complexity in comprehension. These findings are consistent across Greece, Germany, Poland and different types of school, suggesting these challenges are inherent to Deafness/ Hard of Hearing rather than context-dependent. Notably, while higher CEFR levels indicate overall language progression, these fundamental challenges persist, requiring ongoing adaptations and alternative approaches. The data particularly emphasizes how visual aids and written materials become crucial compensatory strategies, with students often relying more heavily on visual and textual input to overcome auditory limitations. This pattern of difficulties underscores the importance of developing specialized teaching approaches that maximize visual learning channels while providing appropriate support for oral language development.

4.4.4 Making students’ voices heard

“For me a big problem is pronunciation. You write a different thing—and pronounce a different one.”

Age: 17 | CEFR: C1 | Poland | Secondary School

“Sometimes the recordings are blurry and then I cannot hear everything.”

Age: 12 | CEFR: A2 | Poland | Primary School

“Understanding different accents, making translation mistakes.”

Age: 17 | CEFR: B2 | Germany | Secondary School

4.4.5 What are your future plans with foreign languages? (Q3)

Students who are deaf or hard of hearing demonstrate sophisticated and well-defined aspirations for their language learning futures. The focus on written communication skills emerges as a primary theme, exemplified by a student from Poland (Age 16, CEFR B2) who expressed “I want to use English fluently, write in English fluently,” indicating a strategic emphasis on written proficiency as a key pathway to professional success. Interest in international work features prominently in their aspirations, with students viewing their language skills as a bridge to global opportunities despite auditory

challenges. This is particularly evident in responses from older students (ages 16–17) who show awareness of how written English proficiency can compensate for oral communication challenges in professional settings. Academic aspirations emerge strongly across the data, with students like one from Poland (Age 17, CEFR C1) showing interest in sign language and international communication, noting “I like learning other international language—International Sign,” demonstrating how students envision multiple pathways for international communication. Travel goals, while present, are often framed within the context of written and visual communication strategies, suggesting a pragmatic understanding of how to navigate international experiences with Deafness/ Hard of Hearings. Notably, these future aspirations appear particularly well-developed among students with higher CEFR levels (B2–C1) and those in secondary education, indicating how academic progress influences the scope and specificity of future language use plans. The data reveals that these students view their Deafness/Hard of Hearing not as a limitation but as a factor that shapes their approach to achieving their international and professional goals.

4.4.6 Making students’ voices heard

“I want to use English fluently, write in English fluently.”

Age: 16 | CEFR: B2 | Poland | Secondary School

“I like learning other international language—International Sign.”

Age: 17 | CEFR: C1 | Poland | Secondary School

“I want to study English as my major.”

Age: 17 | CEFR: B2 | Poland | Secondary School

4.5 Students with specific learning difficulties

4.5.1 What do you enjoy in EFL? (Q1)

Students with specific learning difficulties demonstrate distinct preferences in their language learning enjoyment, with a clear inclination toward dynamic and multisensory learning experiences. The preference for interactive learning emerges as a dominant theme, evidenced by a student from Poland (Age 11, CEFR A1) who expressed enjoyment in “Tasks, especially on educational platforms and through play,” highlighting how active engagement enhances learning pleasure. The enjoyment of game-based activities features prominently across different age groups and proficiency levels, suggesting that gamification provides a motivating framework that helps overcome learning barriers. For instance, another student (Age 13, CEFR A2) noted enjoying “when we read texts and I learn interesting things,” indicating how interactive approaches can make even traditional reading activities more engaging. The appreciation of multimedia approaches is particularly notable, with students responding positively to learning experiences that combine visual, auditory, and kinesthetic elements. This preference aligns with their need for diverse learning channels to compensate for specific learning challenges.

Interest in practical applications emerges as a significant motivator, with students showing greater engagement when they can connect language learning to real-world uses. Notably, these enjoyment patterns appear consistent across different educational contexts and countries, suggesting that the preference for interactive, multisensory learning is intrinsically linked to the nature of specific learning difficulties rather than external factors. This understanding has important implications for pedagogical approaches, indicating that enjoyment in language learning for these students is maximized when activities are interactive, varied, and practically oriented, while maintaining a structured framework that supports their learning needs.

4.5.2 Making students' voices heard

"Tasks, especially on educational platforms and through play."

Age: 11 | CEFR: A1 | Poland | Primary School

"I like it when we read some text and then we answer questions related to this."

Age: 13 | CEFR: A2 | Poland | Primary School

"I like listening tasks the most."

Age: 14 | CEFR: A1 | Poland | Primary School

4.5.3 What is the greatest challenge in EFL? (Q2)

Students with specific learning difficulties experience a complex set of challenges that primarily center around cognitive processing and retention aspects of language learning. Memory and retention challenges emerge as a fundamental barrier, exemplified by a student from Poland (Age 11, CEFR Pre-A1) who stated "I cannot remember words. I mix letters," highlighting how basic vocabulary acquisition becomes a significant hurdle. Difficulties with grammar rules present as a persistent challenge, illustrated by another student (Age 16, CEFR A2, Germany) who noted "Learning grammar is difficult. I have to approach this properly," suggesting that the abstract and rule-based nature of grammar poses particular challenges for these learners. Problems with vocabulary retention appear as a recurring theme across different age groups and CEFR levels, with students reporting that words are "escaping from my mind, even if I learned them earlier," indicating how the consolidation of new vocabulary remains challenging even with repeated exposure. Processing speed issues emerge as a significant barrier, affecting students' ability to engage with real-time language activities and respond effectively in classroom situations. This is particularly evident in test situations, where students report needing extended time to process and respond to language tasks. Notably, these challenges persist across different educational contexts and countries, suggesting they are inherent to the nature of specific learning difficulties rather than context-dependent. The data also indicates that while students may develop coping strategies as they advance in their language learning journey, these fundamental challenges continue to impact their learning experience, requiring ongoing support and accommodations.

This pattern of difficulties emphasizes the need for structured, repetitive learning approaches that provide ample time for processing and practice, while incorporating multiple learning modalities to support retention and understanding.

4.5.4 Making students' voices heard

"I cannot remember words. I mix letters."

Age: 11 | CEFR: Pre-A1 | Poland | Primary School

"Learning grammar is difficult. I have to approach this properly."

Age: 16 | CEFR: A2 | Germany | Secondary School

"Sometimes I do not understand certain commands."

Age: 11 | CEFR: A1 | Poland | Primary School

4.5.5 What are your future plans with foreign languages? (Q3)

Students with specific learning difficulties demonstrate notably varied perspectives regarding their future language use, characterized by a wide spectrum of aspirations and confidence levels. Mixed levels of aspiration emerge as a prominent theme, ranging from ambitious goals to more hesitant outlooks, as evidenced by contrasting responses across the data. For instance, while one student from Poland (Age 11, CEFR A1) expressed optimistic travel aspirations stating "I want to learn English so that one day I can travel," another (Age 13, CEFR A1) showed more uncertainty, admitting "I do not have plans. I know I should learn English when I finish school but I do not think so." The focus on basic communication emerges as a common thread, with students often emphasizing practical, everyday language use rather than academic or professional ambitions. Travel-related goals feature prominently in their future plans, suggesting that students can envision concrete, tangible applications for their language skills despite their learning challenges. However, uncertainty about future use appears as a significant theme, with many students expressing ambivalence or hesitation about their long-term engagement with the language. This uncertainty seems particularly pronounced among students with lower CEFR levels and younger age groups, suggesting that confidence in language ability influences future aspirations.

4.5.6 Making students' voices heard

"I want to learn English so that one day I can travel."

Age: 11 | CEFR: A1 | Poland | Primary School

"I do not have plans. I know I should learn English when I finish school but I do not think so."

Age: 13 | CEFR: A1 | Poland | Special Needs School

"I would like to go abroad on a trip in the future."

Age: 11 | CEFR: A1 | Poland | Primary School

4.6 Physical motor impairment

4.6.1 What do you enjoy in EFL? (Q1)

Students with physical/motor impairments demonstrate distinct patterns of enjoyment in language learning that are closely tied to accessibility and successful engagement. The enjoyment of digital activities emerges as a prominent theme, evidenced by a student from Germany (Age 12, CEFR A2) who expressed enthusiasm for “online games to revise English,” highlighting how technology provides accessible and engaging learning pathways. Interest in communication aspects features strongly in their responses, with students particularly valuing opportunities to interact and express themselves despite physical limitations. This is exemplified by a student from Poland (Age 11, CEFR Pre-A1) who emphasized “Getting to learn new languages, being able to communicate with others,” indicating how language learning represents a pathway to broader social interaction. Appreciation of interactive tasks emerges as significant, particularly when these tasks are adapted to accommodate their physical needs, allowing full participation in learning activities. Motivation from learning progress appears as a crucial factor in their enjoyment, with students expressing satisfaction in seeing their own advancement in language acquisition. The data also indicates that enjoyment often increases when activities are designed to be inclusive and accessible, allowing students to participate fully despite their motor challenges. This understanding has important implications for pedagogical approaches, suggesting that enjoyment in language learning for these students is maximized when activities are digitally accessible, communication-focused, and provide clear evidence of progress while maintaining appropriate physical accommodations.

4.6.2 Making students’ voices heard

“Online games to revise English.”

Age: 12 | CEFR: A2 | Germany | Primary School

“Getting to learn new languages, being able to communicate with others.”

Age: 11 | CEFR: Pre-A1 | Poland | Special Needs School

“I like learning new words and learning new things.”

Age: 14 | CEFR: A1 | Germany | Special Needs School

“No one has ever asked me that before. Yeah I do not know, when we have for example to fill-in the words. We must complete the sentences and then we get the ones to listen to, and then we have to see whether we have completed the sentences correctly or whether there is something else written and so on. That is what I like best. The part about checking whether the sentence is completed or not.”

Age: 21 | CEFR: B2 | Slovenia | Secondary school

“I do not know, because that’s the way we were taught in primary school. So, the more times you knew, the more creative you could

be when you were speaking with someone, writing something, the more you could understand films as well, that kind of thing. So, learning new things, well.”

Age: 16 | CEFR: B1 | Slovenia | Special Needs School

4.6.3 What is the greatest challenge in EFL? (Q2)

Students with physical/motor impairments face distinct challenges in language learning that are primarily centered around the physical aspects of language production and task completion. Physical writing challenges emerge as a fundamental barrier, clearly illustrated by a student from Germany (Age 12, CEFR A1) who expressed “I find it difficult to use the pencil to write long texts,” highlighting how the mechanical aspects of writing can significantly impede language production. Pace-related difficulties represent a persistent concern across different educational contexts, evidenced by a student from Poland (Age 11, CEFR A2) noting “Too much learning. Too quick pace of learning,” indicating how standard classroom tempos may not align with their physical capabilities. Fatigue issues appear as a significant factor affecting sustained engagement in learning activities, with students reporting decreased performance and increased difficulties as lessons progress due to physical exertion. Material accessibility problems manifest in various ways, from difficulties manipulating traditional learning materials to challenges with classroom equipment setup. The data also indicates that while higher CEFR levels suggest overall language progression, these fundamental physical challenges persist, requiring ongoing adaptations and support. This pattern of difficulties emphasizes the critical importance of providing appropriate accommodations and assistive technologies while considering the physical demands of learning activities. The findings also suggest that these challenges often intersect and compound each other, with physical fatigue, for instance, further impacting writing abilities and pace of work, highlighting the need for comprehensive support strategies that address multiple aspects of physical accessibility in language learning.

4.6.4 Making students’ voices heard

“I find it difficult to use the pencil to write long texts.”

Age: 12 | CEFR: A1 | Germany | Primary School

“Too much learning. Too quick pace of learning.”

Age: 11 | CEFR: A2 | Poland | Primary School

“Different words, accent, the fact that they are written differently.”

Age: 16 | CEFR: A2 | Germany | Secondary School

“When we were writing a test, because halfway through you are so tired that you forget about the endings—the s’s, that’s it. The others do not.”

Age: 16 | CEFR: B1 | Slovenia | Special Needs School

4.6.5 What are your future plans with foreign languages? (Q3)

Students with physical/motor impairments demonstrate remarkably ambitious and concrete future aspirations in their language learning trajectories, with a strong emphasis on professional development and global engagement. Career-focused aspirations emerge as a dominant theme, strikingly illustrated by specific vocational goals, as evidenced by a student from Poland (Age 11, CEFR A2) who confidently expressed “I want to be a footballer and play in foreign clubs,” and another student (Age 13, CEFR A1) who stated “I want to develop the language because I want to be a programmer.” These career-oriented goals suggest that students view their physical impairments not as limitations but as factors to consider in their professional planning. Interest in international opportunities features prominently across different age groups and CEFR levels, with students actively envisioning themselves in global contexts despite physical challenges. Travel goals appear consistently in their responses, with students like one from Germany (Age 11, CEFR Pre-A1) expressing the desire to “fly to the US and talk to people,” indicating how language proficiency is seen as a key to mobility and independence. Communication-oriented plans emerge as a unifying thread, with students viewing language skills as essential tools for achieving their broader life goals. Notably, these future aspirations appear particularly well-defined and pragmatic, with students demonstrating clear awareness of how language proficiency can help them overcome potential physical barriers to achieve their international and professional ambitions. This pattern of responses indicates a high level of self-efficacy and future-oriented thinking among students with physical/motor impairments, suggesting that their physical challenges may influence the specific strategies they envision for achieving their goals but do not limit their aspirations.

4.6.6 Making students’ voices heard

“I want to be a footballer and play in foreign clubs.”

Age: 11 | CEFR: A2 | Poland | Primary School

“I want to develop the language because I want to be a programmer.”

Age: 13 | CEFR: A1 | Poland | Special Needs School

“Would like to fly to the US and talk to people.”

Age: 11 | CEFR: Pre-A1 | Germany | Primary School

4.7 Limitations

A significant limitation of this study lies in its sample size and distribution characteristics across the four participating European countries. The total sample size ($N = 95$) presents challenges for robust statistical analysis, particularly when disaggregated by country and disability type. The uneven distribution of participants across countries (Greece: 16, Germany: 24, Slovenia: 23, Poland: 32) creates inherent difficulties in making meaningful cross-national comparisons and potentially introduces bias in the overall findings. This limitation becomes particularly acute when examining specific disability

subgroups within each country. For instance, and one deaf/hard of hearing in Slovenia who also had physical impairment, or the complete absence of certain disability types in some countries (such as no visual impairments in Germany), creates substantial gaps in the cross-national comparative analysis. The small subgroup sizes also limit the statistical power of analyses comparing different disability types and their experiences, potentially masking significant patterns or relationships that might be visible in a larger, more balanced sample.

The study’s methodological approach presents several significant limitations that affect both its internal and external validity. While the study combines interviews with quantitative data from the Foreign Language Enjoyment (FLE) scale’s Likert questions, providing both qualitative insights and quantitative measures of PE and LA, it may still not fully capture the multifaceted nature of students’ foreign language learning experiences. The methodology could benefit from additional data sources such as classroom observations and teacher perspectives to provide further triangulation and a more comprehensive understanding of the phenomena under study. The cross-sectional design of the research offers only a momentary glimpse into students’ experiences, failing to capture the dynamic nature of language learning and how students’ engagement and attitudes might evolve over time. While the study focused on primary and secondary education, Slovenia’s sample included four students aged 18–25 who were still attending secondary special education schools. Although their inclusion maintains the study’s focus on secondary education, their age difference could introduce some variability in perspectives compared to younger secondary students. Additionally, the pragmatic decision to aggregate autism spectrum disorder cases with specific learning difficulties, while necessary for statistical analysis, potentially obscures important distinctions between these fundamentally different types of learning needs, possibly oversimplifying the unique challenges and experiences of each group.

5 Discussion

The findings of this study reveal both an inspiring story of resilience and a call to action in foreign language education. Across all groups, students maintained remarkably positive attitudes toward language learning even when facing significant engagement challenges, as evidenced by LA scores consistently exceeding PE scores. This pattern tells an important story about our students’ determination, but also about where our educational system needs improvement.

Consider the Visual Impairment group, where students showed exceptionally high LA despite moderate engagement levels. These students believe strongly in the value of learning English, even when they cannot easily access learning materials or participate fully in visual aspects of lessons. Similarly, while students with Mobility Impairments showed the strongest connection between their attitudes and engagement ($r = 0.674$), suggesting that when they can participate fully, they thrive, students with Learning Difficulties demonstrated more variable engagement patterns while maintaining positive attitudes – a testament to their resilience in the face of cognitive processing challenges. The findings for students who are Deaf or Hard of Hearing highlight another crucial aspect: while these students maintain positive attitudes, their engagement patterns showed no significant correlation with these attitudes, suggesting that traditional auditory-based language learning approaches may be creating unnecessary barriers.

This disconnect between wanting to learn and being able to fully participate points to a systemic issue rather than student limitations.

What makes these findings particularly compelling is the diversity of future aspirations we uncovered—from dreams of studying abroad to becoming programmers or athletes. These students do not let their challenges define their dreams. Instead, their consistently positive attitudes across all groups, despite varying engagement levels, suggest that the real challenge lies not in students' willingness or ability to learn, but in our capacity to create truly inclusive learning environments that can transform these positive attitudes into full engagement. The real question is: are we doing enough to help them reach these goals?

Data availability statement

The datasets presented in this article are not readily available because the dataset belongs to the partners of the consortium and it will be destroyed in 3 years after the completion of the project. Requests to access the datasets should be directed to mkaratsiori@gmail.com.

Ethics statement

The studies involving humans were approved by Research Committee of University of Macedonia (Greece) and the Research Ethics Committee of John Paul II Catholic University of Lublin (Poland). For the University of Education Heidelberg and University of Ljubljana, the institutional requirements related to research ethics were met. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation in this study was provided by the participants' legal guardians/next of kin.

Author contributions

MK: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. TL: Methodology, Writing – review & editing. ED-z: Data curation, Writing – review & editing. KV: Data curation, Writing – review & editing. MKB: Data curation,

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

- Al Siyabi, M., Kumarei, S., and Al Siyabi, H. (2022). The impact of assistive technology on English language teaching practices for visually impaired students.
- Avramidis, E., Bayliss, P., and Burden, R. (2000). A survey into mainstream teachers' attitudes towards the inclusion of children with special educational needs in the ordinary school in one local education authority. *Educ. Psychol.* 20, 191–211. doi: 10.1080/713663717
- Barry, D., and Choules, K. (2017). Towards a pedagogy of personalisation: what can we learn from students? *Curric. Perspect.* 37, 135–145. doi: 10.1007/S41297-017-0019-5
- Bergeest, H., Boenisch, J., and Daut, V. (2019). Körperbehindertenpädagogik [education for people with physical disabilities]. Bad Heilbrunn: Klinkhardt.
- Birsh, J. R. (2005). Multisensory teaching of basic language skills. Paul H: Brookes Publishing Co.
- Boenisch, J. (2016). "Körperbehinderung [Physical disability]" in *Handlexikon der Behindertenpädagogik*. eds. M. Dederich, I. Beck, G. Antor and U. Bleidick (Stuttgart: Kohlhammer), 57–60.
- Campbell, J., Gilmore, L., and Cuskelly, M. (2003). Changing student teachers' attitudes towards disability and inclusion. *J. Intellect. Develop. Disabil.* 28, 369–379. doi: 10.1080/13668250310001616407
- Cárdenas, J., and Inga, E. (2021). Methodological experience in the teaching-learning of the English language for students with visual impairment. *Educ. Sci.* 11:515. doi: 10.3390/educsci11090515
- Chilla, S., Doetjes, G., Vogt, K., Abed-Ibrahim, L., and Tsagari, D. (2024). Digital-inclusive transformation and teachers' preparedness for foreign language education - a bilateral German-Norwegian perspective. *Center Educ. Policies Stud. J.* doi: 10.26529/cepsj.1690

