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Personal Project: Outcomes of the IB Middle Years Programme's capstone experience

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GLOSSARY

ATL	Approaches to Learning
CAS	Creativity, Activity, Service
CP	Career-related Programme
DP	Diploma Programme
EE	Extended Essay
HL	Higher Level
IB	International Baccalaureate
IBEN	International Baccalaureate Educator Network
MYP	Middle Years Programme
PP	Personal Project
PYP	Primary Years Programme
SL	Standard Level

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EXECUTIVE SUMMARY

The International Baccalaureate (IB) launched the Middle Years Programme (MYP) in 1994 for students between 11- and 16-years old. By November 2022, 1,817 IB World Schools had adopted the MYP, including 444 in Africa, Europe and the Middle East, 1,040 in the Americas, and 333 in the Asia Pacific (IB, 2022a). The MYP's educational approach aims to promote concept-driven, inquiry-based, and interdisciplinary learning (Perry et al., 2018), as part of a 'holistic' education that encompasses abilities, attitudes, and skills beyond individual subjects (Hare, 2010). One of the MYP's purposes is to build on the learning experiences of the Primary Years Programme (PYP) and prepare students to 'step up' to the Diploma Programme (DP) or Career-related Programme (CP).

A central feature of the MYP is an externally moderated Personal Project that serves as a capstone learning opportunity for students in their final MYP year. From the MYP's beginnings, the IB envisaged the Personal Project as pivotal to the programme's philosophical underpinnings (Harrison et al., 2015). Guided by a supervisor, students develop a self-selected project over an extended period of time through a process of inquiry, action, and reflection. In the May 2021 assessment session, more than 83,000 MYP students submitted Personal Projects worldwide (IB, 2021a). However, research on the Personal Project is limited. The existing findings have emerged from small-scale or single-country research only, with few studies focusing exclusively on the Personal Project.

The objective of the current research study was to investigate the experiences and outcomes of the Personal Project at IB World Schools globally. On the one hand, it provided empirical evidence on the extent to which students' Personal Project scores predict subsequent academic performance in the DP. After controlling for school characteristics (e.g., private school status, number of years since authorisation, and number of students registered in the DP) and student characteristics (e.g., gender, rigour of DP coursework, match between students' home language and that of MYP and/or DP instruction), we found Personal Project scores in the MYP to be a meaningful predictor of DP exam scores and, to a lesser extent, the Extended Essay. For Personal Project scores and DP exam scores, we found statistically significant links among scores from CP students and course candidates, but those links were not as strong as those we found among scores from full DP students (see Appendix I).[1]

[1] Importantly, the amounts of variance explained in our final hierarchical linear models—upon which many of our interpretations are based—range from 4-20%. Per Ozili (2022), unlike single-level regression models, hierarchical linear models of social science data can be acceptable with such low proportions of variance explained (e.g., R^2 values) if they include several statistically significant covariates, which our models all do. In Appendix I, we summarise each final model's proportion of variance explained and the amount of statistically significant school-level and student-level covariates. Still, we caution against over-ascribing predictive power to models that do not exceed 10% variance explained and have less than half of the covariates demonstrating statistical significance (i.e., the links between Personal Project scores and DP exam scores among CP students and course candidates).

On the other hand, the research's scope extended beyond scores to consider the potential of the Personal Project to have more comprehensive outcomes for students, school faculty, and communities that surround schools. The findings illuminated the benefits of the Personal Project, as well as the challenges and promising practices that can inform IB World Schools.

METHOD

The research team adopted a *triangulation convergence mixed method design* (Creswell & Plano Clark, 2011), which involved the concurrent analysis of extant IB quantitative data and newly collected qualitative data followed by a converged analysis.

In the quantitative phase, the research team analysed multiple waves of extant IB data from 66,698 students worldwide. The goal was to identify how students' Personal Project scores are associated with their subsequent academic performance in the DP. We conducted quantitative analyses to examine associations among students' scores in the Personal Project, DP exams, and the Extended Essay. Further analyses examined contextual nuances in the data (see Chapter 3 of the main report).

In the qualitative phase, the research team gathered interview data from six IB World Schools across six jurisdictions: Hong Kong, Peru, Qatar, South Korea, the United States, and Zambia. Overall, we interviewed 107 participants, including heads of schools, coordinators, supervisors, and students. Supplementary qualitative data were gathered from the Personal Project exhibition, MYP alumni/ae, and awardees of the *Dr Siva Kumari MYP Student Innovators' Grant*. Thematic analyses explored the broad outcomes of the Personal Project on students, school faculty, and communities beyond schools (see Chapter 4 of the main report).

Finally, the data convergence phase involved interweaving the quantitative and qualitative findings. Specifically, we converged quantitative analysis of the global IB dataset and qualitative analysis of interviews at the six IB World Schools. This process permitted interpretations that offset the limitations of one source of data, are more compelling, and yield additional insights (see Chapter 5 of the main report). Figure 1 on the next page presents an overview of the research.

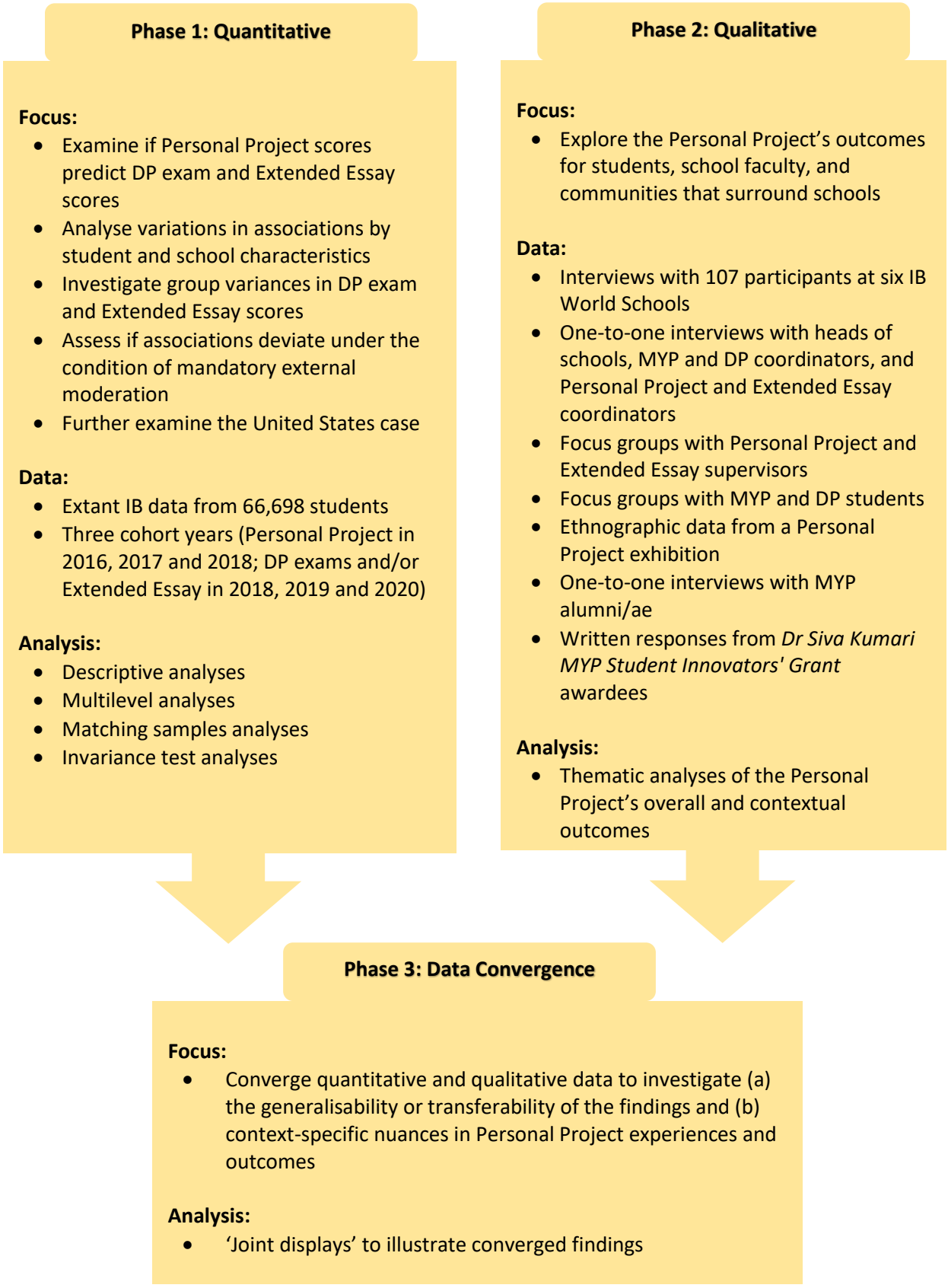

Figure 1.1. *Overview of the Research*

SUMMARY OF QUANTITATIVE FINDINGS

Table 1. *Personal Project's Associations*

Domain	Associations
Personal Project, DP exam, Extended Essay scores	• ***DP outcomes***: Students' Personal Project scores predicted both DP exam and Extended Essay scores. • ***DP exams and Extended Essay***: Among full DP students, Personal Project scores had a stronger association with DP exam scores than with Extended Essay scores: a one-unit increase in Personal Project score associated with a 0.42-unit increase in DP exam score and a 0.25-unit increase in Extended Essay score. • ***Variance***: Student-level variance explained 52-67% of associations between Personal Project and DP exam scores, with 33-48% explained by school-level variance. Student-level variance explained around 80% of the Personal Project's association with Extended Essay scores, whereas school-level variance explained 20%.
Student characteristics	• ***Gender***: Female Personal Project participants averaged higher scores on DP exams (+0.12) and Extended Essay (+0.13) than their male peers. • ***Language***: There were mixed findings regarding associations among language match (i.e., students' primary/secondary languages and school's language of instruction), DP exam scores, and Extended Essay scores. • ***DP rigour***: Students who took more than three DP Higher Level (HL) courses scored higher on DP exams (+0.37) and the Extended Essay (+0.21). • ***Cohort***: Students who took Personal Project in 2017 and DP exams by 2019 had lower scores on DP exams (-1.08) and Extended Essay (-0.59) than their peers in the 2018-2020 cohort.
School characteristics	• ***Legal status***: Private school status associated with higher scores on DP exams (+0.13) and Extended Essay (+0.12). • ***Authorisation***: More time since MYP authorisation associated with slightly higher scores on DP exams and Extended Essay (+0.01 each). • ***Number of students***: Higher numbers of registered DP students associated with very slightly higher DP exam scores (+0.001).
Personal Project participation and DP outcomes	• ***Personal Project participation:*** Personal Project participants attained higher scores on DP exams (+0.18) and Extended Essay (+2.21) than their DP peers who did not participate in Personal Project. • ***Mandatory external moderation:*** Positive associations among Personal Project participation, DP exam scores, and Extended Essay scores were identified for cohorts before and after mandatory external moderation.
United States case	• ***DP outcomes***: Personal Project scores predicted DP exam and Extended Essay scores but had a stronger association with DP exam scores. • ***Full DP***: Full DP students' Personal Project scores had a stronger association with DP exam scores than among students who took 1-5 DP courses. • ***Gender***: Female Personal Project participants outscored their male peers on the Extended Essay. • ***DP rigour***: Students who took three or more HL courses scored higher on DP exams and the Extended Essay than those who took fewer HL courses. • ***Federal program***: DP exam (-0.21) and Extended Essay (-0.08) scores for students who participated in the Federal Program on Free and Reduced-Priced Meals were lower than students who were not part of the programme.

SUMMARY OF QUALITATIVE FINDINGS

Table 2. *Outcomes of the Personal Project for Students*

Domain	Student Outcomes
Positive outcomes for students	• ***A milestone in the IB school career***: Typically, the participants described the Personal Project as a 'passion project' that enabled students to complete a long-term independent project according to their interests. It can be a platform to apply a well-rounded education and a 'refreshing' experience that stands out in the IB school career. • ***Opportunity to develop Approaches to Learning (ATL) skills***: The Personal Project presents ample opportunities for students to build ATL skills, especially self-management, communication, and social skills. • ***Bridge gaps between the MYP and DP***: The learning experience can prepare students for the 'jump' in workload, difficulty, and high-stakes assessments in the transition from MYP to DP. • ***Potential Extended Essay preparation***: For some participants, planning, carrying out, and report writing during the Personal Project was beneficial for the Extended Essay. Others saw the Extended Essay as a more academically rigorous research project aligned with university-level work.
Challenges to positive outcomes for students	• ***Assessment misaligned with what matters to students***: The students were primarily interested in the process of carrying out the project and the 'product or outcome'. Yet the Personal Project is assessed by the 'report' as an account of the project and its impact, potentially leading to frustration. • ***Workload exceeds IB guidelines***: The IB states an expectation for students to spend around 25 hours to complete the Personal Project. The participants often shared that process requires considerably more time, potentially resulting in students feeling anxious or stressed. • ***Unequal access to resources:*** Family, school, and community resources played a crucial role in the Personal Project. This included advice, connections, and financial backing. There is potential inequality of opportunity, as students may not have equal access to these resources.
Promising practices for positive student outcomes	• ***Promoting and structuring peer learning***: Peer learning can help students understand the Personal Project's scope, learn tips and strategies, and instil confidence. Effective approaches included inviting younger students to attend the Personal Project exhibition and facilitating peer study groups. • ***Formalised guidance***: Oral and written guidance for students at the start of the process can promote a clear understanding of the task, reduce dependency on supervisors, and make the process less daunting. ***'Light-touch' supervision***: A 'light-touch' approach to supervision encourages independent learning, which is likely beneficial for developing ATL skills.

Table 3. *Outcomes of the Personal Project for School Faculty*

Domain	School Faculty Outcomes
Positive outcomes for school faculty	• ***Appreciation of an IB education***: Most participants considered the Personal Project well-aligned with IB values of cultivating inquiring, knowledgeable, and caring students. The experience was sometimes contrasted with the DP's more academic and high-stakes learning environment. • ***Enhancing collaboration among school faculty***: The Personal Project can enhance opportunities for faculty collaboration, primarily through interactions between coordinators and supervisors. This collaboration can help build a closer professional community in schools. • ***Getting to know students better***: The Personal Project can enrich student-faculty relations by opening lines of communication, fostering an appreciation of students' interests and talents, and making faculty more informed to advise and mentor students.
Challenges to positive outcomes for school faculty	• ***High supervisor workload***: Supervision responsibilities varied across schools in our qualitative sample. A high supervision workload can be demanding. The task was amplified for faculty supervising projects outside their expertise. If unresolved, the workload can contribute to work-based stress. • ***Contrasting views over IB professional learning***: Heads of schools believed the Personal Project provided IB professional learning opportunities through supervision, grade moderation, and workshops. However, supervisors more often discussed how the benefits were mainly accrued by students, suggesting a need for more dialogue about professional learning.
Promising practices for positive school faculty outcomes	• ***Leveraging institutional knowledge***: Leveraging institutional knowledge held by coordinators was crucial to the Personal Project's successful implementation through interpreting guidelines, sharing learning materials, and ongoing support for supervisors. The finding underscores the importance of the IB providing support for coordinators, especially those relatively inexperienced in the role or working at schools new to the MYP. • ***Nuanced pairing of supervisors with students***: Coordinators can work closely with supervisors when pairing with students. Supervisors with high workloads can be given reduced responsibilities, inexperienced supervisors can take co-supervisor roles, and supervisors can be matched with students according to prior relationships, interests, or expertise. • ***Crafting supervisor groups***: Supervisor groups can promote mutual support and professional learning opportunities by sharing experiences, strategies for supporting students, and how to overcome challenges.

Table 4. *Outcomes of the Personal Project for Communities that Surround Schools*

Domain	Community Outcomes
Positive outcomes for the community	• ***Community engagement***: A high proportion of projects involve students 'being out and about' in the local community, which the schools encouraged. Examples included consulting experts at universities, gathering advice from business leaders, and working with non-government organisations. • ***Apply ATL skills beyond the school***: Community interactions were opportunities to develop ATL skills, especially social and communication skills. Although COVID-19 limited community engagement in some cases, it presented opportunities to develop ATL skills by thinking outside the box and communicating online. • ***Learning about the local community***: The Personal Project experience could promote a deeper understanding of local communities. Service projects exposed students to 'lives of local people'. Other projects enabled students to become more aware of local businesses, institutions, and organisations. • ***Positive outcomes for the local community***: The Personal Project provided a platform for positive social change. The most noted pathway was service work. Further examples of positive outcomes included public information campaigns on health/lifestyle, raising awareness of cultural heritage, and bringing attention to social issues.
Challenges to positive outcomes for the community	• ***Students benefit more than the community***: Community engagement can be more beneficial for students than local communities due to students' motivation to complete the project, relative inexperience and limited resources, and projects being discontinued upon completion. The *Dr Siva Kumari MYP Student Innovators' Grant* highlighted how financial backing and mentorship can help students to expand their projects' social impact in the community. • ***Trends towards overreliance on digital technology***: The Personal Project's pathways to positive community outcomes were increasingly through digital technology, such as apps, social media, and websites. Some school faculty were sceptical about the community contribution of such projects if they did not engage an audience beyond the students' personal network, neglected opportunities to make a difference closer to home, or made unrealistic claims over a 'global impact'.
Promising practices for positive community outcomes	• ***Guide initial community contact***: Support from schools with identifying who to contact, how to make initial contact, and managing expectations were valuable for getting community engagement started. • ***Empower student community engagement***: Supervisors can 'step back' after students have made initial contact and let them take the lead with community engagement. • ***Stress ongoing community relations***: Ensuring students end community interactions on favourable terms is vital to teach students how to maintain good relations with stakeholders and uphold the school's reputation.

SUMMARY OF DATA CONVERGENCE

Table 5. *Summary of the Converged Findings*

Domain	Converged Findings
Potentially generalisable or transferable findings in the Personal Project experiences and outcomes	• ***Overall outcomes***: The Personal Project prepares students to 'step up' to the DP. Personal Project scores predicted DP exam and Extended Essay scores. The experience can have the greatest contribution as preparation for the whole DP, rather than the Extended Essay in particular. Yet DP scores do not fully capture learning outcomes. Students can develop personal interests, forge connections with school faculty, and learn about the community. Also, the Personal Project can have positive outcomes for school faculty and communities that surround schools.
Contextual nuances in the Personal Project experiences and outcomes	• ***Student characteristics***: Female Personal Project participants were associated with higher DP exam and Extended Essay scores than male students, but they can face more contextual challenges with community engagement. Although there were mixed findings regarding associations between language match and DP scores, some students faced language barriers with the Personal Project. • ***School characteristics***: Private schools and schools authorised to offer the MYP for a longer period of time were associated with higher DP exam and Extended Essay scores. These schools may have more resources to maximise the benefits of the Personal Project. • ***Personal Project participation****:* Personal Project participants had higher DP exam and Extended Essay scores than their DP peers who did not participate in Personal Project. All students can benefit from the Personal Project experience as a 'low-stakes' exercise that provides opportunities to learn from mistakes. The findings underscore the Personal Project's role in preparing students for the DP. • ***Mandatory external moderation***: Positive associations among Personal Project participation, DP exam scores, and Extended Essay scores were identified for cohorts before and after mandatory external moderation. Coordinators play a vital role in interpreting and communicating Personal Project guidelines, such as mandatory external moderation. • ***United States case***: The United States case reinforced the global findings. Personal Project scores predicted DP exam and Extended Essay scores, although experience encompassed broader learning outcomes. The United States case also identified the potential of inequality of opportunity, as students who completed the Personal Project and participated in Federal Program on Free and Reduced-Priced Meals scored lower on DP exams and the Extended Essay than their peers from more affluent families.

KEY RESEARCH THEMES

Six key interrelated themes emerged from the research. We present these themes in Figure 2 below and discuss them in greater detail in the report.

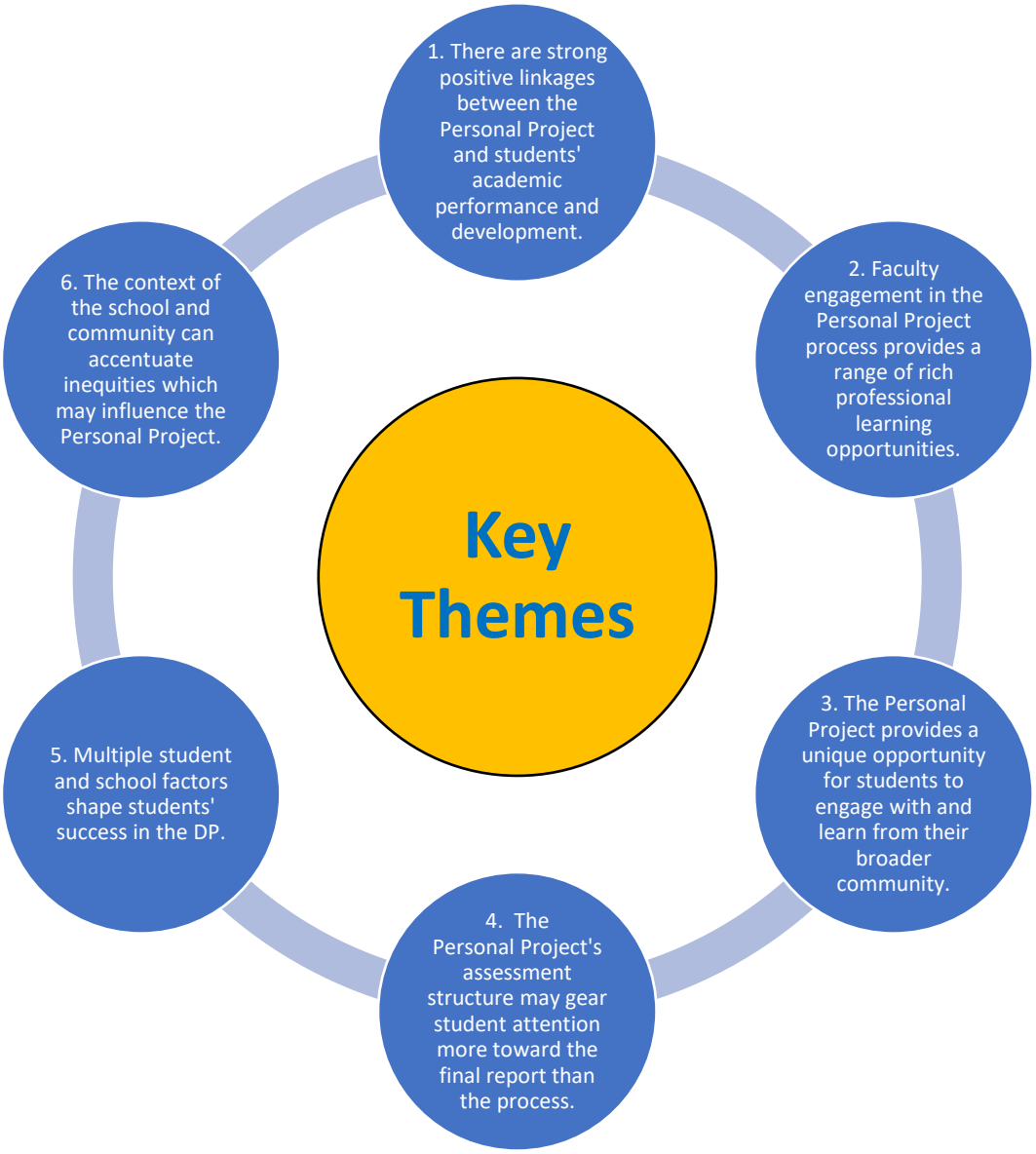

Figure 2. *Key Themes*

RECOMMENDATIONS

Several recommendations emerged from the data. These are outlined below and discussed further in the report. We present the recommendations in four categories: (1) what schools can do to support students' Personal Project experience, (2) what schools can do to support faculty involved in the Personal Project, (3) what schools can do with their communities to maximise Personal Project experiences and outcomes, and (4) what the IB can do through working with schools to support the Personal Project. The recommendations for the IB may be used to inform future policy.

