



Unlocking Learning:

The scale-up of digital learning to support language acquisition and inclusion of learners with a migration background in Italy

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About this report

Acquiring Italian language proficiency is a fundamental step in the school inclusion process for children with a migration background,¹ facilitating a successful educational path and ensuring their social integration in Italy. This is particularly true for first-generation migrant and refugee children. The achievement gap in Italian language skills between them and their peers is equivalent to two academic years (INVALSI, 2023a).

With the right implementation, teachers can leverage digital learning, including the Akelius app, to bridge the achievement gap in Italian language skills between children with a migration background and their peers.

With the right implementation, teachers can leverage digital learning to bridge this gap, including the use of the Akelius digital learning application (Akelius app). The Akelius app is a digital tool designed to facilitate foreign-language acquisition for learners of Italian as a second language (ITA L2). Teachers can leverage the Akelius app with students in a blended learning approach, combining the app in the classroom with traditional teaching methods. Quantitative and qualitative evidence from implementation suggests that the use of the Akelius app is associated with gains in Italian language competencies as well as gains in students' motivation and engagement in lessons.

The Akelius app was introduced in Italy through a trial in the formal educational context from the 2021/2022 school year. In response to the arrival of around 49,400 Ukrainian refugee children, UNICEF expanded the Akelius programme in Italy. By February 2023, it was active in 57 comprehensive schools and five Ukrainian education centres in Latium, Emilia-Romagna, Lombardy, Friuli-Venezia Giulia and Veneto to support these children's integration.

This report ties evidence collected during the expansion of the Akelius app with the broader context of digital learning in Italy and provides three recommendations for key institutions, including the Ministry of Education and Merit, the Regional Education Offices and the schools. These recommendations aim to foster supportive conditions that enable teachers to effectively use technology, including the Akelius app, to enhance the Italian language skills of children with a migration background.

¹ The term 'children with a migration background' encompasses second- and first-generation migrant and refugee children, including newly arrived migrant and refugee children (NAI). This group includes children with diverse language needs. Frequently, first-generation migrant and refugee children, particularly NAI children, do not have foundational skills in the Italian language when they first start school, whereas second-generation migrant children can have foundational Italian language skills, but may lag compared with peers who speak Italian at home.

Key recommendations



1. **In-service teacher training programmes that provide teachers with a coherent package of structured lesson plans, mentoring and practical training sessions can support them to incorporate technology effectively for meeting individual students' needs.**

Introducing technology in the classroom to support students lagging behind entails a drastic shift from traditional teaching methods. In-service training programmes need to go beyond one-off theoretical lessons to provide teachers with hands-on learning experiences and practical materials that can easily be used by teachers to prepare effective lessons using technology.



2. **Recognizing ITA L2 as a subject in Italian primary and lower secondary schools is important to ensure that teachers have adequate training and sufficient time in their schedule to prepare and deliver quality lessons for children with a migration background, including through the use of the Akelius app.**

ITA L2 lessons in Italian primary and lower secondary schools are typically delivered by Italian or special educational needs teachers. Only a minority of these teachers have specific training for teaching ITA L2, while their additional responsibilities leave them with limited time to experiment with new pedagogical approaches and to support the specific needs of students with a migration background. When compared with other teachers, teachers with specific training for teaching ITA L2 were more likely to use the Akelius app as a review tool within their lessons and they were more likely to make use of the personalized learning features in the app.



3. **Guaranteeing that school digital animators (*animatori digitali*) have sufficient availability to support teachers with digital learning, and are adequately trained and rewarded for doing so, is important to advance the National Plan for Digital Schools and to scale up the use of the Akelius app.**

Teachers often need technical and pedagogical assistance to introduce technology effectively into their lessons. School digital animators can provide teachers with support in digital learning across schools in Italy. Yet, their availability, competencies and incentives vary greatly across schools.



1. Introduction

The achievement gap in Italian language reading comprehension between first-generation migrant children and their peers is equivalent to two academic years.

In the Italian education system, 1 in every 10 students has a migration background (Italy, Ministero dell'Istruzione – Ufficio di Statistica, 2022). This includes second-generation migrant and refugee children (63 per cent) and first-generation migrant and refugee children (37 per cent) (Italy, Ministero dell'Istruzione – Ufficio di Statistica, 2022).

Italian language skills are crucial for these students to thrive in the Italian school system. Yet, the achievement gap in Italian language reading comprehension between first-generation migrant children and their peers is equivalent to two academic years (INVALSI, 2023b). This gap remains from primary to upper secondary education and may affect students' likelihood to drop out. Children with a migration background are thrice more likely to drop out when compared with their peers (INVALSI, 2023b).

With the right conditions, teachers can leverage technology to support learners of Italian as a second language (ITA L2) (Poleschuk, et al., 2023). An evidence review conducted in 2020 suggests that digital

learning tools that facilitate individualized and adaptive learning are particularly effective to support lower-attaining students, including, for instance, first-generation migrant students who face language barriers (Major and Gill, 2020). Yet, teachers need to have sufficient time, training and support for harnessing technology to support lower-attaining students through the use of technology.

The primary goal of the Akelius programme is to foster Italian language skills among students with a migration background to facilitate their school insertion and contribute to their social inclusion in Italy.

In 2021, the Akelius programme was launched in Italy to address these challenges through the Akelius digital learning application (Akelius app). The primary goal of this programme is to foster Italian language skills among students with a migration background to facilitate their school insertion and contribute to their social inclusion in Italy. Teachers can leverage the Akelius app in the classroom following a blended learning approach, which combines digital, traditional or non-digital learning methods to achieve learning goals.

In 2021, pilot implementation of the Akelius app started in two comprehensive institutes² located in Bologna and Rome. Implementation in Bologna was supported by external educators from the social cooperative *Agire Insieme Per l'Intercultura* (AIPi),³ whereas in Rome implementation was led by schoolteachers. Poleschuk, et al. (2023) examined the pilot implementation of the Akelius app in 2021–2022. Results from focus group discussions (FGDs) suggest that, when combined with traditional learning methods in a blended learning approach, the Akelius app was a useful tool to personalize learning and support children with diverse learning levels and needs, including newly arrived migrant and refugee (NAI) students with no knowledge of Italian and children with disabilities. Quantitative results from the pilot implementation also suggest that students in lessons where the Akelius app was used progressed faster than other students. The Akelius app also strengthened non-learning outcomes, such as students' motivation and engagement in class (Poleschuk, et al., 2023).

