Project Report

The International Baccalaureate Diploma Programme in Mexico as Preparation for Higher Education

Anna Rosefsky Saavedra, The RAND Corporation
Elisa Lavore, Instituto Tecnológico Autónomo de México
Georgina Flores, Facultad Latinoamericana de Ciencias Sociales-México

RAND Education

PR-351-IBO
March 2013
Prepared for the International Baccalaureate Organization

NOT CLEARED FOR OPEN PUBLICATION

Preface

In this report, we examine the relationship between Mexican students' enrollment in the International Baccalaureate (IB) Diploma Programme (DP) and their college preparedness at four Mexican case study schools. As is the case in the United States and many other countries worldwide, Mexico has been experiencing strong growth in IB implementation since 2000. The number of Mexican schools that offer IB programs doubled from 2000 to 2004 and more than doubled again from 2004-2012 such that today over 90 Mexican schools offer IB. Yet while there is a growing body of research on the relationship between IB DP enrollment and preparedness for higher education in the U.S., UK and Australian settings, there is currently very little research on the IB DP in Mexico or in other Latin American countries. This lack of research puts Mexican IB schools—and Latin American IB schools more generally—at a disadvantage as they seek to grow, develop, improve their educational offerings and demonstrate to universities the preparatory value of an IB DP education. It is also a missed opportunity for Mexican state and national governments that could apply lessons learned from the IB DP to the improvement of the academic upper secondary education system, as well as weigh the option of future public investments in the IB program. The lack of research on the IB DP in Mexico motivates the current RAND study.

This report should be of interest to education policymakers and practitioners in Mexico, both those who work directly with the IB DP and those who work more broadly in upper-secondary education. It should also be of interest to IB Organization staff and others who are involved in IB programs in countries beyond Mexico.

The research for this study was conducted within the Education Unit of the RAND Corporation. For more information about the RAND Education Unit, see http://www.rand.org/topics/education-and-the-arts.html or contact the Unit Director (contact information is provided on the web page). The International Baccalaureate Organization contracted with the RAND Education Unit to conduct the research presented in this report.

TABLE OF CONTENTS

Executive Summary

Originally founded as a private means for diplomats' children to earn an internationally recognized high-school diploma, today the International Baccalaureate (IB) Diploma Programme (DP) serves students from a variety of backgrounds in 144 countries. The IB DP is one of the fastest growing education innovations in schools worldwide. In schools that offer the DP that are authorized as "IB World Schools" by the IB Organization (IBO), teachers use standardized IB curriculum and pedagogy to teach a range of courses and to offer other activities that are intended to prepare IB-enrolled students for college and global citizenship. In this study, in the Mexican context, we analyze the relationship between students' enrollment in the IB DP and their college preparedness using a case study methodology. In four Mexican schools that offer the IB DP, we interviewed school and IB DP administrators, IB DP teachers and IB DP students to learn their perspectives on how and the extent to which the IB DP prepares students for college. We also researched admissions processes at the twelve universities that we found to be frequently attended by Mexican IB students and/or that offer some form of credit for IB DP participation. To supplement our qualitative understanding of the relationship between students' performance in the IB DP and their postsecondary preparedness, we also matched schools' data on students' grades and college enrollment to IBO data on students' IB subject matter and overall examination scores.

We found that from the schools that tend to offer the IB DP in Mexico, most IB students are fairly successful in their college applications, such that the majority enrolls at among the most well regarded post-secondary institutions in Mexico. The possibility that IB DP grades and/or examination records might help boost students' college admissions options does not seem to be a primary motivating factor for students' IB DP enrollment. Many Mexican universities rely primarily on university-specific examinations—that are not particularly well aligned to the IB DP curriculum—to determine admissions. Among those universities that also consider grade point averages among admissions criteria, most do not give extra weight to grades from the IB DP, which tends to be more demanding than other tracks. Finally, most Mexican universities do not grant credit for successful completion of IB DP requirements. Given typical admission criteria and lack of credit for IB credentials, few IB students and teachers view the IB DP as providing an admissions advantage over non-IB tracks offered in the same school (i.e. *Prepa, CCH,* etc.).

Rather, we found that students enroll in the IB DP because they think it will help prepare them to successfully handle college-level work. Students and educators believe that various aspects of the IB DP prepare them for college-level work, including the Theory of Knowledge course, the Extended Essay and the Creativity, Action and Service

program. They also consider higher-level IB DP courses to be especially good preparation for college coursework, though some students feel limited by the selection of standard and higher-level courses offered at their school. We also found that many IB DP students want to study abroad and think that the IB DP prepares them for international study. However, only a small percentage of the Mexican IB DP students in our sample actually enrolled directly into a non-Mexican university after graduation from high school. Finally, though not an intended part of our research plan, we found that several IB teachers in our sample desire greater quantity and relevance of IB professional development.

A summary of the implications of the findings and corresponding recommendations is as follows:

<u>For the IBO and Mexican IB schools:</u>

1) In partnership with AMEXCAOBI, it would be beneficial for the IBO to continue policy conversations with:
   a. Mexican universities regarding acceptance of IB DP credit.
   b. Mexican upper-secondary public education policymakers regarding expansion of the IB DP into state schools.
2) The IBO could help low-income students to navigate the admissions and financial aid processes, either directly through student workshops or webinars or through specific training and professional development for teachers on these topics. These sorts of scaffolding processes geared specifically for low-income students will likely be useful in Mexico as well as in other countries—including the U.S.—that are seeking to enroll greater numbers of low-income students.
3) There will be value in studying IB DP adoption and implementation in Nuevo Leon to learn lessons that could facilitate broader public school adoption and implementation throughout Mexico and potentially in other countries. Teacher training and professional development, for example, is likely to be a meaningful challenge and it will be useful to learn how the Nuevo Leon public schools respond to the challenge.
4) IBO partnerships with continuing education providers and/or *PROFORDEMS* could be a viable way for the IBO to begin to ensure that public school IB teachers receive the training they need.
5) One way to address a potential mismatch between IB DP training materials and Mexican IB DP teachers' training preferences would be for the IBO to modify the content to meet Mexican teachers' needs. There may also be ways for the IBO to encourage greater online training participation, among Mexican teachers and perhaps among teachers in other countries as well.

For academic upper-secondary education in Mexico:

1) Given that lack of satisfaction with other options motivated the majority of the students we interviewed for this study to enroll in the IB DP, there may be value in developing a new academic honors curriculum, to replace and/or supplement CCH and Prepa. This could be accomplished by:
    a. Expanding the IB DP to more university-hosted schools and to state schools, and/or
    b. Drawing from some of the most useful features of the IB DP—including the IB Learner Profile, the experience of learning how to seek, choose and cite sources from beyond classroom walls, cumulative curriculum and the CAS program—as a means of increasing the rigor of existing Mexican academic options.
2) There may be value in upper-secondary policy makers working in partnership with university admissions officials to alter current university admissions examinations and processes so that they better measure students' preparedness for college work. This would be a major undertaking, but might ultimately better align admissions process with academic upper-secondary competency-based curriculum and with the expectations of college coursework.
3) To accomplish recommendations #1 and #2, Mexican upper-secondary policy makers and university leaders might initiate strategic partnerships with IBO leadership and staff, as well as AMEXCAOBI members.

Introduction

Originally founded as a private means for diplomats' children to earn an internationally recognized high-school diploma, today the International Baccalaureate (IB) Diploma Programme (DP) serves students from a variety of backgrounds in 144 countries. The IB DP is one of the fastest growing education innovations in schools worldwide. In schools that are authorized to offer the DP by the IB Organization (IBO), teachers use standardized IB curriculum and pedagogy to teach a range of courses and to offer other activities that are intended to prepare IB-enrolled students for college and global citizenship.

In this study, in the Mexican context, we analyze the relationship between students' enrollment in the IB DP and their college preparedness using a case study methodology. In four Mexican schools that offer the IB DP, we interviewed school and IB DP administrators, IB DP teachers and IB DP students to learn their perspectives on how and the extent to which the IB DP prepares students for college. We also researched admissions processes at the twelve universities that we found to be frequently attended by Mexican IB students and/or that offer some form of credit for IB DP participation. To supplement our qualitative understanding of the relationship between students' performance in the IB DP and their postsecondary preparedness, we also matched schools' data on students' grades and college enrollment to IBO data on students' IB subject matter and overall examination scores.

The Mexican Upper Secondary Educational Setting

In the Mexican education system, primary and lower-secondary education includes grades kindergarten through nine. Upper secondary is a compulsory three-year system for students who are typically aged 16-18. There are three types of upper secondary programs: general (*bachillerato*)—which includes the IB DP, technological and technical professional education. Once students start in a given track, historically they have not been permitted to switch tracks. In 2012, however, the Mexican education ministry adopted a series of upper secondary reforms that attempt to unify the three upper-secondary tracks and provide students with more flexible ways to persist through upper secondary to graduation. The implementation of this reform is an ongoing process.

In contrast to most education systems worldwide, in Mexico, universities constitute a significant proportion, 15 percent, of general upper secondary education options. Students who attend university high schools are then guaranteed post-secondary admission into that university. Private schools provide just over 20 percent of upper

secondary options (World Bank, 2010). As of March 2013, six university-hosted schools (10 percent of all IB DP-providing Mexican upper secondary schools), 1 state-sponsored school and 53 private schools offer the Mexican IB DP, such that over 90 percent of IB DP-offering institutions are private.[1]

Mexico is one of the 34 member countries of the Organisation for Economic Co-operation and Development (OECD), a group composed of the strongest economies in the world. However, the education level of the Mexican workforce, measured in quantity in terms of years of attainment and in quality in terms of performance on the OECD's Program for International Student Assessment (PISA), is among the lowest in the OECD (World Bank, 2010). While Mexican enrollment in basic education is compulsory and near universal, just under half of the children who started school in 2010 are expected to graduate from the upper secondary level. This is the lowest secondary graduation rate among OECD countries, in which, on average, approximately 85 percent are expected to graduate (OECD, 2012). In a similarly low statistic, as of 2012, only 54 percent of 15-19 year-olds in Mexico are enrolled in upper secondary education. While that figure is 12 percentage points higher than it was in 2000, it is low compared to the Brazilian and Chilean averages of approximately 75 percent and the OECD average of just over 80 percent (OECD, 2012, 4). Many students, particularly those living in poverty, drop out before upper secondary completion because they undervalue the long-term labor market benefits of those additional years of education (World Bank, 2010). The Mexican government seeks to improve these attainment rates. Namely, the 2012 education reforms that make the upper-secondary tracks more flexible also make upper secondary education compulsory beginning with the 2012-2013 academic year. This reform is expected to result in universal enrollment by 2022 (OECD, 2012, 5).

Mexican results on the OECD's PISA examination point to education quality deficiencies as well. On the 2009 PISA, Mexico 15 year olds scored lowest among OECD countries on the reading and science assessments and second lowest on mathematics (OECD, 2011a). The Mexican assessment Evaluación Nacional del Logro Académico en Centros Escolares (ENLACE) corroborates Mexican students' poor performance on the international PISA examination. The results of the 2008 ENLACE showed that 45 percent of students in their last year of upper secondary studies failed the ENLACE mathematics test and a further 36 percent only achieved the minimum passing score; only 15 percent scored as "good" or "excellent" (OECD, 2011b).

Given a global economic environment that has been transformed by globalization and technology, evolution from a "low-cost labor-based economy to a knowledge-based

[1] IB also offers options for younger students through the Primary Years Programme (PYP) and Middle Years Programme (MYP). As of March 2013, in total 94 IB World Schools offer one of the three programmes in Mexico, 60 of which offer the DP (and in some cases, the PYP and/or MYP as well).

economy that exploits the new global economic environment" (World Bank, 2010, 7) demands workers with upper secondary education who are prepared to enter higher education. This demand calls for students with greater attainment and academic performance. Given deficiencies in the access and quality of Mexican upper-secondary education, it is critical for Mexico both to increase participation and improve the quality and relevance of its upper secondary education system.

To address the needs to expand coverage and improve labor-market relevance, in 2007, Mexico created *Sistema Nacional de Bachillerato* (SNB) a transparent, standards- and competency-based system designed to demonstrate to students and prospective employers the skills obtained through upper secondary (World Bank, 2010, 8). For IB World Schools, with the exception of university-hosted IB DPs, implementation of the SNB means that students must study the national curriculum and take national exams in addition to the IB DP curriculum and exams.[2] The national curriculum tracks are known as *La Prepa Nacional* and *Colegio de Ciencias y Humanidades* (CCH). IB DP students typically enroll in one of these tracks in their first of three years of upper-secondary studies, followed by two years in the DP. Non-university-hosted upper secondary students who do not enroll in the IB DP typically enroll in one of these national programs for the full three years of upper-secondary study. University-hosted schools that offer the IB DP also offer alternative non-IB tracks.

Given the major expansion of competency-based upper secondary coverage in Mexico planned for the upcoming decade and the urgent need to improve its quality, it is valuable to understand how the competency-based IB DP functions in the Mexican setting. Findings about whether and how the IB DP prepares students in the Mexican setting could be distilled into a set of principles that would be relevant to efforts to strengthen schools within the broader Mexican upper secondary system. Results could also inform educators and policymakers who might consider expanding IB DP opportunities to larger and/or more diverse student audiences.

