TC ABSTRACT

I. BASIC PROJECT DATA

▪ Country/Region:	Jamaica
▪ TC Name:	Using technology to improve boys' engagement and math achievement in secondary education
▪ TC Number:	JA-T1114
▪ Team Leader/Members:	Claudia Uribe (EDU/CJA), Team Leader; Soledad Bos (SCL/EDU) Alternate Team Leader; Emma Naslund (SCL/EDU); Adria Armbrister (GDI/CCO); Janet Quarrie (CJA/CJA); Livia Mueller (SCL/EDU); Navita Anganu (CMF/CJA); Enrique Iglesias (IFD/CMF)
▪ Taxonomy	Client Support
▪ If Operational Support TC, give number and name of Operation Supported by the TC:	N/A
▪ Reference to Request: (IDB docs #)	Will be received shortly
▪ Date of TC Abstract:	May 7, 2015
▪ Beneficiary	Ministry of Education in Jamaica
▪ Executing Agency and contact name	Ministry of Education
▪ IDB Funding Requested:	US$450,000
▪ Local counterpart funding, if any:	US$100,000
▪ Disbursement period (which includes execution period):	Disbursement: 30 months - Execution: 24 months
▪ Required start date:	July 2015
▪ Types of consultants (firm or individual consultants):	Firm and individual consultants
▪ Prepared by Unit:	SCL/EDU
▪ Unit of Disbursement Responsibility:	EDU/CJA
▪ Included in Country Strategy (y/n):	Yes, related to enhancing quality and access to education
▪ TC included in CPD (y/n):	No
▪ GCI-9 Sector Priority:	Yes, Social policy for equity and productivity and small and vulnerable countries

II. OBJECTIVE AND JUSTIFICATION

2.1 **Justification.** Low levels of learning and gender disparity in educational achievement is a global concern for education systems. Girls' access to education as well as their retention and achievement in school has been the focus of many programs and of development aid in many parts of the world. However, unlike other regions in the world where the education bias is against the girls, Jamaica and other Caribbean countries have been experiencing the reverse with boys exhibiting systematic underachievement and disengagement in all counts and measures of education.

2.2 In Jamaica, although enrolment rates for boys and girls are almost equal in the early years, boys' participation in education falls sharply as they progress through the education system. The gender enrollment gap favoring girls widens at the secondary level and at the tertiary level. Females far out-number males in universities and training institutions: approximately 69% of enrolment in these institutions is female (Economic and Social Survey of Jamaica, 2013).

2.3 Boys' lower participation in education is accompanied by a significant gap in learning achievement. At the primary level, girls outperform boys on the national tests by around 20 percentage points in literacy and 15 percentage points in mathematics in grade 4. At the secondary level, females continue to out-perform males in English language and Mathematics. Not only are there more girls sitting the exit examination Caribbean Secondary Education Certificate (CSEC), but they also have higher pass rates. In 2014, the pass rates for English Language were approximately 74 percent for females and 56 percent for males. In mathematics, a subject in which boys outperform girls in most countries, girls and boys score similarly on the CSEC exam: the pass rates were 56 percent for females and 55 percent for males[1].

2.4 In an effort to raise student achievement, the Ministry of Education of Jamaica is developing a methodology modelled after the "Response to Intervention" (RtI) approach which is an early detection, prevention and support system that identifies struggling students and assists them before they fall behind. RtI is defined as a three tier system whereby Tier I entails a universal screening of all students in regular classrooms to identify students at risk; Tier II provides students who are struggling academically with a supplemental small group or individualized instruction aimed at building proficiency, and Tier III entails one on one tutoring with a mix of instructional interventions. The RtI approach has been widely evaluated in the U.S. and is considered as successful by the "What Works ClearingHouse" of the U.S. Department of Education. (NCEE 2009-4060 US Department of Education)[2]. Given the reliance on individualized support to students of the RtI methodology, it provides a good setting for the use of technology which allows for the introduction of interactive and self-paced methodologies known to increase student motivation, personalize instruction, facilitate group work, and provide immediate feedback and real-time monitoring.

2.5 With the support of a Bank's financed program (JA-L1024) the program Proficiency Pathways in Jamaica or PPw, has introduced RtI at the primary education level. The GoJ is planning to expand it to the secondary education level in 2016. At the same time, and taking advantage of the now wider access to broadband and technology, the Ministry of Education is introducing a Tablet program to support PPw in facilitating diversification of instructional approaches and materials that cater to the needs of a more personalized instruction for struggling students.

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[1] Ministry of Education Statistics
[2] Assisting Students Struggling with Mathematics: Response to Intervention (RtI) for Elementary and Middle Schools, April 2009

2.6　Aligned with the objective of improving student's achievement, particularly boys', this TC proposes to support the Ministry in the introduction of PPw into secondary schools and enhancing it by maximizing the use of the technology through three strategies: (i) adaptation of broadband-appropriate applications for personalized learning for students who are struggling and building capacity within the Ministry in the use of instructional technology and broadband applications; (ii) implementing a technology-enhanced curriculum for secondary school students; and (iii) developing policy recommendations on the use of broadband applications to enhance learning based on the lessons from this program. As a first step, the activities of this TC will focus on mathematics given that students are severely lagging behind in this area as evidenced by the pass rates in the Math exams. Likewise, a recent review of technology programs in education found that the impact on student learning is larger in mathematics than in other subject areas, such as language (Arias Ortiz and Cristia 2014).

