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A Solution to Challenges Faced by Teachers in Distance Learning to Improve the Quality and Accessibility of Education

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A B S T R A C T

In recent years, Mongolia has been paying great attention to the development of new knowledge-based industries, contributing to the development of the social, economic, and education sectors. One of the quality reforms being made to prepare a modern Mongolian citizen is the quality and accessibility of distance education. In particular, operations to meet this goal are developed and implemented in coordination with the financing mechanism. Alongside with government organizations, international, non-governmental, and civil society organizations play significant roles for achieving the goals that described above. The objectives of this study were (i) to support the discovery and sustainability in the field of education and distance learning, (ii) the quality and equal access to education due to geographical location, socio-economic conditions, and differences of development in learning. Exploring opportunities lost and how these lost relate to gender, ethnic minorities, remoteness, and the challenges facing teachers in managing online and distance learning. We are going to reflect on the results of quantitative research in the paper, including the experiences of teachers who provided educational services during the pandemic. The study explores the possibility of implementing distance learning in the general education sector in the future, measuring its interrelationships with national and local indicators. Based on data from 225 teachers from 45 schools nationwide, conclusions and solutions have been developed.

1. INTRODUCTION

The issue of access and quality of distance learning is widely discussed around the world (Government of Mongolia, 2020a, p.9; The Public Foundation “Taalim Forum”, 2023b,

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p.3). The COVID -19 pandemic urges the university to implement online education in its all the faculties and departments (Paudel, 2021, p.78).

In order to develop distance learning effectively, it is important to use a high level of quality, along with thorough research, analysis, policy, planning and management that clarify the reality of the current situation. Whether ICT can improve teachers' teaching methods and thereby students' learning outcomes has been a central issue in educational policy in recent years (Hideo Akabayashi, 2024, p.5). As a result of the global COVID-19 pandemic, 1.5 billion students in 165 countries were unable to participate in classroom training (The Asian Population and Development Association, 2021, p.5). Thus, UNESCO has advised these 165 countries with the message, "Learning never stops".

In Mongolia, classroom training was temporarily suspended during the pandemic, and distance learning was developed in "tele-" and "electronic" forms (Karina, et al., 2022, p.72). "Medle", the first online platform in Mongolia, has been used by a total of 10,407 10th-grade students from 477 schools across 21 provinces and 9 districts (Ministry of Education & Science, 2022, p.3). In Medle, organizers aimed to make the content more selective for high school students, based on their needs and interests creating equal opportunities for education (Ministry of Education & Science, 2022, p.10).

In connection with the adaptation and reformation of both global and Mongolian educational development policies, the role and participation of government, non-governmental, and civil society organizations in Mongolia are increasing (Government of Mongolia, 2020b, p.12). Additionally, intensive research and analysis on education, including distance learning, are being conducted (Thi & Jane, 2017, p.154).

In this study, we analyzed the quantitative research on the difficulties faced by teachers in working in an online environment and organizing training. The following issues are highlighted to disseminate the results and support further development:

I. Determining teachers' motivation and readiness index for distance learning;
II. Determining the willingness to adapt to changes in the educational environment and satisfaction with the distance learning experience in terms of trust, belief, and performance indicators.

The aim is to study the interrelationship between distance education readiness index and satisfaction index, and to determine the main problems of education that must be supported by the state.

2. MATERIALS AND METHOD

In this study, we used a cluster method developed by PIL International Research Company in Kyrgyzstan and approved by the International Ethical Commission in Central Asia (The Public Foundation "Taalim Forum", 2023a, p.14). As part of this study, a two-stage cluster method was used to determine the sample size of the quantitative survey conducted in Mongolia in April-May 2023. The sample unit in the first stage consisted of general education schools, and 45 secondary schools were randomly selected proportionally from each of the five regions (*Western, Central, Eastern, Khangai, Capital City*). In the second stage, teachers from the selected schools were randomly chosen (http://www.random.org/) for the study. For this reason, we selected teachers based on years of service and professional field, and gender equality was also considered.