- Clark, M. (2000). "Direction and support staff working with children who are deafblind" in *Teaching children who are deafblind: Contact communication and learning*. eds. S. Aitken, M. Buultjens, C. Clark, J. T. Eyre and L. Pease (London: David Fulton Publishers), 120–148.
- Corn, A. L., and Erin, J. N. (2010). *Foundations of low vision: Clinical and functional perspectives*. American Foundation for the Blind.
- Crombie, M. (2013). "Foreign languages for learners with dyslexia - inclusive practice and technology" in *Inclusive language education and digital technology*. eds. E. Vilar Beltrán, C. Abbott and J. Jones (Bristol: Multilingual Matters), 124–142.
- D'Andrea, F. M., and Siu, Y.-T. (2015). "Students with visual impairments: Considerations and effective practices for technology use," in *Advances in special education technology: efficacy of assistive technology*. eds. D. Edyburn (Emerald Group Publishing Limited), 1, 111–138.
- Davis, P., and Florian, L. (2004). *Teaching strategies and approaches for pupils with special educational needs: A scoping study*. London: DfES.
- Deci, E. L., Vallerand, R. J., Pelletier, L. G., and Ryan, R. M. (1991). Motivation and education: the self-determination perspective. *Educ. Psychol.* 26, 325–346. doi: 10.1080/00461520.1991.9653137
- Dewaele, J. M., and MacIntyre, P. D. (2014). The two faces of Janus? Anxiety and enjoyment in the foreign language classroom. *Stud. Second Lang. Learn. Teach.* 4, 237–274. doi: 10.14746/ssl.2014.4.2.5
- Dewaele, J. M., and MacIntyre, P. D. (2016). "Foreign language enjoyment and foreign language classroom anxiety: the right and left feet of FL learning?" in *Positive psychology in SLA*. eds. P. MacIntyre, T. Gregersen and S. Mercer (Bristol: Multilingual Matters), 215–236.
- Domagała-Zysk, E., Moritz, N., and Podlowska, A. (2021). *English as a foreign language for deaf and hard of hearing learners teaching strategies and interventions*. London: Routledge.
- Domagała-Zysk, E., and Podlowska, A. (2024). "Enhancing listening skills of hard of hearing learners" in *Second language acquisition and listening*. eds. E. Wagner, O. A. Batty and E. Galaczi (London: Routledge).
- Florian, L. (2015a). Conceptualising inclusive pedagogy: the inclusive pedagogical approach in action. *Inclusive Pedagogy Across Curriculum* 7, 11–24. doi: 10.1108/S1479-363620150000007001
- Florian, L., and Linklater, H. (2010). Preparing teachers for inclusive education: using inclusive pedagogy to enhance teaching and learning for all. *Camb. J. Educ.* 40, 369–386. doi: 10.1080/0305764X.2010.526588
- Foti, F., De Crescenzo, F., Vivanti, G., Menghini, D., and Vicari, S. (2015). Implicit learning in individuals with autism spectrum disorders: a meta-analysis. *Psychol. Med.* 45, 897–910. doi: 10.1017/S0033291714001950
- Groce, N. E. (2004). *Adolescents and youth with disability. Issues and challenges*.
- Khajavy, G. H., MacIntyre, P. D., and Barabadi, E. (2018). Role of the emotions and classroom environment in willingness to communicate. *Stud. Second Lang. Acquis.* 40, 605–624. doi: 10.1017/S0272263117000304
- Kormos, J. (2017a). *The second language learning processes of students with specific learning difficulties*. Routledge.
- Kormos, J. (2017b). The effects of specific learning difficulties on processes of multilingual language development. *Annu. Rev. Appl. Linguist.* 37, 30–44. doi: 10.1017/S026719051700006X
- Krashen, S. D. (1985). *The input hypothesis: Issues and implications*. London: Longman.
- Liu, E., and Wang, J. (2021). Examining the relationship between grit and foreign language performance: enjoyment and anxiety as mediators. *Front. Psychol.* 12:666892. doi: 10.3389/fpsyg.2021.666892
- Lyser, Y., Kapperman, G., and Keller, R. (1994). Teacher attitudes towards mainstreaming: a cross-cultural study in six nations. *Eur. J. Spec. Needs Educ.* 9, 1–15. doi: 10.1080/0885625940090101
- Marshall, J., Ralph, S., and Palmer, S. (2002). 'I wasn't trained to work with them': mainstream teachers' attitudes to children with speech and language difficulties. *Int. J. Incl. Educ.* 6, 199–215. doi: 10.1080/13603110110067208
- Nijakowska, J., Kormos, J., Hanusova, S., Jaroszewicz, B., Kálmos, B., Imrene Sarkadi, A., et al. (2016). *DysTEFL2 – Dyslexia for teachers of English as a foreign language*. University of Łódź. Available at: <http://dystefl2.uni.lodz.pl/wp-content/uploads/DysTEFL2-booklet.pdf>
- Nijakowska, J. (2019). Foreign language teachers' preparedness to cater for special educational needs of dyslexic learners. *Eur. J. Spec. Needs Educ.* 34, 189–203. doi: 10.1080/08856257.2019.1581401
- Nijakowska, J. (2020). Dyslexia in the context of second language learning and teaching. *Pragmalinguística* 2, 257–271. doi: 10.25267/Pragmalinguistica.2020.iextra2.15
- Nijakowska, J., Kormos, J., et al. (2016). *Dyslexia for teachers of English as a foreign language. DysTEFL2 project*.
- Old Colony Regional Vocational Technical High School. (n.d.). Specific learning disorder. Available at: <https://oldcolony.us/parents/student-services/disability-information/specific-learning-disorder/> (Accessed February 13, 2025).
- Pawlak, M. (2020). Korekta błędów językowych jako integralny element interakcji w klasie językowej. *Języki Obce Szkole* 3, 39–46.
- Pekrun, R., Frenzel, A. C., Goetz, T., and Perry, R. P. (2007). "The control-value theory of achievement emotions: An integrative approach to emotions in education" in *Emotion in education*. eds. P. A. Schutz and R. Pekrun (Academic Press) 13–36.
- Reid, G. (2016). *Multilingualism, literacy, and dyslexia: Breaking down barriers for educators*. London, New York: Routledge.
- Rødbroe, I., and Janssen, M. (2006). *Communication and congenital deafblindness: Contact and social interaction*. The Netherlands: VCDBF/Viataal.
- Seligman, M. (2018). PERMA and the building blocks of well-being. *J. Posit. Psychol.* 13, 333–335. doi: 10.1080/17439760.2018.1437466
- Simon-Cerejido, G., and Gutierrez-Clellen, V. (2014). Bilingual education for all: Latino dual language learners with language disabilities. *Int. J. Biling. Educ. Biling.* 17, 235–254. doi: 10.1080/13670050.2013.866630
- Sparks, R. L. (2016). Myths about foreign language learning and learning disabilities. *Foreign Lang. Ann.* 49, 252–270. doi: 10.1111/flan.12196
- Sparks, R. L., and Miller, K. (2000). Teaching a foreign language using multisensory structured language techniques to at-risk learners: a review. *Dyslexia* 6, 124–132. doi: 10.1002/(SICI)1099-0909(200004/06)6:2<124::AID-DYS152>3.0.CO;2-3
- Stentford, L., and Koutsouris, G. (2021). What are inclusive pedagogies in higher education? A systematic scoping review. *Stud. High. Educ.* 46, 2245–2261. doi: 10.1080/03075079.2020.1716322
- Wight, M. S. (2015). *Students with disabilities in the foreign language learning environment*. Dissertation Abstracts International.



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Learning styles and strategies of D/deaf and hard of hearing students in foreign language acquisition—a research report

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This article is dedicated to analyzing the learning styles, strategies, and ways of overcoming challenges in foreign language acquisition by D/deaf and hard-of-hearing students (DHH students). The ability of individuals with hearing impairments to acquire a foreign language effectively depends on various factors, such as the degree of hearing loss, the age at which language learning begins, and the availability of educational and environmental support. In research on this category of students, understanding specific learning styles and strategies that aid in the process of acquiring a new language is crucial. The article discusses diverse learning styles and strategies, as well as approaches to overcome difficulties preferred by D/deaf and hard-of-hearing individuals during foreign language learning. The quantitative study also examines educational strategies that support the development of language competencies in this group, including multimedia techniques, imagery, and visualizations that enhance and facilitate reading comprehension. The study aimed to identify dominant teaching styles and learning strategies for English among 55 DHH students from grades VII and VIII in selected primary schools. These schools follow the Core Curriculum for General Education, adapted for students with hearing impairments. A quantitative questionnaire was used, comprising three thematic sections on reading comprehension and learning difficulties. Participants answered closed questions using a three-point scale: *I never do, sometimes do, always do*. The key research questions explored: (1) The reading strategies DHH students use for comprehension; (2) Differences in strategy application based on gender, hearing loss degree, communication method, and onset time of hearing loss, (3) General difficulties DHH students face in learning foreign languages. The findings of a questionnaire were subjected to statistical analysis and indicate that appropriate adaptation of teaching methods and consideration of the individual preferences of deaf students can significantly improve their success in foreign language learning and their motivation to study.

KEYWORDS

learning styles, educational strategies, reading comprehension, foreign language learning, students with hearing impairments

1 Introduction

Learning a foreign language is a complex process that requires engaging various cognitive and sensory resources. For D/deaf and hard-of-hearing students, who experience varying degrees of hearing loss, this process becomes even more challenging, as the lack of full auditory perception hinders the acquisition of fundamental language elements such as pronunciation,

intonation, and speech rhythm. Therefore, foreign language learning for D/deaf and hard-of-hearing students requires applying specific learning styles and teaching strategies that account for the limitations caused by hearing loss while leveraging their strengths, such as visual memory and analytical skills (Dłużniewska, 2016; Kamiński, 2021; Karpińska-Szaj, 2024).

In the last decade, we have witnessed an extremely intensive transformation for people with hearing impairments. These include specialist diagnostics, rehabilitation, and education, but also technical and technological support. All these developments are increasing the auditory and linguistic functioning of this group of people. The conditions for social inclusion are also improving, meaning that it is possible to ensure full participation in social life, work, education, and culture. To be more specific, the USA's comprehensive support for Deaf and hard-of-hearing students is offered through individualized education programs (IEPs) and services mandated by the Individuals with Disabilities Education Act (IDEA). These provisions ensure access to necessary accommodations and services, promoting inclusive education. Additionally, Canada upholds the UN Convention on the Rights of Persons with Disabilities, advocating for education in sign language. The Canadian Association of the Deaf emphasizes the importance of primary communication methods before introducing additional languages, supporting tailored educational approaches for Deaf students.

As Krakowiak (2017) believes, being open to communicating with people with disabilities requires the able-bodied to know about the possibilities of communicating with them and to have a good understanding of how important it is for every person to communicate with others. Lack of communication may result in a blockage of the child's psychological development and becomes a secondary cause of a worsening of the disability, regardless of the root causes that led to the communication difficulties and the symptoms of these difficulties. This is why it is so important for non-disabled people not only to open up to the needs of people with disabilities but also to take concrete action to break down communication barriers. This does not only support the development of people with disabilities but also builds a more inclusive and empathetic society.

The literature (Dłużniewska, 2016; Domagała-Zyśk, 2016; Krakowiak, 2017; Karpińska-Szaj, 2024) on language learning by DHH individuals highlights that these students can achieve significant success in acquiring foreign languages, provided they receive appropriate support and teaching methods tailored to their individual needs. There are numerous strategies and learning styles that can facilitate this process. This article discusses the diverse learning styles preferred by D/deaf and hard-of-hearing students in the context of foreign language acquisition. It also examines teaching strategies that support the development of language competencies in this group of students.

2 Learning styles and strategies in foreign language acquisition – theoretical foundations

2.1 Language learning strategies

Research on language learning by deaf and hard-of-hearing people, both in Poland and internationally, focuses mainly on

analyzing the difficulties and evaluating the effectiveness of teaching methods aimed at developing communicative competence, primarily in written, but also in spoken communication (cf. Kamiński, 2021). Contemporary research shows that with appropriate preparation and support, it is possible to achieve satisfactory results in language teaching for deaf and hard-of-hearing learners in all language skills, including speaking skills (Domagała-Zyśk and Podlewska, 2012; Karpińska-Szaj, 2024). Domagała-Zyśk (2013) states that learning styles in the context of Deaf and Hard of Hearing (DHH) students refer to the diverse ways in which individuals absorb, process, and retain information. These learning styles can be influenced by factors such as language modality (spoken language, sign language, lip-reading), the level of hearing loss, and the use of assistive technologies like hearing aids or cochlear implants. However, it is true that defining these styles in a more explicit manner could enhance the clarity and consistency of the findings, making them more accessible for educators looking to apply these strategies.

Oxford (1992/1993, p. 18) defines learning strategies as 'specific actions, behaviors, steps or techniques that learners use to improve their skills in the language they are learning. These strategies may facilitate the internalization of language, the retention of acquired knowledge, the recall of messages, or the use of newly learned knowledge. Learning strategies are tools through which the learner is internally committed to developing their own language skills.'

The researcher classifies language learning strategies into direct ones, which are involved in conscious mental processes, and indirect ones, which are not used consciously but are important in the foreign language acquisition process among the direct categories.

Oxford (1990, p.37, p.137) highlights memory strategies that facilitate effective memorization of learned material, for example, by grouping similar objects or visualizations. She also lists cognitive strategies, such as summarizing and deductive reasoning, that enable understanding and use of language and help sustain interaction with others. She refers to compensatory strategies, like guessing or substituting synonyms, which help learners maintain communication when they encounter gaps in their knowledge.

A slightly different typology of strategies is distinguished by Marton and Saljo (after Aharony, 2006), dividing them into deep (mature) and surface (immature) strategies.

1. Students who use deep strategies are characterized by their ability to relate to newly learned information to previously held information, their need to learn about a given reality from different points of view, and their desire to connect the knowledge they learn to their applications in everyday life and personal experiences.

Biggs (1993) believes that students who use metacognitive strategies are innovative in their search for solutions and plan their next learning steps, are personally involved in the learning process, and are characterized by high levels of motivation.

2. Students using superficial strategies try to take the shortest route to reach their goal, do not ask questions that would help them to deepen their knowledge, and learn by heart even though they do not understand it. They focus primarily on avoiding failure, but the strategies they use are also effective learning tools (Domagała-Zyśk, 2016).

The conscious use of learning strategies increases the effectiveness of the process. Thanks to them, a person assimilates more information, has structured knowledge, has a better understanding of themselves and the surrounding reality, and has the opportunity to learn more about the world. Strategies bring the satisfaction of success. Although they do not eliminate the need for effort, they develop a sense of agency and give meaning to the actions undertaken (Czerniawska, 1994; Szymczak, 2012).

Learning style, on the other hand, is the adopted way of behaving in learning situations. It can also be seen as a preference 'to use specific strategies, regardless of the demands of particular tasks' (Czerniawska and Jagodzińska, 2007, p. 228). Knowledge of one's learning style makes it possible to create conditions conducive to the achievement of intended goals. Therefore, it can be concluded that such knowledge is crucial for both the learner and the person who supports them. Learning styles are flexible and continuously adapt over time rather than being fixed or pre-established. This means that both the learner and their carers can actively shape learning situations that support the development of such a style, allowing for conscious, purposeful and structured participation in the learning process.

As Piłatowska (2008) writes, an important task for the teacher is not so much to discover the student's learning style, whether through direct observation or by means of special tests, but to introduce a variety of activities that engage as many learning styles as possible.

2.2 Strategies for dealing with language difficulties

Kołodziejczyk (2021) identifies the coping mechanisms used by individuals with hearing impairments to overcome challenges in general language skills. She classifies these strategies based on their underlying triggers, grouping them into three categories: logico-linguistic, psychosocial, and rehabilitative-educational. Logical-linguistic strategies are those that are related to the students' linguistic skills and are motivated by the same linguistic activities that also accompany the speech development of hearing children, hence they can be observed in all children who are at a similar stage of speech development, although in the case of hearing children at a much younger age and at an earlier stage of cognitive and social development. Logical-linguistic strategies may include:

- echolalia (repetitions) with a phatic and educational function; code-switching with natural gestures, mimicry, and pantomime as well as pointing to people, things, phenomena, and the use of graphics; substituting a form with an easier one; redundancy; linguistic analogy; logical analogies.

Psychosocial strategies result from the child's individual personality traits and from certain social attitudes developed in the child's educational environment. These can include:

- silence; all forms of avoidance, with the exception of silence; echolalia as avoidance; all types of emotional contact establishment and maintenance.

Rehabilitative-educational strategies are related to the way the student is educated, and to the choice and use of different methods of communication. Such strategies may include:

- mechanical echolalia; code-switching to sign language, dactylography, speech with phonogests; some types of code duplication; copies and borrowings from sign language.

Strategies can be divided into universal and individual strategies, taking into account the universality of their use. Most logico-linguistic strategies are universal, while psychosocial and rehabilitative-educational strategies are closely related to the individual characteristics of the child's personality, specific educational environment and educational process, which gives them an individual character.

Considering the way in which language acquisition takes place and the conditions under which this process occurs in the case of children with hearing impairments, it is also worth dividing the strategies into developmental ones, observed in all children, typical of the natural process of language acquisition, and glottodidactic ones (Kołodziejczyk, 2021), resulting from insufficient language skills and experience, often observed at different stages of foreign language learning, i.e., typical of foreign language teaching in the didactic process. As Kołodziejczyk (2021) states, glottodidactic strategies include:

- all types of avoidance; mechanical echolalia and echolalia as avoidance; code-switching to other conventional systems, but also intensive use of natural gestures and facial expressions; some forms of substitution with easier forms: use of root forms of words, keywords, hyperonyms, close and related words, use of paraphrase and other parts of speech; all strategies from the redundancy category, taking into account the severity of these phenomena; borrowing and copies from a foreign language.

This division makes it possible to highlight the fact that the process of language mastery of the profoundly deaf child is an intermediate phenomenon between natural language acquisition and artificial language learning, since it presents features of, and uses strategies typical of, both the one and the other phenomenon. Such behaviour testifies to the fact that deaf children in the process of rehabilitation and education with some language education methods can acquire lexical units themselves, but have very limited access to grammatical information, contained in our language in the inflectional endings of words. This happens when the rehabilitation method is inappropriately matched to the child's perceptual abilities.

2.3 Strategies for teaching and learning reading comprehension

Based on the findings of scholars (Krakowiak, 2012; Domagała-Zyśk, 2013; Dłużniewska, 2021), hearing impairment is not directly related to cognitive impairment. Deaf and hard-of-hearing people are characterized by varying levels of intelligence and knowledge, just like hearing people. This can be both high and below average, especially when other disorders co-occur. However, hearing impairment means having to overcome barriers to learn about the world, which deaf and hard-of-hearing people do with varying degrees of success. This is important in the process of learning and acquiring a foreign language, as difficulties in understanding texts can result both from a lack of general knowledge and from insufficient knowledge of the vocabulary

and grammar of the foreign language. Krakowiak (2012), Domagała-Zyśk (2013), and Dłużniewska (2021) state that it is necessary to apply specific strategies for learning and teaching reading comprehension. In this process, it is worthwhile to use commonly used methods when working with deaf and hard-of-hearing students, but they should be supplemented with strategies that are typical of glottodidactics. The ability to read is directly related to how deaf people cope with language difficulties. The following strategies can be distinguished: keywords, prior activation of general knowledge, the ‘reading bath’ strategy, and the strategy of reading texts about the life of deaf and hard-of-hearing people.¹ According to Domagała-Zyśk (2013, p. 257–262), the keyword strategy is to focus the learning and teaching process on preparing deaf people to receive the text, through exercises that test their comprehension of the language being taught. The development of keywords in the text allows for a full understanding of the content of the text.

Prior activation of general knowledge consists in the fact that it is necessary to activate or supplement the learner’s general knowledge before working with the text. This can be, for example, a short conversation in the national language or the preparation of materials on the topic (in the national language). In this strategy, it is important to encourage activity and responsibility for one’s own education. It is worth suggesting ways to seek information.

The “reading bath” strategy involves frequent and intensive reading of various texts, not only those in foreign language textbooks. This strategy serves to consolidate vocabulary that can appear in different contexts. The texts do not have to be analyzed, it is just a matter of contact with the written word. There may be some difficulty in convincing deaf people to read spontaneously, unforced.

Reading texts about the lives of deaf and hard of hearing people is a strategy that can result in increased motivation to read, but also positively affect self-esteem through identification with similar people, especially those who have been successful in life. These can be blogs or newspaper articles, texts on athletes participating in the Olympics for the hearing impaired are numerous.

As Dłużniewska (2016) claims previous research on the reading process in deaf and hard-of-hearing people indicates that the most serious obstacle to reading comprehension is the syntactic level. Mastery of the syntactic principles of the language is therefore crucial. In this context, it is worth returning to the basics, namely the phonological and morphological levels. In the case of inflectional languages such as Polish, the recognition of words and the determination of their syntactic function is based on the analysis of the main lexical morpheme and the word-forming and inflectional morphemes. Grasping the grammatical-logical structure of a sentence requires recognizing that its meaning can shift based on word order or alterations in word meanings, such as through prefixes and suffixes (459).

Researchers (Krakowiak, 1995, 2012; Dłużniewska, 2016, 2021; Miller, 2004, 2005) in the field of reading in deaf people unanimously emphasize that mastery of reading comprehension poses a particularly difficult challenge for this group. Although there is ongoing focus on

the importance of developing this skill in the education system, efforts to create effective strategies so far have not yielded satisfactory results. The issue may lie in the excessive focus on the debate over selecting the primary communication system for the linguistic and cultural minority of deaf individuals, which distracts from the main concern—restricted access to spoken language. It is this lack that is a significant barrier to fully realizing the intellectual potential of many deaf people.

Linguistic competence plays a key role in reading, as it is what makes it possible to understand and interpret a text. Linguistic competence includes knowledge of vocabulary, grammar, and syntax, as well as the ability to recognize and interpret the meanings of words in different contexts. Without an adequate level of this competence, readers may encounter difficulties in reading the author’s intentions, understanding deeper content, or making inferences based on the information they have read. Linguistic competence also influences the ability to analyze a text, detect its structure, and distinguish important from less important information. Individuals with developed linguistic competence are able to process information fluently, which allows them not only to understand the text but also to critically evaluate it and apply the knowledge they have acquired. Moreover, linguistic competence is crucial for the development of reading comprehension skills at different levels, from simple narrative texts to complex, specialized material. Therefore, its development, especially in early childhood education, is the foundation for effective reading and subsequent learning.

3 Comparative case studies from different educational systems: the experiences of DHH students across various cultural contexts

To capture the diversity of D/deaf and hard-of-hearing (DHH) learners’ experiences across various cultural contexts, a broader range of comparative case studies could include the following:

A comparison between Deaf education in the United States and Finland highlights distinct educational frameworks. In the U.S., DHH students benefit from diverse approaches, such as mainstream schooling with sign language interpreters and specialized schools using American Sign Language (ASL). The Individuals with Disabilities Education Act (IDEA) ensures DHH students receive tailored support and accommodations (Traxler, 2000). In contrast, Finland emphasizes inclusivity, offering bilingual education in Finnish Sign Language and written Finnish, and prioritizing the integration of DHH students into mainstream classrooms alongside individualized support (Mäki and Vuorinen, 2021).

The educational experiences of DHH students in Japan and Sweden also differ significantly. In Japan, students often attend specialized schools that focus on oral communication and lip-reading, though there is a growing acceptance of sign language (Muto and Hara, 2018). Sweden, on the other hand, provides a bilingual educational model, with Swedish Sign Language and Swedish as the mediums of instruction, and DHH students are integrated into regular schools with necessary accommodations, such as sign language interpreters and assistive technology (Rönnerberg and Josefsson, 2019).

In the United Kingdom and New Zealand, both countries have diverse provisions for DHH learners. In the UK, DHH students can attend residential schools or mainstream schools with support

¹ The reader will find a full description of the strategies in the publication: E. Domagała-Zyśk, Multilingual. Deaf and hard-of-hearing students in the process of learning and teaching foreign languages. Lublin, KUL 2013.

services, with a focus on British Sign Language (BSL) and inclusion in mainstream classrooms (Gaskell and Seymour, 2018). New Zealand follows a bilingual-bicultural approach, offering education in both New Zealand Sign Language (NZSL) and English, ensuring inclusion through either specialized schools or integrated mainstream classrooms (Knors and Marschark, 2014).

Australia and Germany demonstrate contrasting approaches to educating DHH students. Australia has a mixed system that includes specialized institutions and mainstream schools offering access to Auslan (Australian Sign Language). The National Disability Insurance Scheme (NDIS) provides tailored support services (Monk and Sims, 2020). Germany, traditionally home to specialized schools using German Sign Language (DGS), is increasingly adopting more inclusive practices, integrating DHH students into mainstream classrooms with adaptations like sign language interpreters and speech-to-text services (Müller and Lütke, 2015).

In South Africa and Brazil, the educational provision for DHH students varies considerably. In South Africa, many DHH students attend specialized schools, with limited access to resources in rural areas. South African Sign Language (SASL) is integrated into the curriculum, although challenges remain (Polack, 2015). Brazil, focusing on bilingual education, emphasizes both Brazilian Sign Language (LIBRAS) and written Portuguese, but continues to face challenges in resource allocation and teacher training (Sanches and Lima, 2017).

Lastly, Canada and Norway offer differing models for DHH education. In Canada, DHH students have a range of educational options, including specialized schools and mainstream institutions with sign language interpreters, though the emphasis on bilingual education varies by province (Knors and Marschark, 2014). Norway integrates DHH students into mainstream schools with support services, recognizing Norwegian Sign Language (NSL) as an official language, and offering education in both NSL and Norwegian, depending on individual needs (Tveit and Schreiber, 2018).

These comparative case studies illustrate how different cultural, educational, and legal frameworks impact the experiences of DHH learners. They underscore the successes and challenges of various educational approaches and show how different systems adapt their teaching methods, resources, and curricula to better meet the needs of DHH students.

