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FINAL REPORT

FINAL EVALUATION STUDY OF THE “EDUCATION IMPROVEMENT PROJECT”

Presented by **EV Consulting CJSC**

to the **Center for Education Projects Project Implementation Unit of the
Ministry of Education, Science, Culture and Sports of the Republic of
Armenia**



Abbreviations

USA	United States of America
SMIS	School Management Information System
EU	European Union
YSU	Yerevan State University
NIE	National Institute of Education
NCEDI	National Center for Education Development and Innovation
CFEP PIU	“Center for Education Projects” Project Implementation Unit
NCET	National Center for Educational Technologies
ANAU	Armenian National Agrarian University
WB	World Bank
AEN	Armenian Educational Network
RA	Republic of Armenia
NAS RA	National Academy of Sciences of the Republic of Armenia
RA MoESCS	Ministry of Education, Science, Culture and Sports of the Republic of Armenia
VEMIS	Vocational Education Management Information System
CIF	Competitive Innovation Fund
EDI	Early Development Index
LSGBs	Local Self-Government Bodies
ICT	Information and Communications Technology

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1. INTRODUCTION

The final evaluation study on the results of the “Education Improvement Project” examines the Project results and the level of achievement of the predefined performance indicators, provides full information about the project implementation, and looks into the opinions of the beneficiaries regarding the implemented activities and results. The study also analyzes the Project implementation practice and the identified issues in the context of implementation of the WB “Education Improvement Project”. The study was conducted by EV Consulting CJSC from May to August, 2021.

In order to properly conduct the study two data sources were used: existing secondary data and newly collected primary data.

Existing secondary data sources include the following:

- Quarterly Reports of the “Center for Education Projects” Project Implementation Unit under the RA MoESCS;
- Final Evaluation Study Report of the “Second Education Quality and Relevance Project” (EQRP2);
- Operational Manual of the “Education Improvement Project”;
- Reports submitted under the Project by external consulting firms and experts;
- Other documents, regulations, reports, and manuals related to the Project.

Primary data sources include the following:

- In-depth interviews with the institutions having implemented or assisted in implementing the Project, as well as Project beneficiaries;
- Focus groups with Project beneficiaries;
- Quantitative surveys among Project beneficiaries.

From the secondary and primary quantitative and qualitative data analyses were conducted and the actual performance indicators were calculated. Certain indicators were calculated using existing secondary data provided by relevant institutions, while others were calculated using new primary data collected through surveys. For analysis purposes, the existing quantitative data was combined with qualitative data collected within the framework of the study. Primary data was collected from all the main beneficiaries. Such an approach ensures comprehensive fact analysis and allows for various beneficiaries to present their views.

The final Project evaluation was made based on summarizing the achievement of the Project’s target indicators and intermediate indicators of the subcomponents. The achievement of each subcomponent was assessed based on the analysis of activities aimed at achieving the objectives and the actual results. The evaluation of the subcomponents took into account the effect of external changes on Project results and its impact, main factors affecting success and failure, and various risks related to the implementation of the subcomponent.

At the end of the study conclusions and recommendations that were made based on the Project results are listed. They are aimed at ensuring the sustainability of the Project activities and to enhance the effectiveness of the activities of the World Bank’s new loan project in the field of education in Armenia and other countries.

2. EXECUTIVE SUMMARY

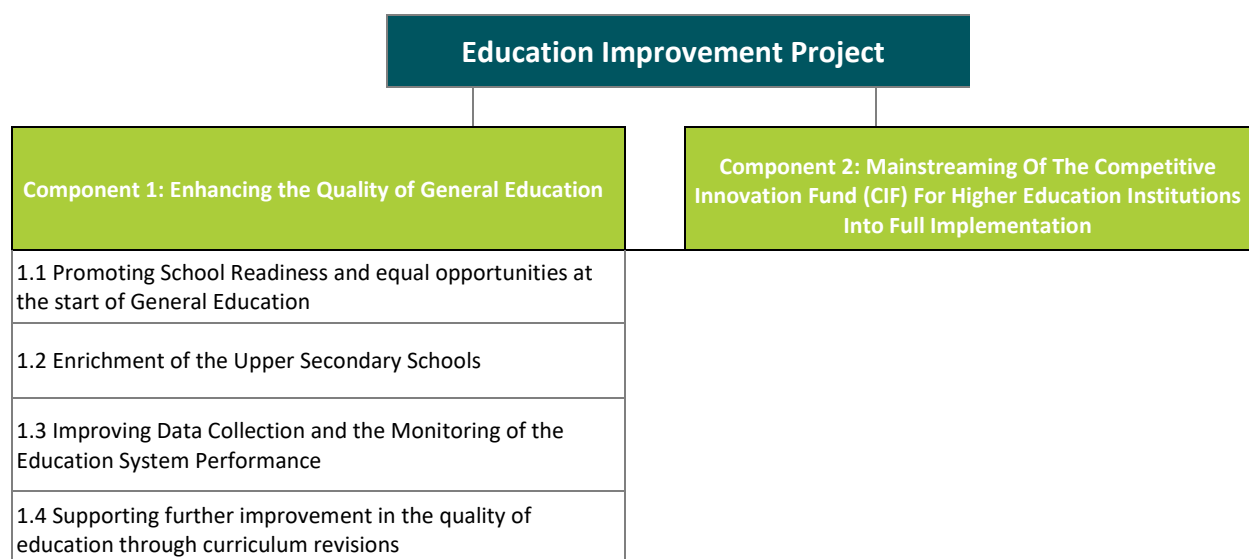
The final evaluation study of the results of the World Bank's "Education Improvement Project" (Project) aims to study the compliance of Project results with the predefined performance indicators and to provide comprehensive information regarding the Project implementation. The study also examines the Project implementation practices and identifies issues that will be taken into account in the next rounds of Project implementation. The study was implemented by EV Consulting CJSC from May to August, 2021 at the request of the Center for Education Projects PIU.

PROJECT DESCRIPTION

The Project was implemented during the period from 2015 to 2021¹. The main objective of the Project is to support the RA Government in moving the development of the education system towards a knowledge-based economy by improving the quality of general and higher vocational education to meet the socioeconomic requirements of the society.

The continuity and integrity of the RA Government's policy and reforms in the general and higher education sectors required that several processes playing a crucial role be completed. The Project has taken into account the priorities of education reforms and ensured the continuity and expansion of activities implemented under the WB's "Second Education Quality and Relevance Project" (2009-2015).

There are two components to the Project. The first component includes four subcomponents.



The RA Ministry of Education, Science, Culture and Sports was authorized to implement the Project, and the executor is the RA Ministry of RA MoESCS "Center for Education Projects" Project Implementation Unit. The main project implementation partners are the National Center for Educational Technologies, the National Center for Education Development and Innovation, Armenian State Pedagogical University after

¹ At the moment of its launch, the Project was set to be implemented in 2015-2019. In 2018, the ending date of the Project was extended to September 30, 2021.

Khachatur Abovyan, the departments of education, culture, and sports of the staff of regional administrations, and HEIs, schools, and preschools implementing the grant projects.

The World Bank committed \$30 million for the Project's implementation, which covers the 80% of the Project. The 20% of the Project's total cost will be co-funded by the RA Government.

On July 10, 2018, the RA Government endorsed the MoESCS' request to extend the period of implementation of the Project by 24 months to September 30, 2021 in order to complete certain activities.

"The Education Improvement Project" was launched on November 20, 2014. Several activities under the Project subcomponents have significantly deviated from the Project implementation schedule, which has resulted in the delay of the overall Project implementation deadline. Particularly, the rehabilitation of the NCET and high schools began with significant delays due to the following reasons:

- No expenditure estimates of seismic retrofitting activities and costs had been made in the technical design of the five schools to be rehabilitated in the first round of the Project. The implementation of this activity required an additional 11 months.
- Due to governmental procedures, an additional year was needed for NCET property registration.
- The total amount of the final estimate (\$30.7 million) of the 12 schools to be rehabilitated in the second round of the Project significantly exceeded the total amount of the initial estimate (\$11.7 million). Given the situation, this activity was temporarily put on hold. Then on June 20, 2017, the Prime Minister's office adopted a decree to reduce the number of schools to be rehabilitated from 12 to 6 or 7, and to begin rehabilitations. Eventually, eight schools were included in the second round.
- The total amount of the final estimate (\$900,000) of the rehabilitation of the NCET building significantly exceeded the total amount of the initial estimate (\$270,000). By the decree of the Prime Minister's office, dated June 20, 2017, the rehabilitation of the NCET building was to begin in accordance with the final estimate. Rehabilitations began in April 2018.

The economic crisis in the country also accounted for the delayed completion date of the Project activities. For example, groundwork for the procurement of science lab equipment for high schools was completed in 2016, but due to the economic and unstable political situation in the country, the Government did not allocate the financing necessary to begin the procurement process. As a result, the mentioned activity was temporarily put on hold. Then in 2018, a decision was adopted by which science lab equipment and furniture in 4 subject areas (physics, chemistry, biology, geography) were to be provided only to the 99 out of 107 high schools in Armenia. The furniture and equipment of natural sciences laboratories in the rest of the high schools (8) will be fully equipped once the rehabilitation is completed by September 30, 2021.

A number of activities under the Project were also put on hold during the project implementation period due to the Velvet Revolution in Armenia. The new Government formed after the revolution later studied the Project activities and adopted a decree on continuing them.

During the project implementation period, Armenia also saw institutional changes that impacted the implementation of the Project's separate subcomponents (see Table 1 below).

TABLE 1: INSTITUTIONAL CHANGES IN ARMENIA'S EDUCATION SECTOR AND THEIR IMPACT ON SEPARATE SUBCOMPONENTS OF THE PROJECT

	STRUCTURAL (INSTITUTIONAL) CHANGES	PROJECT SUBCOMPONENT	IMPACT ON PROJECT IMPLEMENTATION	DESCRIPTION OF IMPACT ON PROJECT IMPLEMENTATION
1.	In 2019, as part of the RA Government's optimization plan, the Ministry of Education and Science was merged with the Ministries of Culture, and Sport and Youth Affairs and renamed as the RA Ministry of Education, Science, Culture and Sports.	Components 1 and 2	High Medium Low No impact	Personnel playing a key role in decision making on the Project implementation, including the minister, deputy ministers, heads of general education departments and divisions, changed.
2.	In 2016, the process of liquidation of the National Institute of Education (NIE) CJSC began. It was completed in 2019.	Subcomponent 1.1	High Medium Low No impact	Due to this, trainings for the pedagogical staff of preschool institutions by NIE were discontinued. Later on, the trainings were organized and implemented by Armenian State Pedagogical University after Khachatur Abovyan.
3.	In 2021, the National Center for Education Development and Innovation (NCEDI) Foundation was established.	Subcomponent 1.4	High Medium Low No impact	The NCEDI will continue to perform some of the NIE's functions, particularly those related to the inspection of subject standards, monitoring and overseeing of the education policy implementation, etc.
4.	In 2015-2021, the higher education institutions were mostly restructured as foundations.	Component 2	High Medium Low No impact	After 2017, the rectors and heads of several universities as well as the boards of trustees were changed. Since then, interim rectors have headed several higher education institutions (State University of Shirak, Yerevan State University). As a result, not all planned project activities in HEIs are being accomplished. More precisely, due to absence of a board of trustees at YSU, the Drug Quality Monitoring Center has not been able to post job openings.
5.	Per the 2019 decree N 1503-N of the RA Government, the new formula for funding state general education schools in Armenia was approved.	Component 1	High Medium Low No impact	The funding formula based on student numbers includes the components of number of school students, the average number of teachers per classroom, accounted by the number of classrooms for various education levels.

PERFORMANCE OF PROJECT OUTCOME AND INTERMEDIATE RESULTS INDICATORS

Activities under Component 1 have been mostly implemented, and three of the four results indicators have been achieved. The other one (high schools targeted by the Project which meet Armenia's construction and safety standards and are equipped with state-of-the-art education resources) will be achieved by the Project end date— September 30, 2021.

The result indicator for Component 2 has been achieved for the 14 completed grant programs. The four ongoing projects will be completed by the Project end date.

PERFORMANCE OF PROJECT RESULTS INDICATORS

Indicator	Baseline	Actual 2021 As of July 31
Component 1: General Education Quality Improvement		
1. Increased EDI scores of children in preschool institutions and schools that received a grant		
<i>Target</i>		<i>EDI scores in the treatment group are significantly higher than EDI scores in the control group.</i>
<i>Actual</i>	41.49 (2018)	During the academic year, EDI scores in the treatment group improved by an average of 35 percentage points (76.82 in 2019) and were higher than the EDI scores in the control group.
2. Increased number of high schools targeted by the Project, which meet Armenia's construction and safety standards and are equipped with state-of-the-art education resources		
<i>Target</i>		13 (2015)
<i>Actual</i>	-	6 (July 2021)
3. Improved communication in education system through ICT		
<i>Target</i>		Yes (2015)
<i>Actual</i>	-	Yes (2021)
4. Improved quality of education through the revision of the curriculum and standards Improved skills and knowledge of students in compliance with modern requirements		
<i>Target</i>		9 (2015)
<i>Actual</i>	-	6* (2021)
Component 2: Supporting the Development of the Competitive Innovation Fund		
5. Enhanced higher education quality, relevance and accessibility; improved and modernized educational and infrastructural capacities		
<i>Target</i>		Yes (2015)
<i>Actual</i>		Yes (2021)

Note

	Achieved
	Partially achieved
	Not achieved

* In terms of STEM subjects, "The EU4Innovation in Armenia: STEM Pilot Activities Project" is comparable to the Subcomponent 1.4 of "The Education Improvement Project". Under the Project, six subject standards and curricula were revised, excluding the STEM subjects.

Fifteen intermediate results indicators have been defined for the Project. Six of the twelve intermediate results indicators defined for Component 1 were achieved by the time this study was prepared. Four will be achieved by the Project end date—September 30, 2021. Two target result indicators were not effective

by the start of this study. The impact of activities implemented under the Project that will lead to the achievement of the target indicator will be seen in one or two years.

PERFORMANCE OF THE PROJECT'S INTERMEDIATE RESULTS INDICATORS

Subcomponent	Indicator	Target	Actual 2021 As of July 31
1.1. Promoting School Readiness and Equal Opportunities at the Start of General Education	1. Number of community-based preschools supported by the Project	134	136
	2. Four to six-year-old children enrolled in preschools supported by the Project	3,450	3,462
1.2. Enrichment of the Upper Secondary Schools	3. Number of high schools by the end of the Project, which meet Armenia's construction and safety standards	13	6
	4. Number of rehabilitated classrooms	162	86
	5. Number of high schools equipped with laboratories provided by the Project	107	99
	6. Improved student attendance at schools rehabilitated by the Project	Yes	Please see note*
1.3. Improving Data Collection and the Monitoring of the Education System Performance	7. Education Management Information System for general, vocational, and higher education integrated and operational	Yes	Yes
	8. The technical equipment needs of Armenian schools have been assessed; they have been updated at schools targeted by the Project; electronic educational resources have been developed for missing topics	Yes	Yes
	9. Number of administrative staff members and teachers trained to use ICT in their teaching	4,000	~3,300
1.4. Supporting Further Improvement in the Quality of Education through Curriculum Revisions	10. The national strategic document on general education has been revised and endorsed by the Government	Yes	Yes
	11. Number of subjects whose standards and curricula have been revised and endorsed by the Government	9	6
2. Mainstreaming of the Competitive Innovation Fund (CIF) for Higher Education Institutions into Full Implementation	1. Number of partnerships between state and private institutions established under the CIF	5	7
	2. Number of higher education institutions benefitting from the CIF's component	15	18
	3. Share of grants established under the CIF achieving at least 80% of their proposed objectives	18	14

Note

	Achieved
	Partially achieved
	Not achieved

Note: The real impact of the activity can be properly measured one or two years after the date of completion.

COMPONENT 1: ENHANCING THE QUALITY OF GENERAL SECONDARY EDUCATION

STATUS OF THE RESULTS INDICATORS OF THE PROJECT'S COMPONENT 1

N	Projects Results Indicators	STATUS ACTUAL 2021 As of July 31
1	Increased EDI scores of children in preschool institutions that received a grant	Achieved
2	Number of community-based preschools supported by the Project	Over performed
3	Four to six-year-old children (3,450) enrolled in preschools supported by the Project	Over performed
4	Number of high schools (13) meeting Armenia's construction and safety standards by the end of the Project	Partially achieved, in progress
5	Number of rehabilitated classrooms (162) resulting from Project interventions	Partially achieved, in progress
6	Increased number of high schools (107) equipped with laboratories provided by the Project	Partially achieved, in progress
7	Improved student attendance at schools rehabilitation by the Project	Please, see the note**
8	Education Management Information System for general, vocational, and higher education integrated and operational	Achieved
9	The technical equipment needs of Armenian schools have been assessed; they have been updated at schools targeted by the Project; electronic educational resources have been developed for missing topics	Achieved
10	Number (4,000) of administrative staff members and teachers trained in the use of the integrated Education Management Information Systems	Partially achieved In progress
11	The national strategic document on general education have been revised and endorsed by the Government	Achieved
12	Number of subjects (9) whose standards and curricula have been revised and endorsed by the Government	Achieved*

**Note: In terms of STEM subjects, "The EU4Innovation in Armenia: STEM Pilot Activities Project" is comparable to the Subcomponent 1.4 of "The Education Improvement Project". Under the Project, six subject standards and curricula were revised, excluding the STEM subjects.

Subcomponent 1.1: Due to projects implemented in the field of preschool education, the Early Development Index (EDI) scores of preschool students involved in the Project increased. By the end of the academic year, EDI scores in the treatment group were improved by an average of 35 percentage points and were also higher than EDI scores in the control group. Instead of the 134 preschools planned to be established under the Project, 136 were established, and currently operate in all regions in Armenia, except one. Yerevan Basic School N55 Named after A. Chekhov SNCO is currently in the process of getting a license. The preschools established under the project in 2015-2020 in their first year alone welcomed a total of 3,462 children instead of the planned 3,450.