The International Baccalaureate Diploma Programme

The IB school-level authorization process and subsequent requirements for students and teachers are rigorous (Byrd, Ellington, Gross, Jago, & Stern, 2007; Mathews & Hill, 2005; U.S. Department of Education, 2011, 29). To earn DP authorization from the IBO, schools must demonstrate adherence to IBO's curricular, pedagogical, mission-based and

[2] University-provided IB DPs are typically exempted from the national requirements, as Mexican universities enjoy a fairly high level of independence from the authority of the Mexican education ministry. Further, though according to Mexican education law all Mexican upper-secondary providing schools must adhere to SNB requirements, implementation of the SNB still may not yet be complete in all academic schools.

ongoing professional-development requirements as stated in the most current version of the "Handbook of procedures for the Diploma Program" (IBO, 2012a). Typically, the IB accreditation process requires extensive faculty and staff participation, takes several years to complete and, if successful, results in authorized "IB World School" status. IB World-School DP teachers must use IB curricular and pedagogical materials to teach IB courses, and participate in ongoing professional development and self-review processes.

Students enroll in the official IB DP in eleventh grade in the U.S. and in their second of three years of upper secondary studies in Mexico. Over the course of their IB DP enrollment, to be eligible to earn the IB Diploma, students must: successfully complete six core IB courses and the IB *Theory of Knowledge* (TOK) epistemology course; participate in the weekly *Creativity, Action and Service* (CAS) requirement; and write a 4,000-word *Extended Essay*. They must also score above defined thresholds on IBO-created and administered examinations in six subjects including languages, social studies, experimental sciences and mathematics. 9,000 IB-certified examiners, in 121 countries worldwide, score the examinations (IBO, 2009).

In just under two decades, the number of U.S. schools that implement IB programs has increased tenfold, from 133 in 1994 to 1,314 in 2012. In the U.S. setting, this growth in IB implementation is based predominantly on the program's perceived academic rigor and success as a college-preparatory intervention (Byrd et al, 2007; Cech, 2008; Mathews & Hill, 2005).

In Mexico, the IB growth trajectory has been even steeper. The first five Mexican schools began to offer the IB DP in the 1980s and today Mexican schools offer the IB program in over 90 schools. As of 2012, over a third of IB-offering schools are located in Mexico City, followed by fourteen and six respectively in the states of Nuevo Leon and Estado de Mexico and five each in Queretaro, Puebla and Morelos. The balance of the schools is located in fifteen other Mexican states (IBO, 2012b).

There are several plausible—albeit as of yet empirically unsubstantiated—reasons for the growth in Mexico. Some school leaders may see a need to provide students with curriculum and pedagogy that will prepare them for future education, work, life and citizenship in the 21st century and believe that the IB DP is a successful means to that end. Other school leaders may be fulfilling IB World School requirements because they see that many of the schools with the strongest reputations in Mexico offer IB programs and they want to be part of the group. Still others may believe that IB World School status sends an attractive marketing signal to potential student applicants and their parents. Finally, among elite educational circles, parents and students could believe that IB DP enrollment might help students' chances of acceptance in foreign universities. Perhaps a combination of these rationales might best describe reasons for IB World School growth in Mexico, though further research is necessary to confirm these motivations.

Virtually since its inception the IBO has claimed that participation in the IB DP prepares students to succeed in higher education (IBO, 2008, 3). A number of studies, including those commissioned by the IBO and those conducted independently, address the relationship between the IB DP and students' preparedness for higher education and the vast majority demonstrate strong relationships between IB DP enrollment and higher education success. For example, compared to non-IB students and controlling for prior achievement and socio-economic background, U.S.-based studies have found that IB students are more academically, behaviorally and emotionally engaged (IBO, 2010a), more likely to attend more selective and four-year colleges (Caspary, 2011; Coca, Johnson, Kelley-Temple, Roderick, Moeller, Williams & Moragne, 2012) and are more likely to earn higher college GPAs and graduate from college at higher rates (IBO, 2010b). U.S.-based studies also report that the IB DP helps students to excel in their college coursework (Coca et al, 2011; Culross & Tarver, 2008). At the University of Florida, the U.S. institution that requests the greatest number of IB DP transcripts from the IBO, researchers found a positive association between students' scores on a given IB subject exam and their first year college grades in that subject (Caspary & Bland, 2011). In addition to these associational studies, one U.S.-based study uses a quantitative approach that permits causal attribution and finds that IB DP enrollment increases students' probability of high school graduation and college enrollment (Saavedra, forthcoming).

Also in the U.S. setting, a study that compared IB DP curricular standards to U.S.'s Knowledge and Skills for University Success (KSUS) standards demonstrated high alignment between the two. According to this study, students who master the IB DP curriculum should enter college with the knowledge and skills—including critical thinking, intellectual inquisitiveness and interpretation—known to promote success in entry-level courses (Conley & Ward, 2009). A number of U.S-based studies support this supposition.

Research in the United Kingdom has similarly upheld the IBO's longstanding assertion the IB DP prepares students for higher education success. For example, in a 2011 study, the U.K.-based Higher Education Statistics Agency reported that compared to A-level honors students, DP students are more likely to enroll at a top-20 higher education institution, achieve top honors by subject, be employed in higher-paid occupations and go onto further graduate study (Higher Education Statistics Agency, 2011).

In 2003, the IBO commissioned an international study—known as the School-University Transition Project—of IB students' university preparedness. The authors defined "university preparedness" to include skills related to1) the cognitive domain, 2)

the affective domain, 3) studying and 4) IB Learner Profile qualities (IBO, 2008a).[3] In a total of nine universities—located in Argentina, Australia, Canada, Italy, Japan, Lebanon, Peru and the U.S. (University of Florida and University of Washington)—researchers surveyed students within the same academic department who had and had not participated in the IB DP during high school to determine any differences between groups in the four areas. Researchers supplemented the survey analysis results with administrative data on persistence, degree course grades and overall grade point averages. The main finding of the study was that on more than half of the survey questions on the four domains, compared to non-IB, IB students were stronger in their assertions that their final two years of secondary study prepared them well for university study (IBO, 2008a).

Other research in the Australian, New Zealand, U.K. and U.S. settings has investigated university professors' and administrators' perceptions of IB DP-prepared students. This body of research also suggests that the IB DP provides students with the cognitive, affective and skill-based resources necessary for post-secondary success. For example, in Australia and New Zealand, Coates et al (2007) found that most university professors believe that the IB DP has no specific weaknesses, that it enhances students' capabilities and that it should be widely adopted. However, professors also expressed lack of awareness of the IB DP (6). In the UK, researchers surveyed university pro-vice chancellors on the IB DP's depth, rigor, breadth, core elements (Theory of Knowledge, extended essay, CAS, etc.), "the whole IB DP package," skills and assessments. On average, the pro-chancellors responded that they perceived no discernible difference in depth and rigor between the IB DP and A-level curriculum, though most thought the IB DP's breadth is more advantageous. In terms of the whole IB package in comparison to the whole A-levels package, about 60 percent felt IB DP had an advantage over A-levels. The pro-chancellors also indicated their sentiment that IB DP students graduate from their secondary studies with more of the skills necessary for advanced studies than do otherwise comparable non-IB student (Jenkins, 2003). In the U.S. setting, Culross and Tarver (2008) surveyed university admissions officers, asking about their perceptions of the "IB DP curriculum, numbers of IB applicants and admissions, credit awarded for DP performance and targeted recruitment of IB students" (238). They found that with only one exception, all sampled universities awarded credit for IB DP final exams. The admissions officers perceived IB curriculum as rigorous, prestigious and challenging and good preparation for university work. All of the universities have seen an increase in IB applicants in recent years and the most selective institutions report actively recruiting students who have earned the IB Diploma (Culross & Tarver, 2008, 242).

[3] According to the IB Learner Profile, "IB learners strive to be: Inquirers, Knowledgeable, Thinkers, Communicators, Principled, Open-Minded, Caring, Risk-takers, Balanced, Reflective" (IBO, 2008, 7). We discuss the IB Learner Profile in greater depth on page 39 of this report.

Yet while there is a growing body of research on the relationship between IB DP enrollment and preparedness for higher education in the U.S., UK and Australian settings, there is currently very little research on the IB DP program in Mexico or in other Latin American countries. A search of the word "Mexico" in the IBO's Education Research Database returns just 10 journal or magazine articles published post 2000. Topics include the IB and globalization, bilingualism and the CAS program. None of the studies address the relationship between IB enrollment and Mexican students' postsecondary outcomes, arguably the most pressing topic to Mexican educators and policymakers. Similarly, English and Spanish searches of the Academic Source Complete, ERIC and Education Abstracts databases using the keywords "International Baccalaureate" and "Mexico" retrieve just one study about analysis of literary texts in two Mexican schools. Searches of "International Baccalaureate" and other individual Latin American countries do not return any sources.

This lack of research puts Mexican IB schools—and Latin American IB schools more generally—at a disadvantage as they continue to grow, develop, improve their educational offerings and demonstrate to universities the preparatory value of an IB DP education. It is also a missed opportunity for Mexican state and national governments that could apply lessons learned from the IB DP to the improvement of the academic upper secondary education system, as well as weigh the option of future public investments in the IB program. The lack of research on the IB DP in Mexico motivates the current study.

Research Questions

Currently, Mexican policy makers, administrators, teachers, parents and students lack credible research on the relationship between enrollment in the IB DP in upper secondary education and students' college preparedness. Such evidence could inform decisions about future public and private investments in the IB DP in Mexican schools. Our research questions therefore focus on the relationship between Mexican IB DP enrollment and students' secondary and postsecondary outcomes:

1) Who are Mexican IB DP students?

2) What are Mexican IB DP students' postsecondary destinations? How do these findings compare to those of non-IB students attending the same school who enroll in other programs (i.e., *Prepa Nacional, CCH,* other tracks)?

3) What is the nature of the relationship between Mexican IB DP students' upper-secondary performance and postsecondary admissions? How do these findings compare to those of non-IB students who attend the same school and who enroll in other programs?

4) What are IB DP students', teachers' and administrators' perceptions of the key components of the IB DP as means of college preparation? How do these findings compare to the perceptions of programmatic requirements of other tracks offered at the same school as means of college preparation?

5) Do the answers to the first three questions differ by whether IB programs are offered in private secondary or university-based schools?

In the following sections, we first contextualize the IB DP in the Mexican secondary education context and provide background on the IB DP as a means of preparation for college. We then present our research questions, analytic methods and results. Finally we discuss the findings and implications for IB in Mexico and for Mexican academic upper-secondary education and conclude.

Analytic Approach and Research Design

Sample

Of 91 Mexican IB World Schools, 60 offer the IB DP, while the others offer IB Primary and Middle Years programmes for younger students. Of the 60 schools that offer the DP, virtually all are private upper-secondary (or begin in earlier grades) or university-based.[4] We therefore chose our sample of four case study schools to include a mix of university-based and private secondary schools. Like many IB World Schools, our four case study schools offer the IB DP in addition to other upper-secondary tracks. Our sampling strategy was to pick cases that could illuminate "typical" Mexican IB DPs and that would facilitate comparisons between private and university-based programs (Miles & Hubermann, 1994, 28). We selected the case study schools in consultation with the IBO.

All schools are located in urban settings and serve students whose families have some capacity to pay tuition. Both private institutions serve primarily middle and upper middle class Mexican students, though one of the schools also offers scholarships to non-IB DP track students with fewer economic resources. Similarly, one of the university-based programs serves predominantly middle and upper middle class students—with a significant proportion receiving some type of financial aid—and the other serves students from fairly wealthy families.

All of the schools offer the IB DP as one of two or more possible upper-secondary tracks and in all IB students comprise a minority of the overall upper-secondary school population. Also in all four schools, the majority of IB students participate in the IB DP as diploma candidates rather than taking IB courses in a more ad-hoc fashion.

Once we had selected the schools, the IBO sent an initial letter of introduction and support for the study. We then followed up with a letter that explained some of the project details, highlighted schools' and participants' rights as research subjects, and requested a phone conversation with the IB Coordinator and/or school head.

Selection of IB teachers and students was necessarily left to the IB coordinators, because we did not have teacher or student contact information, nor were we in a position to choose and organize interview and focus group subjects without the support of the IB Coordinators. Our written selection requests, which we reinforced verbally, included that the selected teachers represent a mix of experience, subject matter and IB DP activity responsibility. Across schools, within the IB DP, Mexican IB teachers typically take on

[4] Only one is a true state-run school. We did not include it in the sample because it is located in a region of Mexico that is currently under a travel advisory.

various roles. For example, a teacher might teach science courses and advise the Extended Essay or teach English courses and direct the CAS program or teach mathematics and help students to manage their college applications. Therefore in most schools, there was only a limited choice of teaching staff who would logically participate in the study. We also requested to IB coordinators that selected students represent a range of level of success and effort.

