

TERMS OF REFERENCE
for
Consulting services to design, develop and install a set of software for special needs
education

1. Background information on the project

The Moldova Education Reform Project (MERP) is a World Bank-financed Project to be implemented between April 2013 and April 30, 2022. The total cost of original credit is SDR 26.1 million (USD 40 million equivalent) and the Additional Financing (AF) in the amount of SDR 7.1 million (USD 10 million equivalent) is provided to the Republic of Moldova in support of Moldova Education Reform Project. The MERP supports the Government of Moldova (GoM) reform program by financing activities that will strengthen the quality of education and lead to a more efficient education sector. Through this Project, the World Bank support the GoM in implementing the needed reforms, which include initiatives for:

- Improve learning conditions in targeted schools;
- Strengthen the education monitoring systems;
- Promoting efficiency reforms in the education sector.

The objective of the Project is to improve learning conditions in targeted schools and strengthen the Recipient's education monitoring systems, while promoting efficiency reforms in the education sector. MERP's focus is to support interventions that would lead to improvements in the quality and efficiency of primary and general secondary education. Specifically, the support through the AF allows the Ministry of Education, Culture and Research (MoECR) to expand the coverage and depth of selected activities already initiated under MERP, such as teacher and school managers' training, participation in PISA, and development of an additional module to EMIS (TVET module) and roll-out of the preschool module.

The MERP has three components:

- A. "Strengthening the Quality of Education",
- B. "Improving the Efficiency of the Education Sector"
- C. "Improving the Ministry of Education, Culture and Research's Capacity to Monitor the Reform".

Component A is divided into three sub-components: A.1, A.2 and A.3. The objective of component A3 is to contribute to the strengthening of the quality of education by supporting the following activities:

- a) providing selected schools with science and technology equipment.
- b) (i) developing in-depth special education modules and training teaching support staff and psycho-pedagogues working with students with disabilities or special educational needs; and (ii) providing special education teaching and learning materials, and selected equipment.
- c) (i) evaluating training programs for school managers and teachers established under Component A.1 (b) of the Project, and updating such programs; and (ii) training and

evaluating a second cohort of school managers and teachers based on the updated training programs;

- d) supporting the National Agency for Quality Assurance in Education and Research (previously was the National School Inspectorate, or any successor thereof acceptable to the Association, and the National Agency for Curriculum and Evaluation (or any successor thereof acceptable to the Association), to increase their respective capacities;
- e) supporting the design and implementation of mechanisms to address the gender, inclusiveness, and citizen engagement dimensions in education;
- (i) developing and incorporating a vocational education and training module into Moldova's Education Management Information System (EMIS); and (ii) training users on the use of EMIS.

2. Objective of the assignment

The objectives of the assignment are to design, develop and install a set of special needs education software.

3. Scope of Services

In order to achieve the objective, the firm shall design, develop and install the full package of software that is presented in Annex 1.

4. Deliverables

This consultancy is expected to begin in October 2020 and be completed within 1 year (including year of warranty and maintenance) with the deliverables submitted as follow:

Activity	Deliverable	Expected Deadline	Approved by
Software analysis and documentation	Technical specifications of the proposed software (all items as specified in Annex 1)	First draft - 1 month from signing the contract Final version - 2 months from signing the contract	MoECR, MERP
Software development and testing	Software development and testing report.	8 months from contract signing. Average one item per month.	MoECR, MERP
Software User Guide and Technical Documentation (in Romanian language)	Software User Guide and Technical Documentation (in Romanian language)	9 months from contract signing	MoECR, MERP
Training for 220 software users (teachers and/or psycho-pedagogues, managers and other specialists working in education sector)	Training reports	10 months from contract signing	MoECR, MERP
Piloting of the software in 100 schools	Software installation and configuration report	12 months from contract signing	MoECR, MERP

Warranty and maintenance	Incidents report. Software maintenance report. Final reporting.	3 (three) months from software delivering and acceptance.	MoECR, MERP
Progress reporting	Progress reports	Monthly	MoECR, MERP
Final report	Final report	Last months of contract	MoECR, MERP

5. Reporting requirements

The Consultant Company will submit to the MoECR and MERP Project Management Unit a monthly progress report reflecting their activity, difficulties and impediments. The report will be developed in Romanian or English based on common agreement.

6. Institutional Arrangements

The Company will work in close collaboration with the MoECR, General Education division, Republican Centre for Psycho-Pedagogical Assistance and ICT division. The Company will report to the Project Executive Director and to the MERP coordinator.

The consultant company will work under the direct supervision of the ICT division from MoECR and all the works will be coordinated with this institution. Also, school teachers and psycho-pedagogues will be involved in lessons content development.

Confidentiality statement: All data and information received from MoECR and MERP for the purpose of this assignment is to be treated confidentially and are only to be used in connection with the execution of these Terms of Reference. All intellectual property rights arising from the execution of these Terms of Reference are assigned to MoECR. The contents of written materials obtained and used in this assignment may not be disclosed to any third parties without the expressed advance written authorization of the MoECR.