Subcomponent 1.2: Thanks to the implemented Project, six more high schools now meet Armenia's construction and safety standards. By the time this study was being conducted, the rehabilitation of seven more high schools was underway. According to the head of the Subcomponent, around 83% of the planned rehabilitation was completed as of June 30, 2021. The schools are expected to be fully operational in September 2021 (except Goris High School N1).

The target indicator for the number of repaired classrooms at schools rehabilitated under the Project is 162. There are 106 classrooms in the six rehabilitated schools, and there will be 176 more classrooms once the rehabilitation of seven high schools benefitting from the Project is completed.

Of the 107 high schools targeted by the Project, 99 high schools have been equipped with natural sciences laboratories and furniture. By the time this study was being conducted, the indicator was achieved by 92.5%. The indicator will be fully achieved once the rehabilitation of the high schools is completed by September 30, 2021.

The implementation of activities under the Subcomponent was expected to improve student attendance at schools rehabilitated by the Project. The completed rehabilitation of five² schools and resumption of classes were followed by the outbreak of the coronavirus pandemic, due to which schools switched to distant learning. During the distant learning period, student absences were registered with some reservations since many of the students, especially the ones in remote border areas, were unable to participate in online classes in real-time mode due to lack of computer devices and/or disrupted Internet connectivity. They mostly watched the recorded video lessons that were available online. For these reasons, the real impact of the activity on student attendance in target high schools cannot be properly measured at this time. One or two years will need to pass before an assessment can be made.

Subcomponent 1.3: The Education Management Information System for general, secondary vocational and higher education is fully integrated and used by general education schools and colleges in Armenia. Higher education institutions will start using the system starting in September 2021.

The technical equipment needs of general education schools have been assessed, and equipment has been updated in target schools. In 2019, the CFEP PIU conducted an assessment of technical equipment needs among 387 general education institutions that had participated in trainings in 2018—42 schools received an interactive projector, and 63 schools received projectors. On top of that, in 2020, one classroom in 101 education institutions in Armenia's regions (except Tavush) has been technically equipped, and 107 high schools received a conference camera for organizing remote and open classes.

A plan to provide projectors to 272 schools in 2021 is already in progress, and 259 of these schools have been provided with laptops.

Electronic educational resources have been developed for the topics (125 topics in total) missing in the textbooks of four subjects—physics, chemistry, biology and geometry—taught in basic and high schools in Armenia. They are available here: <http://esource.armedu.am/>. In 2020, the subsections of each subject had 200,000 visits on average, compared with 100,000 visits in 2019.

Teacher trainings and professional development, continuous integration of ICT in teaching and learning, and high school reforms, which have contributed to the improvement of the quality of education, have played an important role in such developments.

Subcomponent 1.4: The national strategic document on general education has been revised and endorsed by the Government. The standards and curricula of six subject disciplines were revised instead of the planned nine. The standards and curricula of three STEM subjects were revised within the framework of “The EU4Innovation in Armenia: STEM Pilot Activities Project”. The working groups with the technical assistance of international experts having developed standards and curricula for the six subject disciplines

²No classes have yet been held at the rehabilitated Gyumri Academic College.

expanded academic materials for 20 schools for pilot testing by subjects and forms. The pilot testing process began in January 2021. The piloting teachers believe it would be useful to roll out the new standards and curricula in general education schools in Armenia when simultaneously all conditions required for achieving changes (teacher trainings, technical equipment in schools, relevant academic environment, etc.) are also ensured.

COMPONENT 2: MAINSTREAMING OF THE COMPETITIVE INNOVATION FUND FOR HIGHER EDUCATION INSTITUTIONS INTO FULL IMPLEMENTATION

By the time the current research was being prepared, two of the three target result indicators set for Component 2 were fully achieved. Presently, the RA Government and the World Bank are negotiating to extend the contracts of higher education institutions benefitting from the Component. After an agreement has been reached, higher education institutions can complete the activities under the contract, and thus all results indicators under the Component will be achieved.

TABLE 1: STATUS OF RESULTS INDICATORS OF THE PROJECT'S COMPONENT 2

N	PROJECT RESULTS INDICATORS	STATUS ACTUAL 2021 As of July 31
1	Number of partnerships between state and private institutions established under the Competitive Innovation Fund (CIF) (5)	Overperformed (7)
2	Number of higher education institutions benefitting from the CIF's component (18)	Achieved (18)
3	Share of grants established under the CIF achieving at least 80% of their proposed objectives (18)	Achieved (14) Partially achieved, in progress (4)

Three rounds of disbursing CIF grants have been organized in the reporting period: first (i), second (additional) (ii), and second (main) (iii), each including six beneficiary higher education institutions for a total of 18 projects. Seven of them are consortium-based projects in partnership with the state and private institutions, instead of the target of five. The implementation of 14 grants awarded as part of the first (i), second (additional) (ii) and second (main) (iii) rounds of the Project has been successfully completed, and all of the objectives have been achieved.

Implemented activities include the following:

- Establishing at least 16 innovative laboratories / excellence enters and furnishing them with proper equipment
- Developing or further improving at least 16 new academic programs
- Ensuring academic, internship and exchange programs for students and counseling services for the scientific-pedagogical staff with 10 local and international academic institutions
- Collaborating with the private sector organizations in Armenia to attract additional funds to ensure sustainability of the Project

The RA Government and the World Bank are negotiating over extending the contract deadline for three of the projects being implemented as part of the second (main) (iii) round. If approved, all six grant projects will be fully completed by the end of the new deadline, and the objectives will be completely achieved.

SUMMARY AND CONCLUSIONS

The projects implemented **in the general education sector** have significantly improved school readiness of children in Armenia and promoted equal opportunities at the start of general education, especially in the regions. The use of ICT in the educational process has increased and has reached a completely new level. In terms of accessibility, apart from educational use, connecting the schools in remote, border areas to the Internet has also had important social impact for those communities since Internet access was very poor there. As a result of the expanded educational and technical infrastructures of high schools, enhanced teacher capacities, and other developments, the high school system has transformed from the formation to development phase. This will enable to fully accomplish the main mission of the high school system, which is to prepare students for independent life and further professional education.

The Competitive Innovation Fund was established in the **higher education sector** and successfully launched. The grants awarded by the Fund have significantly improved the quality of higher education, its relevance and accessibility.

CHALLENGES

Overall, the main risks for the materialization and sustainability of the activities implemented under the Project and the achieved results are external. While the activities under the Project have been mostly accomplished, and the set goals have been mostly achieved, the systemic issues in Armenia's general and higher education sectors may limit the Project's large-scale impact. Addressing these issues will increase the efficiency of the Project activities and ensure its continuity.

The educational infrastructures, facilities, technologies, academic materials, and other educational resources for schools **in the general education sector** need to be updated and improved. The current model of trainings needs to be improved to fully meet the requirements for knowledge, skills, and capacities of the teachers. In preschool education, there still are accessibility gaps, especially in the regions.

The established quality assurance system **in the higher education sector** is a new educational culture in Armenia. All stakeholders need to demonstrate consistent efforts and work for the system to succeed and become an integral element of the higher education system.

Given the rapid developments in educational needs, priorities, and technologies, the continuous improvement of educational resources and the educational environment is an imperative for enhancing the quality of education. For this purpose, a joint agenda and continuous harmonization of the state policy and projects of the World Bank and other stakeholder international organizations are necessary to lead to greater synergy and improved results.

The implementation of the World Bank's "Education Improvement Project" has recorded tangible results in Armenia's education sector and has had positive impact. The implemented projects have paved the way for development initiatives in the general and higher education sectors.

3. PROJECT RESULTS ASSESSMENT

COMPONENT 1: ENHANCING THE QUALITY OF GENERAL EDUCATION

SUBCOMPONENT 1.1: PROMOTING SCHOOL READINESS AND EQUAL OPPORTUNITIES AT THE START OF GENERAL EDUCATION

OBJECTIVE

The Subcomponent aims to effectively prepare children (including children from vulnerable families, poor communities, remote (border) areas, and mountainous regions) for primary education by promoting equal opportunities upon entry to primary school.

OVERVIEW

The Subcomponent “Promoting School Readiness and Equal Opportunities at the Start of General Education” was the scale-up of the micro-projects developed and piloted in preschool education within the framework of the first WB loan project.

Subcomponent 1.1 focused on the implementation of the preschool education project, which includes rehabilitation of areas designated for preschools, acquisition of teaching and learning materials, necessary furniture and equipment, and trainings. Instead of the 134 preschools that were envisioned under the Project, 136 were established, and they currently operate in all regions in Armenia, except one. Yerevan Basic School N55 Named after A. Chekhov SNCO is currently in the process of getting a license.

At the end of the academic year, EDI scores in the treatment group were higher than EDI scores of children not enrolled in preschools³.

Overall, the Project has significantly improved school readiness of children in Armenia and has promoted equal opportunities at the start of general education, especially in the regions. From 2015 to 2019, the number of preschools in Armenia rose from 717 to 906 (mostly in villages, from 286 to 439)⁴. Within the framework of the Project, from 2015 to 2020, around 13,600 children were enrolled in preschool education; their share among children entering first grade comprises 5-6% every year.

TABLE 1.1.1: SHARE OF CHILDREN ENROLLED IN PRESCHOOL INSTITUTIONS AMONG THOSE ENTERING FIRST GRADE OF GENERAL EDUCATION SCHOOLS

	2015-2016 ACADEMIC YEAR	2016-2017 ACADEMIC YEAR	2017-2018 ACADEMIC YEAR	2018-2019 ACADEMIC YEAR	2019-2020 ACADEMIC YEAR
Number of students in first grade	40,219	25,804	39,187	38,674	38,847
Number of children enrolled in preschool institutions	1,180	1,917	2,157	2,460	2,742
Share of children enrolled in preschools among those entering first grade		5%	5%	6%	6%

Source: NSS RA, Statistical Yearbook of Armenia, 2020, Education and Culture Section

³ Research on Development Dynamics of Children Enrolled in Preschool Institutions and Observation of Factors Affecting Their Development. Final report, 2019

⁴ NSS RA, Statistical Yearbook of Armenia, 2020, Education and Culture Section

PERFORMANCE OF INTERMEDIATE RESULTS INDICATORS

TABLE 1.1.2: INCREASED EDI SCORES OF STUDENTS OF PRESCHOOLS THAT RECEIVED A GRANT

INDICATOR	BASELINE	PERIOD			
	2015	2016	2017	2018	2019
Target	-	-	-	-	EDI scores in treatment group are significantly higher than EDI scores in control group.
Actual	-	EDI scores have increased in treatment group by 18.34% during the academic year, and are also higher than EDI scores in control group.	EDI scores have increased in treatment group by 21.48% during the academic year, and are also higher than EDI scores in control group.	EDI scores in treatment group are around 17 percentage points higher for all tested domains than in control group.	EDI scores have increased in treatment group on average by 35.33% during the academic year, and are also higher than EDI scores in control group.

Source: Baker Tilly Armenia. 2015-2019. Research on Development Dynamics of Children Enrolled in Preschool Institutions and Observation of Factors Affecting Their Development. Final report, 2019

From 2015 to 2019, Baker Tilly Armenia conducted research to evaluate the impact of the project implemented under Subcomponent 1.1. The research was conducted in the regions of Armenia.

TABLE 1. 1. 3: RESEARCH BASED ON YEARS AND REGIONS

N	YEAR	REGION
1	2015-2016	Shirak, Gegharkunik, and Kotayk
2	2016-2017	Armavir, Tavush, and Lori
3	2017-2018	Ararat, Aragatsotn, and Syunik
4	2018-2019	Gegharkunik, Vayots Dzor, Lori, and Yerevan

The research analyzed children's development dynamics for each year and the activity of preschools.

The research looked at the dynamics of EDI scores of children enrolled in the established preschool institutions (treatment group) and children not enrolled in the Project (control group) in the following main fields:

- Basic math knowledge
- Logic and thinking
- Oral language understanding
- Early literacy
- Small /fine/ motor development

Children from particular communities not attending preschool institutions were included in the control group.

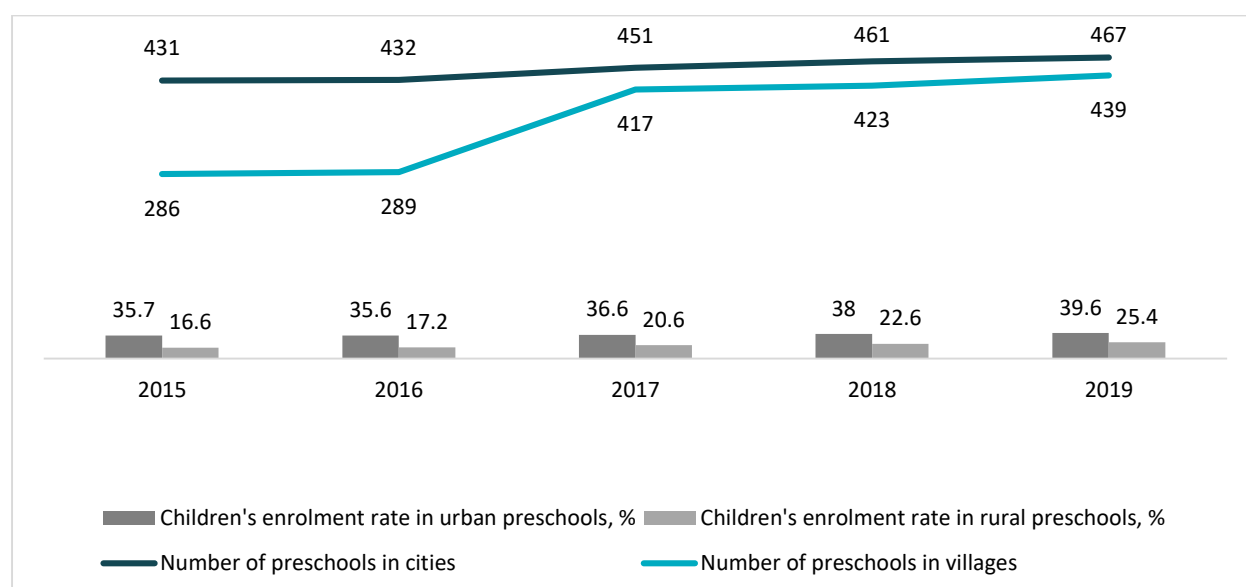
In general, 599 children attending preschool institutions (treatment group) and 364 children not attending preschool institutions (control group) were tested, of which the number of retested children comprised 506 and 294, respectively. Interviews with the directors of the preschools, tutors, and parents of children in the treatment group were also conducted.

The comparison of retesting results of children attending (treatment group) and not attending (control group) preschools shows that EDI scores have increased in the treatment group as opposed to EDI scores in the control group. In preschool, visible development dynamics were also observed among children in the treatment group. Children made significant progress in basic math knowledge, logic, and thinking as well as early literacy.

HISTORY

During the years following Armenia's independence in 1991, Armenia faced low enrolment rates in preschools, especially in rural communities.

CHART 1.1.1: NUMBER OF PRESCHOOLS IN ARMENIA AND CHILDREN'S ENROLMENT RATE



Source: NSS RA, Statistical Yearbook of Armenia, 2020, Education and Culture Section

Back in 2009, there were no kindergarten premises in around 47% of communities in Armenia, and in 170 communities, they did not operate at all. This was also due to the formation of the new RA territorial and administrative system in 1996, as a result of which the preschool institutions came under community management (according to the RA Law on Local Self-Government). Lack of state funding resulted in highly adverse consequences for the preschool network—the number of operating kindergartens significantly dropped, and the conditions of facilities and the educational and technical infrastructures deteriorated. The quality of preschool education (curricula, pedagogical approaches) was disputable, and accessibility was an issue for the socially vulnerable families. In 2008, the RA government approved the RA Strategic Program on Preschool Education Reforms and Pilot Projects for 2008-2015, which was aimed at enhancing the quality of preschool education services and improving their accessibility. A special focus was placed on effectively preparing senior preschool age children (aged five and six) for primary education. The projects were to be implemented by increasing the workload of operating preschools as well as through alternative and low-cost education services.

The pilot stage of the strategic program was implemented in communities in Akhuryan (Shirak) and Spitak (Lori). Under WB's "First Education Quality and Relevance Project" in 2008, 22 micro-projects (20 in schools and two in preschools) were implemented in Lori and Shirak, involving around 530 senior preschool age children. In 2015-2020, under the WB "Education Improvement Project" 136 preschools were established in all regions of Armenia and in Yerevan, with the enrolment of around 13,580 children aged four to six.

The successful accomplishment of activities under this Subcomponent contributed to the implementation of the Project's Subcomponent "Promoting School Readiness and Equal Opportunities at the Start of General Education".

SUBCOMPONENT 1.1: PERFORMANCE ANALYSIS

Establishment of Preschools

From 2015 to 2020, under the Project 136 preschools were established in all regions and in Yerevan. The majority of these preschools—128 of them—are school-based, and 8 operate in kindergartens. 93% of the preschools are located in regions.

TABLE 1.1.4: DISTRIBUTION OF PRESCHOOL INSTITUTIONS BY GEOGRAPHICAL AREA AND YEAR OF ESTABLISHMENT

REGION	2015	2016	2017	2018	2019	2020	TOTAL
Aragatsotn			8			2	10
Ararat			9			5	14
Armavir		12			2	6	20
Gegharkunik	8		3	1	5	5	22
Lori		6		4	1		11
Kotayk	13				2		15
Shirak	12				4		16
Syunik			3		2	3	8
Vayots Dzor				3	1		4
Tavush		6			1		7
Yerevan				9			9
Total	33	24	23	17	18	21	136

Under the activities of the Subcomponent with the support from regional education departments the PIU ensured broad awareness among stakeholders. Meetings with preschool institutions in the regions, mayors, and school principals were organized to present the Project objective, application process, and requirements.

The applications were reviewed and assessed based on factors such as relevance, interest by the community and parents, attraction of required investments, availability of relevant staff, and project sustainability. The preliminary results of the assessment were discussed with regional education departments, and the final results were endorsed by the committee on management of preschool education micro-projects.

The main reasons for rejecting applications were locational incompatibility, issues related to co-funding, and insufficient number of preschool age children in the community. The latter, however, has not been a reason for rejection in remote (border) and mountainous areas.