4 Methodology—research aim, participants, and teaching context

The primary aim of the study was to determine which teaching styles and strategies for learning English to DHH students are dominant. The teaching styles and strategies were examined in relation to reading comprehension (1) and learning difficulties (2). The quantitative research tool was a questionnaire consisting of three thematic blocks covering the above-mentioned language skills. In each block, the participants were asked to answer closed questions, selecting one of the following options: *I never do **I sometimes do ***I always do.

The main research questions were:

1. What types of reading strategies do DHH students apply in developing reading comprehension?

2. What are the differences in reading strategies applications regarding the four variables, that is gender, degree of hearing loss, method of communication with the environment, and time of onset of hearing loss?
3. What kind of general difficulties do DHH students encounter in the process of acquiring foreign languages?

Fifteen primary schools that serve D/deaf and hard-of-hearing students were randomly chosen and invited to participate in the study. Responses with agreement to participate were received from ten schools located in Lublin, Greater Poland, and Masovian Voivodeships, and a snowball sampling method was employed to gather the expected results. The participants were 55 students from grades VII and VIII of a primary school, including 32 girls and 23 boys, who as part of the school's offerings follow a curriculum in line with the Core Curriculum for General.

Regarding the gender categorization, respondents were provided with the option to select "other" allowing for flexibility in gender identification. However, since no participants selected this option, it was not included in the analysis. It is important to explicitly mention this aspect in the study to enhance clarity and inclusivity. Education in primary schools adapted to the needs and abilities of students with hearing impairments. English language lessons are conducted using methods tailored to the needs and capabilities of DHH children, with students systematically working on speech development, vocabulary enrichment, and articulation improvement. Classes are conducted with adjustments to the communication methods according to the student's needs.

There are various educational challenges for DHH students in Poland. Firstly, the number of specialized schools is limited. In Poland, there are relatively few schools specifically designed for DHH students. These specialized schools are often located in larger cities, making access difficult for children from rural areas or small towns. While efforts have been made to integrate DHH students into mainstream schools, many schools lack adequate resources, such as trained teachers, interpreters, and assistive technology. As a result, many DHH students face significant barriers in mainstream education. Secondly, there are some communication barriers mostly represented by an insufficient use of sign language. Although Polish Sign Language is recognized, its use in education is not widespread. Many teachers are not proficient in using it, and teaching materials designed specifically for sign language users are scarce. Additionally, there is a problem with teacher training and support. Teachers in mainstream schools often do not have the specialized training needed to support DHH students. This includes training in Polish Sign language, understanding the cognitive and social needs of DHH students, and strategies for inclusive education. Moreover, there is a shortage of support staff. Schools often lack crucial support staff, such as interpreters, speech therapists, and special education counselors. Finally, there are issues regarding policy and legal framework. While Poland has laws ensuring the right to education for DHH students, implementation and enforcement of these laws vary. Many schools do not fully comply with accessibility standards, and funding for necessary accommodations is often insufficient. There are ongoing efforts to promote inclusive education, but significant disparities remain in the quality of education provided to DHH students in different regions (Oxford, 1990; Krakowiak, 1995; Domagała-Zyśk and Podlewska, 2012; Dłużniewska, 2021; Kołodziejczyk, 2021; Kamiński, 2021).

5 Results

The study analysis assessed the significance of differences through statistical methods. The grouping variables were: gender, degree of hearing loss, method of communication with the environment, and hearing loss onset. The relevant tests for this analysis include the Mann–Whitney U test for independent samples (used when the grouping variable divides participants into two groups) and the Kruskal–Wallis test for independent samples (used when the grouping variable divides participants into more than two groups). The significance threshold is set at $p = 0.05$. All data that was statistically significant is highlighted with an asterisk in the tables.

5.1 Reading strategies and gender

Based on the results from the Mann–Whitney U test presented in Table 1, the following analysis of the reading strategies across gender groups (male and female) can be made:

1. Pre-reading strategies:

These strategies focus on preparing for reading before engaging with the text. They include attempts to predict, skim, or analyze the structure of the text:

“I try to guess what the text is about BEFORE reading it” ($p = 0.627$); “I skim the text first: I notice the length, organization, use of charts, pictures, etc.” ($p = 0.803$); “I decide what to read in detail and what to ignore” ($p = 0.531$).

2. During-reading strategies:

These strategies are used while reading, such as engaging with the text through visual aids, adjusting reading speed, or taking time to reflect:

“I use tables, figures and pictures in text to increase my understanding” ($p = 0.297$); “I notice typographical aids like words in bold to identify important information” ($p = 1.000$); “I adjust my reading speed according to what I’m reading” ($p = 0.383$); “I stop from time to time and think about what I’m reading” ($p = 0.162$).

3. Post-reading strategies:

These strategies are used after reading the text, including activities like summarizing, visualizing, and discussing the content:

“I try to picture or visualize information in the text to help me remember what I read” ($p = 0.156$); “I try to guess the meaning of unknown words” ($p = 0.578$); “I take notes when reading to help me remember what I’m reading” ($p = 0.497$); “I summarize what I read to reflect on important information in the text” ($p = 0.520$); “I underline or circle information in the text to help me remember it” ($p = 0.668$); “I put ideas from the text into my own words to better understand what I read” ($p = 0.815$); “I discuss what I read with others to make sure I understand the text” ($p = 0.515$).

For all the reading strategies examined, the Mann–Whitney U test results show no significant differences between genders. Therefore, the null hypothesis is accepted for each statement, meaning that both male and female participants seem to employ these reading strategies in similar ways, regardless of gender.

I. Degree of hearing loss and reading strategies

For the majority of the statements in the above table, the null hypothesis was accepted, indicating no significant difference in how participants with varying degrees of hearing loss approach these specific pre-, during, and post-reading strategies. However, there are also statements with significant statistical differences ($p \leq 0.05$), indicating that participants with different degrees of hearing loss employed significantly different reading strategies in these cases:

TABLE 1 Reading strategies, grouping variable: gender.

Statements	Significance
I try to guess what the text is about BEFORE reading it.	0.627
I skim the text first: I notice the length, organization, use of charts, pictures, etc.	0.803
I decide what to read in detail and what to ignore.	0.531
I use tables, figures, and pictures in the text to increase my understanding.	0.297
I notice typographical aids like words in bold to identify important information.	1.000
I adjust my reading speed according to what I’m reading.	0.383
I stop from time to time and think about what I’m reading.	0.162
I try to picture or visualize information in the text to help me remember what I read.	0.156
I try to guess the meaning of unknown words.	0.578
I take notes when reading to help me remember what I’m reading.	0.497
I summarize what I read to reflect on important information in the text.	0.520
I underline or circle information in the text to help me remember it.	0.668
I put ideas from the text into my own words to better understand what I read.	0.815
I discuss what I read with others to make sure I understand the text.	0.515

Mann–Whitney U test for independent samples.

TABLE 2 Reading strategies, grouping variable: degree of hearing loss.

Statements	Significance
1. I try to guess what the text is about BEFORE reading it.	0.978
2. I skim the text first: I notice the length, organization, use of charts, pictures, etc.	0.608
3. I decide what to read in detail and what to ignore.	0.946
4. I use tables, figures, and pictures in the text to increase my understanding.	0.584
5. I notice typographical aids like words in bold to identify important information.	0.042*
6. I adjust my reading speed according to what I'm reading.	0.642
7. I stop from time to time and think about what I'm reading.	0.938
8. I try to picture or visualize information in the text to help me remember what I read.	0.099
9. I try to guess the meaning of unknown words.	0.055*
10. I take notes when reading to help me remember what I'm reading.	0.879
11. I summarize what I read to reflect on important information in the text.	0.079
12. I underline or circle information in the text to help me remember it.	0.005
13. I put ideas from the text into my own words to better understand what I read.	0.115
14. I discuss what I read with others to ensure I understand the text.	0.036*

Kruskal-Wallis test for independent samples.

- “I notice typographical aids like words in bold to identify important information” ($p = 0.042$) This suggests that the degree of hearing loss may influence how participants pay attention to typographical cues such as bold or italicized text to identify key information.
- “I try to guess the meaning of unknown words” ($p = 0.055$ – marginal significance, close to threshold). Although this result is just above the significance level, it still indicates a trend toward a difference in how participants infer the meaning of unfamiliar vocabulary.
- “I discuss what I read with others to ensure I understand the text” ($p = 0.036$)

This implies that the degree of hearing loss may affect how frequently DHH participants engage in discussions about what they have read, potentially reflecting differences in communication preferences or opportunities (Table 2).

II. Method of communication and reading strategies

The table below presents the results of a Kruskal-Wallis test for independent samples, where the grouping variable is the method of communication with the environment (e.g., spoken language, sign language, or a combination of both). The test aims to determine whether the method of communication significantly affects the use of various reading strategies by D/deaf and hard-of-hearing (DHH) students. For most reading strategies, the null hypothesis was accepted, meaning there were no significant differences in how students using different communication methods approach these strategies. However, there is one statement with a statistically significant difference ($p \leq 0.05$), Table 3.

Regarding the application of the pre-reading strategies:

“I try to guess what the text is about BEFORE reading it” ($p = 0.988$);

“I skim the text first: I notice the length, organization, use of charts, pictures, etc.” ($p = 0.532$); “I decide what to read in detail and what to ignore” ($p = 0.804$). The p -value in all strategies suggests that the method of communication does not significantly affect the decision-making process regarding which parts of the text to read in detail or ignore.

In terms of during-reading strategies:

“I use tables, figures, and pictures in the text to increase my understanding” ($p = 0.541$); “I notice typographical aids like words in bold to identify important information” ($p = 0.225$); “I adjust my reading speed according to what I'm reading” ($p = 0.516$); “I stop from time to time and think about what I'm reading” ($p = 0.794$); “I try to picture or visualize information in the text to help me remember what I read” ($p = 0.219$); “I try to guess the meaning of unknown words” ($p = 0.280$). The p -value suggests that students across communication methods use similar strategies for guessing the meaning of unfamiliar words, indicating no significant difference in this approach.

Concerning the post-reading strategies:

“I take notes when reading to help me remember what I'm reading” ($p = 0.957$); “I summarize what I read to reflect on important information in the text” ($p = 0.235$); “I put ideas from the text into my own words to better understand what I read” ($p = 0.161$); “I discuss what I read with others to ensure I understand the text” ($p = 0.076$); “I underline or circle information in the text to help me remember it” ($p = 0.046$). This strategy reveals a significant difference ($p = 0.046$), suggesting that students who use various communication methods may vary in their use of underlining or circling as a retention strategy. This implies that certain students may rely on this technique more than others, potentially due to variations in how visual or tactile strategies are applied depending on the communication method.

III. Hearing loss onset and strategy use

The null hypothesis for each statement assumes that there is no difference in strategy use based on the time of onset of hearing loss.

TABLE 3 Reading strategies, grouping variable: method of communication with the environment.

Statements	Significance
1. I try to guess what the text is about BEFORE reading it.	0.988
2. I skim the text first: I notice the length, organization, use of charts, pictures, etc.	0.532
3. I decide what to read in detail and what to ignore.	0.804
4. I use tables, figures, and pictures in text to increase my understanding.	0.541
5. I notice typographical aids like words in bold to identify important information.	225
6. I adjust my reading speed according to what I'm reading.	0.516
7. I stop from time to time and think about what I'm reading.	0.794
8. I try to picture or visualize information in the text to help me remember what I read.	0.219
9. I try to guess the meaning of unknown words.	0.280
10. I take notes when reading to help me remember what I'm reading.	0.957
11. I summarise what I read to reflect on important information in the text.	0.235
12. I underline or circle information in the text to help me remember it.	0.046*
13. I put ideas from the text into my own words to better understand what I read.	0.161
14. I discuss what I read with others to ensure I understand the text.	0.076

Kruskal-Wallis test for independent samples.

For all reading strategies, the p -values are greater than the significance threshold of 0.05, leading to the acceptance of the null hypothesis in each case. This indicates that hearing loss onset does not have a statistically significant impact on the use of any specific reading strategy. However, the detailed findings indicate the what is the frequency of applying the pre-, during-, and post-reading strategies by DDH students. The results are as follows:

1. Pre-reading strategies:

"I try to guess what the text is about before reading it" ($p = 0.926$); "I skim the text first: I notice the length, organization, use of charts, pictures, etc." ($p = 0.436$); "I decide what to read in detail and what to ignore" ($p = 0.856$).

There are no significant differences between students with pre-lingual and post-lingual hearing loss in terms of how they approach a text before reading. Both groups tend to use similar strategies for getting an initial sense of the content.

2. During-reading strategies:

"I use tables, figures, and pictures in the text to increase my understanding" ($p = 0.685$); "I notice typographical aids, like bold words, that identify important information" ($p = 0.132$); "I adjust my reading speed according to what I'm reading" ($p = 0.203$); "I stop from time to time and think about what I'm reading" ($p = 0.190$); "I try to picture or visualize information in the text to help me remember what I read" ($p = 0.956$); "I try to guess the meaning of unknown words" ($p = 0.968$).

The results show no significant variation in the use of strategies while reading. Both groups rely on visual aids, typographical cues, and self-monitoring techniques to a similar extent.

3. Post-reading strategies:

"I take notes when reading to help me remember what I'm reading" ($p = 0.663$); "I summarise what I read to reflect on important information in the text" ($p = 0.397$); "I underline or circle information

in the text to help me remember it" ($p = 0.385$); "I put ideas from the text into my own words to better understand what I read" ($p = 0.325$); "I discuss what I read with others to ensure I understand the text" ($p = 0.671$). Post-reading strategies, such as note-taking, summarizing, and discussing, also show no statistically significant differences between students based on when their hearing loss occurred. Both groups appear to engage in similar reflective and interactive approaches to enhance reading comprehension (Table 4).

6 Discussion of the results

The study conducted reveals significant differences in the use of styles and strategies for developing reading comprehension among DDH students. In terms of the first research question (RQ1):

1. What types of reading strategies do DDH students apply in developing reading comprehension? (RQ 1.)

Deaf and Hard-of-Hearing (DDH) students often use a variety of reading strategies to develop reading comprehension. Some of the common strategies include:

- *visualizing*: DDH students may use mental imagery to create pictures or scenarios based on the text to improve understanding, especially since they often rely on visual cues for learning. e.g. "I try to picture or visualize information in the text to help me remember what I read" ($p = 0.156$)."
- *contextual clues*: They often use the surrounding context of a word, sentence, or paragraph to infer meaning, particularly when encountering unfamiliar vocabulary or concepts. e.g. "I notice typographical aids like words in bold to identify important information" ($p = 1.000$)."
- *repetition and re-reading*: Re-reading texts multiple times helps reinforce comprehension, allowing DDH students to process the information more thoroughly. e.g. "I skim the text first: I notice the length, organization, use of charts, pictures, etc." ($p = 0.803$)."

TABLE 4 Reading strategies, grouping variable: time of onset of hearing loss.

Statements	Significance
I try to guess what the text is about BEFORE reading it.	0.926
I skim the text first: I notice the length, organization, use of charts, pictures, etc.	0.436
I decide what to read in detail and what to ignore.	0.856
I use tables, figures, and pictures in the text to increase my understanding.	0.685
I notice typographical aids, like bold words, that identify important information.	0.132
I adjust my reading speed according to what I'm reading.	0.203
I stop from time to time and think about what I'm reading.	0.190
I try to picture or visualize information in the text to help me remember what I read.	0.956
I try to guess the meaning of unknown words.	0.968
I take notes when reading to help me remember what I'm reading.	0.663
I summarize what I read to reflect on important information in the text.	0.397
I underline or circle information in the text to help me remember it.	0.385
I put ideas from the text into my own words to better understand what I read.	0.325
I discuss what I read with others to ensure I understand the text.	0.671

Mann–Whitney U test for independent samples.

- *graphic organizers*: DDH students often benefit from using graphic organizers like charts, mind maps, or storyboards to structure information visually and clarify relationships between ideas. e.g. “I use tables, figures, and pictures in the text to increase my understanding ($p = 297$).”
- *peer assistance*: Collaborative reading with peers, including those who share the same language and experiences, helps in exchanging ideas and ensuring a clearer understanding of the text. e.g. “I discuss what I read with others to make sure I understand the text ($p = 0.515$).”

The research results confirm the scientific findings by Domagała-Zyśk (2013) and Dłużniewska (2016) who stated that implementing specific strategies for teaching and learning reading comprehension is essential. While commonly employed methods for working with deaf and hard-of-hearing students are valuable, they should be enhanced with strategies characteristic of glottodidactics. Notable strategies include the use of keywords, activating prior general knowledge, the “reading bath” technique, and reading texts focused on the experiences of deaf and hard-of-hearing individuals. To conclude, researchers studying reading in deaf individuals consistently highlight that mastering reading comprehension presents a particularly significant challenge for this group. Despite ongoing emphasis within the education system on developing this skill, efforts to create effective strategies have yet to yield satisfactory outcomes. One possible reason for this is an overemphasis on debates surrounding the selection of the primary communication system for the linguistic and cultural minority of deaf people. This focus may divert attention from the critical issue—limited access to spoken language. This limitation poses a substantial obstacle to fully unlocking the intellectual potential of many deaf individuals (Krakowiak, 2017; Kamiński, 2021; Kołodziejczyk, 2021).

Regarding the second research question: What are the differences in reading strategies applications regarding the four variables, that is gender, degree of hearing loss, method of communication with the environment, and time of onset of hearing loss? (RQ 2.)

The obtained results indicate no statistically vital results regarding the gender and the time of onset of hearing loss variables of DDH students and the application of reading strategies. In the process of analysis, there are some crucial differences in terms of the degree of hearing loss and the method of communication with the environment.

Concerning the first mentioned, there are statistically significant results regarding the strategy “I notice typographical aids like words in bold to identify important information ($p = 0.042$).”

- Female students more often apply this strategy than male students.
- Students with severe hearing loss always apply this strategy.
- DHH students, who communicate via sign language or both (spoken and sign languages), apply the strategy “sometimes” or “always”
- Prelingually deaf use the strategy “sometimes”

Regarding the second mentioned variable, which is the method of communication with the environment, a significant number of DHH students who communicate via spoken language sometimes apply this strategy (60%). What is more, DHH students who communicate via sign language also state that this strategy is used quite often (64%).

Finally, as the scientific research by Czerniawska (1994) and Szymczak (2012) proves, the deliberate application of learning strategies enhances the efficiency of the DHH students’ learning process. These strategies enable individuals to absorb more information, organize their knowledge, gain deeper self-awareness, better understand their environment, and explore the world more extensively. They contribute to the satisfaction of achieving success. While they do not remove the need for effort, they foster a sense of agency and imbue actions with purpose.

Finally, concerning the third research question: What kind of general difficulties do DHH students encounter in the process of acquiring foreign languages based on the questions in the questionnaire? (RQ 3.) The results indicate that DHH students face a variety of challenges when acquiring foreign languages due to

differences in auditory access, language processing, and educational support. Below are some general difficulties:

1. Limited Auditory Access

Almost all of the study participants (53 out of 55 participants) stated that they have difficulties with phonological awareness: DHH students often have limited exposure to the sounds of the target language, making it difficult to develop phonological awareness and reproduce sounds accurately. Additionally, significant challenges in developing listening skills were identified, with 30 out of 55 participants pointing out that difficulties in accessing auditory input impede the growth of listening comprehension, which is a crucial aspect of learning a foreign language.

2. Dependence on Visual Modalities

Some DHH students (21 out of 55 participants) indicated difficulties with lip-reading and sign language. They explained that relying too much on lip-reading or sign language may not accurately reflect the structure and grammar of a foreign language. Besides, a great number of study participants (45 out of 55 DHH students) pointed to visual overload as a major obstacle. The need to process information visually (e.g., reading, watching interpreters, or captions) often leads to cognitive overload.

3. Gaps in Foundational Language Skills

Several DDH students (22 out of 55) admitted that limited literacy skills in their native language impact their ability to learn grammar, syntax, and vocabulary in the foreign language.

4. Pedagogical Challenges

A large number of study participants (49 out of 55) pointed out the absence of tailored teaching materials as a challenge. Much of foreign language instruction depends largely on auditory methods, like listening exercises and oral practice, which may not be accessible to DHH learners. Additionally, some DHH students mentioned that certain foreign language teachers lack the training to modify their teaching methods for DHH students, such as incorporating visual aids, captioned videos, or sign language.

5. Social and Psychological Barriers

Finally, some DHH students (23 out of 55) admitted feeling excluded from group activities or conversations in the foreign language, reducing practice opportunities. Besides, there were some issues with motivation and confidence. Negative past experiences in language learning or a lack of role models fluent in multiple languages lead to reduction of motivation and self-efficacy.

(DHH) students in foreign language acquisition. The research confirms that DHH students employ a variety of strategies to develop reading comprehension, including visualizing, using contextual clues, repetition, graphic organizers, and peer assistance. These strategies align with prior research emphasizing the importance of tailored educational approaches for DHH students (Oxford, 1990; Domagała-Zyśk and Podlowska, 2012). However, the study also identifies gaps in current practices, particularly regarding the use of strategies for enhancing reading comprehension and the need for more inclusive teaching methods, such as incorporating visual aids and sign language (Dłużniewska, 2021; Kołodziejczyk, 2021).

Furthermore, the study reveals that the degree of hearing loss and the method of communication with the environment significantly influence the application of reading strategies. Notably, students with severe hearing loss and those using sign language or both spoken and sign language tend to apply certain strategies more frequently. However, no significant differences were found in relation to gender or the time of onset of hearing loss. These findings underline the need for customized strategies that consider the diverse communication methods and hearing profiles within the DHH student population (Krakowiak, 1995; Kamiński, 2021).

The study also outlines the general challenges DHH students encounter when acquiring foreign languages. Key difficulties include limited auditory access, dependence on visual modalities, gaps in foundational language skills, pedagogical challenges, and social and psychological barriers. These obstacles hinder the development of essential language skills, such as phonological awareness, listening comprehension, and grammar. Additionally, the lack of specialized teaching materials and insufficient teacher training further exacerbate these challenges (Karpińska-Szaj, 2024).

Overall, the results highlight the importance of developing more inclusive and accessible language learning strategies, as well as improving teacher preparation and support, to help DHH students overcome these barriers and achieve success in foreign language acquisition (Oxford, 1990; Dłużniewska, 2021). However, a more detailed exploration of practical classroom applications would greatly enhance the discussion for educators teaching DDH (Deaf and Hard of Hearing) students. For instance, teachers could implement differentiated instruction strategies by modifying the classroom environment with visual aids, sign language interpreters, and noise-reduction tools (Gaskell and Seymour, 2018; Mäki and Vuorinen, 2021). Bilingual approaches, such as using both sign language and spoken language, could be integrated into daily lessons, fostering inclusivity (Mäki and Vuorinen, 2021; Müller and Lütke, 2015). Collaborative learning activities, like peer tutoring or buddy systems, would encourage social interaction and academic support (Tveit and Schreiber, 2018). Additionally, using visual learning tools, adapted reading strategies, and formative assessments tailored to DDH students would promote engagement and understanding (Polack, 2015; Sanches and Lima, 2017). Emphasizing social-emotional support and self-regulated learning, alongside involving families and the community, would help create a holistic learning environment (Rönnerberg and Josefsson, 2019; Traxler, 2000). Professional development and continuous training for educators in deaf education strategies would further equip them with the necessary skills to address the diverse needs of DDH students, ensuring that all students have

7 Conclusion

In conclusion, the study highlights significant insights into the reading strategies and challenges faced by Deaf and Hard-of-Hearing

equitable access to education and opportunities for success (Knors and Marschark, 2014; Muto and Hara, 2018).

