



Unlocking Learning

The use of digital learning to support the education and inclusion of refugees and migrant children in Bosnia and Herzegovina

February 2023

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Svetlana Poleschuk, Andrea Soldo and Thomas Dreesen

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List of abbreviations

Akelius	Akelius digital language learning application
BiH	Bosnia and Herzegovina
FGD	Focus Group Discussion
KS	Canton of Sarajevo (one of 10 cantons/federal units of the Federation of Bosnia and Herzegovina (FBiH), which is one of the two political entities of Bosnia and Herzegovina)
MoE	Ministry of Education
NGO	Non-governmental organization
TRC	Temporary Reception Centre (different type of centres providing accommodation and essential and basic services for migrants, refugees and asylum seekers in BiH)
UASC	Unaccompanied and Separated Children
USK	Una-Sana Canton (one of 10 cantons/federal units of the Federation of Bosnia and Herzegovina (FBiH), which is one of the two political entities of Bosnia and Herzegovina)
IOM	International Organization for Migration

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Executive summary

In Bosnia and Herzegovina, there has been a great increase in the number of refugees and migrants arriving in the country over the past five years, from just a few dozen arrivals annually prior to 2017 to around 95,000 from 2018 until 2022. This large increase, caused by changes in migration routes into western Europe, put an incredible strain on the country's emergency response systems. Temporary reception centres (TRCs) were created across the country to house the new arrivals and provide services including social protection, child protection, psychosocial support and education. In July 2020, UNICEF Bosnia and Herzegovina, together with partners Save the Children and World Vision, introduced the Akelius digital learning application to support children's language learning in TRCs including English, German and French. The use of the digital learning application subsequently expanded to formal schools in Una-Sana and Sarajevo Cantons that integrate refugees and migrants.

The co-creation and implementation of the digital learning application started in 2017, as part of the UNICEF-Akelius Foundation global partnership. The digital learning application is free, includes 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 content and features of the learning application are developed through a co-creation approach with frequent communication and feedback from teachers based on the real-world use of the learning application with students. The digital learning application is being implemented in different countries with the support of UNICEF country offices, including those in Albania, Bosnia and Herzegovina, Cape Verde, Greece, Italy, Kazakhstan, Lebanon, Mauritania, Mexico, São Tomé and Príncipe, and Serbia. The platform is currently available for learning English, German, French, Portuguese, Spanish, Italian, Russian, Swedish, Greek, and Polish. Research on implementation and effectiveness of the digital learning application has been conducted in [Greece](#), [Lebanon](#) and Italy.

This report presents key findings from qualitative research on the implementation and effectiveness of the digital learning application in Bosnia and Herzegovina. The application was introduced in a blended teaching and learning approach where teachers introduced the digital learning application on tablets as part of their in-person classes. The overall objectives of this study are threefold: (1) to understand the programme's association with improving learning outcomes and integration of students into formal schooling; (2) to examine the various modalities in which the digital learning application was implemented and identify best practices and challenges; and (3) to understand the programme's sustainability and potential for scale-up within the education system in Bosnia and Herzegovina. The research design and methods included in-depth structured interviews, focus group discussions (FGDs) and structured classroom observations.



Summary of key findings

- **Use of the digital learning application contributed to the learning and personal development needs of both students and teachers in TRCs and primary schools.** The use of the digital learning application in classrooms was reported to improve learning results, especially at beginner levels and particularly for students participating regularly over an extended period.
- **The wide variety of content provided by the digital learning application in terms of both study topics and levels and types of interactive activities enabled teachers to respond to students' individual learning needs.** This was particularly relevant when working with refugee and migrant children with diverse educational backgrounds.
- **The digital learning application contains rich, diverse and entertaining content for children.** Exploring and using this content allowed teachers to free up time otherwise used for creating instruction materials. Using the digital learning application also helped teachers to focus on improving their lesson plans and individualized learning plans for various groups of children.
- **Both teachers and students experienced technical difficulties when first introducing technology in the classroom.** The introduction of technology at first affected the class dynamics - the teachers' control over the class. For example, the time required to update and distribute the equipment before the class presented a challenge, especially when teachers had limited time at their disposal.
- **To effectively use technology in the classroom, teachers required additional and specific training and strategies for introducing digital learning into their pedagogy.** Teachers reported struggling to identify teaching strategies for integrating digital learning effectively in the classroom and to deliver truly blended language learning classes.

Best practices for implementing the digital learning application

- **To develop and enhance students' language skills, the digital learning application was accompanied by writing and speaking assignments provided by the teacher in a blended classroom approach.** Using the digital learning application proved effective when used as one tool for teachers to reinforce knowledge gained from other classroom activities.
- **Teachers and students benefited from the use of stories and books included in the digital learning application outside of the gamified content.** Teachers reported that language learning through stories motivates children to learn and broaden their knowledge of the world. Some teachers read closely the stories included in the learning application. They also organized theatre performances based on the stories to create a space where children could speak and brought additional books to the classroom.
- **Teachers used the digital learning application as an assessment tool to check new arrivals' knowledge of the foreign language and explain foundational language concepts.** Within classes with many levels, the more advanced students provided peer tutoring to newcomers.
- **The digital learning application was used to help transition and integrate students into formal schooling and their community.** When students attended the digital classes both in the TRCs and at school, playing with the tool helped them build friendship with local children more easily and feel more connected to their peers and the school community.



© UNICEF/Akelius club in Una-Sana Canton

Recommendations for policymakers and education practitioners

- **Teachers should be provided with additional training and professional development on how to combine traditional methods with digital learning activities to meet children’s learning goals.** The capacity for teachers to provide inclusive, equitable, quality education to students with diverse backgrounds and needs can also be strengthened by learning from non-formal education practitioners experienced in student-centred approaches for vulnerable children.
- **Ministries of Education should seek partnerships to provide schools with digital devices, and connectivity to enable effective implementation of digital learning tools.** The technology must be coupled with protocols for its use, storage and maintenance.
- **Detailed protocols for the use and management of technology by teachers and administrators should be introduced and prioritized to promote safe and sustainable use of digital learning in school.** Identifying clear roles and responsibilities for those who use and support the use of technology in the classroom should be carefully considered at school level.
- **Schools and UNICEF-Akelius implementing partners should apply comparable monitoring and evaluation frameworks and tools to enable detailed analyses of digital learning across various settings.** Using comparable metrics would allow for an understanding of the key differences in implementation that leads to success across settings.

