

TERMS OF REFERENCE*Experimental Evaluation Pertinence of Natural Science and Environmental Secondary Education in Agricultural Areas*

Costa Rica
CR-T1228

[\[Web link to approved document\]](#)

*Pertinence of Natural Science and Environmental Secondary Education in Agricultural Areas***1. Background and Justification**

- 1.1 In Latin America and the Caribbean (LAC) a third of the population lives in rural areas (123 million people), ranging from less than 10% in Argentina and Uruguay to more than 40% in Barbados, Guyana, Haiti, Guatemala and Honduras (FAO, 2018). The rural areas are central to most LAC economies. Yet, rural youth lack opportunities to develop the skills they need for work and life. Access to secondary education is 10 percentage points lower in rural than in urban areas (68.6% compared with 78.5%) (CIMA, 2020). The rural-urban gap is even more visible in students' learning. PISA 2015 data show that, on average, Latin American students in rural schools score 56.6 points lower in reading than students in urban schools, which is almost equivalent to two years of schooling. The gap is only marginally smaller in science and mathematics (CIMA 2020). The problem is particularly pronounced in Central America and Mexico where the gap in access to secondary schooling is as high as 30 and 19 percentage points in Honduras and Mexico, respectively (CIMA, 2020). The rural-urban learning gap in Costa Rica is 47,9 points on the 2018 PISA reading exam, equivalent to over a year of studies (CIMA 2020). The rural-urban gap is even more visible in students' transitions to higher levels of education and in the educational expectations that precede their decisions to remain in the education system. In all Central American countries even rural students who outperform their urban peers on PISA, are less likely to expect completing a university degree than their urban counterparts.
- 1.2 The low completion and learning levels of secondary education have a spectrum of causes, including: a lack of quality teachers (Cruz-Aguayo et al. 2020); distance and travel time negatively affect enrollment and attendance, particularly of disadvantaged students; the prevalence of multi-grade classrooms; lack of access to bilingual education models combined with large shares of students who don't have Spanish as their mother tongue; inadequate school infrastructure (Bos et al. 2016); and lack of guidance in the transition to secondary education (Hernández and Raczynski, 2014). These school-related factors are confounded with the economic needs of rural youth, who often migrate to urban areas with the hope of improving their economic opportunities or drop out of school to work in agricultural activities.
- 1.3 One often overlooked determinant of the low levels of learning and completion rates, is the use of curricula, textbooks and pedagogical materials that have an urban bias, seldom focusing on the skills needed to excel in rural life (Gasperini, 2003). Specifically, little emphasis has been placed on teaching students about topics that are relevant for their participation in agricultural activities, the main source of livelihood in rural areas. For those who decide to work in agriculture their schooling experience seldom provides them with the content, knowledge and skills that could help them improve farm productivity. The skills gap translates into low levels of income and oftentimes food insecurity.
- 1.4 This skill-gap is expected to be further amplified as there is evidence that the COVID-19 pandemic could also negatively affect the accumulation of human capital, particularly the employability and future income of young people who are in the transition from school to the labor market.

- 1.5 This poverty trap that arises from the low relevance of the educational curriculum, which is expected to be further amplified due to the COVID-19 pandemic, is of consequence in Central America. This region is facing strong challenges such as climate change which dramatically affects the agricultural suitability of traditional crops. Additional technical training and knowledge would equip youth with the skills to guide them towards the adoption of new technologies and inputs to boost agricultural profitability, and ultimately decrease the rural-urban migration flows.
- 1.6 Costa Rica is no exception to the challenge of low relevance of the education curriculum. To transform secondary education, the Directorate of Technical Education and Entrepreneurial Capacities (DETCE) has developed a new education program for learning agricultural, biological, and environmental sciences. DETCE has identified as an additional determinant for the low levels of learning, that the teaching style often is not conducive to learning, as it tends to be lecture style. Against this background, the new education program includes hands on inquiry-based activities.
- 1.7 Against this background the IDB, in collaboration with the Ministry of Public Education, is looking to contract a firm with expertise in conducting experimental evaluations in the education sector in Latin America.