7.1 Limitations

The conducted research has its limitations – internal validity (differences among the participants resulting from their experiences in learning a foreign language, emotional maturity, as well as experience in acquiring knowledge) and external validity (small sample size). Bearing this in mind, the study sheds light on the styles and types of strategies used in foreign language learning by D/deaf and hard-of-hearing students and serves as a guide for teachers on how to work effectively.

Data availability statement

The datasets presented in this article are not readily available because it is personal data with no permissions obtained to share outside of the purposes for which it was collected. Requests to access the datasets should be directed to izabela.olszak@kul.pl.

Author contributions

IO: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. AB: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation,

Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

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The author(s) declare that no Gen AI was used in the creation of this manuscript.

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References

- Aharony, N. (2006). The use of deep and surface learning strategies among students learning English as a foreign language in an internet environment. *Br. J. Educ. Psychol.* 76, 851–866. doi: 10.1348/000709905X79158
- Biggs, J. (1993). What do inventories of students' learning process really measure? A theoretical review and clarification. *Br. J. Educ. Psychol.* 63, 3–19. doi: 10.1111/j.2044-8279.1993.tb01038.x
- Czerniawska, E. (1994). *Ja i moja pamięć. O użytecznych strategiach uczenia się*. Warszawa: WSiP.
- Czerniawska, E., and Jagodzińska, M. (2007). *Jak się uczyć? 1st Edn*. Bielsko-Biała: Wydawnictwo Park Sp. z o.o.
- Dłużniewska, A. (2016). "Rola języka w opanowywaniu umiejętności rozumienia czytanego tekstu przez dzieci i młodzież z uszkodzeniami słuchu w świetle Interaktywnego Modelu Czytania D.E" in *Język i wychowanie. Księga jubileuszowa z okazji 45-lecia pracy naukowej Profesora Kazimierza Krakowiaka*. eds. W. E. Rumelharta, A. Domagała-Zyśk and R. K. Borowicz (Lublin: KUL), 453–464.
- Dłużniewska, A. (2021). Rozumienie tekstów literackich przez uczniów z uszkodzeniami słuchu. Kraków: Oficyna Wydawnicza Impuls.
- Domagała-Zyśk, E. (2013). *Wielojęzyczni. Studenci niesłyszący i słabosłyszący w procesie uczenia się i nauczania języków obcych*. Lublin: KUL.
- Domagała-Zyśk, E. (2016). Głębokie i powierzchniowe strategie uczenia się języka obcego studentów niesłyszących i słabosłyszących. *Rozpr. Społecz.* 10, 31–35.
- Domagała-Zyśk, E., and Podlewska, A. (2012). "Umiejętności polskich studentów z uszkodzeniami słuchu w zakresie posługiwania się mówioną formą języka angielskiego" in *Student z niepełnosprawnością w środowisku akademickim*. eds. K. Kutek-Sładek, G. Godawa and Ł. Ryska (Kraków: Wydawnictwo św. Stanisława BM), 147–159.
- Gaskell, M., and Seymour, H. (2018). Deaf education in New Zealand: the role of New Zealand sign language. *Deaf Educ. Int.* 20, 116–123. doi: 10.16953/dei.635
- Kamiński, K. (2021). Teaching foreign languages to the deaf in Poland. *Linguistische Treffen Wrocław* 20, 217–226.
- Karpińska-Szaj, K. (2024). Różnorodność osób z uszkodzeniami słuchu w nauczaniu/uczeniu się języków obcych. *Języki Obce w Szkole* 2024, 123–128. doi: 10.47050/jows.2024.3.123-128
- Knors, H., and Marschark, M. (2014). *Teaching deaf learners: psychological and developmental foundations*. Oxford, United Kingdom: Oxford University Press.
- Kołodziejczyk, R. (2021). *Jak dzieci z uszkodzeniami słuchu radzą sobie z trudnościami językowymi? Nie głos, ale słowo* (8). Lublin: KUL.
- Krakowiak, K. (1995). *Fonogesty jako narzędzie formowania języka dzieci z uszkodzonym słuchem*. Lublin: Wydawnictwo UMCS.
- Krakowiak, K. (2012). *Dar języka. Podręcznik metodyki wychowania językowego dzieci i młodzieży z uszkodzonymi narządami słuchu*. Lublin: KUL.
- Krakowiak, K. (2017). *Niepełnosprawni we wspólnocie zmierzającej do solidarności i odpowiedzialności*. Lublin: KUL.
- Mäki, S., and Vuorinen, M. (2021). Educational inclusion of students with hearing impairments in Finland: the role of bilingual education. *Int. J. Incl. Educ.* 25, 502–516. doi: 10.1080/13603116.2019.1622761
- Miller, P. (2004). Processing of written words by individuals with prelingual deafness. *J. Speech Lang. Hear. Res.* 47, 979–989. doi: 10.1044/1092-4388(2004/072)
- Miller, P. (2005). What the word processing skills of prelingually deafened readers tell about the roots of dyslexia. *J. Dev. Phys. Disabil.* 17, 369–393. doi: 10.1007/s10882-005-6620-9
- Monk, S., and Sims, E. (2020). Educational practices for deaf and hard of hearing students in Australia. *Aust. N. Z. J. Deaf Educ.* 24, 29–43. doi: 10.1002/dei.1215
- Müller, F., and Lütke, H. (2015). Education of deaf students in Germany: a comparison of oral and bilingual approaches. *Int. J. Deaf Stud.* 19, 413–425. doi: 10.1093/deaf/edv027

- Muto, A., and Hara, T. (2018). Deaf education in Japan: challenges and opportunities. *Int. J. Spec. Educ.* 33, 143–156.
- Oxford, R. (1990). *Language learning strategies: What every teacher should know*. Boston: Heinle & Heinle.
- Oxford, R. (1992/1993). Language learning strategies in a nutshell: update and ESL suggestions. *TESOL J.* 2, 18–22.
- Oxford, R. (2001). “Language learning styles and strategies” in *Teaching English as a second or foreign language*. ed. M. Celce-Murcia (Boston, MA: Heinle & Heinle), 359–366.
- Piłatowska, M. (2008). Świadomość stylów uczenia się - korzyści dla nauczyciela i studenta. *Acta Univ. Lodz.* 217, 121–132.
- Polack, S. (2015). Education of deaf learners in South Africa: barriers to inclusion. *J. Deaf. Stud. Deaf. Educ.* 20, 240–252. doi: 10.1093/deafed/env026
- Rönnerberg, J., and Josefsson, J. (2019). Swedish bilingual education for the deaf: policies and practices. *J. Deaf. Stud. Deaf. Educ.* 24, 307–316. doi: 10.1093/deafed/enz010
- Sanches, G. P., and Lima, J. D. (2017). Bilingual education for deaf students in Brazil: policies and practices. *Rev. Bras. Educ.* 22, 559–574. doi: 10.1590/S1413-24782017227025
- Szymczak, J. (2012). Świadome i autentyczne uczestniczenie w procesie uczenia się. Specyfika i znaczenie strategii uczenia się. *Forum Dydaktyczne* 9–10, 133–149.
- Traxler, C. B. (2000). The Stanford achievement test, 9th edition: national norming and performance of deaf and hard-of-hearing students. *J. Deaf. Stud. Deaf. Educ.* 5, 337–348. doi: 10.1093/deafed/5.4.337
- Tveit, J. F., and Schreiber, D. (2018). Inclusive education for deaf students in Norway: a review of practices and challenges. *Scand. J. Educ. Res.* 62, 489–505. doi: 10.1080/00313831.2016.1263160



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Internal motivation vs. learning environment support in EFL: evidence from students with diverse learning needs across four European countries

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This mixed-methods study explores the relationship between internal motivation and learning environment support in English as a Foreign Language (EFL) classrooms among students with diverse learning needs across four European contexts. Ninety-five students with visual, hearing, mobility impairments, or specific learning difficulties participated. Drawing on quantitative data from the Foreign Language Enjoyment Scale and qualitative interviews, the study examines how teacher support, peer collaboration, and technological tools shape learners' experiences. While both teacher and peer support significantly predict internal motivation, the strength and nature of this relationship vary depending on the type of learning need. In particular, teacher support was most influential for students with visual impairments and learning difficulties, while peer support played a greater role for students with hearing and mobility support needs. Notably, students' motivation often appeared to be independent of classroom-based support, with family encouragement emerging as a key informal driver. The study also identifies critical gaps in assistive technology training and access, with many students reporting limited instruction and inconsistent technical support. Students emphasized the need for accessible digital materials, flexible assessment strategies, and better-prepared teachers. Qualitative findings highlight preferences for structured environments, multimodal learning, and varied collaboration formats—individual, pair, or group—depending on students' specific support needs and classroom contexts. These results point to the need for targeted teacher education, inclusive pedagogical design, and sustained systemic efforts to ensure equity in language learning for students with diverse profiles.

KEYWORDS

foreign language learning, diverse learning needs, internal motivation, teacher support, peer support, assistive technologies, cross-national study, teacher and peer support

1 Introduction

Recent years have witnessed a growing emphasis on inclusive education, particularly in foreign language learning environments where students with diverse learning needs face unique challenges. We use the term “students with diverse learning needs” rather than “students with disabilities” to recognize that each learner brings unique strengths to the language learning process. As defined by Chilla et al. (2024, p. 6), diverse learning needs encompass “various backgrounds, developmental stages, skills and abilities, identities, and general physiological and psychological features of learners that might affect the current learning process or hinder the accessibility of content.” While Universal Design for Learning [UDL, Center for Applied Special Technology (CAST), 2024] principles have emerged as a promising framework for creating inclusive classrooms, significant gaps remain in understanding how different support systems influence students’ language learning experiences. Despite these documented benefits, access to quality foreign language instruction is frequently limited for students with diverse learning needs (Sparks, 2016). This cross-national European study examines the complex interplay between Learning Environment Support and internal motivation among students with diverse learning needs in English as a Foreign Language (EFL) classrooms. Drawing from data collected across Greece, Germany, Slovenia, and Poland, the research investigates how teacher support, peer collaboration, and technological tools shape the learning experiences of students with visual impairments, hearing impairments, physical disabilities, and specific learning difficulties. Through a mixed-methods approach combining quantitative analysis of Foreign Language Enjoyment Scale data with qualitative interviews, the study explores the effectiveness of current support systems and identifies areas for improvement in inclusive language education. Particular attention is paid to the role of Digital Technology (DT) tools, assessment strategies, and collaborative learning approaches in supporting these students’ language acquisition journey. This study adopts the term “Digital Technology” (DT) rather than “Information and Communication Technology” (ICT) to reflect the broader scope of technologies utilized in inclusive language education. While ICT has been widely used in previous literature, DT better encompasses the full spectrum of digital tools, platforms, and environments that support diverse learning needs, including assistive technologies, learning applications, and virtual environments. The findings reveal both the resilience of students with diverse learning needs and the critical importance of creating supportive learning environments that can effectively harness their internal motivation. By examining these factors across different European educational contexts, this research contributes valuable insights for educators, policymakers, and researchers working to enhance inclusive language education practices.

This study, conducted as part of the SPLENDID project (Supporting Foreign Language Learning for Students with Disabilities¹) funded by the Hellenic State Scholarships Foundation IKY of the Erasmus + program, aims to address these gaps by investigating the foreign language learning experiences of students with diverse needs across four European countries. The

project, led by the University of Macedonia, brings together nine partners, including five universities: the National and Kapodistrian University of Athens, Pädagogische Hochschule Heidelberg PHHD (Heidelberg University of Education), the John Paul II Catholic University of Lublin in Poland, and the University of Ljubljana in Slovenia.

2 Literature review

Recent research trends demonstrate a surge in scholarly attention toward inclusive pedagogical approaches, particularly since 2010 (Stentiford and Koutsouris, 2021). Modern educational frameworks have evolved beyond traditional differentiation models, embracing an approach that recognizes and values the inherent diversity of student learning profiles (Florian, 2015). This shift holds particular significance for language education, where diverse learning needs intersect with the complexities of second language acquisition.

The Universal Design for Learning [UDL, Center for Applied Special Technology (CAST), 2024] framework has emerged as a critical approach in educational settings. UDL emphasizes the need to create inclusive learning environments that accommodate diverse learning preferences and needs, thereby reducing barriers to education for all students, including those with disabilities (Black et al., 2015; Rao et al., 2014; Chavarría et al., 2023). One of the foundational aspects of UDL is its focus on flexibility and adaptability in teaching methods. Research indicates that UDL principles can significantly enhance the learning experiences of students with disabilities by providing multiple means of engagement, representation, and action/expression (Rao et al., 2015; Chavarría et al., 2023). Studies have shown that incorporating UDL into foreign language curricula not only supports students with disabilities but also enhances the overall learning environment for all students (Rivera, 2019). For example, Borzova and Shemanaeva (2020) highlighted the effectiveness of multifunctional tasks in foreign language education, which can be designed to cater to various learning styles and needs, thereby promoting inclusivity. This adaptability is further enhanced through the integration of technology and blended learning approaches, as demonstrated by Klimova et al. (2018) who found that diverse digital resources and learning modalities can effectively engage students with diverse learning preferences and needs. While the benefits of UDL are frequently highlighted, it is important to acknowledge critical perspectives on its limitations and implementation. Few would argue that designing a curriculum with inclusion in mind is a harmful pedagogical approach. UDL has certainly “opened a door” (Baglieri, 2020) for academics to upskill in their consideration of accessibility and inclusion. Further, student and teacher satisfaction with UDL are frequently reported to be high (e.g., Cumming and Rose, 2022). However, given the lack of evidence for effectiveness, it is important to critically reflect on the value of UDL. In particular, Creaven (2025) argues that the erasure of disability in UDL documentation, and the inability of UDL nor any instructional design approach to overcome the challenges of the built environment, requires contemplation. As Creaven (2025) argues, UDL’s emphasis on “all learners” while avoiding specific reference to disability can inadvertently marginalize students with

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extensive support needs by limiting opportunities to address their specific needs. Additionally, [Creaven \(2025\)](#) contends that UDL's focus on instructional design may distract from addressing more fundamental barriers in the physical and sensory environment that significantly impact students with diverse learning needs. Furthermore, research also reveals a significant implementation gap, as many educators lack the necessary training to effectively apply UDL principles in their teaching practices ([Moriña and Perera, 2018](#)). [Toyama and Yamazaki \(2021\)](#) highlight the barriers that insufficient faculty training presents, indicating that educators often struggle to implement UDL principles effectively, which can negatively impact learning outcomes for students with disabilities. [Diaz-Vega et al. \(2020\)](#) specifically noted that insufficient knowledge and implementation of Universal Design principles among university professors creates potential barriers for students with disabilities, highlighting the critical need for enhanced faculty development in inclusive educational practices. The implementation of UDL principles is closely tied to understanding the relationship between internal motivation and external support systems in language learning. Students with a high degree of internal motivation are more likely to engage in self-directed learning and persist in their language studies ([Pan and Chen, 2021](#); [Schwartzman and Boger, 2017](#)). For instance, [Pan and Chen \(2021\)](#) found that perceived usefulness and ease of use of technology, alongside teacher support, positively impacted students' self-directed language learning, particularly when accommodations align with individual learning needs. Based on the work of [Eichhorn et al. \(2019\)](#), applying UDL principles enables educators to create inclusive classrooms that acknowledge the diverse needs of English Learners (ELs), thereby enhancing engagement and learning outcomes for all students. External support systems are vital in fostering and sustaining internal motivation, especially for students with diverse learning needs; Teacher support has been shown to have a direct impact on students' motivation levels, with particular importance for learners with disabilities who may require additional scaffolding ([Piticari, 2023](#)). Teachers who provide encouragement, constructive feedback, and accessible resources can significantly enhance students' self-efficacy and motivation ([Lai, 2015](#); [Piticari, 2023](#)). [Huang \(2023\)](#) highlighted the importance of peer support in online language learning environments, noting that positive interactions among peers can enhance self-efficacy and mitigate negative emotions associated with language learning, which is particularly relevant for students who may face additional challenges due to their diverse learning needs. Educational technology can improve learners' self-efficacy and facilitate a more interactive and accessible learning experience ([Zhang, 2022](#)). [Zheng and Zhou \(2022\)](#) noted that cooperative online learning environments could enhance foreign language enjoyment while providing necessary accommodations for different learning needs. This indicates that when learners have access to supportive technological tools that align with UDL principles, their internal motivation can be further amplified, leading to improved language acquisition ([Allen et al., 2018](#)).

Self-Determination Theory (SDT), developed by Deci and Ryan ([Deci and Ryan, 1985](#); [Ryan and Deci, 2000](#)), provides a comprehensive framework for understanding motivation in educational contexts, including language learning. SDT posits that optimal learning occurs when three fundamental psychological needs are met: autonomy (experiencing choice and volition),

competence (feeling effective), and relatedness (feeling connected to others). [Alrabai \(2021\)](#) conducted a controlled longitudinal study demonstrating that autonomy-supportive teaching significantly enhanced learner autonomy in English language classrooms. His findings revealed that perceived choice emerged as the strongest predictor of learner autonomy, followed by perceived competence, teacher autonomy support, and intrinsic motivation. While Alrabai's research involved general EFL populations rather than students with diverse learning needs, the principles of SDT are particularly relevant to our study population. For students with diverse learning needs, the mechanisms through which autonomy and motivation develop may be even more complex, with family support potentially playing a crucial mediating role. [Wehmeyer \(2023\)](#) specifically examined SDT applications for learners with disabilities, emphasizing that when these students are encouraged to take control of their learning processes, their intrinsic motivation and subsequent learning outcomes improve substantially. Similarly, [Haakma et al. \(2017\)](#) demonstrate that need-supportive environments enhance motivation for students with congenital disabilities by addressing their basic psychological needs.

Bronfenbrenner's Ecological Systems Theory (EST) ([Bronfenbrenner, 1979, 1986](#)) provides a valuable lens through which to understand the complex interplay of environmental factors affecting students' language learning motivation. This theory conceptualizes development as occurring within nested environmental systems, from the immediate microsystem (family, classroom) to broader macrosystems (cultural attitudes, educational policies). As [Nolan and Owen \(2024\)](#) note, EST can be used to examine single factors, groups of factors or whole systems as well as the relationships therein. [Neal and Neal \(2013\)](#) offer an important reconceptualization of this theory, proposing that ecological systems should be viewed not as nested, but as "networked"—an overlapping arrangement of structures connected through social interactions. This networked perspective has particular relevance for language education, where "context" has become increasingly recognized as essential to second language acquisition ([Chong et al., 2023](#)). As [Liaqat et al. \(2025\)](#) demonstrate, the ecological environment in language learning settings involves multiple interconnected systems. Their research shows significant correlations between family connection and factors such as self-esteem and problem-solving, while finding that teacher support and peer support are significant direct predictors of academic resilience. Their analysis of these relationships within Bronfenbrenner's ecological framework illustrates how different microsystems contribute to students' resilience in language learning, with each system playing distinct yet complementary roles in supporting students' motivation and academic achievement. [Lansey et al. \(2023\)](#) apply the EST framework specifically to educational decision-making, demonstrating how the macrosystem—including institutional patterns, cultural beliefs, and both explicit and implicit ideologies—profoundly shapes how education teams perceive students with diverse needs and the services they require. Their research reveals that placement decisions often reflect these systemic influences rather than individual student needs.

Research into the psychological aspects of language acquisition reveals the intricate relationship between emotional wellbeing and learning outcomes. [Domagała-Zyśk \(2024\)](#), for example, emphasizes how affective factors shape the language learning

experience (Domagała-Zyśk, 2024), building upon foundational theories about emotional barriers in language acquisition (Krashen, 1985). Modern scholarship has shifted toward examining success factors, with researchers documenting connections between emotional engagement and language learning achievement. Studies reveal that students experiencing positive emotions demonstrate enhanced learning outcomes (Liu and Wang, 2021), stronger classroom participation (Pekrun et al., 2007), and increased target language communication (Khajavy et al., 2018). This aligns with broader positive psychology frameworks that emphasize the role of emotional engagement, interpersonal connections, and achievement recognition in educational success (Seligman, 2018).

While the negative emotional factors like Foreign Language Classroom Anxiety (Horwitz et al., 1986) have been investigated for a longer time now, the positive concept of Foreign Language Enjoyment is more recent. Investigations by Dewaele and MacIntyre (2014) 2016 highlight how positive classroom experiences enhance language learning effectiveness. Their research identifies three key elements that contribute to successful language acquisition: supportive learning environments, student attitudes, and relationship dynamics between learners and educators. These findings gain additional significance when considering students with diverse learning needs.

The intersection of sensory impairments and language learning presents unique considerations. Research indicates that sensory limitations can affect relationship formation patterns crucial for language development (Rodbroe and Janssen, 2006). Studies emphasize the importance of student agency in educational decisions, noting its particular relevance for maintaining engagement among at-risk learners (Down and Choules, 2017). Supportive student-teacher relationships emerge as a crucial factor, with research demonstrating their impact on learning motivation (Clark, 2000; Deci et al., 1991).

Visual impairments create distinct challenges in language acquisition, particularly regarding incidental learning opportunities typically available through observation (Corn and Erin, 2010; D'Andrea and Siu, 2015). For deaf and hard of hearing students, language learning involves unique obstacles while offering paths for academic growth (Domagała-Zyśk et al., 2021). Current research explores various aspects of their language development, including written communication skills and comprehension strategies (Domagała-Zyśk and Podlowska, 2024, Chomicz, 2025), reading comprehension skills (Sedláčková, 2016), EFL listening (Domagała-Zyśk and Podlowska, 2024) and speaking competences (Domagała-Zyśk and Podlowska, 2019, Domagała-Zyśk, 2021). Research does not only tackle the issues of removing the obstacles and barriers in EFL learning, but also enhancing learner autonomy (Sedlackova and Tothova, 2022), fostering motivation (Kontra and Csizer, 2020) or enhancing and measuring learning enjoyment in EFL for deaf and hard of hearing students (Domagała-Zyśk, 2024).

Learning disabilities introduce additional complexity to foreign language instruction. Conditions like dyslexia affect both native and foreign language processing, necessitating specialized instructional approaches (Nijakowska, 2019). Studies by Kormos (2017a),b and Nijakowska (2020) document varying impacts on language literacy development. Languages with complex spelling patterns, such as English, present particular challenges (Reid, 2016;

Nijakowska, 2010). However, evidence suggests that appropriate educational adaptations enable successful language learning for most students with dyslexia (Nijakowska et al., 2016).