Schools with Students

- ***Provide face-to-face and written guidance for students from the beginning of the Personal Project process*.** Such advice can ensure students have a clear understanding of the Personal Project's purpose, requirements, and expectations while lessening potential for student anxiety.
- ***Offer a range of supervisory approaches in line with context and student needs*.** Different students may respond best to different supervisory systems, ranging from directive to independent. A less directive approach as the project progresses may encourage independence and support the development of ATL skills.
- ***Design structures that get students working together on the Personal Project*.** Peer learning can help students understand the purpose and scope of the Personal Project, draw on others' practical experiences, and build confidence and a feeling of togetherness. Peer structures can be instituted before the formal Personal Project period begins.

Schools with Faculty

- ***Empower coordinators to lead the Personal Project experience***. Coordinators are ideally positioned to leverage their expertise and institutional knowledge to support supervisors and students. To do this, coordinators require the trust of senior leadership, the discretion to match topics and supervisors, and sufficient time and other resources as necessary in context. The backing may include opportunities to join Personal Project-specific professional development. Additionally, schools may institute systems where coordinators formally record important knowledge, perhaps in the form of a cumulative portfolio, to inform their successors when they leave the school.
- ***Nurture structures that allow supervisors to share and support each other.*** Supervisor groups can promote mutual support and learning by sharing experiences and strategies to help students overcome challenges. These may be especially beneficial for first-time supervisors. Distributing leadership holds the potential to add to the supervision experience.
- ***Design suitable criteria and processes for pairing students and supervisors*.** Project supervision and partner matching is demanding. To aid effective matching, coordinators can discuss supervisor preferences and prior relationships with students, as well as expertise, interests, and supervisory style. Other criteria may include workload, familiarity with the process and expectations, and students' knowledge levels.

Schools with the Community

- ***Position robust and ongoing community relations at the heart of the Personal Project experience*.** Schools and students need the community to ensure project relevance and contribution. They must, therefore, work closely with their communities to garner

support. Schools can develop and sustain interactions with the community by, for example, encouraging students to share projects with their community partners when completed.

- ***Provide 'start-up' support to Personal Project students.*** Schools can provide students with support and advice about contacting community stakeholders and managing student and community expectations. Schools can also provide the community with information about the Personal Project, including its purpose, expectations, and records of previous beneficial projects.
- ***Empower students to engage the community and for the community to support students.*** After establishing initial contact, the school and supervisors can consider stepping back and allowing students to drive and shape the engagement. Likewise, involved community members and groups can be trusted to provide meaningful student support.

IB with Schools

- ***Reinforce the purposes and holistic benefits of the Personal Project process beyond formal assessment.*** Students must see the Personal Project as an opportunity to systematically explore an area of personal passion that can benefit themselves and their community – not only as a pathway to higher DP scores. The IB may reinforce this message to schools and the communities they serve.
- ***Provide targeted support to build Personal Project infrastructure for newly authorised schools and those seeking IB authorisation.*** Schools authorised to offer the MYP for a longer period of time tend to produce higher DP scores. The IB may consider instituting mechanisms to give newly authorised schools a 'jump start' in the Personal Project. Such support may target coordinators who play a vital role in the Personal Project implementation through professional development, networking opportunities, and written guidelines. Relatedly, the IB may extend support to less experienced coordinators at more established schools. The IB may also explore ways of sharing promising practices from well-established, successful schools.
- ***Review the Personal Project's assessment structure.*** A perceived over-emphasis on the final report can distract students from the learning process accompanying the Personal Project experience. The IB may review the grading structure and assess the relative weight allocated to the process journal, product or outcome, and final report. In addition, the IB may also wish to consider how it communicates its expectations for the Personal Project, given that it is pass/fail.
- ***Enhance the role of the International Baccalaureate Educator Network (IBEN) in spreading Personal Project practices and supporting schools in less advantaged circumstances.*** Given the rich knowledge accumulated about the Personal Project in individual schools and the unevenness of school contexts, the IB may consider constructing a data bank of promising practices and make

this accessible to all schools, perhaps through the IBEN or other internal mechanisms. Also, the IB may utilise IBEN for sustained coordinator and supervisor professional learning around the Personal Project. Further, IBEN can incorporate clusters to provide peer-to-peer support specific to the Personal Project. The IBEN clusters can be supported by experienced MYP coordinators and IB Field Representatives with specialised expertise. IBEN clusters have the potential to provide ongoing, informal, and needs-responsive support that enhances the impact of formal workshops.

- ***Help schools explore supervision models based on promising practices in different circumstances*.** Given differences in supervisor-to-student ratios across schools, the IB may work with school leaders to explore cross-school supervisory structures. These may include advice about mentoring, peer coaching, and understanding of ATL skills related to the Personal Project.
- ***Take stock of a school's contextual factors on the Personal Project journey*.** Contextual factors shape students' Personal Project experience. The IB may consider exploring resource structures to bring more and less advantaged schools together to help students. Arrangements may include cross-school clusters, sister school schemes, staff exchange, and further expanding IBEN.
- ***Maximise the ongoing and collective contribution to the community.*** Personal Projects benefit individual students' academic and personal development. However, the IB may consider the potential of their collective contribution to support schools' broader communities. The IB can help schools explore ways to leverage the Personal Project to build community connections.

CONCLUDING REMARKS

The IB MYP's capstone Personal Project is an integral part of the IB's mission to educate the 'whole child' and marks the MYP as a unique programme for middle school-aged students. In this study, we investigated the experiences and outcomes of the Personal Project for students, school faculty, and communities surrounding schools. The findings point to clear and considerable benefits of the Personal Project for various stakeholders. We found that participation in the Personal Project provides a clear benefit to students as a 'step up' to the DP and supports broader their development across a range of learning outcomes. The benefits of Personal Project engagement can extend to providing a platform for individual and collective professional learning by faculty and sustaining vibrant connections with various communities. At the same time, we identified a few areas concerning school context and assessment practices that the IB may wish to discuss; these touch upon issues around equity and social impact. Future research may include detailed ethnographic studies of the experience of completing a Personal Project, focus on community stakeholders and their perspectives from the 'other side' of projects, and compare the complementary facets of Creativity, Activity, Service (CAS) in the DP or the Reflective Project in the CP and the potential for sustaining positive outcomes.

1. INTRODUCTION

The International Baccalaureate's (IB) expansion is leaving an impression on increasing numbers of students, school faculty, and community members worldwide. Since 2014, the number of schools offering at least one IB programme has more than doubled. By November 2022, 5,664 schools across over 150 countries offered at least one programme among the Primary Years Programme (PYP), Middle Years Programme (MYP), Diploma Programme (DP), and Career-Related Programme (CP) (IB, 2022a). These IB World Schools aim to combine educational approaches aimed at whole-person development, student-centred pedagogy, and a global outlook. The philosophy is aligned with a 'holistic' education that encompasses abilities, attitudes, and skills beyond subject disciplines (Hare, 2010). The IB's Learner Profile articulates related student attributes that guide programme implementation: *balanced*, *caring*, *communicators*, *inquirers*, *knowledgeable*, *principled*, *open-minded*, *reflective*, *risk-takers*, and *thinkers* (IB, 2022b). These attributes address cognitive, conative, affective, and social learning domains to prepare young people to thrive in globally integrated and technologically advanced societies (Bullock, 2011; Lee et al., 2017; Wright & Lee, 2014a).

The IB launched the MYP – for 11- to 16-year-olds – in 1994. At the time of writing, 1,817 IB World Schools were offering the MYP, including 444 in Africa, Europe and the Middle East, 1,040 in the Americas, and 333 in the Asia Pacific (IB, 2022a). The MYP's educational approach aims to promote concept-driven, inquiry-based, and interdisciplinary learning (Perry et al., 2018). One purpose of the MYP is to build on the learning experiences of the PYP and prepare students to 'step up' to the DP or CP. Three concepts underpin the MYP: (1) 'Approaches to Learning' (ATL) that help students learn how to learn by developing skills for research, critical and creative thinking, communication, collaboration, and self-management; (2) 'Key and Related Concepts' help students explore big ideas that matter; and (3) 'Global Contexts' that connect their studies to understanding a common humanity and shared guardianship of the planet (IB, 2022c). Global surveys of MYP coordinators have identified these features (e.g., holistic learning, pedagogy, and philosophy) as the most important reasons why schools offer the programme (Sperandio, 2010; Wright et al., 2016).

A central feature of the MYP is an externally moderated[2] Personal Project that serves as a capstone learning opportunity for students in their final MYP year. From the MYP's beginnings, the IB envisaged the Personal Project as pivotal to the programme's philosophical underpinnings (Harrison, et al., 2015). The Personal Project allows students to consolidate, integrate, and apply learning from the MYP. The experience is designed to impart the skills to succeed in 'further education and life

[2] From 2017, external moderation of the Personal Project was made mandatory. Moderation is a process in which an external examiner examines a sample of teacher-assessed marks (IB, 2022d).

beyond the classroom' and help students 'develop the confidence to become principled, lifelong learners' (IB, 2022c n.p.). Under the guidance of a supervisor, students develop a self-selected project over an extended time period through a process of inquiry, action, and reflection. First, students document their progress in a 'process journal' where they reflect and report on ideas, criteria, developments, challenges, plans, research, solutions, and progress. Second, students complete a 'product or outcome' as evidence of results showcasing what they were aiming to achieve or create. Third, students write a 'report' as an account of the project and its outcomes, which is the only assessed component (IB, 2022c). The Personal Project typically culminates in an exhibition where students share their experiences with an audience that may consist of peers, school faculty, and community members from outside the school. In the May 2021 assessment session, more than 83,000 MYP students submitted Personal Projects worldwide (IB, 2021a).

There is a lack of research on the Personal Project, and more generally on the MYP, especially with a global scope (Bunnell, 2011). Research has examined the outcomes of MYP graduates taking the DP (e.g., ACER, 2015, Bryant et al., 2016; Wade & Wolanin, 2015), MYP implementation and its influence on teaching and learning in schools across different contexts (e.g., Perry et al., 2018; Ryan et al., 2018), and similarities between the MYP and other curricula (e.g., UK NARIC, 2019; Valle et al., 2017). Recent research has found that MYP students outperform their counterparts in assessments that cover mathematic literacy, reading, scientific literacy, and writing (Tan, 2021). Yet, despite its centrality to the MYP, research on the Personal Project is limited. The existing findings have emerged from small-scale or single-country research only, with few studies focusing exclusively on the Personal Project. Consequently, a research gap remained in in-depth and multi-country studies exploring the Personal Project at IB World Schools.

1.1. Research Objectives

The objective of this research was to investigate the experiences and outcomes of the Personal Project at IB World Schools globally. On the one hand, it provided empirical evidence on the extent to which students' Personal Project scores predict subsequent academic performance in the DP. On the other hand, the research's scope extended to consider the potential of the Personal Project to have a more comprehensive impression on students, school faculty, and communities that surround schools. The findings illuminated the benefits of Personal Project, as well as challenges and promising practices that can inform IB World Schools. The research had three phases:

- ***Phase One - Quantitative***: The research team analysed multiple waves of extant IB data from 66,698 students worldwide. The goal was to examine how students' Personal Project scores are associated with subsequent academic performance in the DP. We conducted quantitative

analyses to identify associations among students' scores in the Personal Project, DP exams, and the Extended Essay. Further analyses examined contextual nuances in the data (see Section 3.6).

- ***Phase Two - Qualitative***: The research team gathered interview data from six IB World Schools across six jurisdictions: Hong Kong, Peru, Qatar, South Korea, the United States, and Zambia. Overall, 107 participants were interviewed, including school leaders, coordinators, supervisors, and students at MYP and DP levels. We gathered supplementary qualitative data from a Personal Project exhibition, MYP alumni/ae, and awardees of the *Dr Siva Kumari MYP Student Innovators' Grant*. Thematic analyses explored the broad outcomes of the Personal Project for students, school faculty, and communities beyond schools.
- ***Phase Three - Data Convergence***: The research team converged the datasets to investigate (a) the extent to which the findings are generalisable or transferrable,[3] and (b) context-specific nuances that may shape the Personal Project's outcomes for students, educators, and school communities.

1.2. Literature Review[4]

Personal Projects, or similar capstone projects, are relatively rare for 15- to 16-year-olds, making the MYP pedagogically uncommon compared to other curricula for this age range. Capstone projects have been defined as a 'rite of passage' (Durel, 1993) or a culminating experience requiring students to synthesise prior learning and demonstrate their readiness to complete a programme. They can be a 'high risk' activity for schools and students, given the complexity of planning and carrying out a project (Lee & Loton, 2019), which may be exacerbated for young adolescents. Students, under supervision, need to: 'Consolidate, interrogate and apply prior and new learning, develop skills in decision-making and interpersonal management, and develop maturity as independent learners' (Hammer et al., 2018 p. 732). At the same time, conducting a project can provide considerable educational benefits through learning experiences that supplement classroom learning and support the development of multiple skills (Bell, 2010).

For MYP students, the Personal Project can provide opportunities to build on and apply knowledge, skills, and attributes developed throughout the programme. The experience may position students well for transitioning to the DP. A 'smooth transition between 11–16 learning and the DP' constitutes a major rationale for MYP adoption (Wright et al., 2016 p. 8). There are, however, mixed

[3] Both terms refer to the application of findings from one study to other settings. Generalisability is the extent to which findings can be applied to a larger population. Transferability, more closely associated with qualitative research, refers to the extent to which findings can be applied to another context.

[4] The literature search process involved two phases. First, the research team searched electronic databases: Education Resources Information Center and Google Scholar. Keywords were applied to identify relevant literature published between 2000 and 2022, including 'capstone project', 'International Baccalaureate', 'Middle Years Programme', and 'Personal Project'. Second, the research team reviewed all IB-commissioned research published on the IB Research website: (https://www.ibo.org/research/).

findings on MYP-DP alignment. Research by ACER (2015) and Wade and Wolanin (2015) found that students who completed the MYP outperformed their non-MYP peers in DP exam scores. Conversely, research in Asian international schools found that continuous experience across IB programmes did not contribute to higher DP exam scores, although it did contribute to metacognitive, self-assessment, and inquiry-related skills (Bryant et al., 2016). Nonetheless, these studies did not specifically focus on the Personal Project. Among the few studies that considered the Personal Project's outcomes for students, the experience has been described as enabling students to take ownership over learning (Dickson et al., 2020) and demonstrate aspects of the Learner Profile and ATL skills (Jarvis et al., 2013). In another study, school leaders and faculty attributed the Personal Project to better time management skills needed for the DP (Walker, Bryant & Lee, 2014 p. 91). Nonetheless, these findings were from single-country studies or where the Personal Project was only a part of broader investigations. The current research provided a more comprehensive investigation of the Personal Project and presents promising practices to maximise the learning outcomes.

Apart from students, the Personal Project's outcomes may extend to school faculty. MYP schools task a coordinator to ensure IB requirements are met, develop resources for students and faculty, and monitor students' progress. Also, faculty are tasked with supervising students by, for example, offering guidance, sharing learning materials, and conducting internal grade moderation. The experience has the potential to support professional development and distribute leadership opportunities (Bryant et al., 2018). Research suggests that the MYP helps teachers hone skills and incorporate new techniques into their practices (Ateşkan et al., 2016). In these ways, the Personal Project may enhance teacher professionalism by integrating creativity with situated learning and opportunities to lead (Fairman & Mackenzie, 2012; Wenner & Campbell, 2017). However, there is evidence that some schools may 'under-value' the Personal Project (Walker & Lee, 2018 p. 476). Further, coordinating and supervising the Personal Project can be resource-intensive, sometimes contributing to decisions to discontinue the MYP (Dickson et al., 2020). These findings chime with Lee et al.'s (2022) study that compared the professional characteristics of IB and non-IB teachers. IB teachers reported greater engagement in student-centred and constructivist pedagogy, more diverse assessment practices, and higher professional satisfaction. But they also reported higher levels of work-based stress than their counterparts in non-IB schools. The current research built on these findings by exploring the opportunities and challenges the Personal Project presents for school faculty. It identified a series of promising practices that can inform efforts to build the capacity of coordinators and supervisors.

The Personal Project potentially builds school-community engagement by providing opportunities for students to understand their communities better while also 'giving back' through

engagement with businesses, charities, and non-government organisations. Perry et al. (2018) found the Personal Project in Australian schools facilitated connections with local communities and offered 'real world' learning opportunities for students (p. 34). The findings are noteworthy given research showing that socioeconomically privileged students at private and international IB schools can be disconnected from local communities surrounding schools (Wright & Lee, 2019). Further research on DP schools in China found that students' community engagement in the Creativity, Activity, Service (CAS) course was often superficial and took a backseat relative to other parts of the programme (Wright & Lee, 2014b). These studies support findings that with progression to the DP, teachers and students tend to narrow their focus on Learner Profile attributes perceived to predict examination success, e.g., 'knowledgeable' in the cognitive domain over 'caring' in the affective (Bryant et al., 2016). Additional relevant studies have highlighted how the benefits of community engagement in the DP for developing skills, trying new experiences, and realising potential are accrued primarily by individual students, with less clear benefits for others (Hayden et al., 2020). Building on this DP research, the current research explored the outcomes of the Personal Project for the communities that surround schools. In so doing, the current study illuminated promising practices that can support school-community engagement.

1.3. Research Questions

Phase One - Quantitative

- 1. Do Personal Project scores predict DP exam and/or Extended Essay scores for Personal Project participants who continue into the DP?
    - a. If such associations exist, do they vary by *student* characteristics?
    - b. If such associations exist, do they vary by *school* characteristics?
- 2. Do Personal Project participants have higher DP exam and/or Extended Essay scores than their DP peers who were not Personal Project participants?
    - a. Do any associations demonstrated deviate for a subset of data from students who attempted the Personal Project under the condition of mandatory external moderation[5] when compared to other available data years?

Phase Two - Qualitative

- 1. How do MYP school community stakeholders perceive the outcomes of the Personal Project experience for students who have *attempted* it?

[5] This refers to testing invariance of student data from the first full mandatory external moderation year [Personal Project in Spring 2017 and DP external exams in May 2019].

- 2. How do MYP school leaders, coordinators, and classroom educators perceive the outcomes of the Personal Project experience for *school faculty* who support its implementation?
- 3. How do MYP school community stakeholders perceive the outcomes of the Personal Project experience for the *broader community that surrounds the school*?

Phase Three - Data Convergence

- 1. To what extent are findings regarding Personal Project experiences and outcomes *generalisable or transferrable*?
- 2. To what extent do the data reveal *contextual nuances*[6] in Personal Project experiences and outcomes?

[6] Examples of contextual nuances include student characteristics (e.g., gender, language, number of DP courses, cohort year) and school characteristics (e.g., private school legal status, years since MYP and DP authorisation, number of registered students).

2. METHOD

The research team adopted a *triangulation convergence mixed method design* (Creswell & Plano Clark, 2011), which involved the concurrent analysis of extant IB quantitative data and newly collected qualitative data followed by a converged analysis (see Figure 1.1).

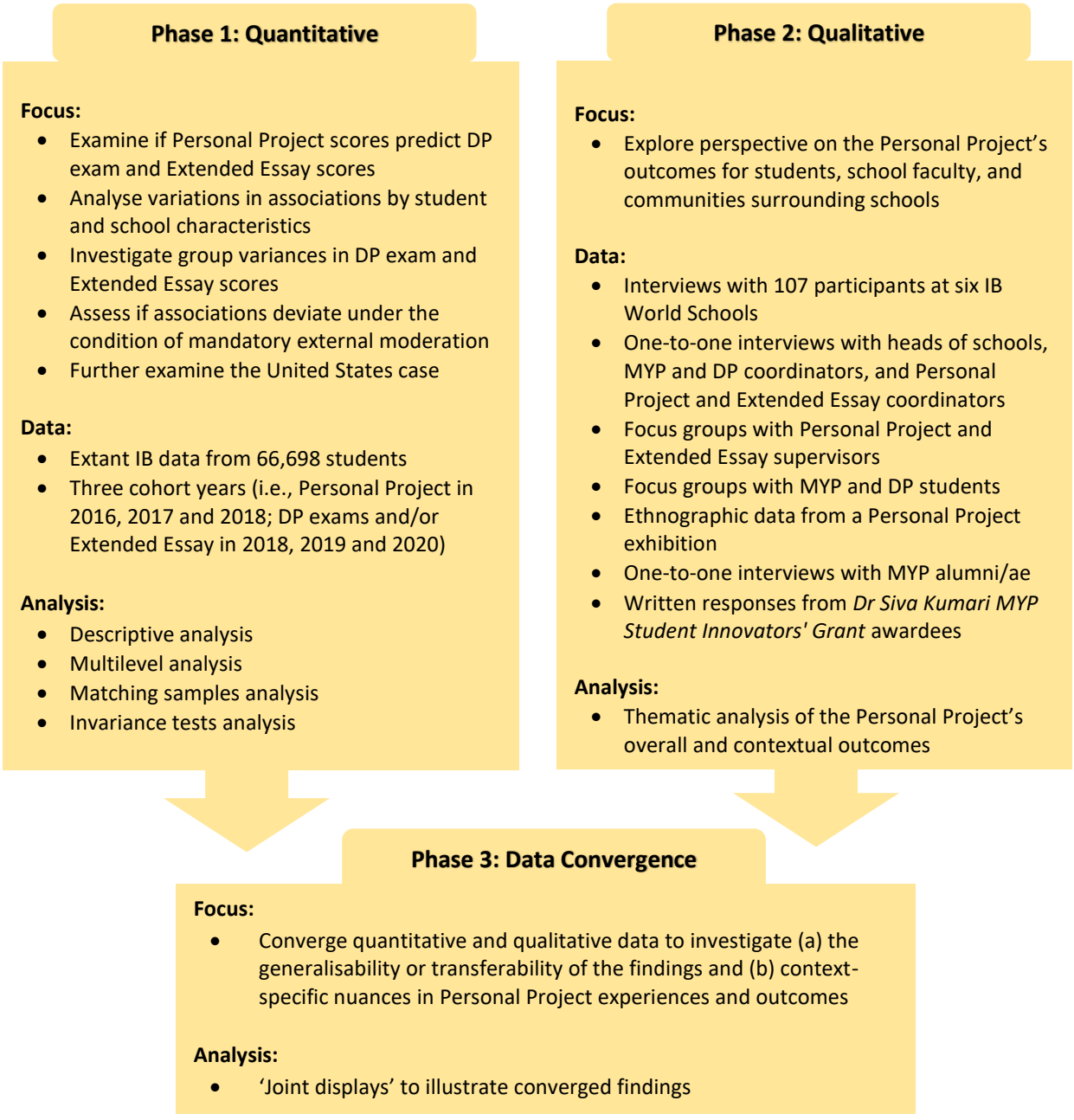

Figure 1.1. *Overview of the Research*

2.1. Phase One - Quantitative

2.1.1. The Present Study

The quantitative phase of the research investigated the associations among students' scores in the Personal Project, DP exams, and the Extended Essay, taking account of student-level and school-level

characteristics. The Personal Project is assessed by a report, within which the product or outcome is evident and a selection of reflective journal entries are included as appendices. The report assessment has four criteria:[7] investigating, planning, taking action, and reflecting. For investigating, students are expected to state a learning goal and global context, identify relevant prior learning and subject-specific knowledge, and demonstrate research skills. Planning involves developing criteria for the product or outcome, planning and recording the project's development, and demonstrating self-management skills. For taking action, students are tasked with creating a product or outcome and demonstrating thinking, communication, and social skills. Reflecting covers students evaluating their product or outcome, reflecting on how it extended their knowledge in a global context, and reflecting on their development as an 'IB learner'. For each criterion, reports are marked between 1 and 8, with a maximum score of 32, which is translated into an IB grade of 1-7. However, students are formally graded on a pass/fail basis with a score of 4 or higher attaining a pass (IB, 2018).