1. Introduction

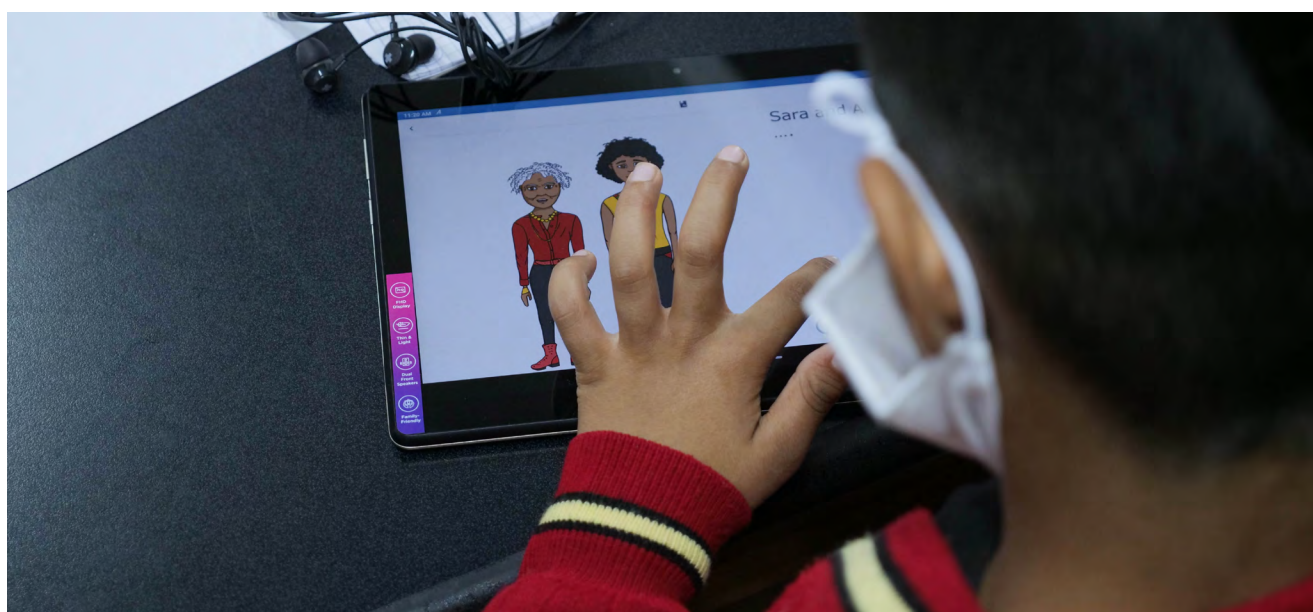
1.1 Country context

Bosnia and Herzegovina (BiH) has moved from receiving few migrants a year to receiving thousands of migrants who are en route to the European Union (EU). Before 2017, BiH was not part of a major migratory pathway, but after the signing of the EU-Turkey Statement in March 2016 and new border restrictions introduced in neighbouring countries, BiH became part of the Balkan migration pathway (European Parliament, 2022) which developed as the main route for refugees and migrants trying to reach western Europe, mostly from Syria, Iraq, Afghanistan, and Pakistan, but also from north and sub-Saharan Africa. This new route increased the number of migrants and refugees in the country from just a few dozen arrivals annually to more than 95,000 arrivals since 2018, putting severe strain on the country's emergency response systems (Oruč et al, 2020; UNHCR, 2018; International Organization for Migration, 2022a).

Most migrants and asylum seekers in BiH live in temporary reception centres (TRCs), settlements built in the areas approved by the government which include former military barracks, student dormitories, or newly built TRCs. Currently, there are four operating TRCs able to accommodate up to 3,000 people at one time. According to International Organization for Migration (IOM) data from the end of April 2022, there were 1,613 people living in TRCs, mostly from Pakistan, Afghanistan and Bangladesh (IOM, 2022b). While most residents are adult men (84 per cent), there are also families with children (11 per cent), unaccompanied minors (4 per cent) and single women (1 per cent). The length of stay in TRCs varies from a few days to many months, which represents a serious challenge for long-term engagement in supporting vulnerable groups.

Unaccompanied minors and children are a particularly vulnerable group of migrants and refugees who require child protection support (for instance, adequate and safe accommodation, guardianship and protection) and appropriate care and services, such as health care, mental health, and psychosocial support. Many children and adolescents have been on the move for extended periods of time, in some cases for years, travelling through and temporarily staying in other Balkan countries. During their travels, many have witnessed and been exposed to different types of violence and forced separation from their parents, usually without access to health, social and educational services.

While in BiH, most children try to cross the Croatian border into the EU. Children cross the border with their families or on their own, which can be a highly stressful and dangerous experience. The exposure to traumatic events, the sense of uncertainty and lack of predictability, structure and purpose affect the process of adjustment to typical everyday routines and habits. In response, UN agencies, international and local NGOs, and public institutions such as social welfare centres, schools, and healthcare institutions cooperate to deliver interventions for the protection and education of children on the move.



1.2 Education for refugee and migrant children

When the inflow of refugees, asylum seekers and migrants to the country increased significantly in 2018, the capacity of the Federal Government and the cantons was supplemented by international agencies and organizations including the IOM, UNICEF, Save the Children, and World Vision. The programmes for integrating migrant children into formal education were established, with the first groups of migrant children enrolling in public primary schools at the end of 2018 and the beginning of 2019 (in the Sarajevo Canton and the Una-Sana Canton). Owing to the COVID-19 pandemic, enrolment was temporarily stopped and resumed in 2021 and 2022.

Integrating migrant children into formal education requires a multilevel and multi-sectoral approach. It consists of several stages and involves diverse stakeholders (e.g., education authorities, school management, community health centres, TRC managers, parents/guardians and cultural mediators¹). Children are enrolled in schools close to temporary reception centres selected by the MoE (two schools in the Sarajevo Canton and five schools in the Una-Sana Canton). The MoE approves the engagement of additional staff in selected schools as well as adaptations in the curriculum, while international and local partners arrange transportation, meals, school supplies, didactic tools and assisting staff.

Once enrolled, children begin a three-month preparatory programme, specifically developed for migrant and refugee children, who spend two to three hours daily on school premises. After completing the preparatory programme, children are assessed by a team of experts (i.e., school pedagogue, psychologist and teacher) and are then placed in the grade that matches the child's readiness, ability and age. The preparatory programme serves many purposes. It enables children to learn the local language (Bosnian/Croatian/Serbian), it serves as a preparation for the education process in a formal school setting and provides children (and their parents or caregivers) with an opportunity to integrate more easily into the school and wider local community.

In addition to preparatory classes, partner organizations provide daily extracurricular education and sports activities directly, at TRCs. These programmes are diverse and include a wide array of activities that range from homework support, sports and art activities to language classes. This is where the German and English digital language learning applications were introduced. These activities became even more important during the COVID-19 pandemic when children enrolled in school were unable to attend class, but in-person activities continued in the TRCs. These types of programmes and activities also provide a welcoming and safe learning environment where children can receive support and care. Non-formal education programmes in TRCs place emphasis on developing study habits and a sense of structure and routine, which is an important precondition for holistic approach-based learning.

Box 1. The Akelius digital learning application

The Akelius digital learning application is a tool for fun language learning which presents rich interactive content in a gamified learning environment. Users of the application go through various types of activities which use thousands of micro-steps with instant feedback on progress to individualize learning. The application is free, includes 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 content and features of the application are developed through a co-creation approach with frequent communication and feedback from teachers based on the real-world use with students. The digital learning application is implemented within classrooms in multiple countries with the support of UNICEF country offices, including those in Albania, Bosnia and Herzegovina, Cape Verde, Greece, Italy, Kazakhstan, Lebanon, Mauritania, Mexico, São Tomé and Príncipe, and Serbia. Languages available for learning are English, German, French, Portuguese, Spanish, Italian, Russian, Swedish, Greek, and Polish. Research on implementation and effectiveness of the digital learning application has been conducted in [Greece](#), [Lebanon](#), Bosnia and Herzegovina and Italy.

¹ Cultural mediators provide dedicated support in TRCs and schools on intercultural communication, including interpretation support and guidance on different socio-cultural norms.

2. Methodology

This research was developed to understand the implementation and effects of the introduction of the digital learning application in BiH. Methods used for this report are based on a qualitative analysis using in-depth structured interviews, FGDs, and structured classroom observations. Research questions used to guide this study include:

1. What were the main challenges and best practices developed when using the digital learning application in the different modalities of implementation (e.g., in formal and non-formal education settings)?
2. How do students and teachers perceive the use and effectiveness of the digital learning application?
3. What is the impact of the digital learning application on educational outcomes (foreign language learning, digital skills and formal school participation) considering the different implementation modalities?
4. What are the main differences and commonalities among the implementation modalities, and how can the best practices and lessons learned from each modality be transferred to others?
5. How can lessons learned from the implementation of the digital learning application with refugee and migrant children strengthen digital learning and improve the resilience of the education sector in BiH?

The research design used a purposive sample. That is, various respondent profiles were purposely included to obtain insights into different aspects of the implementation. Categories of respondents included direct beneficiaries, implementers, partners and decision-makers at different levels. The selection criteria for respondents were founded on having direct experience with the programme or knowledge of implementing the digital learning application. In addition, and where needed, specific selection criteria were defined for each data source/method; for instance, for FGDs with students, specific selection criteria included age (different age groups), learning site (TRC or school) and group type (migrant and refugee students and/or Bosnian students).

Research instruments and fieldwork protocols used for research on the Akelius digital learning programme in other countries were revised and adapted for the BiH context and approved by the Health Media Lab (HML) Institutional Review Board of the Office for Human Research Protections in the United States.² The fieldwork, data collection and research activities were conducted in line with ethical principles and practices, which include respecting the dignity of participants, abiding by just and equitable treatment, prevention of potential risk of harm, informed and ongoing consent and confidentiality.

Qualitative data were collected during February and March 2022 in two cantons (the Sarajevo Canton and the Una-Sana Canton), in four sites where the digital learning application is being implemented: TRC Borići, Primary School Prekounje, and Primary School Harmani II (all Bihać, USK), and TRC Ušivak (Hadžići, KS). For further information on research phases and activities, see the Annex (Table 1). During the two months of the study, 6 FGDs, 11 in-depth interviews with key informants and 6 classroom observations were conducted. In total, 132 persons participated in the study through interviews and FGDs, in addition to classroom observations. A more detailed overview of the data collection activities and a list of respondents are presented in the Annex (Table 2). All the data gathered were coded, categorized, and analysed in NVivo text analysis software by employing thematic content analysis that included the following steps: familiarization (initial reading), first-level descriptive coding and categorizing, second-level pattern coding, exploring connections, and thematic presentation of the results that are based on several sources of data.

