



Education Quality Improvement Program

(BL-L1018 / 3186/OC-BL)

Project Completion Report (PCR)

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Electronic Links

1. [Development Effectiveness Matrix \(DEM\) Summary](#)
2. [Final version of the Progress Monitoring Report \(PMR\)](#)
3. [PCR Checklist](#)
4. [References](#)

Optional Electronic Links

1. [Ex post Economic-Analysis Report](#)
2. [Ex post Economic Analysis Calculations](#)
3. [Final Evaluation Report EQIP I](#)
4. [Minutes of the project's Exit Workshop](#)
5. [Written feedback from MOEYSC](#)

Acronyms and Abbreviations

DEM	Development Effectiveness Matrix
EMIS	Education Management Information System
EQIP	Education Quality Improvement Program
GOB	Government of Belize
GPO	General Project Objective
IDB	Inter-American Development Bank
IPP	Inquiry- and Problem-based Pedagogy
IRR	Internal Rate of Return
IS	Institutional Strategy
LAC	Latin-America and the Caribbean
MOEYSC	Ministry of Education Youth Sport and Culture
NPV	Net Present Value
PCR	Project Completion Report
PEU	Project Executing Unit
PMR	Project Monitoring Report
PSE	Primary education exit exam
PSTT	Pre-Service Teacher Training
PTA	Parent Teacher Associations
RM	Results Matrix
SD	Standard Deviation
TEI	Teacher Education Institutes
TOC	Theory of Change
UIS	Updated Institutional Strategy

BL-L1018 Education Quality Improvement

Lending Instrument	Country	Borrower	Loan(s)	Sector	Subsector
Investment Loan	Belize	BL-BL - BELIZE	3186/OC-BL	Education	Education-Teacher Education &Effectiveness
Date of Board Approval	Date of Eligibility for First Disbursement	Date of Closure (CO)	Loan Amount - Original	Loan Amount - Current	Pari Passu
Jun 12, 2014	Nov 07, 2014	Dec 28, 2019	10,000,000.00	10,000,000.00	
Total Project Cost	Months In Execution from Approval	Months In Execution from First Disbursement	Original Date of Final Disbursement	Actual Date of Final Disbursement	Cumulative Extension(Months)
10,100,000.00	66	60	Sep 30, 2019	Sep 30, 2019	

Ratings of project Performance in PMRs

Has This Project Received Funds from another Project?

☐ Yes ☒ No

Has This Project Sent Funds to Another Project?

☐ Yes ☒ No

Development Effectiveness Classification

Please include here the PCR Overall Rating as is in the PCR Checklist

No	PMR Date	PMR Stage	Classification	Actual Disbursements
1	Jul 24, 2014	Second period Jan-Dec 2014		
2	Mar 30, 2016	Second period Jan-Dec 2015	Satisfactory	848,196.19
3	Apr 20, 2017	Second period Jan-Dec 2016	Satisfactory	2,664,866.49
4	Mar 13, 2018	Second period Jan-Dec 2017	Satisfactory	4,503,534.77
5	May 15, 2019	Second period Jan-Dec 2018	Satisfactory	7,320,801.13

Bank Staff

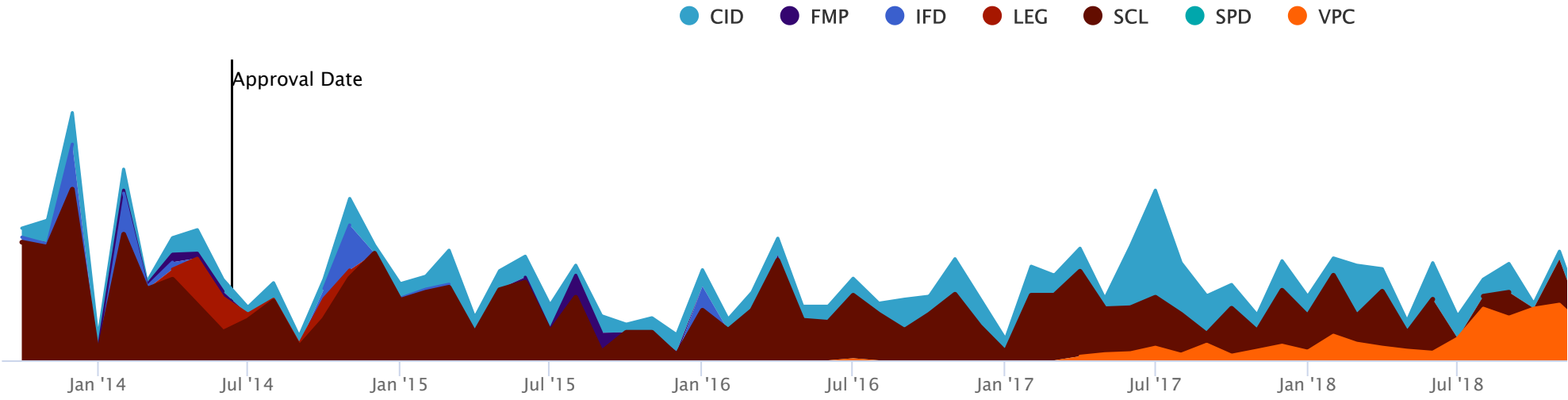
Positions	At PCR	At Approval
Vice-President VPS	Rodriguez-Ortiz,Ana	Levy,Santiago
Vice-President VPC	Rosa, Alexandre	Vellutini,Roberto
Country Manager	Zavala Lombardi,Veronica E. (CID/CID)	Montiel,Gina (CID/CID)
Sector Manager	Cabrol,Marcelo E. (SCL/SCL)	Salazar Sanchez,Hector (SCL/SCL)
Division Chief	Rieble-Aubourg, Sabine (SCL/EDU)	Vegas,Emiliana (SCL/EDU)
Country Rep	Rogers,Cassandra T (CID/CBL)	Jessen,Anneke (CID/CBL)
Project Team Leader	Naslund-Hadley,Emma Ingrid (SCL/EDU)	Naslund-Hadley,Emma Ingrid (SCL/EDU)
PCR Team Leader	Naslund-Hadley, Emma Ingrid (SCL/EI	

Staff Time and Cost

Stage Project Cycle	# of Staff Weeks	USD (including Travel and Consultant Costs)
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Stage Project Cycle	# of Staff Weeks	USD (including Travel and Consultant Costs)
Preparation	28.58	156,886.09
Supervision	121.51	583,649.96
Total	150.10	740,536.05

Time Reported for BL-L1018



I. INTRODUCTION

Although the Government of Belize (GOB) had prioritized and invested heavily in education between 2010 and 2014,¹ important challenges remained concerning quality of instruction, affecting mainly primary education, as well as governance mechanisms to monitor quality and equity levels throughout the system, two major components and objectives of the Government of Belize's Education Sector Strategy 2011-2016.²

During project preparation, an analysis conducted on the quality of primary education showed that even though 92 percent of school-aged children attended primary school, the impact of primary schooling on student outcomes was extremely poor, prompting high repetition rates and low completion rates. Learning outcomes at the primary school level were discouraging, with 39 percent of primary school graduating students (standard six students)³ being able to achieve at a satisfactory level in the Primary Education Exam (PSE) (Näslund-Hadley et al 2013). The analysis pointed to two overarching determinants to explain the discouraging results of primary education: lack of governance mechanisms for quality assurance, and low quality of instruction in primary school classrooms (Arcia 2012b).

In the area of the governance of the education system, the analysis revealed that the education system was characterized by limited government central or local oversight to monitor the quality of the services provided by mostly denomination providers.⁴

At the central level, the Ministry of Education Youth Sport and Culture (MOEYSC) centers in each district, were found to often lack the skills, knowledge, and human resources to supervise and provide guidance to the schools. At the primary level, schools were found not to implement the national curricular program uniformly (Arcia 2012b). At the secondary level, where the schools' managing authorities define their own curricular programs, the analysis revealed variations in quality. As a result, implementation of MOEYSC regulations were found to vary greatly across districts and schools.⁵ As information sent to the central MOEYSC was frequently incomplete, the GOB lacked any real oversight of education quality (Arcia 2012b; and Rapala 2007). On the other hand, in the private subsidized and non-subsidized schools, the analysis revealed that the MOEYSC had little or no control over what went on in the classrooms, what curriculum was implemented, what teaching practices were used, or teacher and student attendance rates; the schools and the churches were found to handle these issues directly. The lack of an information system and monitoring capacity of the MOEYSC precluded them from intervening in low performing schools in a timely manner.

¹ Education spending represented around 7 percent of GDP in FY2011/12 and FY2012/13.

² A third objective of the Education Sector Strategy is increasing access to school, particularly for pre-school, secondary, and tertiary levels.

³ Based on the British education system, primary education consists of two years of infant classes followed by six standards.

⁴ Most pre-primary, primary and secondary schools (81%) are privately operated. In practice, most private schools are publicly funded -85 and 75% at the primary and secondary levels respectively. The managing authorities of the schools assume the responsibility for hiring teachers and managing the GOB resources and tuition they receive from students.

⁵ The Education and Training Act (2010) grants the MOEY formal responsibility for the formulation of education policy goals and priorities.

At the local level, the analysis showed that principals in general lack the necessary skills to be able to ensure good quality levels in their schools (Arcia 2012b) and the sector lacked standards or competencies that define the knowledge, skills, attitudes, and dispositions that principals should have. Moreover, most principals lacked training both as instructional and administrative leaders. The analysis also demonstrated a lack of parental participation in their children's education, which is worrisome as the literature reminds us that parents matters.⁶ The project preparation analysis concluded that the weak school leadership was troublesome in light of research that indicates a link between student outcomes and instructional and administrative leadership of principals (Grissom et al. 2014 and Grissom and Loeb 2011).⁷

In the area of quality of instruction, research indicates that teacher quality is the most important school factor to influence student learning (see Kane et al. 2013; Hanushek 2011; Rivkin et al. 2005; Rockoff 2004). In response to increases in the primary school-aged population (from 47,000 in 2003 to 69,000 in 2013), the Belizean school system had hired large numbers of teachers, many of them without the necessary qualifications to teach. Thanks to this effort, at the time of project preparation, the student/teacher ratio in primary schools (21:1) was in line with the average in the LAC region. However, the increase in the teacher force came at the cost of bringing down the proportion of trained teachers. The analysis, conducted as part of project preparation concluded that Belize's rates of trained teachers were lower than those of many other countries in LAC: while Costa Rica, Ecuador, El Salvador, Mexico, Panama, and Trinidad and Tobago all reported that more than 80 percent of their primary school teachers were trained, in Belize only 47 percent of primary school teachers had the required training.⁸ The low quality of both teacher initial education and in-service teacher training programs were found to affect the quality of instruction in primary school classrooms.

The analysis of the teacher initial education, provided by the tertiary institutions in charge of teacher training (TEIs), including the University of Belize and five privately operated junior colleges, revealed that students studying to become teachers had a weak academic profile in comparison with students of other courses of study. A review of the teacher initial education programs identified weaknesses across the institutions, including: (i) an absence of a clearly defined education methodology and quality standards; (ii) lack of integration of content and pedagogy; (iii) weak partnerships with schools; (iv) absence of protocols and standards for supervision of teacher interns; (v) lecturers with limited competencies in the area of adult learning; and (vi) low level of Math and Science content. The issues identified in the area of in-service teacher training were similar, with the addition of weak instructional leadership of principals (Stewart 2011).

