ORIGINAL ARTICLE

The School Preparedness Toolkit: Building Systemic Resilience in Ukrainian Schools Through a Self-Assessment Digital Platform

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Abstract

During the COVID-19 outbreak, schools around the world faced major challenges and were required to adapt to new educational practices while supporting students' learning and well-being. This study outlines the development of School Preparedness Toolkit (SPT), an online interactive checklist launched from January to March 2021 among 273 Ukrainian schools. SPT was a dual-use tool, aiming to inform and support efforts of school administrations in implementing effective strategies to address challenges arising from COVID-19 and to inform related public health and educational policies at regional and national levels. The toolkit focused on resilience against COVID-19 challenges across five main domains: Access to Education Provision of Quality and Inclusive Learning, Well-Being, Safety, Nutrition, and School Feeding. Completion of SPT was a collaborative process among school administrators. Chi-square tests were conducted to examine differences across schools' geographical locations and between urban and rural areas. Results indicated that most schools were already adapting to the challenges, to the extent of implementing mandated safety and online education protocols, communicating these with families, and providing a psychosocial safety net for children in extreme distress. However, resilience could be further strengthened through a greater emphasis on school cohesion, connectedness, and solidarity, as well as on preventive psychosocial interventions. The SPT methodology was shown to be a promising approach in assisting schools to reflect and plan for greater resilience, not just in the context of the COVID-19 pandemic but also in other extreme adversities that school systems—in Ukraine and around the world—might be facing.

Keywords COVID-19 · School resilience · Systemic resilience · Adaptation strategies · Students well-being

Introduction

Ukraine is a country of great geopolitical interest with a history of adversities and violent interactions. Following the collapse of the Soviet Union in 1991 and the Ukrainian independence declaration, the presidential elections in 1994 resulted in a regional polarized map while creating friction in the relationships of Ukrainian citizens (Freedman, 2014; Welt, 2019). In 2014, the lives of Ukrainians were significantly impacted due to violence by protesters and police and the use of military force by Russia to annex Crimea and sustain a rebellion in Donbas. As a result, children in Ukraine, and especially in the conflict affected areas, were exposed to traumatic events and adverse childhood experiences (ACEs). More specifically, Ukrainian children were not only exposed to conflict and violence among their cities, but they also experience internal displacing, because of movements from Eastern to Western Ukraine (Liu, 2017; Lordos et al., 2019; Lordos et al., 2021). Furthermore, conflict also results in affecting childrens, household lives with many children experiencing emotional or physical abuse or neglect, and household challenges (e.g., parental substance use or separation) (Lordos, et al., 2021; Hughes et al., 2019; Fowler et al., 2020). During those difficult times, school administrations were on the frontline and had to deal with the adverse effects of geopolitical disruptions and children's exposure to ACEs, while being

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responsible for supporting students' well-being and education (Lordos et al., 2019; Machlouzarides et al., 2020; Symeou et al., 2020). Similarly, in March 2020, COVID-19 made its way into Ukrainian youth lives as an additional ACE and all educational institutions were asked to respond to the pandemic crises and adapt to continue educating while supporting the students and staff's well-being and health (Doghonadze et al., 2020; Ivaniuk & Ovcharuk, 2020).

As the pandemic of COVID-19 unfolded, people encountered many changes and challenges in various aspects of their lives, with family life, work, and education significantly affected. Among those impacted the most by the consequences of the pandemic are the children. During the COVID-19 pandemic, ACEs were dramatically increased as both school and home environments were disturbed. More specifically, children lives were disrupted in numerous ways due to lockdowns and school closures that many countries proceeded with as part of physical distancing policies to prevent the spread of the virus (Masten & Motti-Stefanidi, 2020; UNESCO, 2020). As a result, more than 80% of children worldwide were affected by COVID and sub-sequent ACEs, with mental health, nutrition, educational outcomes, and safety being some of the main detrimental consequences (d'Orville, 2020; Nearchou et al., 2020; UNESCO, 2020). Once again, in countries like Ukraine that faced adversities in the past, the COVID-19 pandemic presented another challenge. Despite national efforts to reduce the impact of the pandemic on students, the school administrations were required to make more efforts to accommodate their students' needs and adhere to government legislation.

The United Nations Children's Fund's (UNICEF) Europe and Central Asia Regional Office (ECARO) have developed considerations for building resilient education systems in the context of the COVID-19 pandemic (Antonowicz et al., 2020). The document refers to school operations and provides information regarding access to education, minimization of virus transmission and reducing secondary impacts such as domestic risks and malnutrition (Antonowicz et al., 2020). However, in discussions with relevant stakeholders in Ukraine, especially the UNICEF Country Office and the Ministry of Education, it was noted that schools found implementing the UNICEF considerations document challenging. One challenge was the lack of familiarity with the content of the recommendations. Another challenge was the absence of a process for school administrations to prioritize from the extensive list of recommendations to draw up a local roadmap for resilience relevant to the specific school's strengths and difficulties profile.

Thus, this study aims to bridge the gap between the global scope of the UNICEF considerations document and local policy-making of Ukrainian schools in managing the impact of COVID-19 among Ukrainian institutions through strengthening school resilience. More specifically, the aim is

to utilize the UNICEF considerations document and develop an online platform that would allow Ukrainian institutions to self-assess, through a local participatory process, their resilience on five distinct pillars while recognizing areas that require more effort and offering them helpful information regarding the implementation of measures to enhance resilience in the five domains. In what follows, we will briefly summarize the UNICEF considerations document, demonstrate key aspects of the online School Preparedness Toolkit, and present findings from the deployment of the Toolkit in 273 Ukrainian schools.

The UNICEF Considerations Document as a Response to the Impact of COVID-19 on Educational Systems

COVID-19 has disrupted students' lives in numerous ways; thus, multisystemic handling is required for better educational institutions' adaptation, overcoming all adverse outcomes, and supporting students. As COVID-19 still threatens students, resilience can be applied within educational systems to maintain institutional functioning through adaptive management practices (Masten & Motti-Stefanidi, 2020).

The crises arising from COVID-19 highlighted the importance of schools in fulfilling the educational purpose of knowledge acquisition and in satisfying and supporting young people's socialization needs and mental and physical health (Colao et al., 2020). A resilient school in the context of the COVID-19 pandemic is one that not only safeguards children from threats to public health but also continues to nurture children's socio-emotional and learning capacities to continue developing at a personal and academic level (Masten & Motti-Stefanidi, 2020).

The UNICEF considerations document (Antonowicz et al., 2020) adopts a multisystemic resilience approach (Lordos & Hyslop, 2021) and focuses on five main areas of potential vulnerability:

(A) Access to Education Provision

Access was one of the most significant challenges faced by education systems in the context of the COVID-19 pandemic. Governments and educational systems were not prepared for the sudden complete lockdowns in 2020 during the pandemic outbreak, and as a result, they were unable to deal with school closures and online education effectively. The delay in forming national policies significantly impacted schools' ability to manage the severe consequences of COVID-19 and adapt.