2. Objectives

- 2.1. *The objective of the consultancy is to conduct a rigorous experimental assessment of a pilot to increase the pertinence of secondary education in agricultural areas.*

3. Scope of Services

- 3.1. *The evaluation should encompass some 1,500 students with their teachers and caregivers in Limon and Puntarenas.*

4. Key Activities

- 4.1. The consulting firm will carry out the following activities:
 - a. Design of the experimental evaluation, including the calculation of power and random allocation of schools.
 - b. The quantitative data collection on three occasions: in November 2020, February 2022 and November 2022.
 - c. Development and validation of test instruments, including a student content and problem-solving test; self-filled questionnaires will be applied to teachers and parents of the treatment and control groups.
- 4.2. The evaluation consultant will provide support to the IDB Team in implementing the evaluation of the pilot. The Evaluation Consultant will conduct the following tasks, without prejudice to other tasks that are necessary to implement the evaluation:
- 4.3. Design the final experimental sampling matrix;
- 4.4. Train, coordinate and monitor the work of the consultants contracted for test application and data entry.
- 4.5. Design and maintain a pilot database with information on participating students and teachers.

- 4.6. Conduct three waves of data collection, using:
- a. Instruments to be applied to the students to measure learning, including content and problem-solving skills.
 - b. Instruments to be applied to students to measure interest in agriculture, natural sciences and the environment; life plans; stereotypes and mindsets.
 - c. Instruments to measure caregiver attitudes and stereotypes
 - d. Instruments to be applied to the teachers, including content skills and pedagogical content skills, stereotypes and attitudes towards students.
- 4.7. Analyze the data to assess whether the model has an impact on teacher content knowledge; student achievement; and/or attitudes and beliefs. The evaluation will seek to answer the following questions:
- a. Does the training of teachers in content that is relevant for agricultural areas improve student learning?
 - b. Does the training of teachers in hands-on inquiry-based practices improve student learning?
 - c. Do both strategies have similar impacts?
 - d. Do the treatments have heterogeneous effects depending on the characteristics of the students?
 - e. What is the cost-effectiveness ratio of the treatments and how does it compare to similar programs?
- 4.8. Participate in the dissemination of the results, including presentations in Costa Rica and Washington DC, as well as the co-drafting of publications targeted at teacher training practitioners, educators, development institutions and academia.

5. Expected Outcome and Deliverables

- 5.1. The evaluation consultant will submit the following reports:
- a. A detailed work plan.
 - b. A baseline report and IRB.
 - c. A progress report.
 - d. A final evaluation report.

6. Project Schedule and Milestones

- 6.1. The project will consist in four phases: preparation of testing instruments and sample design; data collection and monitoring of intensity of treatment; and data analysis; and dissemination.

7. Reporting Requirements

- 7.1. Reports must be submitted in electronic files. The databases should be submitted in STATA and must include code books.

8. Acceptance Criteria

- 8.1. Acceptance of consultancy products will be based on international practices for human subject research; and experimental evaluations.

9. Other Requirements

- 9.1. n/a

10. Supervision and Reporting

- 10.1. *The consultancy firm will report to Emma Nasund-Hadley (emman@iadb.org), including bimonthly meetings with the IDB and the MEP during the treatment phase..*

11. Schedule of Payments

- 11.1. Payment terms will be based on project milestones or deliverables. The Bank does not expect to make advance payments under consulting contracts unless a significant amount of travel is required. The Bank wishes to receive the most competitive cost proposal for the services described herein.
- 11.2. The IDB Official Exchange Rate indicated in the RFP will be applied for necessary conversions of local currency payments.

Payment Schedule	
<i>Deliverable</i>	%
1. Against work-plan	20%
2. Against the baseline report, including the database and IRB.	20%
3. Against the first progress report.	20%
4. Against second progress report	20%
5. Against the receipt and approval of the final	20%

evaluation report, including corresponding database	
TOTAL	100%

TERMS OF REFERENCE

Implementation of Pilot – Pertinence of Natural Science and Environmental Secondary Education in Agricultural Areas

Costa Rica
CR-T1228

[Web link to approved document]

Pertinence of Natural Science and Environmental Secondary Education in Agricultural Areas