⁶ Using data from the United States National Educational Longitudinal Study, researchers from the University of New Hampshire discovered that the impact of parental involvement is so important it is in the magnitude of four to six additional years of education; or an increase in per-pupil spending by more than \$1,000 (Smith Conway and Houtenville, 2008). Parental involvement may be even more important in developing countries than in industrialized societies (Caro, 2011).

⁷ In addition, the analysis conducted by the IDB revealed that parental involvement in school management was generally minimal, weakening provider accountability. The role of parents, through Parent Teacher Associations (PTAs), had been relegated to a supporting role, helping schools raise funds, with in-kind support for social and school functions (Arcia 2012).

⁸ Trained teachers at the primary level are defined as those who have completed the Level 2 program or the 2+1 program or higher offered at the University of West Indies Campus in Belize.

In addition to the fact that many teachers lacked the necessary qualifications to teach, those who had been trained were found to lack the necessary content and pedagogical skills. As a result, teachers lacked the necessary content knowledge to be effective in the classroom. When primary school teachers and student teachers (those in their last year of teacher initial education), were asked to take the primary school leaving examination taken by standard six students every year, the results were discouraging. Throughout all subject areas (Mathematics, English and Science), only 69 percent of teachers obtained a grade of B or higher (that is, 31 percent of in-service primary school teachers obtained a grade of C or lower) in the primary school leaving examination. The results for student teachers were even worse, with 56 percent of candidates obtaining a grade C or lower. The teaching methods implemented were predominantly teacher-centered and were found to not actively engage students in activities that may help them develop analytical and critical-thinking skills (Hinerman et al 2014).

In an effort to identify a teacher training approach that worked in the Belize context, in 2011/12 the MOEYSC piloted a teacher-led math inquiry- and problem-based pedagogical approach (IPP) in the Belize City District (BL-T1049). The methodology is defined as structured inquiry, which provides students with the materials and step-by-step instructions for individual investigation and exploration of the concepts being taught. The IPP model was introduced as a school-wide approach that involved principals, school administrators, teachers, and students. The general training approach was to teach the teachers mathematical concepts in the way they were expected to teach students in their own classrooms: through inquiry and hands on activities which varied considerably based on the concept and level of student. Teachers also received in-class tutoring and mentoring. The model was found to have a positive effect on student learning (Hinerman 2014).

The project

To address the causes of the low quality of instruction at the primary level of education, in 2014 the GOB and the IDB designed the Education Quality Improvement Program (EQIP) (BL-L1018; 3186/OC-BL). The **General Project Objective (GPO)** of EQIP was to improve the governance of the education system and the quality of instruction at the primary level, through the following Specific Objectives:

- **SO1** Train approximately 50% of TEI pre-service instructors and 46 percent of in-service teachers at the primary level;
- **SO2** Train approximately 37% of primary school principals in instructional leadership and administration;
- **SO3** Develop and implement an EMIS for 100% of schools at the primary and secondary levels; and
- **SO4** Improve the profile of teacher candidates.

To achieve these specific objectives, the project was structured around three components. The first component aimed to improve the quality of primary school instruction by training pre-service and in-service teachers. The second component aimed to create a quality assurance system to improve education policy and planning and accountability mechanisms at the local and central

level. The third component aimed to evaluate the effect of training for pre-service and in-service teachers on the general objective to improve the quality of primary education.

Five years later in the final year of the program, 50 percent of Belize's primary schools had benefitted from the program,⁹ 48 percent of primary school principals had been trained as pedagogical leaders, 60 percent of primary school teachers had been trained and 37% of primary students (from Infant through Standard 6) had benefitted from an Inquiry and Problem-based Pedagogy learning approach.¹⁰ The goals were exceeded as a result of higher than predicted interest of schools in participating in the training and technical support.

The classroom practices have changed, with significant differences compared to non-EQIP schools in the proportion of lesson time with group work, use of manipulative materials, feedback to students, and active learning engagement of students (Loera & Mejía, 2018). Student learning in EQIP schools has also improved compared to peers in non-EQIP schools. By simply changing the pedagogy and without adding instructional time, a randomized control trial found that the learning gains in mathematics are the equivalent of approximately nine additional weeks of instruction, or 22 percent of the academic year, in Standard 2 (3rd grade). In science and language arts, the gains are the equivalent of about 16 and 14 additional weeks of instruction, respectively (which represents 35 and 40 percent of the academic year, respectively). These learning gains are relatively high in a comparison with mathematics and science programs in other countries (Bando et al 2019). Although EQIP teacher training has focused on teaching methods as opposed to subject content knowledge, teachers who have benefitted from EQIP have improved their own knowledge of mathematics, science and language. The proportion of EQIP teachers who manage to score an overall grade of B or higher on the Primary School Examination is 7 percent higher than among teachers who have not been trained. Another effect is that the proportion of teacher with medium or high mathematics anxiety is lower among EQIP teachers compared with control teachers (MOEYSC, 2019). Another important impact of the Program was that the statistically significant gender differences in student achievement in favor of boys in mathematics disappeared in the follow-up measures.

II. CORE CRITERIA. PROJECT PERFORMANCE

2.1 Relevance

a. Alignment with country development needs

The objectives of EQIP were aligned with the development needs and priorities of the GOB and the IDB at the time of approval and at the time of the closing of the operation. The two principal problems identified during design of EQIP – quality of instruction, particularly in primary education, as well as governance mechanisms to monitor the education system – are also objectives of the *Government of Belize's Education Sector Strategy 2011-2016*. The strategy has been extended and is still in effect,¹¹ making EQIP consistent with Belize's Education Sector Strategy also at the time of closing of the operation. The quality of education at approval was a challenge for the

⁹ There are approximately 300 schools nationwide.

¹⁰ IPP creates active problem-solving opportunities for students who learn by collaboratively solving real life authentic problems, developing explanations, and communicating ideas.

¹¹ A third objective of the Education Sector Strategy is increasing access to school, particularly for pre-school, secondary, and tertiary levels.

country as 39 percent of primary school graduating students (standard six students) were able to achieve at a satisfactory level in the Primary Education Exam (PSE) (Naslund-Hadley et al., 2013). At closure only 49 percent of primary school graduating students (standard 6 students) performed at a satisfactory level in the Primary School Examination (PSE) (MoEYSC 2018). Although the average PSE score has improved, the quality of education continues to be a challenge for the country with more than half of students with less than a satisfactory score.

b. Strategic Alignment

At the institutional level, the program was designed and executed within the same set of sector framework and strategy documents: (i) the Bank's Sector Framework Document for Education and Early Childhood Development (GN-2708-5); (ii) the Strategy on Social Policy for Equity and Productivity (GN-2588-4); (iii) the Bank's country Strategy with Belize 2013-2017 (GN-2746); and (iv) the Updated Institutional Strategy 2010-2020 (UIS) (AB-3008).

Sector Framework Document for Education and Early Childhood Development. The Sector Framework Document for Education and Early Childhood Development (EECD) prioritizes the improvement of teaching quality to improve student learning and development of skills, while at the same time, reducing inequality (see the third dimension of success of EECD). Specifically the following actions are completely aligned with those supported by EQIP: (i) transforming the teaching career so as to attract, develop, motivate and retain the best professionals; (ii) strengthening the role played by school principals and their leadership for improving teaching effectiveness; (iii) developing training support structures for school networks, principals and teachers; (iv) promoting innovations for improving and scaling teaching practices; and (v) generating knowledge about how to improve the effectiveness of training and preparation programs for of teachers

Strategy on Social Policy for Equity and Productivity. The IDB's Strategy on Social Policy for Equity and Productivity (SSPEP) emphasizes human capital development as a key factor for economic growth and development. The EQIP is consistent with the SSPEP, as it focuses on improving human capital by investing in education governance and quality.

The Bank's Country Strategy with Belize 2013-2017. Since the Bank's Country Strategy (BCS) - 2013 to 2017 was extended to 2019, the same BCS was in effect at the time of approval and closing of EQIP. The project is consistent and completely aligned with the BCS objectives and indicators. Specifically, the BCS identified the main determinants for Belize's poor education outcomes, in a context of relatively high spending, as: (i) the low teaching quality, with gaps in both content and pedagogical skills of in-service and pre-service teachers; and (ii) the absence of an effective quality assurance system. In response to these determinants, the EQIP program aimed at improving education outcomes relative to investment in the sector, by supporting the implementation of a system that sets out to raise the qualifications of both in-service and pre-service teachers, for attracting and accepting higher quality entrants into teacher profession; and creating a national system for testing teacher content and pedagogical skills. Such efforts were supported by establishing national teacher education and accountability standards, building capacity in the TEI primary education programs and supporting practical professional development. With respect to the design and implementation of a quality assurance system, the program supported the governance of the education system based on clear standards for student

learning and school management. Furthermore, the three impact indicators chosen for the operation are identical to those of the country strategy (see BCS Results Matrix): (i) prospective teachers in targeted TEIs with an overall grade of B or higher on content exam; (ii) in service primary education teachers in targeted schools with an overall grade of B or higher on content exam; and (iii) teachers in targeted schools appraised by their principal; and publication of school supervision reports from targeted schools. The content exam to test teachers was the same PSE exam used to test students in their final year of primary education.

Corporate Results Framework. The operation is also aligned with outcome indicator Number 1 of the Level 2 indicators of the Corporate Results Framework 2020-2023 (GN-2727-12), which measure the number of “student beneficiaries.”

Institutional Strategy. The EQIP project is consistent with the objectives of the Institutional Strategy (IS) (2010-2020), as it focuses on eradicating social exclusion and inequality through education.

c. Relevance of Design

At the time of Project completion, the underlying assumptions of the vertical logic at design remain relevant and consistent with the results (see figure 1):

- a. **SO1 – Train Pre-Service and In-service Teachers.** At design, research suggested that effective teacher professional development programs should be hands-on, allow for the analysis in situ of instructional practice, and focus on the development of content-specific teaching skills (Darling-Hammond 2009). In Language Arts, the most effective programs for teaching reading should combine the development of visual and auditory perceptual skills, vocabulary, and comprehension skills, with phonics instruction and repeated reading opportunities (Hattie, 2009). In Science, there was a growing body of literature that supported a shift from teacher centered pedagogical methods to some degree of student inquiry (Healy 1990; Lowery 1998). A meta-analysis indicated that teacher-led inquiry-based methodologies are more effective than purely student-led methodologies (Furtak 2012). In Math, comprehensive reviews, such as Hiebert and Grouws (2007) recommended a focus on conceptual understanding and procedural fluency, mathematical argumentations and communication, problem solving and problem posing, and multiple representations and connections.¹² Against this background, the project was designed to support the implementation of **hands-on teacher professional development for in-service teachers** that specifically focus on how to organize Language Arts, Science, and Math instruction according to these principles. While building capacity among in-service teachers was crucial to improve the quality of education in schools in Belize, it was important to address the fact that in-service teachers will, at some point, be replaced with new incoming teachers. Thus, the program also supported the **training of teacher educators at TEIs** in the content-specific teaching methods outlined above so as to ensure that new generations of teachers are also equipped with the necessary skills to successfully promote student learning in Language Arts, Science, and Math. Together the outputs of Component I (C1b. Capacity-building of the TEIs in their training of primary education teachers; and C1c. On-site and distance practical professional development) were designed to improve the quality of primary school

¹² The demand for training by teachers was estimated as high. Teachers did not face either penalizations nor financial incentives for completing the training or for scoring higher on tests. Thus, project results were clearly behind the control of the implementing agency.

teachers by raising the profile of teacher candidates, enhancing the quality of initial teacher education and improving the skills of in-service teachers. Together, indicators I1 and R1 served to verify whether SO1 of training pre-service and in-service teachers was achieved.¹³ Component III (C3a evaluation of Pre-service Teacher Training.; and C3b. RCT of the on-site practical professional Development for Teachers and Principal training) were designed to verify the cause-effect relationship between the outputs and the achievement SO1.