We surveyed a total of 225 teachers across 360 variables throughout Mongolia (*with a confidence level of 0.95*); thus, we assume that our data represent the entire country. We used the SurveySTO program to collect data as well as SPSS22 and MS EXCEL programs for data analysis. In addition to single enumeration expressed in numbers and percentages, we performed comparative analyses by classifying data based on characteristics, calculating statistical indicators (descriptive statistics, ANOVA), ranking factors, conducting factor analysis, grouping, testing hypotheses (Test, Independent-Samples T Test), and establishing relationships.

"Satisfaction with the Experience of Distance Learning" was a measured indicator (Cronbach's Alpha = 0.840, n = 31). Satisfaction was defined by various stakeholders: "Student", "Community", "Parents", "Teacher", "Educational Institution", "Total Satisfaction," as well as by the agreement and opinions of the teachers participating in the study. It was calculated as the degree of complete convergence in responses.

3. RESULTS AND DISCUSSION

As shown in Figure 2, among the 255 teachers (aged 21–60 years) from 45 schools across urban and rural areas (city, aimag, soum), 50% have less than 10 years of teaching experience, while the other 50% have more than 10 years of experience. Of these teachers, 76.0% are women, and 24.0% are men. According to the data, the same distribution applies to 225 teachers from 45 urban and rural schools, with 50% having less than 10 years of experience, 50% having more than 10 years, and a gender ratio of 76.0% women to 24.0% men.

All teachers have between 1 and 42 years of total work experience, with teaching experience in their current schools ranging from 1 to 27 years. Among them, 65.3% hold bachelor’s degrees, while more than 25% have master’s degrees or higher. Most teachers instruct students in grades 5 to 9.

Regarding their professional fields, 29.0% specialize in Pedagogical Sciences: Physical and Mathematical Education (e.g., Mathematics, Physics, Informatics), making it the most common specialization, while 1.8% specialize in Pedagogical Technological Education (e.g., Industrial Specialization), representing the least common specialization.

Regarding the availability of personal computers and laptops for online education, 68.4% of teachers reported having a desktop or laptop computer at home, while 83.6% stated they use a computer with internet access at their workplace. When examining the potential for working in an electronic educational environment in terms of equipment, 68.4% of teachers confirmed having a personal computer or laptop at home, and 83.6% indicated having access to an internet-connected computer at school. More than 30% of teachers do not own personal desktop or laptop computers, and 20% lack access to computers at their schools. Regardless of location—whether in the provincial capital, the national capital, or rural areas—over 30% of teachers do not have a personal desktop or laptop at home, and approximately 20% do not have access to an internet-connected computer at school.

Teachers have attended various professional development courses over the past five years. Approximately 70% of teachers participated in courses offered by the General Authority for Education (GAE), 50% attended programs at universities and non-governmental

organizations (NGOs), 40% took part in local training, and 40% attended international courses. When assessing their professional growth through distance learning, about 70% participated in GAE programs, 50% attended courses by higher education institutions and NGOs, 40% joined local professional development courses, and approximately 30% improved their teaching skills through classroom-based or online courses.

To define the features of education services during COVID-19, teachers were asked the question: *"How did your teaching change to adapt to distance learning with pupils due to school closures?"* In response, 80% of teachers selected the following options: *"Increased the workload and began to use recorded webinars, online webinars, video conferences, lessons on interactive platforms, group online lessons, emails, and Teams."*

Further clarifying the features of educational services during the COVID-19 pandemic, teachers were also asked: *"In your experience, how has the way of working with students in a distance learning environment changed due to the curfew?"* More than 80% of responses indicated a high level of adoption of practices such as *"online webinars," "webinar recordings," "starting to use this form of teaching,"* and *"an increase in the volume of distance teaching."*

In the distance learning environment, students found it challenging to achieve learning outcomes such as *"a genuine understanding of course content," "skills for teamwork and collaboration,"* and *"independent work, self-organization, and self-management skills."*

a. Results of Measuring and Calculating Teachers' Distance Learning Motivation and Readiness Index:

First Finding: The teachers' distance learning readiness index is 78.4%. *"Basic and advanced computer knowledge and skills"* and *"Digital communication and collaboration skills"* are above average, while *"Online course development skills"* and *"Learning management system skills"* are below average (Figure 1).