Students with physical disabilities exhibit diverse language learning capabilities. Their performance spans the full spectrum of academic ability (Boenisch, 2016). While many demonstrate strong communication skills, some require additional support with learning structure and information processing (Bergeest et al., 2019). These findings emphasize the importance of tailored support systems that acknowledge individual learning profiles while maintaining high academic expectations.

These three theoretical frameworks—Universal Design for Learning (UDL), Self-Determination Theory (SDT), and Ecological Systems Theory (EST)—provide complementary lenses through which to examine the complex interplay between internal motivation and external support systems for language learners with diverse needs. While UDL focuses on how educational environments can be designed to accommodate diverse learning profiles through multiple means of engagement, representation, and action/expression (Rao et al., 2015), SDT explains the psychological mechanisms through which such adaptations foster motivation by satisfying needs for autonomy, competence, and relatedness (Ryan and Deci, 2000). EST extends this understanding by contextualizing these processes within interconnected environmental systems, from immediate classroom interactions to broader cultural and institutional frameworks (Bronfenbrenner, 1979). This integrated theoretical perspective suggests that students' internal motivation for language learning emerges from a complex ecosystem of support, where teacher practices (informed by UDL), psychological need satisfaction (as described by SDT), and multiple environmental layers (outlined by EST) interact in ways that have yet to be fully understood. Despite the theoretical richness of these frameworks, research examining how these elements interact specifically for students with diverse learning needs in foreign language contexts remains limited. In particular, the relative importance of different environmental systems—teachers, peers, family, and institutional structures—in supporting internal motivation for language learning has not been systematically investigated across different types of learning needs and national educational contexts. This gap underscores the need for a mixed-methods, cross-national approach that can capture both the patterns of relationship between environmental support and internal motivation (RQ1), their manifestation across different educational contexts (RQ2), and the influence of specific educational factors on these relationships (RQ3).

3 Methodology

This exploratory mixed-methods study adopted a cross-national perspective to examine the foreign language learning experiences of students with diverse learning needs. Recognizing existing research gaps and the necessity for a deeper understanding in this area, the study aimed to address the following research questions:

RQ1a: How does Learning Environment Support (teacher and peer support) influence students' internal motivation in language learning?

RQ1b: Which aspects have the strongest predictive power?

RQ2a: How do levels of Learning Environment Support and internal motivation compare across the four European countries?

RQ2b: How do these patterns differ among students with diverse learning needs?

RQ3: To what extent do educational factors (length of language study, school type, and language proficiency level) influence internal motivation and environmental factors among students with diverse learning needs who learn EFL?

3.1 Ethical considerations

The research project adhered to the respective regulations in Greece, Germany, Slovenia, and Poland, following each country's institutional and national guidelines for studies involving vulnerable groups. Strict ethical protocols were implemented to safeguard participant confidentiality and maintain data integrity. To ensure anonymity, student names were substituted with numerical identifiers during both data collection and analysis, and any identifying information was omitted from interview transcripts. Written parental consent was obtained for all participants, along with the students' assent. To verify the authenticity of interview data, all sessions were audio-recorded with consent and transcribed verbatim, with translations cross-checked by bilingual researchers from each participating nation. Standardized interview protocols were employed across all four countries to maintain consistency in data collection.

3.2 Sample characteristics

The study comprised 95 participants across four European countries: Greece ($n = 16$), Germany ($n = 24$), Slovenia ($n = 23$), and Poland ($n = 32$). While the primary target age range was 8–18 years to focus on primary and secondary education, the sample included seven Slovenian secondary students aged 18–25 with visual impairments, deaf/hard of hearing, learning difficulties, and mobility impairments. This inclusion aligned with established special education frameworks that recognize extended educational trajectories for students with disabilities, particularly in secondary settings where an individualized learning pace takes precedence over standardized age progression.

Participants represented four main categories of diverse learning needs: visual impairment ($n = 16$), Deafness/Hard of Hearing ($n = 14$), physical/motor impairment ($n = 32$), and specific learning difficulties ($n = 33$). The study adopted a broad conceptualization of specific learning difficulties (SpLD) as an umbrella term. While SpLD traditionally encompasses conditions such as dyslexia, dyspraxia/DCD, dyscalculia, and ADHD, we included six Polish students with Autism Spectrum Disorder (ASD) in this category for analytical purposes. This grouping is supported by research evidence, including Foti et al.'s (2015) meta-analysis of

11 studies demonstrating similar implicit learning patterns between individuals with ASD and those with other learning differences. Additionally, this classification aligns with the Individuals with Disabilities Education Act's (IDEA) definition of specific learning disabilities as “a disorder in one or more of the basic psychological processes involved in understanding or in using language” (US Department of Education, 2019, para 1).

The sampling strategy employed context-specific methods in each country to ensure representation of students with diverse learning needs. Inclusion criteria required participants to: (1) have an official diagnosis of disability from their respective national authorities, (2) be actively learning at least one foreign language, and (3) be enrolled in primary or secondary education in either mainstream or special education settings. While the study was open to students learning any foreign language, all participants were studying English, with some additionally pursuing other languages such as German or French. Students' linguistic performance was indicated using CEFR (Common European Framework of Reference for Languages) levels, which were most commonly reported jointly by teachers and students, or by parents and students. In a small number of cases (3), researchers estimated the CEFR level based on contextual indicators such as coursebooks in use, years of language study, and observed language use during the interview. These CEFR levels were used as an approximate indicator of English language proficiency for analytical purposes. Table 1 presents the profile of students with diverse needs who participated in the study.

3.3 Data collection and analysis

Data collection comprised semi-structured interviews lasting between 30 and 60 min, designed to gather both qualitative and quantitative information about participants' language learning contexts and proficiency levels. Students' experiences were evaluated using items from the Foreign Language Enjoyment Scale (Dewaele and MacIntyre, 2014), with responses recorded on a 5-point Likert scale. The qualitative analysis focused on the following questions:

Q1. DT Tools: Usage, Recommendations, and Support:

- Is there any specific support you would like to have? What tools do you use?
- Would you recommend them (why/why not)?
- Is there a particular tool that helps you in developing speaking/listening/writing/reading skills?
- Do you get any support using these tools?

Q2. Material formats, assessment strategies, and teacher support:

- How do you prefer to receive instructional materials and assignments in your foreign language classes?
- Do you have any specific needs when it comes to language assessment (tests, etc.)? What would you recommend your teacher should do to support you?

TABLE 1 Profile of students with diverse needs in EFL across four European countries ($n = 95$).

Country	Type of disability	Sex, age, CEFR level	Years studying	Type of school
Greece ($n = 16$)	Visual impairment	F15 (A2), F15 (A2), M17 (A2), M17 (B2)	4–6 years (2), 7–10 years (2)	Mainstream class with LSA (2), Mainstream class (2)
	Deafness/hard of hearing	F11 (Pre-A1), M14 (A1), F14 (B2), F16 (C1),	1–3 years (1), 7–10 years (3)	Mainstream class with LSA (2), Mainstream class (2)
	Specific learning difficulties	F13 (B1), M14 (B2), M17 (B2), M18 (C1)	4–6 years (1), 7–10 years (3)	Mainstream class with LSA (4)
	Mobility/physical disabilities	F12 (B1), M12 (A2), M17 (B1), M15 (C1)	4–6 years (3), 7–10 years (1)	Mainstream class (2), Mainstream class with LSA (2)
Germany ($n = 24$)	Deafness/hard of hearing	M9 (Pre-A1), M17 (B2)	1–3 years (1), 7–10 years (1)	Special needs (1), Secondary (1)-mainstream
	Specific learning difficulties	M11 (A1), M12 (A1), F16 (A2), M15 (B1), F16 (B1), M16 (B1)	4–6 years (2), 7–10 years (4)	Secondary (6)-mainstream
	Physical/motor impairments (Inc. ADHD and epilepsy)	F13 (Pre-A1), M10 (Pre-A1), M11 (Pre-A1), F12 (A1), F13 (A1), F14 (A1), M10 (A1), M11 (A1), M12 (A1), M13 (A1), M14 (A1), M15 (A1), M17 (A1), F14 (A2), M13 (A2), M14 (B1)	1–3 years (4), 4–6 years (8), 7–10 years (4)	Special needs (11), Secondary (5)-mainstream
	Visual impairments	F13 (A1), M13 (A1), F14 (A1), M13 (A1), F14 (A1), M13 (A1), M13 (A1), F13 (B1)	7–10 years (8)	Special education (7), Mainstream (1)
Poland ($n = 32$)	Deafness/hard of hearing	M9 (A1), F12 (A2), M12 (A2), F17 (B2), M16 (B2), F17 (B2), M16 (B2)	4–6 years (2), 7–10 years (2), > 10 years (3)	Special education (5), Mainstream (2)
	Specific learning difficulties	M11 (pre-A1), F8 (A1), M14 (A1), F11 (A1), F14 (A1), M11 (A2), M10 (B1), M16 (B1), M14 (B2), F13 (B2)	1–3 years (1), 4–6 years (4), 7–10 years (5)	Mainstream classroom (10)
	Autistic spectrum disorder	M11 (A1), M15 (A1), M13 (A1), M12 (A1), F12 (A2), M11 (C1)	4–6 years (4), 7–10 years (2)	Special education (4), Mainstream (2)
	Physical/motor impairments	M12(A2)	4–6 years	Mainstream
Slovenia ($n = 23$)	Visual impairments	F12 (A1), F9 (A1), M21 (B2), M13 (C2)	1–3 years (2), > 10 years (2)	Primary (3)-mainstream, Secondary (1)-special education
	Deafness/hard of hearing	M20 (A2)	4–6 years	Secondary-special education
	Physical/motor impairments (incl. ADHD)	F16 (A2), M19 (A2), M17 (A2), M13 (A2), M13 (A2), M23 (B1), F17 (B1), F16 (B1), M25 (B2), M21 (B2), M15 (C2)	1–3 years (1), 4–6 years (2), 7–10 years (7), > 10 years (1)	Primary (7)-mainstream, Secondary (4)-special education
	Specific learning difficulties	M11 (A1), F11 (A2), F10 (A2), F13 (A2), M14 (B1), M20 (B2), M16 (B2)	4–6 years (2), 7–10 years (3), > 10 years (2)	Secondary (6)-special education, Primary (1)-mainstream

LSA, Learning Support Assistant; CEFR, Common European Framework of Reference for Languages; ADHD, Attention-Deficit/Hyperactivity Disorder. Numbers in parentheses indicate the count of participants in each category.

- c. What does your teacher do that supports your learning with digital learning needs (DLN)?
- d. Can you refer to a time where your language teacher motivated you in learning English (e.g., they proposed that you should participate in a contest, engaged you in a debate, organized an innovative activity, etc.)?
- e. Is there anything you would like your teacher to do to support your language learning?

Q3. Student perspectives on group work and peer collaboration:

- a. How would you describe working with your classmates?
- b. How do you like working best (on your own, in pairs, in groups) and why?

Q4. Internal Motivation: Enjoyment, Challenges, and Support Systems

Internal motivation was explored through four open-ended questions addressing both positive and challenging aspects of language learning, as well as future goals and additional reflections. The first two questions were part of the original interview protocol and were deductively analyzed. The final two questions were more open-ended and analyzed inductively to capture emerging themes, particularly around family encouragement and learner aspirations.

- a. What do you enjoy about learning a foreign language? Is there an activity you really like?
- b. What makes it (sometimes) hard/difficult for you to learn the language(s)? Can you tell me a situation during which you had a problem? Were you able to solve the problem?
- c. What are your plans for learning and using languages in the future?
- d. Is there something else that you wish to add concerning your language learning pathway?

Together, these four questions provided insights into emotional engagement, perceived competence, learner resilience, and the motivational role of family support. This thematic block aligns closely with SDT—particularly the needs for autonomy, competence, and relatedness—and EST by situating learners' motivation within family, school, and broader sociocultural contexts.

3.3.1 Quantitative analysis

For this study, we constructed three distinct variables from the questionnaire items to examine different aspects of the foreign language learning experience: Internal Motivation (IM), Learning Environment Support—Teacher (LES-T), and Learning Environment Support—Peer (LES-P).

The Internal Motivation (IM) variable was constructed using nine items from the Foreign Language Enjoyment Inventory (Dewaele and MacIntyre, 2014) that capture students' personal engagement, emotional connection, and achievement in language learning: "I can be creative in my English classroom," "I don't get bored," "I enjoy learning English/foreign languages," "I feel as though I'm a different person," "I'm a worthy member of my English class," "I've learnt interesting things," "In my English

class I feel proud of my accomplishments," "It's cool to know English," and "Making errors is part of the learning process." These items were selected to reflect various aspects of internal motivation, including creativity, engagement, enjoyment, identity, self-worth, learning value, pride, positive attitude, and growth mindset.

The Learning Environment Support—Teacher (LES-T) variable was formed using three items that specifically address teacher-related support factors: "The teacher is encouraging," "The teacher is friendly," and "The teacher is supportive." These items were chosen to capture the essential aspects of teacher support in creating a positive learning environment for students with diverse needs.

The Learning Environment Support—Peer (LES-P) variable comprised eight items focusing on peer interaction and classroom atmosphere: "I can laugh off embarrassing English mistakes," "It's a positive environment," "The peers are nice," "There is a good atmosphere," "We form a tight group," "We have common 'legends,'" "We laugh a lot," and "English classes—it's fun." These items were selected to reflect the social and emotional aspects of peer support in language learning.

The reliability analysis supported this three-construct approach, with all scales showing acceptable to good internal consistency (IM: $\alpha = 0.800$; LES-T: $\alpha = 0.880$; LES-P: $\alpha = 0.766$).

Descriptive statistics were computed for each variable. Pearson correlations were used to examine associations between Internal Motivation, Teacher Support, and Peer Support as a preliminary step to regression. Subsequently, multiple regression analyses were conducted to identify the extent to which teacher and peer support predicted students' internal motivation, both across the full sample and within specific types of diverse learning needs. Additionally, Kruskal-Wallis tests were employed to explore potential differences in support and motivation scores across countries, types of diverse learning needs, and educational variables (e.g., CEFR level, school type), offering a non-parametric approach appropriate for small and uneven group distributions.

3.3.2 Qualitative analysis

The qualitative data were collected through semi-structured interviews with students and analyzed using thematic analysis, following the three-phase model of qualitative content analysis proposed by Elo et al. (2014): preparation, organization, and reporting. In the preparation phase, responses to ten open-ended questions were read repeatedly to ensure familiarity and comprehensive inclusion. These responses were then grouped into four thematic areas aligned with the study's integrated theoretical framework (UDL, SDT, EST):

- (Q1) digital tools and assistive technology,
- (Q2) instructional materials, assessment, and teacher support,
- (Q3) peer interaction, and
- (Q4) internal motivation and support systems.

In the organization phase, a deductive coding structure was applied to the responses of eight predefined questions, corresponding to the first three themes (Q1–Q3) and the first part of the fourth theme (Q4a–b, related to enjoyment and learning challenges). An inductive coding approach was used for the final

two open-ended prompts—Q4c and Q4d—to capture emergent motivational patterns, particularly the role of family support in shaping learners' aspirations and emotional engagement. In the reporting phase, selected student quotes were used to illustrate key themes and subthemes, with demographic markers (age, CEFR level, support need, country) included to support cross-case comparisons. This combined deductive–inductive strategy allowed for a nuanced understanding of how internal motivation is situated within both personal and ecological contexts.

4 Results

4.1 Influence of learning environment (RQ1)

4.1.1 Analysis 1: descriptive patterns of support and motivation

Figure 1 examines three distinct dependent variables (Teacher Support, Peer Support, and Internal Motivation) independently across four types of support needs. For Teacher Support, students with visual support needs report the highest levels (4.33), followed by those with mobility support needs (4.09), while students with hearing support needs (3.85) and learning difficulties (3.79) report lower levels. In terms of Peer Support, students with visual support needs again report the highest levels (3.85), while those with mobility (3.57) and hearing support needs (3.53) report moderate levels. Students with learning difficulties report notably lower peer support (3.28), which might indicate different dynamics in peer relationships for this group or greater self-sufficiency making them not to look for outside support.

Interestingly, the pattern shifts when examining Internal Motivation. Here, students with mobility support needs show the highest levels (3.94), followed by those with visual support needs (3.82) and hearing support needs (3.74), while students with

learning difficulties report the lowest levels (3.50). This variation is particularly noteworthy because it shows that high levels of support don't necessarily correspond directly to high levels of motivation. For instance, while students with visual support needs report the highest levels of both teacher and peer support, they don't show the highest internal motivation. This suggests that the relationship between support and motivation might be more complex than a simple direct correlation.

Furthermore, the consistently higher Teacher Support scores across all groups compared to Peer Support could indicate several important systemic factors: teachers may be more attuned to providing support for students with different support needs; schools might have better-established systems for teacher support compared to peer support mechanisms; students might have more structured interactions with teachers than with peers; and teachers might receive specific training for working with students with different support needs. These findings highlight the institutional strengths in teacher support while also identifying potential areas for improvement in raising self-awareness of peers to support better their counterparts who face more challenges in the learning process.

4.1.2 Analysis 2: multivariate regression analysis by support need

To examine how Learning Environment Support influences students' internal motivation (RQ1), we first conducted a multivariate regression analysis using the full sample (Table 2).

TABLE 2 Multivariate regression model predicting internal motivation.

Predictor	β	t	p
Teacher support (LES-T)	0.253	2.720	0.008
Peer support (LES-P)	0.396	4.255	<0.001

β , standardized regression coefficient.

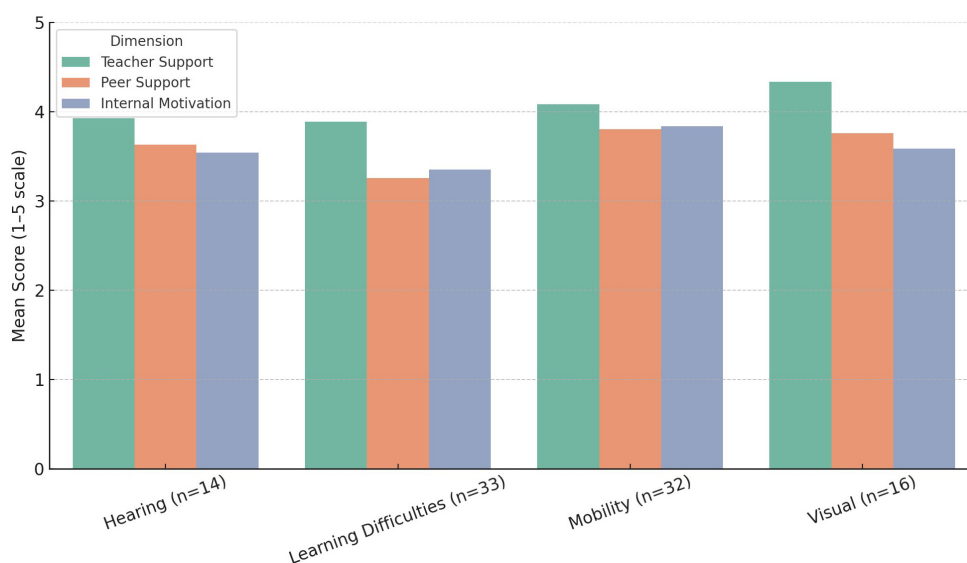


FIGURE 1
Learning environment support and motivation by type of support need.

TABLE 3 Multivariate regression models predicting internal motivation by type of support need.

Type of support	Predictor	B	SE	β	<i>t</i>	<i>p</i>
Visual impairment (<i>n</i> = 16)	(Intercept)	2.534	0.673	—	3.764	0.002
	Teacher support (LES-T)	0.370	0.157	0.486	2.355	0.034
	Peer support (LES-P)	−0.091	0.203	−0.092	−0.447	0.662
Hearing impairment (<i>n</i> = 13)	(Intercept)	1.290	0.750	—	1.720	0.117
	Teacher support (LES-T)	0.126	0.090	0.284	1.399	0.192
	Peer support (LES-P)	0.571	0.254	0.457	2.248	0.049
Learning difficulties (<i>n</i> = 33)	(Intercept)	1.294	0.418	—	3.096	0.004
	Teacher support (LES-T)	0.180	0.083	0.318	2.169	0.038
	Peer support (LES-P)	0.293	0.119	0.362	2.462	0.020
Mobility impairment (<i>n</i> = 33)	(Intercept)	1.672	0.778	—	2.149	0.040
	Teacher support (LES-T)	0.096	0.139	0.112	0.687	0.497
	Peer support (LES-P)	0.496	0.172	0.468	2.880	0.007

B, unstandardized regression coefficient; SE, standard error; β , standardized regression coefficient.

Our analysis revealed that both teacher support ($\beta = 0.25$, $p < 0.01$) and peer support ($\beta = 0.40$, $p < 0.001$) significantly predicted internal motivation, with peer support demonstrating a stronger effect. Together, these support variables explained 28.1% of the variance in internal motivation across the full sample [$R^2 = 0.281$, $F(2, 92) = 17.99$, $p < 0.001$].

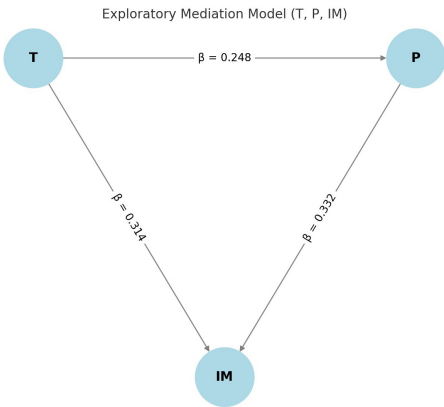
To better understand these relationships, we conducted multivariate regression analyses for each support needs as presented in Table 3. These models revealed distinct patterns in how different forms of support predict internal motivation across groups. As shown in Table 3, students with visual support needs demonstrated a significant positive relationship between teacher support and motivation ($\beta = 0.486$, $p = 0.034$), while peer support showed no significant relationship ($\beta = -0.092$, $p = 0.662$). This finding confirms the importance of teacher-driven guidance for this group and suggests their motivation is largely independent of peer interactions. In contrast, for students with mobility support needs, peer support emerged as the significant predictor of motivation ($\beta = 0.468$, $p = 0.007$), while teacher support showed a notably weaker and non-significant relationship ($\beta = 0.112$, $p = 0.497$). This highlights the importance of social dynamics and peer interactions for maintaining motivation among these students. Students with hearing support needs showed a stronger relationship with peer support ($\beta = 0.457$, $p = 0.049$) than with teacher support ($\beta = 0.284$, $p = 0.192$), though the latter approached significance in the small sample. For students with learning difficulties, both teacher support ($\beta = 0.318$, $p = 0.038$) and peer support ($\beta = 0.362$, $p = 0.020$) significantly predicted motivation, suggesting they benefit from comprehensive support systems.

