SIRIUS WATCH 2021

TOWARDS INCLUSIVE DIGITAL EDUCATION FOR MIGRANT CHILDREN

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About SIRIUS
SIRIUS is the international Policy Network on Migrant Education, active since 2012 and co-funded by the European Commission. Its overall objective is to support the major education policy debates with evidence by analysing and co-creating knowledge on the main challenges and policy approaches for inclusive education in Europe, by mobilising migration and education policy stakeholders and building the capacity of migrant and grassroots education initiatives.

SIRIUS Watch is one of the Network's tools to achieve this objective. It monitors and informs policy development and implementation at different governance levels in the field of inclusive education, with a focus on migrant and refugee learners.

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1. INTRODUCTION

1.1. Setting the context

Over the past year, research has increasingly focused on the COVID-19 virus and its impact on education systems around the world. The shift to distance learning has put tremendous pressure on educators, parents, and children themselves to acquaint themselves with new technologies and pedagogies. However, this trend has not been completely new. Over the past decade, there was a clear trend towards integrating blended learning in formal educational, as well as in all aspects of life, including employment, access to services, and communication. Consequently, digital competences have been recognised by the EU as one of the Key Competences for Lifelong Learning1 and efforts to enhance them are promoted in the Digital Education Action Plan 2021-2027 and the Digital Competence Framework for Teachers.

While the enhanced digitalisation has been a continuous trend over the past decade, the COVID-19 pandemic has certainly enhanced reliance on ICT in education as well as innovation in education, supported by the growing Education Technology (EdTech) community. To ensure that schools and education benefit optimally from the digitalisation in the future, the EU designed the Digital Education Action Plan for 2021-2027[2], which highlights numerous actions to be taken on the EU level to ensure a high-quality online education infrastructure.

However, the COVID-19 pandemic has also reinforced another issue, namely the digital divide in education. Children with less material resources (e.g. laptops, internet connections), lower digital skills, or less parental support do not benefit from the opportunities provided by ICT tools in education to the same extent as other children who do possess such resources. Migrant children are often over-represented in this group. For example, many migrant children come from lower socio-economic backgrounds, whose parents have fewer financial resources, as well as linguistic, digital skills and were less available due to their professional backgrounds to support their children with ICT-enhanced learning. Migrant children also have slightly less access to digital tools at home. Interestingly, compared to their native peers, migrant children more often use ICT for educational purposes and less often for general purposes.[3] During COVID-19, UNICEF noted that many migrant

1 Council Recommendation on Key Competences for Lifelong Learning. Accessible via: https://ec.europa.eu/education/education-in-the-eu/council-recommendation-on-key-competences-for-lifelong-learning_en

2 European Commission. Digital Education Action Plan (2021-2027). Accessible via https://ec.europa.eu/education/education-in-the-eu/digital-education-action-plan_en

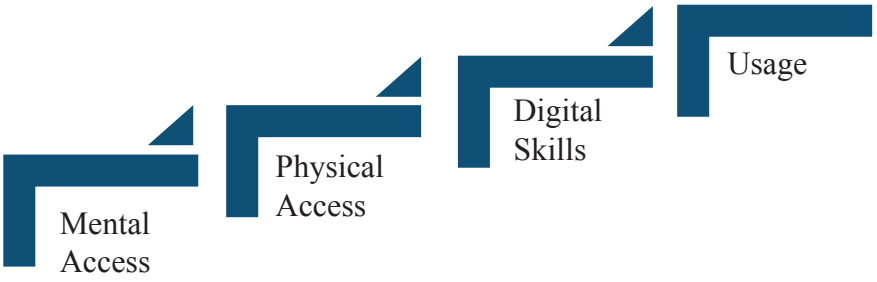
3 Rodrigues, M. (2018) Can digital technologies help reduce the immigrant-native educational achievement gap? Report for the Joint Research Centre (JRC). Accessible via https://op.europa.eu/en/publication-detail/-/publication/b8841847-0638-11e8-b8f5-01aa75ed71a1/language-en

children may have already suffered from gaps in their learning progress and are more likely to fall behind even further.[4] However, limited information is available on the extent to which COVID-19 and online education have affected migrant children so far.

Considering the continuing trends and strategies for digitalisation of education, closing the digital divide is currently more pressing than ever. To do so, it is crucial to understand the challenges that migrant children face in relation to digital education, beyond the mere access to laptops and internet connectivity. Jan van Dijk, one of the leading researchers in the field of digital divide studies, focused also on the recent trends and shifts in the digital divide caused by COVID-19. He argues that personal and positional inequalities (such as having a migrant background) affect the possession of resources (material, mental, social), and subsequently the effective use (access) of ICTs and participation in society.

Van Dijk suggests that *the ability to meaningfully use ICTs* can be divided into four steps: Mental access (motivation, interest); physical access (possession of laptops, internet connection, etc.); digital skills; and consequently, the effective usage of the tools in different settings.

Figure 1. Four consecutive stages of access to digital tools



Source: Jan A.G.M. van Dijk (2012) "The Evolution of the Digital Divide: The Digital Divide turns to Inequality of Skills and Usage" in J. Bus (eds) Digital Enlightenment Yearbook (IOS Press)

When children have the willingness to use ICT tools; there is a need to provide them with the necessary tools and internet connection; and develop their digital skills (and those of their parents). Only then, children will be able to participate in digitalised education effectively and safely. The suggested framework can be applied in educational context as well, as research has shown that children with a migrant background are likely to be more disadvantaged in terms of access and usage of ICT and general education resources.

4 You, D., Lindt, N., Allen, R., Hansen, C., Beise, J., and Blume, S. (2020) Migrant and displaced children in the age of COVID-19: How the pandemic is impacting them and what can we do to help. Migrant Policy Practice, Vol X, No 2.

1.2. SIRIUS Watch 2021

1.2.1. Focus and structure

SIRIUS Watch 2021 presents trends and developments on the effects of digitalisation in education on migrant children both pre-COVID-19 and during COVID-19. It will build on national and EU-level research, as well as the results of the SIRIUS Online Digital Workshop. The results include a clear framework of challenges and recommendations to support the development of an inclusive digital education infrastructure for migrant children.

SIRIUS Watch 2021 – Towards inclusive digital education for migrant children

More specifically, the **SIRIUS Watch 2021 will aim to:**

- **Document/map the digitalisation trends and the digital divide in education pre-COVID-19** and the main challenges faced by migrant children in this regard, to determine the main structural gaps in education systems
- **Analyse the impact of COVID-19 on education of migrant children** focusing in particular on the digital divide and new challenges that have occurred during this period.
- **Understand the challenges and opportunities for migrant children in the post-COVID-19 setting,** taking into consideration the structural issues existing pre-COVID-19, the impact of COVID-19 and the continuous progress towards digitalisation in education planned for the upcoming years.

As a result, this exercise will:

1. Conclude on different dimensions of the digital divide where migrant children experienced most challenges over the past years.
2. Present the main challenges that are likely to continue or enhance in the upcoming years due to continuing digitalisation
3. Inform policy-makers on national and EU levels how to ensure that digitalisation in education is inclusive for migrant children.

Digitalisation in education touches upon a variety of elements ranging from access to digital tools, to curricula, online safety, digital skills, and parental guidance and support. It has been recognised extensively in recent research (e.g. Hodges, C., et.al. 2020) that the use of ICT in education should not be an ad hoc, standalone process. Digitalisation requires the adaptation of curricula, the integration of digital skills in teacher training, and the design of pedagogies that maximise the benefits presented by digital tools. Additionally, as noted by the EU in the Digital Education Action Plan working document, "dealing with disinformation, harmful speech and online threats is a key competence that everybody needs to develop".[5] Increased xenophobia noted across Europe over

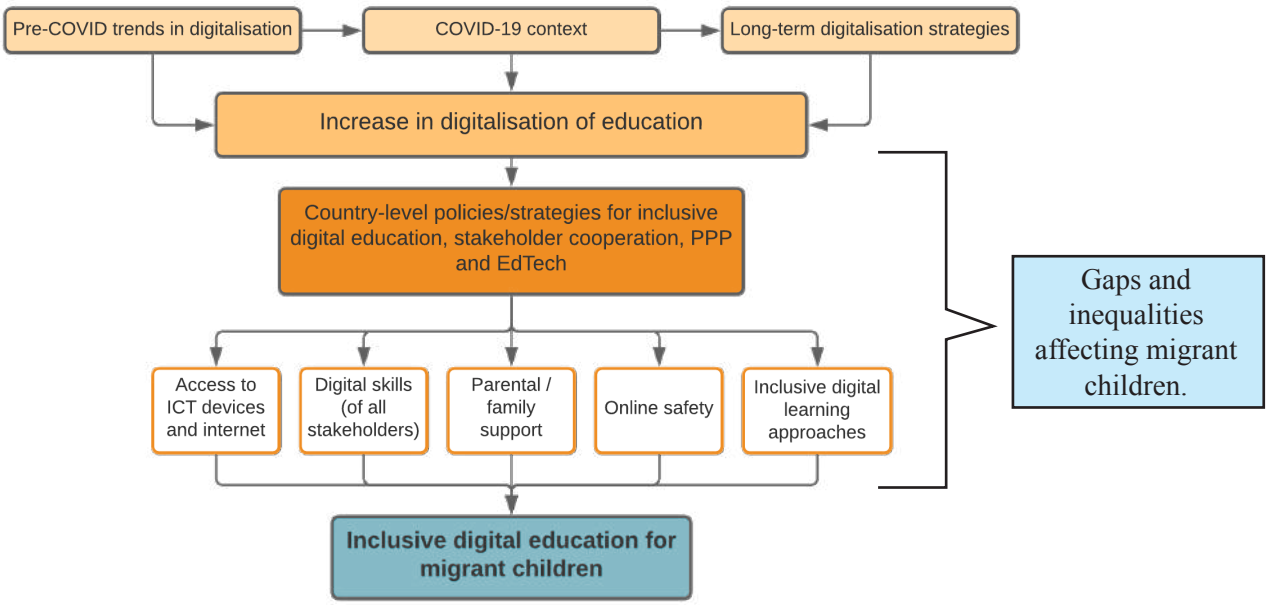
5 https://ec.europa.eu/education/sites/default/files/document-library-docs/deap-swd-sept2020_en.pdf

the past years and the increased reliance on online communication tools highlights "online safety" as a key dimension of digital inclusion for migrant children.

Over the past years, and accelerated by COVID-19, the EU and its Member States have started the design of national strategies and frameworks for the holistic introduction of digital tools in education. The COVID-19 pandemic provides a unique opportunity to take stock of how inclusive the strategies and implementation of digital tools in education have been for migrant children. It allows us to reflect on the main gaps between migrant children and their peers in different aspects of inclusive digital education and determine which gaps are not sufficiently addressed in current policy approaches (and are likely to continue affecting migrant children in the near future).

Therefore, to understand the digital divide affecting migrant children, the research will need to focus on the following elements:

Figure 2. Elements comprising digital education and inclusion



Source: Compiled by PPMI

While access to digital tools and internet connectivity, and the presence of digital competences relate to the access of migrant children to digital education, the remaining three elements determine whether migrant children - upon having this access – can actually use the tools to benefit equally from the enhanced learning opportunities. The following table presents the main topics of interest involved in each element.

The current SIRIUS Watch report will focus mainly on these five elements in the pre-

COVID-19 time and during the COVID-19 lockdowns, as well as predict which elements are likely to remain challenging for migrant children in the upcoming years. This aspect will determine the specific needs and gaps towards digital inclusion as affecting migrant children and the main priorities that policymaking across Europe should focus on when designing and implementing their Digital Agendas and Strategies.

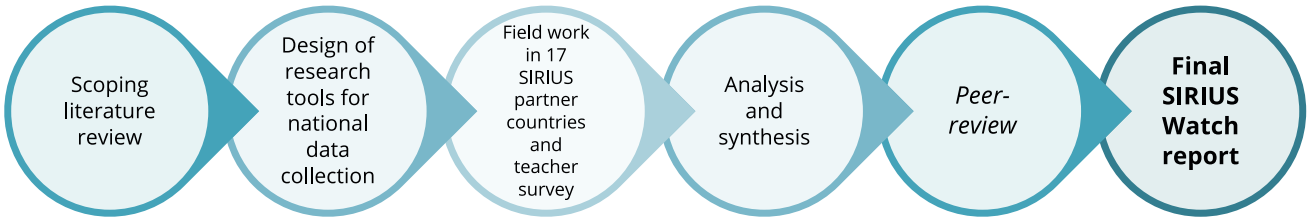
As a result, the report will provide detailed information on the digital divide and gaps in digital inclusion that should be urgently addressed to ensure migrant children will benefit equally from the opportunities that digitalisation has to offer, both in education and in life.

1.2.2. Methods and scope

Based on the aims of the current report, the background, and the conceptual frameworks presented in the prior chapter, the study will cover the following main research questions:

1. What are the main challenges migrant children faced over the past years in terms of digital inclusion and the digital divide?
2. How has COVID-19 exacerbated old challenges or introduced new challenges?
3. What opportunities exist for enhanced digital inclusion and closure of the digital divide for migrant children?

SIRIUS Watch 2021 focused on **both EU and national/regional levels**, including country-level research in 17 European countries. The research comprised the following steps:



A descriptive analysis approach was used to synthesise the key issues and themes arising from the national reports; as well as other evidence and reports from national, regional and international organisations. Throughout the report, various terms and concepts are presented and discussed. The following box provides the key terms and how they should be understood in the context of this report.

Box 1. Key terminology and concepts used in the report

The term **children with a migrant background** includes "all foreign nationals below 18 years old who are forcibly displaced or migrate to another country, be it with their (extended) family, with a non-family member (separated children) or alone (unaccompanied children), whether or not seeking asylum". Within the context of migrant children, the following categories are mentioned throughout the report:

Refugee and asylum-seeking children are those children who have fled their home country and applied for international protection in the host country. Refugees are those who have been granted asylum, while asylum-seekers are still in the process of obtaining that status. The human right to education specifies that the status of a child should not influences his/her access to education, meaning that children in reception centres; asylum-seeker centres and other facilities should be granted access to education on the same basis as native children.

Unaccompanied minors are children who have moved to another country without parents, guardians or other adult supervisors. Special attention must be given to ensure access to education for these children as they are not in the care of another person. Unaccompanied minors are therefore more likely to be excluded from protection.

Regular migrant children are children of parents or guardians who made the willing decision to migrate, for example for work, study or other purposes. These children usually come from families with enough resources to ensure that the child has access to education. However, the lack of support systems for these migrants means that parents must proactively search for information on the education system and enrolment procedures.

Returning migrant children have moved abroad for a period of time and returned to their country of origin. As a result, they have to be re-enrolled in the national education system. Although parents may be more aware of how the system works compared to other migrants, the child still needs to go through assessment to determine the right class and learning path.

The results of the research are presented in the following chapters.

2. Inclusive digital education

2.1. EU policy context and recent developments in digitalisation of education

The exponential development of digital technologies is significantly transforming many aspects of our current societies. The 4th Industrial Revolution, as Schwab[6] calls it, refers to this rapid spread of digital technologies, its transformative power and the changes it brings about to different aspects of our lives, from employment, to social connections, health and education.