The policies on social distancing and movement restriction significantly interfered with traditional educational practices (Pokhrel & Chhetri, 2021). Virtual learning has become the new reality for students, with more than five hundred million children attending virtual classes (Cohen

& Kupferschmidt, 2020). Similarly, in Ukraine, students previously physically attending classes were called to join online education, and the President of Ukraine Volodymyr Zelensky announced an All-Ukrainian Online School project (Ukraine launching "National Online School" project, 2020; Bakhov et al., 2021; Doghonadze et al., 2020).

Students' challenges with remote learning vary, including lack of resources, unavailability of devices, and reduced or lack of access to the internet, but also lack of assistance, guidance, and proper interaction with educators (Adnan & Anwar, 2020; Lai & Widmar, 2020; Pokhrel & Chhetri, 2021). One issue was the lack of available devices since most family members were at home and required to use the devices for studies or work simultaneously (Brom et al., 2020).

Many children, especially those from low-income households, often do not have the required digital resources and infrastructures (i.e., computers and reliable internet connection) for homeschooling, and therefore, they face difficulties in accessing academic materials and following their classes (Garbe et al., 2020; Kuhfeld et al., 2020). Ukrainian students faced difficulties similarly due to technical issues, such as the absence of internet connection in several areas or the lack of computers (Bakhov et al., 2021).

At the same time, students residing in Donetsk and Luhansk regions, which were then temporarily occupied territories and annexed Crimea, also faced the difficulty of connectivity; thus, a broadcast was launched through Dom ("Home") TV in order to enable them to watch video lessons (Ukraine launching "National Online School" project, 2020).

Consequently, the learning gap between children from lower-income and higher-income families will widen even more (Fantini et al., 2020; Kuhfeld et al., 2020). Schools' closure may lead to short-term learning losses and is expected to affect students' long-term educational and human capital opportunities (d'Orville, 2020).

The preparedness of parents and teachers is another major challenge that educational institutions require to manage. Parental involvement has been an essential factor in students' academic performance in traditional school settings. More specifically, experience of positive parenting seems to have a significant impact on Ukrainian adolescents behavioral and emotional adjustments (Symeou et al., 2020). During COVID-19 and the transition to online education, parents, siblings, and grandparents became learning facilitators and faced significant difficulties (Garbe et al., 2020). Parents often require guidance since they lack professional knowledge and educational skills. Though they have taken up the role and responsibility for their children's learning, they cannot replace teachers (Garbe et al., 2020; Putri et al., 2020). Additionally, some parents may lack digital efficacy, technology skills, or interest in technology, while becoming their children's learning facilitators requires more time (Brom et al., 2020; Garbe et al., 2020; Putri et al., 2020).

Parents often had difficulty organizing, managing, and monitoring students' schedules and performance while performing their work responsibilities simultaneously (Garbe et al., 2020; Putri et al., 2020).

On the other hand, educators and teachers were suddenly asked to shift toward online education and encountered several challenges and constraints. First, in a short period of time and in order to engage in online education, teachers were required to acquire and cultivate technical skills and use online educational tools, that up until the pandemic was not necessary (Pokhrel & Chhetri, 2021; Putri et al., 2020). Therefore, educational institutions were required to ensure the necessary infrastructures and respond to teachers' needs for training and guidance on using online platforms (Pokhrel & Chhetri, 2021; Putri et al., 2020). Furthermore, the educational connection between students and teachers was disrupted, as many teachers had little to no contact at all with a significant number of students and estimated that students spent less time on learning than they did before COVID-19 (Colao et al., 2020; Lieberman, 2020). Additionally, the relationship among students was significantly impacted, with students lacking physical interaction and experiencing increased feelings of isolation and loneliness (Chen et al., 2020; Williams et al., 2021).

According to UNICEF considerations, educational institutions should ensure access to education for all children and youth despite the circumstances of the pandemic. The lack of resources and the digital gap are considered among the most significant factors affecting students' engagement in learning (Antonowicz et al., 2020; Garbe et al., 2020). At the same time, other factors, such as parents' concerns about school re-opening, dropouts, and child labor, are also important factors that, in the COVID era, affected students' educational opportunities (Antonowicz et al., 2020). In countries where learning outcomes are already low, dropout rates are high, and resilience to shocks is little, the impact of COVID-19 is more serious (d'Orville, 2020). To address these concerns, schools must develop a plan to ensure students return to school and engage with learning while reducing the risks of dropouts (Antonowicz et al., 2020).

(B) Quality and Inclusive Learning

Apart from ensuring students' access to education, another critical issue is students' engagement in the learning process. In the circumstances of a pandemic, students spend less time learning, while there is a lack of concentration and motivation (Garbe et al., 2020). Before COVID-19 unfolded, education in Ukraine was mandatory, and since 2017, a process of education reform has begun to ensure students' competencies (such as knowledge skills and abilities) in various subjects (Onyshchenko et al., 2019). Despite being interrupted by COVID-19, the

Ministry of Education continued efforts to ensure that students would receive an inclusive education covering all necessary subjects for their educational development (Ukraine launching "National Online School" project, 2020).

According to UNICEF considerations, to increase student engagement, educational institutions should focus on providing more flexible, inclusive, and interactive school curricula that will provide the opportunity to address gaps in learning and increase students' motivation for academic achievements (Antonowicz et al., 2020; Garbe et al., 2020).

(C) Well-being (Mental Health and Psychosocial Support)

Students' health and overall well-being were another main concern and challenge for educational institutions. Lockdown and virtual learning have also caused considerable harm to vulnerable, disadvantaged, and students with disabilities, who often relied on schools to provide various social services and support their basic needs (d'Orville, 2020; Kuhfeld et al., 2020).

Moreover, many schools had previously been responsible for delivering health care and were a source of support for student's mental health, whereas school routines were a source of comfort for students with mental health issues (Armitage & Nellums, 2020; Golberstein et al., 2020). While students were deprived of those services, their mental and physical health were at increased risk due to lockdowns and restrictions. The restrictions of movement, lack of physical socialization, exercise, and staying at home for days made students more vulnerable to experiencing anxiety and depression symptoms (Liu et al., 2021; Xie et al., 2020). Cohabitation at home with parents and siblings could amplify student's exposure to violent behaviors and increase the risks of developing mental health disorders like anxiety, depression, or post-traumatic stress disorder (Chen et al., 2020; de Figueiredo et al., 2021; Fantini et al., 2020; Nearchou et al., 2020; Pereda & Díaz-Faes, 2020; Ragavan et al., 2020).