The varying explanatory power of these models (Visual: $R^2 = 0.231$; Hearing: $R^2 = 0.389$; Learning: $R^2 = 0.332$; Mobility: $R^2 = 0.267$) indicates that environmental support explains different proportions of motivational variance across support needs types. This suggests that other factors—possibly including family support,

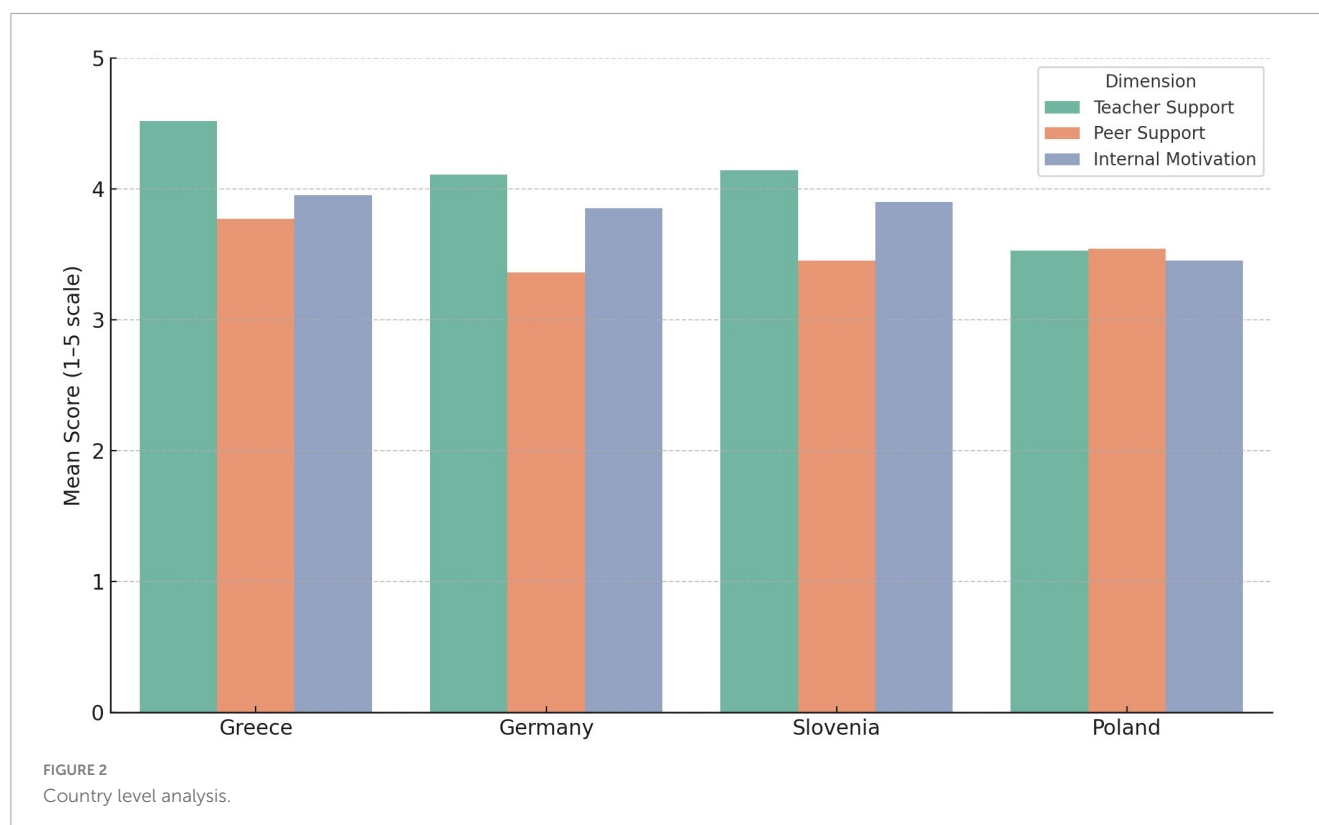
as our qualitative findings later indicate—may play differential roles across these groups.

4.1.3 Exploratory mediation analysis

To complement the main analyses, an exploratory Structural Equation Modeling (SEM) approach was conducted to examine potential mediation pathways between teacher support, peer support, and internal motivation. The model revealed that both teacher support ($\beta = 0.314$, $p = 0.003$) and peer support ($\beta = 0.332$, $p = 0.002$) had significant direct effects on internal motivation. However, the indirect path from teacher support to internal motivation via peer support was only marginally significant ($\beta = 0.078$, $p = 0.080$), with confidence intervals including zero. These findings align with the regression results presented earlier, suggesting that while support within the learning environment contributes to students' internal motivation, it accounts for a moderate portion of the variance ($R^2 = 0.267$). Importantly, the overall model fit and the small sample size ($n = 95$) warrant caution in interpreting these results as conclusive.



Path diagram: exploratory mediation model: teacher support (t), peer support (p), and internal motivation (IM)



4.2 Learning environment support and internal motivation across countries (RQ2)

Building on our findings from RQ1, where we initially examined the predictive relationship between Learning Environment Support and Internal Motivation, we now take a different analytical approach for RQ2. While RQ1 focused on how teacher and peer support influence motivation, RQ2 requires us to examine these as independent variables to better understand their distinct patterns across countries and support needs. This decision to analyze Teacher Support, Peer Support, and Internal Motivation independently is driven by two key insights from RQ1: first, we found that teacher and peer support have different strengths of influence on motivation across support need groups, and second, the relationship between support and motivation isn't uniform but varies significantly across groups. By examining these three variables independently in RQ2, we can identify specific patterns of variation across countries and support needs, potentially revealing cultural or systemic differences in how support manifests and how motivation develops in different educational contexts. RQ2a examines how LES and internal motivation vary across four European countries, while RQ2b investigates differences in these patterns among students with diverse learning needs.

4.2.1 Cross-country comparisons (RQ2a)

Looking first at the country-level analysis in Figure 2, the cross-country comparison reveals distinct patterns in how teacher support, peer support, and internal motivation manifest across

the four European countries. Greece ($n = 16$) demonstrates the highest levels across all measures, with notably high teacher support (4.52) and strong levels of both peer support (3.77) and internal motivation (3.95). Slovenia ($n = 23$) and Germany ($n = 24$) show similar patterns, with teacher support at 4.14 and 4.11 respectively, while their peer support (Slovenia: 3.45; Germany: 3.36) and internal motivation scores (Slovenia: 3.90; Germany: 3.85) are also comparable. Poland ($n = 32$), which has the largest sample size, exhibits the lowest scores across all three measures, with teacher support at 3.53, peer support at 3.54, and internal motivation at 3.45.

These differences may reflect variations in how learning support is structured and perceived across different European educational contexts, although the varying sample sizes should be considered when interpreting these results.

4.2.2 Support needs comparisons (RQ2b)

When examining support patterns by country, several distinctive trends emerge, as Figure 3 illustrates. Students in Greece consistently report higher levels of support across all types of support needs, with particularly strong teacher support for students with visual support needs. This suggests that the Greek educational system may have developed effective strategies for fostering inclusive language learning environments. German data reveals relatively consistent, moderate levels of support across all types of support needs, although it should be noted that Germany had no students with visual support needs in the sample. Slovenia demonstrates particular strength in peer support mechanisms, especially among students with mobility support needs, indicating the possible success of collaborative classroom practices that promote peer interactions. Poland shows lower overall scores

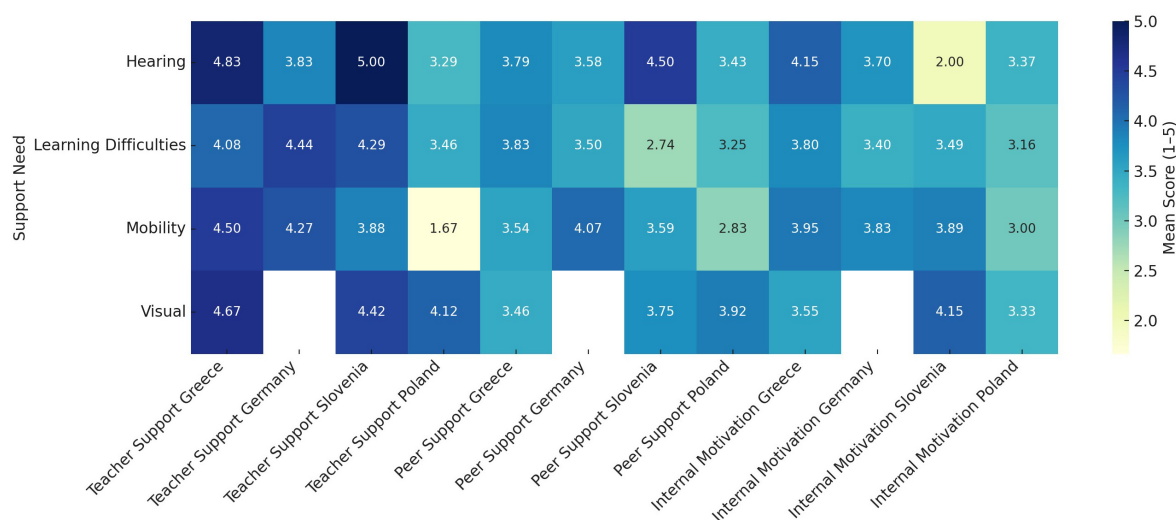


FIGURE 3

Mean scores of teacher support, peer support, internal motivation for students with DLN in EFL by country.

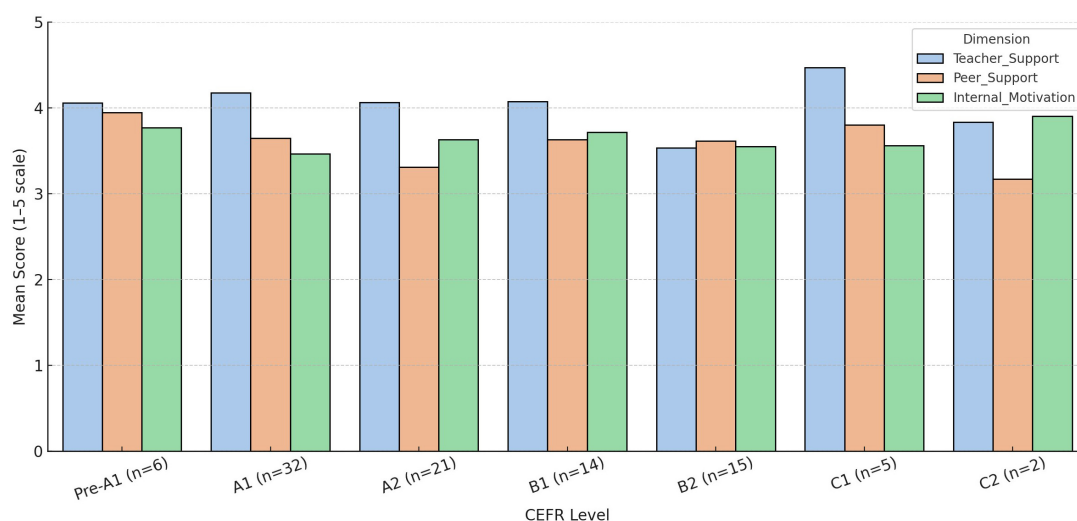


FIGURE 4

Mean levels of teacher support, peer support, and internal motivation across CEFR proficiency levels ($n = 95$).

across most support types and support needs groups, which may reflect broader systemic challenges affecting inclusive practices rather than differences between groups.

It is important to note that the number of participants varied across countries, with Poland having the largest sample and Greece the smallest. Poland's lower overall scores across support types point to potential systemic factors rather than specific challenges per support group. However, the data presents a complex picture that must be interpreted with caution due to sampling limitations. The uneven distribution of students across different support group in each country, and the small or absent representation of certain groups in some countries (no students with visual support needs in Germany and only one student with deaf/hard-of-hearing support needs in Slovenia), makes it difficult to draw conclusions about country-level trends.

4.3 Influences of educational factors on internal motivation and environmental factors (RQ3)

To address how educational factors influence internal motivation and environmental factors among students with diverse learning needs who learn EFL (RQ3), we examined three key educational factors: language proficiency (CEFR level), school type, and length of language study. Our analysis focused on how these factors relate to both internal motivation and environmental support factors (teacher and peer support).

Figure 4 presents patterns across different CEFR levels, showing Teacher Support, Peer Support, and Internal Motivation for each proficiency level, along with the number of students in each level. The analysis reveals that beginning learners at Pre-A1 level ($n = 6$)

show relatively high levels of Teacher Support (4.33) and Peer Support (4.24), suggesting strong environmental support at the initial stages of language learning. This pattern continues somewhat into A1 level ($n = 31$), the largest group, which maintains strong Teacher Support (4.20) but shows slightly lower Peer Support (3.68). In the intermediate levels, A2 ($n = 19$) shows consistent Teacher Support (4.00) but lower Peer Support (3.39), while B1 ($n = 14$) maintains similar patterns with Teacher Support at 4.00 and Peer Support at 3.54. Interestingly, at B2 level ($n = 15$), there's a noticeable decrease in Teacher Support (3.53) while Peer Support remains moderate (3.65). This might suggest a shift in support dynamics as students' progress in their language proficiency. At advanced levels, C1 students ($n = 5$) show increased Teacher Support (4.47) and Peer Support (3.98), while C2 level ($n = 2$), though with a small sample size, shows moderate Teacher Support (3.83) and lower Peer Support (3.19).

While Figure 4 suggested patterns, such as higher levels of teacher and peer support at lower proficiency levels (e.g., Pre-A1 and A1), and fluctuating support levels across intermediate and advanced CEFR levels, these trends lacked statistical significance. Consequently, the observed differences across proficiency levels should be interpreted with caution, as they do not provide conclusive evidence of meaningful relationships between these factors and the internal motivation or environmental support variables. The statistical analysis conducted for RQ3 revealed no significant relationships between the examined educational factors—language proficiency (CEFR level), school type and length of language study—and internal motivation, teacher support, or peer support.

4.4 Thematic analysis of students' experiences

Thematic analysis explored critical dimensions of students' foreign language learning experiences, focusing on four key areas derived from open-ended interview responses:

- (Q1) Digital Tools: Usage, Recommendations, and Support
- (Q2) Material Formats, Assessment Strategies, and Teacher Support
- (Q3) Student Perspectives on Group Work and Peer Collaboration
- (Q4) Internal Motivation and Support Systems, including enjoyment, challenges, personal goals, and family influence.

Each thematic area was analyzed across the four main types of support needs represented in the study: visual impairments, hearing impairments, learning difficulties, and physical/mobility impairments. The analysis combines cross-cutting themes (e.g., technology, assessment, peer dynamics) with variation by support need, providing both breadth and specificity in understanding how students engage with language learning across different educational and national contexts. Selected student quotes illustrate these patterns, capturing both shared experiences and individual differences.

Q1 examines how students with diverse learning needs engage with assistive technologies, revealing variations

influenced by age, language proficiency, and educational settings. Younger students tend to rely on teacher guidance, while older learners demonstrate more independence in exploring tools like social media and specialized applications. Higher CEFR-level students employ complex technological combinations, while lower-level students focus on fundamental tools. Q2 provides insights into the importance of structured materials, patient instruction, and adaptive assessments. Students emphasize multimodal learning approaches, extended time, and alternative evaluation formats, highlighting the need for teacher support tailored to individual needs. Q3 addresses collaborative dynamics, showing how preferences for individual, pair, or group work vary by disability type and classroom environment. Accessibility, compatibility, and clear task divisions play significant roles in shaping student collaboration preferences. Q4 explores internal motivation, highlighting how personal goals, emotional resilience, and family support influence students' engagement with language learning. Below, a more detailed thematic analysis per type of support need is presented.

4.4.1 Q1. DT tools: usage, recommendations, and support

The analysis reveals several significant patterns in how students with diverse learning needs engage with assistive technology and support tools. Age emerges as a crucial factor in technology adoption and preferences, with younger students (ages 8–14) showing a clear inclination toward structured, teacher-guided approaches to technology use. This is evidenced by their reliance on teacher recommendations and need for consistent support in tool usage. In contrast, older students (15+) demonstrate greater independence in selecting and implementing technological tools, often exploring and adopting new technologies on their own initiative, as seen in the case of several students using social media and independent learning applications.

Language proficiency level, as measured by CEFR, significantly influences the sophistication of tool usage. Students at higher CEFR levels (B2–C2) tend to employ more complex combinations of tools, often integrating multiple technologies to support their language learning. For example, advanced students frequently combine screen readers with specialized language learning apps or use social media platforms alongside traditional learning tools. Conversely, students at lower CEFR levels (A1–A2) typically rely on more basic translation and accessibility tools, focusing on fundamental language support rather than sophisticated language learning technologies.

The educational setting plays a crucial role in determining both access to and implementation of assistive technologies. Mainstream schools generally emphasize broader digital integration, incorporating widely available educational technology tools that can benefit all students while being adapted for those with specific needs. Special needs schools, on the other hand, tend to focus on specialized adaptive technologies tailored to specific disabilities e.g., talkers, often providing more intensive support in tool usage but potentially limiting exposure to mainstream digital learning tools. This distinction highlights the ongoing challenge of balancing specialized support with inclusive educational practices.

4.4.2 Visual impairments

Students primarily use screen readers (NVDA), Braille machines, and laptops with specialized software. Digital tools include audio recording devices and text magnification software. Several students mentioned shifting from traditional Braille machines to laptops for increased efficiency and reduced physical strain. Most students strongly recommend screen readers and digital tools over traditional Braille machines. For speaking and listening skills, students primarily utilize audio recordings and speech synthesizers, which allow them to practice pronunciation and enhance auditory comprehension. Reading skills are supported through screen readers and text magnification software, enabling students to access written materials at their own pace and preferred format. Writing tasks are accomplished using laptops equipped with specialized software and Braille machines, though many students express a preference for digital tools over traditional Braille systems due to their greater flexibility and ease of use. The integration of these tools varies based on individual needs and preferences, with many students using multiple tools in combination to support their language learning process.

Students express several key areas where additional support would enhance their learning experience. They particularly emphasize the need for better training in digital tool use, noting that while tools are often available, they lack comprehensive instruction in utilizing them effectively. Students also consistently highlight the importance of more reliable technical support, as interruptions in tool functionality can significantly impact their learning progress. Additionally, they express a strong desire for greater availability of accessible digital materials, indicating that current resources often fail to meet their specific learning needs. These support needs appear consistently across different educational settings and countries, suggesting a systemic gap in technological support infrastructure for language learning.

4.4.3 Making students' voices heard

Example 1: "Laptop, NVDA—speech synthesizer, Word. you can install English, German, Polish speech synthesizer. I had support from other teachers like pedagogue or psychologist. In this school I don't get support now, sometimes if I forget some tools or how to use email, I have to call my previous school for help." Age: 13 | CEFR: B2 | Male | Slovenia | Secondary School

Example 2: "Translator, Braille typewriter. I would especially recommend the translator, it is a useful tool, although it may sometimes not work properly. I use both of these tools myself. I prefer materials in Braille. There is a printer in the school that converts letters into Braille but it doesn't always work properly." Age: 15 | CEFR: A2 | Female | Greece | Mainstream School

Example 3: "Enlarger. I would like to use a translator that reads for me. Listening from a recorder. My teacher sometimes suggests something about tasks but not always.

audio recordings because I read very slowly in my Polish language, so I have big problems with reading in English." Age: 14 | CEFR: A1 | Male | Poland | Special Needs School

4.4.4 Deaf/hard of hearing

Students with hearing impairments demonstrate distinct patterns in their technology use and support needs for language learning. Their current tool usage centers primarily on visual aids, subtitled content, and digital translation tools, with many actively incorporating social media platforms for language exposure and practice. The tools' effectiveness varies across language skills, with limited options for speaking practice but strong support for listening through subtitled videos and hearing aids where applicable, while reading and writing skills benefit from digital text platforms and social media interaction. Despite the clear value of these tools, most students report receiving minimal specialized support for technology use, often developing their skills through self-teaching or peer assistance. This gap in support underscores their expressed needs for additional resources, particularly more comprehensive visual learning materials, better integration of subtitled content across learning platforms, and specialized software for pronunciation practice, suggesting a significant opportunity for improving technological support in language education for deaf and hard of hearing students.

4.4.5 Making students' voices heard

Example 1: "I mainly use social media and especially TikTok and they help me to improve my Listening Skills and also my writing skills through comments. Apart from the hearing aid I don't use any other tool and I don't need any further support to use these tools." Age: 17 | CEFR: B2 | Female | Germany | Secondary School Tools: Social media, hearing aid.

Example 2: "Subtitles for shows, none at school. Instructions are written on the blackboard, material is differentiated (school book, worksheets, tests)." Age: 16 | CEFR: C1 | Male | Poland | Secondary School.

Example 3: "When I watch YouTube, that in general, but also when for example in the morning, because I can't find a cartoon. Not with reading. In speaking a lot. What I already know, but you can still learn some new words." Age: 12 | CEFR: A2 | Female | Poland | Primary School.

4.4.6 Learning differences

Regarding material formats, students predominantly emphasize the need for structured, multimodal learning approaches, with many expressing preference for visual supports and clear organization of materials. The importance of explicit instruction and step-by-step presentation emerges consistently across responses. In terms of assessment practices, students highlight the value of extended time and alternative

evaluation formats, with many noting the importance of having instructions broken down into manageable components. Notably, students express preference for assessment environments that allow them to demonstrate their knowledge without time pressure. Regarding pedagogical support, findings underscore the importance of patient, systematic instruction and positive reinforcement. Students particularly value teachers who provide clear explanations, break down complex tasks, and offer regular encouragement and feedback.

4.4.7 Making students' voices heard

Example 1: "I prefer a more entertaining way of learning, more interactive with more pictures and continuous repetition of the material. The "live" content made the learning process easier for me." Age: 16 | CEFR: B1 | Female | Greece | Secondary School.

Example 2: "It would be good to give more time and not to judge mistakes that come from dyslexia. One incident had a positive impact when my teacher believed in me and encouraged me to take the TOEIC exam despite my anxiety. When I passed, it significantly boosted my confidence. This showed me I could succeed with proper support despite my dyslexia." Age: 17 | CEFR: B2 | Male | Greece | Secondary School.

Example 3: "I need explanation about the mistakes I make, analysis of these mistakes and then I want more exercises to solidify my competences so as to write sentences in English correctly. I want my teacher to assign me such tasks that I can develop my English while doing them." Age: 15 | CEFR: A2 | Female | Poland | Special Needs School.

4.4.8 Physical/motor impairments

Students with physical impairments demonstrate adaptable approaches to technology use and material preferences, often focusing on tools that facilitate independent learning and comfortable access to materials. Their use of adaptive digital devices for writing and interaction reflects a strong emphasis on maintaining autonomy in their learning process. These students generally prefer digital material formats, though some express preference for traditional printed materials when they find digital interfaces distracting. The emphasis on independent access to learning materials emerges as a consistent theme across all educational settings.

4.4.9 Making students' voices heard

Example 1: "I use a talker for German and English that can be switched between the languages so I can use it for my audio output in English. Worksheets, same as everyone." Age: 13 | CEFR: A1 | Female | Germany | Special School.