Finally, we researched twelve universities' websites to learn about their requirements for admission and the characteristics they seek in prospective students. We chose these twelve universities because they are a) described on the IBO website as institutions that offer credit for earning the IB Diploma *and* are universities that IB students are likely to attend and/or b) are among the most highly attended universities among students in our sample. The twelve universities include:

- Autonomous Technological Institute of Mexico (ITAM)
- Iberoamerican University (UIA)
- Anahuac University (UA)
- Monterrey Institute of Technology and Higher Education (ITESM)
- Center for Economic Research and Teaching (CIDE)
- College of Mexico (COLMEX)
- National Autonomous University of Mexico (UNAM),
- University of Monterrey (UDEM)
- Metropolitan Autonomous University (UAM)
- University of the Americas (UDLA)
- National Polytechnic Institute (IPN)
- Benemerita Autonomous University of Puebla (BUAP)

Administrative data and measures

For the administrative data collection aspect of the study, we asked each school for variables that would help to demonstrate the relationship between performance in the IB DP and college preparation. Specifically, of each school we requested the following for each IB DP student for up to three cohorts:

- IB Organization identification number (to permit matching to IBO data)
- Demographic and socio-economic status indicators
- IB DP cumulative score (range of 1 to a maximum of 45)
- Mexican national curriculum grade point averages
- Names of universities to which student applied
- Names of universities at which student was accepted

- Name of university in which student enrolled

Most schools did not have records of all of the requested variables. Two were able to provide us with IBO identification numbers, student gender and age, IB DP cumulative scores, Mexican national grade point averages, names of universities in which students enrolled and whether students received a university scholarship. One school provided us with a means to match to IBO data, gender, age and Mexican national curriculum grade point averages. The fourth provided us with gender and IB DP area grades by semester; we were not able to match the fourth to IBO data. In two cases, schools did not have electronic data records, so we created them using paper records. Using IB identification numbers, for three of the four schools we then matched the school data to the following IBO variables:

- Whether each student passed IB exams in each of six subjects
- Whether each student earned the IB Diploma
- For students who earned the IB Diploma, whether it was a bilingual Diploma

For three of four schools we created separate matched databases; we also created a separate database for the fourth unmatched school. For the schools with the most comprehensive data, variables included:

- IB Organization student identification number
- IB Organization school identification number
- Student date of birth
- Student gender
- Student's national curriculum grade point average
- Students' IB DP cumulative score (range of 1 to a maximum of 45)
- Students' official IB DP exam scores in each tested subject and/or course (i.e., Standard level Spanish, Higher level mathematics, Theory of Knowledge, CAS, Extended Essay)
- Whether the student earned the IB Diploma
- Whether Diploma-recipients earned the bilingual IB Diploma
- Name of the university in which student enrolled
- The university major into which the student enrolled[5]
- Whether the college is public or private

[5] In Mexico, students apply to and enroll in a university-major combination. For example, they might apply to the National University medicine program. They do not apply generically to the National University.

- Whether the college is located in Mexico
- Whether the student received a scholarship (merit or otherwise) to assist in their college financial requirements

We also created five new variables. First, we created the variable "major category" and assigned each student's individual major of study to one of seven groupings of college majors: humanities; social sciences; physical sciences; medical sciences; arts; business; and engineering. The second and third variables are grades on the official IBO Theory of Knowledge and Extended Essay examinations. We translated the existing grades of A through E into a numeric scale of 1 through 5, such that 5=A, 4=B and so forth. These variables allow us to examine correlations between these grades and university outcomes.[6]

The fourth and fifth variables, respectively, indicate whether students enrolled in a university-major combination ranked as number one or top-five by Mexico City's Reforma Newspaper in its 2011, 2012 or 2013 rankings. For example, the medicine major at UNAM is a university-major combination. Since Mexican students apply to university-major combinations rather than to universities (as is a common practice in the U.S.), the university-major ranking is more useful to prospective Mexican students than university rankings.

From 2011-2013, Reforma ranked a total of 22 majors at the Mexican universities with the greatest number of students enrolled in the 22 majors. The 22 ranked majors from 2011-2013 included: Accounting, acting, administration, architecture, communication and journalism, cooking, dentistry, economics, engineering (chemical, civil, electrical, industrial, "mecatrónica," mechanical, systems), graphic design, international relations, law, marketing, medicine, psychology and systems. Reforma uses enrollment statistics compiled by the Asociación Nacional de Universidades e Instituciones de Educación Superior to determine which universities to include in the ranking sample. The selected universities also must meet the following criteria: they enroll at least 1,000 students; the ranked major must have at least 40 students enrolled; and the major must be officially validated; the ranked major must have at least two cohorts of graduates (Grupo Reforma, 2013).

Reforma bases the university-major rankings themselves on the results of telephone interviews with Mexico City and Puebla employers of both private businesses and public

[6] This transformation is not strictly representative of the IB scoring system as the IBO does not explicitly state that the "distance" between an A and a B is the same as a that between a C and a D, or that a B is worth twice a D etc. However, it is only possible to demonstrate correlations between numeric values and so we do so to permit a more dynamic analysis of the IB administrative data.

organizations.[7] Reforma calculated the 2013 rankings based on nearly 1600 employers' responses—on a scale of 0 to 10—to interview questions about each university-major's graduates' preparation, knowledge, capacity, performance, values and professional ethics. On average, 93 employers ranked each university-major combination (Grupo Reforma, 2013).[8]

To create our fourth variable, "rank1," we determined whether the university-major combination that each IB DP student enrolled in was ranked as number one in the Reforma rankings and assigned 1 to students for whom this was the case. To create our fifth variable, "rank5," we determined with the university-major combination that each IB DP student enrolled in was ranked among the top five and assigned 1 to students for whom this was the case. For students with rank5=1, rank1 also=1. In total, 89 of 160 IB DP students that attended the two schools that provided university-major enrollment information enrolled in ranked university-major combinations.

Analytic methods

Arguably, an experimental or large-scale quasi-experimental study might be best suited to address the question of how the IB DP functions as a means of college preparation. Given the utter lack of any research on the IB DP in the Mexican setting, however, a descriptive study is an important precursor to an experimental study, which typically requires substantial financial and time investments in addition to a sophisticated understanding how a program functions in a given setting.

There are also several challenges to the approach of using observational data to compare IB and non-IB students' secondary and post-secondary outcomes using a quasi-experimental analysis design. First, students who *chose* to participate in an IB program may differ from students who do not, in important measured and unmeasured ways that may also be related to students' subsequent academic outcomes. Ignoring the effects of these unmeasured characteristics will lead to *selection bias* in estimates of the effect of enrollment in the IB program on students' outcomes. For example, assuming that students who choose to enroll in IB are more motivated and/or harder-working and that these unmeasured characteristics lead them perform better on measures of academic success, then estimates of these effects will overestimate the IB enrollment impact. While it is

[7] Reforma also interviews students and faculty at the evaluated universities. These interview results do not inform the rankings, but the provide additional useful information to supplement the actual rankings. In 2013, Reforma interviewed nearly 4,000 students enrolled in one of the ranked university-major combinations and 2100 professors.

[8] Many critics have highlighted the deficiencies of university ranking systems like those published by Reforma (i.e. Rizo, 2011). However, there is no other commonly accepted university ranking system in Mexico, so we use the Reforma rankings to demonstrate the general reputation of the universities in which Mexican IB DP students tend to enroll.

possible to assess the sensitivity of observational estimates to the possibility of differing degrees of selection bias, to be convincing this type of analysis requires rich covariates with which to model the selection process. In the Mexican IB context there is not currently sufficient data with which to conduct a convincing sensitivity analysis of a quasi-experimental design.

The second challenge is a lack of consistent secondary outcomes. There is no single secondary exam that all Mexican students must take. All students in grades three through nine as well as twelve must take the ENLACE exam. However, ENLACE is not a high school exit exam or a postsecondary entrance exam. While public schools take the ENLACE examination very seriously because of its foundation in the Mexican Ministry of Education curriculum, ENLACE examination results suggest variation in the extent to which private schools comply with the ENLACE administrative objectives. ENLACE also only tests Spanish and mathematics skills and knowledge on an annual basis,[9] which are limited outcomes given IB's holistic focus on developing a wide range of student outcomes. Other possible measures of students' secondary academic achievement include their scores on the Prueba de Aptitud Academica (PAA), Exani 1 and 2 and/or university-specific examinations.[10] However, students and schools choose whether or not to take those tests and we anticipate that it would be prohibitively challenging to disentangle IB effects from the effects of selecting to take a given secondary exam. Further, these tests are typically used as part of public university admissions, but are less frequently part of the private university admissions process.

A third challenge is that there is no central clearinghouse of higher education data. Therefore it might be possible to gather outcomes for a sub-set of IB or non-IB students, but like the test score challenge, it would be prohibitively difficult to disentangle the characteristics of being part of the sub-sample of students for whom data is available from IB program effects.

Given data limitations, the case study approach we use in this study is the research methodology that is best suited to address the question of how the IB DP functions as a means of college preparation in Mexico. The case study methodology approach is most appropriate for understanding questions about how and why programs and organizations operate (Marshall & Rossman, 2006). We use semi-structured interview and focus group methods to address each of the first three research questions in depth. At each of the case

[9] Every third year, on a rotating basis ENLACE tests either science or social studies.

[10] The PAA is a Spanish-language university entrance test administered by the College Board and used in Puerto Rico, Mexico and other Latin American countries that is sometimes used as part of applications to universities in those countries as well as U.S. universities. Mexican students attending public education institutions must take the Exani 1 examination when they are completing lower secondary education (at age 15) to determine eligibility for further public education and to determine institutions and fields of study. Once students have completed upper secondary school (finished their "bachillerato"), they must take the Exani 2 to continue their higher education studies at a public university.

study schools, we interviewed IB DP coordinators and teachers as well as school administrators and guidance counselors. In focus group settings, we interviewed students about their perceptions of the IB DP experience as preparation for higher education. We supplemented the qualitative methodology with descriptive analyses of quantitative data on IB alumni's class grades, IB examination results and post-secondary application and enrollment information (availability varies by school as we explain above). We explain how we address each research question in greater detail as follows.

RQ #1: Who are Mexican IB students?

We addressed the first research question in three ways. First, we asked all teachers and administrators to describe IB students' socio-economic and academic backgrounds. Second, we asked all IB students to describe their academic backgrounds. Finally, we used administrative data to describe IB students' ages, gender and grades during the first year of upper-secondary. Administrative data also provided us with information about number of students per cohort and changes in cohort size over time.

RQ #2: What are Mexican IB students' postsecondary destinations? How do these findings compare to those of non-IB students attending the same school?

We addressed the second research question in four ways. First, using structured protocols, we interviewed school administrators, IB coordinators and teachers (some who also serve as guidance counselors) at each case study school to learn their perceptions of the characteristics of the postsecondary institutions to which IB students apply and are accepted, compared to non-IB students from the school. If the school provides an alternative non-IB track—*Prepa Nacional*, *CCH* or others—we asked specifically about the extent to which IB as compared to non-IB students apply to and enroll the same types of institutions. Second, we collected data on the names of the institutions that IB and non-IB students have applied to and enrolled in over the past three years. Third, in focus groups with IB students, we asked them about the types of postsecondary institutions to which they intend to apply and what they might know about the institutions that previous cohorts of IB students are now attending. Fourth, we used Reforma newspaper rankings to characterize the quality of the university-major combinations in which IB DP students enroll.

RQ #3: What is the nature of the relationship between Mexican IB students' DP performance and postsecondary admissions? How do these findings compare to those of non-IB students attending the same school?

We addressed the third research question in three ways. First, we interviewed IB DP administrators and several teachers at each case study school to learn their perceptions of

the relationship between students' DP performance as measured by their grades and exam scores—as well as by the extent to which they demonstrate IB Learner qualities—and their postsecondary admissions. We also asked about the relationship between non-IB students' academic and personal performance and postsecondary admissions. Second, we used descriptive quantitative methods to investigate relationships among students' DP total scores (which range from 1 to 45), DP exam scores, and whether students received university scholarships or enrolled in Mexican or foreign universities. Third, we researched university admissions processes at twelve universities that: 1) per the IBO, grant IB-related credit *and* IB students attend and/or 2) Mexican IB students in our sample frequently enroll.

RQ #4: What are IB DP students', teachers' and administrators' perceptions of the key components of the IB DP as means of college preparation? How do these findings compare to the perceptions of programmatic requirements of other tracks offered at the same school as means of college preparation?

We addressed the fourth research question in three ways. First, we interviewed DP administrators and teachers at each case study school to learn their perceptions of how and the extent to which specific aspects of the DP program prepare students for postsecondary education. We also held separate focus groups with IB students to ask them about the extent to which they anticipate that the DP prepares them for postsecondary education. Finally, we used the administrative data to analyze relationships between Theory of Knowledge, Extended Essay and course examination results and whether students ultimately earned the Diploma, as well where they enrolled for university.

RQ #5: Do the answers to the first four questions differ by whether IB programs are offered in private secondary or university-based schools?

To address our fifth research question, we compare differences in the qualitative and quantitative findings across the two types of case study schools. With only two schools of each type in the study, findings in response to this question are extremely exploratory.

Qualitative analysis

We conducted all interviews and focus groups in Spanish, beginning with the formal consent process approved by the RAND Corporation's Human Subject Protection Committee.[11] Each of the two qualitative researchers is fluent in Spanish and English;

[11] The parents of students under the age of 18 signed their consent on forms provided in advance of the focus group meetings.

one is a native Spanish speaker, the other a native English speaker. Interviews with adults took approximately 45 minutes each, as did the student focus groups. During each interview or focus group, one researcher asked questions, while the primary role of the other was to take notes. We asked participants' permission to record the interviews and focus groups and received affirmative responses in all cases, so we also audio-recorded.

Following Marshall and Rothman's advice that "in some instances, direct transfer onto pre-developed data recording charts is appropriate, as with the template strategies" (2006, 156), after each school visit, we used the notes and audio files to create detailed English summaries of each interview and focus group. We used the template strategy approach because it facilitates comparability across case study sites (Marshall & Rothman, 2006). To create the summaries, we used templates that are based on the interview protocols. The native Spanish-speaking researcher created the English summaries, which is preferable to any other form of transcription and translation because there are fewer issues of meaning and interpretation when the researcher is the translator (Marshall & Rothman, 2006, 112). The step of translating the audio recordings into the summary templates required that we organize the information from the voice files by high-level codes that closely aligned with the interview protocols. In total, using the summary templates, we created twenty-nine summary documents, including: four student focus group summaries, six IB DP Coordinator summaries, one guidance counselor summary,[12] and eighteen IB DP teacher summaries.

In the next data-processing step, the native English-speaking researcher transferred the English summaries into a single Excel file that we used to organize the qualitative data from all four schools. In this second round of data processing, the native English-speaking researcher gently modified a minimal number of translations from Spanish to English. For example, we replaced the word "achieve"—as in "achieve in the IB DP" with "succeed." At this step, we created more nuanced codes, such that the Excel file organizes the data into many more, and more nuanced categories than are included in the summary documents.