2 The HML IRB and the Office for Human Research Protections provide ethical assurance for the protection of human subjects in international social and behavioural science research for children, COVID-19, education, refugees and migration, and vulnerable and high-risk populations, among other topics. Both ethical assurance institutions regularly provide ethical review support to research studies undertaken within the global UNICEF-Akelius partnership.

3. Findings

3.1 Programme implementation

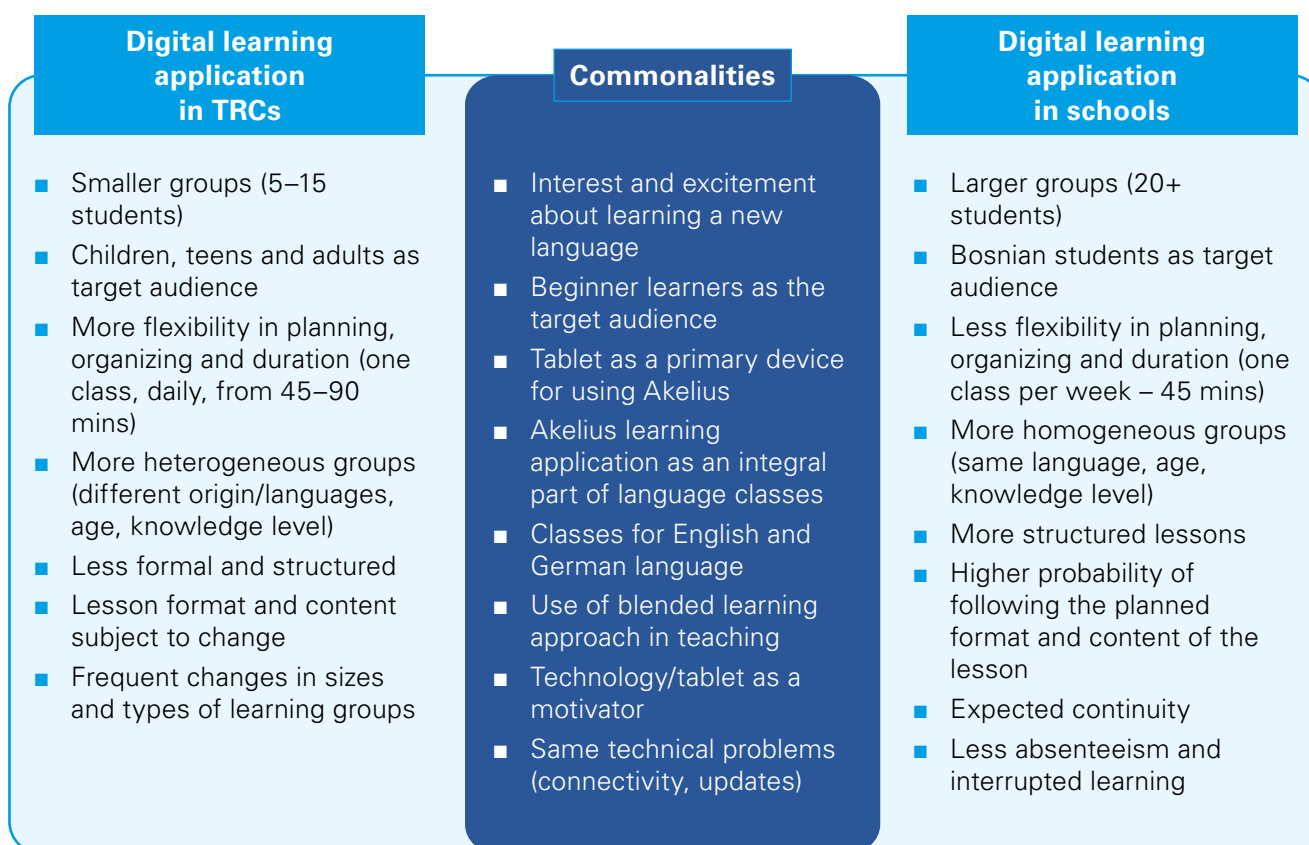
Initially, the digital learning application was offered solely to refugee and migrant children and unaccompanied minors in TRCs. Over time, relevant stakeholders recognized its potential as a learning tool within the formal education system. By the end of 2021, the digital learning application was being implemented in different sites and modalities:

1. in TRCs, as a non-formal education activity for residents (children, adolescents' parents);
2. in partner public schools, as part of a preparatory programme for refugee and migrant children, and
3. in partner public schools, as an extracurricular activity for first, third and fourth grade Bosnian students.

The expansion to these different implementation modalities suggests that the digital learning application was relevant for many groups of children and sufficiently flexible to be adjusted to different target audiences (e.g., young children, teens, adults), for different purposes (e.g., integration, improved foreign language teaching and learning), and in different contexts (e.g., TRCs, schools).

The key characteristics of these various implementation modes, their differences and commonalities will be described and discussed in the following sections. A summary is presented in the figure below (Figure 1).

Figure 1: Digital learning application implementation modalities – differences and commonalities



3.1.1 Digital learning application in TRCs

The use of the digital learning application in TRCs was organized in child-friendly spaces (converted shipping containers or rooms designed and equipped for working with children and organizing different learning activities) and suitable for working with smaller groups. The duration of one class varied from 45 to 90 minutes depending on the group size, age, lesson plans and the level of students' interest in learning activities. All TRC residents were informed about the learning application and welcome to participate.

Digital learning application classes were organized based on the needs and preferences of refugees and migrants: English and German language (languages spoken or used in countries that are desired final destinations for the majority) and at different levels, from A0/A1 to B2.³ The language, level and size of the groups, as well as the learning application methodology and dynamics, depend on the number and diversity of residents in the TRC at the time of implementation (e.g., younger children with families, unaccompanied minors, adults), duration of their stay, turnover rates, and the frequency of attempting to cross the border to the EU.

“Unlike at school, groups at the TRC are quite unstable: I work with a group of children and we get some continuity. Then five new children join the class. We never want to say: “You cannot attend, or will have to join us later.” If a child arrives, we want him/her to stay, but it affects the work dynamics, and we are always having to adjust.”
– Teacher, TRC

As evidence from the qualitative data collection shows, TRC residents want to participate in educational activities and learn new languages, but not everyone has the same type or level of motivation. A student's background and previous experience with learning and schooling, and the level of educational aspirations and expectations of both children and their parents are relevant factors in understanding an individual's responsiveness to learning opportunities. These factors are considered by TRC teachers as they shape their teaching strategies and practice to enhance learners' motivation.

“I want to learn English because I want to have more friends.”
– Student, TRC

“I need to learn English because it is an international language. And I will cross the border, the legal way, and when police stop me, they will need to talk to me. And they will ask me what is your reason to cross the border. And I must defend myself. If I do not know English, they will have a wrong impression about me, they will not know anything about my journey, about the reasons why I am here, out of my country, where I come from. So, I need to be able to introduce myself, so they can be more kind to me, because if they know my situation maybe they will not hit me, or they will not steal my stuff.”
– Student, TRC

In TRCs parents rarely actively engage in their children's education and do not necessarily see their children's education as a priority. There are several possible reasons for this, such as their own experience in education and their current unresolved status and insecure and unpredictable prospects, which put them under pressure and place their children's education on hold. Nevertheless, parents do not object or prevent their children from attending the digital learning application classes; there are even parents who are becoming more open to learning a new language themselves.

³ Language proficiency in Akelius classes is described according to the Common European Framework of Reference for Languages (CEFR) which describes language competence on a six-point scale, from A1 for beginners, up to C2 for those who have mastered a language (A1, A2, B1, B2, C1, C2). At TRCs, the level of students who could not read or write in the Latin script was additionally described as A0.

“I urge children and parents to attend digital learning application classes together. In that way, they can spend some quality time together, as that is something children on the move have lost. Parents deal with their own problems and do not pay enough attention to children, so I believe that the programme should develop further in that direction and stimulate children and parents to spend more time together.”