The community is required to co-fund at least 25% of the total cost of the micro-project. It mostly covered rehabilitation works and the tutor's salary expenses. The Project's average funding per preschool was \$10,000-12,000 equivalent in AMD (the maximum funding amount is \$22,000 equivalent in AMD).

The implemented project targeted senior preschool age children (aged 5 and 6). Preschools established in kindergartens are open from 9:00 a.m. or 10:00 a.m. to 4:00 p.m. or 5:00 p.m., while preschools operating at schools are open for four hours, usually from 9:00 a.m. to 1:00 p.m.

The operation of kindergarten-based preschools is ensured by LSGBs. Preschools established within schools are funded from the state budget, based on student number.

For preschools within kindergartens, at the initiative of the directors, the kindergarten's physical education, music, and foreign languages teachers also get involved in making the education program more versatile. Besides, children stay longer in kindergartens, and this is an important factor for working parents. However, one of the advantages of preschools established within schools is that they facilitate integration of children into schools because they are already familiar with the school discipline and everyday school life and participate in primary classroom activities.

Parents are actively engaged in the activities of the established preschools and contribute to their undertakings.

Establishing preschools, equipping them with teaching and learning materials, furniture and equipment

Spaces designated for preschools have been rehabilitated under the Project. They have been equipped with relevant furniture and equipment, and educational literature, stationery, toys, and so forth have been acquired.

Tutor training

Tutors involved in the project in the regions usually come from the same community. Most of them have a tertiary education degree (from pedagogical universities in Yerevan and the regions).

Under the projects, preschool tutors participated in trainings. Since the Project's launch until June 2019, trainings for preschool tutors were conducted by the National Institute of Education (NIE) CJSC. The level of participant satisfaction with the training program is high. According to them, the training program was effective and rich in learning materials. After the liquidation of the National Institute of Education (NIE) CJSC in June 2019, the committee on management of preschool education micro-projects of the Education Improvement Project (Project Board), at its meeting on May 12, 2020, approved the proposal for the training of tutors of preschools benefitting from the Subcomponent, submitted by the Armenian State Pedagogical University after Khachatur Abovyan Foundation. Trainings for tutors of preschools established in 2020-2021 were conducted by the Armenian State Pedagogical University after Khachatur Abovyan Foundation. Due to the outbreak of the coronavirus pandemic, the trainings were conducted online, and participant satisfaction was high.

Educational background in preschool education has been a mandatory precondition for the selection of preschool tutors. However, due to lack or absence of specialists in the regions, especially in small communities, the selection of tutors was made based on how close their academic specialization was to preschool education. According to the trainers, preschool education degrees held by most trained specialists made the training process even more effective.

The study on project impact, expert interviews, and focus group discussions⁵ with the directors and teachers of preschool institutions show that tutors are very happy with the trainings. They were enriched with new pedagogical knowledge and effective skills of working with preschool children.

Most of the trained tutors expressed willingness to participate in various trainings on preschool education. They were especially positive about the straightforwardness of the training courses and the high professionalism of the specialists. Participants in the online trainings mentioned they would prefer future

⁵In-depth interviews with the heads of departments of education, culture and sports of the staff of regional administrations, focus group discussions with directors and teachers of preschools conducted by EV Consulting in May-June 2021, within the framework of the research on the final Project assessment (see Annexes).

trainings to be conducted in offline mode, as it would allow them to directly communicate with not only the trainers, but also their peers and exchange practice outside of the training courses.

The trainings conducted from 2015 to 2021 were funded by the Project.

Generalized Analysis of Children's EDI Scores

The analysis was conducted by five fields, where the target group testing (TT) and retesting (TR) and the control group testing (CT) and retesting (CR) results are presented by year and by field in the table below.

TABLE 1.1.5: GENERALIZED TESTING RESULTS BY FIELD (2015-2019)

YEAR/REGION	CATEGORY	AREAS/ DOMAINS					
		1. Basic math knowledge	2. Logic and thinking	3. Oral language understanding	4. Early literacy	5. Small /fine/motor development	TOTAL AVERAGE
2015-2016 (Shirak, Gegharkunik, Kotayk)	TT	53.02	59.12	87.51	34.51	51.56	57.15
	CT	44.08	36.49	77.04	26.18	43.41	45.44
	TR	76.95	82.07	95.45	64.49	58.50	75.49
	CR	53.44	47.97	69.05	37.72	39.82	49.60
2016-2017 (Armavir, Tavush, Lori)	TT	48.43	46.64	73.00	32.08	47.05	49.44
	CT	39.67	32.40	56.94	24.83	39.39	38.65
	TR	69.98	78.27	95.63	55.21	55.53	70.92
	CR	48.87	46.38	68.86	32.65	42.26	47.80
2017-2018 (Ararat, Aragatsotn, Syunik)	TT	37.51	46.31	82.52	32.47	24.22	44.61
	CT	30.13	23.34	54.02	16.44	22.14	29.21
	TR	64.37	67.12	96.97	66.24	54.81	69.90
	CR	45.23	24.49	59.04	27.60	32.40	37.75
2018-2019 (Vayots Dzor, Lori, Gegharkunik, Yerevan)	TT	45.40	30.85	74.93	23.81	32.45	41.49
	CT	38.10	33.53	47.63	12.62	33.75	33.12
	TR	76.37	85.47	96.63	66.21	59.41	76.82
	CR	58.83	72.70	77.11	34.37	47.40	58.08

Source: Baker Tilly Armenia. 2015-2019. Research on Development Dynamics of Children Enrolled in Preschool Institutions and Observation of Factors Affecting Their Development. Final report, 2019

The 2015-2016 testing results of children attending preschool exceed those of control group children in all the fields. The most significant increase was observed in respect to (2) logic and thinking (22.65%), and (3)

oral language understanding (10.47%) fields. The comparison of retesting results of children attending and not attending preschool in 2015-2016 shows that the results of children attending preschool are higher than those of children in the control group. The most significant difference was observed in the (2) logic and thinking (34.10%), and (4) early literacy (26.78%) fields.

The 2016-2017 testing shows that the target group testing results exceed those of control group children in all the fields. The most significant difference was observed in the (2) logic and thinking (14.24%), and (3) oral language understanding (16.06%) fields. The comparison of retesting results of children attending and not attending preschool in 2016-2017 shows that the results of children attending preschool are higher than those of children in the control group. The most significant difference was observed in the (2) *logic and thinking* (31.89%), and (3) *oral language understanding* (26.77%) fields.

The 2017-2018 testing results of children attending preschool also exceed those of control group children. The most significant difference was observed in the (2) *logic and thinking* (22.97%), and (3) *oral language understanding* (28.51%) fields. The comparison of retesting results of children attending and not attending preschool in 2017-2018 shows that at the end of the year, the results of children attending preschool were higher than those of children not attending preschool. The most significant difference was observed in the (2) *logic and thinking* (42.62%), and (4) *early literacy* (38.64%) fields.

The 2018-2019 testing results of children attending preschool exceed the results of children not attending preschool, except for the (2) *logic and thinking* (2.68%) and (5) small / fine motor development (1.29%) fields. The most significant difference was observed in the (3) *oral language understanding* (27.3%) field. The comparison of retesting results of children attending and not attending preschool in 2018-2019 shows that at the end of the academic year, the results of children attending preschool are higher than those of children not attending preschool. The most significant difference was observed in the (3) *oral language understanding* (19.52%), and (4) *early literacy* (31.84%) fields.

During the entire four-year period of the children testing results, the lowest results were mostly observed in the (4) *early literacy* field, and the highest results were in the (3) *oral language understanding* field.

Similarly, during the entire four-year period of the children retesting results, the lowest results were mostly observed in the (4) *early literacy* and (5) small / fine motor development fields, and the highest results were in the (3) *oral language understanding* field.

Baker Tilly also conducted an analysis of EDI scores among children enrolled in preschools and those not enrolled in preschools. However, since the indicators of boys and girls differ irregularly by child groups, and by the period of academic year, it is impossible to comment on the gender factor.

CONCLUSIONS AND RECOMMENDATIONS

Activities under the Subcomponent “Promoting School Readiness and Equal Opportunities at the Start of General Education” of the Project have been fully implemented. The effectiveness of the piloted model has been highly commended by the Ministry and was included in the Ministry’s programs. The procedure of introducing alternative cost-effective preschool education models was endorsed on January 26, 2021, and in the state budget for 2021, the amount allocated to alternative preschool services is around \$154 million.

However, Armenia’s preschool education sector faces a number of challenges. Addressing them will help increase the efficiency of activities implemented under Subcomponent 1.1 and ensure continuity.

The continuity of activities implemented and results achieved under the Project’s Subcomponent “Promoting School Readiness and Equal Opportunities at the Start of General Education” requires sustainable funding, particularly in the areas discussed below.

Many of the preschools established by the Project need infrastructure expansion to enroll new students

The number of children wishing to enroll in preschools established by the Project increases creating a need for the expansion of current infrastructures and necessary resources (human, educational, and technical). In many preschools, class sizes are large and range from 25-35 children per class. In particular, the demand for the middle preschool age class grows, which is outside of the framework of Subcomponent 1.1 and the target of the rolled out micro-projects. However, this issue is imperative in terms of ensuring the full cycle of preschool education.

Preschools need new furniture and academic materials

The established preschools are in need of constant improvement and new furniture, teaching and learning materials, and overall infrastructures. In particular, there is a lack of teaching materials and intellectual games, the kindergarten yards need rehabilitation, and playgrounds intended for preschool age children are mostly missing at schools.

Other recommendations

- This Project does not include food services, as it is a short-term and cost-effective model. Parents provide food for their children in preschools. Thus, it is recommended that an attempt should be made to employ an identical approach to food services in all preschools, so that all children have the same conditions.
- If possible, in the next rounds of the Project, support should be provided to the preschools in:
 - Creating outdoor playgrounds and equipping them;
 - Increasing the allocated funds to expand the number of classes in preschools where an higher student numbers and/or demand has been observed;
 - Providing preschools established by this model of the Project with amenities for napping. However, especially in case of kindergarten-based preschools where children spend comparatively longer hours than in school-based preschools, a need for napping was observed. Thus, acquiring relevant amenities for preschools where the need has been identified is recommended.
 - Hiring preschool tutor assistants, since tutors are unable to pay appropriate attention to children's hygiene due to their busy schedules.
- Practice has shown that one-time trainings do not equip tutors with sufficient theoretical and practical knowledge and skills, and that trainers need to conduct monitoring, and if need be, an additional training.
- Trainers have mentioned that preschool tutors should have basic vocational education in the field. While it is comparatively more difficult to find a specialist with basic knowledge in the regions, especially in remote and border areas, Yerevan does not face this issue.
- Regularly promote the activities and achievements of the preschools publicly.
- Hold regular remote meetings with the participation of preschool heads in order to address the issues and challenges they face in their preschool activities.

SUBCOMPONENT 1.2: ENRICHMENT OF THE UPPER SECONDARY SCHOOLS

OBJECTIVE

Support the development of upper secondary schools by improving the premises and providing relevant education resources. In particular, to carry out high school rehabilitations and equip the science laboratories.

MAIN PERFORMANCE RESULTS

INDICATOR	BASELINE	ACTUAL 2021 As of July 31
Increase in number of rehabilitated high schools benefitting from the implemented projects that meet Armenia's construction and safety standards and are equipped with modern educational resources.		
Target		
Actual	-	Partially achieved, in progress

The main result indicator for the Subcomponent is the increased number of rehabilitated high schools with improved physical environment and educational resources. Work towards full implementation is in progress.

The rehabilitated schools have improved seismic safety, their interior design works have been completed, and the conditions of adjacent areas have been enhanced. Technical works have been carried out in the newly established science laboratories, and instructional materials, equipment, and furniture meeting modern requirements have been provided.

INTERMEDIATE PERFORMANCE RESULTS

SUBCOMPONENT	INDICATOR	TARGET 2021	ACTUAL 2021 As of July 31
1.2 Enrichment of the Upper Secondary Schools	Increased number of high schools targeted by the Project, which meet Armenia's construction and safety standards	13	6
	Number of rehabilitated classrooms resulting from Project interventions	162	106 ⁶
	Increased number of high schools equipped with laboratories provided by the Project	107	99
	Improved student attendance in schools rehabilitated by the Project—student attendance has improved in target high schools, according to dynamic data in schools and target group opinions		Has improved in several schools or there has been noticeable improvement (analysis of student absence data, surveys among teachers and learners)

Under the objectives of the Subcomponent, 13 high schools will be rehabilitated by the end of 2021. By the time this research was started, rehabilitations were completed in six high schools, and in seven schools, rehabilitations were 83% complete. These seven schools are projected to go into full operation in

⁶ According to interviews with school principals.

September 2021 (except Goris High School N1). Deviations from the Project implementation schedule are mostly due to the pandemic and the 2020 war.

Approximately 106 of the 162 target classrooms are operational in six rehabilitated schools. This indicator is projected to grow by 176 more classrooms⁷ once the rehabilitation of seven high schools is completed. Upon the completion of the Project, the 13 rehabilitated schools with 282⁸ classrooms will ensure modern education infrastructures for 5,800 students (the maximum number of students according to the current license), which is around 20% of all high school students.

The Project also envisioned equipping high schools with science laboratories of subject areas (physics, chemistry, biology, geography). By the time this research was started, 99 of the 107 target high schools were equipped with these laboratories. The indicator will be fully achieved after rehabilitations of the eight schools are completed by September 30, 2021.

The enhanced facilities in several rehabilitated schools have improved student attendance in one way or another, but this indicator is irregular in several schools and the logical links are breached. However, it is expected that student numbers will increase in rehabilitated schools also at the expense of students enrolled from nearby areas.

HISTORY

The formation of high schools in Armenia was initiated in 2008-2011. The RA Government, by a decree in 2008, endorsed the strategic program on the high school system. A pilot phase began to transform 30 secondary schools into high schools. As part of the reform, the three-year high school system began in the 2009-2010 academic year. Its goal was to improve and modernize the quality of education and efficiency of the third stage of secondary education in order to:

- Enhance the quality of high school education.
- Create streams desirable for students, including an opportunity to choose vocational technical education. For this purpose, the high school curriculum should be more flexible to address students' learning needs and preferences.
- Improve the high school institutional system and increase the efficiency of general education.

High schools were supported also under WB's First Education Quality and Relevance Project, and the support was expanded under the second loan project.

Most schools were built during the Soviet period and have infrastructural flaws—the heating systems are not fully operating and the buildings lack minimum requirements for seismic safety and interior design, among other issues. Science laboratories were also equipped during the Soviet period, and schools acquired relevant items through their own initiatives.

ANALYSIS OF PERFORMANCE OF SUBCOMPONENT 1.2

School Rehabilitation

The first round of rehabilitations was launched in 2016 in five high schools in five regions of Armenia. They were put into operation in 2018. The second round includes the rehabilitation of eight high schools. As of July 31, the rehabilitation of Gyumri Academic College was completed. Currently, the rehabilitation of seven more high schools is in progress. The rehabilitation of these schools is scheduled for completion in September 2021 (except Goris High School N1).

School selection was made based on the following four criteria:

- Technical conditions of the school building (structure, foundation, roof, heating, utility services, etc.),

⁷ Includes classrooms, cabinets, laboratories. The cabinets include units bearing a classroom function, and supporting units.

⁸ Number of classrooms may change during rehabilitations.

- The year of construction of the school,
- Whether the school serves one region or multiple,
- Number of students.

TABLE 1.2.1: HIGH SCHOOLS INCLUDED IN REHABILITATIONS

	MARZ	SCHOOL	REHABILITATION START AND END
1	Armavir	Metsamor High School N2	Q2 2016—Q3 2018
2	Ararat	Ararat High School	Q2 2016—Q3 2018
3	Tavush	Noyemberyan High School	Q2 2016—Q3 2018
4	Kotayk	Hrazdan High School N1	Q2 2016—Q3 2018
5	Gegharkunik	Martuni High School	Q2 2016—Q4 2018
6	Shirak	Gyumri Academic College	Q3 2019—Q2 2021
7	Armavir	Vagharshapat High School N5	Q4 2019—Q3 2021
8	Shirak	Artik High School N3	Q3 2019—Q3 2021
9	Gegharkunik	Khachatur Abovyan High School in Sevan	Q3 2019—Q3 2021
10	Syunik	Goris High School N1	Q3 2019—Q3 2021
11	Yerevan	High School N42	Q3 2019—Q3 2021
12	Yerevan	High School N142	Q3 2019—Q3 2021
13	Yerevan	Armenian State Pedagogical University after Khachatur Abovyan Basic (High School) College	Q3 2019—Q3 2021

As a result of the rehabilitations, the school building conditions have been completely improved. The main walls and the foundation of the schools have been reinforced, and their seismic endurance has been improved. Rehabilitations went smoothly, and all planned activities were implemented.

The surveys⁹ among students showed overall satisfaction: 83.7% of students noted that their school meets their expectations of what the best school should be like. All students are unanimous in the opinion that improved school premises positively influence their attitude towards learning—58.1% of them believe that this factor has a strong influence, and 41.9% believe that it influences them to some extent.

⁹ Survey among high school teachers and students.

Improved school premises have greatly influenced and changed school life and environment. A case in point is Martuni High School, where there is now a new social culture—upon entering school, everyone changes shoes. This culture bears an educative element, and at the same time, it was adopted for maintenance purposes. Improved school premises have also enhanced school discipline, reputation, interest among applicants (even students from neighboring areas attend), and teaching effectiveness.

According to surveys among teachers, 47.1% of them believe that the school is fully rehabilitated and equipped. However, 35.3% of them believe that the classrooms need technical upgrades, and 11.8% believe the classrooms need new furniture.

The rehabilitation of schools has increased their ongoing and maintenance expenses, mostly in terms of heating and economic facilities. Although thermal insulation has enabled several schools to reduce heating expenses to some extent, some schools—due to technical issues with the water boilers, their mountainous location, and two-shift schooling system—have faced higher heating expenses or expect to have them. As a matter of fact, schools have limited financial resources, and allocations are being made whenever there is an urgent need for it or when something is prioritized.

Although high school premises have been improved, and they have been technically equipped, their main development issues are related to the educational environment—lack of highly experienced specialists at schools, high attendance of private tutoring, insufficient skills in using new teaching technologies, giving preference to teaching only knowledge-related information, and low pay for teachers.

