Student Performance and Student Engagement in the International Baccalaureate Middle Years Programme

April 2011

Julie Wade

Table of Contents

List of Tables

Executive Summary

A study of the performance and engagement of students in the International Baccalaureate Middle Years Programme (IB MYP) was conducted in a large, socioeconomically diverse district of rural, urban, and suburban communities. The study was requested by the school district office overseeing the program in collaboration with the International Baccalaureate (IB). Funding for the study was provided by the IB. The study examined the engagement and performance of students enrolled in five middle schools with IB MYP, and compared them with students in five demographically similar middle schools without IB MYP.

Background and Evaluation Questions

The Middle Years Programme (hereafter MYP) employs an inquiry-based approach to teaching and learning with an emphasis on interdisciplinary instruction. The program strives to encourage students to become lifelong learners and active citizens with a global perspective. Three fundamental concepts support and strengthen all areas of the curriculum in an MYP school: intercultural awareness, holistic learning, and communication (IB, 2011a). Five middle schools in the school district have implemented MYP; all use a whole-school model (i.e., all teachers and students in the school participate in the program).

This study examined the performance and engagement of students enrolled in the five middle schools with MYP and five demographically similar middle schools without MYP. The following questions guided the study:

1. What are the characteristics of the five MYP schools and five non-MYP comparison schools?
2. How did students in MYP and non-MYP schools perform on state and local assessments?
3. What were the levels of school engagement in MYP and non-MYP schools, as measured by *Middle Grades Survey of Student Engagement*, and by student attendance and suspensions?
4. How did students and parents in the MYP and non-MYP schools rate their schools on a survey of school environment?
5. What was the relationship between student engagement and student performance in MYP and non-MYP schools?
6. What were the experiences and perceptions of administrators in MYP and non-MYP schools regarding school climate and student engagement?

Summary of Methodology

To answer these questions, a mixed-methods evaluation study was conducted. Qualitative and quantitative data were collected to examine student performance, student engagement, student and parent perceptions of school climate, and reported experiences of school principals. Outcome measures for students in MYP schools were compared with those of students in comparison schools, and differences in students' background characteristics were controlled in two ways: 1) by design, in the selection of demographically similar comparison schools, and 2) by statistical procedures, controlling for student background characteristics.

Sample of schools. All five of the district middle schools with MYP were included in the study. Five comparison schools were selected from among the district middle schools without MYP based on their similarity on a composite of demographic variables.

Measures. Student performance was measured with annual state assessments, Measures of Academic Progress-Reading (MAP-R), and report card grades. Student engagement was measured with the *Middle Grades Survey of Student Engagement*, developed by Indiana University's Center for Evaluation and Education Policy, as well as with attendance and suspension data. Student and parent ratings of school climate were assessed with a survey of school environment administered by the school district. Interviews were conducted with the principal of each of the study schools, both MYP and non-MYP, to gain a deeper understanding of the school context.

Procedures for analyses. Outcome measures were compared for students in MYP schools and students in non-MYP comparison schools using both statistical significance tests and effect sizes. In all analyses of student performance and student engagement, differences in student characteristics were controlled for, including race/ethnicity, receipt of Free and Reduced-price Meal System (FARMS) services, receipt of special education services, enrollment in English for Speakers of Other Languages (ESOL) classes, gender, and when possible, previous test performance.

Key Findings

Student performance.   A higher percentage of students in MYP schools achieved a proficient or advanced performance level on mathematics and science assessments compared with their counterparts in five comparison schools, after controlling for differences in background and previous year's test performance (only mathematics performance was available for the previous year). The analyses revealed small but practically meaningful effect sizes. Comparisons of performance in reading, both on the state assessments and fall-to-spring MAP-R, revealed no significant differences between students in MYP schools and comparison schools.

Student engagement.   At all grade levels, students in MYP schools and students in the comparison schools did not differ in their ratings on the three dimensions of the *Survey of Student Engagement*. Moreover, students in schools with the highest number of years in MYP did not respond significantly differently from students in schools with the lowest number of years in MYP. On individual survey items identified to address students' perceptions of school climate, one item, "Overall, I feel good about being in this school," revealed statistically significant differences in favor of MYP for students in Grade 6 and Grade 8.

Student and parent ratings of school environment.   Student and parent responses to the *Survey of School Environment* administered by the school district provided further information about school climate, particularly in terms of a welcoming atmosphere and school efforts at promoting positive relationships.   Parent and student responses to individual survey items addressing aspects of school climate did not differ between MYP and non-MYP schools. However, student overall ratings of their school in the form of a "grade" between "A" and "D"

were more positive in the MYP schools than in the comparison schools, both for Grade 6 and Grade 8 students. Higher percentages of students in MYP schools compared with students in non-MYP schools gave their school a grade of "A" or "B" (71% vs. 63% in Grade 6, and 56% vs. 48% in Grade 8).

Relationship of student engagement to academic performance. The relationship between students' ratings of school engagement and their academic performance was examined controlling for demographic variables and, when possible, previous year's performance. Overall, the analyses showed a positive association between student engagement and some measures of student performance, both among students in MYP schools and students in comparison schools. Analyses at each grade level did not reveal differences in the engagement-performance relationship between the two groups of students in MYP and comparison schools.

Experiences of principals. Interviews were conducted with principals in both the five MYP schools and the five comparison schools to learn more about the programs and strategies in place at their schools and how they may influence school climate and student engagement. The positive influences of a variety of programs—MYP and others—reported by principals in both MYP and comparison schools may help explain the similar ratings of school engagement and school climate by students in both groups of schools.

One strategy reported by MYP principals in particular, however, was interdisciplinary learning. It was this approach that most distinguished the interviews of MYP principals from those of the comparison school principals. All five principals in MYP schools noted interdisciplinary learning as a positive influence in their school related to MYP.

In addition, four of the five MYP principals identified teacher training and the support of the MYP coordinator as important benefits of the program. All teachers in MYP schools receive initial and continuing training in the program's instructional approach.

Overall summary and discussion. Some evidence of student achievement benefits from MYP was suggested by the data; specifically, performance in mathematics and science were slightly but significantly higher for MYP students compared with students in similar non-MYP schools. Ratings of student engagement, for the most part, were similar for students in MYP and comparison schools. An overall rating of school environment, however, was higher for MYP students compared with non-MYP students, and a higher percentage of MYP students agreed that "Overall, I feel good about being in this school," compared with non-MYP students. Reported experiences of principals in MYP and comparison schools provide insights that may help in the understanding of these findings.

Recommendations

Study findings suggest the following recommendations:

- Continue to examine the performance of MYP students through their years of participation in the program to substantiate and further understand the effects found for mathematics and science.

- Survey students with questions directly addressing their experience in MYP. In areas of MYP emphasis, such as acquiring a global perspective, or learning through an interdisciplinary approach to instruction, teachers and administrators may learn how effectively the program is advancing these goals by asking questions of students.