Educational institutions are not responsible only for providing equal learning opportunities and ensuring students meet their academic goals; thus, with the mental health and well-being of students and teachers at risk during COVID era, schools' roles in empowering and supporting well-being are more important than ever (Golberstein et al., 2020). According to UNICEF considerations, addressing well-being should focus on identifying those at greatest risk, implementing prevention measures to minimize the risk of teacher burnout or students experiencing anxiety or depression symptoms while providing support and interventions to address stress, anxiety, or other mental health issues (Antonowicz et al., 2020).

(D) Safety

While schools around the globe re-open, resilient schools should focus on creating a safe school environment as one of the distinct pillars of successful adaptation. The risk of COVID-19 transmission is higher among schools, and often, parents are reluctant to send their children to schools (Unger et al., 2023). Thus, schools are required to follow national health guides and regulations and implement measures to ensure that the school environment is safe for students and academic staff (Antonowicz et al., 2020).

Some health guidelines in the UNICEF considerations included the implementation of mask policies within schools, creating of hand sanitizer stations and handwashing stations, and frequently cleaning surfaces and ventilating rooms (Sorokopud, 2021) to mitigate the risk of transmission. Ensuring the school's safe operations would reduce the risks of school closures.

(E) Nutrition and School Feeding

Before the pandemic, Ukrainian schools were often a safe physical environment where students received healthy and nutritious food (Symeou et al., 2020). Thus, with school closure, there was an ongoing concern that school closure would increase food insecurity within families that often relied on schools for free meals, as school was a significant source of nutrition for students from lower-income families (Golberstein et al., 2020; OECD, 2020).

With this in mind, the final pillar of UNICEF considerations is Nutrition and School Feeding. COVID-19 has disrupted schools' operations, negatively impacting students' opportunity to receive free school meals, and vulnerable students are at greater risk of malnutrition. Thus, schools must adopt and implement healthy nutrition programs and provide healthy nutrition for their students.

Study Objectives: Development and Deployment of a School Preparedness Toolkit

Re-opening schools in the aftermath of COVID-19 was an ongoing issue in several countries, as it required the enforcement of practical guidelines and care plans to reduce the risk of infection (d'Orville, 2020). Several factors, such as physical distancing, limiting classroom movements, cleaning and disinfecting stations, and personal hygiene, have been identified by UNICEF and others as crucial in ensuring that schools remain safe for all children (COVID-19 Guidance for Safe Schools, 2022; Couzin-Frankel et al., 2020). Despite the usefulness of consideration documents, it is not easy to ensure the implementation of these recommendations in thousands of schools within a national education system. Schools receive information related to COVID preparedness

from multiple sources (e.g., national and local public health authorities and national and local educational authorities) while at the same time coordinating within the school administration system to adapt in the context of the unfolding crisis. As a result, the well-considered regional guidance documents often risk not reaching the intended beneficiaries, or they do not receive the proper consideration when they do. Thus, to address these challenges, a digital toolkit called the *School Preparedness Toolkit* (SPT) ("Schools in Covid-19 conditions: preparedness for adversities" - Interactive Guide | UNICEF, 2021), was developed aiming to support bridging the gap between UNICEF's regional considerations document (Antonowicz et al., 2020) and the deliberative decision-making process that takes place at the level of each school's leadership team.

The objectives of the present study were threefold. First, developing the online platform following the UNICEF considerations document in a way that would allow institutions to self-assess their resilience on five distinct pillars while recognizing areas that required more effort and offering them helpful information regarding implementing measures to enhance resilience in the five domains. The second aim of this study was to deploy the toolkit among Ukrainian schools and assess possible uptake patterns across the different Ukrainian districts. Through this deployment, the tool offered school administrations the opportunity to identify the most vulnerable contingent of students and advocate for the rights of these children. After completing the toolkit, each participating school could download a tailored recommendation based on their resilience scores.

Finally, the last goal was to identify prevailing patterns and blind spots in the adaptation of schools during the pandemic. More specifically, the interest was in recognizing the strategies of adaptation that Ukrainian schools utilized or not during the COVID-19 pandemic and examining how those strategies of adaptation differ between schools and whether the geographical or the location of schools (urban/rural) affected the strategies that different schools employed. This can suggest broader country-wide policies and reforms for greater school resilience in the context of future stressors and shocks.

Development of the School Preparedness Toolkit

The School Preparedness Toolkit is an interactive digital toolkit within the Outgrow online platform (*Outgrow-Interactive Calculators & Quizzes*, n.d). Outgrow is an online platform allowing users/policymakers to create interactive questionnaires and assessments. Developing and preparing the School Preparedness Toolkit at a substantive level and the online platform that would host it required an iterative, integrated, and multistage process.

Phase 1: Content Development for the School Preparedness Toolkit

The online platform aimed to support schools in monitoring their progress in implementing strategies to address challenges arising from the COVID-19 pandemic and to provide additional insight on which strategies could further improve the schools' efforts to adapt to each of the five pillars described in UNICEF's considerations publication. Thus, an extensive literature review, including national and international sources, was conducted to examine the impact of COVID-19 within educational institutions and identify areas of primary concern. Following the five distinct pillars of schools' adaptation as proposed by the UNICEF considerations document (Antonowicz et al., 2020), a toolkit was created consisting of five main sections, each corresponding to one of the pillars as proposed in the UNICEF considerations concerning building resilient education systems in the COVID era (Antonowicz et al., 2020). Each section of the toolkit aimed at identifying each school's strengths in terms of adaptation to COVID-19 challenges. At the same time, the low scores indicated areas where schools have difficulties prioritizing or are facing significant resource constraints, thus requiring more attention—by school leadership or the Ministry of Education—to address.

More specifically, the toolkit included the following components:

1. An opening letter explaining the purpose and usage of the platform, as well as benefits for participating schools.
2. The Participant Information section captures information regarding the number of staff participating in the process and their specialization or position within the school administration. Schools were encouraged to organize discussion sessions, including senior staff members as detailed in the "Methodology" section below, to share perspectives on each question in the toolkit and agree on an appropriate response.
3. An Interactive Ukrainian Map, with the number of confirmed COVID-19 cases between February and December 2020.
4. The Information Page provides details regarding the Toolkit and detailed descriptions of the five critical focus areas.
5. The main questionnaire was divided into five distinct domains. All five sections included multiple and single-response questions and open-ended questions to explore in greater depth the COVID-19 challenges the schools faced as they responded to the needs of the most vulnerable children. Respondents were presented with a series of challenges and invited to consider various COVID-related adaptation strategies that could be applied to

address that challenge. Then, a response scale followed each adaptation strategy in a manner that encouraged thoughtful reflection related to the relevance and priority of the specific approach within the school. Specifically, the scale included four response options for each adaptation strategy: Have implemented this already; Feasible, will prioritize for immediate implementation; Would do this but require additional resources (funds, time, authority); Do not consider this relevant for our school at the moment. An example of questions about adaptation strategies is included in Fig. 1. It should be noted that the initial open-ended questions were not intended to be collected for analysis at an aggregate cross-school level but rather to prime participants into reflecting on current adversities as a basis to evaluate their resilience strategies. The full text of the main questionnaire is included as supplementary material to this paper.