2 In Italy, a 'comprehensive institute' is an educational institution that groups together schools from the pre-primary to the lower secondary level. Comprehensive institutes are run by a single school manager (Eurydice, 2023).

3 [The social cooperative AIPi](#), based in Bologna, was created by educators and teachers of ITA L2 to intervene in schools and local centres for the construction of intercultural educational paths as well as for the reception and schooling of non-Italian-speaking minors together with their Italian peers. AIPi is an implementing partner for the Akelius programme in Italy.

In June 2022, following the arrival of around 49,400 Ukrainian refugee children in Italy, UNICEF and the Initiatives and Studies on Multi-ethnicity Foundation (ISMU Foundation)⁴ collaborated to scale up the Akelius programme to support the inclusion of Ukrainian refugee children and other children with a migration background into the Italian education system. As of February 2023, the Akelius app was implemented in 57 comprehensive schools (i.e., schools that combine primary and lower-secondary education under a single structure) and five Ukrainian non-formal education centres in the regions of Latium, Emilia-Romagna, Lombardy, Friuli-Venezia Giulia and Veneto.

Research was embedded in the implementation of the Akelius app, combining qualitative and quantitative methods to inform decision-making as the programme scales up. [Annex I: Implementation research methodology](#) provides an overview of the research instruments, sample and analysis strategies employed as part of this research. Resulting evidence is presented in this report to address the following research questions:

1. How did teachers and external educators integrate the Akelius app into their teaching practice in schools and non-formal education centres? What best practices and challenges emerged in this process? What differences appeared in implementation between teachers and external educators?
2. What are the most effective ways to train and support teachers to deliver blended learning?
3. What gaps and opportunities exist for leveraging technology to enhance the learning of ITA L2 among children with a migration background in Italy?

⁴ [The ISMU Foundation](#), based in Milan, is an independent scientific research organization studying migration and integration processes. It is research and implementing partner in the scale-up of the Akelius programme in Italy.

1.1. An overview of the Akelius app

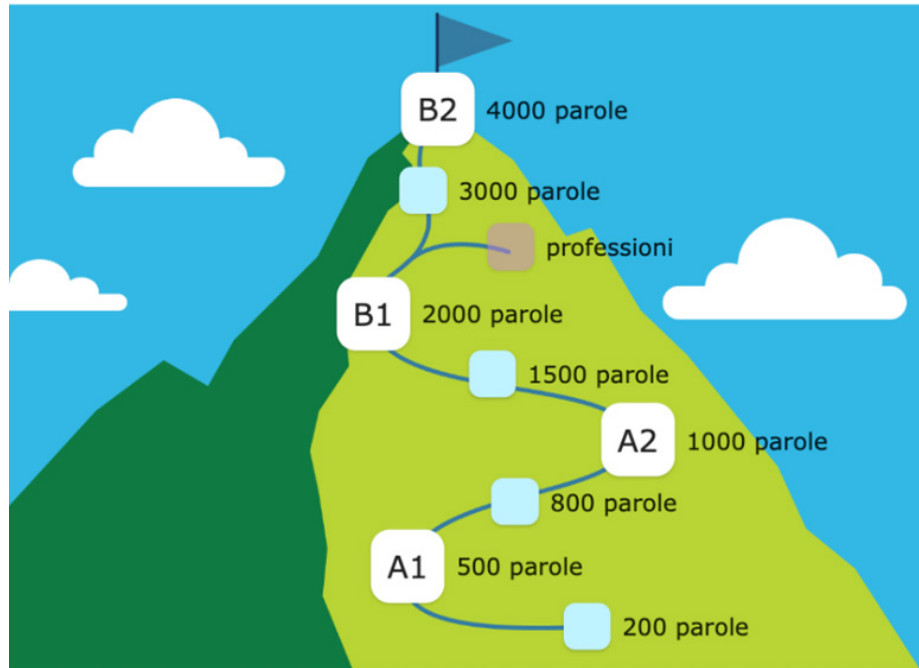
The Akelius app is designed to accelerate foreign language acquisition through gamified learning.

The Akelius app is designed to accelerate foreign language acquisition through gamified learning. The app offers multimedia interactive content that fosters students' core language competencies, including oral and written comprehension, speaking and writing. The content is structured in chapters that can be easily combined with traditional teaching methods following a blended learning approach. Each chapter focuses on a specific communication grammar goal and employs a mix of interactive video lessons, songs, flash cards, reading and listening passages, quizzes and gamified tests (Figure 1). At the end of each chapter, students can evaluate their progress through a gamified test or quiz through which learners receive instant feedback in the app to practice and correct their mistakes until they pass.

The digital learning application is free, contains no advertising and requires no prior user information to access. It can be accessed online via a web browser, or online and offline (when content is downloaded) through a mobile application on tablets or mobile phones. The Akelius app has been implemented within classrooms in multiple countries with the support of UNICEF country offices, including those in Albania, Bosnia and Herzegovina, Bhutan, Cape Verde, Greece, Italy, Kazakhstan, Lebanon, Mauritania, Mexico, Poland, São Tomé and Príncipe, and Serbia. The languages available for learning are English, French, German, Greek, Italian, Polish, Portuguese, Russian, Spanish and Swedish. Research on implementation and effectiveness of the digital learning application has been conducted in [Bosnia and Herzegovina](#), [Greece](#), [Italy](#), [Lebanon](#) and [Mauritania](#).