- b. **SO2 – Train School Principals.** The second specific objective was designed based on a body of research on the role of school principals, which positively links school leadership with student achievement (Waters et al. 2003), as long as principals are skilled in organization management (Grissom & Loeb 2011) and instructional leadership (Robinson et al. 2008).¹⁴ Case study research shows that high performing education systems invest heavily in developing these skills through hands-on programs for principal professional development such as internships, shadowing of experienced principals, and job-embedded mentoring (Darling Hammond & Rothman 2011). Therefore, as part of a larger School Quality Assurance System, the project design included **hands-on principal training** in instructional and administrative leadership. The products associated with the outputs of the School Quality Assurance System: Leadership Training (C2b i, iv) were designed to strengthen the planning and accountability mechanisms at the school level. Indicator R2 allowed to verify whether SO2 of training school principals was achieved.
- c. **SO3 – Develop and implement an EMIS.** In addition to strong school leadership, the literature also highlighted another cornerstone of quality assurance system: rigorous education management information systems (Hinerman et al 2014; Vegas and Petrow 2008; Vegas and Paglayan 2010). Against this background, project design included the implementation of an **Education Management Information System (EMIS)** to ensure that there is adequate data in the system to inform improvement and to determine when it is necessary to intervene in underperforming schools.¹⁵ The products associated with the outputs of the School Quality Assurance System: EMIS (C2a and C2b i, iii) were designed to strengthen the planning and accountability mechanisms at various levels of the education system: from the local to the central level, including the quality assurance of the TEIs. Indicator R3 was devised to verify whether SO3 had been achieved.
- d. **SO4 – Improve the profile of Teacher Candidates.** Countries that rank at the top of international standardized learning tests have consistently succeeded in attracting qualified individuals to the teaching profession, which is one of the factors associated with teacher performance (Mourshed et al 2010). Based on this literature, the Project sought to further strengthen the teaching profession by attracting higher quality teacher

¹³ During project design, it was perceived the impacts of in-service teacher training would be observed in a relatively shorter term when compared to those of pre-service teacher training. Thus, the indicator associated to pre-service teacher training was classified as an impact indicator. The in-service teacher training indicator was classified as an outcome. Such differentiation does not apply to an objective-based evaluation methodology applied in this document.

¹⁴ How principals responded to treatment was beyond the control of the implementing agency. Principals were neither penalized nor provided financial incentives to improve management practices.

¹⁵ The Reporting of individual schools to the EMIS was beyond the control of the executing agency. Schools were neither penalized nor provided with financial incentives for providing timely data. School reporting is necessary to publish school supervision reports.

candidates to the TEIs, including male candidates (a virtually untapped pool of candidates for the primary education level). At the design-stage, research highlighted the social importance of male and female role models in early grades (McGrath and Sinclair 2013). At the time, the workforce was skewed towards women as of the 3,299 primary school teachers, only a quarter (877) was male (DLP, P.1.10). Thus, the lack of male candidates was identified as a problem.

- e. To increase selectivity, the program tested alternative TEI entrance exams. The products associated with the outputs of the system for attracting and accepting higher quality entrants into teacher training (C1a) were designed to change the profile of entrants into teacher training. Indicator R4 as devised to verify whether SO4 was achieved.
- f. **GPO – Improve the Governance of the Education System and the Quality of Instruction at the Primary Level.** Taken together, the achievement of SO1;¹⁶ SO2;¹⁷ SO3;¹⁸ and SO4¹⁹ were designed to achieve the GPO to improve the quality of primary education and governance of the Belize education system. as verified by improvements in student test scores as asessed by the experimental project evaluation.

See below a detailed graphic representation or map of the Theory of Change based on the above analysis. It is important to note that **SO1** includes pre-service and in-service teacher training, however, during the design the project team established that the indicator measuring the effects on in-service teacher training would be better placed at the impact level, for it would better reflect the effects of both in-service, as well as pre-service teacher training after the latter joined a school. Consequently, the Results Matrix shows only the result indicator measuring the effects on pre-service teacher training and not in-service teacher training. However, during the present analysis it was decided that the Impact indicator (I1) should be placed as part of the Results Indicators for SO1, to accurately reflect the cause-effect relationship. At the time of the design, these requirements were not available to the project team, and therefore some adjustments are in order to better reflect the relationship between objective in the theory of change.

¹⁶ Improving in the quality of primary school teachers by raising the profile of teacher candidates, improving the quality of initial teacher education, and improving the skills of in-service teachers.

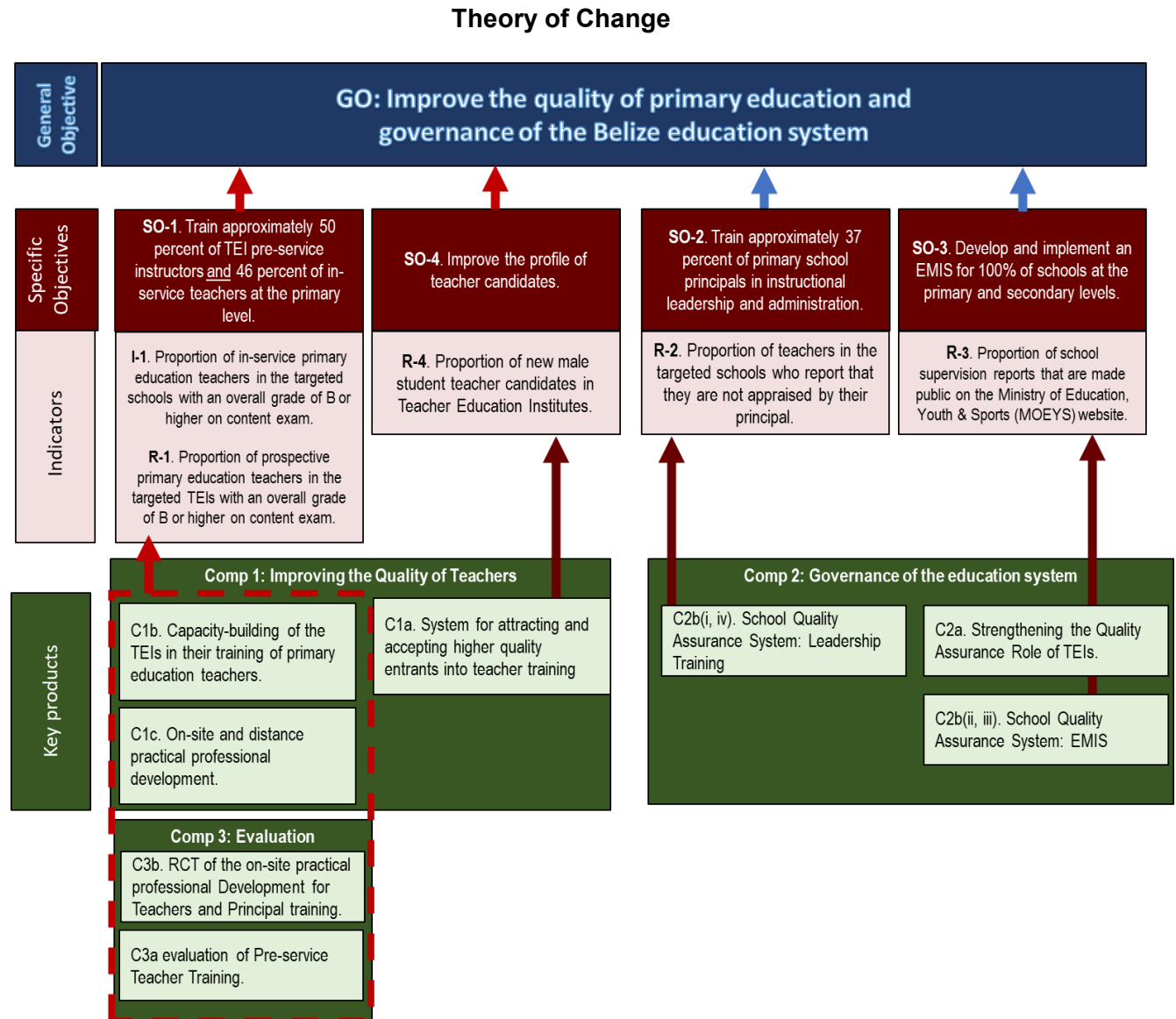
¹⁷ Reflecting the strengthened the planning and accountability mechanisms at the school level.

¹⁸ Reflecting the strengthening of the planning and accountability mechanisms at various levels of the education system.

¹⁹ Reflecting the changed profile of entrants into teacher training.

Figure 1- Theory of Change

- GO** - General/ Objective for the project
I - Impact Indicator
SO - Specific Objectives
R - Result Indicators



Results Matrix

The Results Matrix (RM) **did not change since its approval, or within 60 days after gaining eligibility**. Impact and outcome indicators remained the same in the PMR as were defined in the POD, including baseline and targets (see impact and outcome indicators in Table 1 below).

Table 1. Results Matrix at approval

Indicators	At approval			Startup Plan			At project completion (PCR)			Comments
	Unit of measure	Baseline	EOP (P)	Unit of measure	Baseline	EOP (P)	Unit of measure	Baseline	EOP (A)	
Specific objective 1 (SO1): to train approximately 50 percent of TEI pre-service instructors and 46 percent of in-service teachers at the primary level.										
R1. Proportion of prospective primary education teachers in the targeted TEIs with an overall grade of B or higher on content exam.	Percentage	43.60	50.10	Percentage	43.60	50.10	Percentage	43.60	56.80	There were no changes to the indicator, baseline or goal.
I1. Proportion of in -service primary education teachers in the targeted schools with an overall grate of B or higher on content exam.	Percentage	69	75.90	Percentage	69	75.90	Percentage	69	79.60	There were no changes to the indicator, baseline or goal.
Specific objective 2 (SO2): to train approximately 37 percent of primary school principals in instructional leadership and administration.										
R2. Proportion of school supervision reports that are made public on the Ministry of Education, Youth & Sports (MOEYS) website.	Percentage	0	25	Percentage	0	25	Percentage	0	26.48	There were no changes to the indicator, baseline or goal.
Specific objective 3 (SO3): to develop and implement an EMIS for 100% of schools at the primary and secondary levels.										
R3. Proportion of teachers in the targeted schools who report that they are not appraised by their principal.	Percentage	65.50	59	Percentage	65.50	59	Percentage	65.50	1.00	There were no changes to the indicator, baseline or goal.
Specific objective 4 (SO4): to improve the profile of teacher candidates.										
R4. Proportion of new male student teacher candidates in Teacher Education Institutes.	Percentage	19.61	21.60	Percentage	19.61	21.60	Percentage	19.61	22.10	There were no changes to the indicator, baseline or goal.