a. Access and Participation

This part assessed how schools made decisions about school closure or re-opening and management of technology and connectivity to increase access and participation in education. More specifically, the first challenge referred to students' lack of access to technology and connectivity during periods of distance learning, and the second challenge concerned students' return to school and engagement in learning after periods of school closure and/or distance learning. For those two challenges, a series of different

strategies were presented to help schools assess their efforts of adopting them to overcome access and connectivity issues and return to school, re-engaging in the learning process.

b. Quality of Learning

This second section focuses on ways to ensure the quality of learning and learning continuity for all students. Specifically, the first challenge referred to students' learning and motivation during the pandemic, and the aim was to assess strategies concerning school efforts to enhance students' motivation. The second challenge referred to learning opportunities for children with special education needs and providing appropriate learning support during the pandemic to assess schools' efforts in ensuring learning opportunities for students with special education needs. The third challenge referred to (a) providing support to teachers to adapt to distance and (b) blending teaching pedagogy and digital learning environments. Finally, the fourth challenge of quality of learning referred to assistance provided to families while they supported students' learning.

c. Well-being

This section focused on students, parents, and school staff's well-being and potential threats relating to COVID-19 that could affect them emotionally. The first challenge referred to adopting approaches to teach students socio-emotional skills and included efforts to adopt them and

Fig. 1 Adaptation strategies example. Note. The image illustrates a sample of the adaptation strategies and response scales

enhance students' well-being. Moreover, the second challenge referred to protecting and supporting children against domestic violence and abuse, which were anticipated to increase during the pandemic. Finally, the third challenge referred to the potential stigmatization of virus-affected students and staff upon their return to school after recovering from COVID-19.

d. Safety

The fourth section, which referred to safety, aimed to assess two main challenges relating to the schools' efforts to maintain a safe school operation for children and staff. The first challenge referred to adopting approaches to minimize the risks of infection and ensure the safety of children and staff when schools were open. The second challenge referred to adapting to new health regulations and protection measures and considering children's and their families' needs and life circumstances.

e. Nutrition

In the final section, which referred to nutrition, four strategies were assessed based on one main challenge that schools faced. The challenge referred to developing weekly menus for all students and considering that micronutrient deficiencies will cause additional vulnerability to infection, and schools were asked to assess their efforts.

Phase 2: Encoding of School Preparedness Toolkit within the online Outgrow platform

Once the toolkit's content was developed, it was coded in the online platform of Outgrow. Utilizing the online Outgrow platform also enabled the addition of a scoring system and five distinct resilient scores. The resilience scores were calculated by adding the number of adaptations per section where the participants responded that they had implemented them already, dividing by the total number of adaptations in that section. Therefore, at the successful completion of the online platform, schools would automatically receive five scores, one for each section indicating their level of resilience per domain. The scores were only intended for use by the schools to help them orient their attention to the areas where most resilience-strengthening was needed. The scores were deliberately not used to rank-order schools or compare them against each other since such an exercise would not have served any useful purpose.

Moreover, the feature of downloading a report and recommendations booklet (Fig. 2) was also included in the online platform. The booklet consisted of three sections, including a record of the school's responses concerning COVID-related adaptation strategies, the schools' personalized adaptation scores in each of the five domains, and additional recommendations for each domain. Recommendations

for each domain were drafted based on international and national guidelines and recommendations, while resources and links were also included to assist further schools' efforts in enforcing measures toward multi-resilience. Participants were encouraged to focus on reviewing recommendations for the domains where their resilience scores were lowest, while also considering recommendations from any other sections they wished to prioritize. The full text of the recommendations is included as supplementary material to this paper.

Phase 3: Pilot testing of the School Preparedness Toolkit

The online platform was launched for a pilot test among a group of Ukrainian colleagues and International Experts, along with a review form. The aim of including this board of experts in the review process of the platform was threefold:

1. Examine the constructs and items of the tool and the recommendations page given to schools along with their results and provide detailed feedback.
2. Explore the online platform and provide feedback regarding the platform design, usability, questions, and results presentation style.
3. Ensure that the platform is working correctly with scores being saved appropriately and that the platform is calculating overall resilience scores correctly for each of the five domains using automated online algorithms.

Methodology

Study Design and Procedures

From January to March 2021, the link to the online toolkit was shared with schools across Ukraine; at the same time, online national campaigns were also conducted to increase the tool's reach. The invitation link was shared with school principals, explaining the process and the potential outcomes and benefits for participating schools. Attending school in Ukraine is compulsory for all children until age 17 and is divided into three levels. First is the Elementary School for children between 6 and 9 years old, with a basic curriculum including mathematics, art, music, reading, and writing (World Higher Education Database (WHED), 2006; Education System in Ukraine, 2022). Then, follows the Basic Secondary Schools (Middle School) for children 10 to 14 years old, which covers a general core curriculum (World Higher Education Database (WHED), 2006; Education System in Ukraine, 2022). Finally, children aged 15 to 17 years old attend Upper Secondary (Specialized Secondary Education) and have the opportunity to choose between the Academic stream or Vocational Stream, which can lead to a specialist qualification or a junior bachelor's degree (World Higher Education Database (WHED), 2006; Education System in Ukraine, 2022). In the form presented here, the platform

Fig. 2 SPT report and recommendations booklet sample page. Note. The image illustrates a sample report provided to all participating schools. The percentages presented are only used for illustration purposes

Schools in Covid-19 conditions: Preparedness for Adversities

School Information:

Dear colleagues!

Thank you for your interest in using the Guide and for your motivation to improve the performance of your school!

The inputs provided by your team allowed us to calculate the current performance of your school on each of the 5 dimensions.

Results in five Dimensions

ACCESS AND PARTICIPATION	**52%**
QUALITY OF LEARNING	**83%**
WELL-BEING	**89%**
SAFETY	**89%**
SCHOOL FEEDING	**82%**

A **high score** in a particular area indicates that you are already making significant progress in adapting to Covid-19 challenges; a **lower score** can indicate that you might find it difficult to prioritize the particular domain of operation and/or face significant resource constraints.

Improving performance results in all five areas will have a positive impact on everyone involved.

was designed for use by all secondary schools in Ukraine, including primary and upper secondary education.

The intended primary users of the toolkit were School Principals of all school levels across Ukraine. However, they were encouraged to include other members of the school leadership and administration team (e.g., teachers, school counsellors) in completing the tool, making the whole process collaborative. This collaborative approach was necessary to enable discussions within school administration regarding the schools' preparedness and further needs to re-open.