- Solicit feedback and input from teachers in MYP schools. Four of five MYP principals expressed concern that teachers have adequate professional development and support from the MYP coordinator to align the MYP aims and objectives with the district curriculum and the core curriculum. Receiving and using input from teachers may help with schoolwide incorporation of MYP structures and expectations.

- Assess teachers' perceptions of the MYP training. Since teacher training was reported by MYP principals as an important benefit of the program, soliciting information from teachers about how the MYP training has impacted their work in the classroom may inform instructional practice.

Student Performance and Student Engagement
in the International Baccalaureate Middle Years Programme

Background

The International Baccalaureate (IB) offers challenging and innovative programs to students at three levels: the IB Primary Years Programme (PYP), the IB Middle Years Programme (MYP), and the Diploma Programme (DP). Currently, the IB works with over 3,000 schools in 140 countries to offer IB programs to over 900,000 students (IB, 2011a).

The school district in which the study was conducted is a large, socioeconomically diverse district of rural, urban, and suburban communities. Across the district, 14 IB programs have been authorized and established: one PYP, five MYPs in middle schools, and eight DPs in high schools. Three of the high schools with DPs also have the MYP for students in grades 9 and 10.

The focus of this study was the IB Middle Years Programme in five of the district's middle schools. The first MYP in the district was established in 2003; since then, four other middle schools have launched MYPs, with the most recent MYP authorized in 2008. Over 4,000 students in Grades 6 through 8 currently are enrolled in the five district middle schools with MYP. All MYP schools in the district use a whole-school model (i.e., all students and teachers in the school participate in the program).

The Middle Years Programme (hereafter MYP) employs an inquiry-based approach to teaching and learning with an emphasis on interdisciplinary instruction; the program strives to encourage students to become lifelong learners and active citizens with a global perspective (IB, 2011a). The IB mission statement says:

> The International Baccalaureate aims to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect (IB, 2011a).

At all program levels, IB works in four areas to address its mission: 1) development of curriculum, 2) assessment of students, 3) training and professional development of teachers, and 4) authorization and evaluation of schools (IB, 2011a). Three fundamental concepts support and strengthen all areas of the curriculum in an MYP school—intercultural awareness, holistic learning, and communication. MYP provides opportunities for interdisciplinary learning and critical thinking through its curricular framework. Involvement in community service and developing a global outlook are key elements of the program (IB, 2011b). All teachers in MYP schools participate in IB's professional development, and all MYP schools have an MYP coordinator to support the program on site.

IB authorization is at least a three-year process for the school, beginning with a year-long feasibility study and followed by two or more years of application development and review, including submission of a five-year plan, development of course outlines, teacher training, and IB visits with stakeholders. During the authorization process, an MYP coordinator is brought on to support the program in the school. Reauthorization by IB is required every five years and

ongoing monitoring of assessment, with submission of course materials and assessments, including graded student work, is required each year for rotating grades and course subjects. The systematic evaluation and monitoring by IB ensures that each IB school is implementing the program with fidelity (IB, 2011a).

Literature Review

Studies of IB programs have been primarily descriptive and on a small scale, and few have focused on academic outcomes. A notable exception, however, is a pair of longitudinal studies conducted by Kiplinger (2005a; 2005b) which looked at both achievement and growth in reading and mathematics among students in IB programs and students not in IB programs. Performance was higher among the students in IB programs than among students not in IB programs, both at middle school and high school levels, with greater differences in mathematics. The effect of IB on rates of improvement, however, was modest, and for some groups, absent. The author noted that benefits of the IB program may accrue, because the study found that longer IB participation was associated with greater academic gains, although the size of the effect was small (Kiplinger, 2005a).

In qualitative studies of IB programs, teachers have reported that the adoption of the IB curriculum often results in a more positive school climate and increased student engagement (Powell, 2002; Rose, 2007). In an effort to quantify the examination of IB student engagement, a recent study compared IB and non-IB students on their levels of school engagement (IB and Indiana University, 2010). The study used the *High School Survey of Student Engagement* (HSSSE), a national survey measuring the academic, social, and emotional engagement of high school students (see Yazzie-Mintz, 2010). Analysis of survey responses from IB students and non-IB students revealed the largest effect size on Social/Behavioral/Participatory Engagement. The study also compared survey responses of IB students and non-IB students within the same school; IB students had higher ratings of engagement on all three dimensions. Finally, the study compared responses of all students in schools with IB programs with responses of students in schools without IB programs; results of these analyses showed smaller effect sizes in general.

Both school climate and student engagement have been shown to be positively related to student achievement (Felner, Seitsinger, Brand, Burns, & Bolton, 2007; Fredericks, Blumenfeld, & Paris, 2004; Singh, Granville, & Dika, 2002). In both implicit and explicit ways, the pedagogical approach embedded in the MYP aims to promote a positive school climate and to enhance student engagement in learning. MYP's emphasis on interdisciplinary instruction and inquiry-based teaching and learning creates a structure for interactive, engaged learning (IB, 2011b). Examining the relationship between engagement and achievement among MYP students may help further an understanding of the experience of students in the program.

Assessing the impact of IB program participation, however, is complicated by issues of selection, since most IB students are high achieving even before they participate in an IB program. This problem was highlighted by Kiplinger (2005a; 2005b) and discussed in an IB publication (IB, 2008). Studies of effects associated with IB programs must contend with the fact that IB students, particularly at the high school level, are often high-performing students who have opted to take the most demanding courses. Although the philosophy of the IB program extends beyond

academics, aiming to promote a sense of intercultural awareness and global citizenship in its students, it is difficult to measure the impact of IB, academic or otherwise, because of self-selection in most IB programs (IB, 2008).

The whole-school model of the MYP in the school district conducting the study provided a research sample not confounded by student self-selection factors. All students enrolled in the five MYP schools in the district participate in MYP, and the student outcomes in this evaluation study were measured for all students in MYP schools, as well as for all students in five non-MYP comparison schools. Thus, although at the *school* level some selection factors may be at play (i.e., the schools were not randomly assigned to MYP or comparison group), the students within schools did not elect whether or not to be in MYP, as has been the case in some earlier studies.

Scope of the Study

This study examined the student engagement and student performance of students enrolled in five middle schools with the MYP and five demographically similar middle schools without the MYP. The study also examined student and parent ratings of school climate in the two groups of schools. The relationship between student engagement and student performance in MYP schools and non-MYP comparison schools was an additional focus of the study.

The questions guiding the study included:

1. What are the characteristics of the five MYP schools and five non-MYP comparison schools?
2. How did students in MYP and non-MYP schools perform on state and local assessments?
3. What were the levels of school engagement in MYP and non-MYP schools, as measured by *Middle Grades Survey of Student Engagement*, and by student attendance and suspensions?
4. How did students and parents in the MYP and non-MYP schools rate their schools on a survey of school environment?
5. What was the relationship between student engagement and student performance in MYP and non-MYP schools?
6. What were the observations and perceptions of administrators in MYP and non-MYP schools regarding school climate and student engagement?