Our rationale for including DP exam scores in the analysis was that they hold the greatest weight in overall DP scores: exams at the end of the DP form the primary basis of assessment for most Higher Level (HL) and Standard Level (SL) subject courses. Students may attain a score from 1-7 for each HL or SL courses, whereas an additional three points in the DP may be attained from the Extended Essay and Theory of Knowledge course. The assessment of DP exams considers the extent to which students have developed academic mastery in analysing and presenting information, evaluating and constructing arguments, and solving problems creatively (IB, 2022e), which students have the potential to develop during the Personal Project experience.

We further included Extended Essay scores in the analysis, given the potential for alignment with the Personal Project. Similar to the Personal Project, the Extended Essay presents students with an opportunity to conduct independent research on a topic of their personal interest under the guidance of a supervisor. Nevertheless, there are differences between the two. Extended Essay students are assessed by a formal piece of academic writing comprising a 4,000-word essay and a 500-word reflection. There are five assessment criteria with a maximum score of 34: focus and method, knowledge and understanding, critical thinking, presentation, and engagement (IB, 2017).

2.1.2. Data Sampling

The number of raw student cases in the extant IB data was 69,100 from 108 countries. The research team conducted data treatment procedures to ensure integrity and comparability. The number of remaining cases was 66,698 (96.5%), referring to the whole sample for the quantitative analysis. More

[7] The IB revised the Personal Project assessment criteria in 2021 (IB, 2021b). This description is based on the Personal Project assessment criteria prior to the revision to align with the period covered in the IB datasets in the current research.

details of the steps for data cleaning are presented in Appendix II. In the current section, we outline the criteria and conditions for selecting the samples with regard to the research questions.

Programme samples. The research team distinguished three types of IB student: full DP students, CP students, and course candidates (Table 1 in Appendix III). First, full DP students (*n* = 45,938) took a combination of six or more HL or SL courses. Second, CP students (*n* = 2,303) participated in the CP and took a combination of fewer than six HL or SL courses. Third, course candidates (*n* = 18,440) participated in the DP and took a combination of fewer than six HL or SL courses. By excluding students coded as participating in both DP and CP (*n* = 27), the total sample size of the three groups accounted for 99.9% of the population of the IB-provided data (*n* = 66,698).

Cohort samples. Based on the whole sample (*n* = 66,698), we drew upon three data cohorts[8] of students who attempted the Personal Project (Table 2 in Appendix III). For each cohort, we assumed students took the Personal Project in 10th grade and DP assessments in 11th and/or 12th grade. The number of students in the three cohorts was as follows: 19,922 (2016-2018), 21,692 (2017-2019), and 24,768 (2018-2020). We excluded students who took more than two years to complete the DP (*n* = 316). Overall, the cohort sample size was 66,382 (99.5% of *n*).

2.1.3. Database for Analysis

Analytical samples. Our research team used three types of analytical samples in addressing the different research questions. For Research Question 1, we drew four analytical samples from the whole sample based on the conditions used for the Hierarchical Linear Modelling[9] (HLM) analyses (see Table 1 in Appendix IV). The sample of *full DP students who took DP exams* comprised students who took the full DP. We examined if Personal Project scores predicted DP exam scores, conditioned on student and school characteristics (*n* = 41,866). Based on the sample of *full DP students who took the Extended Essay,* we examined if Personal Project scores predicted Extended Essay scores, conditioned on student and school characteristics (*n* = 40,497). The sample of *CP students who took DP exams* included students who took the CP. We examined if their Personal Project scores predicted DP exam scores, conditioned on student and school characteristics (*n* = 1,578). Based on the sample of *course candidate students who took DP exams*, we examined how Personal Project scores predicted DP exam scores, conditioned on student and school characteristics (*n* = 13,122).

In addressing Research Question 2, two subsets of analytical samples were drawn from the whole sample based on DP students who did and did not participate in the Personal Project.

[8] Three data cohorts refer to students who have taken Personal Project in 2016, DP exam and/or Extended Essay in 2018; Personal Project in 2017, DP exam and/or Extended Essay in 2019; Personal Project in 2018 DP exam and/or Extended Essay in 2020, respectively.

[9] HLM refers to a regression approach to examine the hierarchical or nested structure of the data.

Descriptive statistics from the IB-provided data showed that a total of 57,644 DP students attained a Personal Project score (ranging from 1 to 32). We also had access to data from DP students who had no Personal Project score (n = 8,970). These samples were further used in the matching samples analysis. Finally, we matched two groups: DP students who participated in the Personal Project (*n* = 18,212) and DP students who did not participate in the Personal Project (*n* = 5,886) (Table 2 of Appendix IV).

We extracted a subset of Personal Project participants from the United States for two additional analyses (Table 3 of Appendix IV). For the first additional analysis, we selected students who had taken both the MYP and DP at schools in the United States. The total sample size was 24,932. Then, we separated the students into two groups: Students who took 1-5 HL or SL courses (*n* = 9,555) and full DP course students (i.e., more than 5 HL or SL courses; *n* = 15,377). For the second additional analysis, two samples of Personal Project participants in the full DP group were drawn based on the conditions used for the HLM analyses. The sample of *United States Personal Project students who took DP exams* comprised students who took the full DP to examine how Personal Project scores predicted DP exam scores, conditioned on student and school characteristics (*n* = 10,029). The sample of *United States Personal Project students who took Extended Essay* examined if Personal Project scores predicted Extended Essay scores for students who took the full DP, conditioned on student and school characteristics (*n* = 9,670).

Score calculation. We drew on three key scores from the IB extant data (Table 4 in Appendix IV). For the Personal Project score, the variable 'TOTAL_SCALED_MYP' was used with a range from 1 to 32 points.[10] For the Extended Essay, the variable of 'EE_Score' was used with a range from 0 to 34 points. The DP exam score was newly constructed by using DP grades per subject to calculate each student's average DP exam score. The range was from 1 to 7 points. All scores were standardised so that they could be used for comparisons in the HLM models.

Variables. We identified school-level and student-level characteristics from the extant IB data (see Table 5 in Appendix IV). School-level characteristics included legal status (i.e., Charter, Private, State, and State subsidised), years since MYP and DP authorisation, and the number of registered students in the DP and CP. Student-level characteristics included gender (dichotomous[11] variable coded 1 for Female, 0 for otherwise); if students' primary and secondary languages matched their MYP and/or DP school's primary and secondary languages of instruction (dichotomous variables coded 1 for matched, 0 for mismatched); additional rigour of DP coursework (dichotomous variable coded 1 for students who took more than three HL courses, 0 for otherwise); and cohort years (e.g., Cohort

[10] In this study, students with a "0 score" for the Personal Project were excluded from the analysis based on the assessment rubric which comprised of 1 to 32 points.

[11] Dichotomous variables are categorical variables with two categories.

Year 1 referred to students who took the Personal Project in 2016 and DP exams by 2018). We used additional contextual variables at the student level in the analysis for the United States subset data: participation in the Federal Program on Free and Reduced-Priced Meals[12] (coded 1 for students who had participated in the Programme, 0 for otherwise), English proficiency 1 (coded 1 for Level 1-3, 0 for otherwise), and English proficiency 2 (code 1 for those unreported cases, 0 for otherwise). These three student-level variables were re-coded for analysis in the HLM models.

2.1.4. Analytical Methods

Prior to addressing the research questions, the research team used SPSS version 27.0 for descriptive analyses using one-way analysis of variance[13] (ANOVA) and t-tests[14] on Personal Project, Extended Essay, and DP exam scores across different groups. To analyse quantitative data for Research Question 1, we used HLM version 8.2 to perform multilevel analysis for examining associations among students' Personal Project, Extended Essay, and DP exam scores with respective student and school characteristics. HLM was used because the student samples were nested within schools, with students serving as level 1 and schools as level 2 (Raudenbush & Bryk, 2002).

For Research Question 2, we used five matching methods to conduct between-group comparisons using DP exam and Extended Essay scores. They were Mahalanobis Distance Matching, Propensity Score Matching, Coarsened Exact Matching, Mahalanobis Frontier, and L_1 Frontier (Stuart, 2010). In doing so, we wrote the programme with PERL to control statistical processing in MLn software. As the effectiveness of these matching methods (minimal imbalance and maximal sample size) differed across data sets, we used the results to match with groups according to four criteria: (a) *standardized mean difference*, (b) *% improvement /% data lost*, (c) L_1 imbalance, and (d) number of matched data (King et al., 2017). With the matched samples, we further conducted the analysis with multivariate multilevel modelling (Hox et al., 2017) to examine (a) the associations between DP exam and Extended Essay scores from the two subsets of the matched group and (b) the associations among Personal Project participation, DP outcomes, and the condition of mandatory external moderation.

For Research Question 3, we conducted a correlation analysis using SPSS 27.0 to examine the association between Personal Project and DP exam scores for Personal Project participants in the United States who took 1-5 DP courses and those who took six or more DP courses. We further used HLM version 8.2 to perform multilevel analysis on associations among Personal Project participants' scores on the Personal Project, Extended Essay, and DP exams with respective student and school

[12] Federal Program on Free and Reduced-Priced Meals is used as a proxy for student-level poverty in the United States.
[13] ANOVA is used to test the statistically significant difference of means between three or more groups of data.
[14] T-test is used to test the statistically significant difference of means of two sampled data.

characteristics. For the multilevel models,[15] school- and student-level variables were entered stepwise[16] to assess the effects of Personal Project score in predicting DP exam and/or Extended Essay scores. The steps for entering variables into each model are summarised in Table 2.1, below.

Table 2.1. *Models and Analytical Samples*

RQ	Models and analytical samples	Variables added per step
RQ1	• Personal Project score predicts DP exam score: an analytical sample of full DP students who took DP exams	• Model 1: School-level characteristics: legal status, number of years since MYP authorisation, number of years since DP authorisation, number of registered students in DP • Model 2: Personal Project score • Model 3: Additional rigour DP coursework • Model 4: Female • Model 5: Self-reported language matched with MYP school's language of instruction; self-reported language matched with DP school's language of instruction • Model 6: Cohort year
	• Personal Project score predicts Extended Essay score: an analytical sample of full DP students who took the Extended Essay	• Model 1: School-level characteristics: legal status, number of years since MYP authorisation, number of years since DP authorisation, number of registered students in DP • Model 2: Personal Project score • Model 3: Additional rigour DP coursework • Model 4: Female • Model 5: Self-reported language matched with MYP school's language of instruction; self-reported language matched with DP school's language of instruction • Model 6: Cohort year
	• Personal Project score predicts Extended Essay score: an analytical sample of CP students who took DP exams	• Model 1: School-level characteristics: legal status, number of years since MYP authorisation, number of years since DP authorisation, number of registered students in CP • Model 2: Personal Project score • Model 3: Female • Model 4: Self-reported language matched with MYP school's language of instruction; self-reported language matched with CP school's language of instruction
	• Personal Project score predicts Extended Essay	• Model 1: School-level characteristics: legal status, number of years since MYP authorisation, number

[15] Multilevel models were used as the data was hierarchically structured at more than one level.
[16] Stepwise is a method of selecting variables into models in a prescribed order.

	score: an analytical sample of course candidates who took DP exams	of years since DP authorisation, number of registered course candidates • Model 2: Personal Project score • Model 3: Female • Model 4: Self-reported language matched with MYP school's language of instruction; Self-reported language matched with DP school's language of instruction • Model 5: Cohort year
RQ2	• Multivariate multilevel regression analyses on DP exam scores	• Model 1: Personal Project participation • Model 2: Cohort year of mandatory external moderation • Model 3: Interactions[17] between Personal Project participation and cohort year of mandatory external moderation
	• Multivariate multilevel regression analyses on Extended Essay scores	• Model 1: Personal Project participation • Model 2: Cohort year of mandatory external moderation • Model 3: Interactions between Personal Project participation and cohort year of mandatory external moderation
RQ3	• Personal Project score predicts DP exam score: an analytical sample of United States Personal Project students who took DP exams	• Model 1: School-level characteristics: legal status, number of years since MYP authorisation, number of years since DP authorisation, number of registered students in DP • Model 2: Personal Project score • Model 3: Additional rigour DP coursework • Model 4: Female • Model 5: Self-reported language matched with MYP school's language of instruction • Model 6: Federal Program on Free and Reduced-Priced Meals; English proficiency
	• Personal Project score predicts DP exam score: an analytical sample of United States Personal Project students who took the Extended Essay	• Model 1: School-level characteristics: legal status, number of years since MYP authorisation, number of years since DP authorisation, number of registered students in DP • Model 2: Personal Project score • Model 3: Additional rigour DP coursework • Model 4: Female • Model 5: Self-reported language matched with MYP school's language of instruction • Model 6: Federal Program on Free and Reduced-Priced Meals; English proficiency

[17] Testing interactions allows examination of the joint effect of two or more independent variables on at least one dependent variable.

Following this, using the restricted maximum likelihood method,[18] we developed the multilevel models separately on each analytical sample to examine the associations. In each analytical sample, the multilevel models with group-mean centering[19] were applied to student-level characteristics and grand-mean centering[20] to school-level characteristics. The equations of the final HLM and the multivariate multilevel model are referred to in Appendix V.

We also calculated the Intra-class Correlation Coefficient[21] (ICC) by considering the null model[22] as a base for modelling without containing any variables. For Research Question 1, the results of 2-level ICC showed the following proportion of variance among the schools and students contributing to four analytical samples (see Table 1 in Appendix VI for details):

- Full DP students who took DP exams (43.77% school variance; 56.23% student variance);
- Full DP students who took the Extended Essay (21.04% school variance; 78.96% student variance)
- CP students who took DP exams (48.12% school variance; 51.88% student variance)
- Course candidates who took DP exams (32.90% school variance; 67.10% student variance)

For the additional analysis on the United States subset data in Research Question 3, the results of 2-level ICC showed the proportion of variance among the schools and students contributing to two analytical samples (see Table 1 in Appendix VI for details).

- *United States Personal Project participants who took DP exams* (44.82% school variance; 55.18% student variance)
- *United States Personal Project participants who took Extended Essay* (19.58% school variance: 80.42% student variance)

As IB extant data consisted of 108 countries, we also calculated the 3-level ICC for Research Question 2 as a reference (see Table 2 in Appendix VI).

2.2. Phase Two - Qualitative

2.2.1. Interview Data

The qualitative phase of the research investigated the broader outcomes of the Personal Project for students, school faculty, and communities surrounding schools. In other words, it considered the potential of more comprehensive outcomes that go beyond preparation for DP exam and Extended Essay scores. The research team interviewed school leaders, school faculty, and students. A pilot study

[18] Maximum Likelihood Estimation is a statistical method for estimating the parameters of the probability distribution.
[19] Group-mean centering refers to centering the variable around the mean of each group.
[20] Grand-mean centering refers to subtracting the full sample mean from each parameter.
[21] Intraclass Correlation Coefficient is used to measure the degree of clustering within groups or levels.
[22] Null model refers to the unconditional model, which served as the baseline for comparison.

was conducted at one IB World School in Hong Kong. The purpose was to gather initial information on perspectives of the experiences and outcomes of the Personal Project, which informed the subsequent focus of inquiry. The main part of the qualitative phase involved interviews at six IB World Schools in six jurisdictions: Hong Kong, Peru, Qatar, South Korea, the United States, and Zambia.

All six of the selected schools offered the MYP and DP, which enabled the research team to investigate how the Personal Project shapes MYP-DP alignment. Apart from that, we employed 'maximum variation sampling' to identify variations across schools and selected schools to represent that variance (Patton, 2002). The sampling criteria aimed for variation in (a) location: geography and host culture; (b) school type: state, private, international; (c) student population: predominantly local to predominantly expatriate; (d) longevity: MYP authorisation under five years prior to over 20 years prior; (e) curriculum: schools with alternative dual curriculum pathways following the MYP, and schools with only the DP following the MYP. Details of the schools are presented in Table 2.2.

Table 2.2. *Case School Information*

Case	Location	School type	Student population	Language	Longevity (MYP)	Curricula
1	Hong Kong	International	Predominantly expatriate	English	5-10 years	Full IB continuum and another curriculum
2	Peru	Private	Predominantly local	English and Spanish	Over 20 years	Full IB continuum only
3	Korea	International	Predominantly local	English	Under 5 years	Full IB continuum and another curriculum
4	Qatar	Private	Predominantly local	English	Under 5 years	Full IB continuum and another curriculum
5	United States	Public	All local	English	Over 10 years	Full IB continuum and another curriculum
6	Zambia	International	Predominantly expatriate	English	Over 20 years	Full IB continuum only

Five of the schools were recruited by the research team's networks. First, the research was hosted by the *Asia Pacific Centre for Leadership and Change*, which has extensive global networks with

IB World Schools. Second, the Co-Principal Investigators, as named on the title page, are current and former Programme Leaders for an IB recognised master's degree with an alumni/ae network with IB school leaders across over 20 countries. The IB facilitated the recruitment of the remaining school.

At each school, the research team conducted one-to-one interviews with heads of schools (*n* = 1-2), DP/Extended Essay coordinators (*n* = 1-2), and MYP/Personal Project coordinators (*n* = 1). Focus group interviews were held with Personal Project supervisors (*n* = 2-3), Extended Essay supervisors[23] (*n* = 2-3), students who had recently completed the Personal Project (*n* = 3-5), and DP students working on their Extended Essay (*n* = 3-5), Focus groups facilitated interactive discussions, which can have a 'synergistic effect' by encouraging participants to debate, react, and build on responses (Stewart et al., 2009 p. 594). We conducted all the interviews in English and online through the Zoom platform. They each lasted 45 minutes to 1.5 hours. In sum, we conducted 13-19 interviews at each school, which resulted in 107 participants across the six schools (see Table 2.3 on the following page).

We developed interview protocols to investigate Personal Project experiences and outcomes (see Appendix VII for an example). The pilot study informed the initial questions, which we revised in an iterative process in light of emerging findings. Also, we tailored the questions to different groups of participants to elicit information appropriate for their expertise, including alignment with school missions, professional learning opportunities, promising practices, challenges, student characteristics (e.g., gender, socioeconomic status, language), school-community engagement, the educational development of students, and gaps and synergies with the DP (see Table 2.3). Using the interviews, we also investigated how crises in and outside schools (e.g., COVID-19) affected the Personal Project's implementation. In addition, a research team member attended an online Personal Project exhibition at one case school to observe students' presentations. This supplementary ethnographic data provided a close-up and rich picture of the Personal Project in practice.

Finally, we gathered additional qualitative data to delve deeper into the outcomes of the Personal Project for students. We conducted interviews with MYP alumni/ae to explore the potential long-term outcomes of the Personal Project beyond the DP. The IB Alumni/ae Affairs Team sent an open interview call to graduates from the six case schools between 2004 and 2021. We conducted four online interviews using Zoom with participants who were taking a gap year, at university, or in employment. Using the interviews, we investigated reflections on the Personal Project and how the learning outcomes may have contributed to their current studies or work. In addition, the research team gathered insights from *Dr Siva Kumari MYP Student Innovators' Grant* awardees that provides mentoring and financial support to help MYP students maximise their social impact. The grant is open

[23] In a few cases, Personal Project supervisors and EE supervisors were interviewed on a one-to-one basis owing to scheduling availability.

to all MYP students, not limited to those who have completed the Personal Project. The IB's Strategy and Transformation Team sent an open call to grant awardees of 2020, asking them to comment on whether and how the grant played a role in continuing their Personal Project initiatives. Three awardees provided written responses.

Table 2.3. *Interview Participants and Topics*

Participants	**Number of participants**	**Type of interview**	**Examples of interview topics**
Heads of schools	8	One-to-one	• Overall picture • Alignment with school mission • School and student characteristics • Professional learning • Educational benefits for students • School-community engagement
DP/Extended Essay coordinators MYP/Personal Project coordinators	DP/ Extended Essay coordinators (6) MYP/ Personal Project coordinators (9)	One-to-one	• Institutional support and resources • Positions and roles • Professional learning • Challenges and limitations • Educational benefits for students • MYP-DP transition • School-community engagement
Extended Essay supervisors	14	Focus group	• Readiness for the DP and Extended Essay • Gaps and synergies with the DP and Extended Essay • Promising practices for Extended Essay preparation
Personal Project supervisors	14	Focus group	• 'Hands-on' supervision experience • Professional learning • Promising practices for supervision • Challenges and limitations • Examples of successful projects • Educational benefits for students
Students who recently completed the Personal Project	30	Focus group	• Self-reflection on experience • Skills gained • Challenges to a successful project • Preparedness for the DP and Extended Essay
DP students working on their Extended Essay	26	Focus group	• Self-reflection on the experience • Skills gained • Gaps and synergies with the DP and Extended Essay • Preparedness for further studies

n = 107

2.2.2. Qualitative Analysis

The research team transcribed the interviews verbatim and thematically analysed the data using NVivo 12. The objective of thematic analysis was to interpret the underlying issues or critical findings from large amounts of interview data. The research team generated 'codes' (labels assigned to features or 'chunks' of interview data) that were subsequently integrated into broader 'themes' and 'sub-themes' (patterned responses or meanings; see Miles et al., 2014). The thematic analysis started after we collected interview data from the first school and, through an iterative data collection process, we considered the findings in tweaking or expanding the interview protocols (Strauss & Corbin, 1998). In the analytical process, we struck a balance between being open-minded to new findings and recognising our active role as researchers in generating codes and constructing themes. The codes and themes did not passively emerge but were generated via interpretation through interactions between the data and the focus of the research on the outcomes of the Personal Project for students, school faculty, and communities that surround schools. The findings identified distinctive student and school characteristics and shared findings that cut across the six schools.

2.3. Phase Three - Data Convergence

In Phase Three, the research team comparatively analysed the qualitative and quantitative data to triangulate findings. This approach permitted interpretations that accounted for multiple perspectives and data sources, therefore yielding additional insights (Gorard & Taylor, 2004). Put simply, it was, 'a validity procedure where researchers look for convergence among multiple and different sources of information to form themes or categories in a study' (Creswell & Miller, 2000 p. 126). We interwove findings from Phase One and Phase Two to investigate (a) the extent to which findings about Personal Project experiences and outcomes are *generalisable or transferrable* and (b) *contextual nuances* in Personal Project experiences and outcomes. We interrogated the quantitative findings by identifying potential explanations from the qualitative data. Likewise, qualitative findings illuminated findings that could be further examined in the quantitative data.