Figure 1

a. The overall learning pathway of the Italian Akelius app:



b. An individual 10-minute lesson with its different interactive tasks and tests:

lingua > italiano > A0 > patata



lezione



gioco



indovinare



canzone



grammatica



matematica



quiz



2. Implementation of the Akelius app

Teachers and educators typically use the Akelius app with students as part of face-to-face lessons. To prepare for implementation in Italy and support teachers throughout the school year, the ISMU Foundation developed and delivered a teacher training programme on the use of the Akelius app in blended learning for ITA L2.⁵ The content of the course was also supported by AIPI with practical examples of didactic units with a blended learning approach. The training programme is accredited and available on the [SOFIA platform](#), Italy's national platform for teacher professional development. The ISMU Foundation also provided teachers with technical support and pedagogical assistance through a remote technical help desk during the school year. UNICEF provided schools and non-formal education centres in the programme with one tablet for each student that would use the Akelius app.

⁵ The main target group for the Akelius app are children with a migration background, but the app has also been piloted to strengthen Italian language skills among Italian learners with disabilities and other learners with special learning needs. More information on the use of the Akelius app for learners with disabilities is available at Poleschuk, et al., 2023.

The Akelius app is implemented in three main modalities (Table 1).

Table 1 Implementation modalities for the Akelius app

	EDUCATORS	LOCATION	LEARNERS	LESSONS	FREQUENCY
1. Implementation by teachers in public schools	Italian language and special educational needs (SEN) teachers	57 comprehensive schools	Children with a migration background aged 6 to 10 years old	Individual or group catch-up classes	Weekly during school hours
2. Implementation by external educators in public schools	External educators	3 comprehensive schools	Children with a migration background aged 6 to 10 years old	Individual or group catch-up classes	Weekly during school hours and/or outside of school hours
3. Implementation in non-formal education centres	Volunteer educators	5 non-formal education centres (Ukrainian associations)	Ukrainian refugee children aged 6 to 16 years old	Group lessons	Weekly outside-of-school hours

Differences in implementation modalities shape how teachers and educators use the Akelius app:

- 1. Italian and SEN teachers in public schools** need to balance many curricular responsibilities in a tight schedule. Besides providing children with a migration background with support in ITA L2, public schoolteachers need to teach regular Italian lessons or other support classes. As a result, their availability to experiment with the Akelius app is more constrained.
- 2. External educators** have an exclusive focus on providing ITA L2 lessons for children with a migration background and can devote more time to incorporate the Akelius app in their teaching.
- 3. Volunteer educators in non-formal education centres** do not necessarily have formal training in teaching Italian, but they display high levels of motivation and commitment to provide remedial education for Ukrainian refugee children. Likewise, educators in non-formal education centres do not need to follow a specific curriculum and can use the Akelius app more freely.

When compared with schoolteachers, external school educators and educators in non-formal education centres use the Akelius app to pursue more diverse learning goals, sometimes within the same lesson (Figure 2). When compared with schoolteachers, non-formal educators and external school educators were also more likely to combine digital and non-digital materials within the same lesson to achieve learning objectives (Figure 3). Differences in sample sizes across teachers in each group limit the comparability of quantitative findings across implementation settings, but these findings also emerged in qualitative evidence.

Figure 2 Learning objectives pursued with the Akelius app

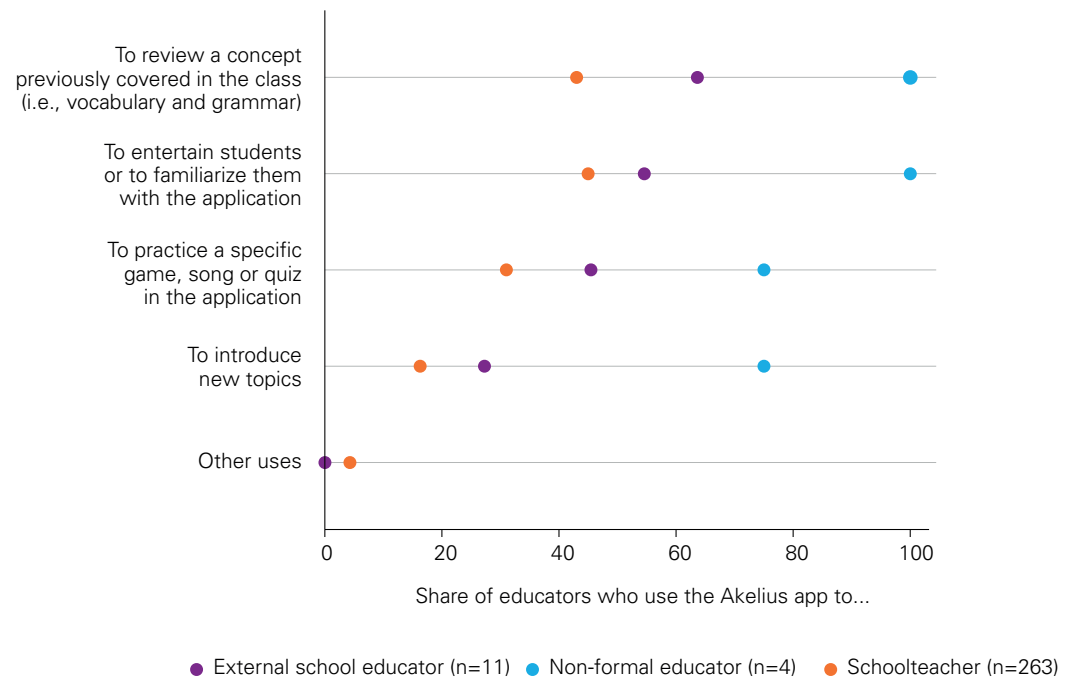
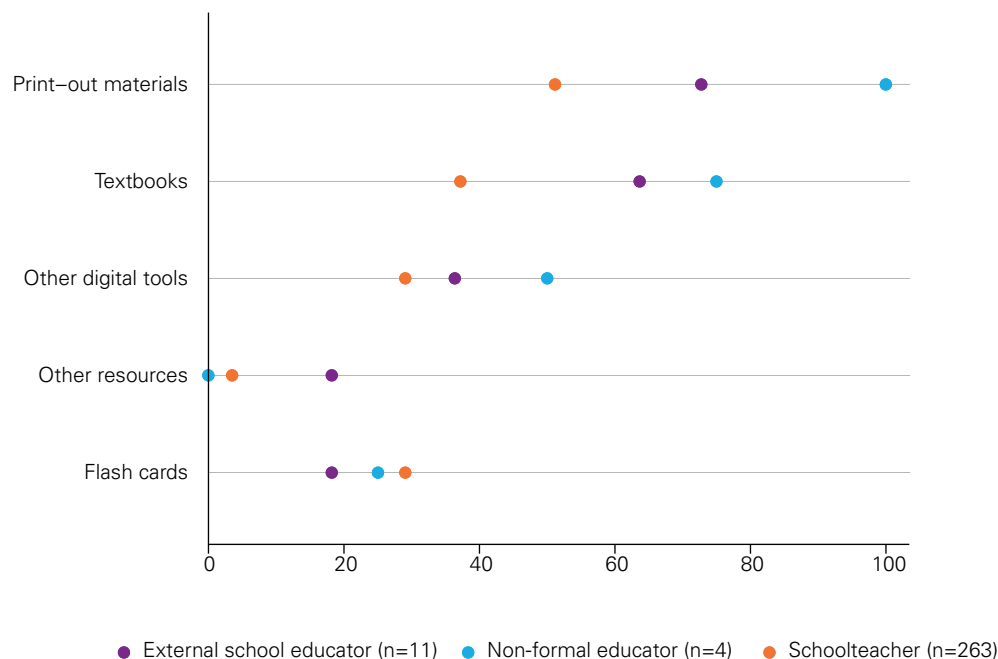