* PSE exam applied to a nationally representative sample of teachers.

** Teacher and learning survey questionnaire applied to a nationally representative sample of teachers.

*** Three-year compounded average

2.2 Effectiveness

a. Statement of project development objectives.

The overall objective of the operation was to improve the quality of primary education and the governance of the Belize education system. To achieve the objective the loan sought to accomplish four specific objectives:

- i) With regards to improving the quality of education at the primary level:
 - **SO1:** To train approximately 50 percent of TEI pre-service instructors and 46 percent of in-service teachers at the primary level; and
 - **SO2:** To train approximately 37 percent of primary school principals in instructional leadership and administration.
- ii) With regards to improving governance of Belize's education system:
 - **SO3:** To develop and implement an EMIS for 100 percent of schools at the primary and secondary levels; and
 - **SO4:** To develop and implement an Education Management Information System (EMIS) at the primary and secondary school levels.

b. Results Achieved

Project data shows that the purpose, as well as the specific objectives, for which the project was designed and implemented, have been achieved. As measured by the results and impact indicators identified in the RM and others, we demonstrate that the project surpassed the planned targets and consequently that quality at the primary level as well as the capacity of the sector to govern itself more efficiently and effectively has improved, in some cases significantly. The following paragraphs present details of this evidence.

Specific Objective 1 (SO1), to train approximately 50 percent of TEI pre-service instructors and 46 percent of in-service teachers at the primary level, was fully achieved. The proportion of in-service primary education teachers in the targeted schools with an overall grade of B or higher on content exam **increased from 69 to 79.6 percent (I1)**. Similarly, the proportion of prospective primary education teachers in the targeted TEIs with an overall grade of B or higher on content exam **increased from 43.6 to 56.8 percent (R1)**. Therefore, the associated result of improving the quality of primary school teachers was achieved.

Specific Objective 2 (SO2), to train approximately 37 percent of primary school principals in instructional leadership and administration, was fully achieved. The proportion of teachers in the targeted schools who report that they are not appraised by their principal **decreased from 65.5 to 1.0 percent (R3)**.

Specific Objective 3 (SO3), to develop and implement an EMIS for 100 percent of schools at the primary and secondary levels, was fully achieved. The proportion of school supervision reports that are made public on the Ministry of Education Youth Sports and Culture (MOEYSC) website **increased from 0 to 26.48 percent (R2)**. Therefore, the result associated with improving the governance of the education system was achieved.

Specific Objective 4 (SO4), to improve the profile of teacher candidates was fully achieved. The Proportion of new male student teacher candidates in Teacher Education Institutes **increased from 19.61 to 22.1 percent (R4)**.

As detailed above, and as is visualized in the theory of change (see figure 1), the EQIP project achieved all four specific objectives aimed at improving the quality of primary education, and the governance of the Belize education system. Table 2 shows that the respective results indicators were 100 percent achieved or surpassed the target.

The proposed indicators were appropriate. Perhaps the statement of the objectives could have been more associated with results, but other than that the monitoring and evaluation plan was appropriate. The ex-post evaluation shows targets were modest. However, targets were aligned to evidence at the design stage.

In the original design, **student learning** was not included as an indicator associated with the general objective. However, it was measured as part of the experimental impact evaluation and has been included in this document as a measure of impact of the EQIP project. The achieved results for this indicator are as follows:

- i) Just by changing the pedagogy, second grade EQIP students scored
 - a. **0.16 standard** deviations higher than other students in mathematics, this effect is ***equivalent to 40 percent of what an average student learns in an entire academic year.***
 - b. **0.29 standard** deviations higher than other students in science, this difference is ***equivalent to 75 percent of what an average student learns in an entire academic year.***
- ii) Per US\$100 invested Belize gets 1.4 standard deviations in science learning and 0.8 standard deviations in mathematics learning.

These results are significant and speak to the effectiveness of the EQIP model in improving the quality of education (Bando et al, 2019).

Lastly, with respects to EQIP's outputs, as a result of the interventions the project managed to surpass all output targets. A detailed list of output achievements is listed in table 3. The project managed to achieve the following:

- i) **320** school principals and general managers trained (equivalent to more than 50% of the country's school principals);
- ii) **1,558** parents trained to increase their participation in school management;
- iii) **98 percent** of all students and teachers registered in the database of newly developed Education Management Information System (EMIS);
- iv) **86** teacher trainers trained;
- v) **1,524** teachers trained (equivalent to slightly more than 50 percent of the country's primary level teachers);

- vi) over **30,000** students benefited by hands-on-learning (equivalent to roughly 50 percent of the country's primary education students); and
- vii) an EMIS information system in operation and a Communication Management Plan to collect timely information from schools and regional offices to promote better informed decision making.

Table 2. Results Achieved Matrix

Indicator	Unit of Measure	Baseline value	Baseline year	Targets and Actual achievement		% Achieved	Means of verification
SO-1: to train approximately 50 percent of TEI pre-service instructors and 46 percent of in-service teachers at the primary level.							
I1. Proportion of in -service primary education teachers in the targeted schools with an overall grate of B or higher on content exam.	%	69.00	2012	P P(a) A	75.90 75.90 79.60	153.62%	External Evaluation Report
R1. Proportion of prospective primary education teachers in the targeted TEIs with an overall grade of B or higher on content exam.	%	43.60	2012	P	50.10	203.8%	External Evaluation Report
SO-2: to train approximately 37 percent of primary school principals in instructional leadership and administration.							
R2. Proportion of school supervision reports that are made public on the Ministry of Education, Youth & Sports (MOEYS) website.	%	0.00	2013	A P(a) A	56.80 26.40 26.48	105.92%	PEU Progress Report
SO-3: to develop and implement an EMIS for 100% of schools at the primary and secondary levels.							
R3. Proportion of teachers in the targeted schools who report that they are not appraised by their principal.	%	65.50	2012	P P(a) A	59.00 59.00 1.00	992.31%	External Evaluation Report
SO-4: to improve the profile of teacher candidates.							
R4. Proportion of new male student teacher candidates in Teacher Education Institutes.	%	19.61	2011	P P(a) A	21.60 21.60 22.10	125.13%	PEU Progress Report

Table 3. Achievement of targets at the product level.

Output	Unit of Measure	Baseline value	Baseline year	Targets and Actual achievement		% Achieved	Means of verification
1.1 Marketing campaign strategy to attract teacher candidates developed and implemented	Campaign	N/A	N/A	P P(a) A	1 1 1	100%	PEU Progress report
1.2 # of teacher trainers who teach methods courses in science, math and language arts and administrative TEI staff trained.	Staff	N/A	N/A	P P(a) A	80 80 86	107.50%	PEU Progress report
1.3 # of teachers trained	Teachers	N/A	N/A	P P(a) A	1,200 1,200 1,524	127%	PEU Progress report
1.4 # of boys benefiting from trained teachers at the primary level.	Students	N/A	N/A	P	14,620	111.88%	PEU Progress report
				P(a)	14,620		
				A	16,357		
1.5 # of girls benefiting from trained teachers at the primary level.	Students	N/A	N/A	P	14,180	102.30%	PEU Progress report
				P(a)	14,180		
				A	14,506		
2.1 # of primary school Principals, General and Local Managers, and Education Officers trained in school administration and educational leadership.	Persons	N/A	N/A	P	320	100%	PEU Progress report
				P(a)	320		
				A	320		
2.2 # of parents trained to increase their participation in school management.	Parents	N/A	N/A	P	450	346.22%	PEU Progress report
				P(a)	450		
				A	1,558		
2.3 Integrated Education Management Information System (EMIS) in operation	System	N/A	N/A	P	1	100%	PEU Progress report
				P(a)	1		
				A	1		
3.1 Randomized control trial of the on-site practical professional development in primary schools implemented.	System	N/A	N/A	P	1	100%	PEU Progress report
				P(a)	1		
				A	1		

Where: P = Start-Up Plan; P (a) = Revised Annual Target; A = Actual.

c. Counterfactual Analysis

The General Project Objective of EQIP was to improve the quality of primary education and the governance of the Belize education system. EQIP achieved all the outputs, outcomes and impacts of the results matrix that it set out to accomplish. In this section we discuss how the effects achieved can be attributed to the activities implemented as part of EQIP. This section is structured around the four specific objectives that the operation sought to achieve at the end of the execution period (SO1, SO2, SO3, and SO4) and the GPO. Based on the education literature and the results presented in the final evaluation report (see optional electronic link #2), this section points to the causal attribution between the actions of EQIP and the outcome indicators defined during the project design.

SO1 – In-Service and Pre-Service Teacher Training. The effectiveness of the project to achieve **SO1** associated with in-service teacher training was measured through a Randomized Control Trial (RCT). Belize's 299 primary schools were randomly assigned into a treatment or a control group. The evaluation found that the program increased teacher performance on the Primary School Examination (PSE). A (statistically significant) positive average effect of the EQIP was observed in the final evaluation (column 1 Table 4). This corresponds to an increase from 69 percent to 79.6 percent of teachers who have a B or higher on the PSE. A more detailed analysis shows that these effects are the result of a positive average effects on Language Arts and Math (column 1, Table 4). For Science, the project had a positive average effect albeit not significant (column 1 Table 4). Teachers were also administered a pedagogical content test, which measures the broader and deeper knowledge necessary to teach mathematics. The results of the test show that there was a positive average effect which can be fully attributed to the project (column 1, Table 4).

Table 4. Average Effects of the Project Implementation on Teacher Performance on Content Exams (in standard deviations)

	Effect on teacher subject knowledge (1)
[I1] PSE*	0.207*
Language	0.212*
Math	0.184*
Science	0.083
Pedagogy	0.206*

Source: MOEYSC, 2019

Notes: *The indicator used in the RCT is the average PSE score over language, mathematics, and science. Such score is positively and directly associated to **I1** Proportion of prospective primary education teachers in the targeted TEIs with an overall grade of B or higher on content exam.

Regarding the achievement of **SO1** associated to pre-service instructors (**R1**), a pre-post impact evaluation was performed, and the main results indicate positive improvements observed in the data (Paredes 2019). Such data suggest that TEI teacher training is effective. The group of teacher candidates who obtained a competent grade or higher on the Language Arts content

exam increased from 51.3 to 69.4 percent, while those who achieved a competent grade or higher on the Mathematics content exam reached 41.8 percent, up from 29.3 percent. In Science, the group of students who obtained a competent grade or higher increased from 50.4 percent to 57.8 percent.