To facilitate the mixed methods analyses, we visualised the data through 'joint displays', which brought '…the data together through a visual means to draw out new insights beyond the information gained from the separate quantitative and qualitative results' (Guetterman et al., 2015 p. 555). We used visually engaging tables to clearly associate the qualitative and quantitative findings, for example, by displaying relevant quantitative findings, coupled with key themes from qualitative data, and converging interpretations. The converging evidence identified in the 'joint displays' provided the foundation for a series of key interrelated research themes and informed recommendations that are presented in the Discussion and Recommendations chapter of this report.

3. QUANTITATIVE FINDINGS

In this chapter, we examine quantitative findings from multiple waves of extant IB data. Specifically, we examine how students' Personal Project scores are associated with subsequent performance in the DP. We first report the associations among students' scores in the Personal Project, Extended Essay, and DP exams. A multilevel analysis was conducted with hierarchically nested data to identify variations according to student and school characteristics. Following this, we report the association of DP exam and Extended Essay scores between DP students who participated in the Personal Project and their counterparts who did not participate in the Personal Project. We further report associations under the condition of mandatory external moderation. Finally, we look at a subset of data from IB schools in the United States to examine how full DP students' Personal Project scores are associated with DP outcomes. We also report how the additional contextual variables of student-level participation in the Federal Program on Free and Reduced-Priced Meals and English proficiency associate with Personal Project, Extended Essay, and DP exam scores.

3.1. Results of Z Scores, ANOVA, and T-tests

Before the primary analyses, the research team conducted normality tests on the analytical samples to identify the distributions of Personal Project, DP exam, and Extended Essay scores. We reported Z-score values for Personal Project, Extended Essay, and DP exam scores for each analytical sample (see Appendix VIII). The results from the one-way analysis of variance (ANOVA) and t-test showed that full DP students had significantly higher Personal Project scores (M = 15.54, SD = 5.43) than students who took the CP (M = 10.52, SD = 4.71) and course candidates (M = 11.10, SD = 4.99), $F(1,2) = 3975.714$, $p < .001$. The results also showed that students who took the full DP had significantly higher Extended Essay scores (M = 18.03, SD = 6.328) than course candidates (M = 13.21, SD = 6.11), $p < .001$. Finally, students who took the full DP had significantly higher DP exam scores (M = 4.83, SD = 0.98) than their counterparts who took the CP (M = 3.81, SD = .96) and course candidates (M = 3.80 SD = 1.11), $F(1,2) = 5665.855$, $p < .001$.

3.2. Personal Project, DP Exam, and Extended Essay Scores

The research team addressed the question: '*Do Personal Project scores predict DP exam and/or Extended Essay scores for Personal Project participants who continue into the DP?*', with two sub-questions: '*If such associations exist, do they vary by student characteristics?*' and '*If such associations exist, do they vary by school characteristics?*'. The descriptive statistics of school-level and student-level variables in the multilevel analysis are presented in Appendix IX. In the current section, we report

the results of multilevel regressions on the final models of each analytical sample. For the detailed regression results of each model, please refer to Appendix X. The major findings are summarised below.

3.2.1. Overall Findings

In the regression models, the standardised coefficients (β) were reported to compare effect sizes. The effect size was generally interpreted under the rule of < .2 (small), < .5 (moderate) and < .8 (significant) (Cohen, 1988). Although score standardisation was performed in the HLM models, caution is needed in interpreting the associations among Personal Project, DP exam, and Extended Essay scores owing to the separate samples drawn.

- ***Personal Project scores predict DP exam and Extended Essay scores:*** The results of two separate multilevel models demonstrated that Personal Project scores associated significantly with DP exam and Extended Essay scores for full DP students (β = 0.418, p < .001 and β = 0.250, p < .001, respectively) (see Table 3.1 on page 22). The results also showed that students' Personal Project scores were significantly associated with DP exam scores for students who took the CP and course candidates (β = 0.258, p < .001 and β = 0.202, p < .001, respectively) (see Table 3.2 on page 22).
- ***Personal Project scores have a stronger association with DP exam scores than with Extended Essay scores***: In the multilevel models of full DP students, Personal Project scores had a significantly higher magnitude of association with DP exam scores (β = 0.418, p < .001) than Extended Essay scores (β = 0.250, p < .001) for Personal Project participants (see Table 3.1).

3.2.2. Student Characteristics

- ***Female Personal Project participants associated with higher DP exam and Extended Essay scores:*** The results of multilevel models showed that female Personal Project participants who took the full DP were more significantly associated with higher Extended Essay scores (β = 0.131, p < .001) than their male counterparts (see Table 3.1). A significant positive association between gender and DP exam scores was also found in the results of course candidates who took DP exams, showing that female Personal Project participants were associated with higher DP exam scores (β = 0.117, p < .001) than their male peers (see Table 3.2).
- ***Mixed language-match associations with DP and Extended Essay scores:*** The four multilevel models showed mixed findings regarding associations between language match and DP outcomes. Language match refers to if students' self-reported primary and/or secondary languages matched their MYP and/or DP/CP schools' primary and secondary languages of instruction. CP students who took DP exams had a positive association between self-reported language match with CP

school's language of instruction and DP exam scores (β = 0.108, p < .05) (see Table 3.2). However, full DP students showed a negative association between self-reported language match with MYP school's language of instruction and Extended Essay scores (β = -0.243, p < .05) (see Table 3.1).

- ***Additional rigour of DP course coursework associated with higher DP exam and Extended Essay scores:*** The results for full DP students showed a significant association among additional rigour of DP coursework, DP exam scores, and Extended Essay scores (see Table 3.1). Personal Project participants in the full DP who went on to take more than three Higher Level DP courses were significantly associated with higher DP exam scores (β = 0.373, p < .001) and Extended Essay scores (β = 0.209, p < .001) than their peers who took three or fewer Higher Level DP courses.
- ***Cohort year associated with DP exam and Extended Essay scores.*** Full DP students who took the Personal Project in 2017 and DP exams by 2019 had relatively lower Extended Essay scores (β = -0.592, p < .05) than students who took the Personal Project in 2018 and DP exams by 2020 (see Table 3.1). Also, course candidates who took the Personal Project in 2017 and DP exams by 2019 had relatively lower DP exam scores (β = -1.075, p = < .05) than students who took the Personal Project in 2018 and DP exams by 2020 (see Table 3.2).

3.2.3. School Characteristics

- ***Private school status associated with higher DP exam and Extended Essay scores:*** The results of multilevel models showed that private school status was significantly associated with higher DP exam scores for Personal Project participants who took full DP (β = 0.134, p < .05) than students who were not in private schools (see Table 3.1). Similarly, private school status was associated with higher Extended Essay scores for Personal Project participants who took the full DP (β = 0.120, p < .05) than their non-private school peers (see Table 3.1).
- ***More time since MYP authorisation associated with higher DP exam and Extended Essay scores:*** The period of time that schools had been authorised to offer the MYP was significantly associated with higher DP exam scores for Personal Project participants who took the full DP (β = 0.014, p < .05) (refer to Table 3.1). Similarly, the results showed that schools authorised to offer the MYP for a longer period of time were significantly associated with higher Extended Essay scores for Personal Project participants who took the full DP (β = 0.009, p < .05) (see Table 3.1).
- ***A higher number of registered students associated with DP exam scores:*** The multilevel model showed that schools with a higher number of students registered in the full DP were significantly associated with higher DP exam scores for Personal Project participants (β = 0.001, p < .05) (see Table 3.1).

Table 3.1. *Personal Project Score Predicts DP Exam and Extended Essay Scores: Full DP Students*

	Personal Project score predicts DP exam score: Full DP students who took DP exams	Personal Project score predicts Extended Essay score: Full DP students who took Extended Essay
Level 2 (School-level characteristics)		
Legal status (1= Private, focal group)	0.134*	0.120*
Number of years since MYP authorisation year (2021-MYP authorisation year)	0.014*	0.009*
Number of years since DP authorisation year (2021-DP authorisation year)		
Number of registered students in DP	0.001*	
Level 1 (Student-level characteristics)		
Personal Project score	0.418***	0.250***
Additional rigour DP coursework (1= More than 3 HL courses taken, focal group)	0.373***	0.209***
Female		0.131***
Self-reported language matched with MYP school's language of instruction (1= Matched, focal group)		-0.243*
Self-reported language matched with DP school's language of instruction (1= Matched, focal group)		
Cohort year 1 (1= Years taken Personal Project in 2016 and DP exams by 2018, focal group)		
Cohort year 2 (1= Years taken Personal Project in 2017 and DP exams by 2019, focal group)		-0.592*

Table 3.2. *Personal Project Score Predicts DP Exam and Extended Essay Scores: CP Students*

	Personal Project score predicts Extended Essay score: CP students who took DP exams	Personal Project score predicts DP exam score: Course candidates who took DP exams
Level 1 (Student-level characteristics)		
Personal Project score	0.258***	0.202***
Female		0.117***
Self-reported language matched with MYP school's language of instruction (1= Matched, focal group)		
Self-reported language matched with CP/DP school's language of instruction (1= Matched, focal group)	0.108*	
Cohort year 1 (1= Years taken Personal Project in 2016 and DP exams by 2018, focal group)	#	
Cohort year 2 (1= Years taken Personal Project in 2017 and DP exams by 2019, focal group)	#	-1.075*

Note: Non-significant school-level variables are not shown in this table.
Due to the collinearity issue, the variables of "cohort year" were not examined in the models.

3.3. Personal Project Participation and DP Outcomes

The research team addressed the question: '*Do Personal Project participants have DP exam and/or Extended Essay scores than their DP peers who were not Personal Project participants?*'. There was

one sub-question: '*Do any associations demonstrated deviate for a subset of data from students who attempted Personal Project under the condition of mandatory when compared to other available data years)?'.* We present the major findings below.

3.3.1. Personal Project Participation

Before the analysis, we used five matching methods to create subsets of equivalent students from two groups: DP students who participated in the Personal Project and DP students who did not participate in the Personal Project. The results showed that Coarsened Exact Matching performed the best across all criteria (please refer to the section on analytical methods): it yielded the most matched data (*n* = 24,098), the greatest matching improvement over data lost ratio (146%), the smallest L1 imbalance (.124), and the smallest standardized mean difference in values of variables across subsets (< .001). Hence, we used these data in the subsequent analyses. In the matched data, the variances in DP exam and Extended Essay scores differed mostly across students rather than across schools or countries. The results showed that the differences in DP exam scores were among students (67%), across schools (22%), and across countries (11%). This pattern was also identified in the differences in Extended Essay scores across students (63%), schools (25%), and countries (12%).

In the multivariate multilevel regression models, Model 1 showed that DP students who participated in the Personal Project had higher academic outcomes than DP peers who did not participate in the Personal Project (see Table 1 of Appendix XI). Compared to other DP peers, students who did the Personal Project attained a 3% higher DP exam score ($\beta = 0.181$, $p < .001$) and a 6% higher Extended Essay score ($\beta = 2.205$, $p < .001$). The total variance of having a Personal Project score accounted for 0.6% of the differences in DP exam scores and 1.4% of the differences in Extended Essay scores (see Table 1 of Appendix XI). For the results of the separate model on the DP exam and Extended Essay scores, please refer to Tables 2 and 3 of Appendix XI.

3.3.2. Mandatory External Moderation

We used the matched sample to examine the associations between cohort years of mandatory external moderation and DP outcomes. The 2016-18 cohort year was selected as the reference group to compare other cohort years (i.e., 2017-2019 and 2018-2020). The results of Model 2 showed mixed findings regarding associations among cohort years, DP exam scores, and Extended Essay scores. Compared to DP students in cohort year of 2016-18, DP students in cohort year of 2017-2019 had 2% lower DP exam scores ($\beta = -0.146$, $p < .001$) and 6% lower Extended Essay scores ($\beta = -2.074$, $p < .001$) (see Table 1 of Appendix XI). Compared to DP students in the 2016-18 cohort year, DP students in the cohort year of 2018-2020 had 4% higher DP exam scores ($\beta = 0.304$, $p < .001$) but 3% lower Extended

Essay scores (β = -1.076, p < .001) (see Table 1 of Appendix XI). The total variance of mandatory external moderation conditions accounted for 0.3% of the differences in DP exam scores and 1.1% of the differences in Extended Essay scores.

Following this, we examined the interactions between Personal Project participation and cohort years of mandatory external moderation. Generally, there was a positive association among Personal Project participation, DP exam scores, and Extended Essay scores for cohorts before and after mandatory external moderation. However, there were some differences (see Table 1 of Appendix XI). Compared to DP students who did not participate in Personal Project, the results of Model 3 showed that (a) DP students who did the Personal Project in 2016 attained 3% higher DP exam scores (β = 0.204, p < .001) and 6% higher Extended Essay scores (β = 1.911, p < .001); (b) DP students who did the Personal Project in 2017 scored approximately the same on DP exams (β = -0.221, p < .001) and 2% higher on the Extended Essay (β = -1.192, p < .001); and (c) DP students who did the Personal Project in 2018 scored 1% higher on DP exams (β = -0.105, p < .01) and 3% higher on Extended Essay scores (β = -0.837, p < .05). These interactions accounted for 0.1% of the differences in DP exam scores and 0% of the differences in Extended Essay scores. The final model accounted for 1% of the differences in DP exam scores and 2.5% of the differences in Extended Essay scores. For the results of the separate model on DP exam and Extended Essay scores, please see Table 2 and 3 of Appendix XI.

3.4. United States Case

The research team used subset data from IB schools in the United States to conduct descriptive statistical analysis of Personal Project participants who took 1-5 DP courses and the full DP and associated DP outcomes. We further conducted the multilevel models to examine the contextual variables of student-level participation in the Federal Program on Free and Reduced-Priced Meals and English language proficiency. The descriptive statistics of school-level and student-level variables in the multilevel analysis are presented in Appendix XII. For the detailed regression results of each model, please refer to Appendix XIII. The following summarises the major findings.

3.4.1. United States Subset Data

- ***Personal Project scores predict DP exam and Extended Essay scores:*** The results of two separate multilevel models showed that the scores of Personal Project participants were significantly associated with subsequent DP exam and Extended Essay scores (see Table 3.3).
- ***Personal Project scores had a stronger association with DP exam scores than Extended Essay scores:*** In the multilevel model, for Personal Project participants who took the full DP, Personal

Project scores had a significantly higher magnitude of association with DP exam scores (β = 0.336, p < .001) than Extended Essay scores (β = 0.239, p < .001) (see Table 3.3).

- ***Full DP students' Personal Project scores had a stronger association with DP exam scores:*** For Personal Project participants who went on to take more than five DP courses, the correlation analysis results indicated a significantly stronger association between Personal Project scores (M = 12.59 and SD = 4.92) and DP exam scores (M = 4.24, SD = 0.87), r = 0.397, p < .001., compared with their peers who took who 1-5 DP courses (Personal Project score: M = 10.06, SD = 4.64 and DP exam score: M = 3.58, SD = 1.07, r = 0.278, p < .001) (see Table 3.3).

Table 3.3. *Personal Project Score Predicts DP Exam and Extended Essay Scores: United States Subset Data*

	Personal Project score predicts DP exam score: United States Personal Project students who took DP exams	Personal Project score predicts Extended Essay score: United States Personal Project students who took Extended Essay
Level 1 (Student-level characteristics)		
Personal Project score	0.336***	0.239***
Additional rigour DP coursework (1= More than 3 HL courses taken, focal group)	0.389***	0.182**
Female		0.162***
Self-reported language matched with MYP school's language of instruction (1= Matched, focal group)		
Federal Program on Free and Reduced-Priced Meals (1= Participated, focal group)	-0.207***	-0.083*
English Proficiency 1 (1= Level 1-3, focal group)		
English Proficiency 2 (1= Unreported, focal group)		

Note: Non-significant school-level variables are not shown in this table.

3.4.2. Student and School Characteristics in the United States

- ***Female Personal Project participants associated with higher Extended Essay scores****:* Female Personal Project participants in were associated with higher Extended Essay scores (β = 0.162, p < .001) than their male peers who continued into the full DP (see Table 3.3).
- ***Additional rigour of DP course coursework associated with higher DP exam and Extended Essay scores:*** A significant association was identified among additional rigour of DP coursework, DP exam scores, and Extended Essay scores (see Table 3.3). Personal Project participants in the full DP who took more than three Higher Level DP courses were significantly associated with higher

DP exam scores (β = 0.389, p < .001) and Extended Essay scores (β = 0.182, p < .010) than students who took three or fewer Higher Level DP courses.

- ***Participation in the Federal Program on Free and Reduced-Priced Meals associated with lower DP exam and Extended Essay scores:*** The results showed a significant association among full DP student's participation in the Federal Program on Free and Reduced-Priced Meals, DP exam scores, and Extended Essay scores (Table 3.3). The separate multilevel models showed that students who had participated in the Federal Program on Free and Reduced-Priced Meals were significantly associated with lower DP exam scores (β = -0.207, p < .001) and Extended Essay scores (β = -0.083, < .05) than their peers not part of that programme.

3.5. Follow-up Sensitivity Analysis

With the extant global data, we conducted a multigroup path analysis to examine the generalisability of quantitative findings between global data (all students from schools in all countries) and non-global data (all students from schools in excluded European nations). The measurement models regarding student characteristics, Personal Project, DP exam, and Extended Essay scores were validated by using AMOS 27. In the first invariance test, we examined the difference between global data and non-global data on Personal Project participants who took DP exams. The descriptive statistics of the measurement model are presented in Table 1 of Appendix XIV. The results of the path regression models showed that the coefficient estimates of different paths on student characteristics, Personal Project, and DP exam scores look similar across the two groups (Table 2 of Appendix XIV).

The results of a Chi-square difference test between the unconstrained and fully constrained models showed that the difference between the two groups is non-significant (p = 0.091) (Table 3 of Appendix XIV). Hence, the parameters used in the measurement model were assumed to be invariant across two groups. Next, we examined the difference between global and non-global data on Personal Project participants who took the Extended Essay. The descriptive statistics of the measurement model are presented in Table 4 of Appendix XIV. Results of path regressions showed that the coefficient estimates of different paths on student characteristics, Personal Project scores, and Extended Essay scores were similar across the two groups (Table 5 of Appendix XIV). The results of a Chi-square difference test between unconstrained and fully constrained models also showed that the difference between the two groups is non-significant (p = 0.818) (Table 6 of Appendix XIV). Hence, the parameters used in the measurement model were assumed to be invariant across two groups.

3.6. Summary

This chapter examined how students' Personal Project participation associates with performance in DP, with additional analyses of student and school characteristics. In Tables 3.4 to 3.6, we summarise the overall findings and the United States subset data findings, respectively.

Table 3.4. *Summary of Quantitative Findings (Part 1)*

Research Question	Quantitative Findings
Do Personal Project scores predict DP exam and/or Extended Essay scores for Personal Project participants who continue into the DP? • *a. If such associations exist, do they vary by student characteristics?* • *b. If such associations exist, do they vary by school characteristics?*	***Overall findings*** • Students' Personal Project scores predict both DP exam and Extended Essay scores. • Personal Project scores had a stronger association with DP exam scores than with Extended Essay scores: a one-unit increase in Personal Project score associated with a 0.42-unit increase in DP exam score and a 0.25-unit increase in Extended Essay score. • Student-level variance explained 52-67% of associations between Personal Project and DP exam scores, with 33-48% explained by school-level variance. • Student-level variance explained around 80% of the Personal Project's association with Extended Essay scores, whereas 20% was explained by school-level variance. ***Student characteristics*** • Female Personal Project participants averaged higher scores on DP exams (+0.13) and Extended Essay (+0.12) than their male peers. • There were mixed findings regarding associations among language match (i.e., students' primary/secondary languages and school's language of instruction), DP exam scores, and Extended Essay scores. • Students who took more than three DP Higher Level (HL) courses scored higher on DP exams (+0.38) and the Extended Essay (+0.21). • Students who took Personal Project in 2017 and DP exams by 2019 had lower scores on DP exams (-0.59) and Extended Essay (-1.08) than their peers in the 2018-2020 cohort. ***School characteristics*** • Private school status associated with higher scores on DP exams (+0.13) and Extended Essay (+0.12). • More time since MYP authorisation associated with slightly higher scores on DP exams and Extended Essay (+0.01 each) . • Higher numbers of registered DP students associated with very slightly higher DP exam scores (+0.001).

Table 3.5. *Summary of Quantitative Findings (Part 2)*

Research Question	Quantitative Findings
Do Personal Project participants have higher DP exam and/or Extended Essay scores than their DP peers who were not Personal Project participants? • *a. Do any associations demonstrated deviate for a subset of data from students who attempted the Personal Project under the condition of mandatory external moderation when compared to other available data years?*	***Personal Project participation*** • Personal Project participants attained higher scores on DP exams (+0.18) and Extended Essay (+2.21) than their DP peers who did not participate in Personal Project. ***Mandatory external moderation*** • Positive associations among Personal Project participation, DP exam scores, and Extended Essay scores were identified for cohorts before and after mandatory external moderation.

Table 3.6. *Summary of Quantitative Findings from the United States Subset Data*

Domain	Quantitative Findings
Additional analyses from the United States data subset	***Overall*** • Personal Project scores predict DP exam and Extended Essay scores. • Personal Project scores had a stronger association with DP exam scores than Extended Essay scores. • Full DP students' Personal Project scores had a stronger association with DP exam scores than students who took 1-5 DP courses.[24] ***Student characteristics*** • Female Personal Project participants were associated with higher Extended Essay scores than their male peers. • Additional rigour of DP course coursework was associated with higher DP exam and Extended Essay scores. • Students' participation in the Federal Program on Free and Reduced-Priced Meals was associated with lower DP exam and Extended Essay scores than their peers not part of that programme.

[24] Although this study cannot determine why links between Personal Project scores and DP exam scores were larger for full DP students than for CP students or course candidates, possible explanations include: (a) considerably smaller sample sizes for the latter two groups, (b) geographic clustering of CPs and/or where course candidacy tends to be common (i.e., disproportionately in the United States and United Kingdom), and/or (c) effects of school-based policies and/or school-community norms that can yield selection biases for which types of students are screened, or self-screen, into CP rather than DP or other programmatic choices (see Mitchell, 2022).

4. QUALITATIVE FINDINGS

This chapter reports on interview findings from heads of schools, coordinators, supervisors, and students from six IB World Schools in Hong Kong, Peru, Qatar, South Korea, the United States, and Zambia. We investigated the experiences and outcomes of the Personal Project for students, school faculty, and the community surrounding the schools. In so doing, the inquiry is extended beyond DP preparation to consider the potentially broader contribution of the Personal Project. We report on the positive outcomes, challenges to realising those positive outcomes, and promising practices. We first focus on students by exploring current and future-oriented benefits of the Personal Project experience. We then look at the outcomes for school faculty, exploring the various roles of school faculty, how the Personal Project shapes perceptions of the IB, the prospect of creating a closer school community, opportunities for professional learning, and workload commitments. Following this, we consider how community engagement in the Personal Project can benefit students, the potential of students to contribute to positive community outcomes, and the associated challenges. We conclude the chapter with a summary of the key findings.

4.1. Students

In this part of the chapter, we address the question: '*How do MYP school community stakeholders perceive the outcomes of the Personal Project experience for students who have attempted it?'.* First, the interviews provided insights into the Personal Project's positive outcomes as part of the IB school career, opportunities to develop ATL skills, and preparation for the DP. These findings were complemented by ethnographic data from an online Personal Project exhibition and interviews with IB alumni/ae interviews to explore potential longer-term benefits of the experience. Second, the findings highlighted concerns raised by participants over assessment, student workload commitments, and unequal access to resources that may limit the positive outcomes. Third, promising practices are put forward to enable students to get the most out of the Personal Project experience.