Student Attendance

Based on school licenses, the rehabilitated high schools are designed to accommodate 300-400 students. By the time the study began, the actual number of students in rehabilitated schools ranged from 140 to 250. On average, schools operate at around 60% of their intended capacity, which is significantly higher than the indicator registered over the previous period.

The survey among teachers of rehabilitated schools showed that 52.9% of respondents believe that the rehabilitations mostly improved student attendance, and 41.2% believe it has not made any difference. According to 76.7% of students, the new school premises have improved attendance. Absence from classes is mostly due to health issues (97.7%).

TABLE 1.2.2. STUDENT ATTENDANCE IN REHABILITATED HIGH SCHOOLS

REGION	SCHOOL	ATTENDANCE BEFORE AND DURING REHABILITATION	ATTENDANCE AFTER REHABILITATION
Armavir	Metsamor High School N2	Before rehabilitation, the average absence rate per student was 18 hours, and during rehabilitation, the student absence rate grew, reaching up to 21 hours.	The average absence rate per student was 40 hours in the 2019-2020 academic year.
Ararat	Ararat High School	Upon the launch of rehabilitation works, the average absence rate per student was 30 hours, which increased and reached 46 hours during the rehabilitation.	Upon the completion of rehabilitation works, the average absence rate per student increased by 7.3% at the end of the 2018-2019 academic year as opposed to the previous year, and in the 2019-2020 academic year, it dropped by 55.1% as opposed to the previous year.
Tavush	Noyemberyan High School	During 2014-2015 academic year, the average absence rate per	At the end of the 2018-2019 academic year, the average absence rate per

		student was 59 hours, it dropped by 6.8% as opposed to the 2016-2017 academic year.	student dropped by 44.4% as opposed to the 2016-2017 academic year, and reached 30 hours per student.
Kotayk	Hrazdan High School N1	Upon the launch of rehabilitation works, the average absence rate per student was 18 hours, which increased and reached 41 hours during the rehabilitation.	Upon the completion of rehabilitation works, the average absence rate per student increased by 47.8% at the end of the 2018-2019 academic year as opposed to the previous year, and at the end of the 2019-2020 academic year, it dropped by 49.5% as opposed to the previous year.
Gegharkunik	Martuni High School	Before rehabilitation, the average absence rate per student was 37 hours, which increased and reached 45 hours during the rehabilitation.	At the end of the 2020-2021 academic year, the average absence rate per student dropped by 26.2% as opposed to the 2019-2020 academic year and reached 32 hours.

EQUIPPING SUBJECT LABORATORIES

Process of Equipping Laboratories

Subject specialists were involved in equipping the laboratories. Based on the subject curriculum (with a plan to conduct around four to 10 practical activities during the academic year), professional experience and best international practice, the specialists created a list of necessary equipment and items and their technical specifications. The list featured both the most and least necessary equipment and items; the only limitation was the Project budget.

After procurement, the experts checked the supplied equipment and items and their compliance with the technical specifications, and found no issues. The only inconsistencies found were related to the external appearance of particular items. User guides were available only for some of the equipment in foreign languages.

The quantity of equipment and items was determined based on need and frequency of application, and by considering student numbers—whether they worked individually or in pairs (with an estimate of 10-15 pairs on average).

However, under the Project, it was not planned to create a list of user guides and necessary materials and ensure their supply.

Laboratories after Being Equipped

Prior to equipping the laboratories, most of the schools had subject laboratories. However, practical activities were either not being conducted at all or were being conducted partially and inefficiently, which was due to lack of necessary chemical supplies. Sometimes the experiments were accompanied by an online video presentation. In some schools, all the practical activities were being implemented due to the active initiations of teachers or school principals.

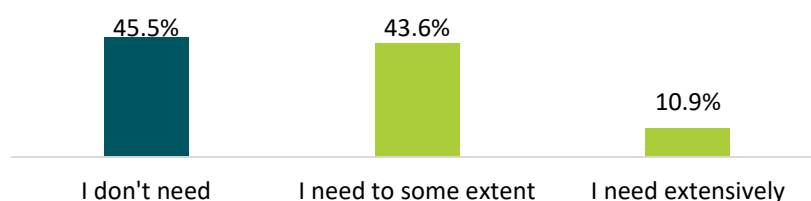
Most respondents (81.2%) mentioned that the laboratories were equipped with necessary materials and equipment, but according to 47.5% of respondents, there were certain limitations. The main reason why laboratories were not used were a lack of relevant materials (chemical supplies) (53.1%), a lack of comprehensible user guides (30.6%), electricity and water supply issues (16.3%), and installation-related technical obstacles (10.2%), such as issues related to installing laboratory fume hoods. The pandemic also impeded the full operation of the laboratories since students were not allowed to sit next to each other.

During the equipping process, schools organized water supply and sewerage system, furniture installation, and storage works. Despite limited financial resources, to ensure the continuous operation of the laboratories school principals were willing to allocate funds for the technical service and maintenance of the equipment and materials. Previously, such funding was never or rarely allocated.

According to the surveys conducted, most teachers (58.4%) believe that most practical activities listed in the curriculum can be conducted in the equipped laboratories, while 26.7% of respondents stated that all practical activities can be performed. However, the experts who developed the list of laboratory equipment believe that the laboratories can fully handle all practical activities in the curriculum. The reasons why some teachers believe that the laboratories are not up to par can be explained by lack of knowledge and abilities regarding the use and purpose of the equipment.

Most teachers (54.5%) admit that to some extent they need training to teach the practical part of the natural sciences subjects, and they demonstrated great desire to participate. Approximately 68.3% did not receive professional trainings, while 12.9% were trained over the past year.

CHART 1.2.1. NEED FOR TRAINING TO TEACH THE PRACTICAL PART OF THE SUBJECT



Source: Survey Among Teachers of Selected Subjects in High Schools, June 2021

Number of respondents: 101

Impact of Laboratories on Academic Achievement and Career Orientation

In general, the respondents (teachers and students) are unanimous in the opinion that practical classes in the equipped laboratories have had a positive impact on student engagement and achievement.

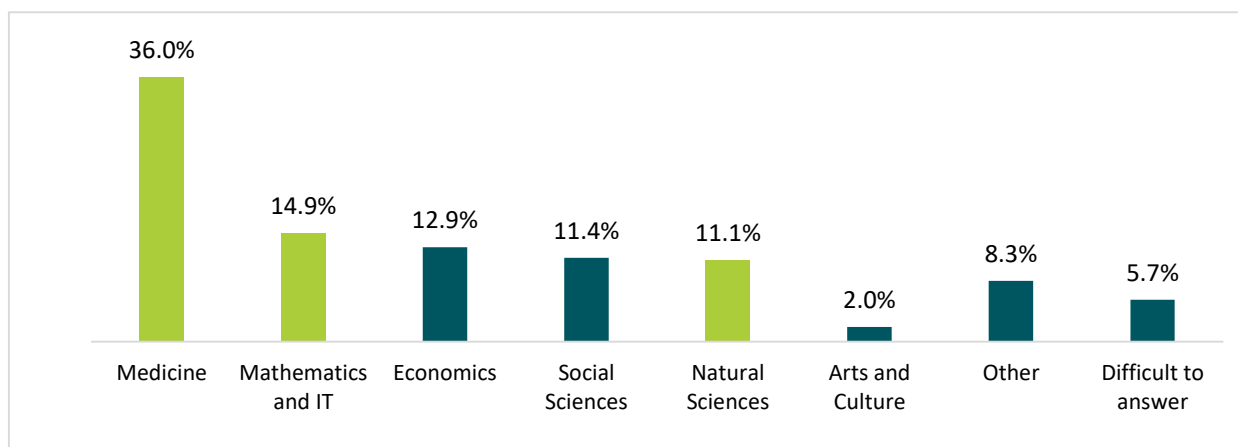
According to 93% of the teachers that participated in the survey, the empowerment of the practical part has in one way or another improved students' progress. About 65.3% of the respondents even say there has been significant progress in this regard.

Students are more enthusiastic and interested in the subject. Besides making the subject more attractive for students, the laboratories also create new opportunities for participating in Olympiads. In addition, thanks to the equipped laboratories, in several schools students have switched from the humanities stream to the science stream.

According to 76.9% of students, practical work in science subjects has significantly facilitated their learning of the subject, and 19.7% have mentioned it has had some positive impact.

Overall, the Project has boosted interest towards scientific subjects. The picture of the respondents' choice of their career path shows that the majority of future applicants are choosing science-based professions, which highlights the importance of laboratories in terms of developing practical knowledge and increasing interest towards science-related professions.

CHART 1.2.2. STUDENT PREFERENCE AREAS WHEN APPLYING TO HEIS



Source: Survey Among Teachers of Selected Subjects in High Schools, June 2021
Number of respondents: 350

CONCLUSIONS AND RECOMMENDATIONS

School Rehabilitations

- External factors (especially, the pandemic) have had the largest impact on the deadlines of this Subcomponent. Rehabilitation was fully completed only in six of the planned 13 schools.
- As a result of rehabilitation, school premises have been completely improved, their seismic performance has been increased, and the interior design and furnishing have been completed. Both students and teachers are satisfied with the school rehabilitation.
- Taking into account the short period of time during which the schools opened after the rehabilitation as well as the 2020 events and the incomplete registration of student absences, it is impossible to objectively assess the real changes with regard to attendance. However, the majority of teachers and students believe that attendance has improved.
- There is quite a large gap between the licensed capacity of the schools and the actual number of students, which further limits the financial resources of schools because school financing is based on the number of students. It is recommended that awareness-raising visits to schools be organized, school success stories as well as life and events in the school be covered and presented, Open House days be held, tours be made, and new students be recruited as much as possible. Students from neighboring areas are already opting to study in the rehabilitated schools, and according to school principals, this will have a growth trend.

Equipped Laboratories

- The laboratory equipping has had a positive impact on the quality of subject learning. Classes have become more interesting, and the practical activities have facilitated lesson learning.
- To establish the 84 chemistry and 84 biology laboratories under the Project, water supply and water sewerage systems as well as necessary furniture were installed.
- However, several schools had technical issues related to water supply, water sewerage, and ventilation, which impeded learning.
- No supply of materials for laboratory equipment and furniture had been planned under the Project; however, almost all schools complained about lack of materials and noted that they had not been

informed about where to get them. It is noteworthy that some schools took initiative in contacting the laboratory-furnishing experts as well as colleagues from other schools for guidance. On top of that, teacher creativity plays a critical role in the effective implementation of practical activities, since they can use the materials available in their everyday life and have meaningful practical classes. The Project implementation committee recommended that a database of providers of laboratory materials and supplies be created and made available to high schools.

- According to study results, 68.3% of surveyed teachers have never been trained in teaching the practical part of their subject, and 54.5% of them mentioned the need for trainings. Lack of knowledge about how to properly use the lab equipment and devices also account for the need to conduct trainings on teaching the practical parts of the subjects. The effective use of laboratories will also enhance teachers' abilities to apply theory to practice.
- User guides and maintenance manuals are needed so that teachers can learn how to properly use and maintain the equipment.

Videos of various laboratory experiments are available online, and teachers can benefit from them. However, there is a need to establish a platform for collaboration between schools so teachers can share their successful experiments with each other. This will motivate them to use the laboratories in a more effective way and be creative.

SUBCOMPONENT 1.3: IMPROVING DATA COLLECTION AND THE MONITORING OF THE EDUCATION SYSTEM PERFORMANCE

OBJECTIVE

The main objective of the Subcomponent is to improve the efficiency of communication in education system through ICT and to support the monitoring and assessment of knowledge acquisition.

OVERVIEW

The Subcomponent is the development of the subproject of the second loan project—integration of ICT into the general education.

Activities under Subcomponent 1.3—rehabilitation and renovation of the NCET office, provision of computers and software to equip schools and integration of the management information system, teacher and administrative staff training on ICT, and creation of electronic resources—have been mostly implemented.

Intermediate Results Target Indicators of the Subcomponent:

- Education Management Information System for general, secondary vocational and higher education: is fully integrated in the last year of the reporting period and used by general education institutions. Higher education institutions will begin using the system starting from September 2021.
- The technical equipment needs of general education schools have been assessed, and equipment has been updated in target schools. In 2019, the CFEP PIU conducted an assessment of technical equipment needs among 387 general education institutions that had participated in trainings in 2018—42 schools received an interactive projector, and 63 schools received projectors. On top of that, in 2020, one classroom in 101 education institutions in Armenia's regions (except Tavush) has been technically equipped, and 107 high schools received a conference camera for organizing remote and open classes.
- A plan to provide projectors to 272 schools in 2021 is already in progress, and 259 of these schools have been provided with laptops.
- Electronic educational resources have been developed for the topics missing in textbooks for Mathematics, Physics, Chemistry, and Biology taught in high schools and primary schools. In 2017, development of electronic educational resources for the 50% of Physics, Chemistry and Biology subjects that had not been covered under the “Second Education Quality and Relevance Project” was implemented. They are available here: <http://esource.armedu.am/>.
- To foster the use of ICT tools in teaching 4,000 teachers and administrative staff members were planned to be trained. In 2017 Canadian Agence Universitaire de la Francophonie organized seven modules of ICT trainings and conducted a training for 30 trainers from Yerevan and the regions. In 2018, 584, in 2019, 1,510, and in 2020, 1,197 teachers and academic staff members from all regions in Armenia and Yerevan were trained and awarded with certificates.
- By the time the current research began, trainings for a total of 3,291 teachers and administrative staff members were organized. In 2021, it is planned to train 1,000 more teachers and administrative staff members, and in this case, the intermediate target indicator will be fully achieved.

The implementation of the Subcomponent has contributed to expanding ICT integration into Armenia's general education sector, especially in terms of development of ICT use in the teaching and learning process. The integrated Education Management Information System for general and secondary vocational

education ensures data collection from all education institutions in Armenia as well as the accessibility of statistical analyses and their presentation to the public in a coordinated way.

PERFORMANCE OF INTERMEDIATE RESULTS INDICATORS

TABLE 2: MANAGEMENT INFORMATION SYSTEM FOR GENERAL, VOCATIONAL, AND HIGHER EDUCATION

RESULTS		
	Deadline	Status
Smoothly functioning Education Management Information System for general, secondary vocational and higher education.	2017	Achieved
General education schools armed with technical equipment.	2021	Achieved
Developed electronic educational resources to supplement to the topics missing in subject textbooks.	2017	Achieved
4,000 teachers and administrative staff members trained in the use of modern ICTs, including electronic educational resources.	2021	Partially achieved, in progress*

* Note: By the time of conducting the current study, the intermediate target indicator was achieved by 82.3%. The indicator will be fully achieved as a result of trainings scheduled for 2021.

HISTORY

Under the “Second Education Quality and Relevance Project” preceding this Project, significant contributions were made towards the integration and use of ICTs in the teaching and learning process. The use of ICTs in schools and universities significantly improves the quality of education and its accessibility. ICT use in the education process also continues to develop in Armenia. Under the loan project, education management information systems for general, secondary vocational, and higher education have been created and are operational. Unified collection of education data, their analysis and monitoring, as well as the implementation of a unified ICT policy and projects has become a need in the education sector.

Use of ICT in the education process has continued during the “Second Education Quality and Relevance Project” and has achieved the following positive results:

- All schools in Armenia have computer equipment and software.
- 1,420 schools were included in the school network and connected to the Internet.
- Around 1,400 representatives (school principals, teachers, librarians) from all schools in Armenia have been trained to use information technologies at school.
- Higher Education Management Information System has been created and launched.

The National Center for Education Technologies (NCET), which was established under the “First Education Quality and Relevance Project,” is in charge of the ICT policy and projects implemented in Armenia’s education sector. Initially, NCET’s area of work and objectives spanned two directions: preservation and enlargement of the current school network. NCET is also responsible for integrating available technologies into education and education management processes. Since 2013, NCET has been providing services in all education institutions in Armenia, including primary and secondary and higher education institutions.

Prior to the launch of the Education Improvement Project, separate management information systems had been developed for general and vocational education institutions, which meant that users would have to

use two different database sources to obtain statistical data and certain analyses regarding the RA education sector.

The study conducted within the framework of the second loan project revealed the need for the integration of general and vocational education management information systems as well as additional needs regarding teachers' ICT skills and effective integration of ICTs into schools.

ANALYSIS OF PERFORMANCE OF SUBCOMPONENT 1.3

Rehabilitation of the NCET Office

In April 2018, the rehabilitation of NCET's new office began under the "Education Improvement Project." Prior to that, NCET was based in four rooms of a building on 23 Simon Vratsyan Street where the areas designated for the servers did not correspond with the required criteria.

Within around a year and a half, the entire area was rehabilitated. Rehabilitation included works such as seismic retrofitting, and design and installation of a new Data Processing Center aimed at strengthening of NCET's technical capacities. Meeting and training rooms intended for up to 50 participants were built. Taking into account the fact that NCET is responsible for the operation of the Education Management Information Systems for general, secondary vocational and higher education, modern computer equipment and software were planned and acquired under the Subcomponent.

Under the Subcomponent, funds were allocated to acquire modern information and communications technology equipment and to develop electronic educational resources to be used in all schools in Armenia. On October 30, 2019, NCET's new office opened at 37 Burnazyan Street, next to High School N16.

Through its large technical staff, NCET provides ongoing technical support to Armenia's Education Network (AEN), spanning 1,420 educational institutions. This support includes technical maintenance of the school network, provision, repair and upgrade of technical equipment, and maintenance of nodes in regions, including prevention of cyber-attacks and protection from unwanted content. Thus, NCET continuously ensures the smooth operation of Armenia's Education Network.

Besides, NCET is responsible for the integration of available technologies into the education and education management processes. The center provides an opportunity to create working email addresses on www.schools.am, hosts official websites on its server, develops and updates the Armenian Educational Portal (www.armedu.am), which includes an education forum, an e-learning platform, and library of electronic educational resources. It also continues to support school computer labs in software updating.