Methodology

Multiple methods were used to answer the study questions: standardized tests and report card grades were used to assess student performance; surveys, as well as attendance and suspension data, were used to measure student engagement; and interviews were conducted with principals to gain a deeper understanding of the school context. Data were compared for two groups of students—students enrolled in five MYP schools and students enrolled in five demographically similar comparison schools. In addition, the relationship between student performance and student engagement was examined within the sample of students in MYP schools and separately for students in comparison schools. The study was conducted using two levels of control to

reduce the selection bias: 1) by design, in the selection of demographically similar comparison schools; and 2) by statistical procedures, controlling for student background characteristics.

Sample of schools. All five MYP schools were included in the study. Five comparison schools were selected from among the non-MYP schools in the district, based on their similarity on a composite of demographic variables: percentage of students enrolled in English for Speakers of Other Languages (ESOL) classes; percentage of students receiving Free and Reduced-price Meals System (FARMS) services; percentage of students identified as Asian American, African American, Hispanic, or White; percentage of students receiving special education services; and number of students in the school. Schools with special programs requiring applications were not included among the comparison group of schools.

Measures of student performance. Student performance data were obtained from student records. The annual state reading and mathematics tests (and in Grade 8, science) were examined for students in MYP and non-MYP schools. Reading and mathematics scores achieved during the study year and in the previous year were used. In addition, scores on the Measures of Academic Progress-Reading (MAP-R)[1] were used to measure fall to spring progress during the study year. Finally, average report card grades for students in MYP and non-MYP schools were examined for the study year.

Measures of Student Engagement. Student engagement was measured using the *Middle Grades Survey of Student Engagement*. This survey, developed by Indiana University's Center for Evaluation and Education Policy, is based on the *High School Survey of Student Engagement*, and taps three distinct dimensions of student engagement:

1. Cognitive/Intellectual/Academic Engagement describes students' effort, investment, and strategies for learning—the work students do and the ways students go about their work. Survey developers refer to this dimension as "engagement of the mind."
2. Social/Behavioral/Participatory Engagement captures students' actions in social, extracurricular, and non-academic school activities, including interactions with other students—the ways in which students interact within the school community. Survey developers refer to this dimension as "engagement in the life of the school."
3. Emotional Engagement emphasizes students' feelings of connection (or disconnection) to their school—how students feel about where they are in school, the ways and workings of the school, and the people within their school. This dimension is described by survey developers as "engagement of the heart." In addition to examination of student responses on the three dimensions described here, responses to survey items tapping school climate were analyzed for the two groups of students.

The survey was administered during one class period in a two-week window in April 2010. Prior to administering the survey, teachers sent home a permission form to parents describing the study and the survey. Response rates were 88% for the MYP schools and 82% for the comparison schools. Further descriptions, including sample items, of the three dimension scores are shown in Appendix A.

---

[1] MAP-R is a computer-adaptive test that administers test items according to a student's ability.

In addition to the survey assessment of engagement, student attendance and suspension data were used to further address student engagement.

Student and parent perceptions of school environment. A measure of school climate was obtained from responses to the district *Survey of School Environment*. The *Survey of School Environment* is administered systemwide to students and parents in each school every spring. Students complete the surveys online in a classroom. Parents are invited to respond to an online survey; if a translated version of the parent survey is requested, a paper version is provided by mail. Both student and parent surveys are anonymous, but students identify their grade. In the middle schools, students in Grades 6 and 8 are surveyed and samples of parents of students in all grades are surveyed. In 2010, the average response rate for students in the five MYP schools was 86% and for students in the five comparison schools was 88%. The average response rate for parents, however was far lower, and comparable to the overall 2010 district middle school parent response rate on the *Survey of School Environment* of 21%. The response rate of parents in the five MYP schools was 21% and of parents in the five comparison schools was 18%.

Principal interview. To gain a more nuanced understanding of MYP and other programs, and how they may relate to school climate and student engagement, interviews were conducted with the principal of each of the study schools—five principals in MYP schools and five principals in non-MYP schools. Principals in MYP schools were asked to discuss the positive impacts of MYP, the challenges of MYP implementation, and how MYP influences school climate and school engagement. Principals in comparison schools were asked to discuss the positive impacts of major programs or areas of focus in their schools, challenges related to major programs, and influences of programs on school climate and school engagement. A research staff member conducted the semi-structured interviews during April and May, 2010. A copy of each of the interview instruments can be found in Appendix B.

Procedures for analysis. Data analytic procedures varied according to the research question being asked as well as the format of the data (e.g., binary or continuous outcome variable). Outcome measures were examined separately for each grade. Both statistical significance tests and measurement of effect size were used in the study. In all analyses of student performance and student engagement, differences in student characteristics were controlled for, including race/ethnicity, receipt of FARMS services, receipt of special education services, enrollment in ESOL classes, gender, and, when possible, previous test performance. The following analytic procedures were used in the study:

- Logistic regression was used to examine whether students in the MYP schools had higher rates of proficiency on math, reading, and science assessments than students in the comparison schools, as well as for comparison of suspensions.
- Repeated Measures Analysis of Variance was used to compare the fall and spring reading scores of students in the two groups of schools on the MAP-R assessment.
- Analysis of covariance (ANCOVA) was used to examine differences in ratings of school engagement in the MYP schools and the comparison schools, as well as attendance rates for students in the two groups of schools.
- Partial correlations were used to examine the relationships between measures of performance and school engagement in the MYP schools and in the comparison schools.

In analytic procedures, sample size influences statistical significance, such that with a large sample, even small differences may be significant. Therefore, effect sizes were used to judge whether the observed differences and relationships were large enough to be of practical significance to educators (American Psychological Association, 2010). Appendix C describes the computation of effect sizes associated with the analytic procedures used in this evaluation.

Findings

Characteristics of the Sample Schools

Characteristics of students as well as school-level characteristics were examined for the two groups of schools. Table 1 shows the demographic characteristics of students in the MYP and non-MYP schools.

Table 1
The International Baccalaureate Middle Years Programme:
Characteristics of Participants in MYP Schools and Comparison Schools, 2009–2010

Demographic Characteristics		% Students in MYP Schools (5 middle schools) (N = 4,201)	% Students in Comparison Schools (5 middle schools) (N = 3,847)
Gender	Male	51.1	52.4
	Female	48.9	47.6
Grade	6	29.8	31.8
	7	36.2	33.0
	8	34.0	35.2
Ethnicity	African American	25.7	20.6
	American Indian	0.3	0.2
	Asian American	12.5	20.1
	Hispanic	29.5	26.0
	White	32.0	33.0
Economically Disadvantaged	FARMS (current)	37.2	34.9
ESOL	ESOL enrollment, any level	6.8	5.9
Special Education	Special Education, any level	11.9	11.1

Student characteristics in the two sets of schools were similar overall. The percentage of African American students in the MYP schools was somewhat higher than in the comparison schools (26% vs. 21%), and the percentage of Asian students was somewhat lower in the MYP schools than in the comparison schools (13% vs. 20%), but other differences in demographic characteristics were less than five percentage points.