7. Qualification requirements and basis for evaluation (evaluation criteria)

Minimum requirements for the firm:

(i) General experience (20 points):

- At least five years of work experience in software development.
- Experience of working with international organizations and/or national agencies implementing externally funded programs and projects would be an asset;

(ii) Specific experience (20 points):

- Experience in development of education software. At least 2 education software developed in the last three years shall be considered.
- Experience in designing, developing, and installing of similar software for special needs education would be an asset.

Minimum requirements for the team members:

The Consultant will provide CVs for one team leader, one special education specialist and at least two software developers corresponding to the following requirements:

Team Leader – responsible for coordination, reporting and task management of the software development

- University degree in Computer Science or another relevant domain.
- At least five years of experience in leading and management of software development projects.
- Experience in developing at least two education software in the last three years.
- Ability to communicate in Romanian.

Special education expert – responsible for ensuring that the developed software correspond to the needs of students and teachers, who will benefit from the developed software:

- University degree (Masters or higher would be an asset) in pedagogy, education policy or related fields;
- At least 5 years of practical activity in inclusive education;
- Experience in using similar education software will be an advantage;
- Excellent technical writing skills in Romanian;
- Good knowledge of English would be an advantage.

Software developer

- University degree in Computer Science or another relevant domain.
- At least five years of experience in software development.
- Proven experience in education software design, development and installation.
- Ability to communicate in Romanian.

Annex 1. Special software description and requirements.

SOFTWARE DESCRIPTION

Product 01.

Title: Primary School Language software A (mixed type) (based on curriculum)

Description:

The software to include ready lessons (the number of lessons will be decided during the analysis phase) and to provide a platform for teachers to insert their own text and to develop everyday activities on the language school books (the first three years at primary school).

Elements of the software:

- A simplified (adapted) form of the text of the school books.
- Definition of the most difficult words (database of “unknown words”). Words to be presented as pictures where possible.
- Include a pictured dictionary where possible.
- Possibility for the teachers to record the passage.
- Possibility for teachers to develop their own questions and activities: True/False, Multiple choice or Odd one out, Fill in the gaps (cloze procedure), Open questions, highlight the answer.
- To autocorrect students
- Students and teachers to be registered as users
- To provide feedback on answers.

Some possible activities:

1. Listen to the passage
2. Listen and follow
3. Read and listen
4. Find the actors in the passage
5. Identify verbs or other parts of language
6. Answer the questions
7. Printing options

Note: Software to be located in the Romanian and Russian language

Use/support: Helps all abilities, all disabilities, **ages 6-8** but also for students of primary school.

Product 02.

Similar to Product 01 but for different ages, different level

Title: Primary School Language software B (mixed type).

Description:

The software to include ready lessons (the number of lessons will be decided during analysis phase) and to provide a platform for teachers to insert their own text and to develop everyday activities on the language school books of the last three years at primary school.

Elements of the software:

- A simplified (adapted) form of the text of the school books.
- Definition of the most difficult words (database of “unknown words”). Words to be presented as pictures where possible
- Include a pictured dictionary where possible.

- Possibility for the teachers to record the passage.
- Possibility for teachers to develop their own questions and activities: True/False, Multiple choice or Odd one out, Fill in the gaps (cloze procedure), Open questions, highlight the answer.
- To autocorrect students
- Students and teachers to be registered as users
- To provide feedback on answers
- Include an onscreen keyboard for writing their own sentences and small essays.
- Include prediction of words
- Printing options

Possible activities:

1. Listen to the passage
2. Listen and follow
3. Read and listen
4. Find the actors in the passage
5. Identify verbs or other parts of language

Note: Software to be located in the Romanian and Russian language

Use/support: Helps all abilities, all disabilities, ages **9-11** but also students of primary school.

Product 03.

Title: Primary School Mathematics software A (Curriculum based)

Description:

The software to provide tools and exercises for early basic skills and concepts on Math like puzzle building or tangrams, patterns, small and big, low and high, heavy and light, few, many, etc. recognition of quantities, numbering things, comparing number of objects on the screen, presentation of numbers, early mathematical formulas, numbers up to 20, introduction to addition, subtraction, multiplication division. Simple problem solving (visual presentation of the problem).

Possible activities:

- Match the design
- Build the puzzle
- Which is bigger, smaller, taller, heavier, etc.
- How many are these
- Match objects with numbers
- Find the right answer
- Games with numbers

Note: Software to be located in the Romanian and Russian language

Use/support: Helps all abilities, all disabilities, **ages 6-8** but also students of first year in primary schools (general education).

Product 04.

Similar to Product 03 but for different ages, different level

Title: Primary School Mathematics software B (Curriculum based)

Description:

The software to provide tools and exercises for skills and concepts on Math as per the school books. Tools to help students with multiplication tables, with numbers up to 1000 and more, with coins and money use, with Mathematical problems with mathematical formulas, with simple

geometry, measuring area and volume, with percentages, decimals and fractions. The content to be taken from the school books. Include tools to help understanding how numbers are built and how mathematical functions can help, use of a ruler, of a protractor, of a calculator, triangles. To include also problem-solving technics (visual presentation of the problem). The content to be taken from the school books.