In order to organize centralized distance learning, in 2019, the Center for Distance Learning was established within NCET to support the education of children that are in need of homeschooling or distance learning. A team comprised of teachers, mentors, senior teachers, and a film crew was set up. Between 2019 to 2021, they shot over 2,000 video lessons for distance learning. Within the framework of the centralized distance learning, in the first term of the 2020-2021 academic year, around 5,000 students from 1st through 12th grades (including high school streams) participated in distance learning courses. The education content was delivered through video lessons, webinars, meetings, and electronic materials. Beneficiaries (students, parents, and teachers) were also offered consulting services.

NCET is responsible for the collection of data from all education institutions in Armenia through the Education Management Information System as well as for conducting statistical analyses and making them publicly available in a coordinated way. SMIS is fully up and running and enables users to obtain statistical data about schools, students, and teachers through filters and their preferred analysis tools. Works aimed

at the creation of the subsystem of integrating the Education Management Information System for vocational education have been completed; secondary vocational education institutions have been integrated and are using the system. HEIs will be integrated starting from September 2021¹⁰.

Present-day requirements for technical capacity have been taken into account in the newly designed data processing center. Since the new data processing center is planned to digitally store for a mandatory period of 5 to 10 years five of the documents being created in general education institutions, it is likely that in the future NCET will need reinforcement of technical capacity of its physical servers.

Procurement of Computer Equipment and Software for ICT Use in All Levels of Education in Armenia

Through surveys conducted by CFEP PIU in 2019, a needs assessment study was carried out in 387 general education institutions that had participated in trainings over 2018 to identify the availability of an interactive projector, interactive boards, and laptops in those schools. Based on the needs assessment results, 42 general education institutions were provided with interactive boards, and 63 educational institutions received projectors.

Based on the needs assessment study, under the 2020 procurement plan, it was planned to supply RA general education institutions with computer equipment. For this purpose, in accordance with the information provided by the MoESCS and the National Center for Educational Technologies SNCO, the CFEP PIU conducted an analysis to identify the schools in need of distance learning and the need for computer equipment to organize distance learning.

Schools were identified where a certain subject was not taught because the school did not have a specialist on the given subject or else the teacher had less than five years' experience and no vocational education. As a result, 101 education institutions in the regions (except Tavush) were selected to be equipped with relevant computer equipment to organize distance learning. Thus, to hold remote classes, one classroom in each of the 101 schools was equipped with a computer, a multifunctional printer, a projector, a web camera, an uninterruptible power supply (UPS), a projection screen, and a microphone. Around 107 high schools received a conference camera to deliver distance learning and open classes.

Development of Electronic Educational Resources for Topics Missing in Textbooks of Mathematics, Physics, Chemistry, and Biology Subjects Taught in High and Basic Schools

Under the "Second Education Quality and Relevance Project", an open educational platform was planned within the framework of Subcomponent 1.3. However, by the decree of the RA Government in 2011, it was suspended due to the expediency of enhancing an already existing educational platform (www.armedu.am). As a result, instead of establishing the abovementioned open educational platform, a decision was made to create a library of electronic educational resources. Based on the results of the needs assessment of the electronic educational content and materials, the development of electronic educational resources for Mathematics, Physics, Chemistry, and Biology subjects taught in high and primary schools was launched by Macadamian AR CJSC in October 2015. Upon the completion of the second loan project, 50% of the entire volume of the educational materials were already developed. Works to this end were fully completed in 2017. The electronic educational materials are available here: <http://esource.armedu.am/>.

The beneficiaries of the developed electronic educational materials are teachers, students, and parents. The package for each subject includes theoretical materials, interactive materials for practical work to

¹⁰ Source: Summary Reports of NCET Activity, Quarterly Reports of CFEP PIU, Research by EV Consulting

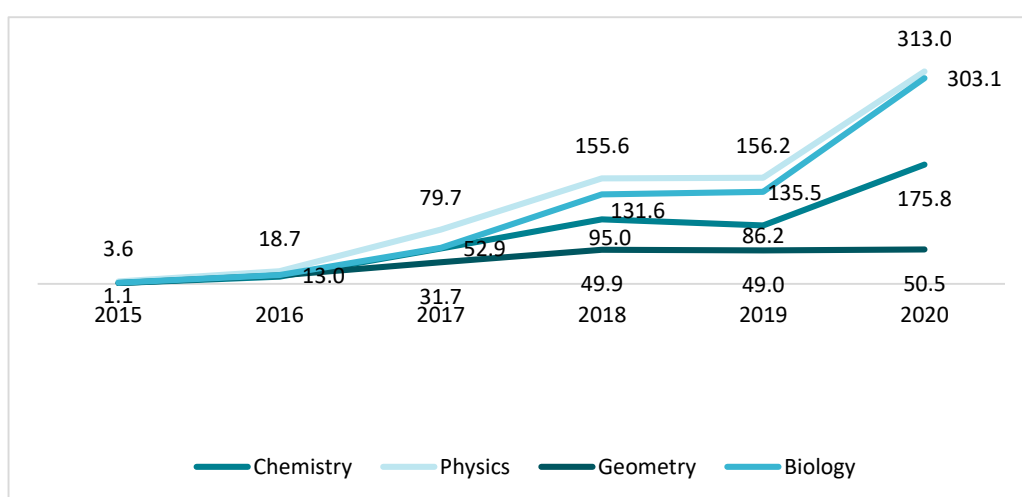
support the learning of the theoretical material, laboratory works that aim to deepen and enhance students' theoretical knowledge, and presentation videos regarding the lessons.

Overall, for grades 7-12, 32 topics were developed for Physics, 16 topics for Geometry, 36 topics for Chemistry, and 41 topics for Biology.

The materials are available to beneficiaries online as well as offline on their computers.

Statistical data regarding website visits show year-on-year increase in website visitors and users benefitting from the materials.

CHART 1.3.1: ANNUAL VISITS TO WEBPAGE OF ELECTRONIC EDUCATIONAL MATERIALS, IN THOUSANDS

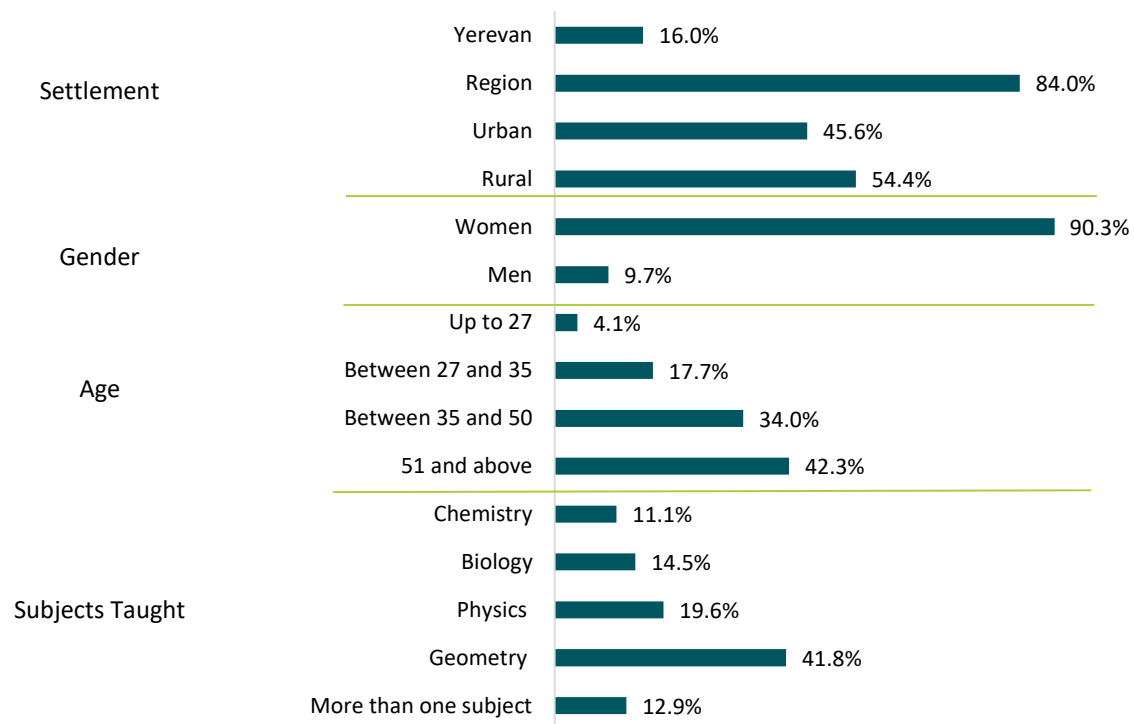


Source: Statistical Data Received from PIU Regarding Visits to Webpage of Electronic Educational Materials, 2021

The most visited subsections on the website are Physics and Chemistry. There was a rapid increase in the number of visits to the subsections of Chemistry, Biology, and Physics during 2020, probably because starting from March 2020, schools in Armenia completely switched to distant learning. Classes were held in form of group video calls, and teachers used to actively take advantage of the electronic resources and use them in their teaching. Children that missed classes were directed to the relevant webpage to catch up.

To identify the level of awareness and satisfaction with electronic educational resources, a quantitative research was conducted among the teachers of the mentioned subjects—the research was conducted through “Online Registry” platform of the EMIS system. By the end date of the fieldwork, 2,264 responses were received. The demographic analysis of the collected data is presented below.

CHART 1.3.2: DISTRIBUTION OF RESPONDENTS BY SETTLEMENT, GENDER, AGE AND SUBJECT, %



Source: Quantitative Research among Teachers of the Four Subjects, EV Consulting, 2021

According to the survey results, the majority of respondents learned about the electronic educational materials through individual searches (53% of respondents). Approximately 37% learned about the availability of the educational materials from the NCET, 34% from school principals, and 28% from the PIU.

CHART 1.3.3. USE OF ELECTRONIC EDUCATIONAL MATERIALS

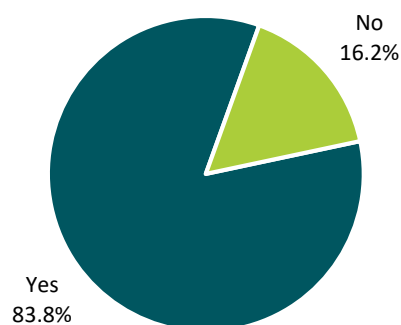
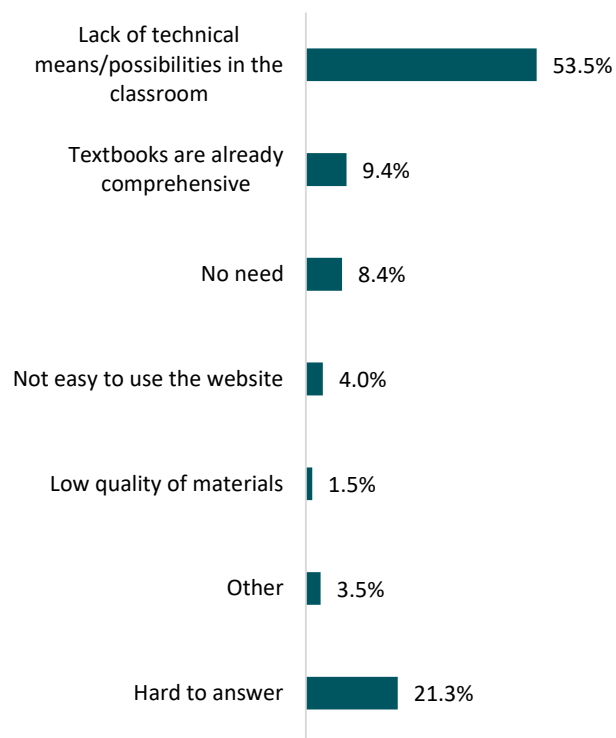


CHART 1.3.4: MAIN REASONS FOR NOT USING ELECTRONIC EDUCATIONAL MATERIALS



Source: Quantitative Research among Teachers of the Four Subjects, EV Consulting, 2021

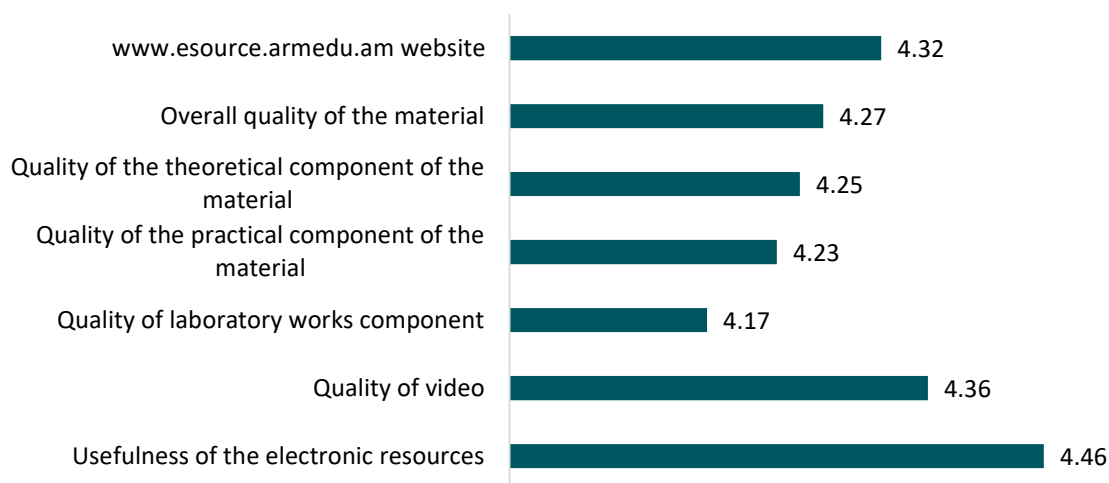
Four in five respondents use electronic educational resources. The main reason for not using them, according to the majority of respondents, is the lack of computer equipment and Internet connection in classrooms. Other reasons include difficulty in using the website and insufficient quality of the developed resources.

Roughly 70% of the respondents use the electronic resources quite frequently. Biology and Physics teachers are the most frequent users of the resources, around 66% and 77% of respondents, respectively. Geometry teachers use them less frequently—around 63% of respondents. That can be explained by the fact that the number of topics developed for Geometry is the lowest at 16 topics, whereas for biology 41 topics were developed, 32 topics for physics, and 36 topics for chemistry.

Respondents in Yerevan and the regions use the electronic resources at nearly the same frequency. Specialists who are up to 27 years of age and those who are between 36 and 50 use the resources more frequently. Respondents 51 and over use the electronic resources less frequently.

One out of two respondents mentioned that the developed materials unequivocally contribute to students' learning of the topic. The others mentioned that the developed materials contribute to students' learning of the topic only to a certain extent. One in three respondents mentioned that the developed education resources fully supplement to the topics missing in the textbooks of the four subjects. The majority of respondents (around 52%) believe that the materials supplement the topics missing in the textbooks only to a certain extent.

CHAPTER 1.3.5: LEVEL OF SATISFACTION AMONG RESPONDENTS BASED ON FACTORS*



Source: Quantitative Research among Teachers of the Four Subjects, EV Consulting, 2021

*Respondents assessed the level of their satisfaction based on factors on a scale of 1-5 where 1 indicates that they are very dissatisfied and 5 indicates that they are very satisfied.

Respondents were most satisfied with the overall effectiveness of the electronic resources and were least satisfied with the quality of laboratory and practical works components. Physics teachers expressed the highest satisfaction with the overall effectiveness of the materials, while Geometry teachers were comparatively less satisfied— 4.56 and 4.38, respectively.

Overall, the respondents expressed high appreciation for the usefulness of the developed electronic materials and recommended that the list of topics for the selected subjects be continuously expanded.

Trainings on the Use of ICT in Teaching and Administrative Work at Schools

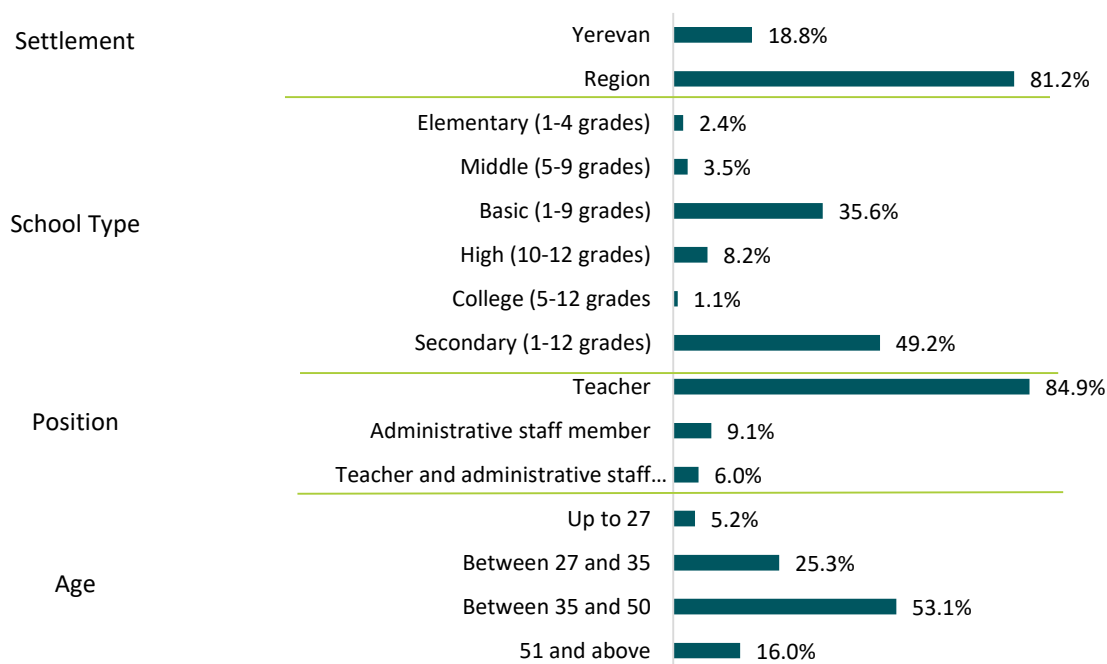
Within the framework of the Project, in 2017, Agence Universitaire de la Francophonie coordinated seven modules of ICT trainings and conducted the training of 30 trainers from Yerevan and the regions.