Each school had the opportunity to complete the tool and assess its resilience scores across the five domains of adaptation. At the end of the questionnaire completion, every school could download a PDF form of their scores and recommendations. The goal was to allow schools to observe their domain-specific adaptation scores and, based on those, choose which domains and recommendations to prioritize to strengthen and support students/staff. At the same time, a de-identified database was generated, including the responses from all schools, to explore country-wide trends in adaptation across the five domains and inform relevant policy by
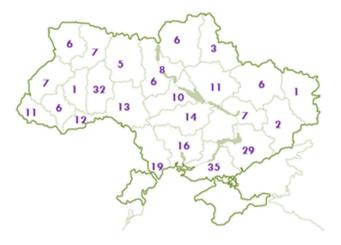
Fig. 3 Platform completions across Ukrainian districts. Note. The map illustrates the successful completion of the toolkit from schools across different Ukrainian districts.

the Ministry of Education or other competent authorities (Fig. 3).

Participants

Overall, 273 educational institutions completed the School Preparedness Toolkit, most of which were communal schools (98.8%). Most of the schools were Secondary General Education Schools (*n*=257), and the remaining 16 were Secondary Vocational Educational Institutions. Additionally, 42.1% of schools were from urban areas, while 57.9% were from rural Ukrainian areas.

Successful completion of the toolkit was grouped based on schools' geographical locations to inform data processing and analysis. About 30% of successful platform completions occurred in Western Ukraine, followed by Central and Southern Ukraine, with 26.7% and 25.6% respectively. The lowest completion rate was observed in Eastern Ukraine (17.6% of the overall sample). Moreover, completing the School Preparedness Toolkit was a collaborative process among school administrations, with 1073 school staff members participating (Table 1).

Table 1 Staff participation in questionnaire completion across schools

	Number	%
Principals	226	21.1
Vice Principals	224	20.9
Teachers	166	15.5
Psychologists	140	13.0
Social Pedagogues	97	9.0
Medical Workers	137	12.8
Other	83	7.7

Data Analysis

For the purposes of this study, the focus of analyses was mainly the implementation of strategies across the five domains. In order to examine whether schools' strategies of adaptation are related to schools' location, i.e., geographical location and urban or rural setting, the chi-square test of independence was performed. The following assumptions for the chi-square test were met:

- All variables included were categorical variables, each having more than two groups.
- The observations are independent as there is no relationship between the subjects in each group, and the categorical variables are not matched in any way (e.g., pre-test/post-test).

All statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS) version 25.

Results

COVID-19 was an unexpected crisis that affected all educational institutions across Ukraine. Schools' resilience scores across the five main pillars indicate uneven adaptation, with some pillars displaying greater resilience than others. More specifically, Safety ($M = 85.41$, $SD = 10.76$) was among the pillars with the highest resilience, followed by Well-being ($M = 80.55$, $SD = 10.7$), and Nutrition and School Feeding ($M = 75.66$, $SD = 14.47$). Quality and Inclusive Learning ($M = 68.66$, $SD = 13.8$) and Access to Education Provision ($M = 54.75$, $SD = 12.61$) had lower resilience scores due to difficulties implementing many of those strategies.
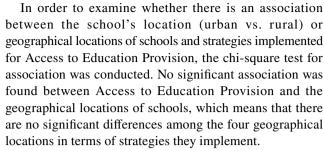
1. Access and Participation

While examining the first challenge, concerning students' lack of access to technology and connectivity during periods of distance learning, it appeared that 73% of participating schools were able to enforce the strategy, which involved informing parents and students about which software to install for participation in learning procedures and were providing IT support when necessary. About 17% of schools mentioned that this strategy, while necessary, required additional resources to implement. The following strategy involved organizing webinars for parents and students on using technology and participating in distance learning. About 59% of schools were already implementing this measure, with 25% indicating this would be implemented soon and 12% requiring more resources to proceed with this strategy. Regarding the strategies of looking for sponsors (local community, municipalities, local businesses, etc.)

to donate IT equipment or pay for internet credit and collaborating with local internet providers/phone providers to secure free or low-cost internet access for marginalized families, 33% and 26% respectively of schools were already implementing these strategies. However, over 50% of schools mentioned they would like to implement these strategies but would need additional resources. Concerning lending IT equipment to students, 68% of schools mentioned they are not able to do so and required further resources in order to be able to do that, while only 14% of schools were able to lend students equipment. The last strategy referred to engaging parent-teacher associations in covering IT or internet costs for the most marginalized students in the school. This strategy was considered irrelevant for 36% of schools, while 47% considered they would do it, but they needed additional resources.

The second challenge referred to students' return to school and engagement in learning after periods of school closure and/or distance learning. Around 91% of schools indicated they would contact all families to individually provide information on school re-opening, address fears and concerns, and encourage students' attendance. Additionally, 80% of participating schools would utilize welcome back-to-school approaches for students and parents, while 13% of schools considered implementing this. Regarding the collaboration of schools with social services to support the return to school or engagement in learning of children from socially vulnerable families, 61% of schools were already implementing this measure. About 18% of schools considered this measure irrelevant, while 14% considered it feasible and would prioritize it.

Moreover, 43% of schools had already assigned a school staff as a mentor to follow up with families of students who were the most at risk of not attending school/not engaging in learning. About 27% considered implementing this measure soon, 10% considered implementing it if they had more resources, while 20% considered this measure irrelevant or necessary. Seventy-two percent of schools were organizing or planning to organize peer mentoring between students to support motivation to remain in school and engage in learning. About 22% of schools considered this measure unnecessary or irrelevant. Regarding providing additional school buses to ensure safe social distancing while commuting to and from school, 50% of schools considered this measure irrelevant. On the other hand, 32% of schools would do this but required additional resources, and only 15% of schools were already implementing this measure. Around 73% of schools did not consider the organization of bus routes relevant to the needs of schools operating in shifts, while 13% were implementing this measure already, and 14% of schools would be willing to implement it but required additional resources.

In order to examine whether there is an association between the school's location (urban vs. rural) or geographical locations of schools and strategies implemented for Access to Education Provision, the chi-square test for association was conducted. No significant association was found between Access to Education Provision and the geographical locations of schools, which means that there are no significant differences among the four geographical locations in terms of strategies they implement.

Moreover, out of the 13 strategies tested in this study, two had expected cell frequencies greater than five and had a statistically significant association with the school's location (urban or rural). The first strategy was "Schools collaborate with internet providers/phone providers to secure free or low-cost internet access for marginalised families," with a weak association with schools' location $\varphi = 0.206$, $p = 0.014$. More specifically, the results indicate that when implementing this strategy, more rural than urban schools require additional resources.

Similarly, the second strategy, "Schools engage parent-teacher associations in covering IT or internet costs for the most marginalised students in the school," also had a weak association with schools' location $\varphi = 0.208$, $p = 0.13$. This result illustrates that more rural than urban schools require additional resources to implement.