Digital technologies are increasingly used in educative processes as a tool supporting teachers, but also as an element promoting individualised and autonomous learning of students. The digitalization of education refers to the integration of different types of digital tools and technologies in the educational processes, concretely in teaching and learning. These digital tools include, among others, computers, software applications, e-books, interactive whiteboards, virtual learning environments and learning management systems. Well-developed ICT infrastructures thus play a key role in the creation of learning environments that can grasp the benefits of the most updated innovations in education at all levels[7]. In addition, the digitalisation of education also needs individuals to acquire skills necessary to seize the potential of these new technologies. Digital education therefore requires not only the presence of digital tools in the learning process, but also the skills to appropriately use them.

2.1.1. EU policies and strategies for digitalisation of education

The European Union already acknowledged the relevance of citizens to develop their digital competences from an early age and throughout their lives.[8] In 2013, the European Framework for Digital Competence was first published, describing the specific knowledge and skills European citizens shall acquire in order to satisfactorily seize the opportunities that digital tools and ICTs bring about. These skills and knowledge are divided in the following areas: information and data literacy, communication and collaboration, digital content creation,

6 Schwab, K. (2016). The Fourth Industrial Revolution. Portfolio Penguin.

7 Hepp K., Prats Fernández, M.À & Holgado García, J. (2015). Teacher training: technology helping to develop an innovative and reflective professional profile. Universities and Knowledge Society Journal 12(2), 30-43, http://dx.doi.org/10.7238/rusc.v12i2.2458 , Pinto, M., Carlinda, L. (2020). Digital technologies in support of students learning in Higher Education, Digital Education Review, 37, 343-360 and Crittenden, W., Biel I., Lovely A .(2018). Embracing Digitalization: Student Learning and New Technologies. Journal of Marketing Education, 41(1), 5-14. doi:10.1177/0273475318820895.

8 European Commission/EACEA/Eurydice, 2019. Digital Education at School in Europe. Eurydice Report. Luxembourg: Publications Office of the European Union. Retrieved from: Digital Education at School in Europe | Eurydice (europa.eu).

safety and problem solving.[9] In addition to this framework, other relevant European policies and strategies are already in place to advance on the field of digital education and ensure its quality development across all Member States. For example, the EU has placed a great focus on developing digital education as part of the Commission's strategy of "A Europe fit for the Digital Age" and it is also a key element of the plans of Next Generation Europe and the Recovery and Resilience Facility for a greener and more digital and resilient European Union.

The Digital Education Action Plan (2021-2027) is currently the cornerstone of EU's digital education policy setting out the guiding principles for the development of digital education in Member States. This policy initiative aims to support an effective and sustainable adaptation of education and training systems, in each of the European Member States, to the current digital age. As stated by the European Commission, the Digital Education Action Plan10:

- offers a long-term strategic vision for high-quality, inclusive and accessible European digital education
- addresses the challenges and opportunities of the COVID-19 pandemic, which has led to the unprecedented use of technology for education and training purposes
- seeks stronger cooperation at the EU level on digital education and underscores the importance of working together across sectors to bring education into the digital age
- presents opportunities, including improved quality and quantity of teaching concerning digital technologies, support for the digitalisation of teaching methods and pedagogies and the provision of infrastructure required for inclusive and resilient remote learning

The Digital Education Action Plan is also a key component for the realisation of the Education Area of 2025 which seeks to foster cooperation between European Union Member States in order to achieve high-quality and inclusive education and training systems. Aligned with the Digital Education Action Plan, there are also other strategies that seek to strengthen the digital capacity of the European Union. For instance, Europe's Digital Decade, which among others, has set the target of training digitally skilled population and also highly skilled digital professionals. The Digital Coalition tackles the need for digital skills in education, aiming to transform teaching and learning of digital skills for lifelong learning, including the training of teachers.

2.1.2. The impact of COVID-19 on education and the digital transformation

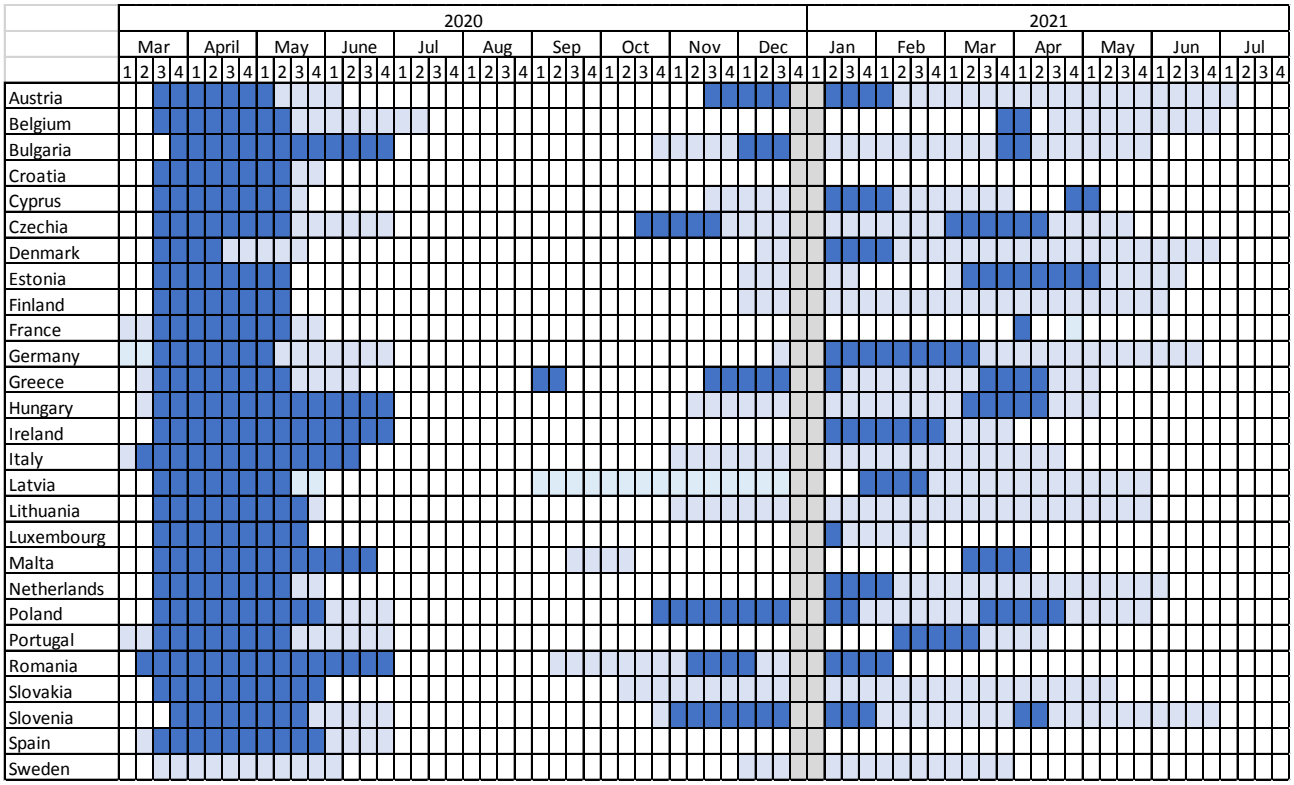
COVID-19 has dramatically disrupted education systems across the globe. The pandemic forced

9 Ferrari, A., & Punie, Y. (2013). DIGCOMP: A framework for developing and understanding digital competence in Europe.

10 https://ec.europa.eu/education/education-in-the-eu/digital-education-action-plan_en

education institutions to urgently re-imagine and restructure educational processes in order to cope with the crisis and avoid learners to suspend their activities. Schools, universities and non-formal education centres had to adapt to new education modalities and approaches. Face-to-face learning was no longer the most predominant learning modality and students have instead used distance learning, for which the use of Information and Communication Technologies' (ICTs) devices have been essential.[11] These have been essential to offer alternative learning opportunities while schools have been closed.

Figure 3. Full and partial school closures during the first year of the pandemic



Dark blue refers to full school closures due to COVID-19 mitigation measures.
Light blue refers to partial school closures.
White cells refer to the normal practice of the education system, either academic breaks or fully open education institutions.
Source: UNESCO COVID-19 education response – Country dashboard. Accessible via: http://covid19.uis.unesco.org/global-monitoring-school-closures-covid19/country-dashboard/

11 Khanna, S. (2020). ICT Enabled Learning. A tool in Crisis Management. Aptisi Transactions on Technopreneurship (ATT), 127-130, https://doi.org/10.34306/att.v2i2.89.

Computers, mobile phones, tablets, and video conferencing are just some of the platforms and tools that have enabled students to keep connected to online classes. Other elements such as educational television and the use of adaptative learning systems have also played a crucial role in maintaining the instruction of learners at all levels.[12] In this regard, the global pandemic can be considered as a catalyst of the process of the digital transformation in education as it has contributed to speed up the development of new educational methods and devices that largely rely upon technology.

Overall, governments took an active role in coordinating the varied strategies followed by education centres and elaborated different governmental plans that were designed to support an effective transition to this new modality. Some initiatives have included, among others, offering teaching materials and resources online, broadcasting educational programmes on television, the creation of specialized websites containing specific materials for online education, readapting the calendar of school activities and the creation of partnerships with different providers such as Google or Microsoft to support moving courses online.[13] However, the urgent and unforeseen closure of schools in March 2020 did not allow governments to carefully assess the impact of school closures and distance learning on educational progress.[14]

The EU also acted in response to the EU-wide school closures. For instance, online resources and platforms were made available and existing platforms such as School Education Gateway and eTwinning offered supporting materials for teachers as well as resources for quality online learning. The EU also funded different projects through the Erasmus+ programme, in order to ensure the continuity of education and training activities. The Erasmus+ Programme has been crucial for an appropriate and solid response to the pandemic, and it has supported, among others, digital education and training, and digital youth work.

In addition, the Commission was involved in the publications of extraordinary calls to support digital education and cultural activities as well as adjustments to online programmes. For instance, their proposal for a "Council Recommendation on blended learning for high quality and inclusive primary and secondary education" seeks to blend school sites and distance learning environments and to blend different tools for learning that can be digital and non-digital as part of learning tasks. In addition, the Commission also conducted two surveys to evaluate the effects of COVID-19

12 Learning remotely when schools close: How well are students and schools prepared? Insights from PISA, OECD Policy Responses to Coronavirus (COVID-19). OECD Publishing, Paris, https://doi.org/10.1787/3bfda1f7-en.

13 A framework to guide an education response to the COVID-19 Pandemic of 2020», OECD Policy Responses to Coronavirus (COVID-19). OECD Publishing, Paris., https://doi.org/10.1787/6ae21003-en.

14 Dunajeva, J., Bankauskaite, R., Siarova, H., et al., Education and youth in post-COVID-19 Europe : crisis effects and policy recommendations, European Parliament, 2021, https://data.europa.eu/doi/10.2861/047424

on mobility participants and higher education institutions.

Despite the increase in online learning, the easing of restrictions immediately brought back face-to-face learning, as prioritised by governments. Nevertheless, the integration of technology in education seems to have brought about positive changes that might incentivize its increasing use in educational processes. A survey conducted by the OECD, reveals that a significant percentage of the respondents consider that there have been positive educational results due to the changes caused by the crisis, including the introduction of technologies and other innovative solutions, and an increase in the autonomy of students to manage their own learning.

Technology changes the way in which educators and learners are involved in the educational process. With the use of technology, educators can become more than just knowledge transfer agents, becoming co-creators of knowledge and more efficiently track students' performance, gathering data on what concrete tasks or problems are more challenging for them.[15] In the case of students, technological devices enable them, in combination with the educators' guidelines, to follow their own learning style and pace, actively engaging in the process of education by choosing when to access online relevant material. The use of appropriate technological devices can therefore offer more individualised learning experiences, adapting to the student's personal style of learning. In this context, the progressive development of learning and teaching methods that make use of technological devices will largely be dependent on the capacity of learners and educators to build up their digital skills in order to seize their full potential.

2.2. Inclusive digital education for all

Besides offering a wide range of learning opportunities, the digital transformation also causes challenges to the closure of the digital divide. Children with limited access to digital tools, or with lower digital skills are likely to fall behind their peers. With the exponential growth of the digital economy, digital literacy should be available to all children not only to seize the opportunities of ICT tools for education, but also to guarantee their inclusion in future societies and the development of their full potential.[16]

While several initiatives analysing the inclusiveness of digital education have been conducted at the macro-level, more recent studies suggest focusing on context-based research in order to obtain more nuanced conclusions about the current landscape regarding the inclusiveness on digital education and the causes and consequences of existing disparities in the access to it.

15 OECD. (2020). Education at a Glance 2021. OECD Publishing, Paris, Education at a Glance - OECD

16 Koss, D. (2001). Children Falling into the Digital Divide. Journal of International Affairs 55(1), 75-90, 10.1080/01972241003712231.

2.2.1. General challenges to inclusive digital education

Access of children to digital technologies can be hindered by different factors. The term "digital divide" first originated in the late 1990s and it was defined as 'the divide between those with access to new technologies and those without".[17] The term promptly gained popularity among researchers and its definition has largely evolved over the years. For instance, Gunkel[18] uses the term to refer to the "gap between those who can effectively use new information and communication tools, such as the Internet, and those who cannot". The OECD referred to the digital divide as the "gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard to both their opportunities to access information and communication technologies (ICTs) and to their use of the Internet for a wide variety of activities".[19]

Researchers in the domain of digital technologies and education note that the digital divide refers not only to the access to technology but also to its effective use. They make a distinction between two types of barriers contributing to the creation of digital inequalities. The first-order divide or primary barrier refers to the limitations in the physical access to an internet connection.[20] The wide diffusion of the Internet across Europe has somehow narrowed this divide, but differences in material access (computers, tablets and Smart TVs) is a factor which still triggers digital inequality.[21] Barzilai-Nahon[22], points out how digital inequalities are context-specific, meaning that "they largely depend on the socio-economic context in which digital technologies develop". Disparities in the access and use of digital tools often mirror other socio-economic disparities. In more socio-economically disadvantaged environments with more vulnerable population groups, the first divide might be "overlooked" when it might still be a relevant barrier for achieving a quality and inclusive digital education for all.

17 NTIA.(1999). Falling Through the Net. United States Department of Commerce. Retrieved from: Falling Through the Net: Defining the Digital Divide | National Telecommunications and Information Administration (doc.gov).

18 Gunkel, D. (2003). Second Thoughts: Toward a Critique of the Digital Divide. New Media and Society 5(4), 499-522, 10.1177/146144480354003.

19 OECD. (2001). Understanding the Digital Divide. OECD Publishing, Paris, OECD Glossary of Statistical Terms - Digital divide Definition.