– Implementing partner representative

The digital learning application, when it is used in classrooms both in TRCs and in schools, is often perceived as a fun activity that contributes to a safe space for children, where they can spend their free time, meet their peers, socialize and have fun. Teachers report that this is a motivating factor for learning, especially for younger students. Participants feel more connected to their peers and the school community because they participate in the same activities and are provided with the same learning opportunities, making the digital learning application a useful element in the transition and integration into formal schooling.

“Younger children want to spend time with other children, primarily to play, and through play comes learning. Unaccompanied minors have different motives; some see it as an opportunity to spend time in a useful manner or just to spend time, while others have a clear goal to learn something, to learn something that will be useful at places where they are going, and they try to use every chance they get. There is a variety of motives.”

– Implementing partner representative

“After Akelius was introduced in schools, all students from the TRC who went to school had similar comments: “Look, they do the same things we do.” They liked seeing local children doing the same activity they did. Because, unfortunately, children feel they are different and that they are being separated, no matter how hard we try to change it. So, when they see they are the same as everyone else in something, it means a lot to them, and they get motivated to go further. That is the goal of education, to make the child feel the same [as] any other child in the classroom.”

–Teaching assistant, TRC

The use of technology motivates people to join the digital learning application classes. Qualitative evidence indicates there are several reasons why technology is a motivator: first, children are excited to use the digital technologies because they are part of everyday life and culture and children are exposed to them from an early age; second, it represents a significant deviation from the usual “chalk and talk” approach to teaching, and technology in teaching delivers educational content in a gamified and fun way.

“Someone decides to join the class just to use the tablet because it is cool and is not something that can be always accessed, or [they] had never used it before, but there are also those who think – great, I am learning a language using a fun application.

– I fully agree that applying Akelius at English classes increased the interest of our users to come to class.”

–Teacher, TRC

Sustaining and enhancing students’ motivation to learn, however, involves more than the use of devices. The elements that keep students learning are clear goals and expectations for language learning, consistent teaching approaches and methods, sound interpersonal skills and teachers’ interest in and positive attitudes towards their students.

3.1.2 Digital learning application in schools

The use of the digital learning application in public schools was initially implemented as part of the preparatory classes for refugee and migrant children. Over the course of 2021 use of the digital learning application expanded into extracurricular English and German language classes for primary school students in five primary schools in the Una-Sana Canton and has subsequently been introduced in the Sarajevo Canton. The extracurricular classes were available for both refugee and migrant children and their Bosnian peers.

The use of the digital learning application in extracurricular language classes was introduced as a first step to test the expansion of the digital learning application into the public school system. English is a mandatory school subject in the Sarajevo Canton from the first grade.⁴ This can provide helpful evidence to the MoE, which views the digital learning application as one of many tools that should be available for teachers to use to improve the existing curriculum and increase children's interest in learning. Classes are organized on school premises and held by the implementing partner's staff once a week for different learning levels, for beginner to low- and mid-intermediate level (A0-A2). Owing to the school's limited capacities and the pilot nature of the initiative, not all students had the opportunity to attend the digital learning application classes. Instead, schools formed groups based on internally defined criteria such as grade level (first, third and/or fourth grade); and for students who expressed interest in learning English or German. As a result, the groups were very homogeneous (same grade, same age, similar knowledge level, and higher interest in learning a new language). Although voluntary, the attendance rate was high and regular. It should be noted that in the 2022–2023 school year the use of the digital learning application has since expanded to be used in curricular English and German classes in both Una-Sana and Sarajevo Cantons.

“Children accepted Akelius well and I believe it is a significant break for them, since in schools they are more bound by the curriculum, strict adherence to textbook content, writing in notebooks, etc.”

– Primary school teacher

The novelty effect of the digital learning application explains the students' high interest level. The use of tablets, for instance, and self-paced instruction, is not very common in primary schools. In addition, an opportunity to learn a foreign language, in a different and fun way, as part of an after-school activity, enhances students' motivation and interest in learning.

“What I like the most in Akelius is having tablets, learning, and having fun and that there is an option for learning other languages too. I also like that I learned a lot of new words.”

– Primary school student



⁴ In the Una-Sana Canton, the first foreign language is mandatory from the third grade, and it is not necessarily English; after the current curricular reform in the Una-Sana Canton, it is expected that the first foreign language will be mandatory from the first grade.

3.2 Pedagogical strategies and learning activities

The digital learning application in BiH, when integrated into in-person classes, followed a blended teaching and learning approach where teachers guide students to work on tablets individually or in groups. The English classes in schools and TRCs are usually structured as three-part lessons, combining digital and non-digital activities (for instance, lectures, asking questions, modelling, using visuals, presentations, discussion, reading and writing exercises). It is up to teachers to decide on and plan the lesson's structure and content. The success and effectiveness of the learning process depends on their resourcefulness, pedagogical ability, technology skills and creativity.

A typical class with the digital learning application starts with the teacher introducing a topic that usually includes activities such as presenting the content on a board, asking questions, or playing a game. The main part of the language lesson is dedicated to independent study using the digital learning application to reinforce topics introduced at the beginning of the class. With more advanced groups, the teacher may introduce follow-up activities such as listening and text comprehension, discussions on various topics linked to the digital learning application content or taking a test. The final part of the lesson is usually reserved for reviewing and summarizing the content learned in class.

Teachers use the digital learning application as a resource for planning lessons and inspiration for introducing and practising new and different approaches to teaching and learning. The digital learning application is organized around thematic units that serve as a starting point for the lesson plan and motivate teachers to find additional materials on the topic to expand vocabulary and grammar. The rich content on the digital learning application developed by the Akelius Foundation software engineers and language experts significantly reduces the time it takes teachers to develop teaching and learning materials, which then enables them to focus on planning and teaching instead. This is particularly relevant for classes in the TRCs, where teachers need to prepare a lot of material for various class situations given a constantly changing group composition.

“When we were doing something in Akelius and came across a text, I realized I could expand on it further. This is the good thing about Akelius, it offers these thematic units, which I can then use as basis for further theme development, introducing additional material, expanding vocabulary and similar. So, I stay with Akelius because it gives me structure and it helps me choose themes and content, and everything else is up to us.”

– Akelius teacher, TRC

Using the digital learning application as a fun way to review and practise material allows teachers to have more time in class to include writing and speaking activities. Some examples of non-digital teaching and learning activities include: writing assignments in the notebook; writing down notes and grammar rules; playing vocabulary games such as word box or word wall, where students learn and memorize new words by repeating the pronunciation, explaining the meaning, offering synonyms, and using a word in a sentence; writing and reciting poetry; storytelling; role-playing; pantomime and quizzes.

The digital learning application offers a range of themes and textual, audio, and visual elements, which engages learners, especially younger children and beginners. Teachers are satisfied with the content, which is well-adjusted to the age of children who can learn English spontaneously by playing games and listening to songs. Furthermore, the content includes characters of different ethnicities, religions and abilities, promoting values such as diversity, multiculturalism, and inclusivity.

“When I was first invited to English [the Akelius learning application] I was scared, and I thought I would know nothing. But after a few classes I realized it was just about having fun and learning.”

– Primary school student

The possibility to monitor student progress with different tasks is important to teachers and students.