Figure 3 Use of additional materials in lessons where the Akelius app was used (blended learning)



Teachers' familiarity with technology and blended learning pedagogies, teacher motivation, available school-level support or teachers' workload are some of the factors that shape implementation of the Akelius app within classrooms.

Differences in implementation are also observed from teacher to teacher.

Teachers' familiarity with technology and blended learning pedagogies, teacher motivation, available school-level support or teachers' workload are some of the factors that shape implementation of the Akelius app within classrooms. Most teachers report using the Akelius app with a structured approach, combining different activities to achieve learning goals (90 per cent), while 10 per cent of teachers report using the Akelius app only to entertain students, without connecting its use to other learning activities in the class.

2.1. Effects on teaching and learning

Learning assessments conducted by the ISMU Foundation with students in the Akelius programme indicate students strengthened their ITA L2 competencies during the school year.

In June 2023, the ISMU Foundation administered learning assessments to 357 students using the Akelius app in ITA L2 lessons, representing 48 per cent of students that used the Akelius app in the school year 2023/2024. The assessments focused on students'

listening and reading competencies and aimed to assess students' learning progress relative to the ITA L2 level assigned by their teachers at the start of the Akelius programme. Students' ITA L2 placement levels followed the Common European Framework of Reference for Languages (CEFR): 99 students were enrolled in A0 classes, 121 in A1 and 49 in A2.⁶ At the end of the school year, most students met learning outcomes for the ITA L2 CEFR level in which they had been enrolled (91 per cent), with 57 per cent of students increasing their performance by more than one CEFR level (Fondazione ISMU, 2024). These results are in line with Poleschuk, et al., 2023, which suggests that students in lessons where the Akelius app was used experienced greater learning gains in ITA L2 when compared with their peers in classes where the app was not used. While a positive trend is registered in learning assessment scores, additional evidence is needed to understand the exact contribution of the Akelius app on students' learning, including experimental evidence to understand the causal impact of the Akelius app on learning outcomes.

The Akelius app is reported to support personalized learning in heterogeneous student groups, catering to students' individual learning needs.

Students' learning progress aligns with what is reported by teachers and educators, indicating that under favourable conditions, the Akelius app can effectively support teaching and learning in ITA L2 lessons. Most teachers and educators that completed the teacher feedback questionnaire believe that the use of technology in ITA L2 lessons can improve and speed up learning (81 per cent), and they report that they are planning to use the Akelius app in the next school year (88 per cent). In FGDs with teachers, teachers report that gamified aspects of the Akelius app encourage students' motivation and engagement. Play-based learning is also reported to provide psychosocial relief and have a calming effect on Ukrainian refugee children and on children with special learning needs. The Akelius app is also reported to support personalized learning in heterogeneous student groups, catering to students' individual learning needs. On average, teachers rate the use of the Akelius app to support their teaching goals, particularly when working with children with a migration background, with 3.5 out of 5.

⁶ The remaining 50 students do not have baseline assessment records or were already placed at the B1 level by teachers at baseline. These students have been excluded from the analysis as the ISMU Foundation's learning assessment was designed to measure learning gains for students between the A0 and (up to) B1 CEFR levels.

2.2. Challenges to implement the Akelius app

Research highlighted positive effects of the Akelius app, but also underscored that bringing technology into the classroom is not enough to enhance learning. The implementation of digital learning

innovations needs to account for common challenges experienced by teachers when using digital devices within lessons (Brossard, et al., 2021). Research surfaced three main implementation-related challenges to use the Akelius app in Italian public schools:

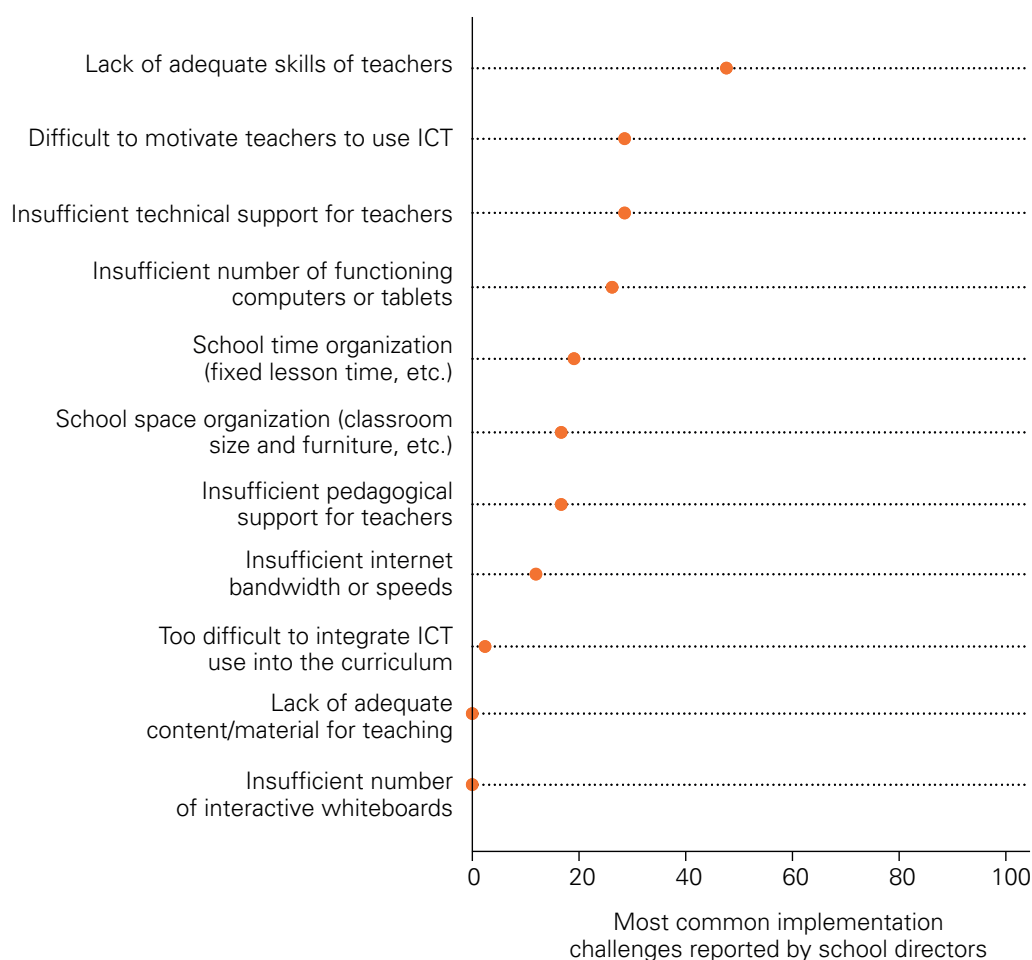
The implementation of digital learning innovations needs to account for common challenges experienced by teachers when using digital devices within lessons.

- 1. Limited availability and competing responsibilities of Italian language teachers in primary schools:** In primary schools, ITA L2 lessons are typically conducted by regular Italian language teachers or SEN teachers who often grapple with tight schedules and limited time for experimenting with new pedagogical approaches. Italian and SEN teachers frequently face the challenge of balancing an increasing demand of delivering ITA L2 lessons with their pre-existing responsibilities and schedule. As a result, primary schoolteachers do not always have sufficient time, support or training to provide children with quality instruction in ITA L2, including with an effective use of digital resources such as the Akelius app. More than half of primary schoolteachers that completed the teacher feedback questionnaire (53 per cent) reported not having sufficient time to implement the Akelius app considering their other responsibilities.
- 2. Logistical hurdles to use technology within classrooms:** Incorporating technology in the classroom requires setting up devices with required software, ensuring devices are sufficiently charged, distributing devices and, sometimes, technical troubleshooting. These logistical hurdles were reported as a challenge for the effective implementation of the Akelius app by 46 per cent of teachers that completed the teacher feedback questionnaire (see [Annex I: Implementation research methodology](#)). For more than half of these teachers (62 per cent), preparing and distributing tablets for using the Akelius app takes 10 minutes or more.

3. Gaps in teachers' skills for using technology to support

inclusive learning: The effective use of technology to support inclusive learning often requires teachers to reconsider how they approach diversity in the classroom, rethink their lesson designs and experiment with new approaches to manage the classroom. Embarking on this process requires teachers' time, together with technical and pedagogical competencies for harnessing digital tools to teach at the right level. "Lack of adequate teachers' skills" was considered by 50 per cent of school directors as the main challenge to implement the Akelius app – the most commonly reported challenge by school directors (Figure 4). Teachers feel more strongly about their competence to implement the Akelius app, but gaps also appear in self-reported skills.

Figure 4 Challenges to implement the Akelius app



While these challenges were experienced by different teachers in the Akelius programme, these challenges are not exclusive to the Akelius app. The National Plan for Digital Schools (2015) and its associated actions recognize many of the specific challenges that the Italian school system faces to digitalize schools. This includes lack of teachers' support and the need for effective training programmes to build teachers' skills on innovative pedagogies that involve technology, according to the National Plan for Digital Schools (2015).

Connecting the experience of the Akelius programme with the broader context for digital learning in Italy, the following section presents three recommendations for the Italian Ministry of Education. These recommendations seek to foster supportive conditions that enable teachers to harness technology for strengthening Italian-language acquisition of children with a migration background, including through the Akelius app.





3. Recommendations for programme scale-up and sustainability



3.1 Prepare and support teachers to harness technology for delivering adaptive teaching through a combination of practical teacher training, structured lesson plans and mentoring opportunities

Leveraging technology to deliver adaptive teaching entails a drastic pedagogical shift from traditional teaching methods. In this line, the National Plan for Digital Schools recognizes that in-service teacher training programmes need to go beyond one-off lecture-based sessions to provide teachers with the skills to bring technology effectively into the classroom (Italy, Ministero dell'Istruzione e del Merito, 2021a). Evidence from the Akelius programme underscores that **providing teachers with a combination of practical teacher training, structured lesson plans and ongoing mentoring support can facilitate an effective implementation of technology in the classroom to meet students' individual learning needs in ITA L2 lessons:**

1. Practical teacher training programmes discuss how to implement technology in the classroom rather than discuss abstract concepts. Practical training programmes can involve approaches such as:

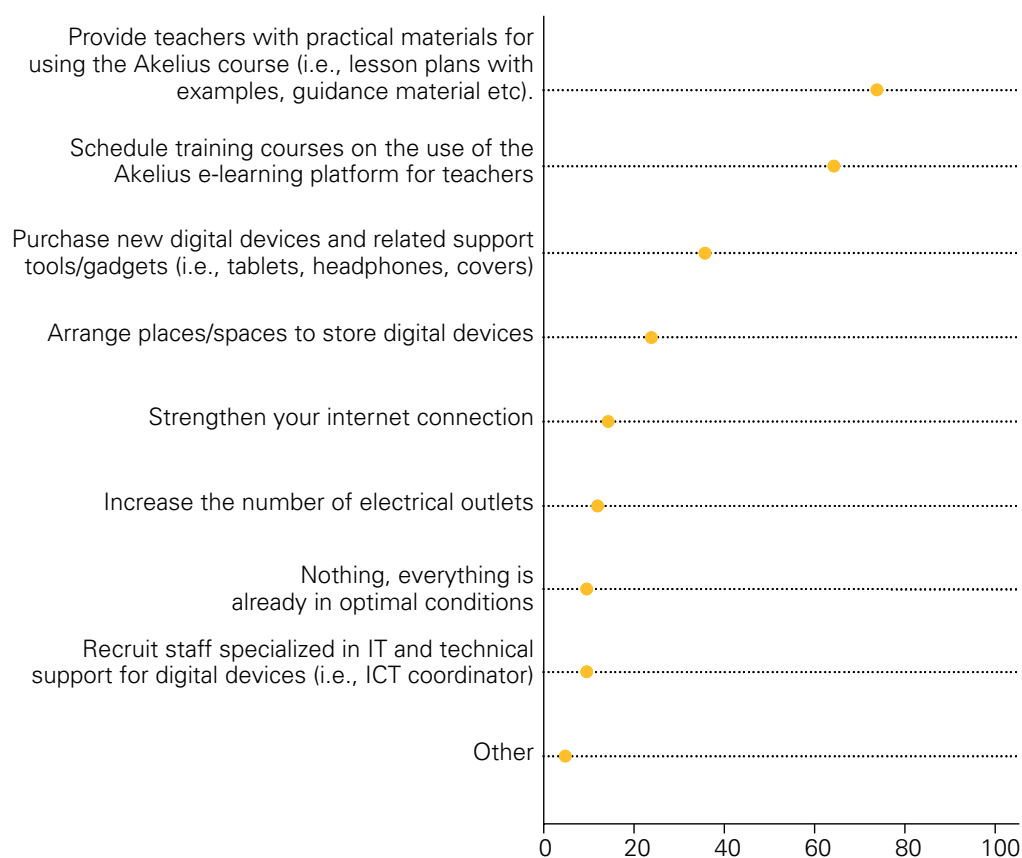
- ✓ peer-modelling, where experienced teachers model an ITA L2 lesson involving the Akelius app
- ✓ flipped classrooms, where teachers-in-training deliver a lesson with the Akelius app
- ✓ co-creation of lesson plans
- ✓ technical lessons, where teachers are trained on troubleshooting technical issues with tablets

Practical sessions of teacher training were highlighted as the most useful training component by teachers that attended teacher training in Italy and other countries where the Akelius app is implemented (Cárceles, Kabil and Skalonja, 2023).

2. Structured lesson plans provide teachers with a road map to combine digital and non-digital activities in the classroom to achieve specific curriculum goals. When asked about additional support needs to implement the Akelius app, 74 per cent of school directors reported the need to provide teachers with practical materials for using Akelius (i.e., lesson plans with examples, guidance materials, etc.) (Figure 5). Lesson plans can include step-by-step learning activities, important lesson routines or exercises for students at different levels in the classroom. In contexts where teachers have significant teaching experience, effective guidance usually saves teachers' time to prepare their lessons while leaving sufficient decision-making space on how to organize and deliver their lessons (Global Education Evidence Advisory Panel, 2023). Co-creating lesson plans with teachers and experts in the use of the Akelius app, such as external educators from UNICEF's partners in Italy (the ISMU Foundation and AIPI), can support that plans are effective and relevant for teachers' context and increase teachers' buy-in.

3. Mentoring support from school digital animators or experts in the use of the Akelius app, such as external educators from the ISMU Foundation or AIPI, can offer teachers opportunities to reflect on their experiences and troubleshoot their challenges. This can improve teachers' confidence in applying skills. Peer-learning opportunities, reported by 37 per cent of teachers as an additional support need, can offer teachers opportunities to learn from how other teachers use the Akelius app in their school.

Figure 5 Additional support needs reported by school directors



Additional support needs reported by school directors

This support follows evidence from the Global Education Evidence Advisory Panel,⁷ which suggests that providing teachers with **a combination of practical teacher training, scripted lesson plans and mentoring support is one of the most cost-effective interventions to support teachers in updating their pedagogical approaches**, and ultimately, enhance learning outcomes (Global Education Evidence Advisory Panel, 2023).

As the Ministry of Education develops its programme for building teachers' digital skills, following the National Plan for Digital Schools and the *Atto di indirizzo politico-istituzionale per l'anno 2022*, encouraging the use of school-based or territorial training programmes that include a coherent package of practical teacher training, structured lesson plans and mentoring support can support an effective introduction of technology in Italian schools, including the Akelius app.



3.2 Recognize Italian as a second language as a curricular school subject in primary schools

Children with a migration background need strong Italian language skills to thrive in the Italian education system. Yet, when compared with their peers, first-generation migrant students score on average 22.1 points lower in Italian INVALSI tests for primary education, an achievement gap equivalent to two academic years (INVALSI, 2023b). This gap carries on consistently across lower and upper secondary education, and it may affect students' likelihood to drop out of school (INVALSI, 2023b). Almost a third of foreign-born 18–24-year-olds left school with only a lower secondary school certificate (32 per cent), thrice the share of their peers (11 per cent) (Fondazione ISMU ETS, 2023). Achievement gaps for second-generation migrant students are comparably smaller, but remain above 10 points across all school-levels (INVALSI, 2023b).

7 The [Global Education Evidence Advisory Panel](#), co-hosted by the Foreign, Commonwealth & Development Office of the United Kingdom, UNICEF, the United States Agency for International Development and the World Bank, is an international panel consisting of leading researchers and practitioners who have contributed to and applied the burgeoning evidence base in education. The panel reviews and assesses evidence-based and cost-effective practices that can improve education outcomes, to help policymakers in making decisions.