20 Attewell, P. (2001). Comment: The First and Second Digital Divides. Sociology of Education, 74(3), 252–259, https://doi.org/10.2307/2673277 and Ertmer, P. A. (1999). Addressing first and second-order barriers to change: Strategies for technology integration. Educational Technology Research and Development, 47(4), 47–61, Addressing first- and second-order barriers to change: Strategies for technology integration | SpringerLink

21 Gonzales, A. (2016) The contemporary US digital divide: from initial access to technology maintenance. Information, Communication & Society, 19(2), 234-248, 10.1080/1369118X.2015.1050438 and Van Deursen, AJ,. & Van Dijk JA,.(2018). The first-level digital divide shifts from inequalities in physical access to inequalities in material access. New Media & Society, 21(2), 354-375, 10.1177/1461444818797082.

22 Karine Barzilai-Nahon (2006) Gaps and Bits: Conceptualizing Measurements for Digital Divide/s, The Information Society, 22:5, 269-278, DOI: 10.1080/01972240600903953.

The second-order divide or second barrier refers to computer use, digital literacy and skills, autonomy, social support and the aims of digital technology use.[23] There is still a stark difference between access (first-order divide) and actual use (second-order divide) and recent studies point out that this second barrier might be even more difficult to overcome as it is created not only by educational or financial factors but also by personal traits, like motivation and self-perceived capacity.[24]

Specifically for children, the mere access to ICT tools is not sufficient to narrow disparities in the use of digital tools and digital education. Ensuring the material access to ICT tools needs to be combined with social support coming from the environments in which children develop. In addition to income, education is also a relevant factor determining inequalities in the access to digital tools. The education level of parents, in addition to the income of the family unit, is an important factor affecting disparities in the use of digital tools.[25] The social environment and socialization process seem to be two crucial elements accentuating or diminishing digital inequalities among this group of the population. As Talaee and Noroozi[26] point out, access to a "social envelope" where parents are users of computers and perform computer practices ease the process of the acquisition of skills by children.

The European Union is currently placing a great emphasis on digital inclusion to ensure that all European citizens can benefit from the digital world and contribute to its development. In 2018, the European Commission adopted a Communication on the digital education action plan in 2018 outlining different measures to help individuals, educational institutions, and education systems to better adapt to the digital transformation of societies. Among these measures, we find the development of relevant digital competences and skills for the digital transformation as well as making better use of digital technology for teaching and learning. Digital inclusion is also being fostered through other policy areas, including the promotion of digital skills and also social inclusion measures.

Overall, inclusiveness in the area of digital education is influenced by a combination of factors; not only the access to material

23 Rockmann, R., Gewald, H., & Haug, M. (2018). Equal access for everyone? A digital divide cascade for retired senior citizens. ECIS 2018 Proceedings, 30. Retrieved from: https://aisel.aisnet.org/ecis2018_rp/30.

24 Vassilakopoulou, P., Hustad, E. Bridging Digital Divides: a Literature Review and Research Agenda for Information Systems Research. Inf Syst Front (2021). Retrieved from: https://doi.org/10.1007/s10796-020-10096-3 and Bucea, A. E., Cruz-Jesus, F., Oliveira, T., & Coelho, P. S. (2020). Assessing the role of age, education, gender and income on the digital divide: evidence for the European Union. Information Systems Frontiers, https://doi.org/10.1007/s10796-020-10012-9.

25 Vassilakopoulou, P., Hustad, E. Bridging Digital Divides: a Literature Review and Research Agenda for Information Systems Research. Inf Syst Front (2021), https://doi.org/10.1007/s10796-020-10096-3.

26 Talaee, E. & Noorozi, O. (2019). Re-conceptualization of «digital divide» among primary school children in an Era of Saturated Access to Technology. International Electronic Journal of Elementary Education 12(1), 27-35, https://www.iejee.com/index.php/IEJEE/article/view/872

resources is relevant, digital literacy and skills, social networks, motivation and self-perceived capacity are relevant variables to be considered in order to ensure an inclusive and quality digital education for children. Remarkably, the elements of the so named "second barrier" of the digital divide, which refer more to individual traits, has a crucial relevance in the shaping of disparities. Since inequalities in the domain of technology seem to be very context-specific, further regional and sectional studies would be of great value in the creation of knowledge regarding this area of study.

2.2.2. Specific considerations for migrant children

Digital exclusion of migrant children can become an additional element to the broader social exclusion of this population group. The use of ICTs by migrants can have twofold outcomes as reported by several scholars. It can hinder the integration of migrants in the receiving societies by creating an attachment and powerful bond to migrant communities and their culture.[27] On the other hand, there is a general agreement on the fact that technology enables this group to better integrate into the receiving societies. Different research suggests that immigrants, as well as refugees, are aware of the benefits offered by technology, especially to find new jobs and be socially engaged. Technology enables this group of the population to participate in the information society, understand the society in which they have arrived and to be socially connected while at the same time expressing their cultural identities.[28]

The use of ICT technologies by migrant children is affected by the factors that have been mentioned in the previous section. The socio-economic conditions of the countries from which immigrants depart is a great predictor of their prior ICT uptake and use. Despite some possible differences between the country of origin and the receiving country in terms of ICT use, migrants coming from wealthier and more educated countries are more likely to have the necessary ICT experience when they arrive in their new countries; they are more prepared to use ICTs.[29] Migrants coming from less developed regions or countries, especially refugees, probably will find more difficulties in the access to ICT tools and training. Migrant children in the European Union belonging to a low socioeconomic status (SES) may therefore suffer from different difficulties hampering

27 Holmes, P. and Janson, A. (2008) 'Migrants' communication practices with ICTs : tools for facilitating migration and adaptation ?', International journal of technology, knowledge & society., 4 (6). pp. 51-62., Migrants' communication practices with ICTs : tools for facilitating migration and adaptation ? - Durham Research Online.

28 Andrade, A. D., & Doolin, B. (2016). Information and Communication Technology and the Social Inclusion of Refugees. MIS Quarterly, 40(2), 405–416, https://www.jstor.org/stable/26628912.

29 Caidi, N., Longford, G., Allard, D., & Dechie, D. (2007). Including Immigrants in Canadian Society:What Role do ICTs Play? Submission to the Strategic Policy Research Directorate of HumanResources and Social Development Canada (HRSDC), https://www.academia.edu/762788/Including_Immigrants_in_Canadian_Society_What_Role_do_ICTs_Play_Draft_Report.

an appropriate and quality use of ICTs. Based on the literature mentioned on the previous chapter, migrant children who grow up in low-income or vulnerable environments are likely to face both, the first and second barrier of the digital divide.

In the host country, migrant children more often have limited access to ICTs at home and they are often in the need to share digital devices in their family environments with their siblings.[30] In addition, children and young people living in refugee camps have limited access to the internet and they mostly use their time to stay connected with family members.[31] In this context, research evidence suggests that schools are key in promoting the access of migrant children to ICT equipment and internet access. In general, migrant children have access to smartphones, but not to computers.[32] In Spain, a study conducted by Jimenez et al[33], points out how immigrants receive more support and mediation from their schools and institutions in the use of these ICT tools as compared to the support they receive from their parents. This is also the case for Portugal, where access of migrant students to computers is more limited and the school is in many cases the only way for students to make use of ICT tools and resources.

In case migrant children have access to digital tools and internet, various challenges arise to their effective use. For instance, a study conducted by Alam and Imran[34] in Australia concludes that, although refugee immigrants are motivated to learn about new technology, many are not able to do so because of unaffordable cost, language barriers and lack of skills. A study in Norway conducted by Jama (2018), concluded that newly arrived students at upper secondary level possess insufficient digital skills to properly use digital teaching aids in comparison with students who are native speakers of Norwegian. Similarly, a study conducted by Kennisnet[35] in the Netherlands suggests that children with lower digital skills and competences tend to speak less Dutch at home.

30 Dohmen, Dieter; Hurrelmann, Klaus; Yelubayeva, Galiya. (2021). Kein Anschluss trotz Abschluss?! Benachteiligte Jugendliche am Übergang in Ausbildung. (F. f.-u. (FiBS), Ed.) FiBS-Forum, No. 76., https://www.econstor.eu/bitstream/10419/233910/1/1757269827.pdf.

31 Trebbe, J.; Paasch-Colberg, S. (09 de 12 de 2016). Migration, Integration und Medien. (B. f. Bildung, Editor), https://www.bpb.de/gesellschaft/medien-und-sport/medienpolitik/172752/migration-integration-und-medien#footnode1-1.

32 Žmavc J.; Gril, A.; Autor, S., «My Mom Thanks You and Sends Her Regards as Well» – Pedagogical Process and Migrant Students During the COVID-19, Sodobna PEDAGOGIKA – Journal of Contemporary Educational Studies, (4), https://www.sodobna-pedagogika.net/en/articles/04-2020_my-mom-thanks-you-and-sends-her-regards-as-well-pedagogical-process-and-migrant-students-during-the-covid-19/.

33 Casado, M.A., Garitaonandia, C., Moreno, G & Jiménez, E. (2019). Media and Communication 7(1) : 56–65, https://addi.ehu.es/handle/10810/50339.

34 Alam, K., & Imran, S. (2015). The digital divide and social inclusion among refugee migrants: A case in regional Australia. Information Technology & People.

35 Kennisnet (N.d. 2017). Monitor Jeugd en Media 2017, https://www.kennisnet.nl/app/uploads/kennisnet/publicatie/jeugd_media/Kennisnet_Monitor_Jeugd_en_Media_2017.pdf).

All these barriers were present during the pandemic and affected the digital inclusion in education of migrant children. Despite the efforts of governments to ensure quality education for all children, migrants did not always have equal access to education. In fact, migrants were disproportionally vulnerable to dropping out of school. In Norway for instance, different studies suggest that young immigrants were overrepresented among the population who did not have an adequate access to digital equipment or internet access in their homes.[36] In Greece, a study conducted by the Refugee Support Aegean organization (RSA), concludes that the enrolment rate of refugee children decreased from 12.867 in March 2019 to 8.627 in March 2021, mainly due to the lack of access to equipment but also because lockdown measures lasted for longer in refugee camps. [37]

The language barrier was also another relevant factor in this case. For example, the online platforms established by the Greek government did not have any adaptations for non-native speakers.[38] In other countries such as the UK, migrant children did not receive any additional support from the government other than measures that already existed before the pandemic, despite the disproportionate disruption of their education. This issue was addressed differently in Estonia where teachers tackled this weakness of the system by identifying students with a mother tongue different to the language of instruction and providing them with individual assistance[39]. In other cases, such as in Lithuania, NGOs were taking an active part in the engagement of migrant children into education during the lockdown. For instance, "Human Aid", which sought to provide students from a refugee background with needed digital tools.

The similarity between the factors hindering the use of ICTs for the general population and those hindering the use of these tools by migrants, implies that measures tackling disparities among the former group could also partially serve to improve the conditions of the latter.[40] Nevertheless, research in this domain suggests that policies tackling the inclusion of migrant children in digital education need to be distinct from those groups of the population categorised as vulnerable because the barriers migrant children are also different. More research is needed to learn about the difficulties experienced by migrant children when accessing and using ICT tools, especially for education, in receiving countries.

36 Bakken, A.; Pedersen, W.; von Soest, T.; Aaboen Sletten, M. Oslo-ungdom i koronatiden. En studie av ungdom under covid-19-pandemien [Oslo-youths during the time of corona. A study of youths under the covid-19 pandemi], NOVA. Retrieved from: https://oda.oslomet.no/oda-xmlui/bitstream/handle/20.500.12199/4221/NOVA-rapport-12-2020.pdf?sequence=3&isAllowed=y

37 Nektaria Palaiologou (2021) SIRIUS Watch country report for Greece

38 Ibid.

39 Eve Mägi, Elisabeth Kendrali and Meeli Murasov (2021) SIRIUS Watch country report for Estonia.

40 Codagnone, C., & Kluzer, S. (2011). ICT for the Social and Economic Integration of Migrants into Europe. Publication Office of the European Union.

In the European Union, there is a general lack of knowledge about the problems that migrant children face when accessing educational ICT tools and there is also a lack of accurate and differentiated body of data on the use of ICT and internet connectivity for educational purposes by migrant children. In general, European Member States do not have specific policies within the domain of digital education to make it more accessible to migrant children. Some digital education policies target specifically the provision of equipment for vulnerable groups, in which migrants can be represented, still this group is not the main target of these programmes.

To address the existing inequalities in digital education for migrant children, governments should create policies that target the inclusion of specifically migrant children into digital education. Considering migrant children to be in the group of vulnerable population is in many cases not enough as some of them might still be in an illegal status which makes it hard to identify them.41 Some measures suggested for governments to contribute to the inclusion of migrants in digital education include giving financial assistance and monitoring the enrolment and attendance rates of refugee students, undertaking compensatory actions when necessary.42 Partnerships between the public and the private sector, as well as additional support from NGOs through parent support services and digital learning hubs, could also significantly contribute to the improvement of the digital learning accessibility of migrant children.43 However, as demonstrated in the following chapters, information on the digital divide affecting migrant children, and the impact of COVID-19 on their educational achievements, is still highly limited.

41 Nathalie Auger (2021) SIRIUS Watch country report for France
42 Nektaria Palaiologou (2021) SIRIUS Watch country report for Greece
43 Merike Darmody (2021) SIRIUS Watch country report for Ireland.

3. Inclusive digital education for Migrant Children in Europe

The experiences of migrant children, especially those with refugee backgrounds, make them a **vulnerable group in relation to obtaining quality education**. As not all host countries have the resources to provide proper care for children with a migrant background, they face disproportionate difficulties in accessing suitable education.[44] Furthermore, while increasing amounts of research are carried out regarding immigrant children, the educational experiences of migrant children, and refugee children in particular, still remains to be analysed in depth. Part of the issue for this stems from the lack of data and studies done specifically on this group.[45]

Across the country reports, a similar issue was encountered as statistics on migrant children were unavailable or were obfuscated by the inclusion of migrant children into categories with other vulnerable groups, making it difficult to understand the particular issues faced by migrant and refugee children. Despite this, it was possible to obtain some information that shines a light on the issues faced by migrant and refugee children regarding digital education and inclusion. Therefore, it is possible to judge the approximate extent to which children with migration backgrounds face inequalities and disadvantages compared to their native peers when it comes to digital education. Furthermore, through the establishment of baseline information, it will also enable researchers, policymakers and other relevant stakeholders concerned by the issues highlighted in the country reports to explore venues relating to digital inclusion that are relevant to them.