4.1.1. Positive Outcomes for Students

1. A milestone in the IB school career

The participants frequently described the Personal Project as a milestone in the IB school career. It was characterised as a 'passion project' that enabled students to independently pursue their personal interests over an extended period of time. Accordingly, the student interviews revealed a diverse range of topics (see Table 4.1). As a head of school noted:

> The project is integral to our IB school programme. You know, it's a long-term project. It's a project that gives the kids loads of opportunities to explore their own interests. (Head of school, Zambia)

Table 4.1. *Personal Project Topics*

Category	Number of Students	Examples of Topics
Arts and crafts	7	• Designed own jewellery collection • Composed music album
Business	2	• Ran marketing campaign: Herbal toothpaste • Started homemade cupcake business
Cultural heritage	4	• Designed Pakistani traditional dress • Film on a search for biological parents
Health/lifestyle	14	• Developed an app for COVID-19 guidelines • Mental health awareness campaign • Started a food blog for cancer survivors
History	3	• Wrote a book on Pearl Harbor • Translation of North Korean literature
Science and technology	11	• Product design: Bicycle phone charger • Research paper: Genome editing • Experiments: Wind tunnel simulator
Service and social issues	15	• Volunteered at an animal shelter • English lessons for refugees • Debate participation: Prison abolition

n = 56.

For heads of schools and faculty, the Personal Project was a platform to apply the IB's philosophy of a well-rounded education. In the most successful cases, this not only involved developing skills but broader benefits through pursuing interests and a sense of achievement upon completion. One head of school remarked on how students feel 'ownership' over their Personal Project:

> They're the experts, they know this thing that they've created, it has encompassed their lives for a number of months. And they feel that ownership. (Head of school, South Korea)

The students often described the Personal Project as a 'refreshing' experience that stood out from other parts of their education. As one student put it: 'The project gives us a chance to gain more knowledge about our own passions' (DP student, Qatar). Another student explained how the Personal Project differed from 'just another assignment':

> It was a lot freer. It was more of a thing I wanted to do rather than just another assignment that I have to put in the time to get high grades. (DP student, South Korea)

2. Opportunity to develop Approaches to Learning (ATL) skills

The Personal Project can be a steep learning curve. As leading a project was often a new experience, some students took time to adjust, faced challenges with timely completion, and in some cases were overwhelmed. One student explained:

> You're being handed a project where there's no class, no teacher, and they say finish it by the end of the year, so there were a lot of things that were overwhelming. (DP student, United States)

The task can be magnified for students facing various contextual issues, such as completing the Personal Project in a non-mother tongue language. Nonetheless, heads of schools and faculty consistently believed that the Personal Project offered ample learning opportunities, especially by developing ATL skills. This was true both for high-achieving students and those who failed to complete it or did not meet their expectations. Indeed, the Personal Project was described as a 'low-stakes' exercise, where students can learn from mistakes, which can inform future projects.

The most often highlighted ATL skill was 'self-management'. The process of completing a year-long independent project required setting goals, managing time, and self-motivation, as a head of school explained:

> At the base level, every student achieves an understanding of the necessity of managing time and managing themselves, looking at the different ways of self-regulation, and how to be organised. (Head of school, South Korea)

Also, the participants often cited 'social' and 'communication' skills. As an example, a student explained how they had to be proactive in updating their progress and reaching out for support from their supervisor: 'We are expected to go to the supervisor to ask for help. We can't wait for them to catch up with us' (DP student, Hong Kong). In another example, students can develop 'social' and 'communication' skills when presenting at the Personal Project exhibition:

> The presentation is an exciting moment for them it is often the first time that they have to prepare something as formal as a Personal Project presentation. They sometimes do have some stage fright or worry about presenting for an audience, but it's a great learning experience. (Supervisor, Peru)

'Thinking' skills were another ATL mentioned. Through the Personal Project, students needed to study a subject in-depth, solve problems, and critically reflect on the process. As a coordinator described:

> It teaches the kids to deal with frustrations and problems. That makes them create solutions, not to fear them. I always tell the kids every problem is just a reflection point to develop critical thinking. (Coordinator, Peru)

Lastly, some participants highlighted 'research' skills. This included picking a topic, identifying reliable sources, and writing the report. As one student explained:

> I learned the importance of having reliable sources and how to search for them so that we can trust what was being reported. Before, I was just jumping to Wikipedia. (MYP student, Peru)

3. Bridge gaps between MYP and DP

Most participants believed that the MYP prepares students well for further education. Nonetheless, they discussed gaps between the MYP and the DP. The DP was described as more academically rigorous, whereas the MYP was more skills-oriented and less pressurised. The MYP-DP transition, thus, can be a 'jump' as it involves a greater workload, a step up in difficulty, and more high-stakes assessments, as illustrated below:

> From MYP to DP, we went from just relaxed teenagers to full-time, serious students. In MYP, we would study in a more relaxed way. Then in DP, we suddenly have to focus all the time. (DP student, Qatar)

The participants frequently noted that the Personal Project can 'bridge the gaps'. One student described the Personal Project as a 'first step into the DP':

> The Personal Project is kind of that first step into the DP in that a lot of the responsibility is given to the student and the process prepares us for a higher level of study. There's a lot less handholding by the teachers when we do the Personal Project, much like the whole DP. (DP student, South Korea)

First, ATL skills can be transferable to the DP. A coordinator discussed how self-management skills help students handle the DP's increased workload:

> For students coming from MYP and going into the DP, I feel like they are better able to manage their time. They've already had that experience working independently and managing their time during the Personal Project. (Coordinator, Qatar)

Second, completing the Personal Project can instil resilience to step up to the DP. A student noted: 'It definitely taught me how nothing great can be achieved without struggle' (DP student, United States).

Third, the experience enabled students to develop interests and know-how that can be pursued further in the DP. As one student reflected:

> For my project, I worked on genome editing technology. For me, the biggest thing was helping select my DP subjects. I was able to test if I really am interested in genetics. I'm taking full DP now and studying biology. (DP student, South Korea)

At the same time, most participants were cautious about singling out the Personal Project scores as a direct indicator of DP success. Although they believed the Personal Project was a valuable experience, it was only one part of the five-year MYP. Also, they observed that the most academically able, organised, and motivated students can achieve highly in the DP irrespective of the Personal Project.

Lastly, interviews with alumni/ae demonstrated how the Personal Project can benefit students beyond the DP (see Box 1, below).

Box 1. Alumni/ae Perspectives on the Personal Project

The research team conducted IB alumni/ae interviews to explore whether the Personal Project carries long-term benefits beyond the DP. The IB Alumni/ae Affairs Team sent an open recruitment call for interviewees through their internal network to MYP and DP graduates between 2004 and 2021. Four alums participated, including one student taking a gap year, two undergraduates, and a business owner. Initially, they were unclear about the Personal Project's longer-term outcomes. However, upon reflection, they described three long-lasting benefits. First, independent self-management skills developed through the Personal Project were valuable for managing university assignments and coursework. A participant noted how setting deadlines helped develop organisational skills that were transferable to meeting multiple deadlines at university. Second, the alums discussed how the Personal Project was their first experience of a large-scale independent project. This included a first opportunity to conduct interviews, navigate library databases, and write a report, which they continued to develop in the DP and at university. Third, the experience helped them discover strengths, weaknesses, and personal interests. For example, a participant noted how the Personal Project guided them in selecting an undergraduate major. Another participant shared how exploring their cultural heritage in the Personal Project led them to start a business:

> In a way, the Personal Project brought me closer to my African cultural heritage, and through that, I learned how deeply I cared about it. It's something I continue doing. For my project, I choreographed a traditional African dance. Since then, all my projects have had that common running theme, and that influenced my decision to start my business. (Business owner, Canada)

4. *Potential Extended Essay preparation*

There were mixed opinions on the utility of the Personal Project in preparing students for the Extended Essay. Some participants discussed similarities in both being student-led projects. As a supervisor explained:

> I've found myself saying more than once the Extended Essay is not unlike your Personal Project, as you create a research question and conduct independent research. I've used it as an introduction. (Supervisor, Qatar)

Others noted how the experience of planning, carrying out, and writing a project report was beneficial for the Extended Essay. One student focused on academic writing:

> The writing skills that the project gives us are really helpful for writing the Extended Essay, like how to follow a structure, using the right academic style, and things like referencing. (DP student, Peru)

However, other participants were less convinced, especially those at the DP level. School faculty characterised the Extended Essay as a rigorous academic research project, which contrasted with depictions of the Personal Project as a 'passion project'. Similarly, students described the Extended Essay as more closely aligned with university-level work. One student elaborated on the differences:

> While the Personal Project tests your ability to explore and go through a process of learning from scratch, the Extended Essay, kind of flips around the other way, and you have to first be knowledgeable about the topic before you dive in for further research. (DP student, South Korea)

These differences were not necessarily identified as a deficiency, as the Personal Project presented other benefits to students. One coordinator questioned whether the purpose of the Personal Project should be preparation for the Extended Essay:

> The Personal Project preparing for EE? That would be trying to achieve too many things in one project. I don't think that's the purpose. The Extended Essay is a whole different ball game. (Coordinator, Qatar)

4.1.2. Challenges to Positive Outcomes for Students

1. *Assessment misaligned with what matters to students*

The most common concern raised by students was with assessment. Students typically shared enthusiasm about their projects. Their primary interests were in the process of carrying out the project and creating the product or outcome. Yet the Personal Project's is assessed by the 'report' as an

account of the project and its impact. Consequently, some students expressed frustration as they believed their product or outcome can be under-appreciated.

> I was frustrated because I felt like they didn't really look at it. I loved my product, and I was proud of it. I felt unappreciated because I was like, I spent most of my time making the film. But here I am getting graded on the report. (MYP student, Hong Kong)

Some students discussed losing interest in their projects. The process journal was described by some as 'at times repetitive and boring' (MYP student, Hong Kong). They also noted that the report can be cumbersome or 'sucked the fun out of the process' (DP student, United States). Another student described:

> I've seen cases where students start off enthusiastically but lose interest as they realise the product really doesn't matter. The product is what makes your project unique, what captures your dedication and effort. But many students simply ignore it. I think that defeats the entire purpose of the Personal Project. (DP student, South Korea)

Others described how students strategically shift their attention to the report. Although the MYP is graded as pass/fail, the Personal Project score held considerable value for some students. This outlook was most commonplace in competitive academic contexts, such as in Hong Kong and South Korea. A few students admitted to writing the report in a way that 'ticked boxes' to meet the assessment criteria, such as developing ATL skills.

> I feel like to get a high score, we have to pretend [in the report] that everything went so perfect, that we are like angels, and we developed all these ATL skills, when in reality, it was a lot messier. (MYP student, South Korea)

Significantly, the findings suggest that learning outcomes may not be fully captured by Personal Project scores.

2. *Workload can exceed IB guidelines*

The IB expects students to spend around 25 hours to complete the Personal Project. However, most participants shared that the process requires considerably more time. As one supervisor put it: 'Those who are deep into their topics spend hundreds of hours on it' (Supervisor, Hong Kong). Similarly, a student described how 25 hours was 'unrealistic':

> 25 hours is just unrealistic. 24 hours is just one day, and then an extra hour. I don't think I would have been able to do my project in a day. (MYP student, United States)

A few students admitted compromising on the quality of their projects, as they were unable to invest more than 25 hours. For others, the time commitment created a heavy workload. First, the workload can lead to practical difficulties with engaging in other parts of the MYP or extracurriculars. Second, it can result in students feeling anxious or stressed. As one student explained, this can reflect a competitive academic environment:

> Here we put a lot of attention on our scores. That plays a role in how we understand the Personal Project. I felt a lot of pressure seeing other people's awesome projects, so I found myself putting in extra hours. (DP student, South Korea)

Nonetheless, similar concerns were shared in all the case schools, as the below quote illustrates:

> I did get stressed, and I know some people even cried because of the Personal Project. We have other classes and assignments too, so it got too much at one point. (MYP student, Peru)

3. ***Unequal access to resources***

Resources from families, schools, and the broader community played a crucial role in Personal Projects. Family members shared advice on topics and helped form connections with community stakeholders. A coordinator in Zambia noted that students often used family networks for their projects:

> Oftentimes, the parents help. We have kids whose parents work for NGOs and other development organisations, so you're able to get certain sets of data and find the right people to support them just because of our parent community. (Coordinator, Zambia)

In other cases, families provided financial backing. One supervisor described students travelling overseas to visit research sites and conduct interviews. Another shared an example of students outsourcing their product:

> You have students who don't put in much work along the way. And all of a sudden, they show up with this extravagant and professionally built product, like a model of a World Cup stadium, that they clearly had help making. (Supervisor, Qatar)

By contrast, other schools serve a less socioeconomically advantaged student body. The head of a school in the United States shared that the IB provides a 'life-changing' opportunity for students, especially by getting them college-ready. However, these students may not have access to the same family resources to support their projects:

> We are reaching underserved populations. You know, 60 percent are under the poverty line, primarily African American students, from all over the city…We saw the IB as an opportunity to change lives and help more students from marginalised homes and families go to college. (Head of school, United States)

School resources were also crucial for introducing, supporting, and seeing projects through to completion. This included support from coordinators through briefing sessions, written guidelines, and exemplars. Supervisors also played a key role in projects. As a student explained, the support extended to emotional support through encouragement and reassurance:

> I told my supervisor how I was working through the nights to meet the deadline, and he told me I was on track, and to get some rest. He would go through my report and would give me pointers on areas for improvement (DP student, South Korea).

However, a few participants perceived differences among IB schools in Personal Project resources. As a student noted, schools that have offered the Personal Project for a longer period may have more resources for students:

> My school is kind of new to the IB. Well, there are other schools that have been doing it way longer than us. They might have more resources to help with the project…Also, the other schools have these new guides, so their students know more about getting top marks. (DP student, Qatar)

The community beyond schools was also a valuable resource. In some cases, the schools had long-term connections that acted as a bridge to contacts across a range of public, private, and non-government organisations. In the below example, the school's network with a local embassy led to a connection with an expert:

> The embassy was very helpful for me. They connected me to an epidemiologist as I worked on my COVID-19 guideline app. He provided me with information, and I used some data and like the latest research on COVID-19 (MYP student, Zambia)

Conversely, there were contextual issues that limited how students utilised community resources. As one example, in Qatar, a few participants described how female students can face restrictions in the local community:

> One of cultural issues here is that some of the girls can't be so independent. Like, one girl wanted to go to a falcon festival for the project. But she said to me, 'my dad won't let me go, I have to ask my brother or somebody to go with me'. Then, her brother didn't want to go, but she couldn't go by herself. (Supervisor, Qatar)

These findings shed light on the potential inequality of opportunity with the Personal Project, as not all students had equal access to resources to support their work.

4.1.3. Promising Practices for Positive Outcomes for Students

1. Promote and structure peer learning

The first promising practice was promoting and structuring peer learning. Although the IB did not design the Personal Project to incorporate peer learning, faculty members at different schools highlighted it as an effective way to push the Personal Project forward, likely enhancing the experience for students. This most often involved providing opportunities for students preparing for the Personal Project to interact with their counterparts who had completed their projects. A common strategy was to encourage younger students to attend the Personal Project exhibition. Students highlighted how these interactions were valuable for understanding the project's scope, learning tips and strategies, and instilling confidence about project completion. One coordinator explained:

> We always invite the Grade Nines to the exhibition, so that they can come along and see what it looks like, connect with the older students, and just be inspired that way. We find that handover helps a lot. (Coordinator, Qatar)

In a few cases, students formed their own Personal Project groups. This presented additional peer-learning opportunities as students supported each other and shared resources. Although the Personal Project is designed to be an independent piece of work, schools may consider facilitating such groups to ensure all students have access to peer support throughout the process.

> I had a group of friends who would get together and like, read my journal, and tell if it is good or not. Or, if I couldn't figure out what to put in a section, I could ask what they wrote. It was nice to have someone to help me get through. (DP student, United States)

2. Provide formalised guidance early

The coordinators highlighted the importance of providing formalised guidance to students at the start of the process. This included an oral presentation to new Personal Project students. In addition, the coordinators shared written guidelines, including a booklet outlining the expectations, exemplars from past students, and a report template. The benefits included promoting a clear understanding of the task, reducing dependency on supervisors, and making the process less daunting. All of this meant that students could invest more time on their Personal Project initiative. A student underscored this point:

> What I liked about our school is that they supported us by providing us with many examples. Also, the coordinator helped with different guides to help us. So, it was kind of easy for us to understand what was going on. (MYP student, Qatar)

3. 'Light-touch' approach to supervision

The participants often recommended that supervisors take a 'light-touch' approach to supervision that encourages independent learning. They emphasised that students gained the most from the experience if they had ownership of their project, especially by developing ATL skills. Hence, the supervisor's role can be to guide students along the way and only intervene when needed.

> We try to encourage independence. It's up to the students to make appointments with supervisors; it's not the other way around. But occasionally, we do have students that just do not have those skills developed yet and do need that support. Only in those cases do the supervisor pull students in. (Supervisor, Qatar)

The students shared a similar perspective. They valued their supervisor's guidance in starting projects, discussing challenges, and finalising the report. However, they also appreciated the opportunity to work independently, as illustrated below:

> She wasn't really involved in the process of actually creating my product. That was challenging, but I think it was good for my growth as it made me take my own initiative. (MYP student, Hong Kong)

In Figure 4.1, we display the three promising practices for increasing the Personal Project's positive student outcomes.

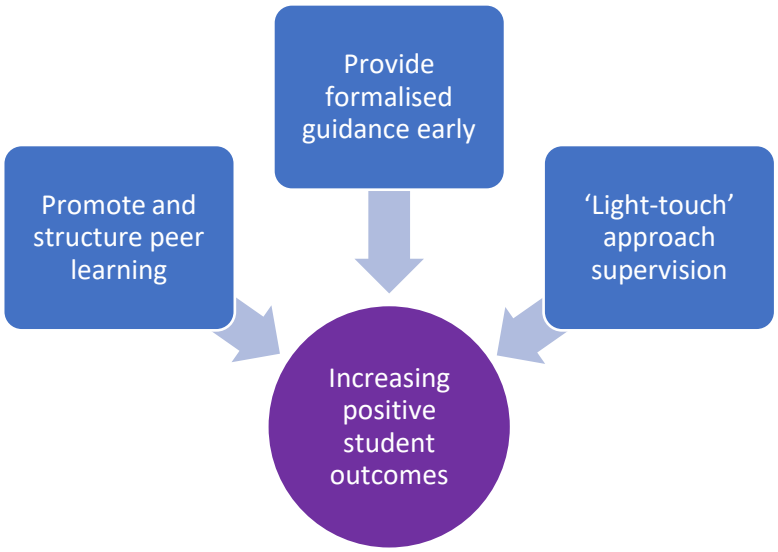

Figure 4.1. *Increasing Positive Outcomes for Students*

4.2. School Faculty

This part of the chapter investigates the question: *'How do MYP school leaders, coordinators, and classroom educators perceive the outcomes of the Personal Project experience on school faculty who support its implementation?*'. We switch the focus from students to the benefits, challenges, and promising practices for school faculty. First, the findings revealed perspectives about how the Personal Project has the potential to foster an appreciation of the IB, enhance collaboration among school faculty, and enable faculty to get to know students better. Second, the findings identified challenges relating to a high workload and contrasting views over professional learning opportunities. Finally, the promising practices targeted institutional support so supervisors can most effectively guide students.

4.2.1. Positive Outcomes for School Faculty

1. Appreciation of an IB education

The heads of schools and faculty believed that the Personal Project fostered an appreciation of an IB education. They discussed how the experience was well-aligned with IB values of cultivating inquiring, knowledgeable, and caring students. As a coordinator explained, this can contrast with the DP's more academic and high-stakes environment:

> In the DP, there is this desire for achieving that 45 [the highest possible score in the DP]. The number is really important to the kids, parents, and administrators. That creates a culture of wanting to achieve a particular score…And all of the other good stuff can be lost along the way. (Coordinator, Hong Kong).

First, the Personal Project underscored the IB's philosophical approach. A coordinator described how the opportunity for 15-16-year-old students to pursue an independent 'passion project' demonstrated the IB's distinctiveness:

> Our role in an IB school is to get students to think, care deeply, and be passionate about their interests, not just be successful by getting a high score…The Personal Project provides us with that opportunity as educators. (Coordinator, South Korea)

Second, the Personal Project highlighted the importance of ATL skills for students. A supervisor shared that the experience of supervising students inspired faculty to incorporate ATL skills into day-to-day teaching:

> It really helped us to reflect on ATL skills. Now, I think we've promoted that through Personal Project. But increasingly, our teachers are trying to build ATLs through their teaching in different content areas. And I think a lot of that grew out of the Personal Project. (Supervisor, Zambia)

Third, the Personal Project can demonstrate the IB's contribution to students' personal growth. Through supervision, participants described how they observed students overcome challenges and realise their potential. One supervisor reflected on their student's Personal Project exhibition presentation:

> We love to celebrate our students' growth. Watching my student write and perform her song was incredible, knowing that previously she was terrified of public speaking. (Supervisor, Zambia)

2. Enhancing collaboration among school faculty

The Personal Project can enhance opportunities for school faculty to collaborate. This included deepening existing relations and establishing new connections across subject areas. For example, coordinators and supervisors collaborated over timelines, supervision strategies, and internal grade moderation. These interactions can be most valuable for new or junior staff as collaboration with experienced faculty presented professional learning opportunities.

In many cases, the collaborations were organised by the MYP or Personal Project coordinator. As one coordinator explained:

> I run lunch training for supervisors. We'd order sandwiches, and supervisors could drop by and get extra support from myself with whatever they needed. (Coordinator, South Korea)

In other cases, the collaboration was more informal. One coordinator shared the benefits of their colleagues discussing the Personal Project in their native language while working overseas:

> Sometimes you'd hear them kind of arguing about a student's score in Spanish, and that was fun. They enjoyed that. Because how often do you get to speak your mother tongue overseas? A little chit-chat while working goes a long way. (Coordinator, South Korea)

Overall, heads of schools emphasised how the Personal Project was a means to build a closer professional community in schools. As one participant noted, the experience can bring 'the whole school closer':

> As the role of the supervisor is broadcast out to such a large portion of the faculty, it becomes a shared experience that builds cohesiveness around the school and brings the whole school closer. (Head of school, Qatar)

3. Getting to know students better

The Personal Project offered opportunities to enrich student-faculty relationships. In particular, school faculty can get to know students beyond the classroom. For example, one supervisor recalled having their pre-conceived ideas about a student challenged at a Personal Project exhibition:

> There's a kid who was very soft-spoken and not an excellent public speaker. And, lo and behold, on his Zoom Personal Project presentation, he's got a suit and tie on and pulls off the best talk. To see him like that was so impressive. (Supervisor, Qatar)

All this was perceived to contribute to deeper connections that can inform interactions with students. First, the experience can open lines of communication for faculty to support students with academic and personal issues beyond the Personal Project, as a coordinator explained:

> Learners have a range of capabilities and areas that they find difficult. If you have a student who is on an individual education plan or is having difficulty with language, the Personal Project allows for these kinds of challenges to become visible, and the supervisor has a broader understanding of the student's needs. (Coordinator, Zambia)

Second, the Personal Project can promote an appreciation of students' interests and talents. As a supervisor shared, this was particularly notable for supervisors who discovered a common interest with a student.