Example 2: "I use the computer to write more easily. It is also more convenient to use the trackpad because I can't use the mouse easily. I don't need support. Forms in digital format because the notes are more organized and formatted." Age: 16 | CEFR: B1 | Male | Slovenia | Secondary School Tools.

Example 3: "When I wear headphones while listening to music it helps me to improve my listening skills and focus better on the lyrics. I also use the translator. Certainly not digitally. Digital distracts me. I prefer printed material." Age: 17 | CEFR: B2 | Female | Greece | Secondary School.

4.4.10 Q2. Material formats, assessment strategies, and teacher support

Students across different proficiency levels emphasize the importance of persistence and resilience in language learning, particularly highlighting the value of multimedia exposure through films, music, and authentic materials. Several students stress the importance of foundational knowledge before engaging with authentic materials, suggesting a scaffolded approach to language exposure. A notable theme emerges around the psychological aspects of learning, with students emphasizing the need to maintain a positive mindset despite challenges. Students also highlight the importance of consistency in support staff, particularly noting the impact of frequent changes in support teachers and the need for specialized support beyond traditional classroom instruction. The value of experiential learning and real-world language application is consistently mentioned, with students expressing desire for international exchanges and authentic communication opportunities.

4.4.11 Visual impairments

Students with visual impairments emphasize the crucial role of early intervention and appropriate technological support from primary school onward. They particularly highlight the importance of having consistent access to adapted materials and specialized staff who understand both language teaching and visual impairment needs. Several students stress the significance of proper learning conditions, specifically mentioning lighting and physical setup of learning spaces. The role of motivation and persistence emerges strongly, with students emphasizing the need to overcome initial barriers and maintain engagement despite technical challenges. Many express the desire for more integrated learning experiences that combine technology with traditional methods, suggesting a balanced approach to language acquisition. Extended time for tests was frequently highlighted as an essential requirement. Participants also expressed a need for alternative assessment formats, with a particular preference for oral examinations. Additionally, the importance of clear structure and formatting in assessments was emphasized to ensure accessibility and understanding. Teacher support and motivation for students with visual impairments centered around several common themes.

There was a strong need for structured guidance to help navigate learning tasks effectively. Participants expressed appreciation for individualized attention, highlighting the importance of tailored support. Clear verbal instructions were emphasized as crucial for understanding, alongside the value of encouragement and an empathetic approach from teachers to foster motivation and confidence.

4.4.12 Making students' voices heard

Example 1: "The oral examination certainly helps. Also, the teacher should not be cold toward the students and should certainly not make them anxious." Age: 17 | Greece | Secondary School.

Example 2: "Having more time when I have to do reading/writing. Exercises based on listening and speaking could be a better way of assessment" Age: 16 | Greece | Secondary School.

Example 3: "The teacher always suggests testing me orally, even in everyday spelling. We also use English a lot in class, and she encourages us to participate in the discussion" Age: 17 | CEFR: B2 | Female | Greece | Secondary School.

Example 4: "The lighting conditions are very important. I used to have a problem with the classroom where we were doing English, I was having a hard time reading because of bad lighting and the teacher arranged for us to have class elsewhere so I was able to participate more actively." Age: 15 | CEFR: B1 | Female | Greece | Secondary School.

Example 5: "To give me extra exercises and write them down in the notebook so that I can do them in the KET (Key English Test, now A2 Key) with the teacher" Age: 13 | CEFR: A1 | Male | Poland | Special Needs School.

4.4.13 Deaf/hard of hearing

Common themes in assessment needs and accommodation include the necessity for written instructions during tests, allowing students to refer back to guidelines as needed. Extended time is often essential for processing information, enabling thorough comprehension and response formulation. Visual support during assessments can aid understanding and retention of material. Additionally, alternative assessment methods, such as portfolios or project-based evaluations, may better capture a student's abilities and learning progress. Common themes in teacher emphasize the need for visual teaching methods, such as diagrams, written instructions, and visual aids, to support understanding. The importance of face-to-face communication is also critical, allowing students to read facial expressions, lips, or sign language for better comprehension. Repetition and clarification are valued to ensure that students fully grasp concepts, while patient teachers

are appreciated for taking the time to address individual needs and foster an inclusive learning environment.

4.4.14 Making students' voices heard

Example 1: "After playing the recording, she asks if everything was clear, as I said, she once gave me a printed text. A lady often comes up to me and asks if I heard everything. She also tries to talk facing me so that I can see her mouth in case of problems." Age: 14 | CEFR: A2 | Female | Poland | Special Needs School.

Example 2: "I get the material sent to me by e-mail and then I start preparing. So, I sit at the computer, and I read until the test." Age: 16 | CEFR: B1 | Male | Germany | Secondary School.

Example 3: "The teacher guides me exactly right, helps me if I get confused. He pays more attention. The teacher also needs to know sign language." Age: 15 | CEFR: B1 | Male | Germany | Special Needs School.

Example 4: "Usually I want my teacher to know sign language fluently. To tell you the truth I am not satisfied with my English teacher. She does not know how to work with young people and motivate us." Age: 16 | CEFR: B2 | Female | Poland | Secondary School.

Example 5: "The teacher puts on the recording to listen to a few times during the test. If something goes wrong on the test, for example I'm disappointed. And I ask the teacher if I can improve my grade and the teacher gives me the chance to write the test again." Age: 14 | CEFR: A2 | Female | Greece | Secondary School.

Example 6: "Sometimes, there are classes that don't have good acoustics. And I'm not talking about listening activities but also when someone is just talking. For example, echoes are created and that makes it even more difficult" Age: 16 | CEFR: B1 | Female | Poland | Secondary School.

Example 7: "The teacher appreciates my commitment despite my difficulties. She tries to help me. She introduces an additional explanation. I need extra time, and the teacher provides me with that. When it comes to grades, she gives me the opportunity to improve the grades." Age: 16 | CEFR: B2 | Male | Poland | Secondary School.

4.4.15 Learning difficulties

Regarding material formats and presentation, findings highlight the importance of structured and clear presentations, ensuring that information is well-organized and easy to follow.

There is a strong preference for multimodal materials, combining auditory, visual, and written formats to cater to diverse learning styles. Visual supports accompanied by written text are particularly beneficial for reinforcing understanding, while step-by-step instructions provide guidance and clarity, enabling learners to navigate tasks effectively. In terms of assessment practices, common themes include the provision of extended time for tests to support thorough processing and response formulation. Simplified instructions help ensure clarity and reduce confusion, while breaking down complex tasks into manageable steps aids comprehension and completion. Additionally, alternative assessment formats, such as oral exams, portfolios, or project-based evaluations, allow students to demonstrate their knowledge and skills in ways that align with their strengths. Regarding teacher pedagogical support and motivation, findings emphasize the importance of patient explanations to ensure students fully understand the material without feeling rushed or overwhelmed. Positive reinforcement plays a crucial role in building confidence and encouraging continued effort. Breaking down complex tasks into smaller, manageable steps helps students approach challenges more effectively. Regular feedback and encouragement are essential for guiding progress, fostering motivation, and maintaining a supportive learning environment.

4.4.16 Making students' voices heard

Example 1: "Watch as many films as you can to make your English go as well as possible. Because I really learnt a lot. I learnt a lot of words and I learnt a lot of films and then I already knew those things." Age: 14 | CEFR: A2 | Male | Poland | Special Needs School.

Example 2: "I prefer notes our teacher prepares for us. There are too many pictures and words in the textbooks—there is a lot of a mess there. I cannot concentrate." Age: 15 | CEFR: B1 | Male | Poland | Special Needs School.

Example 3: "More time, colored sheet, enlarged font. And underlined key words." Age: 14 | CEFR: A2 | Female | Slovenia | Secondary School.

Example 4: "I cannot write correctly – I have dyspraxia. I want to be assessed not for the quality of my writing, but my actual language competences." Age: 16 | CEFR: B1 | Male | Poland | Secondary School.

Example 5: "I don't like writing and I don't like long tasks in general. I prefer a short answer exam. Digital assessment helps me." Age: 13 | CEFR: A1 | Male | Germany | Special Needs School.

Example 6: "I think it all starts in primary school. Unfortunately, however, we did not have the necessary qualified staff in primary school, which meant that valuable

time was lost and it was more difficult to keep up with our classmates." Age: 16 | CEFR: B2 | Female | Greece | Secondary School.

4.4.17 Physical/Motor Impairments

Students consistently emphasize the importance of accessible learning environments that allow for comfortable, independent participation. Many highlight how physical comfort significantly impacts their ability to engage in language learning activities. The role of adaptable learning approaches emerges as crucial, with students appreciating teachers who can modify activities to ensure full participation while maintaining high academic standards. Several students mention the value of digital tools in overcoming physical barriers to language learning, suggesting that technology plays a crucial role in their learning success. Students emphasize the importance of adaptable formats that accommodate their physical needs, with many preferring electronic materials that can be accessed through assistive devices. The physical arrangement and accessibility of materials emerge as crucial factors in their learning experience. In terms of assessment practices, students highlight the need for flexible testing environments and adapted writing methods, including the use of computers or assistive devices. Extended time provisions are valued not primarily for cognitive processing but for physical task completion. Alternative response formats and adaptive technologies play a vital role in enabling students to demonstrate their knowledge effectively. Regarding pedagogical support and motivation, findings underscore the importance of teachers' understanding of physical limitations while maintaining high academic expectations. Support focuses on ensuring physical accessibility of learning activities while promoting independence and full participation in language learning tasks. Teachers' awareness of fatigue and physical comfort emerges as crucial for maintaining student engagement and motivation.

4.4.18 Making students' voices heard

Example 1: "I prefer digital material. I have everything on the computer, and I write. The only thing I write in a workbook." Age: 17 | CEFR: B2 | Female | Slovenia | Secondary School.

Example 2: "iPad, sometimes dictionary, Special needs schoolbook. We all get enough time for tests." Age: 13 | CEFR: A1 | Male | Germany | Special Needs School.

Example 3: "I write all assessments outside class. That's good. It's quieter, and I don't have to move from one class to another when 45 min are up." Age: 15 | CEFR: B1 | Male | Poland | Special Needs School.

Example 4: "I write the tests on my own with a school assistant whom I dictate a lot of my answers, I get more time and usually differentiated tasks." Age: 14 | CEFR: A1 | Male | Germany | Special Needs School.

Example 5: “I want in my school some international exchanges so I can get to know people from abroad and communicate with them in English. I could develop my vocabulary and grammar and I will feel more confident” Age: 15 | CEFR: B1 | Female | Poland | Special Needs School.

Example 6: “It’s helpful when the teacher sits with me and reminds me to work. The teacher helps with instructions and during tasks.” Age: 15 | CEFR: A2 | Female | Germany | Special Needs School.

Example 7: “There should not only be parallel support in schools but also other specialties such as speech and language therapists in the school, as well as a permanent psychologist” Age: 17 | CEFR: B2 | Male | Greece | Secondary School.

Example 7: “Unfortunately I do not feel support from my English teacher. My teacher does not like me because I am all the time moving around and hyperactive and she does not like it” Age: 13 | CEFR: A1 | Male | Poland | Primary School.

4.4.19 Q3. Student perspectives on group work and peer collaboration:

4.4.19.1 Visual impairments

Students generally express varied preferences based on task complexity, accessibility needs, and classroom dynamics. Individual work is often preferred for tasks requiring assistive technological use or specialized materials, while pair work is favored for activities involving verbal communication and mutual support. Group work preferences are typically contingent on classroom arrangement and accessibility considerations.

4.4.20 Making students’ voices heard

Example 1: “Hard to work alone. I prefer to work in pairs, so the other person has a more supportive role.” Age: 15 | CEFR: B1 | Female | Greece | Secondary School,

Example 2: “Definitely in couples because it is more direct communication with your partner. In groups it is difficult to interpret all the information.” Age: 17 | CEFR: B2 | Male | Greece | Secondary School,

Example 3: “I prefer to work alone. I want to be responsible for the result. Also, in groups I could work with people who have common ideas and visions.” Age: 16 | CEFR: A2 | Female | Greece | Secondary School,

4.4.21 Deaf/hard of hearing

Analysis shows that students with hearing impairments demonstrate distinct patterns in their collaborative preferences.

Many express a strong preference for pair work or small group settings where visual communication is more manageable. The importance of clear lines and reduced background noise emerges as a crucial factor in group work preferences. Students often emphasize the need for structured communication protocols in group settings.

4.4.22 Making students’ voices heard

Example 1: “I prefer alone or in pairs. Groups give me a hard time because it’s hard for me to understand who’s talking at any given time.” Age: 16 | CEFR: B1 | Female | Poland | Secondary School,

Example 2: “In pairs because you can take a cue from each other.” Age: 14 | CEFR: A2 | Male | Poland | Special Needs School,

Example 3: “It is often too loud in class which makes it hard for me. In that case, I inform my teacher and go to work outside with my assistant, but I would prefer to work in class with all my peers, but in quiet. I like to work in small groups.” Age: 15 | CEFR: B1 | Male | Germany | Special Needs School,

4.4.23 Learning difficulties

Analysis reveals that students with learning difficulties show diverse preferences in collaborative work, largely influenced by their specific learning needs and classroom dynamics. A significant pattern emerges around the desire for structured support while maintaining autonomy. Many students express preference for pair work over larger groups, citing better focus and more direct support opportunities. The importance of partner compatibility and clear task division appears consistently in student responses.

4.4.24 Making students’ voices heard

Example 1: “First of all, I find it easier if we go in pairs or if we go in groups. Because if I get lost somewhere or if I don’t know how to do something, they can help me. Then it’s much easier for me if we work together, if I forget something.” Age: 13 | CEFR: A1 | Female | Poland | Primary School,

Example 2: “I prefer working in a group and pairs. Because there is always hope that if I don’t know something, don’t know how to do something, someone in the group does. I need some kind of support in the classroom. I don’t feel stressed then.” Age: 14 | CEFR: A2 | Male | Germany | Special Needs School,

Example 3: “It depends on who I’m paired with. In a group, it also depends on who you’re with. If I’m with guys, I don’t really get along, then no. I prefer to be alone.” Age: 15 | CEFR: B1 | Male | Slovenia | Secondary School,

4.4.25 Physical/motor impairments

Analysis shows that students with mobility impairments emphasize the importance of physical accessibility and comfort in collaborative work arrangements. Their preferences often reflect practical considerations about classroom navigation and physical positioning during group activities. Many students express appreciation for flexible grouping options that accommodate their physical needs while facilitating active participation in language learning activities.

4.4.26 Making students' voices heard

Example 1: "More independently because everybody deals with their own problems in their own way. I can't stand it because of the dryness, because I have such a well-developed, I can't stand it that somebody is talking next to me." Age: 16 | CEFR: B1 | Male | Slovenia | Secondary School.

Example 2: "I prefer to work with my peers. I can count on them. They help me if I need support." Age: 15 | CEFR: B1 | Female | Poland | Special Needs School.

Example 3: "Depending on the task. On big projects I like to work in pairs. On smaller ones, I work alone. I don't prefer to work in group work because with many people and many voices I can't concentrate easily." Age: 17 | CEFR: B2 | Male | Greece | Secondary School.

4.4.27 Q4. Internal motivation: sources and support systems

Students' responses to open-ended questions about their future goals, personal interests, and broader reflections on their language learning pathway offer a vivid picture of their internal motivation. These reflections align with the core principles of Self-Determination Theory (SDT)—particularly the need for autonomy, competence, and relatedness—and also illustrate how students' motivation is influenced by systems beyond the classroom, echoing the tenets of Ecological Systems Theory (EST). This section highlights the diversity of motivational drivers among students with different learning needs and across national contexts, providing both depth and cultural breadth to the study's findings.

4.4.28 Visual impairments

Students with visual impairments demonstrate a strong sense of personal direction in their learning journeys. Their motivations are often shaped by a desire for independence, success in formal assessments, and the integration of English into future career paths. Despite occasional gaps in current support, their narratives reveal resilience and goal-oriented attitudes.

4.4.29 Making students' voices heard

Example 1: "I am keeping my fingers crossed that I will pass the English exam and find a job." Age: 21 | CEFR: B2 | Male | Slovenia | Secondary School-special education.

Example 2: "I would like to continue studying English, perhaps use it in my job. Also, maybe to study abroad in the future." Age: 12 | CEFR: A1 | Female | Slovenia | Primary School.

Example 3: "Well, you've got quite a few targets. . . I think I want to master English enough to use it for programing and gaming." Age: 13 | CEFR: C2 | Male | Slovenia | Primary School.

Example 4: "Obtaining language certificates, using English to travel and read international articles for my studies." Age: 15 | CEFR: A2 | Male | Greece | Secondary School.

4.4.30 Deaf/hard of hearing

Motivational themes among deaf and hard-of-hearing students are deeply intertwined with personal interests and media use. Learning English is often linked to global content accessibility—particularly manga, YouTube, and travel. These learners exhibit high autonomy in directing their engagement with the language, even when institutional support is limited.

Example 1: "Traveling after graduation, learn more languages to feel comfortable while moving around." Age: 17 | CEFR: B2 | Male | Germany | Special Needs School.

Example 2: "I don't really have a plan, but I know I like watching content in English. I want to understand more." Age: 20 | CEFR: A2 | Male | Slovenia | Secondary School-special education.

Example 3: "I'm interested in Japanese and English because of manga and YouTube. They help me learn even without a teacher." Age: 12 | CEFR: A1 | Female | Slovenia | Primary School.

Example 4: "To get the certificate for the B2 level first, then continue learning English because it will help me in my job later." Age: 14 | CEFR: B2 | Female | Greece | Secondary School.

4.4.31 Physical/motor impairments

Students with physical disabilities articulate highly practical, self-driven motivations. They consistently frame language learning in terms of usefulness, career preparedness, and independent communication. Their autonomy is often evident in the way they plan their own language trajectories.

4.4.32 Making students' voices heard

Example 1: "Maybe I'll need English in the future, maybe not. But it's good to know just in case." Age: 23 | CEFR: B1 | Male | Slovenia | Secondary School.

Example 2: “I plan to travel, so English will help me communicate. Also, I like the feeling of understanding someone in another language.” Age: 16 | CEFR: A2 | Female | Slovenia | Secondary School.

Example 3: “I’m thinking of taking a course to improve my English. I like to be able to read technical things and watch English series.” Age: 17 | CEFR: B2 | Female | Germany | Secondary School.

Example 4: “By the end of my university studies I want to speak English fluently. It’s necessary for my future career.” Age: 17 | CEFR: A2 | Male | Greece | Secondary School.

4.4.33 Specific learning difficulties

Students with specific learning difficulties speak to the importance of teacher encouragement, self-efficacy, and the pride of overcoming barriers. Their responses highlight the powerful interplay between internal motivation and emotional reinforcement from educators, revealing how success experiences boost competence and future-oriented engagement.

4.4.34 Making students’ voices heard

Example 1: “When I passed the English test, I was really proud. It was difficult because of my dyslexia, but I managed. I want to keep improving now.” Age: 11 | CEFR: A2 | Female | Slovenia | Primary School.

Example 2: “I think I would like to learn more English so I can play games and talk with people online.” Age: 11 | CEFR: A1 | Male | Slovenia | Primary School.

Example 3: “I will probably need English at work. I also want to learn it just to understand movies better.” Age: 20 | CEFR: B2 | Male | Slovenia | Secondary School.

Example 4: “I want to pass the IELTS exam to study. Also, I want to communicate with people abroad through English.” Age: 17 | CEFR: C1 | Female | Greece | Secondary School.

4.4.35 Emerging theme: family support and motivation

While Q4 focused on internal motivation more broadly, an additional theme emerged from the open-ended responses to Q9 (“What are your plans for learning and using languages in the future?”) and Q10 (“Is there something else that you wish to add concerning your language learning pathway?”): the significant role of family support in sustaining motivation and shaping language learning goals.

Students across countries and support needs described both explicit and implicit forms of family encouragement. For example, some mentioned that their parents believed in their abilities or encouraged them to continue studying despite challenges. One student from Greece (Age 17, CEFR B2) noted, “*My parents always supported me learning English; they believe I can go to college and study languages.*” Another student from Poland (Age 15, CEFR A2) shared, “*My mother says it is very important to know English because it helps you to find work.*” These statements reflect not only emotional support but also a broader orientation toward future academic or professional opportunities valued within the family context.

In other cases, indirect signs of family-driven aspirations were evident. Some students described hopes of studying abroad or using English to travel or work internationally — goals that, particularly among younger learners, often mirror parental expectations or shared dreams. Phrases like “*I am keeping my fingers crossed*” or “*My family wants me to study*” also hint at a psychological ecosystem where family involvement plays a stabilizing, motivational role. These responses align with Bronfenbrenner’s Ecological Systems Theory, which positions the family microsystem as a foundational influence in learners’ development. Although not directly solicited, the consistent presence of family references in the open-ended questions reinforces the conclusion that internal motivation does not exist in isolation, but is often nurtured and sustained by the home environment.

4.5 Limitations

A notable limitation of this study lies in the sample size and its uneven distribution across the four participating European countries. With a total sample size of 95, conducting robust statistical analyses becomes challenging, particularly when disaggregating by country and disability type. The uneven participant distribution (Greece: 16, Germany: 24, Slovenia: 23, Poland: 32) complicates meaningful cross-national comparisons and introduces potential biases. This issue is exacerbated when examining specific disability subgroups; for instance, Poland includes only one participant with physical disabilities, Germany lacks representation for visual impairments and only one deaf/hard-of-hearing participants in Slovenia. These gaps limit the ability to draw comprehensive conclusions and reduce the statistical power of analyses, particularly when comparing experiences across different types of support, potentially obscuring meaningful patterns.

The study’s methodological approach also has limitations that might affect its internal and external validity. While combining interviews with quantitative data from the Foreign Language Enjoyment (FLE) scale provided valuable insights into students’ language learning experiences, it may not fully capture the complexity of these experiences. Incorporating additional data sources, such as classroom observations or teacher perspectives, could offer further triangulation and a more holistic understanding. Additionally, the cross-sectional design offers only a snapshot of students’ experiences, failing to account for the evolving nature of language learning and how engagement and attitudes may change over time.

In addition to methodological and sampling limitations, the scope of participant perspectives also warrants reflection. Another limitation of the study is the absence of direct perspectives from teachers and parents. The research design prioritized centering the voices of students with diverse learning needs, aiming to capture their authentic experiences without intermediary interpretation. While this approach provided valuable insights into students' internal motivation and perceptions of learning environment support, it did not incorporate the viewpoints of teachers or families. Integrating teacher and parent interviews could have enriched the findings by offering a more holistic understanding of external support systems and motivational dynamics. Notably, the qualitative analysis revealed that family encouragement plays a significant role in sustaining students' motivation, suggesting that including family perspectives in future research would be particularly valuable. Future studies should consider a multi-informant approach to triangulate student experiences with the perceptions of key adults in their educational ecosystems.