2. Quality and Inclusive Learning

A total of 28 strategies were assessed based on four main challenges schools faced during COVID-19. The first challenge referred to students' learning and motivation during the pandemic. Firstly, 72% of schools organized weekly calls with students and families to discuss their situation, what is going well, and what is challenging, while about 16% planned to implement this measure immediately. Similarly, 70% were teaching study skills (such as how to work independently and organize distance learning and homework), and 25% would implement this measure soon. Sixty-eight percent of schools collaborated with School psychologists, pedagogues, and other experts to explore how to strengthen students' levels of concentration and motivation, while 26% of schools would implement this soon or required additional resources. Around 43% of schools planned on organizing a mentoring program between teachers and students or between older and younger students, while 26% of schools have already implemented this measure. Moreover, 58% of schools were organizing or planning to organize peer study groups (distance or face-to-face) led by students, while 29% considered this strategy irrelevant to their institution. Last but not least, 21% of schools planned on collaborating with NGOs, local associations, youth groups, and community volunteers to

support student learning at home, in the community, or in school. While 21 required additional resources to implement this strategy, about 33% did not consider this measure relevant.

The second challenge referred to learning opportunities for children with special education needs and providing appropriate learning support during the pandemic, and five strategies were assessed. Firstly, 66% of schools were already amending Individual Education Plans to reflect learning opportunities provided at home and via distance learning. At the same time, 14% of schools planned on prioritizing this measure for immediate implementation, while 14% did not consider this measure relevant. Moreover, 48% of schools nominated a teacher or TA to provide individual learning support, including coping skills, during distance and blended learning periods for students and their families. Around 20% of schools required additional resources to do that, and 22% considered this measure irrelevant to their school. Regarding securing extra support from Special Education Teachers to provide additional support to special educational needs students, 34% of schools already implemented this measure, while 28% considered this irrelevant, and 25% would do that but needed additional resources. Thirty percent of schools increased the use of assistive devices and technology

(such as audiobooks, videos, magnifiers, audio messages, and specialized software), while 31% of schools required additional resources to do that, and 22% considered this measure irrelevant. Furthermore, 42% of schools required additional resources to partner with NGOs, universities, and professional associations of therapists to access equipment, materials, or additional human resources for support. About 31% of schools considered this measure irrelevant, and 26% were already implementing it or planned to prioritize it for immediate implementation.

Moreover, in terms of the association between strategies implementation and geographical locations of schools, the strategy "Disseminate booklets that give parents general tips on how to best support learning at home" (Table 2) had a moderate association with schools' geographical location $\varphi = 0.259$, $p = 0.035$. Observing differences in implementation across schools, it appears that this strategy was more likely to be already implemented by schools in Western and Southern Ukraine, while schools in Central and Eastern Ukraine tended to consider this feasible and planned on implementing it immediately.

The second strategy moderately associated with schools' geographical locations $\varphi = 0.286$, $p = 0.009$ was "Disseminate booklets that give parents subject-specific tips on how to best support learning at home" (Table 3).

Table 2 Disseminate booklets that give parents general tips on how to best support learning at home by the school's geographical location

Implementation	School's geographical location			
	Central Ukraine N (%)	Eastern Ukraine N (%)	Southern Ukraine N (%)	Western Ukraine N (%)
Have implemented this already	23 (32%)	12 (25%)	33 (48%)	41 (50%)
Feasible, will prioritize for immediate implementation	31 (44%)	19 (40%)	15 (22%)	25 (31%)
Would do this, but need additional resources (e.g., funds, time, authority)	8 (11%)	7 (15%)	12 (17%)	8 (10%)
Do not consider this relevant for our school at the moment	9 (13%)	10 (20%)	9 (13%)	7 (9%)

$\chi^2 (9) = 18.038$, $p = .035$

Table 3 Disseminate booklets that give parents subject-specific tips on how to best support learning at home by the school's geographical location

Implementation	School's geographical location			
	Central Ukraine N (%)	Eastern Ukraine N (%)	Southern Ukraine N (%)	Western Ukraine N (%)
Have implemented this already	13 (18%)	9 (19%)	30 (43%)	31 (38%)
Feasible, will prioritize for immediate implementation	36 (51%)	21 (44%)	15 (22%)	31 (38%)
Would do this, but need additional resources (e.g., funds, time, authority)	12 (17%)	10 (21%)	15 (22%)	10 (12%)
Do not consider this relevant for our school at the moment	10 (14%)	8 (17%)	9 (13%)	9 (11%)

$\chi^2 (9) = 22.068$, $p = .009$

Table 3 illustrates that this strategy was implemented more by schools in Southern Ukraine compared to Central and Eastern Ukraine. However, it appears that schools in Western Ukraine were equally divided between those that had already implemented this measure and those that considered the strategy feasible and planned on implementing it immediately. The majority of schools in Central Ukraine considered this strategy feasible and will prioritize for immediate implementation.

Furthermore, concerning differences between urban and rural schools, the strategy "Organize a weekly call with students and families to discuss their situation, what is going well, what is challenging, etc." has a weak association $\varphi = 0.182$, $p = 0.042$. This result illustrates that more rural than urban schools are implementing this strategy.

Moreover, the strategy "Collaborate with School psychologists pedagogues to explore how to strengthen students' levels of concentration and motivation" is moderately associated with schools' location, $\varphi = 0.213$, $p = 0.010$ (Table 4). This result shows that a more significant number of rural schools require resources to implement this, consider this irrelevant, or are making arrangements to implement it than urban schools, which are more likely to implement it already.

Additionally, the strategy "Organize school-based training for teachers (by an external trainer)" had a moderate association with schools' location, $\varphi = 0.209$, $p = 0.013$. More urban schools implement this strategy, while rural schools tend to require additional resources to implement this strategy.

Another weak association was detected between the strategy "Provide high-bandwidth internet to teachers (paid by the school, local authorities or local businesses) by School's Location" and schools' location, $\varphi = 0.192$, $p = 0.028$. A more significant number of schools in rural areas require additional resources to implement this strategy.

The strategy "Collaborate with local communities (NGOs, businesses) for digital competencies training and technical troubleshooting by School's Location" is weakly associated with schools' location, $\varphi = 0.192$, $p = 0.027$. Examining the results, it appears that more schools require additional resources in rural areas to implement this strategy.