> I had a student who created a kinetic energy phone charger. I teach a robotics elective, and I like to kind of nerd out, so it was a lot of fun to share that with him. (Supervisor, Qatar)

Third, school faculty were more informed to advise and mentor students. This included advice for DP subject selection, the Extended Essay, and after graduation, as noted below:

> Working as their supervisor could turn into help beyond the project. Like discussions on the right subjects for DP or even a career they think they want to pursue. (Supervisor, Zambia)

4.2.2. Challenges to Positive Outcomes for School Faculty

1. High supervisor workload

Most MYP faculty engaged with Personal Project supervision in addition to administrative and teaching duties. In some cases, they would meet with students three to four times during the Personal Project process. However, other supervisors reported meeting students more frequently, up to weekly or fortnightly. Moreover, the number of students supervised by one faculty member varied across the schools. In general, small and well-staffed schools reported a one-to-two supervisor-student ratio,

whereas it was typically one-to-four for larger schools. The United States public school was an outlier, as one supervisor worked with up to 20 students.

A high supervision workload was described as demanding by many participants. Some students requested additional support owing to aspirations for a high score, whereas others needed interventions to ensure they completed the tasks on time. Furthermore, supervisors often were asked to supervise projects outside their fields of expertise, as noted below:

> I've got somebody doing composting right now. I wish I knew about composting, but I don't. I know of teachers who feel uncomfortable with the openness of the Personal Project. (Coordinator, Peru)

In a few cases, supervisors described the responsibility as contributing to work-based stress, as one participant explained:

> The Personal Project supervisors are overwhelmed already. Not only do I have all my lesson planning and all my grading, I'm also responsible for these projects. And you're just like I'm only one person. (Supervisor, United States)

If unresolved, Personal Project supervision can lead to resentment if faculty are already occupied with other tasks. As a coordinator noted:

> Everyone's busy. To introduce yet another thing that requires, you know, consistent meetings with students etc. That was met with a bit of resentment because these things can sometimes fall over into after-school hours. (Coordinator, South Korea)

2. Contrasting views of IB professional learning

Heads of schools and coordinators discussed how the Personal Project presented opportunities for professional learning in the IB. This involved school faculty gaining inquiry-based learning supervision experience, engagement in internal grade moderation, and participating in IB workshops on the Personal Project. As one head of school explained: 'Much like it is for the students, staff can choose to turn this experience into a learning opportunity' (Head of school, South Korea). A few supervisors reinforced this view, as illustrated in the below reflection on an IB workshop:

> I got a lot out of the workshop. It was very practical, very hands-on. That helped reinforce criteria related to grading, collaboration with colleagues, and was just a lot of fun. (Coordinator, South Korea)

Most supervisors were less convinced. A few participants believed that the experience can be impactful in developing skills in mentorship, academic guidance, and personal support. More typically, however, they discussed how the Personal Project's major benefits were accrued by students. Some participants described the supervisor's role as 'another thing that has to be done' with less clear professional learning outcomes:

> We did Personal Project moderation, but it was another thing that has to be done.... If you spoke to the people moderating, they're like 'Okay, yeah, that's an interesting one'. But ask them again in a few weeks, and either they've forgotten, or you'll get a different response. I don't really see it as professional learning. (Supervisor, Qatar)

These findings point to a discrepancy in views about the IB professional learning opportunities presented by the Personal Project. They suggest that more dialogue among heads of schools, coordinators, and supervisors would be beneficial to understand the experience of supervisors and what schools can do to integrate more professional learning into the role.

4.2.3. Promising Practices for Positive School Faculty Outcomes

1. Leverage institutional knowledge

Institutional knowledge of the Personal Project was typically held by MYP and Personal Project coordinators. The leveraging of this expertise was consistently highlighted as crucial to the Personal Project's successful implementation. These coordinators played a key role in interpreting and disseminating IB guidelines to supervisors, including the transition to mandatory external moderation. They also frequently developed and shared learning materials. Further, they were the primary contact point for supervisors to discuss challenges whilst working with students until completion. The findings underscore the importance of the IB providing thorough support for coordinators, especially those with relatively less experience or at schools new to the MYP. The support may involve regular IB professional development, opportunities for networking with other coordinators, and sharing up-to-date resources. In addition, the findings point to the importance of schools preserving the knowledge collected by coordinators to inform their successors, for example, through a cumulative portfolio. A head of school characterised the coordinator as the Personal Project's 'backbone':

> They're the backbone, really. Our MYP coordinator helps run things smoothly. (Head of school, Hong Kong)

2. Nuanced pairing of supervisors with students

MYP and Personal Project coordinators can work closely with supervisors when pairing with students. In so doing, coordinators can gather information on the supervisors' existing workload, experience,

and know-how. Supervisors can be matched according to their prior relations with students, expertise, and interest in project topics. Moreover, school faculty with a high workload can be given reduced supervisor responsibilities and inexperienced school faculty can take on a co-supervisor role. All this can contribute to professional satisfaction for supervisors and high-quality supervision for students. A coordinator in Qatar discussed pairing new supervisors with more experienced colleagues:

> What we'll do is if it's a new teacher to the Personal Project, we won't actually allocate them a student on their own to supervise. They'll be paired with another supervisor who has done it before so they can learn from them first. (Coordinator, Qatar)

3. Craft supervisor groups

Crafting supervisor groups can ease the workload and enhance the effectiveness of Personal Project supervision. In the case schools, these groups involved a collaboration among three to four supervisors to share experiences, strategies for supporting students, and how to overcome challenges. The benefits included creating a forum for mutual support, a closer-knit community, and professional learning. All of which were especially valuable for less experienced supervisors:

> We work in teams of three or four. I get the chance to look at three other Personal Projects whilst doing my own, using the criteria. Then, we discuss deadlines, make sure that we standardise the marks, share resources and tips, and like, support each other through challenges as they come. (Supervisor, South Korea)

As a supplementary point, the supervisors mostly collaborated towards the end of the Personal Project, such as with internal grade moderation. A few participants highlighted that the supervisor groups might have greater potential if they met at the beginning and throughout the supervisory process. The three promising practices are shown in Figure 4.2.

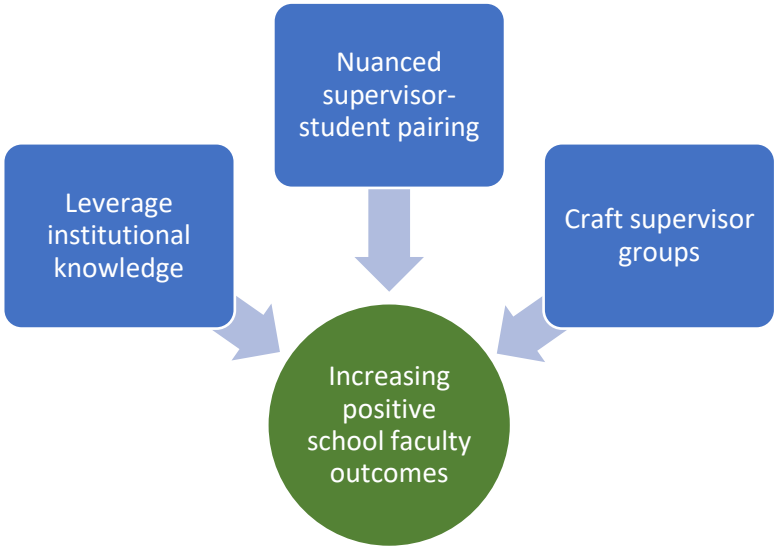

Figure 4.2. *Increasing Positive Outcomes for School Faculty*

4.3. The Community

In this section, we address the question: '*How do MYP school community stakeholders perceive the outcomes of the Personal Project experience for the broader community that surrounds the school?*'. First, we report how community engagement provides opportunities for students to develop ATL skills, learn about their local community, and drive positive change in communities. To complement these findings, we report on interviews with recipients of the *Dr Siva Kumari MYP Student Innovators' Grant,* which supports students seeking to expand their Personal Project. Second, we consider how students may gain more from the experience than community members. Third, we present promising practices to help students connect with the community, understand the needs of stakeholders, and maintain good relations upon project completion.

4.3.1 - Positive Outcomes for the Community

1. Opportunity for community engagement

The Personal Projects involved various degrees of engagement with the local community. Some projects did not require considerable interactions outside the school, especially those focused on academic pursuits. Faculty did not necessarily perceive a lack of community engagement as a 'limiting factor'. First, students can benefit from the Personal Project experience without community engagement. Second, schools typically provide other community engagement opportunities, such as service work. Nonetheless, as a coordinator described, the schools typically encouraged students to consider community engagement in their Personal Project:

> Community engagement depends on the student. I find that in some situations, they do, in others they don't. It depends, but we try to encourage them to do it. (Coordinator, Hong Kong)

Also, as a head of school explained, a high proportion of projects involve students 'being out and about' in the community:

> Personal Projects don't necessarily involve the kids being out and about, but I would say a surprisingly large percentage of them do. (Head of school, Peru)

The students shared a wide range of community experiences. This included consulting experts at universities, gathering advice from business leaders, and working with non-government organisations. For example, one student worked with a professor at a local university:

> If I had any questions, I could visit the lab and discuss my reading. And during the drafts of my paper, I was able to get feedback on what I might do to improve my scientific language or what further resources I could use. (DP Student, South Korea)

In another example, a student consulted experts at a local hospital:

> My project was about the neurobiology of criminal offenders, so I talked to radiologists at our hospital. They helped with medical terminology and scans so I could make clay models of what an impulse control disorder looks like. (DP Student, United States)

2. Develop ATL skills beyond the school

Many participants discussed how students developed ATL skills through interactions with the community. They most commonly cited 'communication' and 'social' skills. These were often developed by reaching out to community members to introduce projects, inquire about resources, and seek advice. School faculty highlighted how these experiences presented opportunities to enhance interpersonal skills:

> In terms of interpersonal skills, it's fantastic. They have to converse with adults who are strangers and professionals in their fields. Kids really come out of their shells. (Supervisor, Zambia)

Also, connections with experts can inspire students and contribute to high-quality projects, as illustrated below:

> I chose a topic because of this very well-known psychologist, and I just messaged her on Instagram. I was shocked that she responded. She helped me develop my project, which was amazing. (MYP student, Peru)

In addition, the participants often cited 'self-management' skills. In many cases, students required organisational skills to schedule interactions with community stakeholders. They also needed time-management skills to meet commitments. As one student shared, whose Personal Project involved volunteering at an animal shelter:

> You kind of have to manage your time all throughout the year, set deadlines, and try not to procrastinate and leave everything to the last minute. (MYP student, South Korea)

The MYP student participants were under various COVID-19 restrictions during their Personal Project. In some cases, this context created challenges for community engagement, given the limitations to

face-to-face interactions. Yet the restrictions presented new opportunities to develop ATL skills, such as 'thinking', 'communication', and 'social' skills. As a coordinator put it:

> I have a strong belief in the value of thinking outside the box. Sometimes the limitations can make you more creative. So, despite COVID-19, students could make those connections with people, but they had to adapt their approach and go online. (Coordinator, Zambia)

Moreover, at a virtual Personal Project exhibition in the South Korean school, the students were observed presenting their projects online to the community stakeholders. In so doing, they applied online presentation skills to share their findings and respond to questions from stakeholders from universities, private businesses, and non-government organisations.

3. ***Learn about the local community***

The participants frequently shared that the Personal Project provides students with an opportunity to experience and explore communities beyond the school. This experience can promote a deeper understanding of local communities, which points to broader learning outcomes beyond preparation for further education. As noted below, a student discussed engagement with children at a hospital in the local community:

> My topic was studying children with cancer, specifically how that affects their day-to-day lives. I visited local hospitals and learned about gaps in facilities these kids have. I got to connect and empathise with them by exploring their experience with authenticity. (DP student, United States)

The participants most often cited service work regarding learning about the community. Service-oriented projects were highlighted as potentially most valuable for international or private school students who may have limited interactions with those outside their own cultural and socioeconomic community. First, in the international schools in Hong Kong and Zambia, a high proportion of students were globally mobile expatriates. These students can face cultural and language barriers with the local community. At the school in Zambia, a supervisor described how service Personal Project helped students learn about the 'lives of local people':

> We do a lot to ensure that our students are not disconnected. We encourage direct community engagement through our service work so they can learn about the lives of the local people here, and we can sometimes help them connect to people who facilitate communication if they don't speak their mother tongue. (Supervisor, Zambia)

Second, service projects can also help students at private schools learn about their local community. This was most notable for students from socioeconomically privileged families attending private schools in Peru, Qatar, and South Korea. In one example, a student described seeing a 'completely different side of my city':

> I went to a school for deaf students to research my Personal Project. It was a completely different side of my city. It just gave me a perspective on my surroundings; they didn't have basic resources like computers or Wi-Fi, it was messy, and it got me thinking deeply about what work needs to be done. (DP student, Peru)

Other projects enabled students to become more aware of businesses, institutions, and organisations in the local community. For example, a student contacted a local fire station to gain input for a project based on developing a car fire alarm:

> I went to a fire station and spent some time with the firefighters. I asked them all about road accidents related to fires. They told me so much about their work and their procedures. It was amazing to learn about their protocols. (DP student, Qatar)

4. Positive change in the local community

Most participants believed that Personal Project was a platform for students to bring about positive change. A coordinator in Zambia reflected on the wide range of topics that sought to make a social impact on the local community:

> One student was recycling books and extending her initiative by getting others involved. Some projects are poverty alleviation, others focus on education for local students, and refugee children. There are some environmental clean-up projects. I mean, there's so many examples of the impact on the community. (Coordinator, Zambia)

In some cases, the contribution was through service work, such as volunteering to teach English to disadvantaged students. However, other projects contributed to the community through other means. This included public information campaigns on health/lifestyle (e.g., mental health), raising awareness over cultural heritage (e.g., traditional poetry), and bringing attention to social issues (e.g., gender discrimination). Also, a coordinator gave the example of a student creating a cookbook to reach the local community despite restrictions during COVID-19:

> A student created a cookbook for kids that didn't involve turning on the stove. They wanted to promote healthy eating, not people turning to junk food. The pandemic led to that topic because they really couldn't go out and do a whole lot in their community, but they could still do something positive for their neighbourhood. (Coordinator, United States)

4.3.2. Challenges to Positive Community Outcomes

1. Students may benefit more than the community

A commonly held belief by the heads of schools and faculty was that the Personal Project can be more beneficial for students than the community. They frequently shared how the experience stood students in good stead for further studies as well as presenting other learning benefits. Yet, as a head of school explained, the primary purpose of engaging the community was 'the completion of the project' for some students.

> It's the way the Personal Project is structured. Students try to connect with the community by reaching out to different agencies or organisations, but it's mainly for the benefit of completing the project. (Head of school, Qatar)

Further, the students' relative inexperience and limited resources can restrict their contribution to the community. A coordinator gave the example of a project that they felt had limited social impact, despite having good intentions:

> The student followed a homeless refugee around Hong Kong to show what his day looked like. He aimed to elevate the person and spread awareness, but in the end, the person didn't come off any better. I don't know what kind of service he did. It kind of missed the mark. (Coordinator, Hong Kong)

In addition, the Personal Project was largely a self-contained piece of work, and many students discontinued their projects upon completion. One student noted: 'I liked the Personal Project, but it's a memory now' (DP student, Qatar). In some cases, the students lost interest in their topic. In other cases, students admitted their attention shifted after starting the DP. One student described how they were unable to continue with their project due to DP study commitments:

> I try to do programming, but homework and assignments get in the way. Like there are so many deadlines to keep up with the DP. After submitting my final project, I couldn't continue working on the app. (DP student, Zambia)

However, there were examples of longer-term outcomes in the community. In a few cases, students were able to continue with their product or outcomes. A student, for example, developed the Personal Project into a successful business:

> One student made a paintball field. And that is now like this establishment here. Kids book it for birthday parties. He ended up studying DP Economics because he was so interested in running a business. (Coordinator, Zambia)

Another pathway to long-term community outcomes was through IB support to expand on Personal Projects. An example is the *Dr Siva Kumari MYP Student Innovators' Grant*, described in Box 2. More generally, the participants described that the long-time contribution can be indirect. In these cases, students pursued passions developed during the Personal Project in further studies or a career that could contribute to communities over the long term.

Box 2. Dr Siva Kumari MYP Student Innovators' Grant

The IB launched the *Dr Siva Kumari MYP Student Innovators' Grant* in 2020 to support MYP students' initiatives focused on social impact. Up to 30 students annually receive the grant through a competitive review process. In addition to financial support, the grant provides opportunities for mentoring from experts and collaboration with other grant awardees (IB, 2022f). Utilising the IB's network, their Strategy and Transformation Team sent an open call to grant awardees of 2020, asking them to comment on whether the grant played a role in continuing their Personal Project initiatives. They relayed three written responses to the research team. All the respondents shared that the grant helped them expand on Personal Project's social impact. On the one hand, financial support helped students continue their initiative. For example, one participant shared how they used the grant funds to build an environmentally sustainable shop at a school, from which the profits were donated to charity. On the other hand, the students described how the grant incentivised them to continue their initiatives after finishing the MYP. In one case, a student described how the grant enabled them to take the Personal Project 'to the next level' for a project that used technology to aid the mobility of people with disabilities:

> I was able to create something I could not have done before. This let me really take my Personal Project to the next level and stretch myself to make a stronger impact with it. It also gave me an incentive to continue working on the project after the project concluded, and I'm still working to this day (Grant awardee, United States).

2. Trend towards overreliance on digital technology

Some participants observed that the Personal Project's pathways to positive community outcomes increasingly used digital technology, such as apps, social media, and websites. The rationale was often that online communication had the potential to make a positive social impact in ways that extended beyond local communities. The trend had accelerated as students faced restrictions on face-to-face interactions owing to the COVID-19 pandemic. As one example, a student created a website with a database of side-effects of food allergy medications:

> Being a severe allergy patient, I made an informational resource to help people understand common medication side effects, hypersensitive reactions, and common misconceptions about allergies. (DP student, South Korea)

At the same time, some faculty were sceptical about the social impact of projects that had an overreliance on digital technology. This was most often cited in cases where students developed a website for their product or outcome. On the one hand, there was concern that, in practice, most initiatives did not engage an audience beyond the students' existing network of family and friends. On the other hand, projects that set goals of reaching a global audience can neglect opportunities to make a difference closer to home. Relatedly, a few participants noted concerns over unrealistic claims of a 'global impact' using digital technologies:

> I sometimes struggle with that. I think you could do a Personal Project that doesn't have to be about a global impact. Because then the downside is that then you end up with students who learn a little bit about being disingenuous and how to make things look like more than what they are. (Coordinator, Qatar)

4.3.3. Promising Practices for Positive Community Outcomes

1. Guide initial contact with community stakeholders

The participants believed that students benefited from initial guidance with contacting community stakeholders. They typically had limited experience developing professional relationships outside schools. As a result, many students initially struggled to appropriately frame their requests, resulting in ineffective or failed attempts to engage the community. A promising practice to get projects started was for coordinators and supervisors to provide support with identifying who to contact, how to make initial contact, and managing expectations. As one coordinator put it:

> We help students with how to reach out to people if they can't explain what the project is themselves, and why it's important. We help them modify their written request to clearly communicate their ideas, so they are more likely to get backing for their projects. (Coordinator, Peru)

2. Supervisors step back after initial contact

Supervisors can 'step back' after initial contact has been established with community stakeholders. That way, students can take the lead in their community interactions. By doing so, students can assume ownership of their projects and develop their own understanding of the needs of stakeholders, as shared in the below quote:

> We give them a chance to partner with people in the community by themselves and understand their needs. I think this is important for their personal development as they're

> going to have to develop those connections themselves later at university and at work. (MYP coordinator, Hong Kong)

3. Stress ongoing community relations

The heads of schools and coordinators emphasised that it is crucial that students end their interactions with community stakeholders on favourable terms. The intention behind this was twofold: first, to teach students how to maintain relationships with stakeholders and second, to uphold the school's reputation. Accordingly, a promising practice was to encourage students to keep stakeholders up to date with the project's outcomes and invite them to attend the Personal Project exhibition. A coordinator underscored how students should not 'disappear' after completing the project:

> We like to remind them that once you've completed your tasks you should end things on a positive note. Don't just disappear one day. Not because you might need something from them but to be respectful. Sometimes the students have a lot going on, so I feel these reminders go a long way. (Coordinator, South Korea)

Figure 4.3 illustrates the three promising practices to increase positive community outcomes.

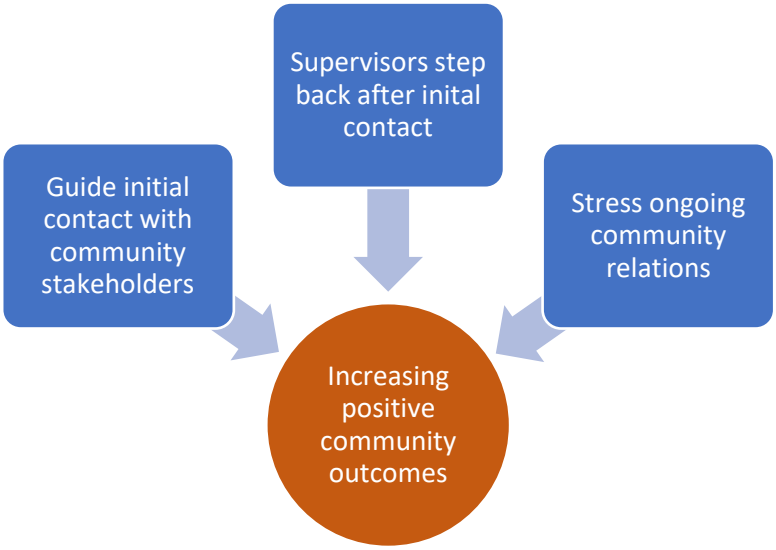

Figure 4.3. *Increasing Positive Outcomes for the Community*

4.4. Summary

This chapter investigated the Personal Project's outcomes for students, school faculty, and the community surrounding the schools. Nearly all the participants agreed that the Personal Project prepared students well for further education. However, they further believed that the potential outcomes were broader, encompassing more comprehensive benefits. They also brought attention to challenges with Personal Project. Lastly, a series of promising practices were shared to help students, school faculty, and the local community get the most out of the experience. In Table 4.2, we summarise the key qualitative findings in relation to the research questions.

Table 4.2. *Summary of Qualitative Findings*

Research Question	Qualitative Findings
How do MYP school community stakeholders perceive the outcomes of the Personal Project experience on students who have attempted it?	***Positive outcomes for students*** • A milestone in the IB school career • Opportunity to develop ATL skills • Bridge gaps between MYP and DP • Potential Extended Essay preparation • Long-term influence over skills and interests ***Challenges to positive outcomes*** • Assessment misaligned with what matters to students • The workload can exceed IB guidelines • Unequal access to resources ***Promising practices*** • Promote and structure peer learning • Provide formalised guidance early • 'Light-touch' approach to supervision
How do MYP school leaders, coordinators, and classroom educators perceive the outcomes of the Personal Project experience on school faculty who support its implementation?	***Positive outcomes for school faculty*** • Appreciation of an IB education • Enhancing collaboration among school faculty • Getting to know students better ***Challenges to positive outcomes*** • High supervisor workload • Contrasting views of IB professional learning ***Promising practices*** • Leverage institutional knowledge • Nuanced supervisor-student pairing • Craft supervisor groups
How do MYP school community stakeholders perceive the outcomes of the Personal Project experience on the broader community that surrounds the school?	***Positive outcomes for the community*** • Opportunity for community engagement • Develop ATL skills beyond the school • Learn about the local community • Positive change in the local community ***Challenges to positive outcomes*** • Students may benefit more than the community • Trend toward overreliance on digital technology ***Promising practices*** • Guide initial contact with community stakeholders • Supervisors step back after initial contact • Stress ongoing community relations

5. Convergence of the Findings

This chapter comparatively analyses the findings from Phase One and Phase Two to provide a more expansive picture of the Personal Project. Specifically, we converge quantitative analysis of the global IB dataset and qualitative analysis of interviews at the six IB World Schools. This process permitted interpretations that offset the limitations of one source of data, are more compelling, and yield additional insights. First, we report overall associations among Personal Project, DP exam, and Extended Essay scores, and other Personal Project outcomes. Second and third, we consider the role of student and school characteristics in Personal Project outcomes. Fourth, we present the associations among Personal Project participation, DP outcomes, and the condition of mandatory external moderation. Lastly, we look at the Personal Project in the United States context. The chapter concludes with a summary of the converged findings.