12. Background and Justification

- 1.8 In Latin America and the Caribbean (LAC) a third of the population lives in rural areas (123 million people), ranging from less than 10% in Argentina and Uruguay to more than 40% in Barbados, Guyana, Haiti, Guatemala and Honduras (FAO, 2018). The rural areas are central to most LAC economies. Yet, rural youth lack opportunities to develop the skills they need for work and life. Access to secondary education is 10 percentage points lower in rural than in urban areas (68.6% compared with 78.5%) (CIMA, 2020). The rural-urban gap is even more visible in students' learning. PISA 2015 data show that, on average, Latin American students in rural schools score 56.6 points lower in reading than students in urban schools, which is almost equivalent to two years of schooling. The gap is only marginally smaller in science and mathematics (CIMA 2020). The problem is particularly pronounced in Central America and Mexico where the gap in access to secondary schooling is as high as 30 and 19 percentage points in Honduras and Mexico, respectively (CIMA, 2020). The rural-urban learning gap in Costa Rica is 47,9 points on the 2018 PISA reading exam, equivalent to over a year of studies (CIMA 2020). The rural-urban gap is even more visible in students' transitions to higher levels of education and in the educational expectations that precede their decisions to remain in the education system. In all Central American countries even rural students who outperform their urban peers on PISA, are less likely to expect completing a university degree than their urban counterparts.
- 1.9 The low completion and learning levels of secondary education have a spectrum of causes, including: a lack of quality teachers (Cruz-Aguayo et al. 2020); distance and travel time negatively affect enrollment and attendance, particularly of disadvantaged students; the prevalence of multi-grade classrooms; lack of access to bilingual education models combined with large shares of students who don't have Spanish as their mother tongue; inadequate school infrastructure (Bos et al. 2016); and lack of guidance in the transition to secondary education (Hernández and Raczynski, 2014). These school-related factors are confounded with the economic needs of rural youth, who often migrate to urban areas with the hope of improving their economic opportunities or drop out of school to work in agricultural activities.
- 1.10 One often overlooked determinant of the low levels of learning and completion rates, is the use of curricula, textbooks and pedagogical materials that have an urban bias, seldom focusing on the skills needed to excel in rural life (Gasperini, 2003). Specifically, little emphasis has been placed on teaching students about topics that are relevant for their participation in agricultural activities, the main source of livelihood in rural areas. For those who decide to work in agriculture their schooling experience seldom provides them with the content, knowledge and skills that could help them improve farm productivity. The skills gap translates into low levels of income and oftentimes food insecurity.
- 1.11 This skill-gap is expected to be further amplified as there is evidence that the COVID-19 pandemic could also negatively affect the accumulation of human capital, particularly the employability and future income of young people who are in the transition from school to the labor market.

- 1.12 This poverty trap that arises from the low relevance of the educational curriculum, which is expected to be further amplified due to the COVID-19 pandemic, is of consequence in Central America. This region is facing strong challenges such as climate change which dramatically affects the agricultural suitability of traditional crops. Additional technical training and knowledge would equip youth with the skills to guide them towards the adoption of new technologies and inputs to boost agricultural profitability, and ultimately decrease the rural-urban migration flows.
- 1.13 Costa Rica is no exception to the challenge of low relevance of the education curriculum. To transform secondary education, the Directorate of Technical Education and Entrepreneurial Capacities (DETCE) has developed a new education program for learning agricultural, biological, and environmental sciences. DETCE has identified as an additional determinant for the low levels of learning, that the teaching style often is not conducive to learning, as it tends to be lecture style. Against this background, the new education program includes hands on inquiry-based activities.
- 1.14 Against this background IICA, in collaboration with the Ministry of Public Education and the IDB, is looking to contract a firm with expertise in conducting agricultural and natural science education to help develop and implement the model for contextualized secondary education.

13. Objectives

- 13.1. *The objective of the consultancy is to develop and implement a model for pertinent secondary education in agricultural areas.*

14. Scope of Services

- 14.1. *The consultancy should encompass the development of education materials for a full academic year and implementation in some 20 schools in Limon and Puntarenas.*

15. Key Activities

- 15.1. In close collaboration with the Ministry of Public Education (MEP), IICA and the IDB Team, the firm will be in charge of developing and implementing a model for pertinent secondary education in agricultural areas for one grade level. The firm will be provided with a list of participating students and teachers that have been selected at random. The consulting firm will carry out the following activities:
- a. Develop and validate a training model, including education materials for pertinent secondary education in agricultural areas based on the DETCE work program for agricultural education.
 - b. Hire and train the required coaches and trainers. At beginning of the academic year the firm should provide a minimum of 50 hours of initial training to trainers and coaches. The Firm should also train any MEP staff coaches and trainers that the MEP wishes to train in the methodology.
 - c. Coordinate the implementation of the pilot, including six face-to-face training workshops for all teachers in the treatment group.
 - d. Conduct continuous monitoring of the intensity of the treatment, documenting which households in the treatment group are being de facto treated according to the original model, what students

are being only partially treated and what classrooms actually do not receive the intended treatment.