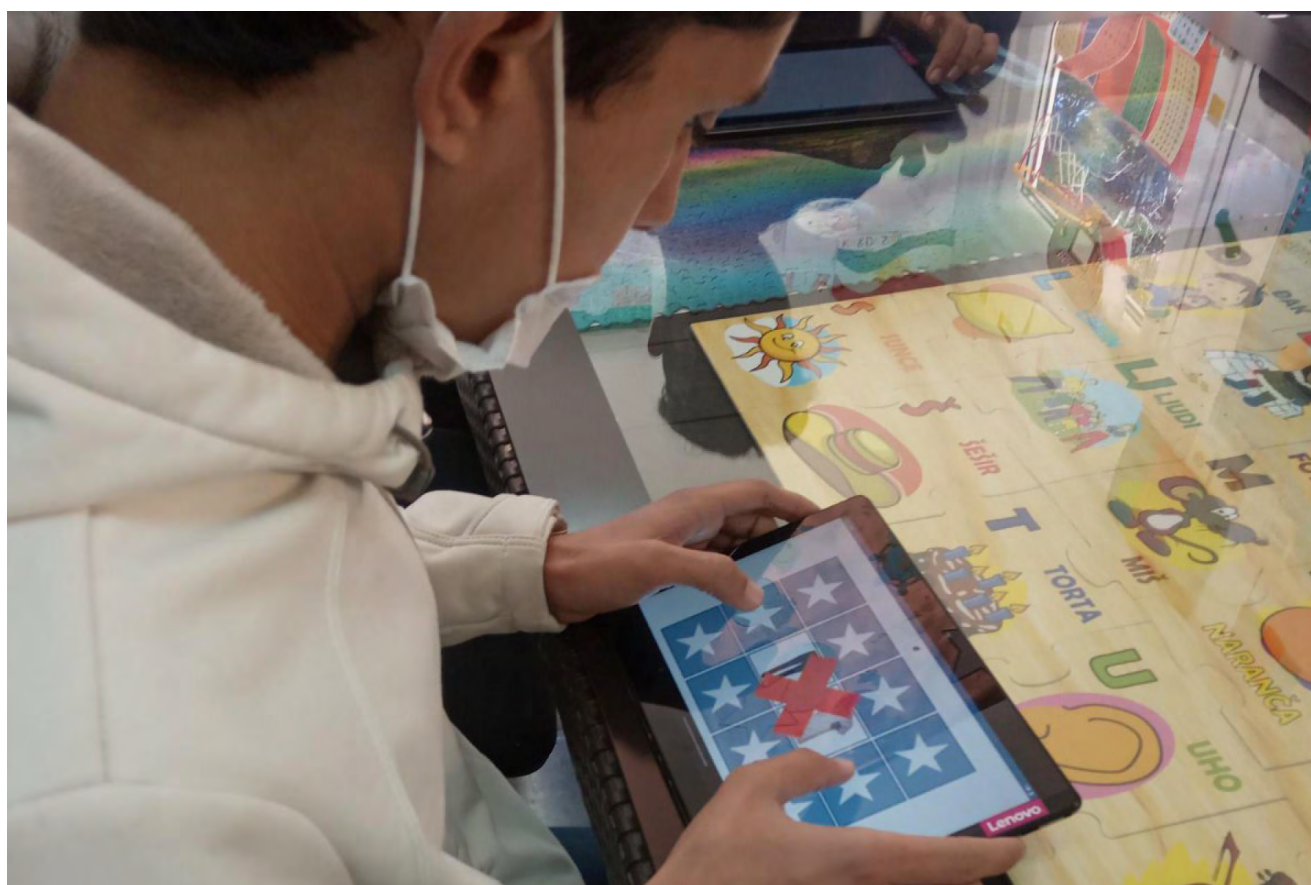
Feedback allows students to identify gaps and assess their learning progress in terms of achieving learning goals and improving self-regulated skills (Butler and Winne, 1995). Instant feedback might lead to higher motivation, aspirations and, potentially, sustained perseverance to learn a new language. Collecting rewards such as 'virtual coins' for accomplishing learning tasks is another feature of the application that encourages competitiveness among learners in the group and might boost performance and lead to better learning outcomes.

“Children I work with, 24 of them, are thrilled with the Akelius learning application... A competitive spirit is developed among them; they follow how many coins each of them has... Also, children who possibly do not have an opportunity to show how much they know during regular classes, have this chance at the Akelius classes because work is done in a slightly different manner.”

– Primary school teacher

“While working on tasks in Akelius, students were making comments and checking how their classmates were progressing; some were competing over who would finish the task first, have more correct answers and win more points, like they were playing a game (a few students made comments like: “I won!”).”

– Class observation, public school



3.3 Programme effectiveness

Qualitative evidence indicates that the use of the digital learning application is positively associated with the development and improvement of language competencies. The digital learning application also represents an opportunity for teachers to improve their knowledge and skills.

3.3.1 Learning outcomes

Teachers and students are satisfied with the learning outcomes achieved with the digital learning application and the blended teaching and learning approach applied in the classroom. The progress and improvement in language competencies are particularly visible in student groups working continuously over a longer period of three to six months.

“Children accepted it quite well and project results were very good. Children on the move, especially children who are included in the Akelius programme activities, quickly learn English and can make friends faster and establish very good cooperation with our children.”
– Primary school teacher

The digital learning application was most effective at supporting students at beginner level because it helps learners build a foundation, learn new words, practise pronunciation, acquire key grammar rules and move from the preparatory/receptive stage to the speech emergence stage. Interactive audio and visual learning components proved particularly helpful with students who were not yet able to read and write. Setting aside time for students to use the digital learning application individually was identified as very useful for students who were shy and less confident to speak up during class.

“The purpose of the learning application is to lay the foundation for students; bring those without any prior knowledge to the point of being able to establish basic communication, and educate those who are unfortunately illiterate to at least be able to read, write, and understand what is in front of them. When it comes to students whose knowledge is somewhat better, the goal is to expand their vocabulary and make them speak perhaps a little more formally.”
– Teaching assistant, TRC

Students notice they learn something new every time they use the digital learning application, from learning how to count to expanding their vocabulary, understanding a conversation, or answering questions. They are aware of the progress they make, and it motivates them to continue learning. This is how an 18-year-old boy from Syria, who stayed in the TRC for a year and a half and who regularly attends English classes, reflects on his progress.

“First time I met the teacher I was just nodding my head, like a chicken, pretending I understood everything. Now, I can understand every single word you are saying, and it is easier for me to answer you, and to feel more comfortable in the conversation.”
– Student, TRC

Teachers observe that children in the TRC started using English when communicating with each other or during other joint activities, and those included in the digital learning application classes at schools with Bosnian students. Furthermore, Bosnian children who participate in the digital learning application classes as an extracurricular activity noticed they improved their English, and some even have better grades compared to children who study English only in regular classes.

Qualitative analysis suggests that reading and listening are more reinforced by the digital learning application than speaking and writing, highlighting the critical role for a blended learning approach that uses the digital learning application together with other classroom activities. When working on tablets, students can listen to each word and sentence many times and repeat what they hear. Younger students also learn some basics of speaking by learning and repeating songs from the digital learning application. In addition, both students and teachers find the learning application useful for practising and improving reading skills. In interpreting these findings, it is important to remember that many students in this context are complete beginners, and many could not read or write in the Latin script when they started with language classes.

“For me, reading and listening and understanding is getting easier with Akelius.”
– Primary school student

“The app is great for enriching vocabulary, for learning certain phrases, for mastering some grammatical content, it can help with pronouncing words correctly and offers a lot of listening content, but I’m not sure to what extent it can enable students to communicate and know the language at a B2 or C1 level.”
– Cantonal Ministry of Education representative

Mastering how to write in a new language is challenging, especially for learners with limited educational backgrounds. In exercises or games, users are usually asked to add a letter or part of the word and are not required to type it. Therefore, teachers provided additional writing exercises so that both younger and older learners can enhance their writing skills. This includes using a notebook to write down new words and grammar rules learned in the digital learning application and to write their own text inspired by the digital learning application content.

“A bad thing with this application is that you cannot type words by hand, like on a keyboard. That can be a problem for you in the future if you do not know how to write, or if you haven’t practised writing in your notebook. I wasn’t writing notes in my notebook, so I still have a problem with writing and spelling because of that.”
– Student at the TRC

“Writing is a problem, because even if they know how to write, they know it in their first language. They do not know the Latin alphabet, so it is an obstacle whether they learn Bosnian or English.”
– Teacher, TRC

Speaking English, from the students’ perspective, is a difficult skill to master. Students prefer to learn and practise speaking English through live interaction with their teachers and additional speaking activities during class. Teachers recognized and used the digital learning application as a tool to develop various classroom activities and encourage verbal interaction (e.g., dialogue, role-plays, storytelling and dramatization).

“I would just like to practise speaking more, and to talk to teachers, working on things together. I don’t need tablets and things like that.”
– Student, TRC

“In Pakistan I finished tenth grade, but we didn’t have English classes in English, it was in Urdu. I understood some English but did not know how to speak, because we just practised reading and writing. And here, I came three months ago, and I am already much better at speaking English.”
– Student, TRC

3.3.2 Non-learning outcomes

Qualitative evidence also indicates that the digital learning application positively influences students' confidence, working habits and general well-being, which are recognized as additional non-learning programme outcomes. According to teachers, digital learning application classes boost students' confidence because students acquire new knowledge, see their progress and discover their potential.

"The digital learning application is interesting because I learned a lot of things that I didn't know. And I like it because I learned to count to 29. I wish the next semester we have English twice a week."