2.7　This TC is in line with two of the objectives of the Broadband Special Program (BBD): (i) the use and adoption of broadband technology and services, including fostering increased access; and (ii) building institutional capacity for the development or adaptation of apps and software for instructional purposes. Also, it is fully in line with the Bank's Broadband Initiative and its strategy to accelerate broadband deployment and use in the Region and, in particular, with three of the four of the BBD 2015 allocation criteria related to: (i) meeting the countries' demand through applications that promote the use and adoption of broadband, (ii) meeting the needs of countries' in the Caribbean region, and (iii) supporting the operational program. This program complements the work being performed under RG-T2212, which aims at creating an inventory of broadband infrastructure and public awareness in the Caribbean, as well as on the results of JA-T1079, which recommends a single ICT regulatory environment in Jamaica to enable a more effective regulatory framework. The project is also aligned with the Bank's Sector Framework for Competitiveness, Technology and Innovation (GN-2791-3), and the Bank's Sector Strategy for "Institutions for Growth and Social Welfare" (GN-2587-2) which recognizes the need to improve public actions in technology and communication (par. 5.21). It is also fully consistent with the Sector Framework Document for Education and Early Childhood Development (GN-2708-2) and the Bank's Social Sector Strategy (GN-2349-9) as it focuses on improving student learning. Its objectives are also aligned with the priorities being discussed in the Bank's new Country Strategy for Jamaica. Importantly, this TC complements the work carried out by RES and EDU under TC RG-T2337 in exploring the use of technology for math instruction.

2.8　**Objective.** The objective of this TC is to develop policy recommendations and improve the capacity of the Ministry of Education in the use of broadband and technology for improving learning for struggling students, particularly boys. This objective will be achieved through the enhancement of the Proficiency Pathways Math Program with broadband applications that support personalized learning. It builds on the activities funded through JA-L1024 which

have supported the development of the Math curriculum for Proficiency Pathways Tiers II and III.

III. DESCRIPTION OF ACTIVITIES AND OUTPUTS

3.1 The TC will consist of the following components:

3.2 **Component 1. Broadband applications for enhancing math instruction (US$100,000).** This component will fund the following activities: (i) technical assistance for developing a framework for the use of technology for supporting personalized math instruction; (ii) purchase and adaptation of broadband applications for the Mathematics program; and (iii) training of Ministry personnel in the fundamentals of the use of broadband applications to improve learning.

3.3 **Component 2. Implementation of technology-enhanced instruction (US $200,000).** This component will fund the implementation in selected schools of the technology-enhanced Math Program in Proficiency Pathways Tiers II and III. Activities to be funded include: (i) training of teachers and coaches in the application of technology-enhanced PPw curriculum; (ii) technical and pedagogical support through the hiring of numeracy specialists and coaches; and (iii) sensitization activities to familiarize and engage teachers and students in the program. The Ministry of Education will provide Tablets for the students in the Program.

3.4 **Component 3. Lessons learned and dissemination (US$150,000).** This component will fund the design, data collection and analysis of an evaluation of the technology-enhanced program that will allow for drawing lessons on the use of broadband technology to improve learning. It will also fund the dissemination activities of the study's results which will include recommendations for a national policy to promote the use of broadband technology to enhance learning.

Results Framework

Outcomes:
• Improved student achievement (particularly of boys) exposed to the technology-enhanced Math curriculum
• Education Policy Makers better informed on strategies that improve Math Achievement among struggling students.
• Wider use of broadband applications in schools for enhancing instruction
• Ministry more capable for introducing and supporting broadband enhanced instruction

Outputs:
1. Broadband applications that are appropriate for supporting personalized learning of students in Tiers II and III of Proficiency Pathways are developed/adapted and adopted.
2. Ministry key personnel trained in the use of appropriate instructional applications.
3. Evaluation of Math technology enhanced program in Tiers II and III of Proficiency Pathways completed and results disseminated.
4. Policy recommendations for increasing the use of broadband applications in education.

IV. BUDGET

4.1 The amount of funding needed to achieve the expected outputs by component is indicated below.

Indicative Budget

Activity/Component	IDB/Fund Funding	Counterpart Funding[3]	Total Funding
Comp. 1 Broadband applications for enhancing math instruction	**100,000**	-	**100,000**
Comp. 2 Implementation of technology-enhanced instruction	**200,000**	**100,000**	**300,000**
Comp. 3. Lessons learned and dissemination.	**150,000**	-	**150,000**
Total	**450,000**	**100,000**	**550,000**

V. EXECUTING AGENCY AND EXECUTION STRUCTURE

5.1 **Executing agency.** The TC will be executed by the Ministry of Education of Jamaica and coordinated by the Education System Transformation Program Implementation Unit, ESTP. The TC execution will be under the supervision of SCL/EDU.

5.2 **Execution period.** The TC will be disbursed over 30 months and executed within 24 months from the approval date.

5.3 **Procurement.** Standard Bank procedures will be followed.

VI. PROJECT RISKS AND ISSUES

6.1 The main risk is that the current broadband infrastructure may not grow at a pace commensurate with the demand by schools generated by the program. Given the changes in the regulatory framework supported by the Bank, competition among providers in the sector is likely to widen access.

VII. ENVIRONMENTAL AND SOCIAL CLASSIFICATION

7.1 The pilot is not anticipated to have direct environmental or social impacts and is expected to be classified as a "C" according to the Safeguard Classification Tool. No environmental impact is foreseen as the initiative is limited to consultancies and the production of didactic materials. No Bank resources will be used to finance investments in infrastructure or large scale equipment.

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[3] Financing of tablets.