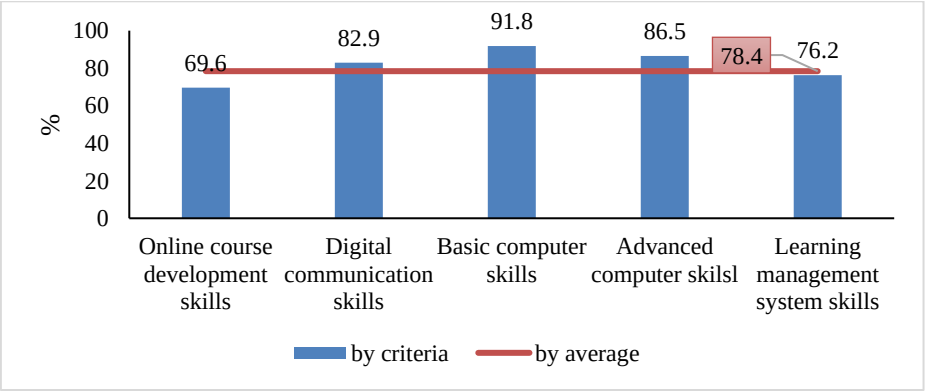

Figure 1. Distance Learning Readiness Index by Criteria and Percentage

To increase teachers' distance learning readiness index, particularly in areas such as online course development skills (69.6%), efforts should focus on improving the abilities related to the following responses in the questionnaire: *"I include real-life examples when teaching online," "I am ready to create online learning materials," "I know how to check if students have copied their written assignments," "I can organize interactive online learning activities that allow students to interact with peers, teachers, and course content,"* and *"I can measure students' understanding and performance potential."* Additionally, enhancing the skill *"I can teach online as effectively as in-person"* is essential (see Figure 2).

In other words, there is a clear need for a training manual that includes both training and methodology to develop these skills. Such a manual should guide educators in planning study content, organizing training, evaluating outcomes, and addressing the unique characteristics of learners.

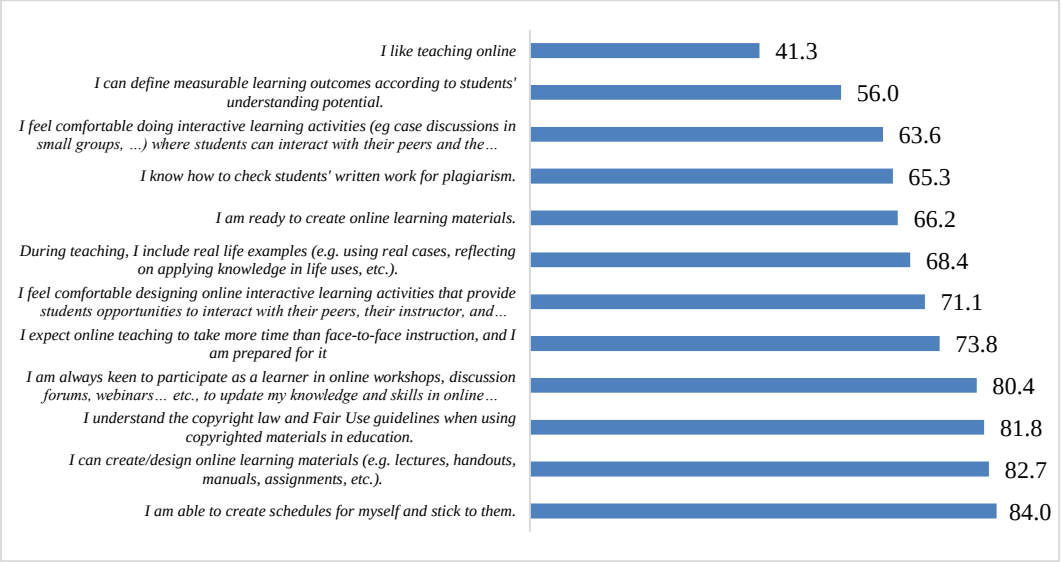

Figure 2. Online Course Development Skill, Percentage of teachers who responded 'Yes' (N=225)

Practices and attitudes should be adjusted to enhance teachers' digital and non-digital communication skills (82.9%). In other words, the indicator *"It is easy for me to communicate with students and colleagues in writing"* received a relatively low rating (Figure 3).