In 2018, in accordance with a schedule drafted in advance (based on institutions and regions, 10 groups in Yerevan and 20 groups in regions), 29 local trainers conducted targeted training of 584 teachers and administrative staff members from all regions and Yerevan on the use of ICT in teaching and administrative work of the educational institutions. Similarly, in 2019, 1,510 teachers were trained. Due to the pandemic, in 2020, a total of 1,197 teachers and administrative staff members were trained online, and they were all awarded certificates at the end of the training.

By the time this report started, trainings of teachers and administrative staff members were ongoing in targeted schools. Overall, 1,000 more beneficiaries will be trained in 2021.

To identify the beneficiaries' level of satisfaction with the efficiency of the trainings, a quantitative study was conducted in June 2021. Approximately 463 teachers and administrative staff members from Yerevan and the regions participated in the survey. The chart below shows the demographics of the participants.

CHART 1.3.6: DISTRIBUTION OF RESPONDENTS BY SETTLEMENT, SCHOOL TYPE, POSITION, AND AGE, %



Source: Quantitative Study among Teachers of the Four Subjects, EV Consulting, 2021

Participants in trainings are mostly specialists in the field of mathematics, informatics, and natural sciences. Teachers of Armenian language and literature, foreign languages, technology, and physical education as well as primary school teachers also participated in the trainings.

Around 84% of respondents expressed high satisfaction with the efficiency of the ICT training courses. The reason for dissatisfaction was that the training materials' volume was large, while the allocated time was not enough to fully absorb it. Among other reasons for dissatisfaction were insufficient number of practical activities and ineffective methods of teaching the material.

After participating in the training courses, teachers now use online learning platforms (Moodle and Padlet), for creating electronic resources (Screencast-O-Matic and Quizizz) more frequently (52% of respondents for each). Teachers use student evaluation and grading tools as well as platforms for lesson planning and cloud services less frequently.

Teachers who use the above-mentioned tools less frequently cited a lack of computer devices at schools and home, frequent Internet connection disruptions, and inconvenience as reasons.

TABLE 1.3.7: FEEDBACK ON THE USE OF ICT TOOLS

1	Students show higher interest in the lesson	74.2%
2	The teaching and learning process has become more interactive and collaborative	57.6%
3	The student assessment process has become easier and more transparent	36.5%
4	It has become easier for teachers to prepare for and deliver the lesson	35.5%
5	On the whole, there has been no change	4.1%

Source: Quantitative Study among Teachers of the Four Subjects, EV Consulting, 2021

Teachers that use ICT tools in the teaching and learning process mention that lessons have become more interactive and collaborative, and children show higher interest in the lessons. Only 4% of specialists using the tools believe that the tools made no difference in the teaching and learning process.

To increase the efficiency of use of ICT tools, participants recommended that the number of computers and other technical devices at schools be increased, the quality of Internet connection be improved, and trainings be conducted regularly but for longer time intervals.

Prior to participating in trainings, the survey participants evaluated the level of their ICT skills and the use of ICT in their teaching as intermediate. However, after participating in the training courses every second participant mentioned they had fully mastered use of the ICT tools in the teaching and learning process.

CONCLUSIONS AND RECOMMENDATIONS

Most activities under the Subcomponent “Improving Data Collection and the Monitoring of the Education System Performance”.

Overall, the main risks for the materialization and sustainability of the activities implemented under the Subcomponent and the achieved results are external.

CHALLENGES AND RECOMMENDATIONS

- The new data processing center is planned to digitally store five of the documents being created at schools for a mandatory period of 5 to 10 years. To ensure the sustainability and safety of the operations, NCET may need to expand its physical servers.
- Education Management Information System for general, secondary vocational, and higher education is fully integrated and operational. All RA schools as well as primary and secondary vocational education institutions use the system and regularly update the data into the system. Only higher education institutions do not enter data into the system. Those institutions will begin using the system starting September 2021.
- Electronic educational resources for topics missing in the textbooks of Mathematics, Physics, Chemistry, and Biology subjects taught at basic and high schools have been developed. Awareness of the materials among beneficiaries increases annually, resulting in the significant increase of the number of website visits. According to beneficiaries, the materials supplement to the topics missing in the textbooks to some extent, hence more electronic materials need to be further developed.
- More than 3,000 teachers and administrative staff members from all RA regions have been trained in the use of ICT tools in the teaching and learning process. Training participants express high satisfaction

with the efficiency of the trainings. However, they mentioned that the training materials were extensive, while the allocated time was not enough to fully absorb it. Participants recommend increasing the number of hours allocated for the trainings, equipping schools with relevant equipment, and providing schools with stable Internet connection.

- Technical equipment needs assessment study is regularly conducted in general schools, and identified schools are being provided with relevant technical resources. However, there are still schools in Armenia (especially in border areas) where technical resources are extremely insufficient.
- The schools in Armenia require regular funding for maintaining computer devices. Presently, schools bear the maintenance expenses on their own. This is often challenging due to limited budget of schools. The current state funding system for schools (per student number) is often insufficient to fully implement the required undertakings, and the funding amount does not ensure the required level of the technical framework (EV Consulting, 2021).
- The sustainability of activities implemented under the Subcomponent and the results achieved require continuous state consideration.
- Technical equipping of schools and their development as well as the broad use of ICT in the teaching and learning process require continuous target funding.
- Given the current rapid technology developments, the limited opportunities to update the technical framework and electronic resources reduces the qualitative indicator of ICT use at schools. For example, although all schools are connected to the Armenian school network, expert surveys and focus groups conducted at schools show that the quality of Internet connection is often poor in urban communities, while in regions and especially rural communities, Internet connection often gets disrupted. This adversely affects the broad use of ICT in the teaching and learning process, the use of electronic resources, and the fulfillment of administrative duties. The abovementioned issue is often due to increased use of ICT and ever-changing ICT requirements, and keeping up is a challenge today.
- Taking into consideration the rapidly changing ICT developments in the world and in Armenia, an assessment of ICT developments, limitations, and trends needs to be regularly conducted at schools in order to effectively address their needs.

SUBCOMPONENT 1.4: SUPPORTING FURTHER IMPROVEMENT IN THE QUALITY OF EDUCATION THROUGH CURRICULUM REVISIONS

OBJECTIVE

The Subcomponent aims to improve the quality of education through the revision of the curriculum and standards as well as to enhance students' knowledge and skills to meet current requirements.

Overview

The subcomponent aims to assist in the revision of subject standards and curricula of elementary, basic, and secondary schools as well as to train teachers to meet the new standards and curricula.

Under the Subcomponent, it was planned to conduct a needs assessment study of the revision of the State Standard for General Education, subject standards and curricula, to set up task forces that would elaborate the abovementioned standards and curricula, conduct teacher trainings on the developed standards, and organize training courses for the possible group of textbook publishers and authors.

PERFORMANCE OF MAIN RESULTS

OBJECTIVE	BASELINE	2021
Improvement of the quality of education through the revision of the curriculum and standards. Improvement of students' knowledge and skills to meet current requirements.		
Target		
Actual	-	Achieved

PERFORMANCE OF INTERMEDIATE RESULTS INDICATOR

SUBCOMPONENT	INDICATOR	TARGET 2015	ACTUAL 2021 As of July 31
Supporting Further Improvement in the Quality of Education through Curriculum Revisions	The national strategic document on general education has been revised and endorsed by the Government		Achieved
	Number of subjects whose standards and curricula have been revised and endorsed by the Government	9	6*

* In terms of STEM subjects, the EU4Innovation in Armenia: STEM Pilot Activities Project coincided with the subjects targeted by the Education Improvement Project. Thus under the Project, the standards and curricula of six subject disciplines were revised, excluding the STEM subjects.

The RA government revised the national strategic document on general education, the state standard for general education, and approved it on February 9, 2021.

The standards and curricula of six subject disciplines (Armenian language, literature, foreign languages, society, social sciences, physical education and safety activities, arts and technology) instead of the intended nine were revised. The standards and curriculum of three STEM subjects were revised under the EU4Innovation in Armenia: STEM Pilot Activities Project.

The standards and curricula of six subject disciplines were then presented for public debate, and after the Ministry's endorsement, teacher trainings were held. Starting from January 2021, the revised standards and curricula were piloted in 20 selected schools in Yerevan, Tavush, and Aragatsotn. Starting from September 2021, they will be tested in all schools in Tavush, which will also include all STEM subjects.

HISTORY

The conceptual regulations of general education have been defined in the National Curriculum for General Education, which was approved by the RA Government in 2004. In the same period, the RA Government approved the State Standard for Secondary Education. These two documents were developed under the Education Quality and Relevance Project. Later, in 2009, the RA Government adopted the Law on General Education, and various sections and provisions of the curriculum were included in the law. However, the sections that had not been defined as conceptual regulations in line with the Law remained in the curriculum and were subject to revision. Similarly, the State Standard for Secondary Education and the State Standard for General Education were developed and approved by the RA Government in 2010.

The Subcomponent “Supporting Further Improvement in the Quality of Education through Curriculum Revisions” of the World Bank’s Education Improvement Project aims to revise and modernize the content of general education.

ANALYSIS OF PERFORMANCE OF SUBCOMPONENT 1.4

Implemented Works

Under the Subcomponent, the “Needs Assessment Study of Revision of State Standard for General Education, Subject Standards and Curricula” was conducted in 2015-2016. That was followed by the launch of the revised State Standard for General Education. For this purpose, a working group comprising 12 consultants was formed; their works were coordinated by a committee appointed by the RA MoESCS.

By the decision of the coordinating committee, the draft of the National Curriculum (State Standard for General Education) was taken as a framework for the implementation of the subclause “j) Final Establishment of National Curriculum by the Combination of the Araratian Baccalaureate and the Excellence Program” of the RA Government Program for 2017-2022.

Due to reformulation of the PIU management board and the staff changes in the RA MoESCS in 2018, works to this end were put on hold and approaches to developing the standards were changed. As a result, it was decided to revise only the State Standard for General Education, which would then serve as a basis for the development of subject standards and curricula.

Considering the EU4Innovation program, which aims to develop STEM subject curricula, the World Bank proposed to remove the science and math subjects included in the Education Improvement loan program to save time and reduce the workload.

To revise the six subject standards and curricula, in 2019, five task forces were set up, which included 33 local experts from the following academic areas:

- Armenian language, literature
- Foreign languages
- Society, social sciences
- Physical education and safety activities
- Arts
- Technology

The revised versions of the draft project—the subject standards and curricula—were presented for public discussion. Afterwards, based on professional and public discussion results, the working group further improved the general education subject standards and submitted the final drafts to the RA MoESCS and the PIU.

Starting from Q3 2020, the working groups have been developing academic materials for the pilot schools, based on subject and pilot classrooms. In the first round, teacher trainings were conducted in selected 20 schools to pilot the subject standards and curricula. Schools were different by their type, including basic, high, and secondary, urban and rural, small and large, schools with a national minority, and schools offering

inclusive education. Starting from January 2021, the six subject standards and curricula have been piloted in the selected 20 schools, and starting from September 2021, the nine subject standards and curricula, including STEM, will be piloted in all schools in Tavush. Since July 2021, awareness-raising workshops have been conducted among teachers of general education schools to present the revised standards and curricula.

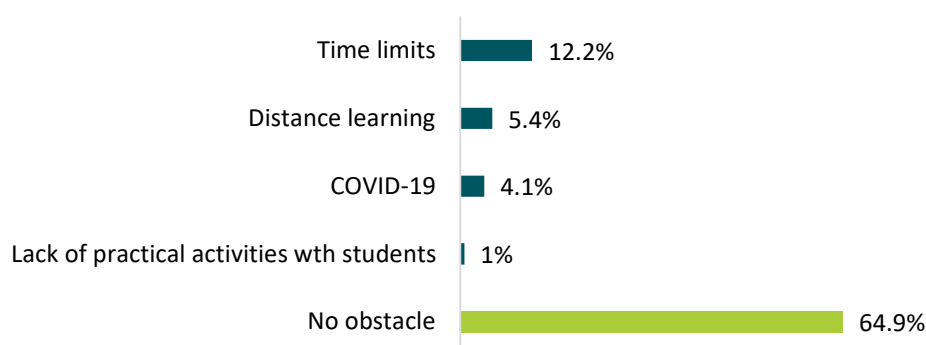
The new state standard for general education is based on competencies that form the integrity of knowledge, skills, attitudes, and value system. The current standard highlights the knowledge-capacity-value system chain. Eight key competencies from which the outcomes stem (based on education levels) have been defined. Standard outcomes have been defined for each grade, and these outcomes will guide each teacher on what knowledge and competencies students should acquire, and how they should perform the assessment. The teaching toolset focuses on practical activities and academic projects. The teaching is student-oriented, and the teacher guides the process.

Efficiency of Testing the Standards and Challenges

The task forces revising the standards have developed teacher training modules. When developing the training program, special attention was paid to project-based learning and cross-subjects themes. Teachers have stressed the efficiency of these trainings in terms of learning new methods, exchanging practices, and collaborating with peers.

Most teachers have not encountered any obstacles while testing the new standards in the selected schools. Some respondents mentioned limited time assigned for the training courses, the pandemic, and remote teaching as challenges that were faced. After the testing was completed, research was conducted among the teachers:¹¹ 148 teachers from 20 testing schools participated in it.

TABLE 1.4.1: WHILE PILOTING THE PROJECT WHAT FACTORS HINDERED ACHIEVING THE OBJECTIVES SET AT THE STARTING POINT?



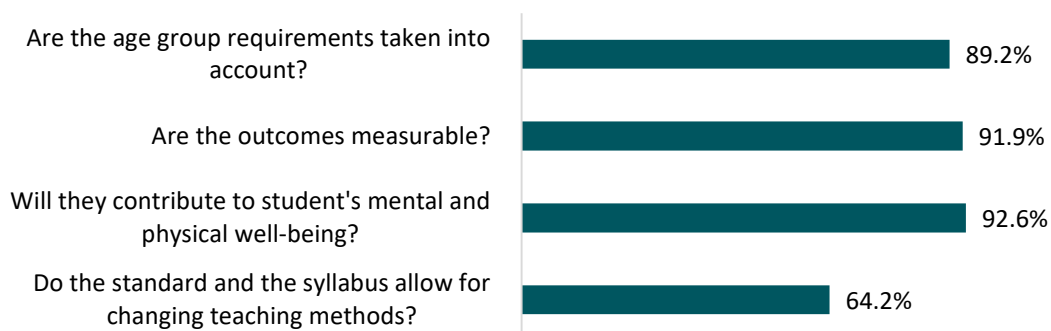
Source: Survey Among Teachers Piloting the Project in Selected 20 Schools Conducted by CFEP PIU, 2021

Teachers could get involved in the development of subject standards and curricula and express their opinion by providing feedback to the working group.

Teachers' opinions regarding the results of testing the new subject standards are mostly positive. They find the new subject standards and the results of the subject curricula to be measurable and effective. According to the surveyed teachers, it is reasonable to use the new standards and curricula in schools. The new standards and curricula take into account all age group requirements.

¹¹ The research questions were developed by international and local experts involved in the task forces, and field works were conducted by the CFEP PIU. EV Consulting has conducted analysis and presentation of the research results.

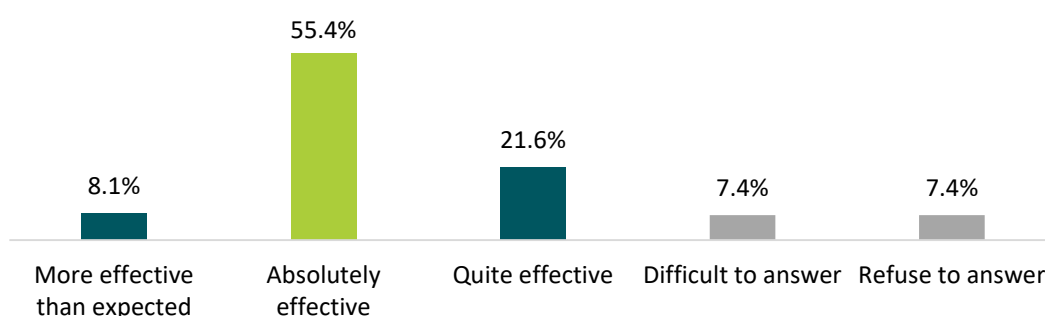
TABLE 3.1.1: ASSESSMENT OF PILOTING OF THE SUBJECT STANDARD AND CURRICULUM



Note: The Table shows only "Yes" answers.

Source: Survey Among Teachers Piloting the Project in Selected 20 Schools Conducted by CFEP PIU, 2021

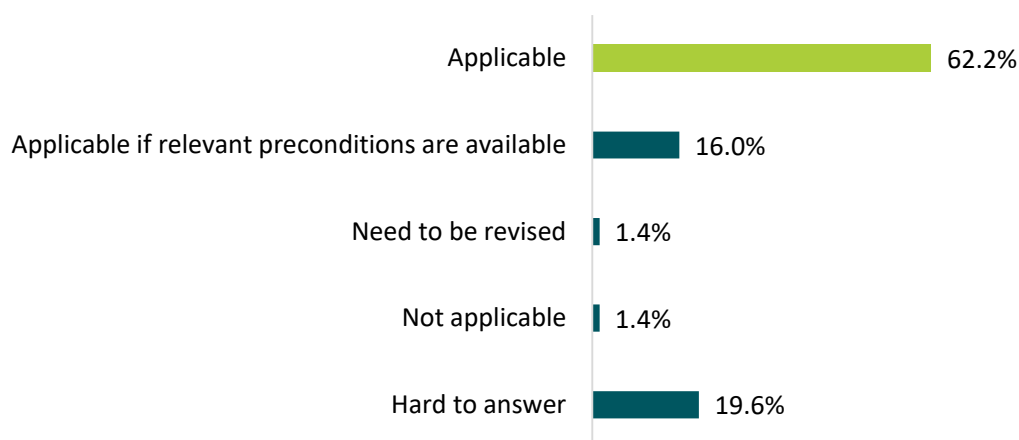
TABLE 3.1.2: EFFECTIVENESS OF PROJECT PILOTING



Source: Survey Among Teachers Piloting the Project in Selected 20 Schools Conducted by CFEP PIU, 2021

According to teachers, certain challenges may emerge in the first round of integrating the new standards and curricula. However, if all conditions for the effective integration are met (equipping with technical resources and devices, raising awareness among beneficiaries of the need for changes and modernization, ensuring gradual change, etc.), then the process will go smoothly and a successful outcome will be ensured. As a matter of fact, experts above middle age group who have taught by traditional methods for many years tend to express concerns about the positive results of the Project.