– Student, public school

"I like that we can learn a lot of languages, not only English. Once we learn English, we can then install to learn both German and French. And I can learn by myself."

– Student, public school

These improvements in self-confidence are particularly important for children on the move, given the often traumatic experiences of their migration journeys. Taking part in learning activities, achieving results, and receiving praise from teachers all help children develop hopes and dreams. Teachers who work with children on the move reiterated that a student's well-being should be a key priority for any type of learning activity.

By applying a student-centred learning approach while establishing trusting relationships between the teacher and the student, teachers can help students cope with personal challenges and help them feel motivated, welcome and even happy. In this way, students' well-being can be improved, which is reflected in their learning outcomes.

"Of course, I like the classes. What made me more interested in learning English is the teacher... They are not just teaching us English, like teaching us material, no, they are sharing with us... It is not just about the class, and table, and desk, and chairs, and boards. No, it is different. It is like a family. When you sit at this table everyone feels comfortable, everyone is talking with freedom, expressing, sharing about himself, you don't need to be ashamed of anything."

– Student, TRC

Another outcome highlighted by educators is an improvement in developing lifelong learning habits. Lifelong learning habits are, for example, having a daily learning routine and not postponing learning, and striving to achieve learning goals every day. Other lifelong learning habits include setting realistic, tangible goals and building slowly on what has been achieved. The development of good learning habits and routines was particularly relevant for children on the move who did not have an opportunity to attend education regularly beforehand.

"What we primarily need to keep in mind is to bring the learners back to routine. Children need to have a routine, they need to know when breakfast or lunch time is, when it's time to study, play, and that they cannot always do what they feel like doing and what they like, but that sometimes they need to learn something. Obviously, since these educational activities are not obligatory, we try to deliver a lot of affection and care through everything we do. For the simple reason of making it easier for them to like something, since what matters the most is that they want to be here, to spend time with other children, to spend time with teachers, to learn and be motivated."

– Implementing partner representative

3.4 Challenges

While the implementation of the digital learning application was seen as successful from qualitative interviews, several challenges to implementation in a classroom environment were identified. The challenges of implementing the digital course in BiH can be classified into two broader categories: technical and pedagogical.

3.4.1 Technical challenges

Both teachers and students mentioned periodic challenges with tablets and connectivity in TRCs and schools. Unstable internet connections and slow internet speed may significantly affect the workflow and class dynamics, the teachers' control over the class, and the students' satisfaction and focus on a task. The application can be used offline; however, some key features that are useful for both teachers and students to enjoy, such as tracking learners' progress and earning 'virtual coins', are not available unless students are logged into the application requiring a basic internet connection.

“Due to the internet connection in the school, many students have faced problems logging into their accounts. Just a few students managed to log in, and to work on the assigned tasks. The initial excitement about tablets and work in Akelius grew into restlessness and dissatisfaction, and the teacher's control over the class flow and dynamics was somewhat lost.”

– Class observation, public school, English class for fourth graders (9 and 10 years old).

Updates to the software require additional work from teachers in lesson planning and class management. Installing an update affects the implementation process in two ways: it requires additional time (and an additional pair of hands), and it affects lesson planning because teachers are not always aware of what kind of changes will be being introduced.

“It would also be useful to receive information about novelties they introduce into the Akelius learning application, about the updates and what changes with them. I only see that once I enter the application, I do not know that upfront, and it would be good to be informed and plan activities accordingly, because children also like when they do something new and different from what they did before.”

– Teacher at the TRCs and primary schools

Preparation of devices can be time-consuming, which can pose an additional challenge especially for public schools. Unlike TRCs, where teachers, together with teaching assistants who are employed by local NGOs World Vision and Save the Children, have sufficient time to update and distribute the equipment prior to the start of the class, teachers in schools have only 45 minutes to conduct one class. Having an assistant for the technical and organizational preparations, especially if the class is held for a bigger group of 20-plus students, would significantly aid the process.

“We have about 40 tablets in the TRC and about the same number in the school. We are talking about 75 or 80 tablets; there are five working days, meaning that 12 tablets must be updated every day. Manually. That is the worst part.”

– Teaching Assistant at the TRCs and primary schools

3.4.2 Pedagogical challenges

A blended learning approach using technology as a tool for teaching in the classroom is a novelty for most teachers. Owing to the lack of experience, knowledge, and relevant pre-service training on digital teaching materials and tools, not all teachers felt initially ready to explore by themselves what the digital learning application can offer in terms of improving students' learning outcomes. Additionally, not all teachers are confident or able to identify the possibilities and limitations for applying digital technology in the classroom with users from diverse educational backgrounds.

“Although I have been using Akelius for quite some time now, honestly, I still lack a clear vision of how it should all look like.”

– Teacher at TRCs and primary schools

Not all teachers understand the concept of independent self-paced learning and how to incorporate it into their teaching approach. They believe that supervision is key for ensuring that the “knowledge is attained in the right way”, and that, if not constantly supervised, children will enter a “surfing mode” and just click thoughtlessly without understanding and learning. Supporting teachers so that they are comfortable with how to incorporate digital learning in the classroom is key, and part of that includes monitoring students' use of digital learning.

The main challenge of introducing the digital learning application into public schools was its integration into the lesson plans, which regulate topics, their sequence, and assessment procedures. This was a challenge even in extracurricular language classes as teachers still try and follow the curriculum to support students in their regular curricular classes. The content in the digital learning application is developed as a tool that can be used in many countries and settings, so it does not follow specifically the curriculum of any one MoE. As a result, teachers need to spend time exploring what they can use from the digital learning application to meet their curricular goals, and plan how to integrate it into their lessons while teaching additional curriculum topics.

“I have developed some plans, but it is still difficult to follow our curriculum. Sometimes I do not want to teach something they are supposed to learn later at regular classes, to avoid creating problems for teachers... I can say that Akelius supplements what children do at regular classes, and we never learn new things unless children had already studied it with their teacher at the regular class.”

– Primary school teacher

Class attendance at TRCs is not obligatory and is affected by factors such as motivation, quality of teaching, teaching approaches, timing of classes, previous grades, and experience. Attendance and enrolment fluctuate greatly at TRCs, and ability within groups of students is diverse (for instance, children of different ages, from different countries of origin, varying levels of preparation and the inclusion of some who are completely illiterate). Diversity of students and fluctuation in attendance make it particularly difficult for TRC language teachers to prepare lectures when everything depends “on the group that shows up”. Moreover, children on the move are exposed to different types of stressors which, among other things, affects their motivation and interest in learning and, therefore, their learning progress. As a result, it is not possible to establish a routine, create stable groups, provide continuity of learning, and establish a structured curriculum. While this is a challenge for classes, the digital learning application helped teachers by allowing them to quickly provide specific support to children by guiding them to different levels and content within the application.

“Having so many different children at different levels ... it is luck and an exception when it happens that we have a group working together continuously and achieving joint progress to certain levels.”

– Teacher, TRC

3.5 Programme sustainability and scale-up potential

“This programme is wonderful because it changes, it constantly improves and expands... This non-linear dynamic, regarding development of both projects and the partnership, is very interesting. Something that was designed for self-paced language learning, and did not require any special interventions, became a large project which is implemented internationally, and has a potential to become one significant initiative that could yield significant results.”