Once we had processed the data through the two steps, we wrote analytic memos on each of the interview protocol topics and on cross-topic themes. These memos serve as the basis for the results we present.

Quantitative analysis

As we describe in Section 3.2, above, the quantitative data is not consistent in terms of what it contains across schools. Therefore we analyze collected quantitative data for each school separately. Given relatively small sample sizes, we use descriptive methods

[12] Only one interviewed educator was not also an IB teacher.

including Polychoric correlations (for correlations that include ordinal variables) and counts to describe the data, rather than inferential methods (i.e., regressions or t-tests).

Results

Who are Mexican IB students?

Administrative records for students who graduated from the IB programs at the four case study schools from 2010 through 2012 (n=354) provide us with information about IB students' ages and genders, as well as about changes in cohort size. Across the schools and cohorts, the average age of graduating students is 19, indicating that most start the two-year IB DP at approximately age 17. Student gender proportions are less consistent across schools. At two of the schools, across cohorts about 55 percent of IB students are boys, whereas at the other two schools only approximately 35 percent are boys. At three of the four schools, cohort size increased every year and at one school, it has fluctuated. In 2010 across the four schools, 111 IB students graduated from the IB DP. By 2012, that number had increased to 133. Therefore not only is the number of Mexican schools that offer IB programmes increasing; the number of students enrolled per school is also increasing, indicating that the IB DP is experiencing non-linear positive growth in Mexico.

Our information about students' economic backgrounds, shown in Table 1 below, is based on interview data.

Table 1: IB students' academic economic backgrounds at the four case study schools, based on interview data.

	Approximate Percent IB in 2012-2013	Family economic background of all students at the school	IB program costs	Economic difference IB vs. non-IB?
School 1	33	Middle to upper middle income	Not noted as different from non-IB	Not perceived
School 2	10	Middle, upper middle and upper income	IB most expensive of three options	Not perceived
School 3	8	Middle to upper middle income; 90% of all students receive some type of financial support, however only 10% of IB students do.	IB most expensive of three options	IB students seem to be from wealthier backgrounds
School 4	30	Middle to upper middle income.	IB more expensive than standard track	IB students seem to be from wealthier backgrounds

At School 1, about one-third of the students per cohort enroll in IB and two-thirds enroll in the CCH curriculum. All teachers and administrators agreed that all students are from middle and upper-middle income families and there is no economic difference between IB and CCH students. Several teachers noted that the difference between IB and non-IB students stems from IB families, who they believe to be more invested in their children's education.

At School 2, according to administrators, about 10 percent of students per cohort enroll in IB and 90 percent enroll in one of the school's two non-IB curriculum tracks. The IB program is the most expensive to enroll in because of staff requirements and exam fees. The first alternative program also has a higher cost because all courses are taught in English, also requiring higher staff costs. The second alternative program is the least expensive. Across the three programs, students come from middle, upper-middle and upper income families. Also across programs, about 40 percent of students have some type of scholarship. According to all teachers and administrators, IB students do not necessarily come only from the wealthiest families; rather they are representative of the overall economic distribution of students at the school, and about 50 percent receive some type of scholarship assistance.

In comparison, the IB students from School 3 are relatively more advantaged than non-IB students. School-wide, teachers and administrators report that students are generally from middle or upper-middle class families and about 90 percent receive some type of financial support. However, only about 10 percent of IB students receive support despite the IB DP having the highest fees of all offered curricular options, suggesting that the IB student population is from a fairly elite economic background. Similarly, IB students from School 4 seem to be from somewhat more advantaged backgrounds than non-IB students. Most School 4 students are from middle and upper-middle income families. IB students, however, must pay higher fees than do students who enroll in the Mexican national curriculum program. According to a few teachers, "Some Prepa Nacional students are interested in the [IB] programme but they don't enroll because of their economic situation."

In fact, IB students at Schools 2,3 and 4 must pay higher fees than do students in other tracks, and at all of the schools in our study, very few students from low-income family backgrounds enroll in the IB DP. One IB teacher described the situation as follows, "Once we had a girl who was the daughter of a secretary… she was an outlier… she had problems the other students didn't have. Getting books and software. Transportation." Several IB administrators and teachers critiqued the current limited access to the IB DP in Mexico. One teacher shared the opinion that IB accessibility to students from lower economic strata would be a means to bring them out of poverty. Another teacher shared his opinion that IB is a successful model that has not expanded beyond elite schools—with only a small minority of two to three exceptions—in Mexico

for two reasons. First, he believes that the conditions are not receptive: "Mexico's education system doesn't have the required level of trained teachers and infrastructure for IB—I don't know how Ecuador is going to do it."[13] Second, from his perspective, elite Mexican, Central and South American schools often use IB as a marketing technique to make their schools attractive to parents and students. "If the IB Organization found a way to make IB accessible to schools that serve poor students, that would change the perception [reinforced through marketing] that IB is not for low income students." The Association of Mexican Schools Authorized by the International Baccalaureate Organization (AMEXCAOBI) concurs that they would like to see IB offered to a broader Mexican student audience and that IB programs should not be elitist, expensive and only accessible to students from wealthy backgrounds. AMEXCAOBI suggests that cost—stemming from annual school fees, diploma exam costs and teacher development—is the greatest barrier to increased access.

Interview data also provides information about IB students' academic backgrounds. Across all four schools, interviews with teachers and administrators and student focus groups consistently indicate that stronger students select to enroll in the IB DP. None of the schools, however, require that students score above a certain threshold on an IB entrance exam. Most schools use a screening process such that students whom teachers perceive to be weak or lacking sufficient motivation are generally not permitted to enroll in IB. Usually this number is low. At School 1, for example, teachers estimate a rejection rate of around three students per cohort. The entrance decision is generally made by students and their parents and then verified by teachers and administrators.

Most teachers and administrators describe IB students as those with a "strong academic background," "curiosity to learn new things," and "better at analysis and questioning than non-IB students." IB teachers also look for motivation as a critical characteristic of potential IB students. "Grades are useful for getting an idea about students' potential to succeed in IB but attitude is the most important." Most teachers point out that while IB students are, on average, stronger academically than students in other programs, there are also some strong students in the other programs who did not enroll in IB—sometimes because of program costs.

Most students explain their decision to enroll in IB as stemming from lack of satisfaction with other options and from their desire to take on a new challenge. Some students feel that their classmates in other programs are not interested in studying. "I may sound arrogant, but in other programs, most students don't understand basic things… the level was too low and it frustrated me." Others take IB for aspirational reasons. For

[13] The Ecuadorian Ministry of Education has supported IB authorization at 22 publically funded schools located throughout Ecuador. The Ecuadorian government also recommends that schools adapt aspects of the IB curriculum as a way to improve the Ecuadorian education system (International Baccalaureate Organization, undated).

example, one student asked, "If I have the chance to take a program that will make you a better person, why shouldn't I take it if I think I'm capable of doing well?" Another explains, "I chose IB because I love challenges and being stressed." An administrator summarizes students' typical rationales for enrolling in IB, explaining that students choose IB because they know they will receive a better education, not because of other advantages, "It's not college admissions or studying abroad, it's the fact that they know everything in IB is studied in more depth… there's the stimulus of wanting to be better."

Administrative data confirms that across schools and cohorts, most IB students are above average students. During their first year of three-year upper-secondary schools, all IB and non-IB students take courses from the Mexican national curriculum. Students' performance in the national curriculum is assessed on a scale of 5 to 10, such that 5 is "not sufficient," 10 is "excellent," and 8-9 is considered "good." At the mean and median across the three schools for which we have this data, IB students earned between and 8 and 9 in their first year of upper secondary. IB students at the 75th percentile earned scores above 9 and only at the 99th percentile earned 10s. According to their grades from the first year of upper secondary, therefore, IB students are above average students, though they are not uniformly exceptional.[14]

What are Mexican IB DP students' postsecondary destinations? How do these findings compare to those of non-IB students attending the same school?

Given that IB students—like most students who study at the elite Mexican private and university-based schools that offer the IB DP—tend to be well-prepared for the university admissions exams and have strong grade point averages, most apply to and are accepted at top Mexican universities. Most teachers generally believe that while the IB DP is good preparation for college, students in other programs experience acceptances and rejections at a similar rate from a similar caliber of Mexican universities. A common sentiment is that, "With the exception of UNAM [the National University], all students are admitted into college without any problem."

Our administrative data, matched to Reforma newspaper rankings data, demonstrate that IB DP students do indeed enroll in the top-ranking university-major combinations in Mexico. Table 2 shows the number of IB DP students who enrolled in number one and top-five ranked university-major combinations as well as the numbers who enrolled in non-ranked university-major combinations and non-Mexican universities.

[14] We do not have comparable information for non-IB students.

Table 2: 2013 Reforma Newspaper rankings of the Mexican University-Field Combinations Enrolled in by IB DP Students (n=160)

IB DP Student University Enrollment Condition	N
Students enrolled in a Reforma-ranked university-major combination	89
Students enrolled in a number one ranked university-major combination	37
Students enrolled in a top-five ranked university-major combination (includes students who enrolled in a number one ranked combination)	73
Students enrolled in a major that is not reviewed as part of the Reforma University-Field ranking system	48
Students enrolled at a non-Mexican (foreign) university	17
Students missing university enrollment variables	6

Of the 89 IB DP students that enrolled in ranked university-major combinations, 42 percent enrolled in number-one ranked programs and 82 percent in top-five programs. By sample IB DP school, the proportions of students that enrolled in number one and top-five ranked university-major combinations was virtually identical. These statistics confirm interviewed teachers' and administrators perceptions that IB DP students tend to enroll in top Mexican universities.

At the two university-based schools in our sample, students who attend IB programs at university-hosted schools are likely to enroll at that university. At one of the two in our study, according to administrators "about 70 percent continue at [the affiliated university] without having to pass an admission exam. This is the reason why many students enroll at the [hosted upper preparatory] school." From the other, administrative data demonstrates that approximately 45 percent across the three IB cohorts included in our study enroll at the host institution.

Many IB students want to study abroad, as undergraduates, undergraduate exchange students or as graduate students, and most feel that the IB DP prepares them for international study. "IB prepares you to study abroad" is a common sentiment students expressed. However, among the case study schools, the proportions of IB students who study abroad as undergraduates varies substantially by school type. From the private schools, most students stay in Mexico and a low percentage study in the United States. For example, from one of the private schools, over three cohorts only three students (5%) enrolled in non-Mexican universities. According to teachers at one private school, "IB students do not study abroad because of their families... Parents don't want their children to study abroad, they consider them too young." Other private school teachers explained, "Many IB students would like to study abroad but do not have the economic means to."

Compared to IB students from private schools, in our sample greater proportions of students from the university-based IB DPs study abroad. For example, the administrative

data shows that from one of the university-based IB DP's in our study, over three cohorts, 14 (15%) students enrolled in non-Mexican colleges. A teacher from that school highlighted the importance of IB to universities in other countries, "Students that go to England need IB; IB students can skip the foundational year. In Spain, IB students don't have to pass admissions exams."

Table 3 summarizes our findings on university enrollment for two case study schools. The first column shows the number of students from one of the private schools in our study that enrolled in each university on the list. The second column shows the number who enrolled at each university from one of the university-hosted IB schools. The third column shows the total number of IB students across the two case study schools that enrolled at each university. The fourth column shows the total number of scholarships awarded to IB students from the two schools at each university. The fifth column shows whether each university is public and the sixth the location of each university.

Table 3: Universities enrolled at among students from two case study schools (n=160).

	Enrollment					
	Private IB school	**University -hosted IB**	**Total enrolled**	**# Scholarship**	**Public?**	**University country**
Anahuac	0	1	1	0	No	Mexico
Anahuac del Sur	1	0	1	1	No	Mexico
Canadian University College	1	0	1	0	No	Canada
Central Saint Martins	1	0	1	0	No	U.K.
CESSA	1	0	1	1	No	Mexico
CIDE	0	4	4	0	Yes	Mexico
COLMEX	1	2	3	3	Yes	Mexico
Florida State University	0	1	1	0	Yes	U.S.
IB DP "Host" university[15] (1)	11	42	53	33	-	Mexico
IB DP "Host" university (2)	1	2	3	2	No	Mexico
IB DP "Host" university (3)	5	0	5	3	No	Mexico
Instituto Politécnico Nacional	0	3	3	0	Yes	Mexico
ITAM	8	7	15	4	No	Mexico
La Salle	1	2	3	0	No	Mexico
Les Roches	1	0	1	1	No	Switzerland
New York University	0	2	2	0	No	U.S.
Texas A&M University	0	2	2	1	Yes	U.S.
UAM	1	0	1	0	Yes	Mexico
University of British Colombia	0	1	1	1	Yes	Canada
Universidad Intercontinental	1	1	2	0	No	Mexico
UNAM	11	15	26	0	Yes	Mexico
Universidad Centro	1	0	1	0	No	Mexico
UP	4	0	4	1	No	Mexico
Universidad de Salamanca	0	1	1	1	No	Spain
University of California, San Diego	0	1	1	0	Yes	U.S.
University of Florida	0	2	2	1	Yes	U.S.
Universidad Iberoamericana	12	2	14	1	No	Mexico
University of Kent	0	1	1	0	Yes	U.K.
University of London	0	1	1	0	Yes	U.K.
Utrecht University	0	1	1	1	No	Netherlands

[15] To preserve the anonymity of the university-hosted school that provided administrative data on student university enrollments, we label universities that offer IB DPs as "hosts" rather than by their actual name.

Not enrolled	2	1	3	0	
No enrollment information	1	0	0		
Total	65	95	160	55	12

The table shows that from the two schools, IB students enrolled at 30 different universities, located in Canada (n=2) Mexico (n=17), the Netherlands (n=1), Spain (n=1), Switzerland (n=1), the United Kingdom (n=3) and the United States (n=5). Twelve universities or 40 percent are public. From the university-hosted school, approximately 35 percent of the universities in which students enroll are public, compared to just under 20 percent from the private school.