TABLE 1.4.4: APPLICABILITY OF THE NEW SUBJECT STANDARDS AND CURRICULA



Source: Survey Among Teachers Piloting the Project in Selected 20 Schools Conducted by CFEP PIU, 2021

The standards and curricula need to be integrated into the school program because they boost students' analytical thinking. Also, the education process of the new generation of learners requires innovative approaches.

Although textbooks contain both theory and practical tasks, the number of practical tasks is insufficient and do not contribute to embedding their learning of the theory. Teachers assign the practical tasks in the textbooks as homework, and as a classroom activity, they use practical tasks from additional handbooks or develop personal examples of practical tasks.

To make the experimental classes more effective, some teachers have employed IT tools—videos, Moodle platform, and online grading tools. Others did not have the possibility to employ the abovementioned tools mostly due to lack of technical resources and devices in their schools.

Teachers regularly check student knowledge and skills in order to achieve the students' highest educational value. On top of that, they manage to create a safe and secure learning environment for each age group. However, schools do not have sufficient resources to ensure students' individual research activity and project-based learning.

The curriculum allows teachers to act freely and gives them a chance to employ innovative and creative approaches. They highly appreciate this fact as it motivates them and increases their sense of responsibility. The new standards also help integrate students into the teaching process and develop their leadership skills. The teaching topics are fixed, but the practical tasks and assessment methods may vary under the curriculum.

CONCLUSIONS AND RECOMMENDATIONS

- Despite the importance of this Component, according to the Ministry, the resources under the loan project have not been sufficient for the development of the standards and their full and large-scale piloting. Although the entire process was coordinated and guided by the Ministry, the separate revision of STEM subjects has created certain difficulties in terms of ensuring interdisciplinary ties.

- Challenges with the new standards include the insufficiency of educational and technical infrastructures, furnishing and technical equipment—especially IT tools—and physical education and healthy lifestyle.
- Teachers above middle age group who have taught using traditional methods for many years tend to express concerns about the effective integration of the subject standards. In general, specialists need to be fully informed and comprehensively trained in the use of the new subject standards and teaching methods.
- The programs of HEIs for preparing pedagogues need to be revised to include the peculiarities of teaching skills required by the new standards.
- When assessing the efficiency of the piloted standards, time should be taken into account as it is closely linked to the full integration and duration of the integration.

COMPONENT 2: MAINSTREAMING OF THE COMPETITIVE INNOVATION FUND (CIF) FOR HIGHER EDUCATION INSTITUTIONS INTO FULL IMPLEMENTATION

OBJECTIVE

The component is aimed at enhancing the quality of higher education, its relevance and accessibility, and improving and modernizing the educational and infrastructural capacities. Among actions taken to this end, one has special importance—the establishment and launch of the Competitive Innovation Fund (CIF) in Armenia, which is a political mechanism boosting innovation in the higher education sector.

OVERVIEW

Activities under the Project Component 2 “Mainstreaming of the Competitive Innovation Fund (CIF) for Higher Education Institutions into Full Implementation” have been implemented. Procedures regarding the operation of the Competitive Innovation Fund (CIF) have been reworked: Three rounds of awarding CIF grants have been implemented: first (i), second (additional) (ii), and second (main) (iii), each with six HEIs benefitting from the CIF’s component, respectively. To expand the list of HEIs benefitting from the CIF’s component, an additional eligibility criterion was introduced during the second (additional) (ii) round of awarding CIF grants. The HEI applying for a new grant should not be a beneficiary of the previous rounds of the component.

Under the second (main) (iii) round of the CIF, in July 2019, grant contracts were signed with six HEIs, which implemented the projects until July 31, 2021.

Thus, thanks to the three rounds of grant awards under the Education Improvement Project, 18 grant projects were executed (initially, the Education Improvement Project targeted the execution of 15 grant projects); four HEIs—Yerevan State University, Mkhitar Heratsi Yerevan State Medical University, Armenian National Agrarian University, and National University of Architecture and Construction of Armenia—have each implemented two grant projects.

The HEIs benefitting from the first (i) and second (additional) (ii) rounds of the grants have successfully implemented the grant projects aimed at enhancing the quality of education and efficiency, ensuring education relevance, and improving accessibility, while improving their abilities in planning, implementing, and monitoring a project. During the project implementation, the HEIs benefitting from the project have implemented all activities under the contract and have submitted phase-in financial and project interim reports. Over that time, the PIU conducted monitoring visits to the 14 HEIs implementing grant projects. Upon completion of the project, HEIs submitted final project and financial reports, which were approved by the CIF Coordinating Council.

As for the six ongoing grant projects implemented under the Component’s second (main) (iii) round, starting from Q4 2019 until the end of the current study, two of the six grants have been completed, procurement of four of the grants by HEIs and monitoring works were still in progress. However, due to the pandemic and the war in 2020, Project implementation deadlines set for the completion of procurement processes by the HEIs have been changed.

In particular, the following HEIs have significantly deviated from the deadline of the Project’s second (main) (iii) round: Yerevan State Medical University with its “Scientific-Educational Center for Fundamental Brain Research” project, the Armenian National Agrarian University with its “Veterinary Center for Scientific-Educational Excellence,” and Yerevan Brusov State University with its “HayLingvoTech” project. According to the head of the grant project, by the Project end date, Yerevan State Medical University will mostly complete the procurement process—it cited building rehabilitation work as the reason for the delay in full implementation. The Armenian National Agrarian University has fully completed construction and interior

design works and has partially completed the procurement process; the challenge it deals with includes the acquisition of forms within the period set forth in the contract. Yerevan Brusov State University has largely completed works aimed at the establishment of the Center and the procurement process. However, Brusov is dealing with challenges in the acquisition of the software necessary to launch the center's operation as well as works towards digital and web resources to ensure the full use of the Armenian language in digital infrastructures, assessment toolkits, and online electronic testing platforms with the involvement of consultants and researchers. According to heads of projects in the respective HEIs, they will be able to fully complete the activities under the contacts with an end-date extension.

Presently, the RA Government and the World Bank are negotiating to extend the end dates of contracts of higher education institutions benefitting from the Component. If they reach an agreement, higher education institutions will have more time to complete the activities under the contract and achieve all result indicators under the Component.

PERFORMANCE OF INTERMEDIATE RESULTS INDICATORS

RESULT		
	Completion Date	Status
Improved partnership in the higher education sector between state and private sectors (a minimum of seven consortium projects).	2021	Implemented
Improved capacities of HEIs through trainings on project development, monitoring, assessment, and procurement.	2021	Implemented
Around 18 (instead of the planned 15) HEIs benefitting from the CIF component.	2021	Partially implemented, in progress*

* Note: In 14 of the 18 grant projects all the actions defined by the component have been implemented; the four ongoing grant projects are partially implemented and are in progress.

HISTORY

Under the first round of the loan Project, the Component was initially aimed at establishing effective and sustainable mechanisms for funding higher education, and its end goal was to improve the quality and accessibility of higher education. The objectives of the Component included the development of a strategy for higher education funding and activities resulting from it, the rollout of a student loan system, and the establishment of the CIF. The strategy was elaborated and approved by the RA Government in 2011. Then a number of activities stemming from the strategy were implemented, and some of them were implemented by the RA MoESCS outside of the scope of the Project. Particularly, the MoESCS launched two new student funding mechanisms. The first was the system of tuition fee reimbursement based on academic achievement and need; around 2,000 students (2015-2016 academic year) from state HEIs benefitted from it. The second was the development and launch of the best student scholarship (the scholarship fund of around AMD 12 million was distributed among 35 students selected from Armenian HEIs). Additionally, at the initiative of the RA Government, a pilot student loan project was also initiated. The rollout of the student loan system under the Project was suspended by the decree of the RA Government, and the funds were used for the establishment of the CIF. The main goal of the CIF is to provide scholarships to HEIs on a competitive basis and support them in implementing innovative and development projects, and assist in improving the quality, relevance, and accessibility of the education they offer.

The CIF provided higher education institutions a chance to develop and implement innovative projects, modernize their curricula and methods, develop their research works, establish ties with the private sector and the priority sectors of the economy, and participate in international partnerships.

ANALYSIS OF PERFORMANCE OF COMPONENT 2

Establishment of the CIF

In 2011, one international and two local consultants were chosen to support the establishment of the CIF and they conducted a feasibility study. Based on the study, the objectives of establishing a CIF in Armenia as well as its tasks and mechanisms for operation were defined, which were further refined during meetings and discussions with various beneficiaries (RA Ministries of Education and Finance, RA MoESCS Science Committee, National Academy of Sciences, state and private HEIs, Republican Union of Employers of Armenia, etc.).

As a result, the Concept of Establishing the Competitive Innovation Fund for Higher Education in Armenia was developed and approved by the RA Government in 2011. Later, the launch guide of the CIF was further developed.

Awarding of Grants

The grants were awarded from 2015 to 2019. The process was promoted with an active information campaign. Particularly, announcements regarding each round of the competition were published on the official websites of the CFEP PIU and the RA MoESCS. HEIs regarded as potential beneficiaries were notified about the competition. The CFEP PIU organized workshops aimed at supporting HEIs in filling in and submitting the grant project application forms.

Within the framework of the three rounds, 28 HEIs submitted grant project applications. Some grant project applications were rejected due to incomplete application packages or because the HEI's scope of work was irrelevant to the priority area set for that round by the CIF Coordinating Council.

After evaluating the submitted applications, the CIF Coordinating Council selected a total of 18 projects as grant recipients. Grant contracts were signed with the HEIs implementing the selected projects. Seven of the selected projects are consortium projects, which combine several institutions (for example, HEIs, research centers, state and private sector representatives). The CIF had set a mandatory precondition that at least 10% of the project be co-funded by the HEIs. The budgets of consortium projects vary between \$300,000 and \$600,000 equivalent in AMD, while the project budget of separate HEIs amounts to \$300,000 equivalent in AMD. The Center for Education Projects PIU organized trainings for the selected HEIs on topics such as project development, writing grant proposals, filling out documents, and procurement. The representatives of the HEIs expressed high satisfaction with the technical support of the Center for Education Projects PIU for writing the grant proposals as many of them had no prior experience in applying for grants.

Main areas of the awarded grants (see Table 2.1.1).

1. Boosting Modernization and Relevance

Higher education modernization projects promote employer involvement in the education processes (through participating in project development, offering academic internships), foster project compliance with labor market requirements, and contribute to the development of labor market study centers, which assumes the establishment of career centers (12 grants).

2. Increasing Effectiveness

Such projects aim to boost the structural reforms of the institutions, improve the management and internal quality assurance systems of the HEIs, and foster the creation of management information systems (4 grants).

3. Improving Accessibility

Projects implemented to this end will enable broader layers of society to enroll in the higher education system, particularly groups that have low socioeconomic status (through remote and supporting projects) (2 grants).

The HEIs that received grants highly appreciative and are especially thankful for the efforts of the Center for Education Projects PIU toward ensuring smooth project implementation. All projects were a success and provided the HEIs with opportunities to enhance the quality and efficiency of education, to ensure relevance, and to improve higher education accessibility. The HEIs and other project beneficiaries mentioned that the grants allowed them to target and reach specific results, and at the same time enabled them to boost their strategic planning and project development and management capabilities. As a direct result of the grant projects, besides modernization of the education processes and quality improvement, the HEIs mentioned new opportunities for international cooperation. Moreover, projects implemented in consortiums promote collaboration between the HEIs and the private sector and enhance ties between the HEIs and the labor market. For example, at the Komitas Yerevan State Conservatory, it is essential for the musicians and the reputation of the Conservatory to hold meetings and master classes with proficient musicians and scholars. The meetings and master classes take place at the innovative acoustic laboratory established under the Project. Furthermore, thanks to the establishment of the Scientific and Production Center for Wine Education, the Armenian National Agrarian University is collaborating with the EVN Wine Academy to perform the project to its full potential—a wine laboratory was set up with state-of-the-art equipment meeting international standards.

The lab equipment procured under the “Genetic Engineering, Genome Editing and 3rd Generation Sequencing Educational and Scientific Excellence Center” Project of the Russian-Armenian University (RAU) has enabled researchers at the RAU Department of Bioengineering, Bioinformatics and Molecular Biology, in partnership with the Personal Genomics and Immunology Lab and Bioinformatics research teams of the NAS RA Institute of Molecular Biology, to decode 12 complete genomes of the SARS-CoV-2 coronavirus using third generation sequencing. Within the framework of an agreement signed between the Russian-Armenian University and the Saarland University in Germany, students had a chance to participate in exchange programs and go to Germany to study and participate in internships. In partnership with the Institute of Cytology and Genetics in Novosibirsk, research on obtaining stem cells is being conducted and professional consulting is provided regularly. Together with the Institute, the students have applied and submitted joint projects for three competitions announced by the Science Committee.

The YSU Microbial Biotechnologies and Biofuel Innovation Center collaborates with a number of companies—Armenia Wine Company, Yerevan Ararat Brandy-Wine-Vodka Factory, Golden Grape Armas, Proshyan Brandy Factory, Yerevan Champagne Wines Factory, Ashtarak Kat, and Bjni and Noy companies—to prepare specialists with knowledge and skills that meet labor market requirements. The university has signed a memorandum with the Nork Infection Clinic Hospital to launch an academic collaboration within the framework of chemistry and infectious diseases scientific subjects. The Microbial Biotechnologies and

Biofuel Innovation Center conducts scientific research and collaborates with various local and international HEIs and scientific research institutes, including:

- University of California, Berkeley
- University of Cádiz, Spain
- University of Florida
- Martin Luther University, Germany
- Saarland University, Germany

Thanks to the established education infrastructures, Yerevan State University, Mkhitar Heratsi Yerevan State Medical University, Armenian National Agrarian University, Komitas Yerevan State Conservatory, Yerevan Gladzor University, and M. Nalbandyan State University of Shirak are revising certain education programs and developing new ones to meet the labor market requirements.

Approximately 81% of Armenia's entire student body has benefitted from the Project (as of 2019-2020 academic year, 57,400 of the total 71,990 students of state, private, Yerevan-based, and regional HEIs in Armenia as well as HEIs operating through intergovernmental agreements). The implementation of the projects has helped 14 HEIs enhance the quality of education, its efficiency, and accessibility.

TABLE 2.1.1: LIST OF PROJECTS IMPLEMENTED BY CIF GRANTS

GRANT PROJECT AREA	PROJECT NAME	IMPLEMENTING HEI	MAIN PROJECT OBJECTIVE	PROJECT COST* (AMD)
Boosting Modernization and Relevance	Modernization of Law as a Profession	Yerevan Gladzor University	Modernization of law as a profession by rolling out a Master's Degree program, building a relevant environment for developing practical skills and capacities, and improving the academic building.	122,618,810
	YSU Microbial Biotechnologies and Biofuel Innovation Center	Yerevan State University Foundation	Improvement of quality of biological (microbial) education in Armenia and its compliance with labor market requirements and with international, including European standards.	246,726,000
	Establishment of Center for Excellence in Dental Education at YSMU	Mkhitar Heratsi Yerevan State Medical University Foundation	Continuous improvement and development of the dental specialization and integrated education program at YSMU.	246,726,000
	Development of Scientific and Production Component of Winemaking Education	Armenian National Agrarian University Foundation	Creation of top-notch educational and technical infrastructures and development of the existing scientific and educational potential based on winemaking education and scientific and production activity.	102,344,639
	Ensuring Balanced Regional Development through Shirak State University Strengthening and Diversification of Educational Services	M. Nalbandyan State University of Shirak Foundation	Strengthening Shirak State University by offering courses, services and new educational technologies complying with regional challenges and labor market requirements, and thus ensuring Shirak's balanced development.	86,873,425
	Modernization of Preschool and Elementary Education through the Training of Specialists Meeting the Requirements of the Time	Khachatur Abovyan Armenian State Pedagogical University Foundation	Preparation of preschool and elementary education specialists armed with innovative, practical and research skills and abilities.	87,859,485
	Introduction of Innovative Technologies Aimed to Improve the Process of Music Education at the Komitas Yerevan State Conservatory	Komitas Yerevan State Conservatory	Modernization of the music education process at the Yerevan State Conservatory through the introduction of innovative technologies and revision of education programs.	72,655,830

	Modernization and Improvement of Vocational Education in the Physical Culture and Sports Sector	Armenian State Institute of Physical Culture and Sport Foundation	Modernization of vocational education and researches by creating a modern scientific research center.	109,993,396
	Establishment of an Educational and Scientific Center of Quality Control and Monitoring of Drugs	Yerevan State University Foundation	Establishment of a scientific-educational center at the YSU Institute of Pharmacy, preparation of specialists meeting international standards, who will research and evaluate the newly created drugs and the structure of their components, as well as the quality of the drugs currently available on the market.	249.417.691
Increasing Efficiency	Technological Innovation Platform	National Polytechnic University of Armenia Foundation	Modern training and research environment aimed at the scientific and technological development, establishment of collaboration with business sector partners to address issues in the field and to build partnerships.	246,726,000
	Modernization of the Curricula of Architectural and Construction Professions with the Establishment of an Educational-Scientific-Experimental Laboratory Equipped with State-of-the-Art Technologies	National University of Architecture and Construction of Armenia Foundation	Improvement of education programs for professions related to issues of Architecture and Construction materials science, technology and structures, establishment of a modern educational-scientific-experimental laboratory to expand the educational functions of the university and to strengthen its capacities.	243,855,428
	Modernization of Construction and Exploitation of Transport Routes Education Program with an Establishment of a Laboratory Armed with State-of-the-Art Testing Equipment	National University of Architecture and Construction of Armenia Foundation	Establishment of a laboratory armed with state-of-the-art testing equipment to enhance the teaching and learning of the Construction and Exploitation of Transport Routes Education Program, develop and commercialize the research activity, integrate research activity into the education process, expand the university's educational functions and strengthen its capacities.	144.133.596
Improving Accessibility	Organization of Distance Learning Courses with the Combination of Distance Learning Technologies	Northern University	Promotion of balanced regional development of educational services for vulnerable groups, by providing quality education, introducing information technologies and ensuring continuity of education.	42,228,180
	Online Master's Program with Joint Diplomas	Public Administration Academy of the Republic of Armenia	Online Master's Degree program in Business Management with a joint diploma awarded by the Public Administration Academy of the Republic of Armenia and the International Scientific Educational Center of the National Academy of Sciences of the Republic of Armenia.	79,036,000

TABLE 2.1.2: LIST OF ONGOING PROJECTS IMPLEMENTED BY CIF GRANTS

GRANT PROJECT AREA	PROJECT NAME	IMPLEMENTING HEI	MAIN PROJECT OBJECTIVE	PROJECT COST* (AMD)
Boosting Modernization and Relevance	Veterinary Center for Scientific-Educational Excellence	Armenian National Agrarian University Foundation	Modernization of education and scientific processes in veterinary medicine, preparation of competitive specialists for the industry, reinforcement of the link between the HEI and the labor market.	139.642.142
	HayLingvoTech Center for Excellence in Language and Educational Technologies	Brusov State University Foundation	Development of technology-based education and research in languages and social sciences in Armenia, preparation of quality specialists, full use of Armenian language in digital environment and software, development of Armenian Language Assessment Toolkit, promotion of the link between education, research, innovation, and business.	119.360.898
	Scientific-Educational Center for Fundamental Brain Research	Mkhitar Heratsi Yerevan State Medical University Foundation	Establishment of a Scientific-Educational Center for Fundamental Brain Research, which will incorporate science into education and become a part of the process of transitioning from the dominantly instructional education to research-oriented education.	248.744.552
Increasing Efficiency	Genetic Engineering, Genome Editing and 3rd Generation Sequencing Educational and Scientific Excellence Center	Russian-Armenian University	Development of the RAU, other universities, and scientific and technological organizations in the field of biomedicine, national and international partnerships, educational, research and innovative activity.	122.720.354

* Does not include co-funding from the higher education institution.