The Italian education system has taken clear steps to regularize ITA L2 as a school subject, an important step to address the specific linguistic needs of children with a migration background.

In 2017, the Italian Government institutionalized teaching positions for ITA L2 through the creation of a national teaching access exam of Italian for foreign language learners – the A23 exam. In 2023, six years after the introduction of the A23 exam, all ITA L2 teachers in Italy have been allocated to lower secondary schools or the first two years of upper secondary schools (Deiana, Malavolta and Marulo, 2021). Although the A23 exam does not specify the school level where ITA L2 teachers need to be allocated, primary schools have not been included as part of this allocation (Deiana, Malavolta and Marulo, 2021). Additionally, the A23 exam does not specify the responsibilities that ITA L2 teachers would need to perform and includes access prerequisites that are not always relevant for teaching ITA L2 (Deiana, Malavolta and Marulo, 2021). These prerequisites include educational or professional experiences not directly associated with teaching ITA L2.

Recognizing ITA L2 as a school subject could support that teachers have sufficient time and motivation to meet students' individual learning needs in ITA L2 lessons.

Recognizing ITA L2 as a school subject could support that teachers have sufficient time and motivation to meet students' individual learning needs in ITA L2 lessons.

It would also support that teachers have specific training to deliver inclusive education for Italian language learners. Among schoolteachers in the Akelius programme, only 16 per cent had specific training in teaching ITA L2. When compared with other teachers, teachers with specific training in teaching ITA L2 were more likely to use the Akelius app strategically in their lessons. For instance, these teachers were more likely to use the Akelius app as a tool to review concepts previously explained in class or more likely to combine the Akelius app with other digital tools within one lesson. Teachers with specific training in teaching ITA L2 were also more likely to use the login functionality of the app, allowing students to engage with the personalized learning features of the app.

Staffing primary schools with sufficient ITA L2 teachers, based on schools' share of students with a migration background, could also reduce gaps in academic achievement across schools in Italy.

In 7 per cent of schools in Italy, children with a migration background represent more than 30 per cent of students. This share is considerably above the national average of 10 per cent. Ensuring that

these schools have sufficient ITA L2 teachers and school resources to bridge educational gaps among students is important to ensure equitable educational outcomes in Italy.



3.3 Guarantee that school digital animators have the required competencies, incentives and availability to support schoolteachers in delivering digital learning

Italian language teachers need comprehensive support to effectively integrate digital technologies into their teaching practices.

This includes technical assistance to prepare, manage or troubleshoot devices, and pedagogical training and assistance to, for instance, support teachers in creating lesson plans that combine digital and non-digital tools in a lesson to meet curriculum goals.

When compared with other teachers, teachers with specific training in teaching ITA L2 were more likely to use the Akelius app strategically in their lessons.

School digital animators can play an important role in supporting this process within Italian schools.

The role of school digital animators (*animatori digitali*) was established by the National Plan for Digital Schools (2015),⁸ which sets out the vision and operational plan for the digitalization of Italian schools. Each school in Italy appoints a school digital animator, a teacher who, together with the school and administrative directors, has the role of diffusing digital innovations at the school level. School digital animators can support the diffusion of digital innovations by:

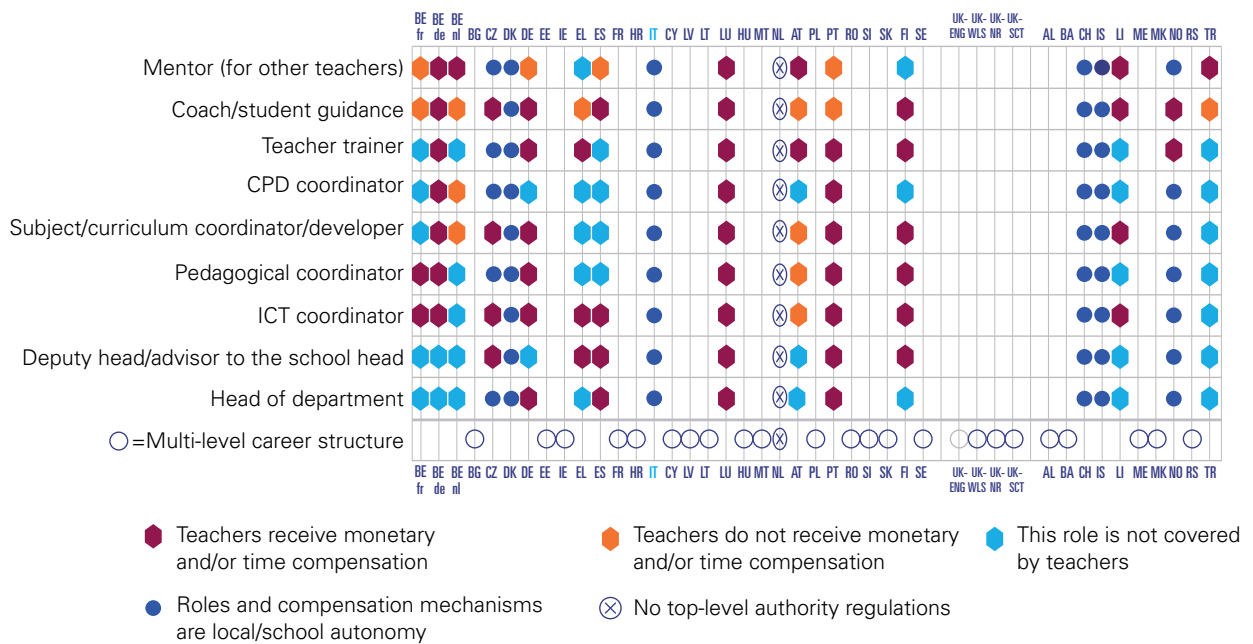
1. Identifying and supporting the implementation of suitable digital innovations, including through the purchase of technical equipment or the provision of technical assistance to teachers
2. Facilitating internal training or peer-learning opportunities to teachers and school staff on digital skills
3. Supporting the active involvement of the school community for schools' digitalization, including through workshops or dedicated days for digital activities (Italy, Ministero dell'Istruzione e del Merito, 2021b)

8 Italy, Ministero dell'Istruzione e del Merito, 'Piano nazionale per la scuola digitale', 2022, <<https://scuoladigitale.istruzione.it/pnsd>>, accessed 3 June 2024.