Across both schools in the study, 55 of 160 (34%) of IB students receive some form of scholarship during at least their first year of university. The majority of the scholarships, 33 of 55 (60%), however, went to students from the university-hosted IB program that continued their tertiary studies at the same university.

As we were unable to obtain administrative data on non-IB students' postsecondary destinations, we are unable to compare IB and non-IB students' university enrollment statistics. However, future comparative research would be valuable.

What is the nature of the relationship between Mexican IB DP students' performance and postsecondary admissions? How do these findings compare to those of non-IB students attending the same school?

Most IB students, teachers and administrators believe that the IB DP prepares students for the challenge of college course work. However, they do not think that enrollment or performance in the IB DP gives IB students an admissions advantage to Mexican universities over non-IB students from their school. Specifically, students, teachers and administrators do not think that students' grades in the IB DP help them with university admissions, nor do they think that their IB examination results help. Though they see enrollment in the IB DP as helpful as a means of college preparation, as one teacher summarizes, "IB is not as important for admissions as it is for college performance."

Part of the reason for interviewees' perceptions that the IB DP does not give students an admissions advantage is their belief the curriculum does not directly prepare IB students for success on the examinations that determine their university admissions status. At most Mexican universities, students' scores on a university-specific admissions examination are the primary determinants of acceptance. There are only two exceptions to this rule among our sample of twelve researched universities. First, two universities—

IPN and UNAM—honor special admissions agreements with affiliated upper-secondary schools that permit students at these schools to bypass the admissions examination requirement. Second, some universities only require the admission exam for entry into some majors but not others.

Our review of twelve universities' websites provides a more nuanced picture of the role of IB DP participation in the admissions process and suggests that IB could be somewhat more beneficial than IB students, teachers and administrators describe. We summarize the findings from our university website review in Table 4 below.

Table 4: Admissions processes at twelve Mexican universities.

University	Required admission examinations	IB credit policy	Other admission requirements	Desired student characteristics
ITAM	Students from schools that do no have an agreement with ITAM must pass the SAT	Credit for Mathematics HL, Computer Science SL and LH and Mathematics SL	* Online admission form * Upper-secondary diploma	* Determined * Risk-taker * Communicative * Socially engaged
UIA	All students must pass an exam that accounts for 40% of the admission process. The other 60% is based on the students' overall upper-secondary GPA.	No information found on the website.	* Upper-secondary diploma	Each program specifies different qualities related to each separate field study.
UA	All students must pass a professional guidance test and an academic evaluation.	No information found on the website.	* Online admission form * Upper-secondary diploma * Statement of purpose	Each program specifies different qualities related to each separate field study.
ITESM	All students must pass a written examination. If they score above a given threshold, they must also pass an interview with the director of the program.	No information found on the website. ITESM is mentioned on the IB website as giving credit for IB courses.	* Online admission form * Attendance at an admissions examination workshop * TOEFL examination * Upper-secondary diploma	Each program specifies different qualities related to each separate field study.
CIDE	All students must pass the SAT with a 1300 score. Those that do so then have to pass	No information found on the website.	* Online admission form * Upper-secondary diploma	There are only three undergraduate programs at CIDE and each looks for similar qualities in students,

	math, Spanish and writing examinations. Finally, students have to pass an interview.			including: social commitment, ability to manage pressure well and ability to work well in teams.
COLMEX	All students must pass a written examination. If they pass, they must also pass an interview.	No information found on the website.	* Curriculum vitae * Two letters of recommendation * Academic transcript * Upper-secondary diploma	No desired student characteristics were found on the website for any program.
UNAM	All students must pass a written examination, excepting those from UNAM's upper-secondary schools.	No information found on the website. UNAM is mentioned on the IB website as giving credit for IB courses.	* Online admission form * Upper-secondary diploma * Some programs require a minimum upper-secondary GPA	Each program specifies different qualities related to each separate field study.
UDEM	All students must pass the SAT with a minimum score of 1000.	No information found on the website. UDEM is mentioned on the IB website as giving credit for IB courses.	* Online admission form * Upper-secondary diploma * Minimum upper-secondary GPA of 7	Each program specifies different qualities related to each separate field study. Many fields highlight similar desired qualities including: creativity, thirst for knowledge, communication skills, leadership skills, social commitment, analytic skills, open-minded.
UAM	All students must pass a written examination.	No information found on the website.	No other requirements are mentioned on the website.	Each program specifies different qualities related to each separate field study.
UDLA	Only some programs require students to pass a general written examination.	IB courses' validation requires a minimum grade of 5 and should have been taken at higher than standard level. Credit for IB courses is only allocated during the first undergraduate semester.	* Online admission form * Upper-secondary diploma that specifies the overall upper-secondary GPA * Some programs require a TOEFL certificate with a minimum score of 500	No desired student characteristics were found on the website for any program.
IPN	All students must pass a written examination, excepting those	No information found on the website.	* Online admission form * Upper-secondary diploma	Each program specifies different qualities related to each separate field study.

	from IPN's upper-secondary schools.			Many fields highlight similar desired qualities including: curiosity, responsibility, discipline, diligence, ability to manage pressure well and ability to work well in teams.
BUAP	All students seem to be required to pass a written admission examination, but the website does not provide specific information.	No information found on the website. BUAP is mentioned on the IB website as giving credit for IB courses.	No other requirements are mentioned on the website.	Each program specifies different qualities related to each separate field study. Many fields highlight similar desired qualities including: creativity, responsibility, communication skills, curiosity, responsibility, ability to work well in teams, leadership and critical thinking.

Admission into public universities, which are among the most selective in Mexico, requires that applicants take a university-specific admission examination (details specified in Table 3). Most of these examinations are composed of multiple-choice questions in varied fields of study including chemistry, physics, Spanish, history, mathematics, etc. IB students may not be well prepared to pass these tests, as IB courses usually do not cover the vast array of tested topics and IB students do not always take courses in all the fields of study. According to virtually all IB teachers, the IB DP curriculum promotes skills and knowledge that differ from those emphasized in the university-specific admissions exams. One teacher explains, "IB courses require students to develop capabilities that are different from those assessed on the admissions exams. For example, IB math and science courses emphasize processes whereas admission exams ask only for solutions." It is quite plausible that the processes students learn through the IB DP will lead to the correct solutions. However, IB DP students may be at a disadvantage if they have no experience with a given tested field of study.

In comparison to the public universities' admissions examinations, the IB curriculum may prepare students better for private Mexican universities' entrance examinations. Most private Mexican universities use a Spanish-translated version of the College Board's SAT examination in their admission processes. The verbal section of the SAT measures students' ability to read critically and understand words in particular contexts. IB literature, English and Theory of Knowledge courses may prepare students for this part of the test, as these courses are intended to develop students' language and reasoning skills. The SAT mathematics section tests students' knowledge and ability to solve arithmetic, algebra, geometry, statistics and probability problems. Students who take IB

mathematics courses at any level should be prepared to perform well on the SAT mathematics section since the IB curriculum thoroughly covers all tested topics. Finally, IB student's experience with the Extended Essay should be sufficient training to do well on the writing section of the SAT. It would be useful to conduct further research on IB students' preparedness to perform well on the SAT.

Admission processes at most public and private universities include additional features, some of which might benefit IB students. For example, three universities in our sample complement their admission processes with interviews, which is a potential advantage for IB students since the IB DP seeks to develop students' communication skills and capacity to engage in reflexive discussions. Many universities also specify program-specific or university-wide desired student characteristics such as determination, responsibility, leadership, creativity, open-mindedness, ability to communicate well, ability to work in teams, ability to deal with pressure and commitment to social issues. Most of these qualities overlap with those included in the IB Learner Profile (discussed in greater depth on page 39), indicating that Mexican universities seek to enroll students with the qualities that many IB students develop through their IB DP studies. The extent to which these student qualities actually drive the admissions process, however, seems minimal, since many of them can only be assessed through means such as interviews, recommendation letters and personal statements, which only three universities in our sample employ.

Additional admissions requirements are probably not affected by students' IB status and include—at some universities—a minimum upper-secondary grade point average (though the threshold is not usually very high and is easily attainable for most IB students) and an upper-secondary graduation certificate, or, from non-Mexican students, SAT results. A university admissions official explained that admissions criteria for her university are published on their website, the order of importance is as follows: 1) An application signed by the student (which requests name, address, upper-secondary school information and other personal information), 2) A transcript signed by the student's high school, 3) A copy of the student's birth certificate, 4) A copy of the student's ID number card, 5) Two color photographs of the student's passport and 5) An up-to-date ID card including a photograph. IB participation does not have a bearing on any of these requirements.

Another reason for interviewed students', teachers' and administrators' perception that IB does not realize an admissions benefit is that though sometimes grade point averages contribute to the admissions decision, they are typically not weighted to reflect course difficulty, such that grades in a less demanding program carry equal weight to IB DP grades. An administrator summarizes the common sentiment about the relationship between IB grade point averages and admissions decisions as follows, "All universities require a minimum grade point average for admission… students with higher averages

are more easily admitted… this is so for all programs." One teacher even went so far as to say that, "Students from other programs have an advantage because they can earn outstanding GPAs." Most students agree and make statements like, "IB students do not necessarily have better grades than other students because it's harder to get higher grades in IB."

Further, few IB teachers and students believe that IB examination scores—or ultimately earning the Diploma—have any association with admissions. As one teacher explains, "Even though students do not get subject grades above 6 [on a scale of 1-7, 7 is the maximum], they do well in college. Exams don't seem to have been written by Spanish speakers." Students do not think there is any relationship between IB exam success and university admissions, because the IB exam results do not arrive until students have already enrolled in university. According to students, "After finishing high school, the IB exam scores can take a few months...what's important is succeeding in the program, more than scores." Across schools, administrators, teachers and students all agree that while there are many benefits for enrolling in the IB DP, improved odds of admission to Mexican universities is not generally considered to be one of them.

Credit recognition policies at the majority of Mexican universities also contribute to students' and educators' perceptions that enrollment in the IB DP does not provide students with an admissions advantage. Few Mexican universities offer credit for successful completion of IB courses or even passing IB Diploma exams. Just two universities in our internet-review sample specified IB credit policies on their websites (ITAM and UDLA).[16] At both universities, the amount of credit allocated depends on the IB course level and on the attained grade. Therefore university credit is not a strong incentive for most IB students, and according to several teachers, can sometimes even serve as a disincentive. This teacher expresses the common sentiment that Mexican universities do not sufficiently recognize the IB DP, "In Mexico, universities do not truly appreciate IB. We know that abroad they don't even require admissions exams of IB students and universities give them more grants." Teachers and students at private non-university hosted schools are particularly frustrated by Mexican universities' lack of recognition of the IB DP. One private school teacher explains that, "It's frustrating when kids ask which universities give credit for IB. They see the long list in the US and the list of five in Mexico." Another explains that the lack of university recognition "is a source of frustration for students because they do not see a reward for their effort." AMEXCAOBI has been lobbying for the recognition of the IB DP in the National Education system, though with little success to date.

[16] Four of the twelve universities in our sample that the IBO list indicates provide credit do not mention IB credit anywhere on their websites: BUAP, ITESM, UNAM and UDEM.

Exceptions to the rule that Mexican universities do not give IB DP-related credit include the universities that host IB programs. At both of the university-hosted programs in our study, the university recognizes the IB Diploma, granting IB students scholarships that increase for increased total IB scores (on a scale of 1-45).

Though most Mexican teachers and administrators believe that there is no relationship between IB DP performance and college admissions success, they believe that, "the relationship has to do with students' thinking capabilities. The correlation is that IB students have better analysis and writing skills. The IB program may not be useful for being admitted to college but it does help to provide students with the necessary skills and knowledge for success." Though virtually all students and educators who participated in the study perceive a positive relationship between IB DP enrollment and college preparedness, in this study we have not collected the type of data that would be able to validate or counter the perception. Yet Mexican students' and educators' perceptions about the relationship between IB DP enrollment and college preparation correspond with those that researchers in Australia, New Zealand, the United Kingdom and the U.S. found through research on faculty perceptions of the IB DP. For example, in the U.S. context, Culross & Tarver (2011) report that university "faculty generally had a positive view of the IB DP. They perceived the IB as focusing more on global issues, requiring higher level thinking skills, applying learning, developing links between concepts and covering a broader spectrum of topics" (Culross & Tarver, 2011, 235). An in-depth study of university student and faculty perceptions of the IB DP in the Mexican setting may be a worthwhile study to follow the present one.

The administrative data provide evidence of a suggestive relationship between students' IB DP performance and their university admissions, at least at the two schools in the study for which we have the relevant data. At each of the two schools there are significant correlations between whether IB students earn a scholarship to help offset some of the university costs and their IB performance as measured by their total IB points on a scale of 1 to 45 (private: 0.39, SE=0.14; university: 0.26, SE=0.13). At the university-based school, there is also a significant relationship between whether students earn a bilingual Diploma and whether they enroll at a Mexican versus foreign university (-0.39, SE=0.18). As the preceding are the results of very basic uncontrolled correlations and we only have the data for two schools, they should not be given too much weight. However, they do suggest the value of further quantitative research on the relationship.

What are IB DP students', teachers' and administrators' perceptions of the key components of the IB DP as means of college preparation? How do these findings compare to the perceptions of programmatic requirements of other tracks offered at the same school as means of college preparation?