Table 2 describes school-level characteristics of the five MYP schools and the five comparison schools, including staff experience, number of years in MYP, and other programs. At the school

level, the average number of students was larger in the MYP schools than in comparison schools (842 compared with 772), and the MYP schools had a slightly higher percentage of teachers with less than five years experience (20% compared with 17%). Both MYP and comparison schools had other programs in place (e.g., Middle School Reform, Positive Behavioral Interventions and Supports).

Table 2
Characteristics of MYP Schools and Comparison Schools, 2009–2010

School Level Characteristics		MYP Schools (5 middle schools)	Comparison Schools (5 middle schools)
Number of Students	Mean, *SD*	842 $SD^a = 134$	772 $SD^a = 255$
	Range	677–986	581–1187
Professional Personnel, Years Experience	Less than 5 Years	20.1%	16.6%
	5-15 Years	47.5%	48.5%
	More than 15 Years	32.3%	34.9%
Principal, Years in Position	Median	5	5
	Range	2–6	2–15
Years in MYP	Median	5	NA
	Range	1–8	
Other programs or strategies in place[b]		MSR (3 schools); PBIS (3 schools); language immersion (3)	MSR (2 schools); PBIS (4 schools); mentoring programs (3); peer mediation (2)

[a] SD = standard deviation
[b] MSR = Middle School Reform
  PBIS = Positive Behavioral Interventions and Supports (U.S. Department of Education, 2010)

Student Achievement

Annual state reading, math, and science performance was examined for the students in MYP and non-MYP schools. The percentages of students in each group of schools meeting the standard for proficient or advanced performance level in the study year (2009–2010) are shown in Table 3.

Table 3
Percentage of Students Scoring Proficient or Advanced on Mathematics, Reading, and
Science in MYP Schools and Comparison Schools, 2009–2010

	Grade	MYP Schools		Comparison Schools	
		N	%	N	%
Mathematics Proficient or Advanced	6	1,058	85.7***	1,090	82.6
	7	1,300	82.8**	1,115	78.9
	8	1,243	78.7***	1,228	73.1
Reading Proficient or Advanced	6	1,034	90.9	1,071	90.8
	7	1,254	88.8	1,091	90.0
	8	1,208	88.7	1,182	88.2
Science Proficient or Advanced	8	1,343	77.5***	1,293	72.0

$*p < .05; **p < .01; ***p < .001.$

Analysis of the proficiency scores using logistic regression to control for differences in students' background revealed statistically significant differences between the two groups of schools in mathematics and science, with small but practically significant effect sizes for all grades in mathematics and for Grade 8 science (Cohen's $d = .35$ for Grade 6, .20 for Grade 7, and .30 for Grade 8 in mathematics, and .35 in science). (In science, only Grade 8 students are tested, so there are no Grade 7 scores as a controlling variable in the Grade 8 analysis, and no scores for Grade 6 and Grade 7 students.) The percentage of students meeting proficiency in reading was statistically similar for MYP and non-MYP schools in 2009–2010 across all grades.

Students' performance on the MAP-R reading assessments administered in the fall and spring of 2009–2010 were examined to assess reading progress during the school year. Table 4 presents the average RIT scores for students in MYP and non-MYP schools for fall and spring of the 2009–2010 school year.

Table 4
Mean RIT Scores for Students in
MYP Schools and Comparison Schools, Fall 2009 and Spring 2010

	Grade	MYP Schools					Comparison Schools				
			Fall 2009		Spring 2010			Fall 2009		Spring 2010	
		N	Mean	(SD)	Mean	(SD)	N	Mean	(SD)	Mean	(SD)
MAP-R RIT Score	6	1,127	214.1	(15.4)	218.7	(14.8)	1,161	214.6	(15.9)	218.6	(15.3)
	7	1,379	218.4	(16.0)	221.7	(15.3)	1,207	218.8	(15.2)	221.6	(14.2)
	8	1,292	222.4	(15.1)	225.6	(14.3)	1,278	222.6	(15.3)	224.8	(15.2)

Students in each grade in both groups of schools showed progress in reading skills between fall and spring, with no significant difference in improvement or performance between MYP students and students in comparison schools.

Student Engagement

Attendance and suspensions. Student engagement was measured both with student records (attendance, suspensions) as well as with results of the *Survey of Student Engagement.* Attendance and suspension rates are shown in Table 5.

Table 5
Mean Attendance and Suspension Rates for Students in
MYP Schools and Comparison Schools, Spring 2010

		MYP Schools			Comparison Schools		
	Grade	N	Mean	SD	N	Mean	(SD)
Mean attendance rate: % of days attended	6	1,081	96.3**	(3.6)	1,114	95.8	(4.1)
	7	1,332	95.5	(4.3)	1,143	95.4	(4.6)
	8	1,281	95.1	(5.0)	1,251	95.3	(4.7)
% of students with 1 or more out-of-school suspensions	6	1,158	2.2		1,179	2.3	
	7	1,432	3.1		1,212	4.1	
	8	1,351	3.3***		1,302	5.5	

*$p < .05$; **$p < .01$; ***$p < .001$.

The mean attendance rates for all grades, in MYP and comparison schools, were over 95%. Analysis of covariance revealed that among Grade 6 students, students in MYP schools had a higher mean attendance rate than students in comparison schools (96.4% compared with 95.8%; $p < .002$) but the effect size was negligible (Cohen's $d = .12$). Attendance rates of Grade 7 and Grade 8 students were similar for students in MYP schools and comparison schools.

Suspension rates were small for students in all grades in both MYP schools and comparison schools. Logistic regression revealed that in Grade 8 a significantly smaller percentage of students in MYP schools than in non-MYP schools had one or more suspensions during the year (3.3% compared with 5.5%; $p < .001$); the effect size for this difference was small but of practical significance (Cohen's $d = .39$).

Survey of Student Engagement. Students completed the *Middle Grades Survey of Student Engagement* in their classroom in spring 2010. Scores on the three survey dimensions were computed for each student. Average ratings of students in MYP schools and comparison schools are shown in Table 6.