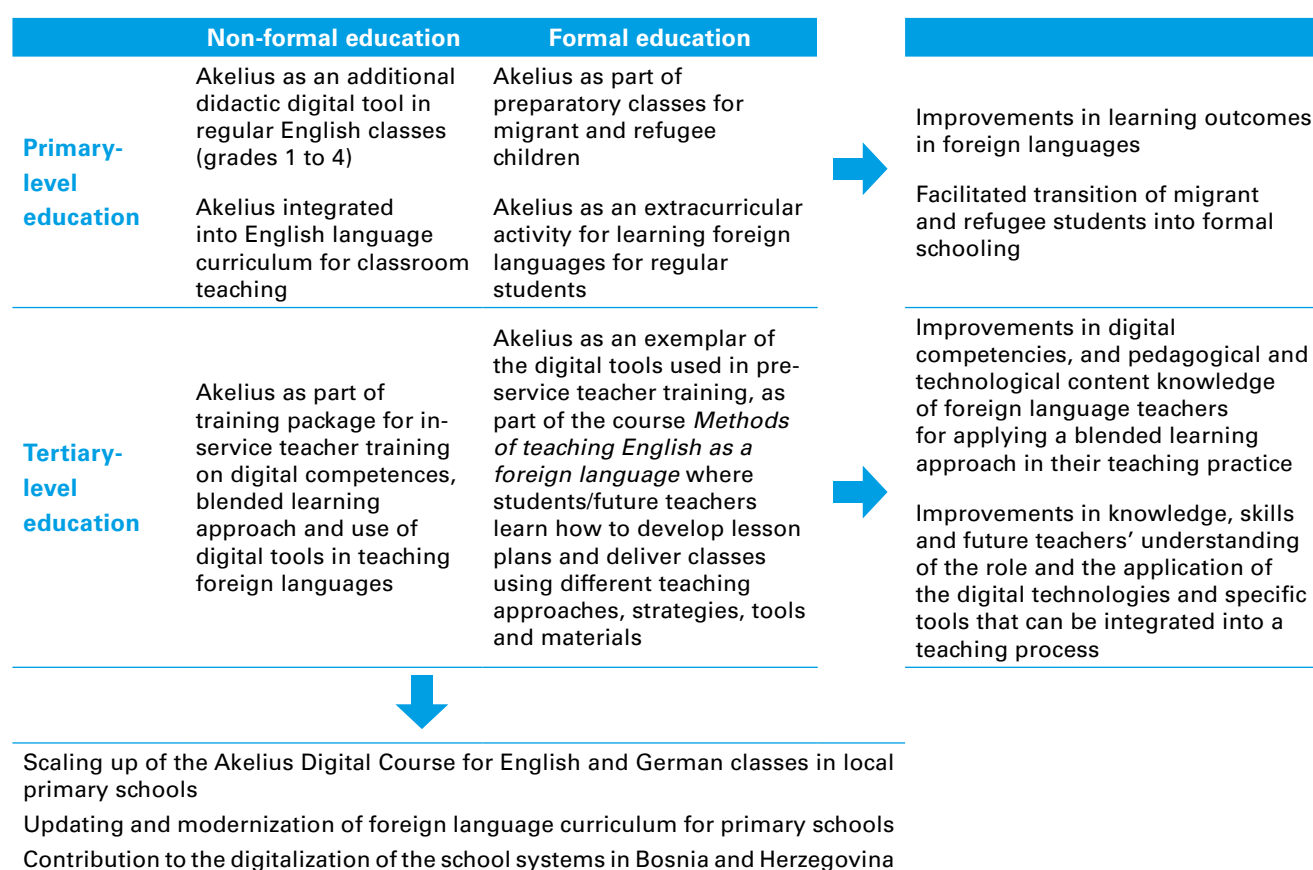
– UNICEF BiH Country Office representative

The digital learning application in BiH proved to be relevant to the learning needs of both students and teachers in both TRCs and public schools. The learning application is also compatible with other interventions and initiatives that include the integration of digital tools into a formal curriculum and digitalization in education.

There is a great interest from all stakeholders and beneficiaries in continuing to use the digital learning application in the Una-Sana Canton and the Sarajevo Canton. Productive partnerships have been established between implementing agencies, partner organizations and institutions, educational authorities, TRCs and partner schools.

Teachers in each of the five schools in Una-Sana Canton were introduced to and trained to use the digital learning application in teaching English and German. Additional teacher training is planned for the use of the digital learning application in classrooms across Sarajevo and Una-Sana Cantons. Figure 2 shows potential pathways for scale-up of the digital learning application based on qualitative interviews with various education stakeholders, from the classroom to cantonal MoE level.

Figure 2. Akelius scaling-up opportunities in the BiH context



Education authorities in BiH recognize the importance of digitalization in education and integrating digital and blended learning into the curriculum. Despite recent reforms aimed at improving ICT infrastructure, schools in BiH are still poorly equipped and there are significant variations between schools in terms of the equipment and support they receive (International Telecommunication Union & UNICEF, 2021). A widening digital divide between urban and rural schools presents a risk for scaling digital learning in public schooling. Even when an ICT infrastructure is in place, stakeholders report the absence of adequate mechanisms and resource management processes; schools obtain the equipment through various projects but do not plan for equipment maintenance, including staffing.

“Many say that digitalization already created greater freedom and easily accessible knowledge. If we truly want it to be like that, we then must ensure that we all have access to technologies and not just some children and some teachers.”
– University professor

UNICEF Bosnia and Herzegovina has drafted two important documents to support BiH educational authorities in the process of introducing digital technologies and digital competencies into formal education. One document is the analysis of the available infrastructure in schools (UNICEF and UNESCO, 2021a), and the other is guidance for technical standards (United Nations Transforming Education Hub, 2022). These documents are intended to give MoEs sufficient information to make equitable decisions based on schools’ needs.

Effective implementation of the digital learning application or any blended learning programme requires proper support for teaching staff. This requires investment in the entire support system for digital learning, including human resources to support technological challenges and thorough monitoring and evaluation systems that develop greater understanding of digital learning.

To prepare future teachers to incorporate the Akelius digital learning application into their teaching, training was organized with universities in Bihac and Sarajevo. For in-service teachers, online training was organized through the UNICEF-Akelius Foundation partnership on the technical aspects of the application and the blended learning approach. Participants were also able to exchange their experiences with teachers from other countries that had used the digital learning application.

UNICEF also has supported the various Ministries of Education in Bosnia and Herzegovina to develop ‘Guidelines for the improvement of online and blended teaching and learning for the educational system in Bosnia and Herzegovina in the context of quality (and) inclusive education’ at the federal level, endorsed by all cantons. These guidelines respond to the country’s need to have clear instructions for the implementation of digital learning in a remote or blended learning approach across Bosnia and Herzegovina; to build on initial findings from this research report and on the experience of the digital learning application in Una-Sana Canton and Sarajevo Canton; and to take into account other efforts including an ICT infrastructure assessment supported by UNICEF Bosnia and Herzegovina (MoE BiH, forthcoming).

4. Conclusion

This research was embedded into the ongoing implementation of the Akelius digital learning course in BiH. The data were obtained through class observations, FGDs with children, teachers, and parents, as well as in-depth interviews with key stakeholders. It offers a clearer understanding of the local context, the main differences between implementation modalities, key barriers and facilitators for implementation, best practices, gaps and emerging needs.

The research process identified key findings regarding the effectiveness of the programme:

- **Qualitative evidence suggests that in Bosnia and Herzegovina the digital course improved children’s language learning outcomes and students’ confidence, working habits and general well-being.** This is in line with previous research on the Akelius digital language learning programme in Greece (Karamperidou et al., 2020) and Lebanon (Dreesen et al., 2021).
- **The course’s simplicity and stimulating content helped learners engage and remain motivated to learn a new language.** In TRCs and schools, learners were excited about using digital devices as part of the learning process.
- **The diversity of content and flexibility of choice provided by the course enabled teachers to respond to students’ various learning needs,** which is particularly relevant when working with people on the move. When used in public schools, the course helped increase children’s interest in learning, revitalized and upgraded the existing curriculum, and further developed teachers’ digital-pedagogical competencies.

The implementation of the digital course in BiH has demonstrated how traditional and technology-supported teaching and learning activities can be combined. In the classroom, the digital course is used with various additional writing, speaking, and reading activities that stimulate communication, information exchange, and social and emotional competencies.

Throughout the research, best practices for using the digital course were identified:

- **The digital course is most effective when accompanied by writing and speaking assignments provided by the teacher in a blended classroom approach.** Using the digital course proved effective when used as one tool for teachers to reinforce knowledge gained from other classroom activities.
- **Teachers and students benefited from the additional teaching and learning materials provided by the digital course including stories and books outside of the gamified content.** Teachers reported that language learning through stories motivates children to learn and broaden their knowledge of the world.
- **The digital course can be used as a diagnostic tool to check new arrivals’ knowledge of the foreign language and explain foundational language concepts.** Within classes with many levels, the more advanced students provided peer tutoring to newcomers.
- **The digital course was used to help transition and integrate students into formal schooling and their community.** When students attended the digital classes both in the TRCs and at school, playing with the tool helped them build friendship with local children more easily and feel more connected to their peers and the school community.