According to most students, teachers and administrators, many aspects of the IB DP seem to prepare Mexican IB students for their university studies. Highlights include the IB Learner Profile, the Theory of Knowledge (TOK) course, the Extended Essay (EE) and the Creativity, Action and Service (CAS) course, which in concert one teacher nicely packaged as, "The Extended Essay develops research skills, the Theory of Knowledge course develops thinking and the Creativity, Action and Service program develops the person." Teachers and students also discussed the value of IB coursework as a means of college preparation, particularly higher-level courses. All agree that IB DP requirements are more demanding than the non-IB requirements of CCH, Prepa Nacional and the alternative university-hosted tracks and the vast majority of students, teachers and administrators agree that the IB DP prepares students better for college than do the non-IB programs. Finally, though we did not formally ask interviewed teachers about their preparation to teach the key components of the IB DP, several teachers provided comments relevant to this topic. Their message is that they would like more and better-aligned IB professional development than what they currently receive.

IB Learner Profile

The IB mission is to "develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect." The purpose of the IB Learner Profile is to provide schools and teachers with a practical means through which to translate the IB's mission into practice. The Learner Profile consists of ten ideals to foster in IB students, including that students be inquiring, knowledgeable, thinking, communicating, principled, open-minded, caring, risk-takers, balanced and reflective.

Do IB students select to enroll in the IB DP because they already have the IB Learner Profile qualities or does enrollment in the IB DP develop students' IB Learner Profile qualities? According to students, teachers and administrators, the answer is some of both. All students know that the IB DP is demanding, generally more so than the non-IB options offered at their school. To decide to enroll in the IB DP in the first place, therefore, to at least a minimal degree, students must be somewhat inquiring and risk-taking. IB students explain that initial differences in IB versus non-IB students' personal and academic qualities constitute part of the reason that IB students enter in the first

place, “To a certain degree, students have these qualities before they enter the DP—they are only admitted into the program if teachers think they have the right profile.” Yet in a sentiment expressed by several teachers, one explained, “I believe that when they enter in the DP they barely have the Profile. They only have the seeds...”

All also agree that enrollment in the IB DP continues to develop IB Learner Profile qualities in IB students beyond where they would otherwise have been in a non-IB curriculum. According to one student, “the DP develops these qualities in students.” A teacher explains that by graduation, “IB students have more [IB Learner Profile] qualities and to a higher degree than [non-IB] students. This is because IB teaches them to look for information and prepare their work. They also take different courses and spend more time in class. Through the IB years they fulfill the IB Learner Profile.” Another teacher explains that, “They all come with one quality and graduate with more than one.” Students “had some of the Profile’s qualities before enrolling in the DP. As they continue in the process they keep developing. We notice a favorable evolution… it’s a personal process, every student enhances different qualities… those that don’t satisfy the Learner Profile are left behind.”

Most teachers of both IB and non-IB students comment that non-IB students do not develop IB Learner Profile qualities to the extent to which IB students do through their final two years in upper secondary. For example a teacher explained that, “[Non-IB] students do not always make efforts to develop these qualities—though they will have to develop them when they get to college, with greater difficulty.” All IB students agree that they develop skills and qualities that they would not in another program, explaining, “If you ask other programs’ students about any subject, they’re going to give you vague answers.”

Most teachers and students also agree that the IB Learner Profile qualities are not useful for admissions to college but they believe them to be very useful for college work. “Achieving the IB Learner Profile qualities does not determine college admission but they are an advantage for students… they help them to cope better with college work. The capacity to learn without someone else’s help is the most relevant for doing college quality work.” However, some students note that, “In college application processes that include an interview, IB students excel because of their critical and communicative abilities.”

Theory of Knowledge

Theory of Knowledge (TOK) is an epistemology course that, “Encourages critical thinking about knowledge itself to try to help young people make sense of what they encounter. Its core content addresses questions like these: What counts as knowledge? How does it grow? What are its limits? Who owns knowledge? What is the value of knowledge? What are the implications of having, or not having, knowledge?” (IBO,

2006). Unlike the IB Learner Profile, about which virtually all IB students, teachers and administrators are in agreement, perspectives on the TOK course were more disparate.

In our study, students' feelings about TOK vary fairly drastically by school such that the private school students are much more positive than the university-hosted IB students. It is important to note that with only two schools in each group, it is impossible to know whether this difference can be attributable to systematic teaching and learning differences between private and university-based IB DPs or whether it relates to idiosyncratic features of the four schools.

Students at one private school see TOK as a complement to their other courses and believe that it helps them to practice for oral examinations, to be more analytical and objective and to choose better which information to analyze. "We think we're good at discussing and defending different points of view but TOK shows you how superficial you can be. It helps you analyze and become more objective." Students at another private school say that TOK is one of their most important courses because it relates different areas of knowledge. They believe that TOK makes students critical and reflexive, take into account the pros and cons of different situations and find relevant resources to make better decisions. Summarizes one student, "I think its one of the most important courses, we make links between areas of study."

In contrast, most students in the university-hosted IB DPs feel that the TOK course is not well articulated and that teachers do not sufficiently connect TOK across courses. For example, one student said, "I think most of us dislike TOK, it's a waste of time... they make you think so much that they stress you… you question something and they make you question it more… it doesn't have a clear point." Others agree with statements like, "Its useless, yes, you make reflections and then what do you do with those reflections?" and "I think the way TOK is taught is too abstract and discussions seem pointless," and "I think TOK should be linked to other courses but we haven't done a single project related to what we do in TOK." Several university-hosted IB teachers offered comments that explain students' reactions, "When they are in TOK, they don't like it. They find it too abstract… then in college, they question everything… they realize that their opinion counts."

Overall, teachers are more inclined than students to be positive about the value of TOK, believing that it is fundamental to the IB DP and that it ties courses together. Representative comments include that, "TOK teaches IB students how to think out of the box, how to have divergent thinking…TOK teaches students to be critical and question everything." Teachers also value TOK's connections to the principled, caring, open-minded aspects of the IB Learner Profile as well as to CAS, explaining that TOK, "Articulates courses from an ethical perspective."

The administrative data provides suggestive support for the qualitative finding that students at the private IB schools in the study found TOK to be more useful than did

students at the university-based IB schools. At the private school for which we have university enrollment data, there is a strong and significant correlation between students' TOK final examination scores and whether they obtained a university scholarship (0.54, SE=0.15). The relationship at the university-based IB DP is of lesser magnitude and not significant (0.10, SE=0.14). These results, however, are suggestive and require further research.

Extended Essay

The Extended Essay (EE) is a mandatory 4,000-word research paper that students must complete in order to be eligible to earn the Diploma. Each student has an advising teacher who helps them to refine their research question and find relevant resources and provides advice and comments about drafts.

Most students recognize the value of the EE, sharing comments like, "its easy because it's a topic you like…. For my extended essay I wanted to do something that I would probably study in my [college] major." A minority of students expresses more negative opinions. Though they recognize the importance of learning to carry out research projects, they do not think that the EE helps them to achieve its objectives because of its numerous limiting restrictions and requirements: "The EE process could be improved… in general in IB we're given freedom, but we don't have it for the EE… it should be my chance to explore my research capacity." Another student explains, "It would be better if we could develop one of our research projects in a course."

A challenge to students is that their choice in EE topics tends to be limited by the range of courses offered in their school, "If you choose a topic from an area of study that's not offered at your school, you're on your own, you don't get support." Students are less enthusiastic about their EE's when they do not write about a topic that particularly interests them. "I didn't have much freedom to choose my topic, they told me what I wanted to do was too futuristic and that I wasn't going to be able to prove anything… now I'm writing my EE on a topic I don't like so much." Students at one school shared their discontent about how teachers operationalized the EE requirement, explaining "I think it's a useful requirement but its not well-executed at our school," "they're very strict about what the teacher wants you do to," "they put pressure on students to have a hypothesized result," and "I think it should be more relaxed so you can develop your research skills."

Teachers, on the other hand, are generally more explicit about the future benefits of the EE for students, explaining, "They'll be perfectly able to succeed at college work with all requirements," "IB students learn perfectly how an essay has to be done, how to include references, how to support a hypothesis," "it's a great tool to prepare for college work," and "It's useful for college where they'll have to write a thesis."

Teachers also shared their perspectives on why the EE is challenging for students. According to many teachers and administrators, the IB students across the schools in our study did not have prior research experience, including experience constructing hypotheses, selecting topics, source selection or citing sources. However, teachers believe that in the end, students learn skills and knowledge through the process that will help them in their college studies. For example, one teacher describes the EE as, “a degree dissertation. This is an advantage because students learn all the formal requirements for successfully conducting a research project.”

Some of the features of the EE that contribute to the positive opinions expressed by teachers and some students also pose a challenge to IB teachers, who also share reasons for why it is difficult for them to teach the EE. Students’ lack of any previous research experience challenges teachers. As one teacher explains, "Our basic education system doesn't teach the importance of including references. “Students’ critiques about topic selection and other requirements are recurrent issues that teachers hear from repeated cohorts of IB students, and teachers say that these become tiresome. A few teachers, like the students themselves, critique IB requirements in their particular areas of study and what they perceive to be the vagueness of some aspects in EE requirements. For example, two teachers perceive a contradiction between the IB handbook and the evaluation criteria: "IB trainers tell us art is not for EE's. We have advised art essays, but they haven't followed the manual or the evaluation criteria… the problem is that IB requires regional art topics and the use of primary sources.”

The administrative data shows that at one school there was a statistically significant correlation between students’ EE final examination scores and whether they ultimately earned the Diploma (0.43, SE=0.18). We do not see a significant correlation between EE scores and earning the Diploma at either of the other two schools for which we have the necessary data.

Creativity, Action and Service

Along with TOK and the EE, Creativity, Action and Service (CAS) is “at the heart of the Diploma Programme” (IBO, 2008b, 3). The IBO defines Creativity to include, “arts and other experiences that involved creative thinking,” Action to include, “physical exertion contributing to a healthy lifestyle,” and Service as, “an unpaid and voluntary exchange that has a learning benefit for the student. The rights, dignity and autonomy of all those involved are respected” (IBO, 2008b, 11). Students must successfully complete CAS to earn the Diploma—successful completion is determined through students’ documentation of their activities and demonstration of engagement with eight specified learning outcomes.

At all four schools in our study, the school’s formal CAS programme only included Service. A minority of students participated in arts and very few in any type of athletic

program. Students often responded that given their time commitments to academics and CAS, they had no time for other activities like sports. Therefore all quotes are relevant to the Service aspects of CAS, but not the Creativity or Action aspects.

Teachers and students alike greatly value CAS as a key part of the IB DP. Representative quotes from teachers and administrators include, “CAS is excellent, it’s a fundamental piece of the programme,” “CAS is important because it makes students conscious of others’ needs, to not be indifferent to what is happening in the places they live,” “Many students do more social service hours than required, they like the course,” “CAS teaches through experience and makes students more conscious, sociable and makes them agents of change,” “CAS generates proactive and committed leaders, it’s vital for the Profile,” and “CAS makes them deeply humane, they become more empathetic.”

Most students feel that CAS helps them to develop their social skills, to become responsible and organized and to be more self-confident. For most of the students, CAS is perceived as one of the best parts of the IB DP because it gives them a sense of others’ walks of life beyond their elite private school lives. “It makes you a more sensitive person, you start thinking about what others need.” A small minority of students complained about CAS rules, explaining, “They make you comply with hours and specific requirements.”

Most teachers and students think that CAS does not help with students’ college applications and make statements like, “CAS is irrelevant for college applications.” However, their participation in CAS appears to affect the college activities in which some IB students participate in college. One administrator reported that, “In some colleges that don’t have a well-organized ‘social service’ department, IB students have organized it.” Students at one school commented that, “In some applications, universities ask us about our social service experience and they get really impressed with all we’ve done.” This is most likely to be the case for applications to non-Mexican universities.

At each of the schools in our study, non-IB students also participate in CAS. For example, at one of the private schools, “Students start with CAS in preschool.” At both of the university-hosted IB DPs, students take CAS in all three years of upper-secondary school and students in non-IB programs also take CAS.

Standard and higher-level courses

According to students, teachers and administrators, the IB Learner Profile, TOK, the EE and CAS are unique elements of the IB DP and those that really set it apart from the curriculum offered through other Mexican programs. IB coursework at standard and higher levels, however, compose the bulk of the time requirements of the IB DP. During the two IB DP years, students must take a total of six courses at standard or higher levels—distinguished by hours spent per course and level of difficulty—in six subject

groups: 1) Language and Literature, 2) Language Acquisition, 3) Experimental Sciences, 4) the Arts, 5) Mathematics and Computer Science and 6) Individual and Societies. Depending on the availability of courses by school, students take a course in each area at either the standard (150 teaching hours) or higher (240 teaching hours) level. However, to be eligible to earn the IB Diploma, the IBO requires students to take at least three and not more than four subjects at the higher level.

There is fairly broad variation in students', teachers' and administrators' perceptions of the relative value of standard versus higher-level courses. Since students must choose their college majors before they apply to college, some do not like the requirement that they must take courses in six subject areas, most of which they believe are not directly applicable to their intended college major of choice. A representative comment encapsulating this sentiment is, "Only one of the standard courses I take helps me for my college studies… biology and psychology have nothing to do with the major I'm interested in, which is finance." These students tend to find most helpful the higher-level courses that they take in subjects that are closest to their intended major. One administrator described this trend as follows, "Usually when a student chooses a standard-level biology course, he will choose a humanities major." Yet our administrative data does not clearly confirm the administrator's description. Across the schools for which we have the necessary data we find no meaningful patterns of significant correlations between students' higher-level course grades and their university major area of study (as defined in Section 2.3).

However, other students appreciate the broad requirements of the six subject groups and find both the standard and higher-level courses to be useful regardless of the majors they want to later pursue. These students point out the value of standard level courses for helping students to clarify their interests, "If you don't have any idea, they constitute a very interesting basis for exploring what you might like to study." Other students value standard level courses for their "general cultural" value.