3.1. Access to ICT tools and devices

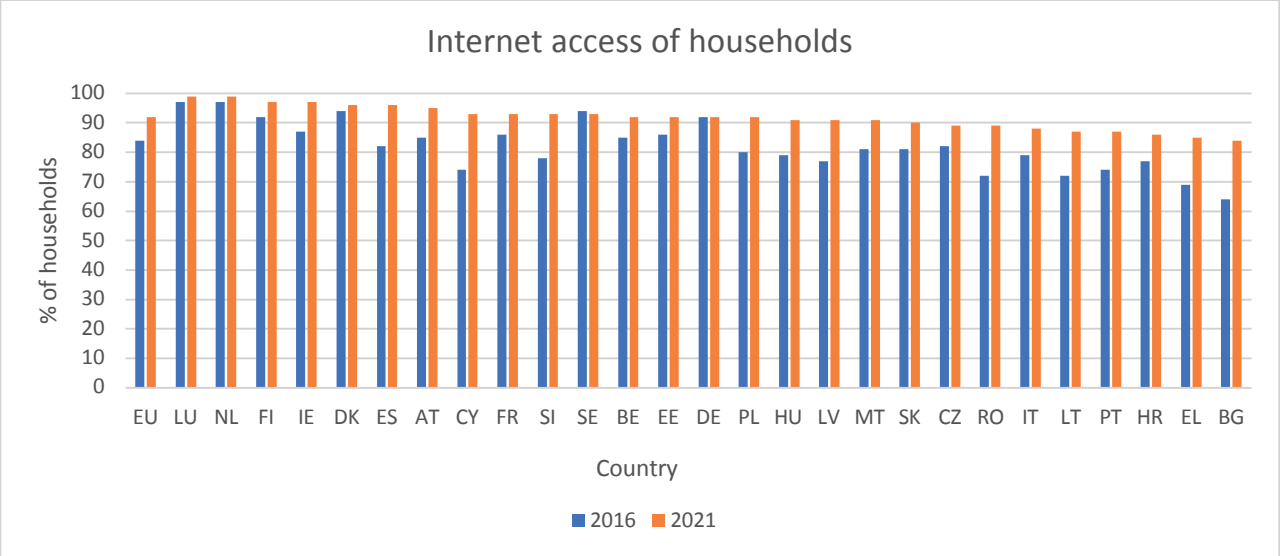
As described in Chapter 2, **access to digital tools is a first step to digital inclusion** as it allows children to take advantage of digital opportunities and improves access to information. The importance of having access to digital tools and the effect of ICT based advantages in fostering academic achievements are noted for all children. This is illustrated by a report written in Norway, titled "*Digital divides. Evaluation of the examination in mathematics for 10th grade, spring 2018*". The report noted that some children have better opportunities to succeed not only due to a better standing of the subject, but also to certain digital advantages. One of the reasons why these advantages exist, stems from availability of digital tools to children of different backgrounds among other

44 Cerna, L. (2019). Refugee education: Integration models and practices in OECD countries.
45 Cerna, L. (2019). Refugee education: Integration models and practices in OECD countries.

reasons such as teaching quality and school priorities. Furthermore, the report outlined that students who lack digital tools at home, usually live in worse socioeconomic conditions, which coincided with an immigrant background.[46]

In Europe, access to digital technologies has undergone a consistent improvement, as between 2016-2021 internet access in households went up from 84% to 92% across the EU.[47] Yet, as data from the country reports shows, the access to ICT tools wasn't spread out equally among the population within the countries, and it is unclear how this data differs between native and migrant families.

Figure 4. Internet access among households in EU between 2016-2021



Source: Eurostat

The information regarding the access of migrant kids to ICT tools and the internet varies widely between different EU countries. While all countries to some extent have data on the accessibility of digital tools and the internet coverage within the country, in some cases there is a lack of specific data on the case of migrant children. Hence, **socioeconomic status is sometimes used as a proxy to determine the extent of access to digital tools.**

46 Bjørnset, M et al.(2018). Digital divides. Evaluation of the examination in mathematics for 10th grade, spring 2018.

47 https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Digital_economy_and_society_statistics_-_households_and_individuals

In the case of **Germany**, it is unclear to what extent migrant children experienced a lack of access to digital tools in relation to their native peers. The ICILS study in 2018 on the digital literacy of 8th grade students did not show differences in access to digital tools stemming from one's background. However, a difference was found between families of higher and lower cultural capital. Data showed that 68% of 8th graders from families who have higher cultural capital have access to desktops, laptops and tablets as well as an internet connection. Meanwhile, the corresponding figure for families with lower cultural capital was 64%.[48]

In **Ireland**, based on the available research, the access of migrant children to digital tools and how it compares to native populations remains to be explored. This is because data regarding ICT access in schools does not differentiate between students based on their background. It is worth noting that access to the Internet in schools was affected by the geographical location of the school, to a great extent influenced by the overall penetration of broadband internet. Similarly, data that would differentiate between migrants and non-migrants based on access to digital technology outside of schools was unavailable, with possible differences being attributed to economic circumstances.[49]

The inequalities in access to digital tools created by socioeconomic differences are also visible in Spain. In a survey carried out in **Catalonia** data showed that 20.8% of children between the ages of 10-15, who live in families that make 900 euros or less per month have not used desktops or laptops in the last three months. However, the corresponding figure for those who live in families making 2500 or more euros per month is only 1.4%. [50]

Along with socioeconomic considerations, **another possible factor that could limit the digital access for migrant children as well as nationals is linked to divides between urbanized and less urbanized areas**. In the case of Ireland, the this divide is listed as one of the factors which affects access to broadband internet.[51] Issues were also noted in **Portugal and Croatia** as in both countries the **divide between the respective country's regions affected access to different types of ICT tools and internet**.[52] In the case of Portugal, it made children living in disadvantaged regions reliant on their schools in order to take advantage

48 Eickelmann, B et al. (2019): ICILS 2018# Deutschland: Computer-und informationsbezogene Kompetenzen von Schülerinnen und Schülern im zweiten internationalen Vergleich und Kompetenzen im Bereich Computational Thinking: Waxmann.
49 Merike Darmody (2021) SIRIUS Watch country report for Ireland.
50 Miquel Àngel Essomba and Anna Tarrés (2021) SIRIUS Watch country report for Spain.
51 Merike Darmody (2021) SIRIUS Watch country report for Ireland.
52 Sofia Marques da Silva and Daniela Silva (2021) SIRIUS Watch country report for Portugal; Elli Pijaca (2021) SIRIUS Watch country report for Croatia

of digital tools, while in the case of Croatia the Ombudswoman for Children in Croatia concluded that such divides created overall less opportunities for children in rural areas.[53]

While the reasons for inequalities stated above are noted the most frequently, it is also worth pointing out that even if a household had digital tools, the presence of **many individuals in a household might have led to the need to share digital devices**. Similarly, for those living in refugee camps, issues with the availability of digital equipment and interruptions in internet connection, especially at the start of the pandemic, further limited access to digital tools.[54]

Another factor that impedes educational progress due to poor digital access, can be attributed to the lack of access to study information systems. These systems are used as conduits for maintaining communication among parents, teachers and students all the while allowing to monitor academic progress and assigned tasks. However, in cases where internet is unavailable, or a family does not have digital tools communication with schools is interrupted, making it more difficult to progress at the same rate as one's peers.

To alleviate inequalities when it comes to accessing digital tools, governments of **European countries have launched action plans and other types of initiatives that seek to address the issue and enhance digital inclusion**. However, the specific needs of migrants are in most cases included under the umbrella term of "vulnerable populations" at best and are completely unacknowledged at worst. However, a couple positive examples of sensitivity to migrants' needs do exist.

In **Greece**, efforts have been made to address the needs of migrant children especially those living in migrant accommodation sites, by providing additional funds as well as financing measures to ensure internet access within these locations. As an additional step the Greek government implemented EU decisions regarding migrant education that seek to ensure the right of access to digital tools.[55]

In the **Netherlands**, while policies by the government are designed for children regardless of their background, some non-governmental initiatives exist. In one case, refugee children who were working in digital environments were given laptops as their language courses were carried out in a digital environment.[56]

53 Sofia Marques da Silva and Daniela Silva (2021) SIRIUS Watch country report for Portugal; Elli Pijaca (2021) SIRIUS Watch country report for Croatia
54 Nektaria Palaiologou (2021) SIRIUS Watch country report for Greece
55 Nektaria Palaiologou (2021) SIRIUS Watch country report for Greece
56 Laurinde Koster (2021) SIRIUS Watch country report for The Netherlands

With the onset of the **COVID-19 pandemic** all students had to rapidly transition to some form of distance learning to continue their education. As these classes were carried out in a digital environment, access to ICT tools became crucial. That is why children who were already lower on the socioeconomic spectrum and already faced inequality, saw their participation in digital education disproportionally affected. Despite these findings more research needs to be conducted in order to determine how migrant populations in particular were adversely affected.

The issue concerning the lack of data is pertinent in countries such as Estonia and Lithuania. Here, no research has been done on the extent to which migrant children were affected by the pandemic or how it impacted their access to digital tools.[57] [58] This also makes it difficult to draw comparisons between migrant and non-migrant students affecting the design of comprehensive policies that their specific needs might have required.

In some countries' cases where it was possible to collect data, information showed that migrants, especially **those living in refugee and reception centres were especially disadvantaged** when it came to accessing digital tools.

In the case of **Germany** migrant students living in refugee and reception centres, faced many setbacks as they experienced difficulties in accessing ICT tools. This is due to a shortage of digital tools such as computers and poor internet connection. Following classes was made even more difficult as quarantine measures within the camps closed down common spaces and inhibited any kind of learning. Furthermore, reception centres reported that only 56% of children could access the internet as the existing Wi-Fi capacities were insufficient or unavailable. The lack of computers also meant that 60% of children were not able to use computers and of those who had such access only 14% did not have to share their computer with other individuals.[59]

In Greece, students in refugee camps also encountered problems relating to insufficient access to ICT tools. This is exemplified by 82% of refugee camps reporting that they were not able to provide sufficient access to digital tools and a sufficient internet connection.[60]

Given the inequality in access to digital tools, children with refugee and migrant backgrounds tended to be negatively affected in their academic pursuits. As the case of

57 Eve Mägi, Elisabeth Kendrali and Meeli Murasov (2021) SIRIUS Watch country report for Estonia.
58 Tomas Armalys (2021) SIRIUS Watch country report for Lithuania.
59 Claudia Köhler (2021) SIRIUS Watch country report for Germany
60 Nektaria Palaiologou (2021) SIRIUS Watch country report for Greece

Greece illustrates, the reports of the Citizen Ombudsmen, reported that within camps only 62% of the population was enrolled in schooling and that only 14% of them actually followed their classes.[61] Similarly, for those children living in worse socioeconomic conditions it was more difficult to follow classes then for their more advantaged counterparts. For example, in Germany, data showed that disadvantaged, children including migrants were more likely to share devices leading to less opportunities to participate in class.[62]

It is also worth emphasizing that **COVID-19 school closures hindered the ability of children with migrant backgrounds to practise their linguistic skills.** Under normal conditions children who would have trouble with the country's language could receive face to face instruction and were also able to practise it daily with their peers. Nevertheless, as education moved online, opportunities to practise their language skills became more limited due to migrant children having to stay at home and having limited interaction outside their families.[63] Consequently, in countries such as France and Germany it was noticed that skills pertaining linguistic ability tended to deteriorate.[64]

Aware of the negative consequences of the pandemic and the problems that the changes in schooling might cause, most European countries launched actions plans and initiatives that sought to adapt schools to a more digitized environment and ensure that students have greater access to digital tools. However, many of these efforts were directed at all children or specifically targeted populations perceived as vulnerable due to their socioeconomic status. Nevertheless, in some countries specific initiatives were designed or were aware of the needs of migrant children to ensure that they do not fall behind their native peers.

In **France**, it is noted that at the start of the pandemic educational resources were put online so that teachers would be able to provide learning support to students. While not directly targeting migrant children, it still proved a valuable resource especially as it was and continues to be implemented in classes that welcome migrant students. Similarly, in some cases resources were created specifically for migrant students and made accessible through smartphone applications. At the regional level, public organizations and private foundations that work for inclusion ensured that migrant families would be able to access digital tools.[65]

61 Nektaria Palaiologou (2021) SIRIUS Watch country report for Greece
62 Claudia Köhler (2021) SIRIUS Watch country report for Germany
63 Olga Wasilewska & Agata Gajewska-Dyszkiewicz (2021) SIRIUS Watch country report for Poland.
64 Nathalie Auger (2021) SIRIUS Watch country report for France; Claudia Köhler (2021) SIRIUS Watch country report for Germany
65 Nathalie Auger (2021) SIRIUS Watch country report for France.

In **Germany**, most initiatives at the federal level focused on improving digitization in schools. Yet, at the *lander* level pressure from organizations that support refugees, led to the Bavarian Ministry of Interior taking steps to provide wireless internet coverage in refugee reception centers. However, as the initiative started in July of 2021, its implementation is still expected to take time.[66]

The **Greek** government took steps to provide help to migrant populations and worked together with UNICEF providing access to the Akelius program.[67] One example of such a program is the *Digital Language Learning Course* that seeks to improve language skills of migrant students and is highly adapted to the COVID-19 context as it features blended learning, enabling courses in the case it is needed to move online.[68]

3.2. Digital skills

Digital competences refer to one's ability to use the whole range of digital tools for communication, information and problem solving in a critical and confident manner.[69] The country reports show that socioeconomic conditions affect the capacity to master such skills. This means that groups such as migrant students who tend to find themselves in worse socioeconomic conditions have a more difficult time when it comes to mastering the skills needed to succeed in the digital domain. Such data reflects an overall trend in educational processes, as PISA studies highlight that the educational achievements of migrant students are tied to their sociodemographic backgrounds.[70]

The effects of socioeconomic inequality on digital skills are widely reflected across different European countries, with a noticeable tendency for those coming from disadvantaged backgrounds to face more barriers to mastering digital skills. Nevertheless, the exact **effects of such inequalities in regard to the achievements of migrant students still remains to be explored in depth**.

66 Claudia Köhler (2021) SIRIUS Watch country report for Germany
67 Nektaria Palaiologou (2021) SIRIUS Watch country report for Greece
68 Nektaria Palaiologou (2021) SIRIUS Watch country report for Greece
69 Digital Competence: The vital 21st-century skill for teachers and students. SchoolEducationGateway. (n.d.). Retrieved October 22, 2021, from https://www.schooleducationgateway.eu/en/pub/resources/tutorials/digital-competence-the-vital-.htm.
70 OECD. (n.d.). Chapter 9. Performance and academic resilience amongst students with an immigrant background. Performance and academic resilience amongst students with an immigrant background | PISA 2018 Results (Volume II) : Where All Students Can Succeed | OECD iLibrary. Retrieved December 28, 2021, from https://www.oecd-ilibrary.org/sites/263bde74-en/index.html?itemId=%2Fcontent%2Fcomponent%2F263bde74-en

In **France**, migrant and native children share the same curriculum in their studies, yet due to their socioeconomic backgrounds there is a variation in access to digital tools, consequently leading to differences in digital skills. Furthermore, as interviews show, the language barrier contributes to the gap in digital skills making it harder for migrant students to master digital tools and limits the ability of parents to contribute to digital literacy.[71]

In the case of **Germany,** a study carried out by ICILS in 2013 included a focus on migrant students and their educational achievements in regard to non-migrant populations. Data showed that 8th grade students without a migration background are likely to significantly outperform those students whose parents are immigrants.[72] In 2018 ICILS carried out another study, which looked at the digital literacy of 8th grade students. The study found cleavages along socioeconomic lines as students with lower cultural capital tend to be outperformed by students who come from families with high cultural capital.[73]

Nevertheless, despite differences between migrant and non-migrant backgrounds, **it is important to view migrants as a constitutive group rather than a singular body based on a binary understanding of migrant/non-migrant.** This is because, as observations in Spain show, rather than a person's place of origin, the ability to use digital tools stems from a person's cultural and economic status.[74] This observation is supported by the case of Lithuania, where interview data underlined that differences arise between migrants coming from the same country based on socioeconomic and rural/urban divides, akin to those found within host countries.[75]

Given the lack of concrete data in most countries it is hard to judge how competence gaps between migrant and non-migrant students, affect their educational progress. Nevertheless, based on the available data it is likely that any possible gaps are likely to follow established socioeconomic divides in educational achievement.