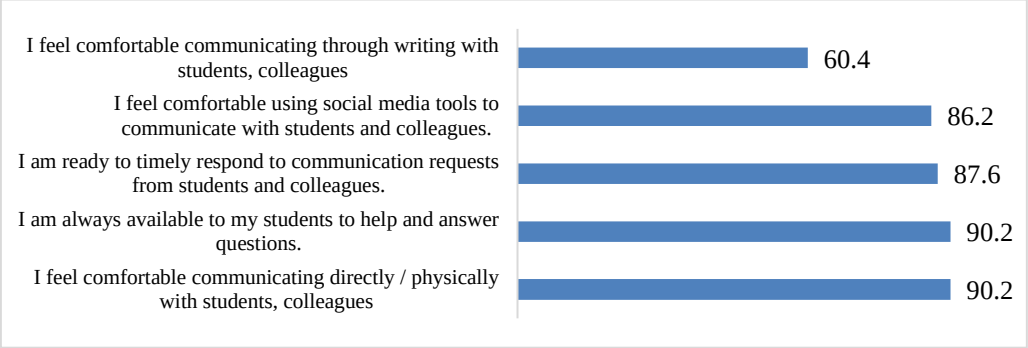

Figure 3. Digital Communication Skills, Percentage of Teachers Who Responded Positively (N=225)

In order to increase the basic computer skills of teachers (91.8 %), it is necessary to improve the skills of using Internet browsers and online learning platforms (Figure 4).

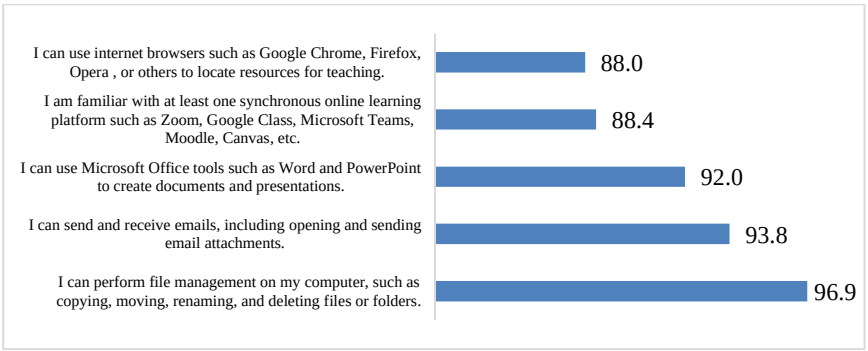

Figure 4. Basic Computer Skills, Percentage of teachers who responded 'Yes' (N=225)

To increase teachers' advanced computer knowledge and skills (86.5%), the abilities related to *"I can protect (password lock) files on my personal computer to safeguard confidential information"* and *"I can add audio/video files to my presentations"* need to be improved (Figure 5).

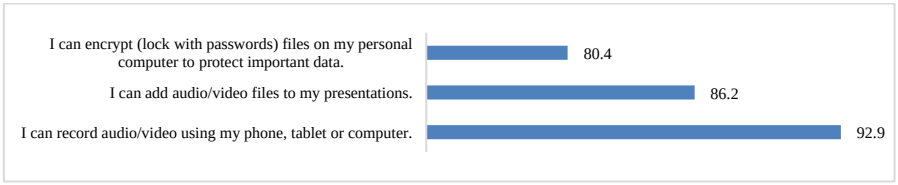

Figure 5. Advanced Computer Skills: Percentage of Teachers Who Responded Positively (N = 225)

To improve teachers' learning management system skills (76.2%), the following areas, based on responses to questions such as *"It's easy to use online assessment tools (exams, assignments, rubrics, questions) to assess student progress," "Using e-journals for students to grade and submit is easy,"* and *"I can use e-learning services (Google Classroom, Moodle, Foxford, etc.) to facilitate the student learning process"* should be developed (Figure 6).