Table 6
Mean Ratings of School Engagement in MYP Schools and Comparison Schools

		MYP Schools			Comparison Schools		
	Grade	N	Mean Rating	SD	N	Mean Rating	SD
Cognitive/Intellectual / Academic Max. possible score = 58	6	979	37.5	(6.8)	758	37.2	(7.0)
	7	1,085	36.7	(6.6)	854	37.1	(7.2)
	8	1,085	37.2	(6.9)	800	37.0	(7.6)
Social/Behavioral/ Participatory Max. possible score = 17	6	970	9.8	(2.6)	750	9.8	(2.6)
	7	1,078	10.0	(2.5)	849	10.3	(2.6)
	8	1,078	10.3	(2.5)	789	10.4	(2.6)
Emotional Max. possible score = 39	6	994	30.1	(4.4)	769	29.6	(4.9)
	7	1,098	28.7	(4.2)	864	29.3	(4.9)
	8	1,098	28.7	(4.6)	808	29.0	(5.1)

Analysis of covariance was used to compare survey ratings of students in MYP schools with those of students in non-MYP schools. The analysis revealed that in all grades, students in the two groups had similar average ratings on each of the three engagement dimensions.

Because the number of years since authorization of the MYP varied in the five middle schools (from one to eight years), an analysis was conducted to examine whether the number of years in MYP had an effect on students' ratings of school engagement. The two MYP schools with the highest number of years since authorization (seven and eight years) were compared with the two schools that were most recently authorized (one and four years since authorization). Average ratings of students in the two groups of schools are shown in Table 7.

Table 7
Mean Ratings of School Engagement in MYP Schools with Most Years in Program and
MYP Schools with Fewest Years in Program

		MYP Schools with High Program Years			MYP Schools with Low Program Years		
	Grade	N	Mean Rating	SD	N	Mean Rating	SD
Cognitive/Intellectual/ Academic Max. possible score = 58	6	423	38.5	(6.3)	384	36.8	(6.9)
	7	475	37.2*	(6.5)	403	35.5	(6.7)
	8	506	38.2	(7.0)	376	36.9	(6.8)
Social/Behavioral/ Participatory Max. possible score = 17	6	421	10.1	(2.4)	379	9.7	(2.7)
	7	476	10.2**	(2.5)	395	9.5	(2.5)
	8	503	10.6	(2.4)	374	10.5	(2.5)
Emotional Max. possible score = 39	6	423	30.4	(4.2)	393	30.2	(4.3)
	7	486	28.8	(4.1)	407	28.9	(4.3)
	8	512	28.9	(4.7)	380	29.2	(4.6)

$*p < .05; **p < .01; ***p < .001.$

The number of years with the program had a small but significant effect on Grade 7 students' engagement ratings. Statistically significant differences between students in MYP and comparison schools were found on ratings of the Cognitive/Intellectual/Academic and Social/Behavioral/Participatory dimensions. The effect size associated with the difference in ratings on the Cognitive/Intellectual/Academic dimension was negligible (Cohen's $d = .15$); the effect size for the difference in Social/Behavioral/Participatory ratings was small but of practical significance (Cohen's $d = .20$).

In addition to students' ratings on the three engagement dimensions of the *Middle Grades Survey of Student Engagement*, responses to individual survey items related to school climate were examined. Table 8 shows ratings for the two groups of students on items identified as reflecting school climate.

Table 8
Percent of Students Agreeing with Survey Items
in MYP Schools and Comparison Schools

Survey Item	Grade	MYP Schools		Comparison Schools	
		N	Percent Agree[a]	N	Percent Agree[a]
Overall, I feel good about being in this school.	6	1,035	90.0***	828	86.4
	7	1,140	85.4	892	83.6
	8	1,115	84.2**	831	81.2
This school makes me feel confident about who I am.	6	1,029	72.8	827	71.9
	7	1,133	69.7	889	72.4
	8	1,112	69.4	831	69.1
I am an important part of my school community.	6	1,018	62.4	824	60.4
	7	1,130	57.9	881	59.4
	8	1,106	57.6	824	60.6
There is at least one adult in this school who cares about me.	6	1,026	86.4	825	87.0
	7	1,132	84.2	887	85.2
	8	1,111	87.3	829	87.5
I can be who I am at this school.	6	1,022	75.9	816	73.4
	7	1,125	73.8	884	75.2
	8	1,109	75.7	826	73.8
All students are treated equally at this school.	6	1,013	54.3**	816	47.7
	7	1,122	47.4	873	51.1
	8	1,098	46.5	818	50.6

[a]Percent Agree represents students marking "Strongly Agree" or "Agree" on a four-point scale.

Across all grade levels, responses to many of the survey items tapping school climate were similar for students in the two groups of schools. Logistic regression analytic procedures were used to compare the responses of the two groups while controlling for differences in the students' background. One item—"Overall, I feel good about being in this school"—revealed statistically significant differences in favor of MYP for students in Grade 6 and Grade 8, with

small but practically significant effect sizes (Cohen's d = .27 for Grade 6 and .20 for Grade 8). On an additional survey item—"All students are treated equally at this school"—Grade 6 MYP students showed higher levels of agreement than Grade 6 non-MYP students, but the effect size was negligible (Cohen's d = .18).

Student and Parent Ratings of School Environment

Responses to the district *Survey of School Environment* were used to examine perceptions of students and their parents toward their schools. Survey items relating to a welcoming atmosphere and school efforts in building positive relationships, as well as an overall "grade" rating of the school, were chosen to provide data most relevant to school climate. Table 9 presents a summary of responses from surveyed students (Grades 6 and 8) in MYP and comparison schools.

Table 9
Percent of Students Agreeing with Items on Survey of School Environment
in MYP Schools and Comparison Schools

Survey Item	Grade	MYP Schools		Comparison Schools	
		N	Percent Agree[a]	N	Percent Agree[a]
I feel welcomed at this school.	6	850	81.2	1,022	78.3
	8	1,135	77.9	1,191	76.1
School staff encourages students to respect others.	6	842	91.8	1,012	91.9
	8	1,135	88.2	1,184	85.8
This school encourages students to help one another.	6	833	81.6	1,007	78.9
	8	1,132	73.2	1,178	71.1
			Percent Rating A or B		Percent Rating A or B
What grade would you give your school?	6	849	71.2	1,018	63.2
	8	1,138	56.4	1,194	48.1

[a]Percent Agree represents students marking "Strongly Agree" or "Agree" on a four-point scale.

Responses to the *Survey of School Environment* are reported descriptively, since the surveys are anonymous and no comparisons or controls of respondent demographic characteristics can be made (although comparison schools were selected to be demographically similar to MYP schools). On specific survey items about feeling welcomed and about school efforts at promoting positive relationships, students in MYP schools and students in comparison schools responded with similar levels of agreement. However, on a broader question asking students to assign a "grade" to their school—from "A" to "D"—a higher percentage of students from MYP schools than from comparison schools gave their school an "A" or a "B" (71% vs. 63% among Grade 6 students; 56% vs. 48% among Grade 8 students), an eight percentage point difference in both cases.