Continuously update the beneficiary database with student and teacher profiles, participation in training, etc.

16. Expected Outcome and Deliverables

16.1. The evaluation consultant will submit the following reports:

- a. A detailed work plan;
- b. An initial report;
- c. A first progress report, including the model for pertinent secondary education in agricultural areas, including learning and training materials;
- d. A second progress report;
- e. A third progress report; and
- f. A final report.

17. Project Schedule and Milestones

17.1. The consultancy will consist in three phases: development of the model, learning and training materials; teacher training and pilot implementation; and dissemination.

18. Reporting Requirements

18.1. Reports must be submitted in electronic files. The databases should be submitted in STATA and must include code books.

19. Acceptance Criteria

19.1. Acceptance of the model will require lessons for a full academic year. Acceptance of pilot implementation will require at least 40 hours of continuous training for each participating teacher.

20. Other Requirements

20.1. *n/a*

21. Supervision and Reporting

21.1. *The consultancy firm will report to IICA.*

22. Schedule of Payments

- 22.1. Payment terms will be based on project milestones or deliverables. The Bank does not expect to make advance payments under consulting contracts unless a significant amount of travel is required. The Bank wishes to receive the most competitive cost proposal for the services described herein.
- 22.2. The IDB Official Exchange Rate indicated in the RFP will be applied for necessary conversions of local currency payments.

Payment Schedule	
<i>Deliverable</i>	%
1. Against work-plan	10%
2. Against Initial report	20%
3. Against the first progress report.	15%
4. Against second progress report	15%
5. Against third progress report	20%
6. Against final report	20%
TOTAL	100%

Consultoría Individual en Asistencia para Investigación SCL/EDU

CR-T1228: Pertinencia de la Educación Secundaria de Ciencias y Medio Ambiente en las Comunidades Agrícolas Rurales

La misión del equipo:

El Sector Social (SCL) cuenta con un equipo multidisciplinario convencido de que invertir en la gente es el camino para mejorar vidas y superar los desafíos del desarrollo de América Latina y el Caribe. Junto con los países de la región, el Sector Social construye soluciones de política pública para reducir la pobreza y para mejorar los servicios de educación, trabajo, protección social y salud que los ciudadanos reciben. El trabajo del Sector tiene como objetivo impulsar una región más productiva con igualdad de oportunidades entre hombres y mujeres y con una mayor inclusión de las poblaciones más vulnerables.

La División de Educación apoya los sistemas educativos de los países de América Latina y el Caribe para alcanzar las cinco dimensiones que contribuirán a que tengan éxito en la promoción de la enseñanza y el aprendizaje efectivos entre todos los niños y jóvenes. La ventana del sector privado del BID también financia proyectos para ampliar las oportunidades educativas para estudiantes de bajos ingresos.

Apoyamos a los países de América Latina y el Caribe para garantizar que:

1. Las altas expectativas guíen los servicios de educación.
2. Los estudiantes que ingresan al sistema estén listos para aprender;
3. Todos los estudiantes tengan acceso a maestros efectivos;
4. Todas las escuelas tengan recursos adecuados y puedan usarlos para aprender;

y

5. Todos los graduados tengan las habilidades necesarias para tener éxito en el mercado laboral y contribuir a la sociedad.