5 Discussion

The findings of this study reveal an inspiring narrative of determination among students with diverse learning needs, alongside critical areas where educational systems can improve. Across all groups, students demonstrate strong internal motivation to learn English, even in the face of significant challenges related to teacher support, peer collaboration, and the use of DT and assistive technologies. This unwavering motivation underscores not only their commitment to learning but also the pressing need for more inclusive and supportive educational environments.

Students with visual impairments exemplify this balance of resilience and need. Despite their reliance on tools like screen readers, Braille devices, and text magnifiers, they report frustrations with inadequate training and unreliable technical support. Their voices highlight systemic gaps in the availability of accessible digital resources, yet their motivation remains remarkably high. This echoes findings from [Prystiananta et al. \(2025\)](#), whose meta-narrative review confirms that assistive technologies such as JAWS, MELDICT, and OCR tools substantially improve motivation, vocabulary acquisition, and communication skills among students with visual impairments. They express a desire for more teacher guidance and consistent support, emphasizing the importance of structured environments in fostering their learning.

For students who are Deaf or Hard of Hearing, the challenges lie in adapting one-size-fits-all learning environments to meet their needs. While they exhibit strong internal motivation, their responses highlight the limitations of auditory-based teaching methods. Subtitled content, visual aids, and face-to-face communication are essential tools for these students, highlighting the need for teachers to be better equipped to implement inclusive practices in their classrooms, ideally with knowledge of sign language where possible. The usage of sign language in the classroom is a complex issue as it means introducing one more language into the classroom environment. As [Urbann et al. \(2024\)](#) suggest, the solution might be to use in EFL classes not the students' national sign language but British Sign Language (BSL)

or American Sign Language (ASL). This would enable the students to enjoy the signing culture of English-speaking countries and get the necessary skill for signing communication abroad. As the lack of interpreters and EFL teachers using BSL or ASL in EFL classes is a problem, the solution might be to use digital resources more often, like online interpretation services or language resources in BSL or ASL.

Similarly, students with mobility impairments thrive when provided with adaptive technologies and accessible materials. Their internal motivation is closely tied to the support they receive, particularly from teachers who ensure their full participation in classroom activities. These students remind us that inclusivity is not just about physical accessibility but also about creating opportunities for meaningful engagement, whether through flexible assessments or tailored instructional strategies.

Students with learning difficulties reveal a similar story of perseverance. Their positive attitudes toward learning persist even as they navigate cognitive challenges that often require more time and structured guidance. These students value teachers who break down complex tasks into manageable steps, provide patient explanations, and celebrate progress through consistent encouragement. However, their responses also reflect the need for greater collaboration with peers, as supportive peer relationships can play a crucial role in reinforcing their learning.

Across all groups, the integration of DT and assistive technologies is a recurring theme, highlighting the importance of digital technology in inclusive language learning environments as suggested e.g., by [Lepelt & Vogt \(in press\)](#). Advanced learners at higher CEFR levels (B2-C2) demonstrate the ability to leverage sophisticated combinations of tools, while students at lower levels (A1-A2) rely on basic tools like translators and audio recorders. Yet, the lack of training and systemic support often hinders their effective use of these technologies. Students across countries express a desire for more comprehensive instruction in tool usage and better technical support, highlighting the need for schools to invest in both resources and training. The findings also highlight the urgent need to reform how inclusive practices are embedded in EFL teacher education. While students in this study demonstrated determination and self-motivation, their experiences frequently pointed to insufficient or inconsistent teacher support. This gap reflects broader issues in teacher preparedness, as [Effendi et al. \(2024\)](#) observe in their systematic review: many pre-service EFL teachers report positive attitudes toward inclusion but lack the knowledge, confidence, and experience to adapt their teaching to diverse needs. Without meaningful engagement with inclusive pedagogy during training—especially through authentic classroom exposure—educators risk defaulting to deficit-based views or inadvertently excluding learners with disabilities from full participation in language learning.

The diversity of these students' experiences is matched by the diversity of their aspirations. They dream of studying abroad, becoming professionals in various fields, and using their language skills to connect with the world. Their stories are a testament to their determination and potential, but they also serve as a reminder of the responsibility we share as educators and policymakers. The data is clear: internal motivation alone is not enough. Teacher support, peer collaboration, and access to effective technologies are crucial in transforming this motivation into success. As [Howard \(2023\)](#) emphasizes, inclusive language

education must move beyond compensatory measures to embrace inclusive pedagogy—adapting instruction in ways that benefit all learners while addressing specific needs without stigma. Such an approach aligns closely with the diverse strategies students in this study identified as most effective: structured guidance, clear explanations, emotional encouragement, and accessible tools. However, the most significant finding is that students' internal motivation appears to be independent of teacher and peer support, suggesting that their families play a pivotal role in inspiring and encouraging their language learning journey. This underscores the importance of fostering stronger school-family partnerships to further support these students' aspirations. The question is whether we are providing the inclusive environments they need to make the challenging path of learning more accessible to them. It's a call to action to bridge the gaps, elevate their voices, and create systems that empower all students to accomplish their full potential.

Data availability statement

The datasets generated during this study are fully anonymized; however, they are not publicly available due to ethical restrictions related to the inclusion of minors and students with diverse learning needs. These restrictions are in accordance with the approvals granted by the ethics committees in the participating countries. Although the study was funded by the Erasmus+ Programme through the State Scholarships Foundation (IKY), data sharing is subject to consortium agreements and ethical safeguards. In line with the project's data management plan, the dataset will be securely stored and destroyed 3 years after the project's completion. Requests for access to anonymized data may be considered on a case-by-case basis and should be directed to mkaratsiori@gmail.com.

Ethics statement

The studies involving humans were approved by Research Committee of University of Macedonia (Greece) and the Research Ethics Committee of John Paul II Catholic University of Lublin (Poland). For the University of Education Heidelberg and University of Ljubljana, the institutional requirements related to research ethics were met. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation in this study was provided by the participants' legal guardians/next of kin.

Author contributions

MK: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

- Allen, M., Berg, C., Dawson, J. Q., and Leveridge, N. (2018). "Insights from the application of universal design principles to support english language learners," in *In Proceedings of the Western Canadian Conference on Computing Education*, (ACM), doi: 10.1145/3209635.3209646
- Alrabai, F. (2021). The influence of autonomy-supportive teaching on efl students' classroom autonomy: An experimental intervention. *Front. Psychol.* 12:728657. doi: 10.3389/fpsyg.2021.728657
- Baglieri, S. (2020). Toward inclusive education? Focusing a critical lens on universal design for learning. *Can. J. Disability Stud.* 9, 42–74. doi: 10.15353/cjds.v9i5.690
- Bergeest, H., Boenisch, J., and Daut, V. (2019). *Körperbehindertenpädagogik*, 4th Edn. Bad Heilbrunn: Klinkhardt.
- Black, R., Weinberg, L., and Brodwin, M. (2015). Universal design for learning and instruction: Perspectives of students with disabilities in higher education. *Exceptionality Educ. Int.* 25, 1–23. doi: 10.5206/eei.v25i2.7723
- Boenisch, J. (2016). "Körperbehinderung," in *Handlexikon der Behindertenpädagogik*, 3rd Edn, eds M. Dederich, I. Beck, G. Antor, and U. Bleidick (Stuttgart: Kohlhammer), 235–238.
- Borzova, E., and Shemaneva, M. (2020). Multifunctionality in university foreign language education: From aims to techniques. *Human. Soc. Sci. Rev.* 8, 1429–1448. doi: 10.18510/hssr.2020.84132
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press
- Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: Research perspectives. *Dev. Psychol.* 22, 723–742. doi: 10.1037/0012-1649.22.6.723
- Center for Applied Special Technology (CAST) (2024). *Universal Design for Learning Guidelines Version 3.0*. Available online at: <https://udlguidelines.cast.org>.
- Chavarría, R., González-Montesino, R., Lopez-Bastias, J., and Diaz-Vega, M. (2023). Universal design for learning and instruction: Effective strategies for inclusive higher education. *Educ. Sci.* 13:620. doi: 10.3390/educsci13060620
- Chilla, S., Doetjes, G., Vogt, K., Ibrahim, L. A., and Tsagari, D. (2024). Digital-inclusive transformation and teacher preparedness for foreign language education—A Bilateral german-norwegian perspective. *Center Educ. Policy Stud. J.* 15, 81–100. doi: 10.26529/cepsj.1690
- Chomicz, M. (2025). "Digital transformation and the professional development of foreign language teachers," in *Digital and Inclusive Transformation in Foreign Language Education*, eds I. A. L. Ibrahim, D. Tsagari, K. Vogt, S. Chilla, and G. Doetjes (Routledge).
- Chong, S. W., Isaacs, T., and McKinley, J. (2023). Ecological systems theory and second language research. *Lang. Teach.* 56, 333–348. doi: 10.1017/S0261444822000283
- Clark, C. (2000). Innovative strategy: Concept cartoons. *Instructional Learn. Strategies* 12, 34–45.
- Corn, A. L., and Erin, J. N. (2010). *Foundations of Low Vision: Clinical and Functional Perspectives*, 2nd Edn. Virginia: AFB Press.
- Creaven, A. M. (2025). Considering the sensory and social needs of disabled students in higher education: A call to return to the roots of universal design. *Policy Futures Educ.* 23, 259–266. doi: 10.1177/14782103241240808
- Cumming, T. M., and Rose, M. C. (2022). Exploring universal design for learning as an accessibility tool in higher education: A review of the current literature. *Australian Educ. Res.* 49, 1025–1043. doi: 10.1007/s13384-021-00471-7
- D'Andrea, F. M., Siu, Y. T., and Edyburn, D. L. (eds) (2015). "Students with visual impairments: Considerations and effective practices for technology implementation," in *Advances in Special Education Technology*, Vol. 1, (Leeds: Emerald Group Publishing Limited), 111–138.
- Deci, E. L., and Ryan, R. M. (1985). The general causality orientations scale: Self-determination in personality. *J. Res. Pers.* 19, 109–134. doi: 10.1016/0092-6566(85)90023-6
- Deci, E. L., Vallerand, R. J., Pelletier, L. G., and Ryan, R. M. (1991). Motivation and education: The self-determination perspective. *Educ. Psychol.* 26, 325–346. doi: 10.1207/s15326859ep2603_4_6
- Dewaele, J. M., and MacIntyre, P. D. (2014). The two faces of Janus? Anxiety and enjoyment in the foreign language classroom. *Stud. Second Lang. Learn. Teach.* 4, 237–274. doi: 10.14746/ssl.2014.4.2.5
- Dewaele, J. M., and MacIntyre, P. D. (2016). "Foreign language enjoyment and foreign language classroom anxiety: The right and left feet of the language learner," in *Positive Psychology in SLA*, eds P. D. MacIntyre, T. Gregersen, and S. Mercer (Bristol: Multilingual Matters), 215–236.
- Diaz-Vega, M., Moreno-Rodríguez, R., and Lopez-Bastias, J. (2020). Educational inclusion through the universal design for learning: Alternatives to teacher training. *Educ. Sci.* 10:303. doi: 10.3390/educsci10110303
- Domagała-Zysk, E. (2021). "To speak or not to speak? Speech and pronunciation of deaf and hard of hearing students learning English as a foreign language," in *English as a Foreign Language for Deaf and Hard of Hearing Learners Teaching Strategies and Interventions*, eds E. Domagała-Zysk, N. Moritz, and A. Podlowska (London: Routledge), 17–31.
- Domagała-Zysk, E., and Podlowska, A. (2019). Strategies of oral communication of deaf and hard of hearing (D/HH) non-native users. *Eur. J. Special Needs Educ.* 34, 156–171. doi: 10.1080/08856257.2019.1581399
- Domagała-Zysk, E., and Podlowska, A. (2024). "Enhancing listening skills of hard of hearing learners," in *Second Language Acquisition and Listening*, eds W. Wagner, O. A. Batty, and E. Galaczi (London: Routledge), 268–279. ISBN9781003219552 doi: 10.4324/9781003219552
- Domagała-Zysk, E., Moritz, N., and Podlowska, A. (2021). *English as a Foreign Language for Deaf and Hard of Hearing Persons: Challenges and Strategies*. Newcastle upon Tyne: Cambridge Scholars Publishing.
- Domagała-Zysk, K. (2024). "Teacher identity as an element of competence supporting the implementation of digital and inclusive transformation in education," in *Digital and inclusive transformation in foreign language education*, eds I. A. L. Ibrahim, D. Tsagari, K. Vogt, S. Chilla, and G. Doetjes (Routledge).
- Down, B., and Choules, K. (2017). *Building Inclusive Schools*. Berlin: Springer.
- Effendi, R., Lestari, S., and Syamsu, R. F. (2024). Digital learning technology in inclusive education: Exploring the potential for personalized learning. *Int. J. Res. Anal. Rev.* 11, 162–169.
- Eichhorn, M. S., Lowry, A. E., and Burke, K. (2019). Increasing engagement of english learners through universal design for learning. *J. Educ. Res. Pract.* 9, 1–10. doi: 10.5590/JERAP.2019.09.1.01
- Elo, S., Kääriäinen, M., Kanste, O., Pölkki, T., Utriainen, K., and Kyngäs, H. (2014). Qualitative content analysis: A focus on trustworthiness. *SAGE Open* 4, 1–10. doi: 10.1177/2158244014522633
- Florian, L. (2015). Inclusive pedagogy: A transformative approach to individual differences. *Scottish Educ. Rev.* 47, 5–14. doi: 10.1163/22119969-90000001
- Foti, F., Barattucci, M., and Raffone, A. (2015). Executive functions: Relationship between working memory and reading comprehension. *J. Cogn. Psychol.* 27, 624–636. doi: 10.1080/20445911.2015.1011833
- Haakma, I., Janssen, M., and Minnaert, A. (2017). The influence of need-supportive teacher behavior on the motivation of students with congenital deafblindness. *J. Vis. Impairment Blindness* 111, 247–260. doi: 10.1177/0145482x1711100305
- Horwitz, E. K., Horwitz, M. B., and Cope, J. (1986). Foreign language classroom anxiety. *Modern Lang. J.* 70, 125–132. doi: 10.1111/j.1540-4781.1986.tb05256.x
- Howard, K. B. (2023). Supporting learners with special educational needs and disabilities in the foreign languages classroom. *Support Learn.* 38, 154–161. doi: 10.1111/1467-9604.12449
- Huang, Y. (2023). Examining the relationship between peer support and foreign language emotions in online learning: The mediating effect of self-efficacy. *Front. Psychol.* 14:1148472. doi: 10.3389/fpsyg.2023.1148472
- Khajavy, G. H., MacIntyre, P. D., and Barabadi, E. (2018). Role of the emotions and classroom environment in willingness to communicate: Applying doubly latent multilevel analysis in second language acquisition research. *Stud. Sec. Lang. Acquisition* 40, 605–624. doi: 10.1017/S0272263117000304
- Klimova, I., Sharabarina, N., Tikhova, E., and Dubinka, S. (2018). Communicative competence enhancement. *Xlinguae* 11, 67–74. doi: 10.18355/xl.2018.11.01xl.07
- Kontra, E., and Csizer, K. (2020). Foreign language learning characteristics of deaf and severely hard-of-hearing students. *Modern Lang. J.* 104, 233–249. doi: 10.1111/modl.126300026-7902/20/1-17
- Kormos, J. (2017a). *The Second Language Learning Processes of Students with Specific Learning Difficulties*. Milton Park: Routledge.
- Kormos, J. (2017b). The effects of specific learning difficulties on processes of multilingual language development. *Annu. Rev. Appl. Ling.* 37, 30–44.
- Krashen, S. (1985). *The Input Hypothesis: Issues and Implications*. Harlow: Longman.
- Lai, C. (2015). Modeling teachers' influence on learners' self-directed use of technology for language learning outside the classroom. *Comput. Educ.* 82, 74–83. doi: 10.1016/j.compedu.2014.11.005
- Lansley, N., Frias, F., and Fias-Alonso, C. (2023). Perceptions of an inclusive education model: exploring the voices of administrators, teachers, parents, and students. *J. Special Educ. Prep.* 3, 64–77. doi: 10.33043/jsep.3.2.64-77
- Lepelt, L., and Vogt, K. (in press). "Universal design for Learning - ein inklusives Rahmenkonzept zur Differenzierung im fremdsprachlichen Unterricht," in *Teilhabe in, An und Durch Digitale Medien: Diklusion im Fremdsprachenunterricht*, eds P. Schildhauer and J. B. ündgens-Kosten (Thuringia: Beltz Juventa).

- Liaquat, F., Islam, M., Azim, M. U., and Lodhi, A. S. (2025). Investigating academic resilience in learning English: An ecological context of undergraduate students. *Front. Psychol.* 15:1467544. doi: 10.3389/fpsyg.2024.1467544
- Liu, H., and Wang, H. (2021). Exploring the relationship between positive emotions and EFL learning engagement: The mediating role of cognitive reappraisal. *Front. Psychol.* 12:731721.
- Moriña, A., and Perera, V. (2018). Inclusive higher education in Spain: Students with disabilities speak out. *J. Hispanic Higher Educ.* 19, 215–231. doi: 10.1177/1538192718777360
- Neal, J. W., and Neal, Z. P. (2013). Nested or Nodular? A Methodological and Theoretical Review of Ecological Systems Theory. *Soc. Dev.* 22, 723–732.
- Nijakowska, J. (2010). *Dyslexia in the Foreign Language Classroom*. Bristol: Multilingual Matters.
- Nijakowska, J. (2019). Foreign language teachers' preparedness to cater for special educational needs of learners with dyslexia: A conceptual framework. *Eur. J. Special Needs Educ.* 34, 189–203. doi: 10.1080/08856257.2019.1581401
- Nijakowska, J. (2020). "Dyslexia in the foreign language classroom: Current issues and future directions," in *Advances in Special Education Technology*, Vol. 2, ed. D. L. Edyburn (Leeds: Emerald Group Publishing Limited), 89–110.
- Nijakowska, J., Tsagari, D., and Spanoudis, G. (2016). Cross-country comparison of EFL teacher preparedness to include dyslexic learners: Validation of the DysTEFL-Q. *Dyslexia* 22, 345–361.
- Nolan, H. A., and Owen, K. (2024). Medical student experiences of equality, diversity, and inclusion: Content analysis of student feedback using Bronfenbrenner's ecological systems theory. *BMC Med. Educ.* 24:5. doi: 10.1186/s12909-023-04986-8
- Pan, X., and Chen, W. (2021). Modeling teacher supports toward self-directed language learning beyond the classroom: Technology acceptance and technological self-efficacy as mediators. *Front. Psychol.* 12:751017. doi: 10.3389/fpsyg.2021.751017
- Pekrun, R., Frenzel, A. C., Goetz, T., and Perry, R. P. (2007). "The control-value theory of achievement emotions: An integrative approach to emotions in education," in *Emotion in Education*, eds P. A. Schutz and R. Pekrun (Cambridge, MA: Academic Press), 13–36.
- Piticari, P. (2023). Effects of the Universal design for learning (UDL) principles on the motivation of children with SEN integrated in mainstream schools. *Rev. Psychopedagogy.* 12, 74–85. doi: 10.56663/rop.v12i1.66
- Prystiananta, N. C., Noviyanti, A. I., and Udhiyanasari, K. Y. (2025). The impact of assistive technologies in enhancing English learning outcomes for students with disabilities: A meta-narrative analysis. *World J. Engl. Lang.* 15, 296–308. doi: 10.5430/wjel.v15n2p296
- Rao, K., Edelen-Smith, P., and Wailehua, C. (2015). Universal design for online courses: Applying principles to pedagogy. *Open Learn. J. Open Distance E-Learn.* 30, 35–52. doi: 10.1080/02680513.2014.991300
- Rao, K., Ok, M., and Bryant, B. (2014). A review of research on universal design educational models. *Remedial Special Educ.* 35, 153–166. doi: 10.1177/0741932513518980
- Reid, G. (2016). *Dyslexia: A Practitioner's Handbook*, 5th Edn. Hoboken, NJ: Wiley.
- Rivera, J. (2019). Blended learning-effectiveness and application in teaching and learning foreign languages. *Open J. Modern Linguistics* 9, 129–144. doi: 10.4236/ojml.2019.92013
- Rødbrø, I., and Janssen, M. J. (2006). Communication and congenital deafblindness: A guide to the intervention process. Dronninglund: Danish Resource Centre on Congenital Deafblindness.
- Ryan, R. M., and Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *Am. Psychol.* 55, 68–78. doi: 10.1037/0003-066X.55.1.68
- Schwartzman, R., and Boger, K. (2017). Locus of control synergies in new language learning and cultural adaptation: A communication center perspective. *Br. J. Educ. Soc. Behav. Sci.* 21, 1–13. doi: 10.9734/bjesbs/2017/34367
- Sedláčková, J. (2016). "Challenges of reading comprehension development of deaf learners in the foreign language classroom: Putting theory into practice," in *English as a Foreign Language for Deaf and Hard of Hearing Persons – Challenges and Strategies*, eds E. Kontra and E. Domagala-Zysk (Newcastle upon Tyne: Cambridge Scholars Publishing), 109–134.
- Sedlackova, L., and Tothova, M. (2022). Teacher training for inclusion in the context of digital transformation: A systematic review. *Front. Educ.* 7:1032333. doi: 10.3389/feduc.2022.1032333
- Seligman, M. E. P. (2018). PERMA and the building blocks of well-being. *J. Positive Psychol.* 13, 333–335. doi: 10.1080/17439760.2018.1437466
- Sparks, R. L. (2016). What does research on the academic outcomes of students in foreign language programs tell us? *Modern Lang. J.* 100, 10–23.
- Stentiford, L., and Koutsouris, G. (2021). What are inclusive pedagogies in higher education? A systematic scoping review. *Stud. High. Educ.* 46, 2245–2261. doi: 10.1080/03075079.2020.1716322
- Toyama, M., and Yamazaki, Y. (2021). Classroom interventions and foreign language anxiety: A systematic review with narrative approach. *Front. Psychol.* 12:614184. doi: 10.3389/fpsyg.2021.614184
- Urbann, K., Gross, K., Gervers, A., and Kellner, M. (2024). "Language means freedom to me" perspectives of Deaf and hard-of-hearing students on their experiences in the English as a foreign language classroom. *Front. Educ.* 9:1447191. doi: 10.3389/feduc.2024.1447191
- US Department of Education (2019). *Individuals with Disabilities Education Act. Section 1401(30)*. Washington, DC: US Department of Education.
- Wehmeyer, M. L. (2023). "Self-determination theory and the education of learners with disabilities," in *The Oxford Handbook of Self-Determination Theory*, ed. R. M. Ryan (Oxford: Oxford University Press), 684–698. doi: 10.1093/oxfordhb/9780197600047.013.34
- Zhang, Y. (2022). The effect of educational technology on EFL learners' self-efficacy. *Front. Psychol.* 13:881301. doi: 10.3389/fpsyg.2022.881301
- Zheng, S., and Zhou, X. (2022). Enhancing foreign language enjoyment through online cooperative learning: A longitudinal study of EFL learners. *Int. J. Environ. Res. Public Health* 20:611. doi: 10.3390/ijerph20010611

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