Possible activities:

- Multiplication tables
- Match the design
- Build the puzzle
- Which is bigger, smaller, taller, heavier,
- How many are these
- Match objects with numbers
- Find the right answer
- Use of tools like calculator, ruler, protractor etc
- Interactive learning
- Tools for learning the mathematical concepts
- Games with multiplication
- Quizzes and many more

Note: Software to be located in the Romanian and Russian language

Use/support: Helps all abilities, all disabilities, **ages 9-11** but also students in primary schools (general education).

Product 05.

Title: Higher School Language software A (mixed type), curriculum based

Description:

The software to be rather an assessment and revision tool. To include by subject a summary of the day lessons (text passage) written and recorded as well. The passage to be modified and enriched with pictures if needed. The software to provide different types of exercises like questions/answers, multiple choice questions, odd one out and quizzes, true or false tests, close procedures, identification of concepts of pictures or text (i.e. How do you call this tool?), To include also matching of words or sentences with pictures, complete the sentence, make a list of etc.

Possible activities:

- Show the passage
- Read the passage
- Record the passage
- Open books questions
- Locate the answer
- Answer the quizzes

Note: Software to be located in the Romanian and Russian language

Use/support: Helps all abilities, all disabilities at the higher school.

Product 06.

Title: Higher School Mathematics software A (Curriculum based)

Description:

The software should provide challenging environment for students on:

1. Terminology
2. Objectives by chapter of Maths
3. How to provide solutions to problems
4. Step by step demonstration of difficult to teach or learn topic
5. Assessments with quizzes and different types of exercises
6. Solutions to problems with explanation.

Possible activities:

- New Concepts
- List of objectives
- Evaluation charts
- Quizzes
- Interactive learning
- Following step by step procedures
- Learning of the tools to be used to solve problems

Note: Software to be located in the Romanian and Russian language

Use/support: Helps all abilities, all disabilities at the higher school.

SOFTWARE NON-FUNCTIONAL REQUIREMENTS

Architecture requirements

NFR01. The required software will be designed and implemented using open standards. The custom or COTS (Commercial off-the-shelf) solutions are accepted.

- a. In case of custom solution, the Consultant will deliver compilable and documented source code.
- b. In case of COTS solutions, the Consultant will include in his/her offer any required licenses. Only perpetual licenses are accepted.

NFR02. The Consultant will include minimum and recommend infrastructure requirements and will not include any hardware components in his/her offer.

NFR03. Two or more required software could be combined in one complex software.

NFR04. Web based software will be designed for hosting on virtualized environment and will be deployed on governmental cloud environment (MCloud).

Usability and User Interface requirements

NFR05. The Web based software interface will conform at least to Level A of Web Content Accessibility Guidelines 2.1. (<https://www.w3.org/TR/WCAG20/Each>)

NFR06. The software interface will automatically adapt to various display resolutions including tablets or smartphones.

NFR07. The software interface will be available in Romanian and Russian languages.

NFR08. The software interface elements will include contextual help.

Training requirements

NFR09. The Consultant will prepare and deliver a training for Teachers. The estimated number of participants is 220. The training will be delivered in Romanian. The Client assumes the right to record the training in order to use it internally.

NFR10. The Consultant will prepare and deliver the training materials including curricula, presentations, labs, manuals, video presentations, quizzes and other relevant materials. All training materials will be provided in Romanian and compatible with e-Learning systems.

Note: Training rooms, equipment and logistics will be ensured by Client.

Documentation requirements

NFR11. The Consultant will prepare and deliver the following user documentation:

- a. Interactive guidance included in provided software user interface adjusted to user role (Teacher or Student)
- b. Downloadable user manuals in PDF format for users depending on their roles
- c. Video instructions for Students and Teachers

All user documentation will be provided in Romanian.

NFR12. The Consultant will prepare and deliver the following technical documentation:

- a. Software analysis and architecture documentation
- b. System installation and configuration manual (including code compilation, system installation, hardware and software requirements, backup and disaster recovery procedures)

All technical documentation could be provided either in Romanian or English.

Support and Warranty requirements

NFR13. The Consultant will ensure 12 (twelve) months of warranty of delivered software.

NFR14. During the warranty period the Consultant will:

- a. Fix all identified and reported by Client defects;
- b. Solve the reported incidents on time. The response and resolution time shall not exceed 4 (four) hours for non-critical errors and 1 (one) hour in case of critical errors. The incidents shall be solved within 5 (five) working days for non-critical errors and within 1 (one) working day for critical errors starting from escalation time.

Note:

Critical defect – Some of the main features cannot be used or some of the users of the application are affected. The use of the software is likely to continue with significant additional effort from users.

Non-critical defect – The software is working in normal parameters, but some of the functionalities do not work according to the requirements.

Protection and security requirements

NFR15. The education software will not store personal data.

NFR16. Web based software shall include security controls for all its components for at least OWASP Top 10 vulnerabilities. Refer

https://www.owasp.org/index.php/Category:OWASP_Top_Ten_Project

NFR17. All input data shall be validated on client and server side.