5.1. Converged Quantitative and Qualitative Findings

The converged findings are visualised in the following pages through a series of 'joint display' tables that present selected quantitative findings, relevant themes from the qualitative data, and converging interpretations.

In Table 5.1, we demonstrate converged overall findings on how the Personal Project experience prepares students well to 'step up' to the DP through higher academic performance and learning outcomes that scores may not capture. In Table 5.2, we report converged findings on student characteristics. They illustrate mixed findings of how gender and language match (i.e., students' self-reported primary/secondary languages and the schools' language of instruction) relate to Personal Project experiences and outcomes. Table 5.3 shows how school characteristics may shape the Personal Project. The converged findings put forward explanations for how private schools and schools that have been authorised to offer the MYP for more years were associated with higher DP exam and Extended Essay scores. In Table 5.4, we present converged findings on why DP students who participated in the Personal Project attained higher DP exam and Extended Essay scores than DP peers who did not participate in the Personal Project. The table also illustrates how Personal Project mandatory external moderation relates to student academic outcomes in the DP. Finally, Table 5.5 focuses on the United States. The converged data largely reinforce findings from the global IB dataset and interviews at IB World Schools. They also provide evidence of potential inequality of opportunity as students' participation in the Federal Program on Free and Reduced-Priced Meals was associated with lower DP exam and Extended Essay scores compared with students who did not participate in that programme.

Table 5.1. *Converged Findings on Overall Student Outcomes*

Domain	Phase One: Quantitative	Phase Two: Qualitative	Phase Three: Convergence
Personal Project as preparation for the DP	• Personal Project scores predicted DP exam and Extended Essay scores for Personal Project participants who continued into the DP.	• The Personal Project enables students to develop ATL skills that prepare them for the DP. • Broader benefits include developing personal interests, forging connections with school faculty, and learning about the community. • The Personal Project can also have positive outcomes for school faculty and communities.	• The Personal Project is a valuable part of a well-rounded IB education. • The most academically able, organised, and motivated students may achieve high DP scores irrespective of the Personal Project. • DP scores do not fully capture the outcomes for students, faculty, and communities.
A comparison of preparation for the DP and Extended Essay	• Personal Project scores more strongly predicted DP exam scores compared to Extended Essay scores.	• The Personal Project can 'bridge gaps' between the MYP and DP as students develop ATL skills, resilience, and interests. • The Extended Essay is a more academically rigorous research project aligned with university-level work.	• The Personal Project experience helped prepare students for both DP exams and the Extended Essay. • The most notable contribution was for 'stepping up' to the DP in general, rather than the Extended Essay in particular.

Table 5.2. *Converged Findings on Student Characteristics*

Domain	Phase One: Quantitative	Phase Two: Qualitative	Phase Three: Convergence
Gender	• Female Personal Project participants had higher DP and Extended Essay scores than their male peers.	• Gender was not cited as an important feature impacting Personal Project scores. • Gender can shape the Personal Project experience. Female students may face more contextual challenges or restrictions engaging in the community beyond schools.	• The quantitative data suggest that the gender of Personal Project participants is associated with DP outcomes. • Gender was not a major theme for the Personal Project in the qualitative data. We recommend further research.
Language match	• There were mixed findings regarding associations among language match, DP exam scores, and Extended Essay scores.	• The Personal Project was a steep learning curve as a first experience leading a long-term project. • The challenge can be magnified for those facing various contextual issues, such as taking the Personal Project in a non-mother tongue language.	• Although language barriers were challenging for students, language match was not a clear predictor of DP outcomes. • One explanation is that the Personal Project is offered by high-achieving international schools with multilingual student bodies.

Table 5.3. *Converged Findings on School Characteristics*

Domain	Phase One: Quantitative	Phase Two: Qualitative	Phase Three: Convergence
Legal status of schools	• Private school status was associated with higher DP exam and Extended Essay scores for Personal Project participants who took the DP.	• Resources played a key role in Personal Projects. • Families shared advice, formed connections, and provided financial backing. • School resources were vital for introducing, supporting, and seeing Personal Projects through to completion.	• Private school students may have greater access to family and school resources to support the Personal Project. • The findings shed light on the potential inequality of opportunity in the IB and the outcomes of students.
School MYP authorisation year	• Schools that have been authorised to offer the MYP for a longer period of time were associated with higher DP exam and Extended Essay scores for Personal Project participants who took the DP.	• Institutional knowledge held by coordinators was crucial to successful Personal Project implementation. • Coordinators interpreted guidelines, shared learning materials, and were the contact point for supervisors.	• Schools with more MYP experience likely have more institutional knowledge of the Personal Project. • The IB can target support for new coordinators or coordinators at schools new to the MYP.

Table 5.4. *Converged Findings on Personal Project Participation and DP Outcomes*

Domain	Phase One: Quantitative	Phase Two: Qualitative	Phase Three: Convergence
Personal Project participation and DP outcomes	• Personal Project participants attained higher DP exam and Extended Essay scores than their DP peers who did not participate in Personal Project.	• Students who participated in the Personal Project had opportunities to develop ATL skills that prepared them for success in the DP. • The Personal Project is a 'low-stakes' exercise where students can learn from mistakes that can inform future assignments.	• The Personal Project learning experience prepares students to 'step up' to the DP, potentially contributing to higher DP exam and Extended Essay scores.
Personal Project mandatory external moderation and DP outcomes	• There were positive associations among Personal Project participation, DP exam scores, and Extended Essay scores for cohorts before and after mandatory external moderation.	• Coordinators play an integral role in interpreting and communicating Personal Project guidelines. • Their role includes managing changes such as the transition to mandatory external moderation of the Personal Project.	• IB support and guidance for coordinators are crucial for the successful implementation of the Personal Project.

Table 5.5. *Converged Findings on the Personal Project at United States Schools*

Domain	Phase One: Quantitative	Phase Two: Qualitative	Phase Three: Convergence
Personal Project preparation for the DP	• Personal Project scores predicted DP exam and Extended Essay scores. • Personal Project scores had a stronger association with DP exam scores than Extended Essay scores.	• Students develop skills and interests during the Personal Project that prepares them for further education. • The learning experience is more comprehensive than preparation for high DP scores.	• The United States case reinforces findings from the global datasets • The Personal Project not only stands students in good stead for the DP but offers broader learning opportunities.
Federal Program on Free and Reduced-Priced Meals	• Participants in the Federal Program were associated with lower DP exam and Extended Essay scores than their peers not part of the programme.	• The IB can be 'life-changing' for low socioeconomic status students, especially by getting them 'college-ready'. • Low socioeconomic status students may have less access to family and school resources to support the Personal Project.	• Schools can target support for low socioeconomic status students to ensure they get the most out of the Personal Project experience.

5.2. Summary

This chapter converged selected quantitative and qualitative findings. The process permitted more profound interpretations of Personal Project outcomes than would be possible from one source of data. We summarise the key findings below.

- The converged findings demonstrate how the Personal Project prepares students to 'step up' to the DP. Quantitative data showed that Personal Project scores predicted subsequent DP scores. Qualitative data showed how the experience provides opportunities to develop valuable ATL skills. The findings further suggest that the Personal Project had the greatest contribution as preparation for the whole DP, rather than the Extended Essay in particular. The academically strongest students may achieve highly in the DP irrespective of the Personal Project. Nonetheless, the Personal Project's outcomes may not be fully captured by DP scores. The learning outcomes for students include developing personal interests, forging connections with school faculty, and learning about the community. Moreover, the Personal Project can have positive outcomes for school faculty and communities surrounding schools.

- Student characteristics revealed contextual nuances in the Personal Project. Female Personal Project participants had higher DP and Extended Essay scores than their male peers. Yet, qualitative data revealed that female students might face more contextual challenges with the Personal Project. For example, female students faced restrictions in interacting with community stakeholders in some contexts. Also, some students faced language barriers with the Personal Project, although there were mixed quantitative findings regarding associations between language match and DP scores. One explanation was that the Personal Project is offered by international schools with multilingual student bodies, extensive resources, and competitive academic cultures conducive to high-scoring projects.
- School characteristics can shape Personal Project experiences and outcomes. Personal Project participants at private schools and schools authorised to offer the MYP for a longer period were associated with higher DP exam and Extended Essay scores. Qualitative analysis suggests students at private schools may be able to draw upon more extensive family and school resources to maximise the benefits of the Personal Project. Moreover, institutional knowledge developed by schools over time was crucial to successful Personal Project implementation. These findings suggest that the IB should target support at non-private and newly authorised schools.
- Quantitative findings showed that Personal Project participants had higher DP exam and Extended Essay scores than their DP peers who did not participate in Personal Project. The findings underscore how Personal Project contributes to preparing students for the DP. The qualitative findings further demonstrated how all students can benefit from the Personal Project, as a 'low-stakes' exercise that provides opportunities to learn from mistakes to inform future assignments.
- Quantitative data demonstrated that DP exam and Extended Essay scores differed across cohort years. Generally, there was a positive association among Personal Project participation, DP exams and Extended Essay scores for cohorts before and after mandatory external moderation. Qualitative data highlighted coordinators' integral role in interpreting and communicating Personal Project guidelines. The findings underscore the importance of IB support for coordinators as the primary holders of institutional knowledge, especially those who are relatively inexperienced in the role or working at schools new to the MYP.

  The United States case largely reinforced findings from the IB global data. Personal Project scores predicted DP scores, and the experience encompassed broader learning outcomes. Also, the case reinforced the potential of inequality of opportunity, as students who participated in Federal Program on Free and Reduced-Priced Meals were associated with lower DP exams and Extended Essay scores than their peers not part of the programme. The findings call attention to the importance of targeting support for IB students from low socioeconomic status backgrounds.

6. DISCUSSION AND RECOMMENDATIONS

The purpose of this research was to investigate the experiences and outcomes of the Personal Project at IB World Schools globally. The preceding chapters have detailed findings separately from the quantitative and qualitative phases, and by bringing the two data sets together. This chapter presents six interrelated key themes that look a little more deeply across the findings and then puts forward a series of recommendations for the IB's consideration.

6.1. Key Themes

In Figure 6.1, we present six key themes that emerged from the research, which are discussed in more detail in the subsequent pages.

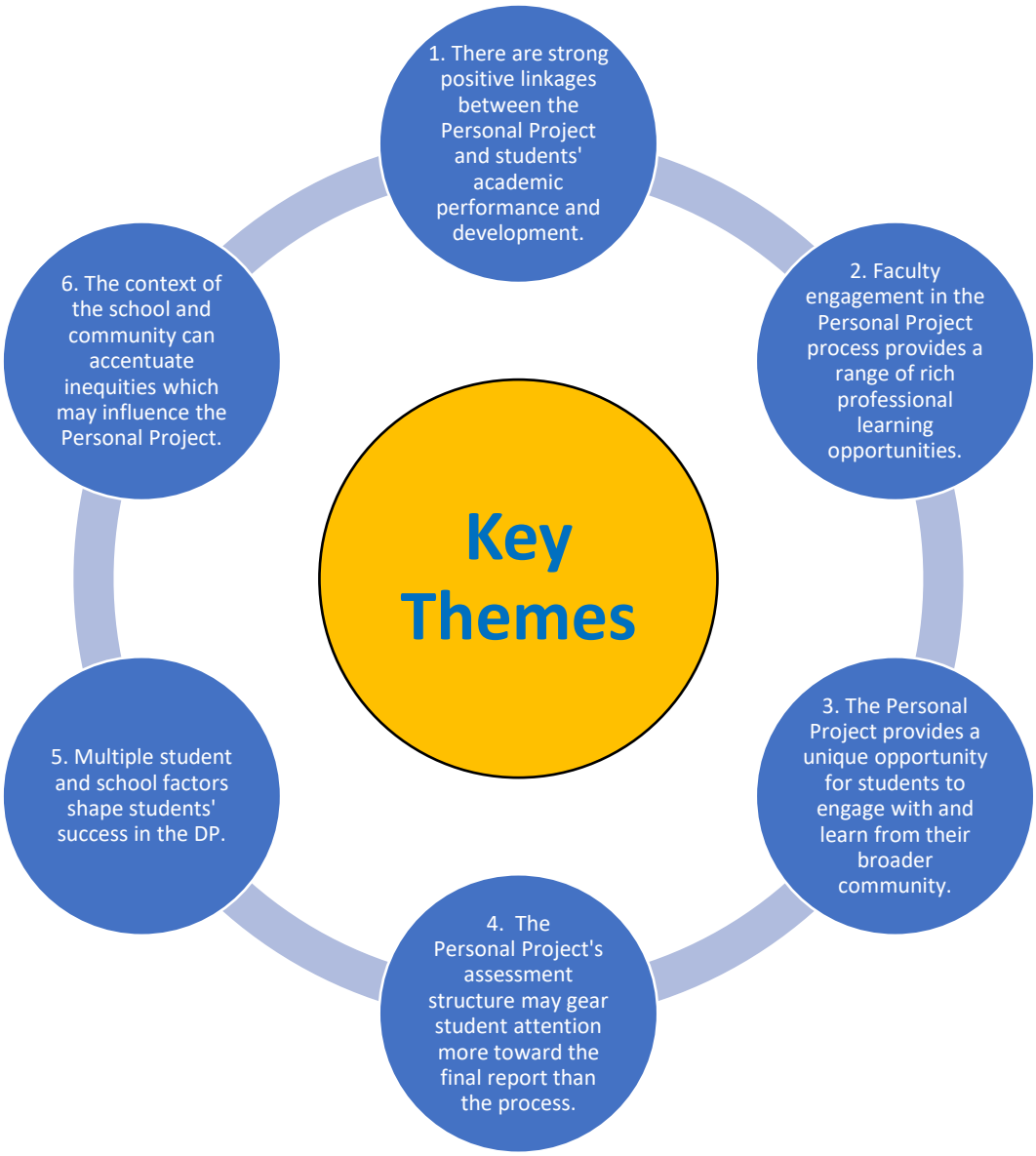

Figure 6.1. *Key Themes*

1. **There are strong positive linkages between the Personal Project and students' academic performance and development.**

The findings suggest multiple linkages between the Personal Project and students' academic performance and development. First, Personal Project completion is associated with higher achievement in the DP, including DP exams and the Extended Essay. However, the potential outcomes of the Personal Project extend beyond examination and essay scores. By allowing students to engage in a 'passion project' over a sustained period, students develop a range of organisational, communication, and academic skills—encapsulated by ATLs. Such skills transcend academic work as students work with peers, adults, and stakeholders across various communities and networks and develop the skills needed to work with a broad array of parties. Through the Personal Project, students also build their capacity for self-management, conducting research, and self-regulation of their learning. The skills were most immediately beneficial for meeting the increasing challenges of the DP. Engagement with the Personal Project also exposed students to areas of interest that can inform their later choices and preparedness for further education and careers. As such, the experience serves to help students 'step up' to the DP and develop greater mastery of ATLs. The experience also has the potential to deliver beyond IB programmes as a part of students' overall developmental trajectory.

2. **Faculty engagement in the Personal Project process provides a range of rich professional learning opportunities.**

The IB provides formal professional development opportunities for school faculty in ATLs and the Personal Project. Faculty engagement with the Personal Project in schools revealed the potential for enhanced professional learning in these areas. This seemed most effective when school-based structures were in place to facilitate interaction among faculty around activities such as sharing supervision strategies, engaging in internal moderation activities, and reflecting on the ATLs and strategies to develop them. Such participation also built mentorship or coaching relationships that were especially beneficial for novice faculty. Reciprocally, we suggest that such relationships provide leadership opportunities for more senior faculty. Further, working with colleagues and students over a sustained period served to develop learning-centered relationships. In this way, the Personal Project can manifest as a shared experience around which the entire school engages and serve as a mechanism for faculty to understand better individual students' unique learning strengths and develop responsive learning enhancement or support strategies. Similar to student learning, the findings suggest professional learning opportunities that extend well beyond formal professional development sessions. Nonetheless, they seem contingent on school leaderships' positive influence, particularly that of an effective programme coordinator.

3. The Personal Project provides a unique opportunity for students to engage with and learn from their broader community.

A feature of the Personal Project is the opportunity for students to engage various communities to facilitate its completion. While projects do not necessarily need to have this aspect, in our case findings, most projects entailed engagement with the local community or networks beyond schools. While this may potentially benefit students in learning to engage with an array of stakeholders, it also provides a valuable opportunity to learn in-depth about their community, its needs, and the potential for service, advocacy, and public information to make a difference. At its best, the Personal Project connects students to community organisations, services, and businesses that can seed enduring relations with schools. However, the extent to which the potential positive social impact of projects was realised or sustained seemed to vary across students.

4. The Personal Project's assessment structure may gear student attention more toward the final report than the process.

The Personal Project has multiple aims, and students value the experience. They benefit from the process of working through the different stages, from carrying out the project to creating the product or outcome. Still, there is a risk that this may be overshadowed by an overconcentration on the final report. Qualitative data indicated a version of this washback effect. In other words, although external moderation leads to reliable assessment, an emphasis on the final report may skew students' pragmatic focus away from the process. This concern relates to how students and schools allocate time and resources to the Personal Project. The schools in our case studies allocate excess hours and supervisory resources to a project that, by IB guidelines, should represent around 25 hours of work.

5. Multiple student and school factors shape students' success in the DP.

Quantitative data indicated that Personal Project completion is associated with higher achievement in the DP. However, there is a need for caution in interpreting the findings.

First, multiple contextual (student and school) factors may provide more reliable indicators of DP scores than success on the Personal Project itself. These include but are not limited to gender, academic aptitude, private schooling, socioeconomic status, time since the IB authorised the school, and the size of the DP student cohort. Three findings emerged to support the influence of different contextual factors. The first touches upon equity, the second on the school's history, and the third on school size, or, more accurately, the number of students sitting the IB. First, Personal Project students who sat for the DP at private schools scored higher DP exam and Extended Essay scores than their non-private school peers. When considered in tandem with the issues around socioeconomic status

(see also point six below), this may relate to supervisor-student ratios for the Personal Project, availability of curriculum resources, and the existence and substance of and access to community and family networks. The second issue relates to school IB history. Data indicated that schools authorised to offer the MYP for a more extended period had a positive association with the DP exam and Extended Essay scores. These schools may have accumulated more IB institutional knowledge to guide students with the Personal Project and the transition to the DP. The third issue is that schools with higher numbers of registered DP students tended to have higher DP exam scores. This finding may relate to larger schools having more resources to implement IB programmes successfully.

In addition, the Personal Project had a stronger association with DP than Extended Essay scores may reflect the tendency for DP schools to emphasise examination success over nonacademic outcomes, as well as the different nature of the Personal Project and Extended Essay. Lastly, although important to student learning, the Personal Project's emphasis on ATLs is not directly related to academic outcomes. In short, the Personal Project's contribution to formal academic outcomes should not be overplayed and should be considered along with a school's different contextual features.

6. The context of the school and community can accentuate inequities that may influence Personal Project experiences and outcomes.

Private schools appear to have more resources to dedicate to the Personal Project than do less well-resourced public schools. Both individually and in combination, this has the potential to influence the efficacy of the Personal Project experience across several areas. These include:

- *Curriculum time and level of other in-school resources that can be allocated to the Personal Project*. Schools with superior resources can allocate more curriculum time to the Personal Project and provide a greater range and depth of resource material to support projects. Despite the 25 hours formally allocated for the Personal Project, schools with lower supervisor-student ratios and more structural flexibility can dedicate more time to supporting the Personal Project. Also, schools enjoying higher levels of material resources, such as dedicated learning centres, may be better placed to support a broader range and depth of projects.
- *Ratio of supervisors to students allocated for the Personal Project*. Depending on resource availability, different schools assigned different numbers of supervisors to each Personal Project student. Data showed that the ratio of supervisors ranged from one supervisor to two students in better-resourced schools to one supervisor to 20 students in less well-resourced schools. Such stark differences can influence levels of individual support, ranging from topic selection to depth of support for report completion. Higher ratios may also place greater intellectual and professional demands on supervisors who support large numbers of students.

- *Access to community and family networks to select topics and complete the Personal Project*. Schools in more challenging circumstances may have fewer available community resources and family networks for students. This can potentially influence the Personal Project experience in at least four ways. First, fewer community resources may limit the range of project topics available to students. Second, support and expertise for carrying out projects may be harder to find in some communities than in others. Third, the sophistication/relevance of areas that students can discover and then access may be more limited in some communities. Fourth, families in some schools may have fewer networks and less time to commit to supporting students with the Personal Project. In short, the context of the school may advantage or disadvantage students not only in completing the Personal Project but by restricting the range, awareness, and choice of possible topics before the project is launched.
- *Families provide multiple forms of support to students*. In addition to time, expertise, and network constraints, families in some contexts may lack access to financial or other material resources to support students with their projects. Personal Project topic selection, the learning process, and overall benefits may be constrained.

6.2. Recommendations

This section puts forward several recommendations for both schools and the IB to consider. They draw on the promising practices identified through interviews with school leaders, faculty, and students working intimately with the Personal Project across the six case schools (see also Figures 6.2 to 6.5).

6.2.1 Schools with Students

- *Provide face-to-face and written guidance for students from the beginning of the Personal Project process*. Such advice can ensure students clearly understand the Personal Project's purpose, requirements, and expectations. Deeper student understanding from the outset may reduce student anxiety and dependency on supervisors.
- *Offer a range of supervisory approaches in line with context and student needs*. Different students may respond best to different supervisory systems. Students lacking experience and confidence may require more frequent and sometimes more directive supervision, whereas others may be comfortable working more independently. Regardless of the level of supervision needed, a respectful, lighter-touch approach as the project progresses may encourage independent thought and support the development of ATL skills.
- *Design structures that get students working together on the Personal Project*. Peer learning can help students understand the purpose and scope of the Personal Project and draw on others'

practical experiences. Although the IB did not design the Personal Project to incorporate peer learning, school faculty highlighted it as an effective way to push the Personal Project forward, likely enhancing the experience for students. Learning with others can instil confidence and show students that, even though it is an individual project, they are not alone on their journey. Peer learning structures can be instituted even before the formal Personal Project period by inviting younger students to observe the projects 'in process', attend the Personal Project exhibition, and facilitate peer study groups.