La consultoría se enfocará en el componente III – Investigación y disseminación. La consultoría apoyará a la investigación para contrastar datos piloto con datos sobre educación rural secundaria y técnica en América Central, así como la difusión de los resultados. Las preguntas de investigación incluirán: ¿Cuáles son las condiciones óptimas para la educación técnica combinada en áreas agrícolas, y para diferentes perfiles de estudiantes? ¿Cuáles son las estrategias para promover la búsqueda de carreras en la agricultura por parte de las mujeres? ¿Cuáles son las carreras del futuro en la agricultura en AIC? ¿Cuáles son las estrategias probadas para incentivar a los jóvenes a permanecer en el sector agrícola? Específicamente, la difusión incluirá el desarrollo de dos videos, publicaciones y un taller en Costa Rica. El taller de medio día en Costa Rica se llevará a cabo una vez finalizada la evaluación del piloto. El generoso apoyo del Gobierno del Japón se promoverá en todos los videos, boletines e informes. Por lo tanto incluye entregables/productos puntuales que apoyaran al componente III de la Cooperación Técnica.

Productos:

- Publicaciones (coautor)

- Investigación Analítica (co-responsable)
- Notas de política (coautor)
- Talleres de diseminación (co-responsable)

Lo que harás:

- Análisis de datos sobre enseñanza de ciencias naturales y el medio ambiente
- Organizar reuniones con oficiales nacionales en Costa Rica y otros países sobre enseñanza de ciencias naturales y el medio ambiente;
- Recopilar información para indicadores de aprendizajes de ciencias naturales y
- Apoyar en la producción de publicaciones sobre educación STEM.

Lo que necesitarás:

- **Ciudadanía:** Eres ciudadano/a de uno de nuestros 48 países miembros. Podemos ofrecer asistencia con el traslado y las solicitudes de visa para ti y tus dependientes elegibles.
- **Consanguinidad:** No tienes familiares (hasta el cuarto grado en consanguinidad y segundo grado de afinidad, incluido el cónyuge) que trabajan en el Grupo del BID.
- **Educación:** Licenciatura en economía, política pública, o relaciones internacionales. Tener una maestría en estos mismos campos sería preferible.
- **Experiencia profesional:** Al menos dos (2) años de experiencia laboral relevante a las labores y responsabilidades de la posición.
- **Idiomas:** Dominio oral y escrito del español, japonés e inglés. Otros idiomas ayudan.

Competencias Generales y Técnicas: La consultoría requiere manejo fluido de bases de datos y la habilidad de redactar resúmenes de los datos compilados. Esto implica experiencia como mínimo MS Office (Excel, Word, Powerpoint, y Access). Manejo de otros paquetes de análisis estadístico y/o sistemas de bases de datos ayuda.

Resumen de la oportunidad:

- **Tipo de contrato y modalidad:** Consultor. Mensualidad
- **Duración del contrato:** TBD
- **Ubicación:** Sede del Banco, Washington, DC.
- **Persona responsable:** Emma Naslund-Hadley, Especialista Líder, SCL/EDU
- **Requisitos:** Debes ser ciudadano/a de uno de los 48 países miembros del BID y no tener familiares que trabajen actualmente en el Grupo BID.
- **Viajes:** Si

Nuestra cultura: nuestra gente está comprometida y apasionada por mejorar vidas en América Latina y el Caribe, y hacen lo que les gusta en un entorno de trabajo diverso, colaborativo y estimulante. Somos la primera institución de desarrollo de América Latina y el Caribe en recibir la certificación EDGE, reconociendo nuestro fuerte compromiso con la equidad de género. Como empleado, puedes ser parte de grupos de recursos internos que conectan a nuestra comunidad diversa en torno a sus intereses comunes.

Alentamos a las mujeres, los afrodescendientes, las personas de origen indígena y las personas con discapacidades a postularse.

Sobre nosotros: En el Banco Interamericano de Desarrollo, estamos dedicados a mejorar vidas. Desde 1959, hemos sido una fuente importante de financiamiento a largo plazo para el desarrollo económico,

social e institucional en América Latina y el Caribe. Sin embargo, hacemos más que prestar. Nos asociamos con nuestros 48 países miembros para proporcionar a América Latina y el Caribe investigaciones de vanguardia sobre temas de desarrollo relevantes, asesoramiento de políticas para informar sus decisiones y asistencia técnica para mejorar la planificación y ejecución de proyectos. Para ello, necesitamos personas que no sólo tengan las habilidades adecuadas, sino que también sean apasionadas por mejorar vidas.

Nuestro equipo de Recursos Humanos revisa cuidadosamente todas las aplicaciones.