The original proposal for the evaluation of the Pre-Service Teacher Training (PSTT) was a quasi-experiment that allowed for an impact evaluation of the teacher training intervention in TEIs, which consisted of capacity building of staff at TEIs to improve the PSTT in pedagogical practices and content knowledge in Math, Science, and Language Arts, focusing on how to link the teaching of content with concrete content specific pedagogy. However, due to decreased enrollment in the TEIs and high levels of teacher candidate drop-out (churn/ attrition), neither a propensity score matching, nor a difference-in-difference approach was possible. Additionally, the small sample size limited the statistical power to identify program effects via multi-variate regression analysis (Paredes 2019).

While there is not enough information to more rigorously demonstrate an effect on teacher candidate content skills, at the time of implementation there was no other donor or GOB intervention, policy changes unrelated to the operation, market factors, or natural events, which could explain the observed improvement. In addition, the experimental evidence of the program's success in the same context and under very similar circumstances to improve in-service teacher knowledge, lead us to support the idea that the observed improvements can be attributed to the program. Furthermore, international evidence shows that teacher training is effective to improve teacher knowledge in similar contexts (Benli and Sarikaya. 2012; Fukkink, 2019; Wiyarsi et al, 2015)

Furthermore, a qualitative analysis was conducted using the data collected to develop a Pedagogical Practice Index and a Quality of Teaching Index. The first index consists of five indicators from the TIMSS²⁰ video Study (1995; 1999); and the latter consists of five indicators from the Classroom Assessment Scoring System (CLASS) framework²¹ (see results on Table 5).

In the EQIP approach, trained teachers (SO1) use more manipulative materials and monitor students more closely (see Table 3). Their students use manipulative materials more frequently, and do more work organized at an individual, peer, and team levels. They also spend more time actively engaged in learning activities (time on task) and students are more frequently excited or motivated by the learning activities. Teachers in the control group use a more direct-teaching approach in their lessons, characterized by more drill practice and memorization.

In terms of the overall quality of their lessons, EQIP teachers (SO1) show relevant effect sizes in five CLASS dimensions: Student, Engagement, Analysis and Inquiry, Regard for Student Perspectives, and Positive and Negative Climate. Other dimensions are similar among EQIP and

²⁰ Trends in International Mathematics and Science Study or TIMSS study, a series of international assessments of the mathematics and science knowledge of students around the world, that allows educational systems worldwide to compare students' educational achievement.

²¹ The CLASS is an observational instrument developed at the Curry School Center for Advanced Study of Teaching and Learning to assess classroom quality in PK-12 classrooms. It describes multiple dimensions of teaching that are linked to student achievement and development. The CLASS can be used to reliably assess classroom quality for research and program evaluation and also provides a tool to help new and experienced teachers become more effective.

control group teachers. A group of teachers with high scores in their lesson quality decided not to answer relevant questions. Therefore, it was not possible to identify attitudinal and other sorts of factors that may predict the overall quality of the lessons. However, some factors seem to be associated with higher quality of their lessons, including being female, younger than 24 years old, registered at the University of Belize (Belmopan Campus), not Spanish speaker, and having a low level in the Mathematical Anxiety test.

SO2 and SO3 EMIS and Leadership Training. The attribution analysis for these objectives is theory-based because interventions that are system wide such as the creation of a quality assurance system are "not amenable to evaluation using experimental design."²² Therefore, the two specific objectives related to the quality assurance system were evaluated through a before-and-after comparison.

The literature supports the attribution of some of the specific outcomes achieved to the activities implemented under the EQIP. **First**, the literature shows that principal training in instructional and managerial leadership is effective in improving leadership practices, including feedback to teachers and building strong relationships based on confidence between school leaders and teachers. A randomized control trial of a principal leadership program, that emphasizes training in how to provide feedback to teachers, finds effects on principals' self-reported use of more effective leadership practices and feeling of efficaciousness (Jacob et al, 2016). A systematic review by Lillejord and colleagues (2015) finds that effective school-based interventions focus on the development of relationships between principals and teachers. Similarly, a systemic review by Copeland and Neeley (2013) identify actions and competencies that are leading indicators for principals that manage to turn around schools successfully, including evaluating teaching and providing feedback. **Second**, although the literature provides limited experimental evidence that education management information systems increase transparency, studies show that transition to such systems is associated with gains in efficiency and transparency (Deloitte, 2017; Arias et al 2018). Although this evidence stems from developed countries, the studies targeted mainly low-performing schools and it is plausible to infer that the EMIS and the principal leadership training yielded the observed results in the rates of published school reports and assessed teachers. Moreover, at the time of implementation there were no other donor or GOB interventions, policy changes unrelated to the operation, market factors, or natural events, which could explain the observed improvements in the frequency of feedback from principals (**R2**) or school transparency (**R3**).

In addition to the evidence which supports the idea that the program effects can be attributed to the program, it should be noted that both interventions were system-wide changes implemented in a context where no training for school principals on leadership and administration was provided either by the state or by private providers other than that financed by the project (SO2).²³ In addition, there was no alternative investment on the implementation of EMIS or practice to publish

²² "We must first acknowledge that there are indeed types of intervention not amenable to evaluation using experimental design. Programmes that require systematic changes at more than one level of the educational system are difficult, if not impossible, to evaluate using this design, due to the difficulties of randomising at all levels" (Styles and Torgerson, 2018).

²³ Before project implementation, the European Union had provided school leadership training in the Banana Belt. Such training did not target teachers which participated in the program. Thus, baseline values capture any effects such training may had. The training does not threaten the identification of project effects.

school supervision reports (**SO3**). Indeed, these weaknesses had been identified by the GOB and the IDB at the program design stage in 2014. The timing on the observation of changes in results indicators **R2** and **R3** and the program implementation support the idea the results can be attributed to the project.

SO4 – Profile of Teacher Candidates. The attribution analysis for this objective is theory based because the interventions was system wide. To improve the profile of teacher candidates, EQIP supported efforts to elevate the prestige of the profession by diversifying the pool of teacher training candidates, including male candidates (a virtually untapped pool of candidates for the primary education level). A number of tools were utilized in a Big Men Teach campaign, including TV, radio and newspaper ads; web sites; and social media, among many others. Since the campaign was nationwide, it was not feasible to conduct an experiment and it was evaluated through a before-and-after comparison.

Although it was not possible to undertake an experimental or quasi-experimental evaluation, the literature supports the attribution of the increased proportion of male teacher candidates to the Big Men Teach campaign. The inherent nature of public information campaigns makes them hard to evaluate through randomized control trials, as it's challenging to ensure a control group. Nevertheless, a few randomized control trials show that information campaigns in the education sector in a developing country context have the potential to influence behaviors of school community actors. In India, a randomized experiment found that a public information campaign about Village Education Committees (VEC), improved educational outcomes by encouraging the village to volunteer to teach reading (Banerjee et al 2010). Another randomized experiment in India, concluded that village community campaigns about school performance increased teacher effort, and had some impact on student achievement (Pandey et al 2009). Although India is in a different region of the World, it shares many developing country challenges with Belize, including the low status of the teaching profession (Näslund-Hadley, Alonzo, and Martin, 2013).

GPO – Improved Quality of Education. The General Project Objective of the program centered around the improvement of the quality of primary education. The RCT implemented to evaluate the in-service teacher professional development (**SO1**) allowed for the estimation of the effects of the teacher training program on students' academic outcomes in Mathematics, Science, and Language Arts. Student outcomes are one of the most widely and accepted measures of the quality of education. The evaluation found a positive statistically significant program effect in Standards 2 and 5 in the Language Arts, Mathematics and Science content exams in the final project implementation (Table 5). Thus, experimental evidence supports the idea the project achieved the **GPO**. This finding is consistent with the literature which finds teacher quality is the most important school factor to improve student learning, academic achievement and graduation rates (Hanushek, Kain, and Rivkin 2002).

Table 5: Pedagogical Practice Index and Quality of Teaching Index

Area of Analysis	Description	Indicators	Baseline EQUIP-I (2017) %	Control Group %
<i>Pedagogical Practice Index: t is based on a video study instrument (TVSI) that is based on the methodological approach Of the TIMSS video study.</i>				
Organization of Students	The way the teachers organize students is strongly related to the dominant teaching model, particularly between frontal model teaching, where teachers are the key source of knowledge, and the team-oriented teaching, where teaching materials and the conversation with other students are also sources of knowledge to learn.	% of lessons where the students work with peers	13	29.9
		% of lesson where students work in teams	21.9	32.4
Teacher Activities	Teaching is a cultural activity, and most teachers in a given country have a similar pattern of activities. However, the purpose of an intervention like EQUIP-I is to introduce some relevant changes in the way teaching is implemented at the classroom level.	% of lesson where the teachers do active monitoring	27.8	38.9
		% lessons teachers give direct feedback to a student or group of students	8.8	14
		% lesson most students are paying neutral attention	96.6	99.3
Student activities	The activities of the students are a key element in discriminating the effectiveness of teaching strategies and the use of classroom resources. Most of the critical professional skills of a teacher are related to their ability to actively engage the students in activities that give to the students more opportunities to learn. Time-on-task, a well-known predictor of student learning, is particularly important.	% of the lesson where most students are actively engaged as instructed by the teacher.	30.6	42.5
		% of the lessons where a student formulates a question	0.1	0.61
Instructional Materials and Equipment used	Teachers and students use instructional material and equipment to facilitate the process of learning. It is particularly important the material designed by the teachers because usually this material is more pertinent to the children's level of knowledge. Also important is the use equipment, such as videos, to improve motivation and to reach better transmission of the content, although some teachers may overuse this equipment.	% of lessons most students use material prepared by the teacher	29.5	40.7
<i>Quality Of Teaching Based on the CLASS Framework</i>				
Emotional Support	Positive relationships among teachers and children, teachers' abilities to support social and emotional functioning in the classroom	Regard for student perspectives	52.8	63.3
Classroom Organization	Well-managed classrooms that provide children with frequent, engaging learning activities	Behavioral management	74.5	81.6
Instructional Support	Interactions that teach children to think, provide ongoing feedback and support, and facilitate language development	Analysis and inquiry	26.9	37.5
Student Engagement	Student attention and participation	Active engagement	57.4	63.6

Source: Video Study Of the impact Of EQUIP In-service Teacher Training for Primary School Teachers in Belize (BL-L1018), April 2018, Armando Loera Varela and Fernando Mejia Bolero. Heurística Educativa & Centro de Estudios Educativos.

d. Unanticipated outcomes

EQIP had a number of unforeseen results related to key project interventions:

Mathematics Anxiety of In-service teachers. The randomized control trial to evaluate the achievement of **SO1** asked in-service teachers to complete a Mathematics Anxiety test, which measures the level of their anxiety in mathematics. Anxious teachers have been found to make students anxious, and do less inquiry-based teaching, which in turn affects quality of teaching and decreases learning (OECD 2013; Lee 2009). Significant average effects were observed in the RCT. Furthermore, simple percentage statistics show that there has been a decrease in the percentage of teachers with medium-to-high level anxiety from 58.8 percent in 2015 (Baseline) to 52.5 percent in 2019 (Optional Link #2).