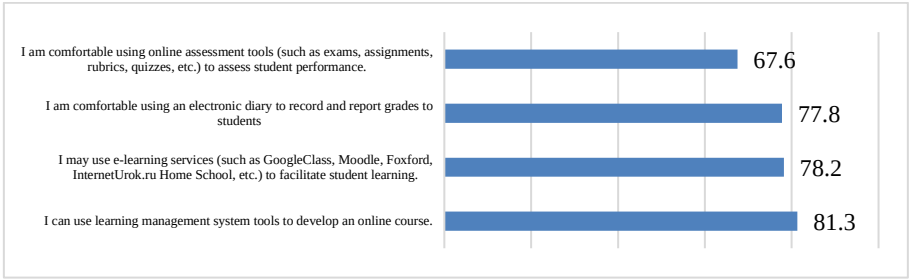

Figure 6. Ability to Use Learning Management System, Percentage of teachers who responded 'Yes' (N=225)

According to the criteria and indicators above, there is a need for comprehensive solutions such as planning, organizing, and evaluating online courses, organizing training, conducting internships, and then regularizing and evaluating them.

Second finding*:* A teacher's readiness for distance learning varies depending on their profession, geographic location, equipment availability, and environment. For instance, the criteria used to calculate the Teacher Distance Learning Readiness Index vary by location. The competing hypothesis—that the distance learning readiness index of teachers in capital city and provincial center schools is higher—is supported by statistical significance ($t = 0.045$, $df = 223$, $p = 0.049$). In other words, the index for teachers in the provincial centers and capital is 6.52 percent higher than that of teachers in Sums.

A teacher's readiness for distance learning does not depend on their age, years of experience, or level of education, but rather on their profession ($t = 0.023$, $df = 223$, $p = 0.022$). In other words, teachers in the "Information and Communication Technology" field have the highest readiness, at 86%, while teachers in professional groups such as "History/Social Science, Civic Education/Geography, Economics," "Elementary School," and "Physical Education, Labor/Technology" require skill enhancement.

Third finding: Teacher skills differ for each criterion, and the "Teacher Distance Learning Readiness Index" is more dependent on the "Online Course Development Skills ($r = 0.915^{**}$)" and "Basic Computer Skills ($r = 0.915^{**}$)" criteria.

In the future, it can be seen that there is a need to improve the "Online Course Development Skills" based on the "Basic Computer Skills" of the teachers (Table 1).

Table 1. Differences in Teacher Skills and Statistics

		Online course development skill	Digital communication skill	Basic computer skill	Advanced computer skill	Ability to use learning management system	Teachers' readiness index for DL
Provincial center and capital	N	95	95	95	95	95	95
	Mean	73.249	83.579	94.737	89.827	80.000	81.398
	Std. Dev	23.4756	18.9015	16.5569	23.3547	25.9398	17.8019
	Min	0.0	0.0	0.0	0.0	0.0	3.4
	Max	100.0	100.0	100.0	100.0	100.0	100.0
Sum	N	130	130	130	130	130	130
	Mean	66.858	82.462	89.692	84.107	73.462	76.191
	Std. Dev	27.8346	24.6546	20.4196	25.9920	30.1408	21.6270
	Min	0.0	0.0	0.0	0.0	0.0	0.0
	Max	100.0	100.0	100.0	100.0	100.0	100.0
N		225	225	225	225	225	225
Mean		69.556	82.933	91.822	86.522	76.222	78.389
Std. Deviation		26.2195	22.3671	19.0104	25.0194	28.5661	20.2236
Minimum		0.0	0.0	0.0	0.0	0.0	0.0
Maximum		100.0	100.0	100.0	100.0	100.0	100.0

Although there is no difference in the above-mentioned skills between teachers in the capital and local areas, it was possible to identify different needs at the sub-district, school, and teacher levels (see Table 1). Therefore, there is an opportunity to organize training for the target group.

b. The estimation of motivation to adapt to changes in the educational environment and the satisfaction of stakeholders

At the national level, the average "Total Satisfaction" is 46.8%. The highest level of satisfaction is 61.3% for "Educational Institutions," and the lowest is 15.1% for "Satisfaction/net," which is defined by the indicator "I like distance teaching more than traditional teaching" (see Figure 7).