However, the specific responsibilities, compensation and availability of school digital animators vary across schools.

Schools in Italy have autonomy to define the specific role and compensation of school digital animators (Figure 6). School directors typically appoint a tenured teacher as school digital animator, based on their experience and motivation. Every school year, school digital animators present a school plan proposing digital innovations suitable for their school context and digital training programmes for teachers. As of 2023, schools are allocated a yearly budget of €2,000 to fund activities proposed by the school digital animator. Any compensation for the work of school digital animators is also derived from this budget.

Figure 6 Existence of compensation mechanisms available to teachers to cover specific roles according to top-level authority regulations, lower secondary education, 2019/2020



Source: European Commission, Education, Audiovisual and Culture Executive Agency, and Eurydice, 'Teachers in Europe: Careers, development and well-being', Publications Office of the European Union, Luxembourg, 2021, <https://eurydice.eacea.ec.europa.eu/sites/default/files/teachers_in_europe_2020_chapter_1.pdf>.

Ensuring that school digital animators have sufficient time to perform their responsibilities, and are adequately trained and compensated for doing so, can be instrumental in advancing the National Plan for Digital Schools, including the implementation of digital learning initiatives such as the Akelius app.

Only a small proportion of school digital animators in schools that participated in the Akelius programme were available full-time (14 per cent) or compensated for their role (5 per cent). As a result, support to troubleshoot devices during lessons or to implement specific digital innovations at the classroom level was not always available when needed in these schools. School digital animators provided technical assistance to teachers in 70 per cent of schools, while support in pedagogy for digital learning was provided in 30 per cent of schools. This included pedagogical support to develop lesson plans that incorporate technology or guidance to use digital materials to meet curriculum goals. School information and communication technology (ICT) protocols, which determine when and how teachers may use technology in the classroom, were only available in 43 per cent of schools.

Ensuring that school digital animators have sufficient time to perform their responsibilities, and are adequately trained and compensated for doing so, can be instrumental in advancing the National Plan for Digital Schools, including the implementation of digital learning initiatives such as the Akelius app. In Finland, Germany or Spain, regulations establish the monetary or time-based compensation for school digital animators, commonly referred to as ICT coordinators in other countries (European Commission, European Education and Culture Executive Agency, and Eurydice, 2023). Defining a standard set of responsibilities and a competency framework for school digital animators can also ensure that teachers across schools in Italy can receive quality technical and pedagogical support to implement digital learning when needed.

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Annex I: Implementation research methodology

Research was embedded in the implementation of the Akelius app to inform decision-making as the programme scales up. Resulting evidence is presented in this report to address the following research questions:

1. How did teachers and external educators integrate the Akelius app into their teaching practice in schools and non-formal education centres? What best practices and challenges emerged in this process? What differences appeared in implementation between teachers and external educators?
2. What are the most effective ways to train and support teachers to deliver blended learning?
3. What gaps and opportunities exist for leveraging technology to enhance the learning of ITA L2 among children with a migration background in Italy?

Implementation research combined quantitative and qualitative methods.

Quantitative instruments included:

1. **School ICT readiness questionnaires** were used to capture schools' preparedness to introduce technology in their classrooms. The questionnaire considers schools' ICT infrastructure, staff roles and school leaders' attitudes towards digital learning. School directors were responsible for completing the questionnaire online. Responses were provided by school directors in 42 out of 57 comprehensive schools in the Akelius programme.
2. **Pre-/post-teacher training questionnaires** were used to capture teachers' prior experience using technology in the classroom as well as changes in teachers' attitudes and knowledge around blended learning pedagogies, including using the Akelius app, following teacher training. Teacher training forms were completed by 76 schoolteachers before and after attending a teacher training programme on blended learning, with a focus on the Akelius app, provided by the ISMU Foundation.
3. **Teacher feedback forms** were used to understand teachers' implementation of the Akelius app following teacher training. Responses were provided by 271 teachers and 12 external teachers in comprehensive schools and four non-formal educators in Ukrainian associations.

- 4. Learning assessments and monitoring data from the ISMU Foundation** were used to understand implementation patterns by schoolteachers as well as learning outcomes of students in lessons where the Akelius app was used. The ISMU Foundation administered learning assessments to 357 students using the Akelius app in ITA L2 lessons, representing 48 per cent of students that used the Akelius app in the school year 2023/2024. The assessments focused on students' listening and reading competencies, and are aimed to assess students' learning progress relative to the ITA L2 level assigned by their teachers at the start of the Akelius programme. Monitoring data included teachers' registration forms in the Akelius programme.

Quantitative data was analysed on Stata to produce descriptive statistics.

Evidence from quantitative instruments was triangulated with qualitative data, including data from the following:

- 1. FGDs** were organized to facilitate open-ended discussions among schoolteachers (3 FGDs), non-formal educators in Ukrainian associations (1 FGDs), parents (2 FGDs) and students (2 FGDs). FGDs included 6 to 7 participants, ensuring a balanced representation of gender, and were led in person by UNICEF.
- 2. Key informant interviews (KIIs)** were organized to facilitate in-depth discussions with key stakeholders for the implementation of the Akelius app. This included: school directors (2 KIIs), Ukrainian association directors (2 KIIs), representatives from territorial support centres (1 KII) and the Ministry of Education (1 KII).
- 3. Classroom observations** were organized to understand teachers' use of the Akelius app within classrooms, including associated pedagogical approaches, challenges and additional support needs. Classroom observations were completed by UNICEF in four Italian language lessons in comprehensive schools and one lesson in a Ukrainian association.

Qualitative data was analysed on NVivo using inductive and deductive coding.

This research also builds on evidence from the pilot implementation of the Akelius app in 2021–2022, examined in *Unlocking Learning: The use of education technology to support disadvantaged children's language learning and social inclusion in Italy* (Poleschuk, et al., 2023).

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