3. Well-being

Within the Well-being section, the first challenge referred to adopting approaches to teach socio-emotional skills to students and assessed a total of 7 strategies. Firstly, 74% of schools were already implementing the measure where teachers start the day with an emotional check-in and finish the day with an emotional check-out, while 20% of schools were planning on immediate implementation of the strategy. Similarly, 67% of schools have already implemented a measure where pedagogues hold weekly calls with families to discuss the situation (what is going well, challenges, and how to enhance well-being). About 21% of schools considered that measure feasible and were planning to prioritize immediate implementation. Regarding facilitating peer discussions on socio-emotional well-being with students, 65% of schools had already implemented this measure, while 30% considered this strategy feasible and planned to prioritize it immediately. Forty-two percent of schools organized student group meetings where they can work on identifying and processing their challenging emotions, and 39% considered this strategy feasible and were planning on prioritizing for immediate implementation. However, 11% of participating schools would require additional resources to implement this measure. Additionally, 38% of participating schools were integrating socio-emotional learning in the curricula, focusing on emotion regulation, collaboration, and distress tolerance. At the same time, 44% of schools considered this measure important and feasible and were planning an immediate implementation, while 11% required additional resources to proceed with this strategy. Fifty-three percent of schools were planning on prioritizing measures for immediate implementation, to encourage the use of mindfulness activities in the class and teaching about growth mindset, while thirty-five percent of schools were already implementing these measures. Finally, regarding creating databases of online learning resources for socio-emotional skills and making them available to the student population, 27% of schools have already implemented it, and 43% considered this measure feasible and would prioritize immediate implementation. However, 23% of participating schools required additional resources to do that.

Table 4 Collaborate with School psychologists' pedagogues to explore how to strengthen students' levels of concentration and motivation through the school's location

Implementation	School's location	
	Urban$N$ (%)	Rural$N$ (%)
Have implemented this already	82 (78%)	89 (62%)
Feasible, will prioritize for immediate implementation	15 (14%)	24 (17%)
Would do this, but need additional resources (e.g., funds, time, authority)	7 (7%)	17 (12%)
Do not consider this relevant for our school at the moment	1 (1%)	13 (9%)

χ^2 (3) = 11.258, $p = .010$

The second challenge within the Well-being pillar referred to protecting and supporting children in domestic violence and abuse, which were expected to increase during the pandemic. The strategy of informing students of the child protection services and helplines available in the school and community was already implemented by 92% of schools. Similarly, 88% of schools gave all children a phone number to call if they were victims of violence or abuse (hotline or a school number). Eighty-seven percent of schools had already collaborated with social protection services to establish case management protocols to respond to abuse and violence. Furthermore, 75% of schools have already implemented a measure where School psychologists prioritize student victims of violence for one-on-one counselling. While this measure was considered important, 10% of schools required additional resources to implement this, and 9% considered it irrelevant to the school. Seventy-two percent of participating schools had already provided training teachers to identify signs of violence and abuse, while 17% of schools were planning on providing such training. Finally, 40% of schools already provided parent training workshops focusing on anger management, distress tolerance, and self-management skills. Moreover, 36% of schools considered it feasible and were planning on providing parent training, and 12% of participating schools considered this measure necessary; however, they required additional resources to implement.

Finally, the third challenge referred to the potential stigmatization of virus-affected students and staff and three strategies was included. Firstly, 92% of participating schools focused on disseminating accurate information about COVID-19 to students and staff, while 88% were establishing support networks for any student/staff member who is self-isolating after being infected with COVID-19. Finally, 78% of the schools have already implemented the strategy of engaging with families affected by COVID-19 to provide socio-emotional and practical support, while 14% of schools considered this measure feasible and would prioritize this measure for immediate implementation.

No significant association was found between well-being and geographical locations of schools, meaning that no significant differences among the four geographical locations in terms of strategies implemented were detected. Regarding differences between urban and rural schools, only one strategy, "School psychologists prioritize students-victims of violence for one-on-one counselling," had a moderate association $\varphi = 0.265$, $p = 0.001$ (Table 5). More specifically, for this strategy, it appears that though a significant number of both urban and rural schools implement this strategy, in rural schools, a significant number of schools still require additional resources to implement this or, in some cases, consider this irrelevant.

4. Safety

In the fourth section, which referred to safety, 15 strategies were assessed concerning minimizing infection risks and ensuring the safety of all students and staff. Firstly, 94 to 97% of schools were already implementing the following strategies: (a) installing hand sanitizing stations all around the school, (b) encouraging openness among students and staff in reporting even minor symptoms, (c) providing relevant training to teachers on the symptoms they should be mindful of, and (d) minimizing movement of students between classrooms, by encouraging only teachers to move from class to class. Furthermore, more than 87% of schools were already implementing the strategy of staggering arrival and departure times for different grades and maximizing the use of all school entrances/exits to minimize crowds, as well as the strategy of minimizing teaching approaches or subjects that required face-to-face group work, singing, or indoor physical education. Moreover, 76% of schools already implemented measures to ensure that desks are spaced at least 1 m from each other; however, 19% of schools needed additional resources to implement this measure. Seventy-five percent of schools implement measures of moving classes to larger and, if possible, open spaces, such as assembly halls, large school corridors, or even outdoors. About 13% of schools refused to answer whether they implemented this measure. Finally, 40% of schools implemented measures of splitting classes in sub-groups that can come on different days and times and alternate between in-school instruction and distance/online instruction, while 11% of schools required additional resources to implement this. On the other hand, 39% considered this measure irrelevant to their institutions.

Table 5 School psychologists prioritize students-victims of violence for one-on-one counselling

Implementation	School's location	
	Urban *N* (%)	Rural *N* (%)
Have implemented this already	92 (87%)	95 (66%)
Feasible, will prioritize for immediate implementation	5 (5%)	9 (6%)
Would do this, but need additional resources (e.g., funds, time, authority)	2 (2%)	21 (15%)
Do not consider this relevant for our school at the moment	6 (6%)	18 (13%)

χ^2 (3) = 9.149, p = .27

The second challenge referred to adapting to new health regulations and protection measures and considering children's and their families' needs and life circumstances. Ninety-eight percent of schools have already implemented regular communication with parents and students on health protocols and protective measures. Furthermore, 74% of schools consulted with students to understand their security concerns and improve school health protocols, and 17% considered this feasible and would prioritize immediate implementation. Seventy-one percent of schools made special provisions related to safety measures (mask-wearing, hand sanitizing, distancing) for children with special education needs, while 22% consider this measure irrelevant. Around 70% of participating schools consulted with parents and communities to understand security concerns and improve school health protocols. About 18% of schools considered this measure important and planned to prioritize its immediate implementation, while 12% required additional resources. Regarding special safety provisions for children from poor households (procurement of masks, etc.), 59% of schools implemented such strategies, while 20% required additional resources, and 13% considered this strategy irrelevant to the institution. Last but not least, 46% of schools set up a committee with teachers and parents to discuss the implementation of protective regulations and school closure, and 28% planned on prioritizing this strategy immediately. Twenty percent did not consider this measure relevant for their schools.

Regarding Safety strategies, there was no significant association found with the geographical locations of schools, which means that there are no significant differences among the four geographical locations in terms of strategies implemented.

In terms of schools' location (urban or rural), only the strategy "Splitting classes in sub-groups that can come on different days & times, and alternate between in-school instruction and online" had a moderate association, $\varphi=$ 0.247, $p = 0.002$ (Table 6). More specifically, it appears that a similar proportion of schools in both rural and urban areas are implementing this strategy; however, in rural areas, a more significant proportion of schools consider this strategy irrelevant to their institutions.