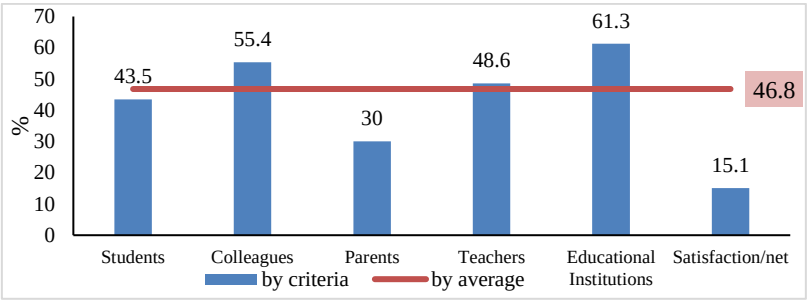

Figure 7. Satisfaction of Distance Learning Experience by Criteria and Percentage

The "Students' satisfaction (R=0.904**)" and "Teachers' satisfaction (R=0.742**)" criteria have the strongest influence at the national level "Total satisfaction".

It can be seen that there is a need to improve both teacher and student satisfaction in the future. For instance, the percentage of teachers who agreed with statements describing their satisfaction- such as *"Monitoring students' progress during distance learning was not a problem for me," "During distance learning, I used fewer methodological resources,"* and *"Due to technical difficulties, distance learning greatly limited my ability to teach"*- is low. However, teachers did not agree with the indicators describing student satisfaction: *"The DL programs allowed me to teach more effectively, resulting in the children understanding the lesson better," "Students were actively involved in DL," "Students were very motivated during DL,"* and *"My relationship with students outside of class became more active than in classroom lessons."*

Despite the characteristics of teachers and students, clarifying what indicators need to be improved and paid attention to when conducting distance learning has created an advantage. Therefore, there is a possibility to comprehensively plan and define the needs of the next stage, such as adjusting to the characteristics of the target student group, creating opportunities to change attitudes, increasing the role and responsibility of parents and guardians, etc.

c. The correlation between the indicators "Readiness Index for DL" and "Satisfaction of DL experience"

At the national level, the 'Readiness Index for DL' averages 78.5%, while the 'Satisfaction with DL experience' averages 47.4%.

There is a significant and strong correlation (Table 2) between the indicators "Teacher Online Learning Readiness Index" and "Satisfaction with Distance Learning Experience". If the "Teachers' Online Training Readiness Index" is increased by 10%, the "Satisfaction of Distance Learning Experience" can be increased by 2.5%.

Table 2. Correlation Between Teacher's 'Readiness Index for DL' and 'Satisfaction of DL experience

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.342[a]	.117	.113	13.9025
a. Predictors: (Constant), Teachers' Readiness Index for DL				

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5707.164	1	5707.164	29.528	.000[b]
	Residual	43101.216	223	193.279		
	Total	48808.380	224			
a. Dependent Variable: Total Satisfaction						
b. Predictors: (Constant), Teachers' Readiness Index for DL						

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	27.795	3.718		7.476	.000
	Teachers' Readiness Index for DL	.250	.046	.342	5.434	.000
a. Dependent Variable: Total Satisfaction						

Therefore, there is a need to improve the satisfaction of not only teachers and students but also stakeholders. It is indicated that this can be continuously measured using the above-mentioned method and reflected in future work.