Prior to the pandemic, **few countries had in place programs that would address the specific needs of migrant children**. However, as the importance of digital education was emphasized in education plans and agendas, in some cases children with migration backgrounds could have found themselves included as part of a wider set of beneficiaries.

71 Nathalie Auger (2021) SIRIUS Watch country report for France.
72 Eickelmann, B. (2015): Bildungsgerechtigkeit 4.0 | Heinrich-Böll-Stiftung. With assistance of Heinrich-Böll-Stiftung. Available online at https://www.boell.de/index.php/de/2015/04/27/bildungsgerechtigkeit?dimension1=ds_digitale-schule, updated on 9/8/2021, checked on 9/8/2021.
73 Eickelmann, B. (2015): Bildungsgerechtigkeit 4.0 | Heinrich-Böll-Stiftung. With assistance of Heinrich-Böll-Stiftung. Available online at https://www.boell.de/index.php/de/2015/04/27/bildungsgerechtigkeit?dimension1=ds_digitale-schule, updated on 9/8/2021, checked on 9/8/2021.
74 Miquel Àngel Essomba and Anna Tarrés (2021) SIRIUS Watch country report for Spain.
75 Tomas Armalys (2021) SIRIUS Watch country report for Lithuania.

In **Portugal**, a nationwide initiative INCoDe.2030 was developed to increase digital competences, while focusing on promoting aspects related to inclusion and education.[76] Another project was also launched in the country called Creative Communities for Digital Inclusion. It also focused on facilitating digital inclusion especially for those communities that were considered more excluded from the digital world among which were minorities and migrants.[77]

The Ministry of Education, Culture and Science in the Netherlands, seeks to integrate digital skills within the curriculum for primary and secondary education all the while training teachers with skills that would enable this. The goal of the agenda is to ensure that regardless of background and gender students would have similar digital skills and competences.[78]

Norway stands out as a worthy example in terms of ensuring and advancing the digital competences of migrant children. One of the ways that the government tries to guarantee improved digital skills for migrant children is by **launching a digitization strategy for basic education, which specifically included migrant children** by underlining that that teaching support can bridge gaps for students who are yet to master the Norwegian language.[79] Moreover, the Ministry of Education and Research sought to establish a Nordic network for students who recently arrived to the country, which would utilize digital tools, making digitalization a crucial aspect of education.[80] Another important aspect of developing the digital skills of migrant students can be seen at the local level, as in the case of the Fjell municipality. Here an initiative equipped students who recently came to Norway and speak a minority language with digital devices and actively uses them in teaching and academic processes.[81]

The **onset of the pandemic and the subsequent digitalization of education showed the importance of digital skills**. However, it is hard to measure the extent to which children with migrant backgrounds were affected as the available data ranges from migrants having digital skills equivalent to those of nationals to a complete lack of data on digital skills of migrant children.[82] Therefore, it is likely that the key factor which determined the ability

76 Government of Portugal. INCODE.2030.
77 Sofia Marques da Silva and Daniela Silva (2021) SIRIUS Watch country report for Portugal
78 Laurinde Koster (2021) SIRIUS Watch country report for The Netherlands
79 Kunnskapsdepartementet.(2017). Framtid, fornyelse og digitalisering. Digitaliseringsstrategi for grunnopplæringen 2017–2021 [Future, renewal and digitalization. Digitalization strategy for the primary and secondary education and training 2017-2021]. https://www.regjeringen.no/contentassets/dc02a65c18a7464db394766247e5f5fc/kd_framtid_fornyelse_digitalisering_nett.pdf
80 Fred Carlo Andersen (2021) SIRIUS Watch country report for Norway
81 Fred Carlo Andersen (2021) SIRIUS Watch country report for Norway
82 Nektaria Palaiologou (2021) SIRIUS Watch country report for Greece

to continue education stemmed from socio-economic conditions of the family the child is from and the educational background of the parents rather than their ethnic background.

The most decisive way in which the ethnic background could have affected the child's ability to continue their education is due to a language barrier, given that a child had did not have sufficient time to master the language prior to the pandemic. The issue would have been especially pertinent given that children had to use online systems in a language that's not native to them to access their homework assignments, grades and other information relating to their studies. In the cases where they were able to follow their classes, it could be assumed that they might not have fallen behind in relation to their peers. Nevertheless, given the various issues they are more likely to face, digital learning might have slowed down their academic progress. The **most devastating effect would have been for those children who had to drop out**. As the case of Bulgaria illustrates, having poor grasp of the Bulgarian language combined with digital learning entailed challenges led to higher dropout rates especially among unaccompanied migrant minors.[83] **One possible positive aspect of digital learning** during the pandemic is that in Estonia and the Netherlands the overall digital competences of students seem to have improved over the pandemic. [84]

The pandemic period also **didn't see any specific initiatives by national governments to target migrant children** and instead the focus was on all children, usually those living in worse socioeconomic conditions. This meant that children in these positions received specific attention as in the case of Lithuania and Slovenia, where digital tools such as laptops and tablets were handed out to children who faced issues in continuing education due to a lack of digital tools.[85] In some cases NGOs stepped in to help as in the case of Italy where the Salesian Solidarity with Italy organization provided laptops and tablets to vulnerable students and supported migrants and refugees in Sicily.[86]

3.3. Parental and family support

Studies show that the **involvement of parents in the educational process** of their child can prove beneficial when it comes to enhancing their academic achievements. Similarly, such involvement can play a positive role when it comes to the social and psychological aspects of schooling by enabling the child to form meaningful social relations and contributing to

83 Bistra Ivanova (2021) SIRIUS Watch country report for Bulgaria
84 Laurinde Koster (2021) SIRIUS Watch country report for The Netherlands; Elisabeth Kendrali and Meeli Murasov (2021) SIRIUS Watch country report for Estonia.
85 Tomas Armalys (2021) SIRIUS Watch country report for Lithuania; Sabina Autor and Janja Žmavc (2021) SIRIUS Watch country report for Slovenia.
86 Micaela Valentino (2021) SIRIUS Watch country report for Italy.

their academic engagement.[87] However, in the case of parents with migration backgrounds it becomes more difficult to foster meaningful parental involvement as barriers based on language and understanding the educational system might arise. Furthermore, with the onset of the COVID-19 pandemic, problems arose for native and migrant parents alike, as some lacked digital resources such as computers or tablets to allow their children to follow classes from home or did not have the need competences to sufficiently support the digital learning process.[88] However, in the case of non-native families language barriers became an additional issue.

As schools are becoming increasingly digitalized, especially following measures introduced during the pandemic, **it is becoming increasingly important for parents to be digitally literate** in order to become involved in the educational processes of their child. While governments and various organizations can help address issues relating to digital skills, sufficient data is required to ensure that relevant actions can be taken. In the case of parents with migrant backgrounds this issue is especially pertinent as country reports point to a lack of available data that would allow to gauge the digital competences of migrant parents. That is why most of the data regarding the digital skills of migrant parents stems from triangulation based on surveys, socioeconomic background, and linguistic skills. This showed that migrant parents tend to have lower digital skills then their native counterparts.

Norway's results were in line with the findings in other countries, yet it stands out as an exception, due to a report conducted in 2010 with a particular focus on migrants. The "Immigrants online" report's analysis, with the exclusion of Swedish immigrants, covered the 5 biggest non-national populations (Polish, Pakistani, Iraqi, Somali and Vietnamese). Overall, a survey included in the report revealed[89]:

- Immigrants with little experience in technology numbered 41% vs. 27% for Norwegians.
- Around 83% of immigrants had a computer at home.
- PC usage among immigrants reached 90%, with 70% using digital technology every day and 92% using it at least once a week.
- When it came to work, slightly over 25% of immigrants used a computer, with the corresponding figure for Somalians being 19% while the figure for those with Vietnamese backgrounds reached 36%.

87 Alieva, A. (2021). 'Parental involvement in formal education', NESET Ad hoc report no. 1/2021.
88 Alieva, A. (2021). 'Parental involvement in formal education', NESET Ad hoc report no. 1/2021.
89 Guthu, L et al.(2010). Innvandrere på nett. En analyse av innvandreres digitale kompetanse [Immigrants online [An analysis of immigrant's digital competence], https://www.kompetansenorge.no/statistikk-og-analyse/publikasjoner/Innvandrere-pa-nett/

Despite the lack of concrete data, it is highly likely that parents of migrant children would have been less able to help their children. This stems from the fact that they more frequently find themselves in worse socioeconomic conditions, do not have a history of using digital tools in their country of origin, and lack understanding of the language of instruction.

In the case of **Estonia and Lithuania**, electronic study information systems enable parents to track the educational progress of their child all the while providing a medium to communicate with the teachers.[90] However, such systems are usually based on the national language and require knowledge of how to use and navigate digital tools. This creates an intersecting problem of digital skills, accessibility, and language. In cases, where such parents are less proficient in utilizing digital devices, it might prove difficult to monitor the situation of their child at school. Similarly, even if they can navigate the website, insufficient linguistic knowledge, could make it difficult to understand the website or information regarding schooling. This could also negatively affect the educational experience as barriers in fostering communication with teachers might prevent migrant parents from intervening on the child's behalf or passing down important information.

In the case of **Slovenia**, a similar sentiment is expressed in regard to language. According to data, while differences in digital abilities between migrants and nationals were not an issue, the ability of migrant parents to speak Slovene prevented them from participating in the education of their children to the fullest extent.[91]

However, **some exceptions** in the results could be observed in Germany, Lithuania, and Slovenia which reported that the skills of migrant parents and nationals are similar. The reason for this divergence could lie in the way survey data was collected. In the case of Germany, the available survey findings focused only on the region of North-Rhine Westphalia, thus not taking into account federal dynamics as a whole.[92] In the case of Lithuania and Slovenia, while migrant populations might have been included in the survey their relatively small numbers, might have overrepresented certain socioeconomic groups, creating a perception of digital skill equality.[93]

90 Eve Mägi, Elisabeth Kendrali and Meeli Murasov (2021) SIRIUS Watch country report for Estonia; Tomas Armalys (2021) SIRIUS Watch country report for Lithuania.
91 Sabina Autor and Janja Žmavc (2021) SIRIUS Watch country report for Slovenia.
92 Claudia Köhler (2021) SIRIUS Watch country report for Germany
93 Tomas Armalys (2021) SIRIUS Watch country report for Lithuania.; and Slovenia

In order to address digital skill gaps, **European countries and NGOs implement various programs targeted at people who seek to improve their digital skills**. Nevertheless, such programs frequently overlook the specific needs of migrants. In the case of Estonia and Lithuania, no digital skill improvement programs targeted migrants directly. Instead, migrants would have to rely on initiatives based on meeting certain criteria. These could include speaking the native language, being under a certain age or requiring a certain professional status such as being unemployed or a student at a VET facility.[94] In other countries such as France, Ireland or the UK migrants would have to rely on local initiatives or NGOs to help migrant communities improve their digital skills and teach them to use online tools which facilitate daily life.[95] The most developed systems for teaching digital skills were found in the Netherlands and Norway.

In the case of the **Netherlands**, the central government allocated all municipalities with 60 million euros to help citizens improve their language and mathematical skills. Starting from 2018, Dutch municipalities were also able to use these funds to organize workshops targeting the improvement of digital skills. The contribution of libraries also helped address digital skills needs.[96]

In **Norway**, migrants have the ability to benefit from adult education courses which emphasize the importance of digital skills. It is also important to note that the Directorate for Integration and Diversity offers professional recommendations for municipalities how participants in the introductory program for adult immigrants can receive adapted and relevant training in digital skills.[97]

The COVID-19 pandemic and related school closures enhanced the reliance of the education system on the support provided by parents and the reliance on digital tools. This was especially difficult for migrant children as their parents usually had lower digital skills to begin with or due to their professions were less available to support their children's digital education. In the case of the UK, this proved problematic as refugees were overrepresented among those considered to be essential workers, yet were not always officially recognized as such by the government putting them at a disadvantage to their officially recognized peers.[98] A similar issue was outlined in Germany, where the considerable presence

94 Eve Mägi, Elisabeth Kendrali and Meeli Murasov (2021) SIRIUS Watch country report for Estonia; Tomas Armalys (2021) SIRIUS Watch country report for Lithuania.
95 Nathalie Auger (2021) SIRIUS Watch country report for France; Merike Darmody (2021) SIRIUS Watch country report for Ireland; Nicola Horsley (2021) SIRIUS Watch country report for the UK
96 Laurinde Koster (2021) SIRIUS Watch country report for The Netherlands
97 Fred Carlo Andersen (2021) SIRIUS Watch country report for Norway.
98 Nicola Horsley (2021) SIRIUS Watch country report for the UK

of migrant workers in essential professions or jobs that did not offer the possibility of working from home, meant that they could not support the digital education of their children who stayed at home.[99] The latter issue was also observed in Poland due to migrants working in the service sector, which made working from home arrangements difficult.[100] Another pertinent issue inhibiting migrant parents from supporting their children stemmed from **poor knowledge of the local language**. This especially affected young migrant pupils, because for them teacher-parent contact became the dominant method of communication, that allowed younger students to stay updated on assignments and other schooling information.[101] Given that language barriers were encountered, ruptures in the education process were likely to appear.

Since the pandemic made children more reliant on their parents and digital tools, despite the lack of data at the moment**, it is likely that certain differences will arise in the educational and learning progress of migrant children and their native peers**. This is due to the fact that families from better off socioeconomic backgrounds, had more opportunities to support their children and mitigate psychological impacts then their counterparts from disadvantaged backgrounds.[102] Another important aspect that can setback migrant children in particular is articulated in the Poland country report where it is noted that if parents cannot sufficiently support their children, teachers should do their best to intervene, providing, help and guidance to children. Nevertheless, this was not always possible as **some teachers lacked the needed skills to work with non-Polish speaking pupils**.[103] Hence, children from migrant and refugee backgrounds are more likely to face educational setbacks that could extend into the near future**.** However, an optimistic outlier can be found in the case of the Netherlands. While it is recognized that the pandemic had negative effects, it nevertheless provided an opportunity for migrant families to reduce the digital skills gap. As digital tools became an ingrained part of education, students had to adjust to the change, with ICT becoming not only a form of leisure but also an indispensable part of education, thus creating an opportunity to develop digital literacy skills.[104]

To address the issues that became apparent during the pandemic, various **initiatives sprang up within European countries** as a way to ensure that possible negative effects of the pandemic are reduced for children that come from vulnerable backgrounds. The measures that were implemented, while not necessarily being designed to address the needs of migrant

99 Claudia Köhler (2021) SIRIUS Watch country report for Germany
100 Olga Wasilewska & Agata Gajewska-Dyszkiewicz (2021) SIRIUS Watch country report for Poland.
101 Tomas Armalys (2021) SIRIUS Watch country report for Lithuania.
102 Claudia Köhler (2021) SIRIUS Watch country report for Germany
103 Olga Wasilewska & Agata Gajewska-Dyszkiewicz (2021) SIRIUS Watch country report for Poland.
104 Laurinde Koster (2021) SIRIUS Watch country report for The Netherlands

parents, were nevertheless able to alleviate some of the concerns they might have encountered. Depending on the country, measures ranged from trying to disseminate information in a multilingual format to providing digital tools. Furthermore, in some cases the measures proved to be quite extensive.