Table 10 shows the average ratings from parents of students in the MYP schools and comparison schools who responded to *Survey of School Environment.* A sample of parents of students in all grades was sampled; respondents were not identified by grade.

Table 10
Percent of Parents Agreeing with Items on Survey of School Environment
in MYP Schools and Comparison Schools

Survey Item	MYP Schools		Comparison Schools	
	N	Percent Agree[a]	*N*	Percent Agree[a]
I feel welcomed at this school.	355	90.4	313	92.6
This school does a good job of welcoming families of diverse cultures	301	96.4	270	96.3
		Percent Rating A or B		Percent Rating A or B
What grade would you give your school?	354	83.3	309	79.3

[a]Percent Agree represents parents marking "Strongly Agree" or "Agree" on a four-point scale.

Responses from parents of students in MYP schools and parents of students in the comparison schools were similar on the survey items examined. Over ninety percent of parents in each group of schools agreed that they felt welcomed at their school and that their school does a good job welcoming families of diverse cultures, and over three quarters of parents in MYP schools and in comparison schools gave their school an "A" or a "B" on a scale from "A" to "F."

Relationship of Student Engagement to Academic Performance

The relationship between students' ratings on the *Survey of Student Engagement* and their academic performance was examined separately for students in MYP schools and students in comparison schools. Partial correlations from multiple regression procedures were used to examine relationships between the engagement ratings and four measures of student performance—annual state assessment scores in mathematics, reading, and science, and average report card grades. Separate analyses were conducted for each outcome measure and each grade level.

In each analysis, the following demographic variables were controlled: receiving FARMS services, enrollment in ESOL classes, receiving special education services, race, and gender. In all analyses except those examining the relationship between engagement ratings and science scores and engagement ratings and Grade 6 report card averages, the previous year's score (mathematics score, reading score, or report card grade average) was included as a control variable. Thus, the correlations represent the relationships of the engagement rating with the performance measure, *after* controlling for last year's performance and student background characteristics. Table 11 summarizes the findings of these analyses.

Table 11
Relationship between Ratings of School Engagement and Measures of
Performance in MYP Schools and Comparison Schools

	Grade	MYP Schools (5 middle schools)	Comparison Schools (5 middle schools)
Partial correlations with mathematics scale score			
Cognitive/Intellectual/ Academic	6	.050	.059
	7	.027	.062
	8	.040	.106**
Social/Behavioral/ Participatory	6	.041	.051
	7	.037	.033
	8	-.027	.053
Emotional	6	.065	.059
	7	.039	.014
	8	.036	.098**
Partial correlations with reading scale score			
Cognitive/Intellectual/ Academic	6	.118**	.062
	7	.108**	.083*
	8	.060	.144***
Social/Behavioral/ Participatory	6	.098**	.009
	7	.112**	.078*
	8	-.011	.065
Emotional	6	.086*	.084*
	7	.074*	.037
	8	.013	.123**
Partial correlations with science scale score			
Cognitive/Intellectual/ Academic	8	.145***	.127***
Social/Behavioral/ Participatory	8	.067*	.031
Emotional	8	.073*	.097**
Partial correlations with average report card grades			
Cognitive/Intellectual/ Academic	6	.277***	.257***
	7	.211***	.188***
	8	.191***	.119**
Social/Behavioral/ Participatory	6	.143***	.159***
	7	.108**	.102**
	8	.116***	.087*
Emotional	6	.218***	.231***
	7	.158***	.163***
	8	.126***	.095**

$*p < .05; **p < .01; ***p < .001$, two-tailed.

Partial correlations between engagement ratings and performance (controlling for demographic variables and, when possible, previous year's performance) revealed significantly positive relationships in MYP schools and in comparison schools across grade levels. However, caution should be exercised when interpreting the results, since the significance levels (p values) of the correlations are greatly affected by the large study sample size. In these analyses, engagement ratings showed the strongest relationships with report card grades for students in all grades in both MYP schools and non-MYP schools. Using Cohen's (1988) guidelines (see Appendix D), most of the associations between engagement ratings and report card grades would be interpreted as small but practically significant effect sizes. In addition, the associations between Cognitive/Intellectual/Academic ratings and science scores in both MYP and non-MYP schools yielded small but significant effect sizes.

Overall, the data show some association between the ratings of student engagement and measures of student performance. However, the analyses did not show a difference between the MYP schools and the comparison schools in their engagement/performance relationships. In both groups of schools, engagement ratings showed positive associations with report card grades.

Principal Interviews: Summary of Findings

To gain a more nuanced understanding of MYP and other programs, and how they may relate to school climate and student engagement, interviews were conducted with the principal of each of the study schools—five principals in MYP schools and five principals in non-MYP schools. Principals in MYP schools were asked to discuss the positive impacts of MYP, the challenges of MYP implementation, and how MYP influences school climate and school engagement. Principals in comparison schools were asked to discuss the positive impacts of major programs or areas of focus in their schools, challenges related to major programs, and influences of programs on school climate and school engagement.

As noted in Table 2, the major programs in place in the five MYP schools (in addition to MYP) were: Middle School Reform (MSR) (three schools), Positive Behavioral Interventions and Supports (PBIS) (three schools), and language immersion (three schools). The major programs in place in the five comparison schools were: MSR (two schools), PBIS (four schools), mentoring programs (three schools), and peer mediation (two schools).

Principal comments from MYP Schools. The positive impact identified most frequently by principals in the MYP schools was the opportunity for interdisciplinary learning. All five MYP principals reported that teachers collaborate in interdisciplinary units and students are making connections between disciplines and with the world outside of school. One MYP principal sums up MYP in this way: "It gets kids to be good thinkers and good people."

A second area that four of the five MYP principals identified as a benefit of the program was teacher training and the support of the MYP coordinator. Describing the program impact on teachers, one principal explained, "The [MYP] training is extremely beneficial and the dedicated MYP coordinator, who provides in-house professional development, has been beneficial to teachers."

In addition to specific changes in instructional approach and to the accompanying staff training and support, three principals noted that the community and the students like the program. The students recognize characteristics of the MYP philosophy in various activities at school, and they are proud to attend an MYP school. One principal describes the effect of MYP on students in this way: "...they know when they walk in the door that they're going to be an IB MYP student."

The challenge identified most frequently by principals (four of five principals reported) was the additional effort required for teachers to balance and coordinate the objectives of MYP with the requirements and timelines of the district curriculum. Training and support also was mentioned as a concern by three of five MYP principals because there are fewer resources to train staff who are new to the program, so turnover becomes an issue.

Principals also were asked to discuss the influence of MYP on school climate and student engagement in learning. Three principals referred to the interdisciplinary nature of MYP and the increased collaboration among teachers as having an effect on climate and engagement. Two of the five MYP principals reported that the emphasis on rigorous instruction has influenced school climate, one noting that "MYP has given us an umbrella of rigorous instruction for all of our students."