Mathematics Anxiety of Students. Furthermore, Standard 2 and 5 students also completed the Mathematics anxiety test and significant average effects were observed among the Standard 5 students in the third year of the implementation. Standard 2 students did not take the test in the follow-up years. Once again, simple percentage statistics show that there has been a decrease in the percentage of students with medium-to-high level anxiety from 85.8 percent in 2015 to 82.1 percent in 2019 (Optional Link #2), with a slightly lower percentage among the treatment group in that same year (all students were used in these calculations).

Inquiry and problem-based pedagogical approach. The Teacher Education Institutes (TEI) embraced the inquiry and problem-based pedagogical approach, that resulted in 33 percent of them to decide to send their teacher interns only to EQIP treatment schools, where they receive the benefit of learning from EQIP teachers.

Belize Education Management Information System Unit. The success of the EMIS motivated the MOEYSC to create a BEMIS Unit (Belize Education Management Information System Unit) within the Policy and Planning Research and Evaluation Services (PPRE) at the Ministry. MOEYSC also included BEMIS in the revised rules of the Education Act, to expand its use to all levels of the education system (the original design of the project included only primary and secondary schools).

Leadership training. The leadership training component, which was designed for school leaders, generated interest also among teachers who are aspiring to become principals. Thus, in addition to the training of school leaders, the project also trained a group of prospective principals.

Video study methodology. The methodology for the qualitative video study generated interest among officials in the MOEYSC to use videos for training purposes, which prompted the design of a professional development course for education officers, school inspectors, TEIs, and ministry directors.

Feedback system. The work with the development of the feedback system for the TEIs prompted the revision for improvement of the teacher appraisal instrument and the scales for assessing teachers and MOEYSC professional staff.

Training of TEI pre-service instructors. As originally designed, the operation intended to train only the TEI methods instructors, but EQIP was so well received by the TEIs, that in all 6 institutions' teacher trainers from both, content and methods courses, participated in the training events.

2.3. Efficiency

Cost-effectiveness.

The cost of scaling the IPP approach is low. Specifically, the cost of increasing test scores by 0.10 SD is estimated at \$11.75²⁴ per student in Mathematics and \$8.44 in Science. This cost of a 0.10 SD increase in learning is also low in a regional comparison of the impact of IPP, which in Science ranges from US\$9.61 in Argentina to US\$49.96 in Peru. Also, in Mathematics the cost-effectiveness of EQIP compares favorably as the per student cost of an 0.10 SD increase in learning ranges from US\$6.90 in Argentina to US\$22.48 in Paraguay (Bando et al 2019).

Cost Benefit-Analysis

An ex-post cost-benefit analysis was conducted to estimate the efficiency of the project. The Net Present Value (NPV), the Internal Rate of Return (IRR) and the benefit/cost ratio were calculated at the 12 percent discount rate and based on the assumptions, parameters and methodology used, the results of this analysis indicate that the social return of the project is positive.²⁵

The main assumptions to estimate benefits are:

- a. The combined effect of the program components improved the academic achievement of students in the targeted primary schools by 0.16 SD in mathematics and 0.29 SD in science, which is equivalent to an additional 0.3 years of instruction (Bando, Naslund-Hadley & Gertler, 2019). The gains in academic achievement are significant, and monetarized by wage premiums at a rate of US\$2,010 per year, which is based on rates of return for education in Belize (Montenegro & Patrinos, 2014) throughout the typical work life of an individual of 42 years²⁶.
- b. Consistent with the framework outlined in Psacharopoulos and Patrinos (2004), repetition and dropout rates among primary and secondary students decreased, increasing the number of students completing their primary education and the number of students transitioning to secondary education by 7,525 over 20 years (Arcia, 2019).²⁷
- c. The implementation of the quality assurance system, including the EMIS which, eliminated the need to conduct an extensive annual data collection exercise implying savings of at least US\$232,000 per year (Arcia, 2019). The immediate access to EMIS data on school and student performance have produced an incentive to maintain managerial support for its continued use. Data on student test scores, and internal efficiency have improved over the course of the program, signaling a positive outlook on its sustainability.

²⁴ Costs were recorded in current dollars of the year the program was implemented.

²⁵ The choice of a 12 percent rate follows the recommended discount rate to be applied to projects as per PCR guidelines 2020.

²⁶ The work life is often assumed 45 years (Montenegro & Patrinos, 2014). Here we consider 42 because the official graduation age is 18 years of age and the retirement age is 60 in Belize.

²⁷ The 20-year span includes the oldest students in Standard 6 that benefited from the program in 2014 to the youngest students in Infant 2 that benefited in 2018. We assume the economic gains due to education are permanent as in Psacharopoulos and Patrinos, (2004). Even if the span is reduced to the cohort of students benefited in the four-year project execution window, the ERR corresponds to that of the conservative scenario.

The costs include all those covered by the project. No other costs are included as no significant changes were imposed on the resources or time of participants. The program rather represented a substitution of previous practices. The sensitivity analysis presents the effects of a conservative, neutral, and an optimistic scenario. The scenarios are based on the uncertainty around the estimation of wage premiums (or returns to education) and temporality of benefits.

Under a Conservative Scenario, Component I account for 96.4 percent of total program benefits, while Component II accounts for the remaining 3.6 percent of the benefits. Approximately 2.6 percent of benefits come from the savings accrued by a reduction of 25% in the rates of repetition and dropout; 93.8 percent come from the increase in lifetime incomes among graduates, resulting from the increased in wages associated with an increase in learning directly produced by the program, and 3.6 percent of the benefits accrue to the reduction in administrative costs brought about by the EMIS. The benefits of the program have a net present value (NPV) of US\$27.8 million (Table 5). There were no significant economic distortions in the education sector that affected project efficiency. Products were mostly used appropriately and there were no implementation delays which affected project efficiency. The accuracy with which education premiums are estimated are dependent on the health of Belize's economy. In the case of a macroeconomic shock affecting future labor markets, is likely the rate of return to education will increase, as the best educated workers are most likely to succeed relative to those with poor education during an economic downturn (Mincer, 1991; Vilorio, 2016; Riddell & Song, 2011). The impact of the coronavirus is still difficult to estimate. Preliminary findings reported by Psacharopoulos, et al (2020) indicate that earning losses from closing schools during the pandemic will be significant. They will also be inequitable, affecting the poor proportionally more than the non-poor because of their lower access to online educational resources (Montoya and Arcia 2020). However, Belize will likely remain as one of the most affordable destinations during times when external demand may be more price conscious. As a result, the rates of return to education may not be affected significantly because of the likelihood of a rebound in the tourism sector. This conservative scenario provides an approximation to the lower limit of the value of benefits.

Under a Middle Scenario the rates of repetition and dropout are reduced by 50 percent. This reduction yields an increase in the number of graduates over the baseline and conservative scenarios, and an increase in total benefits, which total US\$36.2 million. Under an Optimistic Scenario, with a reduction of 75 percent in the rates of repetition and dropouts, total program benefits amount to US\$128.7 million.

Table 5. NPV Benefits Components I and II

Conservative Scenario	US\$	
Savings in recurrent costs by reducing repetition rates	702,917	2.53
Higher income due to increased learning	25,849,661	93.04
EMIS Savings	1,229,981	4.43
TOTAL PROGRAM BENEFITS	27,782,559	
Middle Scenario	US\$	
Savings in recurrent costs by reducing repetition rates	1,405,834	3.89
Higher income due to increased learning	33,430,800	92.47
EMIS Savings	1,317,837	3.65
TOTAL PROGRAM BENEFITS	36,154,471	
Optimist Scenario	US\$	
Savings in recurrent costs by reducing repetition rates	2,108,751	1.64
Higher income due to increased learning	125,194,600	97.27
EMIS Savings	1,405,693	1.09
TOTAL PROGRAM BENEFITS	128,709,043	

Source: Arcia, 2019.

The financial indicators resulting from the above benefits are summarized below

Table 6. Summary of Financial Results by Type of Scenario

Conservative Scenario		Middle Scenario		Optimistic Scenario	
Indicator	Value	Indicator	Value	Indicator	Value
Net Present Value at 12 discount rate (US\$)	1,885,024	Net Present Value at 12 discount rate (US\$)	5,939,145	Net Present Value at 12 discount rate (US\$)	66,968,484
Internal Rate of Return (%)	12.4	Internal Rate of Return (%)	13.1	Internal Rate of Return (%)	17.7
Benefit/Cost ratio	1.52	Benefit/Cost ratio	1.60	Benefit/Cost ratio	2.38

Source: Arcia, 2019.

Avoidance of Cost Overruns. The design was based on activities that could be implemented in parallel, avoiding as much as possible inter-dependencies that could have blocked activities from advancing. In addition, the design included detailed planning of the scope and cost of activities. As a result, the original scope of EQIP remained the same throughout execution, thereby avoiding cost overruns that could have resulted from expanding the number of beneficiary schools.

2.4. Sustainability

a. General Sustainability Aspects

Overview

All interventions were designed to strengthen the capabilities of the education sector to sustain and in some cases enhance the benefits achieved by the project, as measured by the Specific Objectives (SO). All project results have been realized and no significant residual risk remains for

its achievements. The quality of education and the governance of the education sector have been improved. Thus, this section focuses on the ability of the program to produce more results and the risks associated with it.²⁸

SO1. During the execution, in order to strengthen the sustainability of **SO1**, rather than simply have the international experts train teachers, the project invested in the creation of a national training system, which will remain after project completion. Around 80 percent of the country's methods instructors in the Teacher Training Institutes were trained; and a cadre of 32 national teacher coaches were trained as local instructors for teacher professional development. These local professionals will be used for teacher professional development, continuous coaching in the EQIP schools, as well as part of the roll out of the EQIP pedagogical approach to the 50 percent of the country's primary education schools of EQIP II.²⁹ Based on these sustainability efforts, the Project Team estimates that **R1** will be sustained.

SO2. In the same way, rather than simply have the international experts train principals, the experts trained TEI and MOEYSC professionals to deliver leadership training to principals. Through the local model that was created, the project trained 320 school principals and general managers. In addition, the training generated interest among teachers who are aspiring to become principals, leading to their enrollment and participation in the leadership course. This manifestation of interest displays the sustainable nature of the intervention, and the fact that new generations of principals would have been trained by the time they assume their responsibilities. Based on these sustainability efforts, the Project Team estimates that **R2** will be sustained.