5. Nutrition

The implementation of nutrition strategies had no significant association with the geographical location of schools or the schools' urban-rural location. These results mean that all schools, regardless of their geographical location and urbanity, have no differences in the nutrition strategies they implement.

Discussion

At an aggregate level, results from the School Preparedness Toolkit provided significant insight into the resilience strategies that schools across Ukraine had deployed while at the same time offering entry points into additional resilience strategies that could be considered on the path toward greater resilience. These included both "low-hanging fruits"— adaptations that schools could independently implement using existing resources—and more challenging adaptations, which, in the opinion of most schools, would require additional resources in terms of funds, human resources, and level of authority.

In the dimension of access and participation, in the context of remote learning, it appears that most schools have already informed families which software to install to participate in learning. They also contacted them to inform them about school re-opening, address concerns, and encourage attendance. "Low-hanging fruit" adaptations that most schools would be willing to implement revolved around improving communication between the school and students or between students. Specifically, these included the holding of webinars for families on how to use online technology, assigning mentors to follow up on vulnerable students at risk of not participating in learning, and organizing peer mentorship between students to support motivation to remain at school and engage in learning (Putri et al., 2020). However, adaptations that revolved around addressing hardware or internet connectivity deficits that families were experiencing were deemed challenging to address at the school level, especially in rural communities, suggesting that support by

Table 6 Splitting classes in sub-groups that can come on different days and times, and alternate between in-school instruction and online

Implementation	School's location	
	Urban N (%)	Rural N (%)
Have implemented this already	46 (44%)	46 (32%)
Feasible, will prioritize for immediate implementation	12 (11%)	11 (8%)
Would do this, but need additional resources (e.g., funds, time, authority)	17 (16%)	11 (8%)
Do not consider this relevant for our school at the moment	30 (29%)	75 (52%)

χ^2 (3) = 15.148, $p = .002$

central educational authorities or local authorities would be required (Putri et al., 2020).

In the dimension of quality of learning, most schools have already contacted parents for advice on how to support learning at home, ensure that children have space and time to study, and guide parents in using online learning resources (Brom et al., 2020). "Low-hanging fruit" recommendations that schools felt they could effortlessly implement revolved around integrating elements of community cohesion in approaches to remote learning. These included organizing online peer study groups, parents' support groups, and mentorship programs between older and younger students. Adaptations that schools felt would be difficult to implement using existing resources included utilizing more specialized digital tools or partnering with universities and NGOs to support the online learning process. Differentiations between urban and rural schools related to this pillar reveal diversity between profiles of resilience, with rural schools displaying greater ease in developing systems for informal support (e.g., organizing a weekly call with families to discuss their situation, what is going well, what is challenging). In contrast, urban schools are more comfortable establishing professional support systems engaging psychologists' services.

In well-being, most schools had already developed sophisticated counselling support and protective services for at-risk students. Specifically, most schools were already collaborating with child protective services to establish case management protocols, deploying School psychologists to provide one-to-one counselling for victims of violence or bullying, and training teachers to identify signs of victimization or abuse. However, resilience strategies that focus on preventive interventions were found to be in the "low-hanging fruit" category, which was found to be appealing but had not yet been implemented. These included the integration of socio-emotional learning in school curricula and providing parent training workshops.

In the dimension of safety, numerous adaptations were reported consistently among almost all schools. These included various social distancing measures, hand sanitization, and training teachers and students in identifying and reporting relevant symptoms. What was less frequently done but considered valuable and feasible was to set up participatory mechanisms with parents, teachers, and students to understand safety concerns and discuss the implementation of protective regulations and school closure.

In summary, resilience adaptations that schools in Ukraine had already implemented tended to revolve around formal communication between schools and families (Adnan & Anwar, 2020; Brom et al., 2020), specialized one-to-one support for children at risk of violence, and implementation of mandated safety measures to prevent the spread of COVID-19 (Cohen & Kupferschmidt, 2020; Couzin-Frankel et al., 2020). What seemed to be missing from the adaptation repertoire of many schools—but was considered promising and easy to implement—was actions in the direction of greater school connectedness and cohesion (e.g., peer study groups, mentorship systems, parent support groups, participatory mechanisms to guide implementation of protective regulations) and preventive psychosocial interventions (e.g., integrating socio-emotional learning in the curricula, providing parent training workshops). Overall, Ukrainian schools were found to be adequately deploying protocols and expertise to deal with the adversities posed by the COVID-19 outbreak but can benefit from a greater emphasis on working toward transforming their schools into connected and cohesive communities.

Considering more broadly the utility of the School Preparedness Toolkit as a method to assess and strengthen systemic resilience in schools, the current study has shown significant promise and potential. In a matter of just a few months, several hundred schools across Ukraine were thoroughly familiarized with critical insights from the UNICEF Considerations document, engaged in an inclusive and participatory process to self-assess their school's resilience, received automated but individualized feedback, and had the opportunity to develop an action plan toward greater resilience. At the same time, data flowed back to the central level, most notably the MoES and UNICEF, who utilized the findings to develop new programs and policies supporting schools' resilience. Some limitations also became apparent. Many more schools had been targeted than utilized the toolkit. The difficulty in engaging schools in assessing their resilience suggests that a purely digital delivery modality might not be adequate. An alternative could be to recruit focal persons in each district who will be visiting local schools to inform them about the School Preparedness Toolkit, strengthening their motivation to utilize it, and possibly stepping in as facilitators in workshops with the school's senior management team to assist them in self-assessing their resilience, drawing up an action plan, and monitoring its implementation. Similarly, at the national level, formalizing a mechanism to ensure that self-assessment results that come in from schools are appropriately reviewed, discussed, and utilized by the appropriate stakeholders would significantly enhance the toolkit's overall effectiveness in contributing to novel and impactful programming and policies.

While this project was designed and implemented as a humanitarian response in the context of the COVID-19 outbreak, the significance of the approach extends beyond COVID. Ukraine in 2022–2023 is dealing with a much more severe challenge than the COVID outbreak of 2020–2021. While the context of war and invasion has little in common with the context of a public health emergency, what remains a constant is to continue to ensure schools' resilience amidst extreme challenges to their normal everyday functioning (Masten & Motti-Stefanidi, 2020). Appropriate adaptations of the toolkit could

be made to assess school preparedness in the context of the war; for instance, how to remain resilient amidst shelling and drone attacks, electricity and water disruptions, displacement and inflow of refugees, mobilization of school staff into the defense forces, and severe psychosocial trauma (Education: Impact of the War in Ukraine, 2022; Malykhin et al., 2022). Similarly, the toolkit could be adapted to other contexts facing extreme adversities that risk disrupting the education system, contributing to the preparedness, resilience, and recovery of institutions vital to children's safety, development, and well-being.

Data Availability Anonymized study data is available from the first and/or second author upon reasonable request.

Declarations

Conflict of Interest The authors declare no competing interests.

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