In the case of **Germany** steps were taken at the federal and local levels to address the needs of parents, in some cases focusing specifically on migrant and refugee parents[105]:

- An initiative designed by a civil society actor created a hotline so that parents could receive information or counselling on issues that concerned them. Prior to the drying up of funding, the hotline provided information in 14 languages and was used by migrant parents.
- An emergency care program called Notbetreuung, was implemented to address the needs of parents who had children under 12 years old and could not work from home or their child needed special support. If such criteria was met the parents could then send their children to school. One criterium that frequently made children eligible for such support were shortcoming in command over the German language.
- As a means of addressing the lack of digital skills that parents with a migrant or refugee background might experience, some municipalities offered workshops and seminars on the topic specifically for migrant parents.

In Spain, **Catalonia's autonomous government**, also sought to improve the digital skills of migrants through a training program designed in several languages. Civil society actors also played a role, as the Barcelona Education Consortium launched a unique initiative where an individual would facilitate migrant families' communication with schools by acting as a translator.[106]

In **Poland**, schools featured teacher's/cultural assistants, who would be selected from non-teaching staff. They would then play various but vital roles which included the dissemination of information between teachers, parents and students, providing support in distance learning activities as well as assisting students from other backgrounds to integrate within the community and receive psychological support.[107]

105 Claudia Köhler (2021) SIRIUS Watch country report for Germany
106 Miquel Àngel Essomba and Anna Tarrés (2021) SIRIUS Watch country report for Spain.
107 Olga Wasilewska & Agata Gajewska-Dyszkiewicz (2021) SIRIUS Watch country report for Poland.

3.4. Online safety and harassment

The increasing use of digital technologies in the daily lives of younger generations enables them to stay in touch at an unprecedented level all the while enabling access to various types of information. As these technologies become more integrated into various aspects of their lives including the field of education, certain issues must be accounted for with relation to **online safety, cyberbullying and harassment**. Much like bullying in real life, cyberbullying is the perpetual harassment of a chosen victim due to perceived differences and inferiority, through the use of digital technologies and Internet services such as social media.[108] Addressing the phenomena is important, because even though it takes place digitally, its effects can be felt in the physical world due to increased negative physical and mental affects. As children with migrant backgrounds tend to face discrimination and violence in the physical domain, the digital world provides an additional medium which puts them at risk. Their situation is made all the more precarious as they usually have less experience and information when it comes to using digital tools. Thus, they are more likely to find themselves in unwanted situations or targets of individuals who seek to take advantage of their vulnerability.[109]

When it comes to analysing online safety and the digital well-being of migrant children, a pertinent issue is the lack of consistent and substantial data. This makes it hard to assess the actual extent to which children with migrant backgrounds were harassed in the digital environment.

Studies in the **Netherlands** show that students with a migrant background such as those who come from Moroccan and Surinamese families tend to experience bullying at higher rates then native students. However, it is difficult to judge to what extent bullying translates into cyberbullying. In this case only broad figures exist showing that migrant children tend to be more frequently affected by cyberbullying both as perpetrators and victims. Based on gender differences non-western migrant girls are more frequently victims of cyberbullying then western or non-migrant girls, while no differences exist between boys regardless of their ethnicity.[110]

In **Lithuania** studies show that cyberbullying rates have been increasing over the last 10 years. However, as these numbers did not mention migrants NGOs working with refugee populations were

108 Smith, P. K., Mahdavi, J., Carvalho, M., Fisher, S., Russell, S., & Tippett, N. (2008). Cyberbullying: Its nature and impact in secondary school pupils. Journal of child psychology and psychiatry, 49(4), 376-385.
109 Ratajczak, M., & Galzignato, E. (2019). Migrant Children and Cyber-violence. The Problem of Hate Speech in Italy and Poland. Peace Human Rights Governance, 3(3).
110 Laurinde Koster (2021) SIRIUS Watch country report for The Netherlands

asked about the issue. According to the interviews conducted, there was no noticeable difference between bullying and cyberbullying rates between refugee and native populations.[111]

Similarly, in the cases **where data is available, it can point to contradicting results** making it difficult to make reliable judgments on the extent of cyberbullying. In Norway, a study from 2007 point towards the fact that people with immigrants are less accepted and are more likely to face attacks. A studied carried out 8 years later showed that a student's background is unlikely to make them more prone to various forms of abuse. Meanwhile a comparative study showed a little over 30% of immigrant parents reported that their children had been exposed to bullying, while for Norwegian parents the corresponding figure is 17%.[112]

In some cases, countries that have smaller immigrant populations, **national minorities are used as proxies in an attempt to determine the extent of online bullying trends**. In the case of Estonia, no data was available on the digital well-being of migrant children. Therefore, the sizeable Russian minority was used as a proxy for migrant children. Here, data shows that Russian speaking-children experienced more bullying than their Estonian counterparts.[113]

Given the negative impact of bullying and cyberbullying **countries have taken various steps to tackle the problem**. This includes various branches of government working together to draft laws that aim to reduce instances of bullying as well as making proclamations and offering recommendations that seek to eliminate bullying from the educational environment. These efforts also include the funding of various initiatives. In the Netherlands, the Anti-Bullying Act mandates that schools ensure the social safety of students. Nevertheless, it is left for the schools themselves to decide as to how this will be done and which of the tools provided by the government will be used. [114] However, these initiatives generally do not specifically consider migrant children.

However, despite these positive developments it is noted that some countries recognize **shortcomings within anti-bullying policies.** These issues happen at various levels. In some cases, they stem from problems within the regulatory frameworks that are established in a country. In other instances, the problems arise when teachers or other responsible authority figures have to confront instances of harassment themselves.

111 Tomas Armalys (2021) SIRIUS Watch country report for Lithuania.
112 Fred Carlo Andersen (2021) SIRIUS Watch country report for Norway
113 Eve Mägi, Elisabeth Kendrali and Meeli Murasov (2021) SIRIUS Watch country report for Estonia.
114 Tomas Armalys (2021) SIRIUS Watch country report for Lithuania.

In the case of the **UK**, a 2019 Government white paper underlined that measures and initiatives to tackle bullying exist. However, their lack of coherency between regulations fails to sufficiently prevent exposure to harmful content.[115]

In **Norway**, problems tend to lie in the experience of some teachers when encountering harassment. This means that educators do not always know how to help students who encountered race-based harassment or failing to follow up on cases of reported bullying.[116]

Following the **outbreak of COVID-19** and the ensuing lockdowns, education in the EU moved to the online space. This posed a risk to younger children who had less experience using digital tools and as a result were more susceptible to harmful and offensive content online. Similarly, some teachers also lacked training in using digital tools and computers. Hence, the start of the pandemic and its early months created risk for online safety and cybersecurity.

One way this was observed is through the **increased cyberbullying rates**, with the only exception being the Baltic countries where nearly a third of students reported having seen less bullying.[117] While the increased rates of harassment touched many students coming from marginalized backgrounds *(e.g., those living economic precarity, belonging to LGBT communities, etc.)* as most forms of harassment moved from the physical to the digital space, **populations that were of a minority background were also heavily affected by these trends.**

In **Greece**, people living in refugee camps were frequently stigmatized because of the poor living and hygiene conditions with anxieties and weariness becoming more accentuated following the spread of COVID-19 in the country. Combined with longer isolation periods for those in refugee camps, this led to the unwillingness of local populations to accept refugee children into their communities. However, it is noted that cyberbullying was not a major issue as refugee children lacked access to digital tools.[118]

Data from **Norway** looked at the prevalent trends of digital media as a whole and showed that the digital landscape became more intense as stigmatization and inflammatory rhetoric became increasingly commonplace. Similarly, some young people felt uneasy about the fact that certain

115 Nicola Horsley (2021) SIRIUS Watch country report for the UK
116 Fred Carlo Andersen (2021) SIRIUS Watch country report for Norway
117 Eve Mägi, Elisabeth Kendrali and Meeli Murasov (2021) SIRIUS Watch country report for Estonia.
118 Nektaria Palaiologou (2021) SIRIUS Watch country report for Greece

public discourse channels focused on infection rates within certain areas of cities rather than accounting for the interconnected nature of social factors and infection rates. Hence, shining a spotlight on the wrong factors lead to increased prejudice.[119]

In the **UK** research highlighted that bias against certain populations during the pandemic was based on established trends, with more people calling for anti-immigration measures. Yet, occurrences of xenophobia against Asian populations was noticed, with children of perceived Asian heritage being targeted more frequently and harassed.[120]

In digital classrooms, **harassment took on new forms** with classes moving online during the ensuing lockdowns. Here, while the teachers still lacked experience using the new conferencing platforms students would interfere with the class by adjusting classroom settings. Another phenomenon was *"zoom bombing"* the class, where the link to a class would be shared with third parties, which would then join the lesson with the intention to disrupt the lesson, by showing provocative material or bullying those present. Other means of harassment were more direct with students sending their peers insulting messages or taking screenshots, that could then be used to mock the student.[121] However, it is **unclear whether migrant and refugee children were more frequently affected** by this in comparison to their native peers and how the numbers changed with students becoming more adept at using digital tools, effectively being able to stop some instances of cyberbullying.

Overall, there is a **lack of information on how migrant children could have been affected by increased instances of cyberbullying** and the long-term effects of the phenomena. Drawing meaningful conclusions on the effects of digital harassment is made all the more difficult by variations in the backgrounds of migrant children. As different inequalities tend to overlap, they react with each other in ways that are hard to predict as in the case of refugee children in Greek camps whose instance of cyberbullying was lower than children who might have had a better access to digital tools.

Overall, **few governments launched new programs designed to reduce the rise in cyberbullying** and harassment specifically due to the pandemic. In the cases that governments decided to act, various measures were implemented and rather than targeting specific groups sought to address cyberbullying as a whole.

119 Fred Carlo Andersen (2021) SIRIUS Watch country report for Norway
120 Nicola Horsley (2021) SIRIUS Watch country report for the UK
121 Tomas Armalys (2021) SIRIUS Watch country report for Lithuania.

In the case of **Italy**, the country's legislator set out to regulate cases on cyberbullying, by enacting the "Ferrara Law", containing provisions that seek to limit the phenomena. The actions outlined in this document seek to educate the youth on the responsible use of contemporary media. Furthermore, the document provides a definition of cyberbullying and allows minors over 14 to have information about them removed from the Internet. Similarly, the document envisions steps that would monitor cyberbullying, while also designing campaigns that inform the general population about the issue and prevent it. It is also worth noting that a fund was created to fight against cyberbullying.[122]

The **Greek government partnered up with various NGOs and educational institutions** leading to the implementation of several projects. The projects included not only students but also teachers in parents in order to disseminate information about digital safety and cyberbullying. To further the goals of the project's seminars and conferences where some of the means to train and distribute information. The Ministry of Education also undertook various measures by instituting committees that would address instances of harassment in schools and included various socially orientated stakeholders in the process.[123]

In **Spain**, a campaign called #HeyBrian was launched targeting young individuals. The goal of the campaign was to encourage the target audience to use digital tools and the internet in safe and responsible ways. This was done through various information campaigns highlighting the dangers of revealing personal details, sharing of sexual content and other problems that are related to the digital domain.[124]

In **Poland**, the Ministry of Digital Affairs and Naukowa i Akademicka Sieć Komputerowa (NASK) launched a campaign designed specifically for parents called "Don't Lose Your Child on the Internet" which provided parents with information and educational material to allow them to ensure the safety of their children. Similarly NASK provided various form of media and content for kids to teach them about Internet use and safety. However, as all these initiatives were in Polish, it is hard to judge the extent to which migrant parents and children could benefit.[125]

122 Micaela Valentino (2021) SIRIUS Watch country report for Italy.
123 Nektaria Palaiologou (2021) SIRIUS Watch country report for Greece
124 Miquel Àngel Essomba and Anna Tarrés (2021) SIRIUS Watch country report for Spain.
125 Olga Wasilewska & Agata Gajewska-Dyszkiewicz (2021) SIRIUS Watch country report for Poland.

3.5. Inclusive digital pedagogies

Digital pedagogy is the process of introducing **digital tools into the educational process within classrooms or through distance or blended learning**. By implementing such measures, schools and governments create opportunities for students to enhance their learning experience.[126] Furthermore, the integration of digital tools into educational processes goes beyond improving test scores by carving out a space in which it can become easier to breakdown sociocultural barriers and facilitate the integration of students by providing linguistic and other types of support.

Overall, data from the country reports points to **disparities when it comes to digital pedagogies within classrooms and their accessibility to migrant children.** While most countries have a system which aims to facilitate the integration of migrant students, the extent to which digital solutions are included within such programs differs from country to country. In countries such as Germany and the United Kingdom while some form of digital tools exist in classrooms, there still remains a need for measures that would specifically be designed to help children with migrant backgrounds.[127] In the Lithuanian education system, which emphasizes the importance of digital education, the use of digital tools in *"equalizing"* classes, which are designed to help migrant children integrate, depends heavily on the teacher's initiative.[128] Meanwhile in Ireland policies for digital pedagogies and education are developed for the student body as a whole rather than focusing on the particular needs of non-native students.[129]

However, some countries developed comprehensive systems that seek to **maximize the use of digital solutions** in education in order to ensure that migrant students are able to have a holistic educational experience.