SO3. To ensure the sustainability of the EMIS, the project invested in the training of MOEYSC professionals from the central to the school levels, including continuous on the job training over a period of three years from international experts. The implementation of the EMIS was system wide and prompted: (i) the creation of the Belize Education Management Information System Unit (BEMIS) within the Policy and Planning Research and Evaluation Services (PPRE), at the MOEYSC; and (ii) its inclusion in the revised rules of the Education Act, with the purpose of ensuring its use at all levels of the education system. The consultancy that provided international expert support was completed in 2017, but the BEMIS continues to be used for monitoring and planning of the education system, reflecting a high degree of national appropriation and a strong

²⁸ Perhaps the only parameter which remains uncertain is the monetarization of student improvements in learning. Actual premiums to education will be realized when students face the labor market. As discussed in the economic analysis, the estimated premiums are likely to be a lower bound because better educated people tend to fare better relative to those not educated (Riddell and Song 2011; Mincer 1991). The second threat to benefits related to dropout or repetition decreases is low as students retain relative gains throughout their academic life (Psacharopoulos and Patrinos, 2004). A threat to this would be a significant negative shock to the education system, detrimental to learning, which is highly unlikely.

²⁹ In 2019 the Bank approved a new operation, EQIP phase II (BL-L1030), that continues the support to the MOEYSC that began with EQIP, by expanding the benefits of teacher professional development and school management, to the remaining schools.

leadership within PPRE. Based on these sustainability measures, the Project Team believes that **R3** will be sustained over time.

SO4. The project supported the improvement of the profile of teachers' candidates, by elevating the prestige of the profession and by diversifying the pool of teacher training candidates, including male candidates. The campaign had a positive impact on the community, prompting the interest of male candidates to join the body of teachers in Belize for years to come. Based on these sustainability efforts, the Project Team considers that **R4** will be sustained over time.

Other sustainability considerations. In EQIP schools, some 40 percent of school administrators have taken ownership of the parent training program and are continuing the organization of parental meetings although the consultancy support was completed. Regarding the computer hardware purchased and distributed to primary schools through the project, school administrators and district officers were trained in computer trouble shooting and basic maintenance, including the development of a plan for the maintenance for the investment in computers. The size of the operation did not affect the fiscal situation of Belize. The macroeconomic growth was modestly positive (4%) did not affect the execution of the project.

Risks to the Sustainability of EQIP. The sustainability of EQIP hinges on the country's ability to continue to train new teachers that enter the system when current teachers retire or leave the profession for other reasons. Therefore, the program included the training of instructors at the TEIs, charged with training teacher candidates and providing training to in-service teachers. However, if the pre-service instructors leave their positions, the capacity of the TEIs to train pre- and in-service teachers in IPP would be jeopardized. It is recommended that the country continuously provide new TEI instructors with training in IPP, including any related new evidence-based practices; and in-service TEI methods instructors with continuous professional development opportunities. This could be done by contracting international expertise, or by sending TEI instructors to international teacher training colleges. Indeed, the MOEYSC has committed to taking such mitigating actions in its development plan. No unmitigated risks to the continuation of outcomes is likely to be high.

b. Environmental and Social Safeguards

Based on the guidelines of the Environment and Safeguards Compliance Policy (GN-2208), the operation was classified as category "C" as it was not expected to generate any negative environmental and/or social impacts. Neither the MOEYSC nor the Bank have observed any environmental impacts.

3. NON-CORE CRITERIA

3.1. Bank Performance

a. Bank performance in ensuring quality at entry

The Program was the result of extensive sector work performed by the Bank, including:

- i) An assessment of Belize's education system;

- ii) an assessment of teacher content skills;
- iii) a national survey of teacher attitudes and beliefs;
- iv) an assessment of the country's system for teacher training and professional development;
- v) the development of a Belize Teacher Education and Development Strategy 2012-2017;
- vi) an institutional analysis of the education system;
- vii) a pilot evaluation of a new pedagogical approach for teaching mathematics which was scaled through the project;
- viii) a census of textbook and curriculum use in schools;
- ix) a census of information technology use in schools;
- x) a national adaptation of UNESCO's OpenEMIS, including a small pilot of the BEMIS.

This body of sector work helped the Bank identify priority areas for investment in the sector and define the specific lines of activities that were supported by the Program. Most importantly, several lines of action of the Belize Teacher Education and Development Strategy were implemented; the Mathematics pedagogical approach was brought to scale; and recommendations on school accountability were followed through. In addition to the already undertaken sector work, the following technical work was conducted during project preparation and initial implementation: (i) a cost-benefit analysis of the proposed investment; (ii) mapping of business processes to be automated through the EMIS; (iii) development of a Program Operation Manual; (iv) sample design for the on-site professional development and principal training; (v) international project management support to the execution unit: and (vi) through its Office of Institutional Integrity (OI), the Bank conducted a risk assessment of the capacity of the Project Executing Unit. To ensure widespread support for the Program, the MOEYSC, with Bank support, undertook extensive stakeholder consultations with TEIs, primary and secondary education principals, school managing authorities, students, PTAs, and the Belize National Teachers Union.

b. Quality of Bank's supervision

To minimize risks during the execution, the Bank provided continuous support and supervision to the Project Executing Unit (PEU) and the MOEYSC throughout the life of the project, by conducting proactive technical assistance, close involvement in each procurement process, financial planning, and by conducting a minimum of four administration missions per year.³⁰ More specifically, the Bank supported the PEU in the quarterly revision of the PEP, Procurement Plan, Financial Plan, budget, counterpart disbursements and Results Matrix. Furthermore, the Bank supported the PEU and MOEYSC with numerous and periodical training workshops, including procurement and financial workshops, and technical workshops, such as: teacher assessment

³⁰ In terms of the intensity of the support, it was equivalent to 122 weeks, higher than the 11 weeks of BL-L1014; but lower than the 166 weeks so far for BL-L1019, which is scheduled to close in 2020. If the size of the operation is considered, EQIP dedicated 7% of resources for preparation and supervision, compared with 3% so far for BL-L1019 and 10% for BL-L1014.

workshops, evaluation workshops, EMIS workshops, administration and leadership workshops, and participation and school management workshops, among others. This support of the IDB was no doubt valuable in ensuring that the operation was implemented in the projected timeframe.

3.2. Borrower Performance

Notwithstanding challenges faced by the PEU when implementing the loan – including struggles to fill all the required positions in the unit³¹ – the MOEYSC and the PEU showed extraordinary efforts to push through the EQIP program making sure the objectives were achieved as originally conceived. These efforts were not limited to the Ministry of Education but had the instrumental participation of the Ministry of Finance. Ownership of the project was reflected in such efforts throughout the execution. As a result of the frequent struggles to fill PEU positions, the IDB country office and the Project Team continuously aided the PEU as described in section 3.1.

Furthermore, the commitment of the GOB to rigorously monitor and evaluate EQIP is praiseworthy. In the absence of administrative data, primary data was collected to monitor indicators at the school level. As a result, close to 8 percent of program resources were used for monitoring and evaluation, and the GOB ensured that data was collected for both baseline and endline, including the use of additional instruments that were not part of the results matrix, such as the teacher and student mathematics anxiety measures.

Finally, all agreements and requirements set forth by the loan contract were complied with, including timely counterpart funding, monitoring of performance indicators, evaluation plan, and procurement and fiduciary policies. In addition, widespread measures were acted upon to ensure sustainable results, all relevant terms of reference were required to include capacity building measures, through periodical training sessions of MOEYSC officials, teachers and school administrators, among others; and continuous technical support to the MOEYSC in the execution of program components.

4. FINDINGS AND RECOMMENDATIONS

4.1. Technical Sectorial

The project design is relevant and consistent with the Theory of Change (TOC) approved by the Bank. The operation sought to improve the governance of the education system and the quality of education at the primary level, by training TEI instructors who provide teaching methods courses for pre-service and in-service teachers (**SO1**); and primary school principals in instructional leadership and administration (**SO2**). It also sought to improve the governance of Belize's education system by developing and implementing an EMIS at the primary and secondary school levels (**SO3**) and to improve the profile of teacher candidates (**SO4**). The Results Matrix did not suffer any changes during the execution, and all goals were exceeded during the original timeframe.

The evaluation results indicate that EQIP was a successful operation. Among the most relevant outcomes are:

³¹ Most importantly for periods the PEU lacked a financial specialist and at times also lacked a procurement specialist.

- i) **R1** - The quality of teachers improved both in terms of content and pedagogical skills. For example, the percentage of in-service teachers who scores “B” or higher on the standards 6 Primary School Examination (PSE) **increased from 69 to 80 percent**.
- ii) **R2** - The proportion of school supervision reports that are made public on the Ministry of Education Youth Sports and Culture (MOEYSC) website **increased from 0 to 26.48 percent**.
- iii) **R3** - The proportion of teachers in the targeted schools who report that they are not appraised by their principal **decreased from 65.5 to 1.0 percent**.
- iv) **R4** - The Proportion of new male student teacher candidates in Teacher Education Institutes **increased from 19.61 to 22.1 percent**.

In addition, the following results stand out:

- i) Student learning improved. For example, second grade EQIP students scored 0.16 standard deviations higher than other students in mathematics, a difference equivalent to 40% of what an average student learns in an entire academic year. Similarly, EQIP students scored 0.16 standard deviations higher than other students in language arts. This would be equivalent to 9 additional weeks of instruction. In addition, the economic analysis showed that per US\$100 invested, Belize gets 1.4 standard deviations in science learning and 0.8 standard in mathematics learning.
- ii) The instruction among EQIP teachers became more Student Centered, by: using less whole class teaching; more student group work; increased lesson time using manipulative materials to visualize mathematics, conduct science experiments and teach phonemics; and students being more actively engaged in the classroom, among others.
- iii) The EMIS covers 98 percent of all students and teachers, which improves efficiency, facilitates the monitoring of education programs, assists the MOEYSC in the decision-making processes, and manages the allocation and distribution of educational resources, among other. EMIS has allowed the country to go from a paper-based system with student and teacher records available at the school level only, to a cutting-edge system with individual-level student and teacher data available for the entire country, from the local to the central levels of the education system. Promoting community participation in the school and the education of their children by training 1,458 parents.

To measure the impact of EQIP, the design of the operation included: (i) an experimental evaluation of in-service teachers in virtually all of Belize’s primary schools;(ii) a video study of classroom practices; and (iii) an ex-ante and ex-post economic analysis. The Pre-Service Teacher Training, due to decreased enrollment in the TEIs and high levels of teacher candidate drop-out, neither a propensity score matching, nor a difference-in-difference approach was possible. Additionally, the limited sample size limited the statistical power to identify program effects via multi-variate regression analysis (Paredes 2019).

In terms of recommendations for future operations, three factors appear to stand out as being particularly relevant for the successful results achieved through the EQIP:

- i) **Use of an evidence-based approach.** The teacher training used a pedagogical approach that had previously been piloted and found to be effective in the Belize District (BL-T1049). *Recommendation:* Projects that seek to improve the quality of instruction should ideally use an evidence-based pedagogical approach from a similar context.
- ii) **Continuous BEMIS Training.** To ensure that schools, district offices and the central level of the MOEYSC populate and use the BEMIS, continuous training was provided over several years. *Recommendation:* In contexts of limited IT capabilities, the successful introduction of an EMIS requires continuous technical support throughout the education system on everything from how to operate computers to how to plan and supervise based on data.
- iii) **Local Ownership.** The project subcomponents with the smoothest execution had champions within the MOEYSC who took clear ownership of the corresponding activities. *Recommendation:* During the design, it is central to identify the unit and group of officials who will be the owners of each subcomponent.