Principal Comments from Non-MYP Comparison Schools. Principals in the comparison schools were asked to discuss the major programs or curricular interventions in place at their schools and the influence the programs have on school climate and student engagement. Positive Behavioral Interventions and Supports was identified as having a positive effect on school climate by all four principals in schools with PBIS; the principals noted that a reduction of behavior issues using PBIS has improved school climate. The two principals in Middle School Reform schools reported that the professional development in MSR, as well as a wider course selection, has helped to increase student engagement. Three of the five principals in comparison schools reported increased collaboration as a positive impact of the programs at their schools.

Similarities in Perceptions of MYP and non-MYP Principals. Principals from both groups of schools reported ways that the programs and strategies in place at their schools influence school climate and student engagement. Collaboration among teachers was identified as a positive influence on school climate and student engagement in both MYP and non-MYP schools. Principals from both groups of schools reported that the expanded curriculum in Middle School Reform, with more interesting electives offered to students, is more engaging for students. One principal from an MYP school explained, "The MSR new curriculum is very engaging for the adolescent learner and [it is] complimentary to MYP. There is more student-to-student discourse, and hands-on, authentic activities that appeal to students."

Observations Specific to MYP Schools. One strategy influencing school climate and student engagement that was reported by MYP principals in particular was interdisciplinary learning. The opportunity for students to make connections between classroom disciplines and with the world outside of school was described by all five MYP principals as significantly contributing to student engagement in learning. One principal described it in this way: "It's making connections between disciplines, between the curriculum and real life, making things relevant, student centered, and having more of a global look ... not just learning things in a vacuum."

Discussion

This study examined student engagement and student performance, as well as student and parent perceptions of school climate in five middle schools with the MYP and in five demographically similar middle schools without the MYP. The relationship between student engagement and student performance in MYP schools and non-MYP comparison schools was an additional focus of the study.

Some evidence of student achievement benefits from MYP was suggested by the data; specifically, performance in mathematics and science were slightly but significantly higher among MYP students compared with students in similar non-MYP schools. Previous research (Kiplinger, 2005a; 2005b) also found a slightly greater effect in mathematics than in reading, and the same study suggested that the benefits of an IB curriculum may compound over years in the program. Given the previous findings (2005a), and the effects for mathematics and science in the present study, it may be informative to continue examining the academic performance of students who are enrolled for multiple years in MYP and IB programs.

Student engagement ratings were similar for students in MYP and comparison schools. In addition, relationships (partial correlations) between the student engagement ratings and measures of performance were similar for the MYP and comparison school groups. Given the MYP emphasis on interdisciplinary learning and communication, it might be expected that students in MYP schools would show greater engagement than students in non-MYP schools, and that their engagement would connect more directly with their academic performance (i.e., engagement/performance relationships would be stronger in MYP schools). What might account for the lack of such findings? It is possible that the comparison schools have programs in place that emphasize some of the same qualities and values that underlie the MYP, so that levels of engagement may be high for both groups of students. Indeed, interviews with principals in both MYP and non-MYP schools reported the positive influence of other programs in place, particularly Middle School Reform.

The *Survey of Student Engagement* was developed for high school students and the present study is among the first to use the middle school version, so scores from a national middle school sample are not yet available. Comparing the engagement ratings from the present study with a larger national group, when available, would provide a broader context in which to view the level of engagement of the district's MYP students as well as students in the comparison schools.

Finally, higher percentages of MYP students gave their school an "A" or "B" on a survey of school environment and agreed that "Overall, I feel good about being in this school" on the engagement survey, compared with non-MYP students. These ratings suggest that students in MYP schools have positive feelings about their school that are not being picked up by other specific survey questions about student engagement and school climate. These findings, in conjunction with reports from MYP principals, suggest that students in MYP schools may experience a sense of pride based on their school's involvement in the program. Three of the five MYP principals named the positive feelings and pride of the community and the students toward the program as one of the positive impacts of MYP. Assigning a higher "grade" and feeling good about being in their school may be a reflection of the pride felt by students in MYP schools.

Recommendations and Next Steps

The following recommendations are suggested by the findings:

- A small but significant effect for MYP was shown in mathematics and science performance. To substantiate and further understand this effect, it is recommended that performance of MYP students continue to be examined through their years of participation in the program.

- It may be informative to survey students with questions directly addressing their experience in MYP. In areas of MYP emphasis, such as acquiring a global perspective, or learning through an interdisciplinary approach to instruction, teachers and administrators may learn how effectively their program is advancing these goals by surveying students with questions relevant to MYP objectives.

- Solicit feedback and input from teachers in MYP schools. Four of five MYP principals expressed concern that teachers have adequate professional development and support from the MYP coordinator to align the MYP aims and objectives with the district's curriculum and the core curriculum. Receiving and using input from teachers may help with schoolwide incorporation of MYP structures and expectations.

- Assess teachers' perceptions of the MYP training. Since teacher training was reported by MYP principals as an important benefit of the program, soliciting information from teachers about how the MYP training has impacted their work in the classroom may inform instructional practice.

References

American Psychological Association. (2010). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: Author.

Cohen, J. (1988). *Statistical power for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Connell, J. P., Spencer, M. B., & Aber, J. L. (1994). Educational risk and resilience in African-American youth: Context, self, action, and outcomes in school. *Child Development*, *65*, 493-506.

Felner, R. D., Seitsinger, A. M., Brand, S., Burns, A., & Bolton, N. (2007). Creating small learning communities: Lessons from the project on high-performing learning communities about "What Works" in creating productive, developmentally enhancing, learning contexts. *Educational Psychologist*, *42*(4), 209–221.

Fredericks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, *74*(1), 59–109.

International Baccalaureate. (2011a). *About the International Baccalaureate*. http://www.ibo.org/general/who.cfm. Accessed 1 February 2011.

International Baccalaureate. (2011b). *The Middle Years Programme*. http://ibo.org/myp/. Accessed 1 February 2011.

International Baccalaureate. (2008). *A review of research relating to the IB Diploma Programme*. http://ibo.org/research/resources/documents/dpresearchreview.pdf. Accessed 1 February 2011.

International Baccalaureate and Indiana University. (2010). *Research summary. High school engagement among IB and non-IB students in the United States: A comparison study.* IB Global Policy & Research Team, in collaboration with the Center for Evaluation and Education Policy, Indiana University.

Kiplinger, V. L. (2005a). *Effects of IB Participation on Mathematics Achievement and Growth, 2001–2004 in Academy School District Twenty*. Unpublished report.

Kiplinger, V L. (2005b). *Effects of IB Participation on Reading Achievement and Growth, 2000–2004*. Academy School District Twenty. Unpublished report.

Kline, R. B. (2004). *Beyond significance testing*. Washington, D.C.: American Psychological Association.

Powell, K. E. (2002). *The International Baccalaureate Middle Years Programme: A model of program implementation and school reform*. Unpublished Doctoral Dissertation.