Higher education institutions view certain technical processes and requirements regarding grants such as, the duration of the procurement process, paperwork for equipment acquisition, the form and length of the reports, complex procedures with regard to changes in project implementation deadlines and costs in the estimates as complicated and in certain cases, not practical. To some extent, this has to do with universities' lack of experience in applying for such projects. For example, certain HEIs mention that the procurement procedure within the framework of the grant differs from the current official system for state institutions they are familiar with, and that has created difficulties for them. However, all surveyed HEIs mention that thanks to the support and efforts of the Center for Education Projects PIU, all technical issues have been solved and have not impeded the entire project implementation. Moreover, thanks to the Project, HEIs have improved their capacities in planning and execution of grant projects, which has allowed them to feel more prepared to apply for such projects in the future, including international projects.

Some of the HEIs mention that they had a surplus as a result of the procurement, which they could use for implementing other activities under the Project. This implies new procurement processes. Furthermore, according to the CIF Manual, the proposals of the HEI on savings and their further use are subject to consideration and approval by the CIF Board. However, taking into account that the CIF Guide Manual provides for a maximum of 24 months for the implementation of grant programs, it is not possible to refer to the implementation of additional activities during this period of 24 months. The overall procedure will exceed the predefined scope of time.

CONCLUSIONS AND RECOMMENDATIONS

A CIF has been established in Armenia, which has ensured the successful implementation of 14 grant projects under the Education Improvement Project, and the full implementation of four grant projects is expected to be completed by the end of the Project.

The launch of the CIF and its implementation of grant projects are highly appreciated by the HEIs and other beneficiaries. In particular, they underlined the relevance of the projects and their true contribution to improving the quality of education processes and increasing their efficiency, relevance, and accessibility.

Thanks to the implementation of the projects, the following achievements have been registered in Armenia's higher education sector:

- At least 16 innovation laboratories or excellence centers were established.
- At least 15 centers were equipped with educational and technical resources.
- At least seven documents (operational guidelines) were developed for the activities of the centers.
- At least 16 vocational programs were developed or modernized and integrated.
- At least 10 international practice studies were carried out through visits or remotely.
- Through visits and trainings, at least 12 professional development activities were conducted for the scientific-pedagogical staff.
- Tens of collaborative relationships have been established between local and foreign private and state institutions and HEIs.

The HEIs have gained experience in applying for large grants, including from external funding sources.

By expanding the experience, they gained in their own institutions, higher education institutions apply for other grants to establish innovation labs and excellent centers for students specializing in other fields as well, thus improving the quality of their education.

The Component has provided an incentive for the HEIs to improve their planning, project development, and grant writing skills. Thanks to the gained experience, the HEIs are more prepared to independently apply for international grants.

It is recommended that priority be given to projects that boost international cooperation and imply cooperation with the private sector.

The appraisal from the HEIs and other beneficiaries show that the CIF grants may have an especially huge impact on the promotion of international partnerships and engagement of the private sector. It is recommended that in the next rounds of awarding grants, priority should be given to the projects that boost international cooperation and imply cooperation with the private sector.

It is recommended that annual state budget allocations be made to ensure the sustainability of the grant project.

According to the Ministry, the funding system for HEIs is currently being changed, and it will take into account issues related to the funding of scientific and educational infrastructures. Distribution of grants from the state budget bears certain regulations-related gaps, which impede the proper implementation of the project. In particular, in such cases the acquisition of main resources is being restricted.

The RA Government has also significantly increased its science funding for 2021-2022. This presents an opportunity for HEIs to get involved in science funding projects and build scientific and educational capacities.

It is recommended that a platform coordinating grants projects be created to improve the efficiency of their activities.

Presently HEIs benefitting from the Project independently take measures to problem-solve an issue within the framework of the Project, start procurement to acquire a certain material or equipment they need, or obtain some information they require. All this results in ineffective use and management of resources. HEIs benefitting from the Project recommend that a common platform or a task force be set up to coordinate all projects, conduct collective procurement, ensure exchange of practice and information, and ensure smooth communication—that is, to take project coordination to an institutional level.

4. SUMMARY AND CONCLUSIONS

Activities under the World Bank's Education Improvement Project will be mostly implemented by the end of the extended end date, ensuring the performance indicators are met and the results indicator targets are achieved. As of July 31, three of the four results indicators and six of the twelve intermediate results indicators under Component 1 were achieved. Four more indicators will be achieved by the Project's end on September 30, 2021. Two target result indicators could not be measured by the time this study was conducted since the impact of the associated activities implemented under the Project will be seen in one or two years.

The results indicator under Component 2 has been entirely achieved for the 14 completed grants projects, and the four ongoing projects will be completed by the Project end date. Two of the three intermediate results indicators were fully achieved by the time of preparing this research. Presently, the RA Government and the World Bank are negotiating to extend the contracts of higher education institutions benefitting from the Component. If an agreement is reached, the additional period will enable higher education institutions to complete the activities under the contract, and thus all results indicators under Component 2 will be achieved.

IMPACT

The successful practice of integrating preschool models into the **general education sector** has led to targeted allocations from the state budget to further expand them. Studies reveal improved school readiness of children, which will promote equal opportunities at the start of general education, especially in the regions.

The rehabilitation of high schools has substantially changed the learning environment, and its positive impact is already visible in the improved student attendance and attitudes toward learning, and this has a growing trend. The rehabilitated schools offer a top-notch learning environment for many rural communities.

New high school science laboratories, electronic educational materials and tools, and ICT equipment will increase the number of practical activities in the teaching and learning process and will improve student learning. Some of the activities under the Project have significantly contributed to overcoming the challenges that were imposed on Armenia's education system by the COVID-19 pandemic, particularly those related to distance learning.

The integrated Education Information Management System plays an important role in the monitoring and management of the education system. It allows state bodies and other stakeholders to get detailed real-time information about the education system.

Education standards and curricula as well as teacher qualifications are the primary factors leading to improvement in education. Teachers have positively evaluated the results of the piloted revised subject standards and curricula, but time is needed for their full integration and impact.

Grants awarded by the Competitive Innovation Fund in the **higher education sector** have improved the quality of higher education, its relevance, and accessibility. They have also contributed to establishing collaborations with the private sector and international institutions. The implementation of grants projects and development of relevant skills are expected to contribute to

the HEIs' successful participation in local, regional, and international calls for grant proposals and partnership projects.

Interaction between the implemented activities is a factor that increases Project efficiency. For example, the rehabilitation of high schools and the establishment of science labs in all high schools targeted by Subcomponent 1.2, the trainings of teachers and administrative staff members on the use of ICT in subject teaching and in performing administrative work as well as on ICT use in education processes under Subcomponent 1.3, and the development of subject standards and their integration under Subcomponent 1.4 are all aimed at enhancing the overall quality of general education.

APPENDIX: STUDY METHODOLOGY AND INFORMATION SOURCES

PROMOTING SCHOOL READINESS AND EQUAL OPPORTUNITIES AT THE START OF GENERAL EDUCATION

Table A1. List of conducted interviews

INSTITUTION	CONTACT PERSON	POSITION
RA ESCS	Zhanna Andreasyan	Deputy minister
PIU	Armine Khachatryan	Head of subcomponent
Department of Education, Culture and Sports of the RA Marzpetarans Staff	Albert Mkrtchyan	Head of Department (Ararat)
	Sonya Budaghyan	Head of Department (Armavir)
	Karen Zazyan	Head of Department (Gegharkunik)
	Hrayr Karapetyan	Head of Department (Shirak)
	Meri Gandalyan	Head of Department (Syunik)
	Arpiar Ghazaryan	Head of Department (Vayots Dzor)
Former National Institute of Education	Khoren Margaryan	Financial manager
Armenian State Pedagogical University named after Khachatur Abovian	Heghine Khachatryan	Dean of the Faculty of Primary Educationx
	Svetlana Marutyan	Department of Preschool Pedagogy and Methodologies

Focus group discussions¹

- Conducted focus group discussion among 11 principals of beneficiary preschools from Kotayk, Shirak, Armavir, Syunik, Ararat, Gegharkunik marzes and Yerevan, May 27, 2021.
- Conducted a focus group discussion among 12 tutors/teachers of the beneficiary preschools from Kotayk, Shirak, Armavir, Syunik, Ararat, Gegharkunik marzes and Yerevan, May 27, 2021.

Data and information source documents

- Monitoring study by Baker Tilly
- Quarterly CFEP PIU summary reports on micro-project activities
- Summary data of the CFEP PIU on the activities of all 136 established preschools in the marzes of the RA and city of Yerevan during 2015-2020, the number of children engaged in each of them, age and gender

¹ The focus group discussions were conducted through a specially developed guide, which was submitted to the PIU within an interim report.

ENRICHMENT OF THE UPPER SECONDARY SCHOOLS

Table A2. List of conducted interview

INSTITUTION	CONTACT PERSON	POSITION
RA ESCS	Zhanna Andreasyan	Deputy minister
PIU	Grisha Baghdasaryan	Head of subcomponent
Expert for laboratory equipment	Gagik Grigoryan	Physics expert
Expert for laboratory equipment	Meri Hovsepyan	Biology expert
Expert for laboratory equipment	Knarik Bdoyan	Chemistry expert
Expert for laboratory equipment	Seyran Suvaryan	Geography expert
Metsamor high school	Mayis Nikoghosyan	Director
Noyemberyan high school	Susanna Budaghyan	Director
Martuni high school	Vardan Avetisyan	Director
Ararat high school	Hovhannes Nahapetyan	Director
Hrazdan N1 high school	Hasmik Hayrapetyan	Director
Gyumri Academic College	Armen Martirosyan	Director
Jermuk Educational Complex	Armine Arsenyan	Director
Aparan high school	Nvard Barseghyan	Director
Gyumri Economic College	Nara Chakhoyan	Director
Vanadzor special school with in-depth learning of mathematics and natural sciences	Armen Tsaturyan	Director
Goris N4 high school	Armine Shegunts	Director
N65 high school	Rafayel Barseghyan	Director
N159 high school	Zarine Ghazaryan	Director

Quantitative study¹

- Quantitative survey sample makes up 30% of 99 high school laboratories equipped with modern resources in science subjects. In proportion to the geographical and quantitative distribution of high schools having been equipped with laboratories, 35 schools were selected. Quantitative surveys were conducted among 101 teachers from 35 selected high schools, with an average of one teacher from each school teaching natural sciences: physics, biology, chemistry and geography.

¹ Quantitative surveys were conducted through specially designed questionnaires, which were submitted to the PIU within an interim report.

Table A3. Sample Distribution by beneficiary high schools

MARZ	NUMBER OF SCHOOLS	THE PROPORTION OF SCHOOLS	SELECTED SCHOOLS	NUMBER OF TEACHERS
Aragatsotn marz	3	3%	1	3
Ararat marz	5	5%	2	5
Armavir marz	5	5%	2	5
Gegharkunik marz	6	6%	2	6
Lori marz	14	14%	5	14
Kotayk marz	11	11%	4	11
Shirak marz	10	10%	4	10
Syunik marz	4	4%	1	4
Vayots Dzor marz	3	3%	1	3
Tavush marz	4	4%	1	4
Yerevan	34	34%	12	35
Total	99	100%	35	101

Quantitative survey sample makes up 30% of 99 high school laboratories equipped with modern resources in science subjects – total of 35 high schools. Out of every 35 high schools, 10 students were randomly interviewed, 5 from each 10th and 11th grades. It is assumed that 12th graders in high schools have a low attendance rate due to the preparatory classes before final exams, and therefore may have low awareness about the situation at high schools. Therefore, the latter were not engaged in the framework of this study.

Table A4. Sample Distribution by beneficiary high schools

MARZ	NUMBER OF SCHOOLS	THE PROPORTION OF SCHOOLS	SELECTED SCHOOLS	NUMBER OF STUDENTS
Aragatsotn marz	3	3%	1	10
Ararat marz	5	5%	2	20
Armavir marz	5	5%	2	20
Gegharkunik marz	6	6%	2	20
Lori marz	14	14%	5	50
Kotayk marz	11	11%	4	40
Shirak marz	10	10%	4	40
Syunik marz	4	4%	1	10
Vayots Dzor marz	3	3%	1	10
Tavush marz	4	4%	1	10

Yerevan	34	34%	12	120
Total	99	100%	35	350

Data and information source documents

- Available data and reports on rehabilitated schools and equipped laboratories.
- Available data and reports on supply of laboratories with modern educational resources.

IMPROVING DATA COLLECTION AND THE MONITORING OF THE EDUCATION SYSTEM PERFORMANCE

Table A5. List of conducted interviews

INSTITUTION	CONTACT PERSON	POSITION
RA ESCS	Zhanna Andreasyan	Deputy minister
PIU	Harutyun Gharibjanyan	Head of subcomponent
National Center for Educational Technologies	Artak Poghosyan	Director

Conducted focus group discussions and quantitative survey¹

- Conducted a focus group discussion with 7 local trainers trained by Agence Universitaire de la Francophonie, June 9, 2021.
- Quantitative study was implemented among trained teachers and administrative staff. Due to the lack of a single database of trained persons and the impossibility of quotas, the quantification of the quantitative survey according to the age, geography, subject of the respondent was not applied. The survey questionnaire was emailed to all training participants and by the end of the fieldwork, 463 responses were received, which were fully included in the analysis.
- Quantitative study on e-learning materials among teachers of 4 subjects from Yerevan and regions was conducted. The announcement on the survey was circulated in the "gradebook" section for teachers in the ICT system in advance. Then the questionnaire was placed on the same platform, it was open until the required number of surveys (350 answers) was reached. By the end of the fieldwork, 2,264 responses were received, which were fully included in the analysis.

Data and information source documents

- Quarterly CFEP PIU summary reports on micro-project activities
- Summary reports on the activities of the National Center for Educational Technologies, 2016-2021

¹The focus group discussions and quantitative surveys were conducted through a specially developed guideline and questionnaires, which were submitted to the PIU within an interim report.

SUPPORTING FURTHER IMPROVEMENT IN THE QUALITY OF EDUCATION THROUGH CURRICULUM REVISIONS

Table A6. List of conducted interviews

INSTITUTION	CONTACT PERSON	POSITION
RA ESCS	Zhanna Andreasyan	Deputy minister
PIU	Lilit Shavarshyan	Head of subcomponent
National Center for Educational Development and Innovation	Artashes Torosyan	Acting Director
Subject standards and program development working groups	Karine Harutyunyan	Society, social sciences
	Serob Khachatryan	
	Tamara Aleksanyan	Armenian language, literature
	Mariam Petrosyan	Art
	Kristine Soghikyan	Foreign language
	Ernest Avanesov	Physical education and safety activities

Data and information source documents

- RA Government N 439 N decision of April 8, 2010
- Quarterly CFEP PIU summary reports
- Subject-oriented modules and educational materials

MAINSTREAMING OF THE COMPETITIVE INNOVATION FUND FOR HIGHER EDUCATION INSTITUTIONS INTO FULL IMPLEMENTATION

Table A7. List of conducted interviews

INSTITUTION	CONTACT PERSON	POSITION
RA ESCS	Zhanna Andreasyan	Deputy minister
PIU	Liana Mamyan	Head of Component
Grant program managers in the universities	Areg Grigoryan	National Polytechnic University of Armenia Foundation
	Aram Baykov	Yerevan State Medical University after M. Heratsi Foundation
	Konstantin Yenkovyan	
	Vachagan Melkonyan	Armenian National Agrarian University Foundation
	Sona Tsarukyan	
	Karen Trchunyan	Yerevan State University Foundation
	Anna Mkrtchyan	
	Hovik Melkonyan	Shirak State University after Mikayel Nalbandian Foundation
	Rima Aydinyan	Gladzor University of Yerevan
	Narine Avetisyan	Yerevan State Conservatory after Komitas
	Syuzanna Sargsyan	Northern University
	Kristina Tsaturyan	Brusov State University Foundation
	Arsen Arakelyan	Russian-Armenian University

Focus group discussions¹

- Conducted two focus group discussions among the students from the beneficiary universities, June 6, 2021

Data and information source documents

- Grant process evaluation reports provided within the framework of Competitive Innovation Fund
- Summary reports of grant programs implemented by universities
- CIF grant applications

Grant implementation monitoring reports

¹ The focus group discussions were conducted through a specially developed guide, which was submitted to the PIU within an interim report.