Teachers generally respond that both standard and higher-level courses develop the skills and knowledge students need for their university studies. A Spanish teacher explains, "standard and higher-level courses are helpful for any major… students develop reading and writing skills. IB evaluation criteria consider elements that should be present in any text." Some teachers believe that standard level courses are more demanding than most Mexican upper secondary courses and, in some cases—especially mathematics—are even more demanding than typical first-year college courses. Several teachers even express concerns about the level of difficulty of standard courses, "I feel standard courses are a bit elevated… I believe IB takes for granted that students have a knowledge foundation they don't actually have." A minority of teachers believes that standard-level courses are not so helpful as a means of preparation for college level work. As one

explains, “I tell students to take higher-level courses because standard level courses don’t prepare them well.”

Limited IB course selection is a source of frustration for students in most schools, when it comes to choosing in which subject matter they will pursue standard and higher-level courses. Many explain that they were disappointed by some of the courses they had chosen, “I feel you must start IB with a very clear idea of what you want to do, otherwise you may choose the wrong courses…” This problem is enhanced by limitations in the course offerings. In the two university-based programs, available courses are oriented to the academic fields specialized in by the affiliated universities. Students lament the limitations, “We don’t have a wide range of options…this is truly limiting… it’s not a problem of the program, but of how the school manages it.” Private schools are also limited in their course offerings, but due to costs and the lack of teacher expertise. In these cases, school authorities explained that, as there are only a few students in IB, it is too expensive opening new courses. Indeed, in one school, students have no choice in courses.

Comparison to non-IB program requirements

Teachers and students agree that IB DP requirements are more demanding than the non-IB requirements of CCH and Prepa Nacional at the private schools and the alternative requirements at the university-hosted programs. Most teachers at our sample schools teach courses in both the IB DP and other tracks and base their perspectives on their experience teaching to one or more sets of programmatic requirements beyond those of the IB DP. As the IB DP is a two-year course and upper secondary is a three-year course of studies, all students base their comparative perspectives on their personal experience during their non-IB DP first year of upper secondary, as well as on what they learn about other tracks from their non-IB DP peers.

Administrators and teachers explain that, “The IB subjects are studied in more depth and there’s extra work that’s not required of other students,” “IB requirements are more demanding than CCH,” “IB is harder than is typical in Mexican schools,” and “The other programs don’t have a TOK or EE and those are key tools for college work.” Students’ comments align very closely with their teachers, “The other programs don’t have the same depth, those students learn subjects more superficially and through memorizing,” and “students in other programs would not be able to complete an IB test.”

At one level, IB is more demanding because it includes the TOK and EE requirements, which most other programs do not. IB students also typically have more homework than IB students; as students explain, “we have weekend work, we can’t finish homework from one day to the next.” There are also three other reasons offered by interviewees for why the IB DP is more demanding. First, to write proposals and research papers and support them with reliable information, IB students must move beyond the

knowledge and skills they learn in class. In contrast, in other programs, students are rarely required to seek knowledge beyond the confines of the classroom. Second, the existence of external assessments makes the IB DP more demanding, a pressure that teachers and students feel constantly. Relevant comments include, "Students know they will be graded by external teachers so they try harder," "Exams are harder and we have to train them for external assessments," and "There are many more requirements in IB than in CCH and they do not depend on the teacher; rather, also on the evaluation criteria and external evaluation." Third, the IB DP is also considered to be more demanding than other alternatives because IB requires that students develop and demonstrate cumulative knowledge and skills across the two DP years. Teachers explain that, "In other courses, they pass courses one by one. If they pass the first one, they can forget it. In IB they can't forget anything because the program is cumulative. Students make the same distinction, explaining, "In IB, knowledge isn't disposable, when the semester is over I don't throw away my notebook, I save it because I'll need it later." Students like this aspect of IB, "Its very cool making links between areas of study… you start to see that you don't have to focus in only one thing."

Though all interviewed teachers and students agree that the IB DP requirements are more demanding than non-IB requirements, some point out that the same teachers often teach IB and non-IB courses and sometimes use the same curriculum, so the differences are not always so pronounced. One teacher of IB and CCH curriculum explains that though she teaches parts of the CCH course using IB curriculum and pedagogy, she must teach certain topics to IB students that are not covered in the CCH curriculum. Students explain that, "we have a good education because we have much more work to do, but the CCH students have a good education too because they learn many subjects with the IB method, since we have the same teachers. In some areas we have the same level… IB has a higher level but it's not a big difference." One teacher points out that while the IB DP has more requirements, college preparation has most to do with students' motivation for study, "A Prepa Nacional student can be better prepared than an IB student, it depends on the level of personal motivation." Also, in some schools, all students have the opportunity to take at least a few official IB courses. According to an administrator, "We offer three IB courses to non-IB students: two language courses and a math course… our expectation is to offer only IB in the future."

IB teacher preparation to teach key IB DP components

Though we did not ask interviewed teachers or administrators directly about their level of preparation and training to teach IB, several volunteered their perceptions of the extent to which they feel prepared to teach and support IB students. Comments include, "For teachers, it is hard to help our students establish links between all the courses," "IB is more demanding of teachers," and "IB only shows us how to fill in paperwork, there

are no training courses, we have to look for them at the National University." These comments indicate that at least some IB DP teachers think they need more PD than they currently receive and that they are not aware of the IB-sponsored in-person workshops and online training opportunities that exist.

Another teacher training-related issue is that several interviewed teachers expressed their need for training on topics that are not directly IB-related, though are related to issues that are important to Mexican IB students. Specifically, these teachers want to learn more about how to support students with their college applications, particularly to non-Mexican universities, "Teachers need to learn how to write recommendation letters and fill in on-line application forms."

Do the answers to the first four questions differ by whether IB DP programs are offered in private secondary or university-based schools?

As we note above, with only two schools in each type, any differences are extremely exploratory. In most regards, we did not find clear differences in IB DP's between private and university-hosted schools. Throughout the previous sections, however, we highlight several differences between private schools and university-hosted IB DP's in our study. IB students from the two private schools are less likely to enroll directly into a non-Mexican university than university-hosted IB students. University-hosted students are more likely to enroll in the host university than in other universities. And students from the private schools were generally more positive about the TOK course.

Another difference between the two types of IB-offering schools is with respect to the introductions to different universities that each provides to students as they go through the process of choosing which universities to apply to. Private schools in our study organize more college fairs and talks with university representatives than do university-hosted programmes. In contrast, university-hosted IB DP's tend to encourage students to take courses in their affiliated universities during the last upper-secondary year, which often leads to continuation in the university for the duration of their tertiary studies.

None of the schools, however, provide additional formal, structured support to students during the application process. A representative comment from a private school student explains that there is a teacher that students can go to, but the guidance is not formal, "in spite of the lack of college guidance, there's support, you can ask Ms. 'Rodriguez' for information." Both university-based programmes and private schools only provided extra help to students interested in studying abroad and who were required to send recommendation letters. Students who planned to stay in Mexico complete the entire application process on their own.

Despite the difference in how schools present university options, both types of schools shared similar strategies regarding guidance in choosing a major—which is required for admissions to Mexican universities. For example, students at all schools took psychological tests, the results of which guidance counselors used to help counsel students on their choice of major. Most schools also offer a specific course in choosing a major. Across both types of schools, several teachers and guidance counselors expressed the sentiment that, "IB does not have a vocational [major] guidance course, but we offer it because it's necessary." The timing of the major guidance course was generally out of sync with the timing of the IB DP. Students explain that by the time they took the major guidance course and psychological test, "we had already chosen our IB courses…it was too late to make a change." As mentioned, our administrative data does not demonstrate meaningful patterns of significant correlations between students' higher-level course grades and their university major area of study. However, given that students must apply to enter specific major fields of study as part of their applications to Mexican university, IB students' selection of which courses they would take at the higher level ultimately has an important influence over their ultimate decision of which major they will pursue in their tertiary studies.

Limitations

There are several limitations to the validity of the results that we present in this paper. First, all results are contingent upon students' decision to enroll in the IB DP. Unlike an experimental evaluation of the IB DP "treatment," students were not randomly assigned to the IB DP. As we explain in the Results section, it is very likely that students who choose to enroll in the IB DP differ from those who do not in important measured and unmeasured ways. Therefore all of our findings are contingent not only on the IB DP itself, but on the composition of the students who enroll.

The second validity threat is that in qualitative research, the researchers' presence affects their participants' behaviors and responses. This concern could be even stronger when interviewing teenagers, because of perceived age and power differences (Marshall & Rossman, 2006). Though all research subjects gave informed consent, it is possible that they modified their answers to our research questions and/or would have answered differently in a non-research setting.

A third validity threat is that though we attempted to select case study schools that would be representative of the 58 Mexican schools that offer the IB DP, it is impossible for the four schools that we selected to fully represent the diversity of the other 54 schools.

Finally, selection of IB teachers and students was necessarily left to the IB coordinators and school directors. Written selection requests included that the selected teachers and students represent a mix of experience and subject matter—in the case of teachers—and level of success and effort—in the case of students. Though we asked in written and verbal form for this described variation in interview and focus group subjects, our reliance on school leadership to aid in the teacher and student sample selection could bias the results.

Discussion of Findings and Recommendations

As is the case in the United States and many other countries worldwide, Mexico has been experiencing strong growth in IB implementation since 2000 (IBO, 2012c). The number of Mexican schools that offer IB programs doubled from 2000 to 2004 and more than doubled again from 2004-2012 (IBO, 2012b). The number of IB DP students has also increased remarkably since 2000, with a tenfold increase in IB candidates and a sevenfold increase in the number of IB examinations taken (IBO, 2012b). This rapid growth suggests educator, student, parent and university satisfaction with the quality of an IB DP education and motivates discussion of the implications of the findings of our study for IB programs in Mexico and in countries beyond Mexico. Further, the IB DP is a model of competency-based education from which upper-secondary Mexican education policymakers could apply lessons-learned to the development of the public competency-based academic system.

Implications for the IB Organization and Mexican IB schools

The main results of the study include that students, teachers and administrators are satisfied with the IB DP in Mexico. IB students tend to attend top Mexican universities and they believe that their IB DP participation will prepare them well for college-level work. Notably, even though students are aware that their IB DP enrollment may not provide them with a university admissions advantage—at least among Mexican institutions—they choose to participate in the IB DP because of their perception of the program's educational value. Another finding is that the vast majority of Mexican IB DP students are fairly socio-economically advantaged, though teachers, administrators and AMEXCAOBI members believe this demographic reality ought to change such that less advantaged students have greater opportunity to enroll and succeed in the IB DP. Finally, though not probed on the topic, several teachers noted that they would benefit from more and different professional development.

To promote continued IB DP growth in Mexico, it will behoove the IBO to continue to lobby Mexican universities to value IB DP participation in the admissions process and to value the IB DP credits of enrolled students. According to the IBO (2012b), four Mexican Universities—Benemérita Universidad Autónoma de Puebla, Escuela Bancaria y Comercial, Instituto Tecnológico y de Estudios Superiores de Monterrey y Universidad de Monterrey—recognize IB students in at least one of four ways: by accepting credit as an admissions credential; by offering automatic admission or exemption from admissions examinations for IB Diploma holders; by offering course credits for at least some higher

level IB courses; and by offering course credits for at least some standard level IB courses. AMEXCAOBI members indicate that actually seven Mexican universities officially recognize IB students, and the National University does so unofficially. In contrast, passing Advanced Placement (AP) examination scores are recognized for advanced placement or credit at 16 Mexican universities (College Board, 2013). That AP credit valued at far more universities than is IB DP credit suggests room for further IBO work on the issue.

Another issue with implications for the IBO is that though there are a handful of exceptions, the vast majority of Mexican schools that currently offer IB programs are private and serve middle to upper economic strata students. Very few economically disadvantaged Mexican students have the opportunity to enroll in IB programmes. This situation may be changing. In early 2013, the IBO and AMEXCAOBI representatives entered into preliminary conversations with education ministry officials from the state of Nuevo Leon about the possibility of beginning state-sponsored IB programmes in five schools. Though actual implementation will take time, these plans could lead to expansion of the Mexican student audience for IB and would fulfill the hopes of broader access expressed by several teachers included in this study.

If such growth takes place, our findings suggest the extent to which IB DP enrollment would contribute to economically disadvantaged students' university admissions success will likely depend on the admissions requirements of the universities to which they apply, which vary as we show in Table 4. Regardless of the admissions processes, it is possible that encouraged by their IB DP experience low-income students might apply to and attend in greater proportions universities they would not otherwise have applied to. Therefore, it will be useful for the IBO to help low-income students to navigate the admissions and financial aid processes, either directly through student workshops or webinars or through specific training and professional development for teachers on these topics. With careful scaffolding, the planned IB DP expansion to state schools could serve as a means of promoting socio-economic mobility. The sorts of scaffolding processes geared specifically for low-income students will likely be useful in Mexico as well as in other countries—including the U.S.—that are seeking to enroll greater numbers of low-income students in the IB DP and to improve their success in the program.

It will also be valuable to study IB DP adoption and implementation in Nuevo Leon to learn lessons that could facilitate broader public school adoption and implementation throughout Mexico. Teacher training and professional development, for example, is likely to be a meaningful challenge and it will be useful to learn how the Nuevo Leon public schools respond to the challenge. There are approximately 1.7 million public school teachers in Mexico and evaluation data indicates that most are not sufficiently prepared to teach even standard (non-honors) academic curriculum. For example, in 2008 and 2009, among all the teachers who competed for a position in the National Contest for

Teaching Positions Allocation, only 30% passed the examination. In addition, OECD and UNESCO surveys reveal that a significant number of teachers never intended to become a teacher in first place, a finding that is partially explained by the low status teachers hold in Mexico (OECD, 2010; UNESCO, 2011). The Federal government offers several continuing education courses, certifications, masters and doctoral degrees and a few states have also started to offer their own continuing education options. Teachers enrolled in *PROFORDEMES*, a teacher incentive program, receive extra points for each continuing education course taken. IBO partnerships with continuing education providers and/or *PROFORDEMES* could be a viable way for the IBO to begin to ensure that public school IB teachers receive the training they need.