Conclusion: Contributed to the definition of "Difficulties faced by teachers in working in the online environment and organizing training" in the "Innovative Distance Learning Methods to Improve Access to Education" project. Based on the results of the quantitative research, the following conclusions and suggestions have been developed:

- The 'Readiness Index for DL' of teachers and students has been measured, leading to an improved result.
- The participation of direct and indirect stakeholders has been increased, thereby enhancing satisfaction.
- There is a direct and weak correlation between the 'Readiness Index for DL' of teachers and the 'Satisfaction of DL experience' of stakeholders. In other words, the 'Satisfaction of DL experience' of stakeholders can be increased by enhancing the 'Readiness Index for DL' of teachers.
- The difference and correlation between the 'Readiness Index for DL,' 'Motivation to Adapt to Changes in the Educational Environment,' and 'Satisfaction with the DL Experience' have been identified, which can be exemplified in making plans and decisions for the development of distance learning strategies and policies in the future.
- It is concluded that Mongolia needs to improve its distance learning policy. In other words, a holistic approach is required, focusing on improving the quality, organization, effectiveness, and accountability of distance learning programs. Additionally, ensuring the stability of development through the characteristics and compliance of criteria and indicators, such as the readiness and satisfaction with distance education and learning activities, is essential.

***Recommendation*:** It is proposed to discuss and disseminate the activities and experiences implemented within the scope of the quantitative research of the project at (i) national, (ii) local, and organizational levels, particularly:

(i) At local and organizational level:

- It is necessary to provide professional management and methodology for improving, using, and disseminating the assessment methodology for DL readiness and satisfaction;
- It needs to organize and implement the “Activities to influence parents” to improve the shared responsibilities of schools (teachers, colleagues, educational institutions), families (parents, guardians), and students;
- With the participation of stakeholders, educational departments and schools of provinces and cities should conduct evaluations with the "Assessment Methodology of Distance Learning Readiness" at certain intervals and reflect the results in their activities.

(ii) At the national level:

- Increase the standards and programs of distance learning courses in the professional study plan for MNUE students and reflect them in the study plans of other universities;
- Create a unified platform for the integration and dissemination of research results reported by governmental and non-governmental organizations and organize experience exchange meetings and national consultations;
- Discuss the policy, legal, and operational problems of educational service of distance learning and training and ensure the participation of relevant parties in determining strategies and ways to solve these problems.

4. REFERENCES

Ministry of Education and Science. (2022). The first online school in Mongolia. https://moe.gov.mn/post/121087

UNICEF Mongolia. (2022). Assessment of effectiveness of Tele-Lessons. https://www.unicef.org/mongolia/reports/assessment-effectiveness-tele-lessons

UNICEF For every child. (2021). Education covid-19 case study: Mongolia – remediation of learning after school reopening.

Hideo Akabayashi, Shimpei Taguchi & Mirka Zvedelikova. (2024). School ICT resources, teachers, and online education: evidence from school closures in Japan during the COVID-19 pandemic. *Education Economics*, pp.1-14. doi: https://doi.org/10.1080/09645292.2024.2362917

Paudel, P. (2021). Online education: Benefits, challenges and strategies during and after COVID-19 in higher education. *International Journal on Studies in Education (IJonSE*), 3(2), pp.70-85. doi: https://doi.org/10.46328/ijonse.32

Karina Palkova , Olena Agapova, Aelita Zīle, Anton Polianskyi, Khosha Vadym, Serafyma Hasparian, Mozhaiev Mykhailo. (2022). Sustainability of Open Educational Resources in Forensic Sciences: International Experience. *European Journal of Sustainable Development*, 11(3), pp.71-80. doi: https://doi.org/10.14207/ejsd.2022.v11n3p71

Thi Kinh Kieu, Jane Singer. (2017). Involvement of NGOs in Training Teachers in Education for Sustainable Development in Vietnam: A Case Study. *European Journal of Sustainable Development*, 6(1) pp.153-166 doi: https://doi.org/10.14207/ejsd.2017.v6n1p153

The Public Foundation "Taalim Forum". (2023a). *International Conference "Educational Strategies and Innovations in the Era of Digitalization-2023*". Ulaanbaatar, Mongolia

The Public Foundation "Taalim Forum". (2023b). Meeting of the consortium members at the Mongolian National University of Education. Ulaanbaatar, Mongolia

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