Rose, T. (2007). *A Qualitative Study of Student Achievement and Growth Associated with the International Baccalaureate Program in Academy School District 20*. Unpublished report.

Singh, K., Granville, M., & Dika, S. (2002). Mathematics and science achievement: Effects of motivation, interest, and academic engagement. *Journal of Educational Research*, *95*(6), 323–333.

U.S. Department of Education, Office of Special Education Programs. (2010) *Schoolwide Positive Behavioral Intervention and Supports.* Information at: http://www.pbis.org.

Valentine, J. C. & Cooper, H. (2003). *Effect size substantive interpretation guidelines: Issues in the interpretation of effect sizes*. Washington, DC: What Works Clearinghouse.

Yazzie-Mintz, E. (2010). *Charting the path from engagement to achievement: A report on the 2009 High School Survey of Student Engagement.* Bloomington, IN: Center for Evaluation & Education Policy.

Appendix A

Dimension Scores from the *Survey of Student Engagement*

The *High School Survey of Student Engagement* (HSSSE), developed by the School of Education at Indiana University, was based on the *National Survey of Student Engagement*, a survey assessing the engagement of college students. Since the survey's inception in 2003, over 500,000 students nationally have participated in the HSSSE.

The *Middle School Survey of Student Engagement* (MSSSE), used in this study, was developed by the Center for Evaluation and Education Policy at Indiana University. MSSSE was based on the high school version (HSSSE), and taps the same three dimensions of student engagement.

The following descriptions of survey dimensions and sample items are adapted from the Research Summary produced by IB and Indiana University (2010).

The survey taps into three broad dimensions of student engagement: 1) Cognitive/Intellectual/ Academic Engagement; 2) Social/Behavioral/Participatory Engagement; and 3) Emotional Engagement.

Sample items from the Cognitive/Intellectual/Academic Engagement domain include:
- How many hours are spent in a typical week reading and studying for class?
- To what extent do teachers try to engage [you] in classroom discussions?
- How often have you worked on a paper or project that required you to do research outside of assigned texts?
- How often have you connected ideas or concepts from one class (or subject area) to another in doing assignments or participating in class discussions?

Items tapping into students' level of Social/Behavioral/Participatory Engagement include:
- How important is participating in school-sponsored activities to you?
- [To what extent does your] school emphasize participating in school events and activities?
- [To what degree has] school contributed to growth in gaining awareness of conditions in the community outside of school?

Items related to Emotional Engagement include:
- [To what extent do you] feel supported by the following people at this school: teachers, administrators, counselors, other students?
- [To what degree do] adults in this school want [you] to succeed?
- [To what degree has the] school contributed to growth in understanding yourself?
- [To what degree has the] school contributed to growth in treating people with respect?

Appendix B

Interview Protocol for MYP School Administrator (Principal)

I.   **School Background [**NOTE: Publicly available background information on school will be collected beforehand (racial/ethnic breakdown, school size, student mobility, etc.)]

- How long have you (the principal) been at the school in your current position? What was your familiarity with MYP/IB before coming to this school?

- Give us a little bit of background on the school's admin and faculty – recent turnover, average experience, etc.

- In addition to the IB, what are some of the other major programs and/or curricular interventions at your school? Tell us a little bit about each major program/intervention.

- What are the primary areas of focus in your school improvement plan? (For IB schools: To what extent is the MYP a focus of the school's improvement plan?) Can we get a copy of the plan for our records?

II. **Middle Years Programme**

- When was the MYP authorized at your school? What was the candidacy phase like?

- What are some of the positive impacts of MYP implementation at your school?

- What are some of the challenges of MYP implementation you have observed at your school?

- Based on your experience and observations, do you believe the introduction of MYP at your school has influenced the climate of the school? In what ways? By school climate, we mean very broadly, the "quality and character of school life." This includes the "norms, goals, values, interpersonal relationships, teaching, learning, leadership practices, and organizational structures" that contribute to staff and student experiences within a school."

- Do you believe the introduction of MYP at your school has influenced student engagement in learning? In what ways?

- Outside of the MYP, what are some other key characteristics or features of your school that influence school climate? Student engagement?

- Is there anything else you would like to share about the MYP in your school?

Interview Protocol for Non-MYP School Administrator (Principal)

I. **School Background [**NOTE: Publicly available background information on school will be collected beforehand (racial/ethnic breakdown, school size, student mobility, etc.)]

- How long have you (the principal) been at the school in your current position?

- Give us a little bit of background on the school's admin and faculty – recent turnover, average experience, etc.

- What are some of the major programs and/or curricular interventions at your school? Tell us a little bit about each major program/intervention.

- What are the primary areas of focus in your school improvement plan? Can we get a copy of the plan for our records?

II. **Middle Years Programme**

- What are some of the positive impacts of these major programs or areas of focus in your school?

  What are some of the challenges of these major programs or areas of focus you have observed in your school?

- Based on your experience and observations, do you there is anything in particular that has influenced the climate of the school? In what ways? By school climate, we mean very broadly, the "quality and character of school life." This includes the "norms, goals, values, interpersonal relationships, teaching, learning, leadership practices, and organizational structures" that contribute to staff and student experiences within a school."

- Is there anything in particular that has influenced student engagement in learning at your school? In what ways?

- What are some other key characteristics or features of your school that influence school climate? Student engagement?

- Is there anything else about your school's major focuses, school climate or student engagement that you would like to share?

Appendix C

Calculation of Effect Sizes

Effect sizes for comparing groups on continuous outcome measures (e.g., means). Effect sizes were estimated for differences between means with the standardized mean difference statistic, or Cohen's *d* (Cohen, 1988). The formula for Cohen's *d* is:

$$\frac{\text{mean}_{\text{treatment}} - \text{mean}_{\text{comparison}}}{\text{pooled standard deviation of outcome measure}}$$

> In this study, the treatment group is MYP schools and the comparison group is the non-MYP schools.

Cohen (1988) provides these guidelines for interpretation: *d* = .20 is considered a small effect; *d* = .50 is considered a medium effect; *d* = .80 is considered a large effect.

Effect sizes for comparing groups on categorical outcome measures (e.g., proficient/not proficient; agree/disagree). For categorical outcomes the logistic regression analytic procedure was used to compute an odds ratio. Kline (2004) provides a formula for converting an odds ratio to an effect size expressed as *d*. That formula is:

$$\text{logit } d = \frac{\ln(OR)}{pi/\sqrt{3}}$$

Relationships between variables. Partial correlations were used as an effect size estimate in the measurement of relationships between variables (Kline, 2004). Partial correlation procedure estimates the correlation between two variables while other variables in the statistical model are held constant. Cohen (1988) proposed the following guidelines for interpretation of these correlations: .10, .30, and .50 correspond to small, medium, and large effect sizes, respectively.