Teacher training also seems to be an issue among at least some of the IB DP teachers in our sample, who communicated their desire for more and/or different training. IBO statistics show that in 2012, approximately 1900 Mexican IB teachers participated in in-person workshops hosted directly by the IBO (60%) or by authorized providers (40%), indicating that on average, about 20 teachers per Mexican IB school received training. This average seems quite high and suggests that frequency of teacher training is probably not the main issue. Rather, the issue could be a misalignment between what teachers need to be trained on and what they are trained on. One cost-effective way to address this issue would be for the IBO to work to increase online training participation and to modify the content to meet Mexican teachers' needs. Table 5 below shows that relatively few Mexican teachers take advantage of this resource. There may be ways for the IBO to encourage greater online training participation, among Mexican teachers and perhaps among teachers in other countries as well.

Table 5: Mexican IB Teachers' Enrollment in Online Trainings

Year	# of online workshop participants from Mexico
Jan-Aug 2010	Not recorded
Sept-Nov 2010	21
2011	103
Jan-March 2012	21
May-Dec 2012	121

In summary, our recommendations for the IBO and Mexican IB schools are as follows:

1) In partnership with AMEXCAOBI, it would be beneficial for the IBO to continue policy conversations with:
    a. Mexican universities regarding acceptance of IB DP credit.
    b. Mexican upper-secondary public education policymakers regarding expansion of the IB DP into state schools.

2) The IBO could help low-income students to navigate the admissions and financial aid processes, either directly through student workshops or webinars or through specific training and professional development for teachers on these topics. These sorts of scaffolding processes geared specifically for low-income students will likely be useful in Mexico as well as in other countries—including the U.S.—that are seeking to enroll greater numbers of low-income students.
3) There will be value in studying IB DP adoption and implementation in Nuevo Leon to learn lessons that could facilitate broader public school adoption and implementation throughout Mexico and potentially in other countries. Teacher training and professional development, for example, is likely to be a meaningful challenge and it will be useful to learn how the Nuevo Leon public schools respond to the challenge.
4) IBO partnerships with continuing education providers and/or *PROFORDEMES* could be a viable way for the IBO to begin to ensure that public school IB teachers receive the training they need.
5) One potentially cost-efficient way to address the potential mismatch between IB DP training materials and Mexican IB DP teachers' training preferences would be for the IBO to modify online training content to meet Mexican teachers' needs. There may also be ways for the IBO to encourage greater online training participation, among Mexican teachers and perhaps among teachers in other countries as well.

Implications for Upper-Secondary Education in Mexico

Our findings also have implications for the greater Mexican upper-secondary education system. First, lack of satisfaction with other options—rather than belief that the IB DP helps university admissions success—motivated the majority of the students we interviewed for this study to enroll in the IB DP. Though national curriculum examination results indicate that IB students in our study are not uniformly exceptional students when they begin the IB DP, their interest in the curriculum, belief that their IB DP experience would help them in college and perhaps a group dynamic of pressure and support from peers leads them to value their IB DP experience.

This finding suggests that above-average students enrolled in academic upper-secondary schools Mexico-wide may be unsatisfied with the level of rigor available in their schools and that there may be value of developing a new national honors curriculum for academic public schools. Given IB administrators', teachers' and students' satisfaction with the IB DP, it may be worthwhile for upper-secondary education policymakers to either look to expand the IB DP at a large scale throughout Mexican upper-secondary institutions or, at the least, to draw from some of the most useful

features of the IB DP as a means of increasing the rigor of existing options. This study suggests that some of the most popular and useful features of the IB DP include the IB Learner Profile, the Extended Essay—particularly the experience of learning how to seek, choose and cite sources from beyond classroom walls—curriculum that is cumulative and that students do not perceive to be "disposable," and the CAS program.

Another finding from this study with implications for upper-secondary more generally is that while administrators, teachers, students and admissions officials believe that IB DP students are better prepared for college-level work than are non-IB students, there is a meaningful disconnect between the IB DP curriculum and university admissions processes. There are a few ways to consider the incongruity. First, with regards to IB, the incompatibility could limit the widespread expansion of the IB DP in Mexico if the current university admissions system remains unchanged. Second, there may be value in upper-secondary policy makers working in partnership with universities to alter current university admissions examinations so that they better measure students' preparedness for college work. University admissions processes could also be changed so that they are better able to measure students' "desired characteristics," perhaps though expansion of the use of personal statements and interviews as part of the admissions process. In the long-term, alteration of the admissions examinations and processes might better align them to the legislated competency-based upper-secondary academic curriculum.

In summary, our recommendations for the upper-secondary education in Mexico are as follows:

1) Given that lack of satisfaction with other options motivated the majority of the students we interviewed for this study to enroll in the IB DP, there may be value in developing a new academic honors curriculum, to replace and/or supplement CCH and Prepa. This could be accomplished by:
    a. Expanding the IB DP to more university-hosted schools and to state schools, and/or
    b. Drawing from some of the most useful features of the IB DP—including the IB Learner Profile, the experience of learning how to seek, choose and cite sources from beyond classroom walls, cumulative curriculum and the CAS program—as a means of increasing the rigor of existing Mexican academic options.
2) There may be value in upper-secondary policy makers working in partnership with university admissions officials to alter current university admissions examinations and processes so that they better measure students' preparedness for college work. This would be a major undertaking, but might ultimately better align admissions process with academic upper-secondary competency-based curriculum and with the expectations of college coursework.

3) To accomplish recommendations #1 and #2, Mexican upper-secondary policy makers and university leaders might initiate strategic partnerships with IBO leadership and staff as well as AMEXCAOBI members.

Further Research

As discussed in the Limitations section, the findings of this study are exploratory and descriptive and require further research to make definitive conclusions about the IB DP in Mexico as a means of college preparation. One possible future study could offer a more in-depth look at university student and faculty perceptions of the IB DP in Mexico. This study would include investigation of why Mexican universities do not currently value IB DP credit to the extent that they value credits earned through passing Advanced Placement examinations. Our university research findings indicate that a useful component of this type of study could be a comparative analysis of IB and AP students' SAT scores.

Other future research could include experimental evaluations of the IB DP in Mexico, with outcomes to include those related to university admissions, scholarships and studying abroad. Wider-scale implementation studies would also be useful and would contribute a stronger understanding of the strengths and weaknesses of Mexican implementation of the various IB DP components.

References

Byrd, S., Ellington, L., Gross, P., Jago, C., & Stern, S. (2007). *Advanced Placement and International Baccalaureate: Do they deserve gold stars?* Washington, DC: Thomas B. Fordham Institute.

Caspary, K. & Bland, J. (2011). Research Brief: First College Courses Taken by Florida IB Students. Center for Education Policy, SRI International. Retrieved from http://www.ibo.org/research/policy/programmevalidation/diploma/

Cech, S. J. (2008). World grows smaller, IB gets BIG. *State Legislatures, 34*(2), 20-24.

Coates, H., Rosicka, C. &MacMahon-Ball, M. (2007).Perceptions of the International Baccalaureate Diploma Program among Australian and New Zealand Universities. Australian Council for Education Research. Retrieved from: http://www.ibo.org/research/policy/programmevalidation/diploma/

Coca, V. Johnson, D., Kelley-Kemple, T., Roderick, M., Moeller, E. Williams, N &Moragne, K. (2012). Working to my Potential: The Postsecondary Experiences of CPS Students in the International Baccalaureate Diploma Programme. The University of Chicago Consortium on Chicago School Research. Retrieved from http://ccsr.uchicago.edu/publications/working-my-potential-postsecondary-experiences-cps-students-international-baccalaureate

College Board (2013). AP International Recognition: Mexico. Retrieved from: http://www.collegeboard.com/student/testing/ap/intad/intad_mexico.html

Conley, D. & Ward, T. (2009). Summary Brief: International Baccalaureate Standards Development and Alignment Project. Educational Policy Improvement Center. Retrieved from http://www.ibo.org/research/policy/programmevalidation/diploma/

Culross, R. & Tarver, E. (2011). A summary of research on the International Baccalaureate Diploma Programme: Perspectives of students, teachers and university admissions offices in the USA. Journal of Research in International Education 10 (3) 231-243.

Grupo Reforma. (2013). Las Más "Applicadas": Las Mejores Universidades 2013. Suplemento mensual (14 de abril). Mexico City, Mexico: Reforma. pp. 4-114

Higher Education Statistics Agency. (2011). International Baccalaureate Students Studying at UK Higher Education Institutions: How do they Fare? Retrieved from http://www.ibo.org/research/policy/programmevalidation/diploma/

International Baccalaureate Organization. (undated). Ecuador A Dynamic Presence: Growth and Characteristics of IB World Schools. Retrieved from: http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CDAQFjAA&url=http%3A%2F%2Fwww.ibo.org%2Fiba%2Fcountryprofiles%2Fdocuments%2FEcuadorCountryProfile_000.pdf&ei=0ZfCUMrUDoi40AHM-ICYBw&usg=AFQjCNF1fZZcGX2sYObEStOIZiXc2G2s8w

International Baccalaureate Organization (2006).Theory of Knowledge Diploma Programme Guide. Cardiff, Wales: International Baccalaureate Organization.

International Baccalaureate Organization (2008). IB Learner Profile Booklet. Cardiff: Wales. Retrieved from http://www.ibo.org/programmes/profile/

International Baccalaureate Organization (2008a). School-University Transition Project: Summary Report. Retrieved from http://www.ibo.org/research/policy/programmevalidation/diploma/

International Baccalaureate Organization (2008b). Creativity, Action and Service Guide. Cardiff, Wales: International Baccalaureate Organization.

International Baccalaureate Organization. (2009). General regulations: Diploma program for students and their legal guardians. Cardiff: Wales

International Baccalaureate Organization. (2010a). High school engagement among IB and non-IB students in the United States: A Comparison Study. IB Global Research and Policy Team, in collaboration with the Center for Evaluation and Education Policy, Indiana University. Retrieved from http://www.ibo.org/research/policy/programmevalidation/diploma/

International Baccalaureate Organization (2010b). Academic performance of IB students entering the University of California system from 2000-2002.IB Global Policy & Research Department. August 2010. Retrieved from http://www.ibo.org/research/policy/programmevalidation/diploma/

International Baccalaureate Organization. (2012a). Handbook of Procedures for the IB Diploma Program. Retrieved from: http://store.ibo.org/handbook-of-procedures-for-the-diploma-programme-2012-cd-rom-p-1632.html

International Baccalaureate Organization (2012b). Mexico IB Profile. Retrieved from http://www.ibo.org/iba/countryprofiles/

International Baccalaureate Organization (2012c). The IB Diploma Programme Statistical Bulletin, May 2012. Cardiff, Wales. Retrieved from: http://www.ibo.org/facts/statbulletin/dpstats/index.cfm

International Baccalaureate Organization (2013). IBO statistics on in-person and online professional development. Unpublished.

Jenkins, C. (2003). Perceptions of the International Baccalaureate Diploma Programme: A report of an inquiry carried out at UK universities and institutions of higher education. Retrieved from: http://www.ibo.org/research/policy/programmevalidation/diploma/

Marshall, C. & Rossman, G. (2006). *Designing Qualitative Research*. Thousand Oaks, CA: Sage Publications.

Mathews, J., & Hill, I. (2005). *Supertest : How the International Baccalaureate Can Strengthen Our Schools*. Chicago, IL: Open Court.

Miles. M. & Huberman, M. (1994). Qualitative Data Analysis. Thousand Oaks, CA: Sage Publications.

Organization for Economic Cooperation and Development. (2010), *Mejorar las escuelas. Estrategias para la acción en México,* OECD Publishing.

Organization for Economic Cooperation and Development. (2011a). Strong Performers and Successful Reformers in Education: Lessons from PISA for Mexico. OECD Publishing. Retrieved: http://dx.doi.org/10.1787/9789264107243

Organization for Economic Cooperation and Development. (2011b). Establishing a Framework for Evaluation and Teacher Incentives: Considerations for Mexico. OECD Publishing. Retrieved: www.oecd.org/edu/preschoolandschool/47730873.pdf

Organization for Economic Cooperation and Development. (2012). Education at a Glance: OECD Indicators Mexico. Retrieved from http://www.oecd-ilibrary.org/education/education-at-a-glance-2012_eag-2012-en

Ruiz, M.R. (2011). Los Rankings de Universidades: Una Visión Crítica. Revista de la Educación Superior. XL (1) 157 77-97

Saavedra, A. (forthcoming). The Academic Impact of Enrollment in International Baccalaureate Diploma Programs: A Case Study of Chicago Public Schools. *Teachers College Record*.

UNESCO (2011), Estado del arte sobre políticas docentes en América Latina y el Caribe. Borrador para discusión.

U.S. Department of Education. (2011). *A blueprint for reform: The Reauthorization of the Elementary and Secondary Education Act*. Alexandria: VA: EdPubs. Retrieved January 17 http://www2.ed.gov/policy/elsec/leg/blueprint/blueprint.pdf

World Bank. (2010). International Bank for Reconstruction and Development Program Document for a Mexico Secondary Upper Education Development Policy Loan in the

Amount of US$700.0 Million to the Mexico United States. April 9, 2010. Retrieved from http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2010/04/21/000334955_20100421021016/Rendered/INDEX/536690PGD0P112101Official0Use0Only1.txt