4.2. Fiduciary

The execution period and budget allocated to EQIP were adequate and consistent to achieve the objectives of the operation. The use of an investment loan was appropriate to allow the GOB to implement the project, while building capacities throughout the education system. The budget for EQIP did not undergo major adjustments or transfers between categories (see Table 7 below). The variations were between -16.07 and 4.12 percent for all components. These changes respond to the natural adjustments that budget projections go through during the procurement processes.

Table 7 Costs of the Project

1 Improving the Quality of Teachers							\$4,426,500.17
Outputs		2015	2016	2017	2018	2019	Cost
1.1 Marketing campaign strategy to attract teacher candidates developed and implemented	P	\$111,750.00	\$544,100.00	\$380,050.00	\$400,100.00	\$65,000.00	\$1,501,000.00
	P(a)	\$111,750.00	\$368,758.00	\$240,431.00	\$375,450.00	\$65,000.00	\$984,639.00
	A	\$0.00	\$368,758.00	\$240,431.00	\$310,450.00	\$65,000.00	\$984,639.00
1.2 # of teacher trainers who teach methods courses in science, math and language arts and administrative TEI staff trained.	P	\$59,500.00	\$59,500.00	\$59,500.00	\$208,250.00	\$208,250.00	\$595,000.00
	P(a)	\$59,500.00	\$59,500.00	\$167,750.00	\$208,250.00		\$595,000.00
	A	\$59,500.00	\$159,500.00	\$167,750.00	\$208,250.00	\$0.00	\$595,000.00
1.3 # of teachers trained	P	\$262,087.13	\$106,782.46	\$410,033.85	\$970,649.83	\$545,992.79	\$2,295,546.06
	P(a)	\$262,087.13	\$672,799.00	\$352,998.17	\$336,165.00		\$1,846,861.17
	A	\$684,899.00	\$472,799.00	\$352,998.17	\$336,165.00	\$0.00	\$1,846,861.17
1.4 # of boys benefiting from trained teachers at the primary level.	P						\$0.00
	P(a)			\$200,000.00	\$200,000.00		\$500,000.00
	A	\$0.00	\$100,000.00	\$200,000.00	\$200,000.00	\$0.00	\$500,000.00
1.5 # of girls benefiting from trained teachers at the primary level.	P						\$0.00
	P(a)			\$200,000.00	\$200,000.00		\$500,000.00
	A	\$0.00	\$100,000.00	\$200,000.00	\$200,000.00	\$0.00	\$500,000.00

2 Governance of the Education System							\$3,715,914.75
Outputs		2015	2016	2017	2018	2019	Cost
2.1 # of primary school Principals, General and Local Managers, and Education Officers trained in school administration and educational leadership.	P	\$0.00	\$773,575.00	\$655,455.00	\$833,780.00	\$133,140.00	\$2,395,950.00
	P(a)	\$0.00	\$0.00	\$660,437.53	\$660,437.53		\$1,320,875.06
	A	\$0.00	\$0.00	\$660,437.53	\$660,437.52	\$0.00	\$1,320,875.05
2.2 # of parents trained to increase their participation in school management.	P	\$0.00	\$219,541.66	\$50,583.33	\$101,166.67	\$219,541.66	\$590,833.34
	P(a)	\$0.00	\$0.00	\$400,000.00	\$190,833.34		\$590,833.34
	A	\$0.00	\$0.00	\$400,000.00	\$190,833.34	\$0.00	\$590,833.34
2.3 Integrated Education Management Information System (EMIS) in operation	P	\$403,059.06	\$124,971.11	\$21,383.30	\$41,657.06		\$591,070.60
	P(a)	\$403,059.06	\$902,103.18	\$0.00	\$882,103.17		\$1,804,206.35
	A	\$0.00	\$902,103.18	\$20,000.00	\$882,103.13	\$0.00	\$1,804,206.31
							Component Revised Cost
3 Evaluation							\$677,000.00
Outputs		2015	2016	2017	2018	2019	Cost
3.1 Randomized control trial of the on-site practical professional development in primary schools implemented.	P	\$0.00	\$0.00	\$261,662.80	\$261,662.80	\$224,282.40	\$747,608.00
	P(a)	\$0.00	\$332,600.00	\$0.00	\$232,600.00		\$677,000.00
	A	\$11,800.00	\$332,600.00	\$100,000.00	\$261,923.05	\$0.00	\$706,323.05

Other Cost		2015	2016	2017	2018	2019	Cost
Executing Unit/Project Execution Support	P	\$169,324.00	\$169,323.00	\$169,323.00	\$169,323.00	\$105,075.00	\$782,368.00
	P(a)	\$169,324.00	\$169,323.00	\$169,323.00	\$169,323.00	\$368,885.22	\$1,088,763.43
	A	\$122,110.2	\$288,444.95	\$169,323.00	\$140,000.00	\$339,562.22	\$1,059,440.43
Midterm and Final Review, including ex-post economic analysis	P	\$0.00	\$0.00	\$18,000.00	\$0.00	\$42,000.00	\$60,000.00
	P(a)	\$0.00	\$0.00	\$38,000.00	\$0.00	\$62,000.00	\$100,000.00
	A	\$0.00	\$0.00	\$38,000.00	\$0.00	\$62,000.00	\$100,000.00
Audit	P	\$25,000.00	\$25,000.00	\$25,000.00	\$25,000.00	\$25,000.00	\$125,000.00
	P(a)	\$25,000.00	\$14,312.88	\$14,312.88	\$14,312.88	\$25,000.00	\$91,821.65
	A	\$14,312.88	\$23,883.01	\$14,312.88	\$14,312.88	\$25,000.00	\$91,821.65
Contingency	P	\$0.00	\$0.00	\$0.00	\$0.00	\$415,624.00	\$415,624.00
	P(a)	\$0.00	\$0.00	\$0.00	\$0.00		\$0.00
	A	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total Cost		2015	2016	2017	2018	2019	Total Cost
	P	\$1,030,720.15	\$2,022,793.30	\$2,050,991.28	\$3,011,589.36	\$1,983,905.87	\$10,100,000.00
	P(a)	\$1,030,720.15	\$2,519,396.06	\$2,443,252.58	\$3,469,474.92	\$520,885.22	\$10,100,000.00
	A	\$892,622.14	\$2,748,088.14	\$2,563,252.58	\$3,404,474.92	\$491,562.22	\$10,100,000.00

Note: The costs include both IDB and Local Counterpart amounts and must be consistent with the information presented in the last PMR report. If there is any inconsistency. The table is extracted from the IDB Convergence system for project management, where: P is the originally Planned budget; P(a) is the planned budget at the start of each year; and A is the actual budget.

4.3. Organizational and managerial

To ensure a positive experience in the administration of the EQIP, the project team conducted extensive work together with the counterpart. Among others the team conducted capacity assessments, stakeholder consultations, surveys, institutional analysis, risk assessments, censuses, and a pilot evaluation to test a new pedagogical approach for teaching mathematics. Furthermore, to ensure widespread support for the project, the MOEYSC, with Bank support, undertook extensive stakeholder consultations with TEIs, primary and secondary education principals, school managing authorities, students, PTAs, and the Belize National Teachers Union. Despite these efforts, at the time of closing of the operation, some stakeholders expressed, the need to reinforce even more the consultative approach during the loan design stage, including: (i) intensifying the contacts with stakeholders throughout the education system, keeping them updated on the developments of the loan throughout the execution; (ii) enhance technical support to the MOEYSC units tasked with the supervision of large consultancies to keep them on top of what is expected; (iii) establish protocols to terminate potential non-performing contracts at an early stage; and (iv) introduce measures to ensure timely technical feedback to consultants to enhance efficiency and effectiveness in the process.

Table 8
Findings and Recommendations

Findings	Recommendations
Technical-sectorial	
The teacher training used a pedagogical approach that had previously been piloted and found to be effective in the Belize District.	<i>Recommendation # 1:</i> Projects that seek to improve the quality of instruction should ideally use an evidence-based pedagogical approach.
The teacher training quickly translated into learning gains for students. At the design stage this was not anticipated to happen so quickly, which is why no indicator on student test scores was included in the results matrix.	<i>Recommendation # 2.</i> For this type of intense teacher training projects, it is recommended to include an impact indicator in the Results Matrix to assess the students' learning gains.
To ensure that schools, district offices and the central level of the MOEYSC populate and use the Education Management Information Systems (EMIS), continuous training was provided over several years.	<i>Recommendation # 3.</i> In contexts of limited IT capabilities, the successful introduction of an EMIS requires continuous technical support throughout the education system on everything from how to operate computers to how to plan and supervise based on data.
A quasi-experimental design could not be done when evaluating the PSTT, due to decreased enrollment in the TEIs and high levels of teacher candidate drop-out.	<i>Recommendation # 4.</i> Quasi-experimental designs are challenging. Yet, in cases when an experimental design is not feasible, it is preferable to initially aim for a quasi-experimental design rather than have a before-and-after evaluation as the default. If it turns out to not be doable, you can always do a simpler design during execution as in the case of the TEI evaluation.
Fiduciary	
The execution period and budget allocated to EQIP were adequate and consistent to achieve the objectives of the operation.	<i>Recommendation # 5.</i> It is recommended that IDB teams provide hands-on assistance and training on an ongoing basis whenever the counterparts require.
The Office of Institutional Integrity (OII) carried out a risk assessment as part of the design, recommending minimizing the number of procurement processes. Based on this recommendation, procurement activities were streamlined into fewer contracts for key activities, which helped ensure timely execution.	<i>Recommendation # 6:</i> When the capacity of the executing agency is weak, it is recommended to streamline procurement activities by concentrating the main project activities in a few large contracts.

The school management and parental training initiated after the professional development, resulting in lack of support from principals.	Recommendation # 7. To ensure support from the school community for the IPP approach, it is recommended to implement teacher professional development and school management training activities concurrently
Organizational and managerial	
EQIP was a large operation for such a small PEU, which led to delays in some administrative processes. Moreover, the MOEYSC technical units are understaffed, which caused delays in the review of consultancy reports.	Recommendation # 8. It is recommended that the PEU be reinforced with: <ul style="list-style-type: none"> i) Additional technical support for the supervision of large consultancies, including a dedicated monitoring specialist; ii) The establishment of protocols to terminate non-performing contracts at an early stage to avoid dragging the execution unnecessarily; and iii) The implementation of measures to ensure timely technical feedback to consultants to enhance efficiency and effectiveness in the process.
The project subcomponents with the smoothest execution had champions within the MOEYSC who took clear ownership of the corresponding activities.	Recommendation # 9. During the design, it is central to identify the unit and group of officials within the line ministry that will be the owners of each subcomponent.
Impact Evaluation	
Although the national curriculum goals aspire for students to develop problem-solving and critical thinking skills, the national learning exam measures largely if students have memorized content. A test instrument was validated in Belize for the measurement of students' problem-solving and critical thing skills.	Recommendation # 10. Rather than simply by default using the national standardized test for the impact evaluation, it is recommended to ensure that the test used truly measures the skills reflected in national curriculum goals.