The **Netherlands** have implemented various policies that seek to encourage the use of ICT in classrooms, which also includes a particular focus on migrant children. As a means of helping their adjustment to the Dutch society, efforts are made to ensure that the beneficiary population has an opportunity to learn Dutch in an engaging way. This is done through the use of multimedia tools such as animated books and games that adapt to a child's learning needs.[130]

126 Coovadia, H., & Ackermann, C. (2021). Integrating digital pedagogies into a typical student learning lifecycle and its effect on exam performance. Accounting Education, 30(1), 42-62.
127 Claudia Köhler (2021) SIRIUS Watch country report for Germany. And UK
128 Tomas Armalys (2021) SIRIUS Watch country report for Lithuania.
129 Merike Darmody (2021) SIRIUS Watch country report for Ireland.
130 Laurinde Koster (2021) SIRIUS Watch country report for The Netherlands

In the case of **Norway**, the field of digital pedagogy is led by NAFO, a division of the Faculty of Education and International Studies at Oslo Metropolitan University. They focus on the development and dissemination of educational resources in multiple language. Some of these resources (Tema Morsmål; Skolekassa; Fleksibel Opplæring) are run by the division. The latter is especially interesting as it allows speakers of Arabic, Somali and Tigrinya to pursue a bilingual education in math and science. Some of the resources created by NAFO also seek to provide help and recommendations to teachers through the provision of resources focusing on working in multicultural environments.[131]

In **Greece**, the Committee for Migrant Education emphasizes the development of learning plans that would be responsive to the educational needs of students and would include a focus on digital skills while accounting for possible language barriers that might be present. Similarly, the program also seeks to recruit teachers that have experience with migrant backgrounds to facilitate the implementation of such procedures.[132]

Spain serves as a positive example through the digitalization of reception classrooms. According to data from the region of Catalonia, these classrooms which aim to help students with a migrant background to integrate, feature classes with the greatest access to digital tools in comparison to non-reception teaching spaces. Furthermore, to further ensure that students would be able to benefit from these tools, reception classrooms feature lower student to teacher ratios then is common.[133]

An important aspect that touches upon the digital inclusion of children with migrant backgrounds is the **recognition of the specific needs that might be present to help them take full advantage of such opportunities**. However, in this case the policies of European governments tend to be limited. This is because the overarching tendency is to focus on digital inclusion for all children. On the other hand, it is worth pointing out that in some country's efforts are made to recognize the needs of migrant students as part of "vulnerable students". For example, in France migrant children could be included under the umbrella term of "disadvantaged" populations, while in Slovenia migrant children were acknowledged as a "vulnerable" group without any further steps.[134]

131 Fred Carlo Andersen (2021) SIRIUS Watch country report for Norway
132 Nektaria Palaiologou (2021) SIRIUS Watch country report for Greece
133 Miquel Àngel Essomba and Anna Tarrés (2021) SIRIUS Watch country report for Spain.
134 Nathalie Auger (2021) SIRIUS Watch country report for France; Sabina Autor and Janja Žmavc (2021) SIRIUS Watch country report for Slovenia.

Following the **implementation of lockdowns**, governments would provide little help to develop more equitable educational environments or design inclusive digital pedagogies and solutions.[135] In some cases the migrant students could receive help if they were part of a vulnerable population.

In **France,** students who were deemed vulnerable could have access to tools designed to help them adjust to the new system of learning. However, it is hard to appreciate the possible benefits such systems had, as French laws forbid the gathering of ethnic data and statistics.[136]

The **Lithuanian case** shows that the government took steps to alleviate the possible challenges that children from disadvantaged background might face. The main way to do so was linked with providing such pupils with ICT tools such as tablets and laptops that would enable them to attend classes. Yet, the ability of children with migrant backgrounds to benefit from such an opportunity remains unknown as data on the initiatives did not consider the background of the beneficiary populations.[137]

It is worth pointing out that **some positive trends** emerged throughout the course of the pandemic. In the case of Greece, the Ministry of Education and UNICEF in collaboration with various non-formal education actors organized online learning events for refugee students throughout March and May of 2020, with 77% of children with refugee backgrounds participating in such sessions.[138] At the regional and local levels, schools became more accustomed to the changes induced by the pandemic, they were able to find ways to adapt to the specific needs of their students. In the Netherlands, schools with migrant populations sought to ensure that their families would be able to follow developments by translating important documents to ensure the dissemination of information.[139] Meanwhile, the Catalan regional government hired additional staff for the 2020/2021 academic year to provide a more personalized educational experienced to students in reception classes.[140]

135 Nicola Horsley (2021) SIRIUS Watch country report for the UK; Laurinde Koster (2021) SIRIUS Watch country report for The Netherlands
136 Nathalie Auger (2021) SIRIUS Watch country report for France.
137 Tomas Armalys (2021) SIRIUS Watch country report for Lithuania.
138 Nektaria Palaiologou (2021) SIRIUS Watch country report for Greece
139 Laurinde Koster (2021) SIRIUS Watch country report for The Netherlands
140 Miquel Àngel Essomba and Anna Tarrés (2021) SIRIUS Watch country report for Spain.

4. Looking ahead: The future of inclusive digital education for migrant children

Across Europe, countries have reopened schools and prioritised keeping schools open even in case of new outbreaks. Despite the lack of concrete data, governments have recognised that school closures have had significant impact on educational progress, particularly of vulnerable children such as migrants[141]. However, developments and innovations in digital education will likely not be reversed. In fact, the pandemic has ignited interest of education stakeholders and EdTech communities in digital education tools and ample research exists on how the use of digital tools can enhance the educational experience. Therefore, education systems in Europe have an important task to ensure that continued innovation and digitalisation in education does not enhance inequalities even further, but rather focus on closing the pre-existing divide, enhanced by COVID-19.

4.1. Main challenges ahead for inclusive digital education for migrant children

Whether or not the pandemic will continue to cause school closures and influence the education system, it has revealed fundamental flaws in education systems which will affect the quality of digital education for migrant children in the upcoming years.

4.1.1. Research and policy gaps

The most frequently listed challenges to inclusive digital education for migrant children across the 17 countries involved in the study was the lack of specific policies focusing on the education of children with a migrant background. The lack of recognition of migrant children as particular category of children prevents governments from addressing their needs through targeted support measures.

There is a lack of understanding in **Croatia** that migrant children (even if there is a low number of children) should receive specific focus just like every other vulnerable group.[142] The main gap in existing policies and strategies is the lack of concretization and categorisation of the targeted group and unifying pupils into one group, namely "pupils (students) studying in **Finland"**.[143]

141 Dunajeva, J., Bankauskaite, R., Siarova, H., et al., Education and youth in post-COVID-19 Europe : crisis effects and policy recommendations, European Parliament, 2021, https://data.europa.eu/doi/10.2861/047424
142 Elli Pijaca (2021) SIRIUS Watch country report for Croatia
143 Nafisa Yeasmin and Pavel Tkach (2021) SIRIUS Watch country report for Finland

It appears that in **France**, the main gap in current policies concerns the failure to take into account the issue of migrant pupils and families in the provision of digital access to their schooling: migrant pupils are categorised as a vulnerable group, but nothing is specifically proposed on the issue of digital access and in particular their language needs.

There is a direct link between the lack of policies and the lack of research. The development of the current report has shown that only little and anecdotal evidence exists on the difficulties faced by migrant children during the pandemic, and in relation to digital education in general. Without clear, concrete evidence on gaps and challenges, policymakers are less supported to develop targeted support measures for this group of children. Quotes from the following country reports demonstrate this finding:

The digital skills of migrant children have not been studied in detail in **Estonia**. In most cases, the results of testing or surveys are presented only by the language of instruction of the school or the language of the test, whereas the background of the student is not considered.

Empirical evidence is needed to guide policy-making in digital inclusion of migrant children. To date, there is very little research evidence available comparing digital learning outcomes of migrant-origin and native children in **Ireland**. It is very difficult to identify challenges in the face of lacking research evidence.

There is one main gap identified during this desk-research with is the lack of national numbers of the different groups that work with digital education in the **Netherlands**. Thus, there is no real overview of issues within different groups (migrant and non-migrant children) concerning digital inclusion. These lack of numbers makes that this desk-research can only talk "in general" rather than specifying the issues in different groups.

In Germany, the structure of the education system is a challenge for overall educational inclusion. The authority allocated to the federal states in all issues concerning education comes with considerable barriers in terms of coordinated nation-wide efforts and strategies for inclusion.[144]

The French country report highlighted furthermore that public-private partnerships, and consultations with migrant families are not widespread. This is perceived by the expert as a key challenge for the future, as it limits understanding of the specific needs of migrant children in education.[145]

144 Claudia Köhler (2021) SIRIUS Watch country report for Germany
145 Nathalie Auger (2021) SIRIUS Watch country report for France.

The solutions in this regard are clear. Country experts and stakeholders recommend the development of holistic strategies of educational inclusion of the immigrants into the education system with concrete measures and target groups, and develop a system of social, financial support for the digital inclusion of migrant pupils.[146] Migrant children should be recognised as a group of students who need special focus in certain segments of school policy (e. g. multilingual language policy).[147] Long term programmes to provide the population with digital competences seem to work better than ad-hoc initiatives, so focus should be placed on structural interventions.[148] One approach could be to find systemic solutions for many successful practices implemented by schools and NGOs for inclusive education of immigrant students.[149]

4.1.2. Continuation of existing gaps in access and skills

The process of digitalisation of education is likely to affect educational and pedagogical processed in the classroom and enhance the reliance of learners on ICT tools, both in class and at home. However, the increased reliance on digital tools does not necessarily coincide with increased access to ICT tools and acquisition of digital skills. The continued gaps in access to, and use of ICT tools are perceived by many interviewed stakeholders as one of the main challenges towards digital inclusion for migrant children in the near future.

The issue of migrant households in **Finland** is that often such households cannot afford several computers or laptops for the family. The Finnish education system responded to that by providing laptops or tablets to pupils in need, which helped (or helped them to) preserve continuity in learning processes during COVID-19. However, without an increase in disposable household incomes, it will not be possible to completely improve the situation on the longer term.[150]

In **France**, the problem of equipment was resolved during the pandemic, but the remaining problem is that of connection, which prevents migrant families from having Internet access at home.[151]

Currently, the **Greek** provisions regarding digital equipment are to lend seven tablets per school for vulnerable students. However, in Intercultural Schools, where the majority of students come from vulnerable refugee/migrant families, seven tablets are not enough to cover the needs of the majority of students.[152]

146 Nafisa Yeasmin and Pavel Tkach (2021) SIRIUS Watch country report for Finland
147 Sabina Autor and Janja Žmavc (2021) SIRIUS Watch country report for Slovenia.
148 Sofia Marques da Silva and Daniela Silva (2021) SIRIUS Watch country report for Portugal
149 Sabina Autor and Janja Žmavc (2021) SIRIUS Watch country report for Slovenia.
150 Nafisa Yeasmin and Pavel Tkach (2021) SIRIUS Watch country report for Finland
151 Nathalie Auger (2021) SIRIUS Watch country report for France
152 Nektaria Palaiologou (2021) SIRIUS Watch country report for Greece

Migrant students in **Portugal** are more likely to come from disadvantaged families and to lack access to digital equipment. Despite significant efforts in providing disadvantaged children with digital tools and equipment, the following years are expected to be challenging in this regard.[153]

Another important challenge in this regard was mentioned in relation to Finland. "There is a clear gap between the EdTech involvement in educational systems of Finland and migrant's or refugee's home countries. For people coming from Syria and Afghanistan, where almost 0% of EdTech is involved in the education system, it will appear unusual and uncomfortable from the beginning to use modern technologies in education. This problem led, leads, and will lead to an increasing gap in digital skills of adults and teenagers, a decrease in the efficiency of the parental digital support and a reduction in motivation (mental access) to digital services".[154]

Additionally, digitalisation of education systems has introduced another dimension to the linguistic challenges that migrant children face, particularly newly arrived migrants. Language education for migrants is primarily focused on the host country language, while internationalization of the EdTech will likely lead to primarily English-language software. If the language of education is not English, a lack of language skills will lead to an increasing misunderstanding of educational software basics.[155]

Overall, experts recommend the upgrading of digital infrastructure in schools, to ensure access to ICT tools for all. Additionally, the digital infrastructure in refugee centres, suitable study rooms and multi-professional support measures have to be upscaled to enable equal participation in education.[156] Governments could also introduce 'zero-rating' Internet connection in refugee camps, so that the entire population has access, without having to pay data. Stakeholders need to assist with encouragement of refugee students to attend, to facilitate with translation where necessary and act as mediators between the refugee and school community.[157]

4.1.3. Other challenges perceived for the near future

Some country reports perceived that digital inclusion in the upcoming years may be affected by the increasing prevalence of cyberbullying and online harassment.

153 Sofia Marques da Silva and Daniela Silva (2021) SIRIUS Watch country report for Portugal.
154 Nafisa Yeasmin and Pavel Tkach (2021) SIRIUS Watch country report for Finland
155 Nafisa Yeasmin and Pavel Tkach (2021) SIRIUS Watch country report for Finland
156 Claudia Köhler (2021) SIRIUS Watch country report for Germany
157 Nektaria Palaiologou (2021) SIRIUS Watch country report for Greece

Intensification of the xenophobic attitudes toward migrants in Europe due to the migration crisis nowadays affects **Finland** too. As mentioned in previous sections, facts stated that nowadays, you need to limit and control your behavioural patterns and opinions on the internet to avoid cyberbullying. The COVID-19 pandemic showed that cyberbullying in conjunction with moderating factors such as isolation may lead not only to education-related underperformances and absenteeism but also to more severe – consequences, such as mental health problems.

Special attention should be paid to online bullying campaigns in the **Netherlands**. The country report has established that there are discrepancies within groups, like gender and (migrant) background.

The German country report highlighted another challenge that is applicable to other countries as well. Due to the COVID-19 developments, the overall availability of places for vocational training has been decreasing. Hence, migrant young people will be facing more competition and will have even more challenges finding a place for vocational training (Dohmen, Dieter; Hurrelmann, Klaus; Yelubayeva, Galiya, 2021).

Lastly, a challenge faced in Portugal, with likely application across Europe, is the lack of teacher training on how to provide digital -or even general- support for migrant children. In the upcoming years, the inability to provide specialised support to migrant children will prevent them from catching up on their learning progress.[158] The Estonian country experts recommend, in this regard, that the facilitation of creating learning materials, coupled with application of learning analytics, can be used to encourage teachers to take up on hybrid education (training) and implementation (presuming that schools will have prepared technical support for it). Diverse assistance and autonomy can incentivize teacher agency in which teacher builds its own brand with own learning materials and instructional practice, also for resilience and digital pedagogy.[159]

Good examples could be taken from the Australian context (O'Mara B. & Harris A., 2016) that studies the uptake and use of digital technologies by migrant and refugee-background young people through the lens of a site-based arts pedagogy program, Culture Shack (CS). It argues that online pedagogies including animation, Facebook, photoshop, mobile phones and Youtube can be used effectively for bridging cultural, gender and educational gaps, if the ways in which they are applied engage with communication preferences and discourses of culture, ethnicity and digital media technology - including issues related to technological determinism.

158 Sofia Marques da Silva and Daniela Silva (2021) SIRIUS Watch country report for Portugal
159 Eve Mägi, Elisabeth Kendrali and Meeli Murasov (2021) SIRIUS Watch country report for Estonia.

4.2. Main opportunities and solutions for inclusive digital education

Besides the challenges brought forth by the COVID-19 pandemic, it has had certain positive effects as well, such as the **push for innovation, and the recognition of the vulnerability of certain groups of children in digital education**. The pandemic has raised awareness of different elements that hinder the inclusiveness of digital education. To move forwards, it is important that challenges are addressed and new opportunities emerging as a result of the pandemic are harnessed.

National governments from European Member States have been increasingly focusing on digital education in recent years. The pandemic has furthermore originated the conditions to create a remarkable "momentum", a suitable opportunity, to invest in the development of digital education. Teachers, families, and students have been largely dependent on the use of digital tools for the continuity of education during the lockdowns and, since the use of these tools will likely continue to be a reality, it is a main target for governments to ensure their use to improve the quality of national educational systems and their inclusiveness.