The following recommendations are key for policymakers and education practitioners when developing and implementing digital learning:

- **Teachers are at the centre of digital learning and should be provided with training on how to combine traditional with technology-supported teaching and learning activities to meet the learning goals.** The capacity for teachers to provide inclusive, equitable, quality education to students with diverse backgrounds and needs can also be strengthened by learning from non-formal education practitioners experienced in student-centred approaches for vulnerable children.
- **Ministries of Education should seek partnerships to provide schools with digital devices and sufficient connectivity to enable effective implementation of digital learning tools.** The technology must be coupled with protocols for its use, storage and maintenance.
- **Detailed protocols for teachers and administrators to use and manage technology should be introduced and prioritized to promote safe and sustainable use of digital learning in schools.** Identifying clear roles and responsibilities for those who use and support the use of technology in the classroom should be carefully considered at school level.
- **Schools or implementing partners should apply comparable monitoring and evaluation frameworks and tools to enable detailed analyses of digital learning across various settings.** Using comparable metrics would allow for understanding the key differences in implementation that leads to success across settings.



© UNICEF/Akelius model class held by student from Faculty of Philosophy

References

- Butler, Deborah L. and Philip H. Winne, 'Feedback and Self-Regulated Learning: A theoretical synthesis', *Review of Educational Research*, vol. 65, no. 3, 1995, pp. 245–281. <https://doi.org/10.3102/00346543065003245>
- Dreesen, Thomas et al., *Unlocking Learning: The implementation and effectiveness of digital learning for Syrian refugees in Lebanon*, Innocenti Research Report, UNICEF Office of Research, Innocenti, Florence, 2021.
- European Parliament, EU-Turkey Statement & Action Plan, Legislative Train Schedule, June 23, 2022. <https://www.europarl.europa.eu/legislative-train/theme-towards-a-new-policy-on-migration/file-eu-turkey-statement-action-plan>
- International Organization for Migration, *Bosnia and Herzegovina Migration Response Situation Report 07–13 February 2022*, UN Migration, Sarajevo, 2022a. https://bih.iom.int/sites/g/files/tmzbdl1076/files/documents/01_iom-bih-external-sitrep_07-13-february-2022_final_0.pdf
- International Organization for Migration, *Bosnia and Herzegovina Migration Response Situation Report 25 April–01 May 2022*, UN Migration, Sarajevo, 2022b. https://bih.iom.int/sites/g/files/tmzbdl1076/files/documents/01_iom-bih-external-sitrep_25-april-01-may.pdf
- International Telecommunication Union & UNICEF, *Connectivity in Education: Status and recent developments in nine non-European Union countries*, ITU and UNICEF, Geneva, 2021. <https://www.unicef.org/eca/media/18241/file/Connectivity%20in%20education:%20Status%20and%20recent%20developments%20in%20nine%20non-European%20Union%20countries.pdf>
- Karamperidou, Despina et al., *Unlocking Learning: The co-creation and effectiveness of a digital language learning course for refugees and migrants in Greece*, Innocenti Research Report, UNICEF Office of Research, Innocenti, Florence, 2020.
- Oruč, Nermin, Saima Raza and Danica Šantić, *The Western Balkan Migration Route (2015–2019)*, International Centre for Migration Policy Development, Vienna, 2020. <https://www.pragueprocess.eu/en/migration-observatory/publications/document?id=289>
- UNHCR, 'Desperate Journeys: Refugees and Migrants Arriving in Europe and at Europe's Borders. January–December.' UNHCR, online, 2018. <https://www.unhcr.org/desperatejourneys/>
- UNICEF and UNESCO. *Analysis of the Existing Elements of ICT Infrastructure for Primary, Secondary and Higher Education in the Administrative Units of Bosnia and Herzegovina*. UNICEF and UNESCO, 2021.
- United Nations Transforming Education Hub, 'Technical Standards for Tools of Information and Communication Technology in Education Systems in Bosnia and Herzegovina', Transforming Education Summit, 26 August 2022. <https://transformingeducationsummit.sdg4education2030.org/ICT>

Annex

Table 1. An overview of the qualitative research study phases and activities

Phase	Activities	Year 2021/2022					
		Dec	Jan	Feb	Mar	Apr	May
1. Preparation	1.1 Initial meetings with implementing agencies and partners in BiH, and research and programme team						
	1.2 Preparing and finalizing the fieldwork plan						
	1.3 Preparing and gathering all necessary approvals for conducting the data collection in the field (e.g., ethical approvals, clearance/approvals for entering the TRCs and primary schools)						
	1.4 Revising and translating research tools and supporting materials for the data collection (e.g., interview and focus group guidelines, information sheets, informed consent/ assent forms)						
	1.5 Informing all the relevant stakeholders about the research activities and inviting respondents to take part in the research						
2. Data Collection and Administration	2.1 Revising and updating the field visit plan and interview/FG schedules						
	2.2 Field visits to four locations (two TRCs and two primary schools) where Akelius learning application is being implemented						
	2.3 Conducting 6 classroom observations, 6 FGDs, and 11 interviews with different profile respondents						
	2.4 Processing and storing all materials according to provided guidelines						
	2.5 Transcribing, and translating all interview and FGD transcripts into English						
	2.6 Debriefing meetings with research and programme team						
3. Data Analysis and Reporting	3.1 Organizing and summarizing notes from the field						
	3.2 Preparing three case study reports for two TRCs and one primary school						
	3.3 Coding the data gathered, and data analysis						
	3.4 Preparing and finalizing a summary report on the main findings						

Table 2. An overview of the data collection activities and sources

Data collection technique	Data source/ respondents	Location	Date (mm/dd/yyyy)	Duration (min)	No. (M)	No. (F)	No. participants (total)
Interview	Local implementing partner - World Vision	onsite - TRC Ušivak	02/03/2022	69	1	1	2
Interview	Teaching staff - Teacher	onsite - TRC Ušivak	02/04/2022	66		1	1
Interview	Teaching staff - Teaching Assistant	onsite - TRC Ušivak	02/04/2022	44		1	1
Interview	Subnational level representatives - MoE USK	in person	02/11/2022	49		2	2
Interview	Local implementing partner - Save the Children	in person	02/11/2022	57		1	1
Interview	School management - Primary School Prekounje	in person	02/11/2022	46	1		1
Interview	Subnational level representatives - MoE KS	in person	23/02/2022	37		1	1
Interview	University staff - University of Sarajevo	in person	03/03/2022	52		1	1
Interview	Teaching staff - Teacher	onsite - TRC Ušivak	03/04/2022	72	1		1
Interview	UNICEF BiH CO staff	online	03/07/2022	50	1	1	2
Interview	University staff - University of Bihać	in person	23/03/2022	40	1		1
Subtotal 1 - 11 Interviews				582	5	9	14
Focus Group Discussion	Students (children in TRC Ušivak)	onsite - TRC Ušivak	02/02/2022	43	6	2	8
Focus Group Discussion	Students (UASC in TRC Ušivak)	onsite - TRC Ušivak	02/03/2022	41	5		5
Focus Group Discussion	Teaching staff - Teaching Assistants and Cultural Mediators	onsite - TRC Borići	02/09/2022	63	2	7	9
Focus Group Discussion	Students (children in TRC Borići)	onsite - TRC Borići	02/09/2022	44	5	1	6
Focus Group Discussion	Students (Bosnian students in Primary school Harmani II)	onsite - Primary school Harmani II	02/10/2022	42	7	12	19
Focus Group Discussion	Teaching staff – Teachers	onsite - Primary school Harmani II	02/10/2022	80	1	2	3
Subtotal 2 - 6 FGDs				313	26	24	50
Classroom Observation	Akelius class for refugee and migrant children	onsite - TRC Ušivak	02/02/2022	70	5		5

Data collection technique	Data source/ respondents	Location	Date (mm/dd/yyyy)	Duration (min)	No. (M)	No. (F)	No. participants (total)
Classroom Observation	Akelius class for refugee and migrant children	onsite - TRC Ušivak	03/04/2022	60	2	2	4
Classroom Observation	Akelius class for refugee and migrant children	onsite - TRC Borići	02/09/2022	60	4	7	11
Classroom Observation	Akelius class for refugee and migrant children	onsite - TRC Borići	02/10/2022	45	3	4	7
Classroom Observation	Akelius class for Bosnian students	onsite - Primary school Prekounje	22/03/2022	60	12	8	20
Classroom Observation	Akelius class for Bosnian students	onsite - Primary school Prekounje	23/03/2022	45	13	8	21
Subtotal 3 - 6 Observations				340	39	29	68
TOTAL				1235	70	62	132

for every child, answers

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