In **Estonia,** the Ministry of Education and Research has adopted the Education Strategy 2035, for which innovation in education will be the cross-cutting theme and where it is proposed that ICT is effectively used in learning, teaching and leadership.[160]

In **Ireland**, the first phase of the National Digital Strategy, investing in national roll-out of high-speed broadband in schools, was launched in July 2013. A new strategy is underway and this will build on the existing one, but taking into account the progress that has been made so far in embedding digital technologies in teaching, learning and assessment.[161] Furthermore, digital skills are included in Irish curricula for primary and secondary schools. The INTO (union of primary school teachers) discussion document (2017)[162] provides an overview of policy development in the area.

In **Norway,** the Norwegian Ministry of Education and Research has launched a strategy plan, "Future, renewal and digitalization". Digitalization strategy for basic education 2017–2021 "(Kunnskapsdepartementet, 2017), which acknowledges that digital skills and the pedagogical use

160 Ibid.
161 Department of Communications, Energy and Natural Resources. (2013). National Digital Strategy for Ireland Phase 1.
162 https://www.into.ie/app/uploads/2019/11/ICT-in-Education.pdf

of ICT are key parts of education and training, and they should be considered as basic skills to be taught.[163]

There have also been cases where Member States have seized the opportunity of lockdowns to **conduct more thorough research on the functioning of their national educational systems**. In Spain, for instance, the index OTL (Opportunities to learn) was constructed. These included different questions referred to schoolwork during lockdowns and it revealed different trends which are useful to obtain a more in-depth understanding of the Spanish educational landscape. The index revealed important insights about the relationships between accessibility to digital education and other variables. The index ranges from 0 to 100 where 0 equals to no OTL and 100 equals maximum OTL.[164] This index actually revealed that the accessibility to digital educational devices is favoured when there were smaller number of people confined in a family unit, the family income level is higher, the family is native to the country and also by higher levels of the educational cycle as well the concerted or private ownership of schools. This type of surveys is useful to understand factors hindering the use of digital technologies by vulnerable groups of the population, including migrants.

The pandemic has furthermore fostered the appearance of new methods of learning and teaching that are likely to become more frequent in the near future. Hybrid educational environments where digital technologies blend with traditional teaching methodologies have been developed. It is believed this **hybrid education will be useful to improve equity and resilience**. Classrooms which combine technology for remote learning or hybrid classes can effectively increase flexibility for students to learn about different subjects at their own pace. Online platforms that have been created as a support for teaching during the pandemic could still further be used to narrow the digital divide of vulnerable groups and provide more flexibility in the learning process.

In Greece, for instance, the "Greek Unlocking Learning Digital Language Learning course" is one example of a "blended learning approach" where digital elements complement traditional face-to-face teaching. Furthermore, during the pandemic, many resources were put online so teachers could support their pupils at a distance too.[165] This new practice, which was implemented in France, is intended to continue and has been mainly used in migrant students'

163 Kunnskapsdepartementet (2017) Future, renewal and digitalization. Digitalization strategy for the primary and secondary education and training 2017-2021 https://www.regjeringen.no/contentassets/dc02a65c18a7464db394766247e5f5fc/kd_framtid_fornyelse_digitalisering_nett.pdf

164 Miquel Àngel Essomba and Anna Tarrés (2021) SIRIUS Watch country report for Spain

165 Nektaria Palaiologou (2021) SIRIUS Watch country report for Greece

schemes. Teachers in France have had the opportunity to benefit from resources to teach French as a second language and pupils have been capable of using resources that can be used on smartphones.[166] Providing further funding to these initiatives as well as training to be capable of using these technologies is an outstanding opportunity for seizing the advantages of digital education and contributing to its development. Online platforms that have been stablished during the pandemic can move into being permanent resources.

4.2.1. Inclusive digital education policies and strategies

There are certain factors that hinder the successful use of digital educational tools and their inclusiveness. National governments have tried to address this issue through different policies and strategies that represent valuable opportunities for improving the accessibility to digital education and their effective use by all groups of the population.

One way of making digital education more inclusive is **improve the material access to digital tools**. There is evidence of different Member States advocating for the direct distribution of digital tools for learning purposes. This was the case in Germany, for instance, where the federal government launched an emergency aid programme worth 500 million euros to provide mobile devices for disadvantaged students. Nevertheless, this strategy did not meet the expectations as it did not reach those children who were most in need (Bertelsmann Stiftung 2020). In spite of this, the strategy can be regarded as a first example which could foster the investment in distributing digital tools as children who do not own digital devices, such as smartphones, tablets, laptops or notebooks, might not be able to complete out of class activities that require their use. Schools play a crucial role in the distribution of these, as families from low-income households can find it more difficult to buy them (Staat van het Onderwijs, 2019).

In the case of Ireland, the Irish Government has provided additional funding for the improvement of digital education in the last few years and one relevant measure to be undertaken is to provide schools with funding to support students who are most at risk of educational disadvantage due to the lack of access to appropriate digital infrastructure. Furthermore, it intends to provide all schools with high-speed broadband connectivity by the end of 2022 and early 2023. The lack of connectivity and a suitable environment for the use of digital educational tools at home challenges the capacity of students coming from disadvantage backgrounds to perform as good as their peers. Children from these backgrounds do not have the same access to learning opportunities at home and rely heavily on school for this. In Estonia, digital environments and platforms

166 Nathalie Auger (2021) SIRIUS Watch country report for France.

that required a user licence opened free of charge, which increased access to educational opportunities and enabled to diversify study process (Carretero et al, 2021).

Another strategy that has been followed is to provide funding to provide training and **improve the skills of teachers and other relevant figures of the educational process such as social educators**. This has been the case of Spain, where the Plan for Improving Educational Opportunities (PMOE) of the Department of Education has made available extraordinary funding to increase equal opportunities and to invest in the figure social educators. It also provides training at the family level, especially in those areas which are more at risk. Furthermore, the government has acted in cooperation with migrant organizations and neighbourhood's education associations to create digital environments at schools which were not prepared for the digital transition during the pandemic.[167] This cooperation between different stakeholders in order to originate a suitable environment in which digital technologies can be used also represents a useful opportunity for digital education to further flourish in the near future. Furthermore, the report from Spain offers insightful ideas and suggests that to build on the trends and opportunities to enhance digital inclusion it is required to perform a curriculum reform that can create a digital culture and ethos in teacher training. This curriculum reform should, among other things, promote a broader sense of inclusion, to be aware of cybersecurity and to implement personal learning environments.[168]

Individualized and personalized support, specifically for migrants, is currently considered to be one key opportunity for the improvement of the inclusiveness of digital education. For instance, in Lithuania's report, the need for a comprehensive integration plan with sensitivity for the student's background is acknowledged. The monitoring of refugee enrolment and attendance rate and the consideration of the circumstances of refugee students and newly arrived immigrants could improve the inclusiveness of digital education.[169] For instance, in Norway, the so-called "Flexible Education" is an educational net-based resource which is made available to newly arrived pupils who count with limited Norwegian skills. These students might have access to bilingual instruction. This enables them to integrate in the educational system at their own pace.[170]

Overall, it seems that already existing opportunities for the development of inclusive digital education, need to focus not only on providing material access to more vulnerable students but also to provide training and digital skills to teachers and families. Furthermore, adaptative tools can be a

167 Miquel Àngel Essomba and Anna Tarrés (2021) SIRIUS Watch country report for Spain
168 Miquel Àngel Essomba and Anna Tarrés (2021) SIRIUS Watch country report for Spain
169 Tomas Armalys (2021) SIRIUS Watch country report for Lithuania.
170 Fred Carlo Andersen (2021) SIRIUS Watch country report for Norway

good tool to improve the integration of migrants in the educational system.

4.2.2. Cooperation with EdTech communities

During the pandemic, there have been diverse private initiatives collaborating in the provision of new digital tools, and access to these, among students and in education centres. The development of EdTech before the pandemic across Member States was differentiated among European Member States and this had an influence on the effectiveness in the response to digitalised methods of education during the pandemic. The increase in the use of digital tools for educational purposes during lockdowns have contributed to an increasing participation of private EdTech companies in the educational cycle, which has changed the landscape of private and public interaction venues, and which has created new paths for further cooperation.

Given the specific needs that they might have, EdTech solutions can enable children to have a more personalized educational experience that seeks to adjust to their needs. In practise this means that teachers are able to gather more data on how individual students are doing and which areas they are falling behind. This effectively enables them to design a specific needs-based response to ensure efficient integration of the migrant student into the classroom. For migrant students' integration could also be further enhanced through EdTech as it creates new spaces for collaboration with their classmates on school projects, while in the long-term the practise gained by working with EdTech tools which actively encourage the use of digital technologies and communication further contributes to the skills needed for future professional pursuits.[171]

The cooperation between public bodies and EdTech companies can be promoted by different network strategies which facilitate exchanges among different educational stakeholders. In **Germany**, the Digital Education Network of the Digital Education Forum coordinates a broad partner network of stakeholders, and synergies among different stakeholders can be identified in order to be strengthened to find suitable solutions for educational challenges. Participants in the workshops that are organised by this association are invited to try out a change of perspective and to enter dialogue beyond the boundaries of their field of education (Netzwerk Bildung Digital 2021).

In the case of **Lithuania**, the role of EdTech in promoting inclusion was limited but the pandemic made it become a tool capable of implementing lasting changes in the education system rather

171 7 Benefits Of EdTech In The Classroom - BairesDev. Retrieved 7 March 2022, from https://www.bairesdev.com/industries/edtech-classroom-benefits/

than just a supplement for learning. The public consultation "Create for Lithuania", promoted by the Ministry of Education, Science and Sports, aimed at discussing about possible methods that could contribute to improve EdTech competences and infrastructures. Still, no measures concretely targeting migrants were created.[172]

In **Estonia,** The EdTech community has played a key role in promoting digital inclusion. They have been initiators of very important educational technology solutions and during the pandemic, many digital environments and platforms that first required a user licence opened free of charge, increasing access to educational opportunities, and enhancing the quality of digital education and its accessibility (Carretero et al., 2021). This close public-private collaboration during this concrete period of time and the offering of solutions and apps free of charge, has originated initiatives such as EdTech Estonia in which 28 EdTech companies collaborate to become a leader in education innovation. These strategies could be useful if applied to other Member States.

All these practices can be considered as suitable opportunities for the further development of digital education. The creation of new venues facilitating exchanges between public bodies and private companies, the creation of new apps and platforms which are free of charge and opened to the public, the creation of pilot experiments where new digital tools are used and the design of these to address the needs of migrant children are all opportunities to be seized by EdTech communities to increase their relevance in the realm of digital education.

4.3. Conclusions and recommendations

The current 2021 SIRIUS Watch Report has presented available data on the inclusiveness of digital education for migrant children both before and during the pandemic. Two distinct conclusions can be drawn from the findings:

Firstly, the report has demonstrated that the **increase in diversity in classrooms and increase in awareness on the specific needs and challenges faced by migrant children over the past years has not led to increased monitoring and data collection on migrant children in schools**. Besides the regular PISA tests that assess educational performance against children's background, little is known about the experiences of migrant children with digital education. While the presence of digital tools in education has increased over the years, particularly during COVID, a similar trend assessing the inclusiveness of the digital transformation has not followed suit. As a result, it is largely unknown to what extent the school closures during the pandemic have caused gaps

172 Tomas Armalys (2021) SIRIUS Watch country report for Lithuania.

in the learning process of migrant children.

Moreover, the pandemic provided momentum for the digital transformation in education, which is likely to continue developing rather than returning to its pre-COVID state (with the possible exception of distance learning). Therefore, the challenges faced by migrant children regarding inclusive digital education will continue to affect their learning progress even if or when the pandemic becomes an issue of the past. Without clear knowledge on the experiences of migrant children and the inclusivity of digital education in this regard, there is a high chance that the digital divide in education will expand over the upcoming years.

The second conclusion that can be drawn from this study is that the **digitalisation of education should be regarded as both a potential threat and a potential opportunity for the education of migrant children**. This study has described to the extent possible (with limited data) the main areas where digitalisation of education may actually hinder the learning progress of migrant children and demonstrated that continuous digitalisation may increase the digital divide. However, progress made in education technology can also provide opportunities for migrant children (and their families) to catch-up with peers and get acquainted with the host language and education system. It would therefore be a loss to define digitalisation as a challenge alone, without recognising the opportunities that it can offer.

Besides making resources available at no charge, education technology can support with translations and language learning, and connect migrant children and their families to various learning resources relevant for their context. It is also important to note the immense potential EdTech can provide in the support of migrant children education, particularly through personalised learning plans, assessments and linguistic support.

Based on the findings and conclusions of this report, the following **policy recommendations** can be made:

- **Integrate children with a migrant background as specific sub-group of interest in national monitoring and evaluation activities.** The scale of migration to and within Europe, as well as the specific needs of migrant children recognised in numerous studies, show that they can no longer be generalised under "vulnerable or disadvantaged children". Policymakers and practitioners need to be able to determine how migrant children fare under the introduction of digital technologies and adjust policies and pedagogies accordingly. Individual countries will need to assess with stakeholders and representatives of migrant communities how to collect this data without creating (additional) stereotypes and discrimination.

- **Evaluate and assess the current inclusiveness of ICT tools used in**

the classroom and for homework assignments. Dialogues with migrant children themselves, their parents and migrant community representatives can provide valuable insights into how current digital tools are perceived and how they affect the education progress of children and educational support provided by parents. Policy-makers can cooperate with the designers of existing ICT tools to make existing tools more inclusive and set standards for the future.

- **Set requirements for EdTech developments and innovations to ensure their inclusivity**. Public-private partnerships for education innovation and the introduction of ICT tools should include concrete measures to ensure that tools are accessible for children from different backgrounds and different vulnerabilities. Migrant children should be involved in the testing and piloting of new tools and their concerns should be considered. Additional research can provide specific pointers and guidelines for policymakers to understand what types of technologies, software, design, etc., can hinder or facilitate access for different groups of children.

- **Recognize the important role of migrant parents in aiding their children by ensuring that they have opportunities to improve their digital skills**. Given the benefits of parental involvement in their children's education, it is important that migrant parents are able to access opportunities which could improve their digital skills. This would enable their inclusion into the host society as well as fostering their capacities to get involved in their children's education. Similarly, as the pandemic showed, younger children are reliant on their parent's help on a digital schooling and communication environment. Possible approaches include the provision of digital skills trainings for parents at the school, which could even be organised for parents and children together.

- **Design actions plans that alleviate the lost educational progress of migrant children during COVID-19.** While all children from vulnerable socioeconomic backgrounds faced educational setbacks, migrant children have their own specific needs in terms of recovery and catch-up in their educational progress. This requires cooperation between schools (who assess individual needs and challenges, provide individualised support and cooperate with social workers and other support systems in the community) and national governments who provide the structures and resources for schools to do so.

- **Ensure that antiharassment and antibullying policies protect migrant children and raise awareness on racism and discrimination.** As migrant children come from different cultural backgrounds and societies it is important that they do

not become seen as the "other" and are welcomed by the host populations. To do so efficient regulatory frameworks are needed, while also providing training to teachers on digital skills, to tackle cases of online harassment and on encouraging students to learn about different cultures. This also requires a more comprehensive assessment of how digitalisation has affected bullying of migrant children over recent years, so that measures can be targeted at their specific challenges.

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