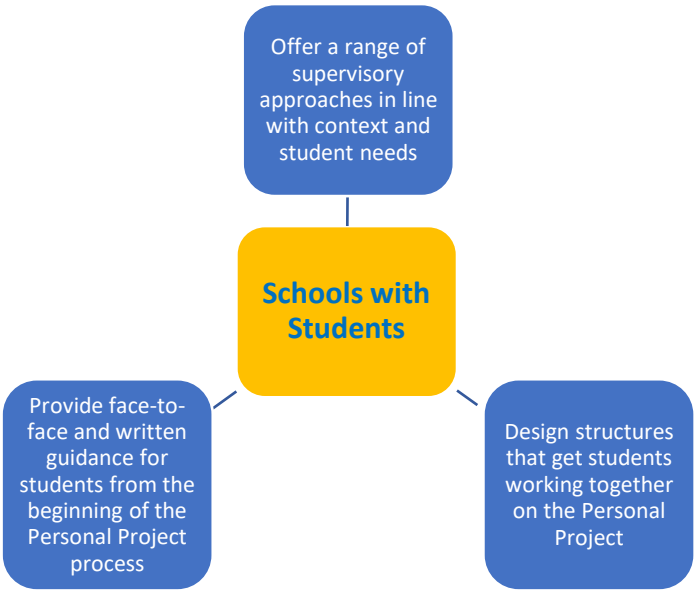

Figure 6.2. *Schools with Students*

6.2.2 Schools with Faculty

- *Empower coordinators to lead the Personal Project experience*. Coordinators often have high levels of institutional expertise and knowledge. They are in an ideal position to leverage this know-how to support supervisors and students. The empowerment of coordinators depends on trust from senior leadership, discretion to match topics with supervisors, and additional time and other resources. The backing may further include opportunities to join Personal Project-specific professional development. Additionally, schools may institute systems where coordinators formally record important knowledge, perhaps in the form of a cumulative portfolio, to inform their successors when they leave the school.
- *Nurture structures that allow supervisors to share and support each other.* Supervisor groups can promote mutual support and professional learning opportunities by sharing experiences, strategies for helping students, and how to overcome challenges. They may be especially beneficial for first-time supervisors and supervisors in newly authorised schools. Depending on the school context, such groups may be loose configurations without a formal leader or more

formal groups with an appointed, more experienced leader. Different forms of distributed leadership hold the potential to add to the supervision experience.

- *Design suitable criteria and processes for pairing students and supervisors*. Supervising projects can be demanding for faculty. This may be particularly so in schools where supervisors work with large numbers of Personal Project students. Where possible, coordinators can discuss supervisor preferences, keep a record of expertise and interests, and consider the faculty member's supervisory style. Other criteria may account for faculty workload, familiarity with the Personal Project process, prior relations with students, and experience as a supervisor.

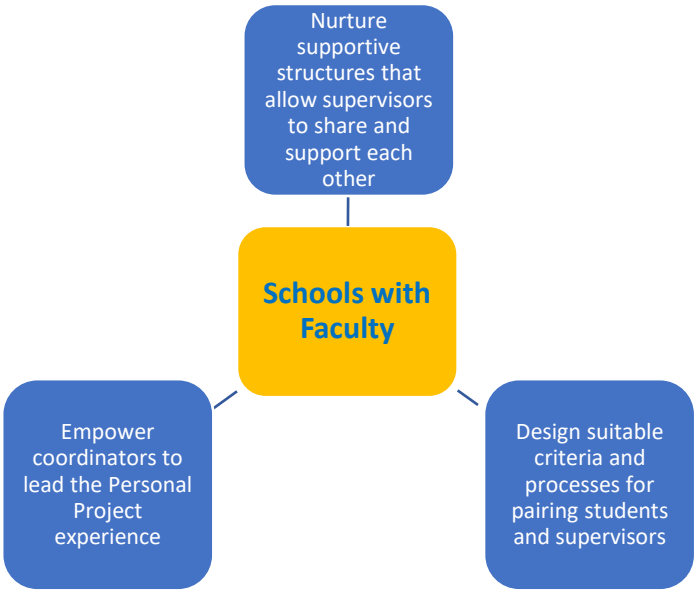

Figure 6.3. *Schools with Faculty*

6.2.3 Schools with the Community

- *Position robust and ongoing community relations as the heart of the Personal Project experience*. Schools and students need the community to promote project relevance and social impact; the community can also benefit from what students 'give back' through their projects. Therefore, schools can work closely with their communities to garner support and help faculty and students treasure the relationships formed. Schools can develop and sustain interactions between students and community stakeholders. One example is explaining to students that they should share their projects with their community partners and not 'cut and run' when completed. In such a regard, a school's reputation may determine community support for future projects.
- *Provide 'start-up' support to Personal Project students*. Making initial contact with relevant community members and groups can be challenging for students. Schools can provide support and advice with contacting stakeholders in a specific area, making initial contact, and managing

student and community expectations. Schools can also provide the community with information about the Personal Project, including its purpose and expectations, lists of previous beneficial projects, the support the schools can offer, and even advice on 'talking' to students.

- *Empower students to engage the community and for the community to support students*. After establishing initial contact, the school and supervisors can consider stepping back and allowing students to drive and shape the engagement. Likewise, involved community members and groups are trusted to provide meaningful student support.

Figure 6.4. *Schools with the Community*

6.3 IB with Schools

- *Reinforce the purposes and holistic benefits of the Personal Project process beyond formal assessment*. Data indicate that students value the Personal Project most for the whole process and final product or outcome rather than only a mechanism for DP preparation. It seems important that students and schools see the Personal Project for what it is – an opportunity to systematically explore an area of personal passion that can benefit themselves and their community, rather than only another pathway to higher DP scores.
- *Provide targeted support to build Personal Project infrastructure for newly authorised schools and those seeking IB authorisation.* Given that data indicated that schools authorised to offer the MYP for a longer time period tended to produce higher DP scores, the IB may consider instituting mechanisms to give newly authorised schools a 'jump start' in understanding the Personal Project purpose and associated structures. Support from the IB may target coordinators who play an integral role in Personal Project implementation through professional development, structured and unstructured networking opportunities, and clear written guidelines. The IB may also explore

opportunities to share promising practices from well established, successful schools. Early authorisation support may be particularly valuable for schools serving lower socioeconomic status students and new schools with faculty inexperienced in the IB.

- *Review the Personal Project's assessment structure*. Data indicated that a perceived over-emphasis on the final report can distract students from the learning process and experience throughout the Personal Project. It may be worth reviewing the grading structure and assessing the relative weight allocated to the final report. In addition, the IB may also wish to consider how it communicates its expectations for the Personal Project, given that it is graded as pass/fail.
- *Enhance the role of the International Baccalaureate Educator Network (IBEN) in spreading Personal Project practices and supporting schools in less advantaged circumstances.* Given the rich knowledge accumulated about the Personal Project over the years in individual schools and the unevenness of school contexts, the IB may consider constructing a data bank of promising practices and make this accessible to all schools through the IBEN. Also, IBEN clusters can provide peer-to-peer support specific to the Personal Project for newly authorised MYP schools and their faculty or those serving less advantaged communities. IBEN clusters can be further supported by input from MYP coordinators from more experienced schools and IB Field Representatives with specialised expertise in, or passion for, the Personal Project. Similarly, given the critical role of coordinators in structuring school-based practices that lead to successful enactment, the IBEN provides a potential mechanism for sustained coordinator and supervisor professional learning around Personal Project implementation and exchange of facilitative school-based support structures and strategies. In these ways, the IBEN can provide ongoing, informal, and needs-responsive support that enhances the impact of formal IB workshops and training sessions.
- *Help schools explore different supervision models based on promising practices in different circumstances*. Given the stark differences in supervisor-to-student ratios across schools, the IB may work with heads of schools and coordinators to guide instituting in- and cross-school collaborative structures. This might include advice about ways to collaborate that emphasises mentoring and peer dialogue strategies for supervision, understanding of ATL skills and how they relate to the Personal Project, and the potential of promoting a richer and more well-rounded sense of student achievement.
- *Take stock of a school's contextual factors on the Personal Project journey*. Unsurprisingly, data showed that various contextual factors, including socioeconomic status, can influence students' Personal Project outcomes. This is apparent in areas such as family support, supervisor-student ratios, and the availability of community resources. Given such differences, the IB should be aware of the implications for students to realise the full benefits of the Personal Project experience. The

IB may consider further exploring and resourcing structures to bring more- and less-advantaged schools together to benefit students. Configurations may include:

- Cross-school clusters
- Sister school schemes
- Short-term coordinator or supervisor exchange programs
- Further expanding the IBEN

- *Maximise the ongoing and collective contribution to the community.* Personal Projects are generally seen as discrete projects - the benefits of which to individual students' academic and personal development are clear. However, the potential of a collective contribution seems to be underexplored, especially in terms of supporting schools' broader communities. A promising practice identified in the interviews was inviting community stakeholders to attend the Personal Project exhibition to see students present their work. Schools may ask how the Personal Project can further be leveraged to build community connections through questions such as:
  - How can the collective impact of Personal Projects in the community be gauged?
  - How can Personal Project outcomes be made more widely available across the community?
  - How can Personal Projects be catalogued and shared across different years?
  - How can schools leverage the Personal Project as a mechanism for continued engagement with the local community?

Figure 6.5. *IB with Schools*

7. CONCLUDING REMARKS

This study investigated the outcomes of the IB MYP's capstone Personal Project experience for students, school faculty, and communities that surround schools. The research team identified multiple benefits in each category of analysis and suggested emerging promising practices and recommendations for potential uptake across schools and by the IB. Student and school participation in the Personal Project provides a clear benefit to students as a 'step up' to the DP. In addition, the experience has strong potential to move beyond supporting academic achievement by developing students across a range of learning outcomes that are unlikely to be fully captured by DP exam or Extended Essay scores. Moreover, the potential benefits extend to providing a platform for individual and collective professional learning by faculty as well as establishing and sustaining vibrant connections with local communities. We believe that these benefits can be further leveraged by IB schools worldwide.

The findings point to clear and considerable benefits of the Personal Project for various stakeholders. However, the study also reveals a few areas pertaining to school context and assessment practices that the IB may wish to probe in more depth to address possible concerns around equity and social impact. Future research may address these concerns by providing more detailed ethnographic studies of the experience of completing a Personal Project, focusing on community stakeholders and their perspectives from the 'other side' of projects, and comparing the potential complementary facets of Creativity, Activity, Service in the DP or the Reflective Project in the CP and the potential for sustaining positive outcomes.

Overall, the Personal Project is an integral part of the IB 'school career' and marks the MYP as a unique programme for middle school-aged students. Whilst an ambitious and visionary undertaking, the findings of this study suggest that the experience is a valuable endeavour for students, school faculty, and the communities with which they engage.

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APPENDIX

Appendix I

Table 1. *Final Models' Proportions of Variance Explained and Covariates' Patterns of Significance*

			School-level		Student-level	
Group	Outcome	Variance explained	Covariates	Statistically significant	Covariates	Statistically significant
Full DP	DP exams	20%	4	3	7	2
	EE	6%	4	2	7	5
CP	DP exams	7%	4	0	4	2
Course candidates	DP exams	4%	4	0	6	3

Note: Full DP = students (*n* = 45,938) who took a combination of six or more Higher Level (HL) or Standard Level (SL) courses in the Diploma Programme (DP); CP = students (*n* = 2,303) in the Career-Related Programme and took a combination of fewer than six HL or SL courses; Course candidates = students (*n* = 18,440) in the DP who took a combination of fewer than six HL or SL courses; EE = Extended Essay.

Appendix II

Before the data cleaning, the research team first accounted for repeated students' results attributed to schools offering two programmes (DP and CP). By separating the school data, students' Personal Project and DP scores, the research team removed the duplicated entries, but not the student cases. In other words, the sample remained the same (*n* = 69,100). Second, entries were removed from students who withdrew from both the MYP and DP. The student samples remaining in the dataset equalled 68,214 (98.7% of the original data the research team received from the IB). Third, some entries recorded no assessment scores (i.e., Personal Project, DP exams, Extended Essay). The research team decided that those entries lacked relevant predictive and outcome variables for addressing the research questions. Hence, those entries were removed, and 66,735 students remained in the sample (96.6% of the original data). Fourth, the research team investigated entries that consisted of students taking identical courses, but where the data showed differences in assessment scores and/or assessment year due to re-takes. We extracted the data from these students' earlier year scores from DP courses and the later year scores from Personal Project to ensure the closest temporal connection between Personal Project and DP assessments, thus maximising potential claims regarding predictive validity. The student sample size remained the same (*n* = 66,735). Fifth, 37 students who attended two DP schools were removed due to their potential for contributing to confounding variability.

Table 1. *Steps and Actions of Data Cleaning*

Steps	Actions	*n* (after steps)	Percentage of original dataset
Raw data cases from mother file	Population from the original dataset	69,100	100%
1. Repeated rows	Removed duplicated cases attributing to schools that offered two programmes (DP and CP)	69,100	100%
2. Withdrawal entries	Removed entries that recorded withdrawal of both MYP and DP	68,214	98.7%
3. Empty entries	Removed empty entries that recorded no assessment scores, which have no contribution to the research questions	66,735	96.6%
4. Re-take cases	Removed re-take cases (retaining the shortest distance between Personal Project and DP)	66,735	96.6%
5. Students who had attended two DP schools	Removed 37 students who had attended two DP schools (identified by the variable of 'IBISCode_DPCP')	66,698	96.5%
Remaining cases (*n* = 66,698) were organized in long-to-wide format			

Appendix III

Table 1. *Descriptive Table of Programme Samples*

Group	Conditions	*n*
Full DP students	• Students completed ≥ 6 total of SL and HL DP courses (regardless of stated programme status in IB's student registration data) anywhere in the world; • Excluding CP and CP-anticipated students	45,938
CP students	• Students completed < 6 total of SL and HL DP courses who are in the CP anywhere in the world	2,303
Course candidates	• Students completed < 6 total of SL and HL DP courses (regardless of stated programme status in IB's student registration data) anywhere in the world; • Excluding CP and CP-anticipated students	18,440
	Sub-Total	66,681
Outliers	Students who had taken dual programmes (e.g., DP and CP courses)	27
	Total	66,698

Table 2. *Descriptive Table of Cohort Samples*

Personal Project taken in 10th grade	DP taken in 11th or 12th grade	*n* for students who took DP within 2 years
2016	Finished at/before 2018	19,922
2017	Finished at/before 2019	21,692
2018	Finished at/before 2020	24,768
	Sub-Total	66,382
Outliers		316
	Total	66,698

Appendix IV

Table 1. *Descriptive Table of Analytical Samples for Addressing RQ1*

Analytical samples	Conditions	*n*
Full DP students who took DP exams	• Personal Project students who took full DP Personal Project performance predicts DP exam score conditioned on student and school characteristics	41,866
Full DP students who took Extended Essay	• Personal Project students who tookfull DP Personal Project performance predicts Extended Essay score conditioned on the student and school characteristics	40,497
CP students who took DP exams	• Personal Project students who took CP Personal Project performance predicts DP exam score conditioned on student and school characteristics	1,578
Course candidate students who took DP exams	• Personal Project students who took course candidate Personal Project performance predicts DP exam score conditioned on student and school characteristics	13,122

Table 2. *Descriptive Table of Analytical Samples for Addressing RQ2*

Analytical samples	Conditions	*n*
DP students did Personal Project	• DP students whose Personal Project scored 1-32 • Matched samples	18,212
DP students did not participate in Personal Project	• DP students who have no Personal Project scores • Matched samples	5,886

Note: "0 score" will be excluded based on the assessment rubric which comprised of 1 to 32 points"

Table 3. *Descriptive Table of Analytical Samples for Addressing RQ3*

Analytical samples	Conditions	*n*
US Personal Project students who are course candidates	• US Personal Project students who took 1-5 DP courses	9,555
US Personal Project students who took full DP	• US Personal Project students who took > 5 DP courses	15,377
US Personal Project students who took DP exams	• US Personal Project students who took full DP • Personal Project performance predicts DP exam score conditioned on student and school characteristics	10,029
US Personal Project students who took Extended Essay	• US Personal Project students who took full DP • Personal Project performance predicts Extended Essay score conditioned on the student and school characteristics	9,670

Table 4. *Score Calculation*

Scores	Attributes	Variables label in SPSS	Point	Re-calculation is needed or not? (Y/N)
Personal Project score	Single vector of scale	TOTAL_SCALED_MYP	1-32	N, using original total points
Extended Essay score	Single vector of scale	EE_Score	0-34	N, using original total points
DP exam score	Each subject on 1-7 grades	DP Average_Grade	1-7	Y, using grades per subject to calculate each student's average DP exam score for all students who took at least 2 DP exams, regardless of whether they were full DP students, CP students, or course candidates.

Table 5. *School- and Student-level Variables Used in the Analysis*

Levels	Variables	Variables label in SPSS	Values/ categories	Recode needed? (Y/N)
School-level characteristics				
School	School ID	IBISCode_MYP IBISCode_DPCP	Various	N
School	Legal status in MYP/DPCP	LegalStatus_MYP LegalStatus_DPCP	1 = Charter, 2 = Private, 3 = State, 4 = State-subsidized	Y
School	Years since MYP/DPCP authorization	AuthorizationDate_MYP AuthorizationDate_DPCP	Numeric	Y
School	Number of registered students per programme	Newly constructed variable [Counting number of students registered in DP/CP]	Numeric	Y
Student-level characteristics				
Student	Student ID	CANDIDATE	Various	N
Student	Gender	GENDER_MYP	1 = Female, 0 = Male or "X"	Y
Student	Self-reported lanagugae matched with MYPor DPCP schools'	Newly constructed variables [computing "Language match in MYP": LANGUAGE1_MYP and LANGUAGE2_MYP match with PrimaryLanaguageofInstruction_MYP	Numeric	Y

	languages of instruction	and/or SecondaryLanaguageofInstruction_MYP] [computing "Language match in DPCP": LANGUAGE1_MYP and LANGUAGE2_MYP match with PrimaryLanaguageofInstruction_DPCP and/or SecondaryLanaguageofInstruction_DPCP]		
Student	Additional rigour of DP coursework	Newly constructed variable [Using "LVL_DPCP" on each subject to count students who had taken more than 3 HL courses]	Numeric	Y
Student	Cohort year	Newly constructed variables [Using "YEAR_MYP" and "YEAR_DPCP" to compute "Cohort year 1" (Years taken Personal Project in 2016 and DP exams by 2018)] [Using "YEAR_MYP" and "YEAR_DPCP" to compute to compute "Cohort year 2" (Years taken Personal Project in 2017 and DP exams by 2019)] [Using "YEAR_MYP" and "YEAR_DPCP" to compute "Cohort year 3" (Years taken Personal Project in 2018 and DP exams by 2020)]	Numeric	Y
Student	Federal Program on Free and Reduced-Priced Meals	Newly constructed variables [Using "Free_LUNCH_PROGRAM_DPCP" to compute "Free lunch programme" to identify students who had participated in the programme or not]	Numeric	Y
Student	English proficiency	Newly constructed variables [Using "ENGLISH_PROFICIENCY_DPCP_to compute "English Proficiency" to identify students attained different levels]	Numeric	Y

Appendix V

a. Equations of Hierarchical Linear Modeling on analytical sample of *full DP students who took DP exams* (Final model)

Level-1 Model

$$DP\_ZAVERAGESCORE_{ij} = \beta_{0j} + \beta_{1j}*(PP\_ZSCORE_{ij}) + \beta_{2j}*(RIGOUR\_HL_{ij}) + \beta_{3j}*(FEMALE_{ij}) + \beta_{4j}*(MYP\_LANGUAGEMATCH_{ij}) + \beta_{5j}*(DP\_LANGUAGEMATCH_{ij}) + \beta_{6j}*(COHORTYEAR\_1_{ij}) \beta_{7j}*(COHORTYEAR\_2_{ij}) + r_{ij}$$

Level-2 Model

$$\beta_{0j} = \gamma_{00} + \gamma_{01}*(PRIVATE_j) + \gamma_{02}*(MYP\_AUTHYEAR_j) + \gamma_{03}*(DP\_AUTHYEAR_j) + \gamma_{04}*(StudentsPerProgramme_j) + u_{0j}$$

b. Equations of Hierarchical Linear Modeling on analytical sample of *full DP students who took Extended Eassay* (Final model)

Level-1 Model

$$EE\_ZSCORE_{ij} = \beta_{0j} + \beta_{1j}*(PP\_ZSCORE_{ij}) + \beta_{2j}*(RIGOUR\_HL_{ij}) + \beta_{3j}*(FEMALE_{ij}) + \beta_{4j}*(MYP\_LANGUAGEMATCH_{ij}) + \beta_{5j}*(DP\_LANGUAGEMATCH_{ij}) + \beta_{6j}*(COHORTYEAR\_1_{ij}) + \beta_{7j}*(COHORTYEAR\_2_{ij}) + r_{ij}$$

Level-2 Model

$$\beta_{0j} = \gamma_{00} + \gamma_{01}*(PRIVATE_j) + \gamma_{02}*(MYP\_AUTHYEAR_j) + \gamma_{03}*(DP\_AUTHYEAR_j) + \gamma_{04}*(StudentsPerProgramme_j) + u_{0j}$$

c. Equations of Hierarchical Linear Modeling on analytical sample of *CP students who took DP exams* (Final model)

Level-1 Model

$$DP\_ZAVERAGESCORE_{ij} = \beta_{0j} + \beta_{1j}*(PP\_ZSCORE_{ij}) + \beta_{2j}*(FEMALE_{ij}) + \beta_{3j}*(MYP\_LANGUAGEMATCH\_{ij}) + \beta_{4j}*(CP\_LANGUAGEMATCH_{ij}) + r_{ij}$$

Level-2 Model

$$\beta_{0j} = \gamma_{00} + \gamma_{01}*(PRIVATE_j) + \gamma_{02}*(MYP\_AUTHYEAR_j) + \gamma_{03}*(CP\_AUTHYEAR_j) + \gamma_{04}*(StudentsPerProgramme_j) + u_{0j}$$

d. Equations of Hierarchical Linear Modeling on analytical sample of *course candidates who took DP exams* (Final model)

Level-1 Model

$$DP\_ZAVERAGESCORE_{ij} = \beta_{0j} + \beta_{1j}*(PP\_ZSCORE_{ij}) + \beta_{2j}*(FEMALE_{ij}) + \beta_{3j}*(MYP\_LANGUAGEMATCH_{ij}) + \beta_{4j}*(DP\_LANGUAGEMATCH_{ij}) + \beta_{5j}*(COHORTYEAR\_1_{ij}) + \beta_{6j}*(COHORTYEAR\_2_{ij}) + r_{ij}$$

Level-2 Model

$$\beta_{0j} = \gamma_{00} + \gamma_{01}*(PRIVATE_j) + \gamma_{02}*(MYP\_AUTHYEAR_j) + \gamma_{03}*(DP\_AUTHYEAR_j) + \gamma_{04}*(StudentsPerProgramme_j) + u_{0j}$$

e. Equations of Hierarchical Linear Modeling on analytical sample *of United States Personal Project students who took DP exams* (Final model)

Level-1 Model

$$DP\_ZAVERAGESCORE_{ij} = \beta_{0j} + \beta_{1j}*(PP\_ZSCORE_{ij}) + \beta_{2j}*(RIGOUR\_HL_{ij}) + \beta_{3j}*(FEMALE_{ij}) + \beta_{4j}*(MYP\_LANGUAGEMATCH_{ij}) + \beta_{5j}*(FREELUNCH_{ij}) + \beta_{6j}*(ENGPRO\_1_{ij}) + \beta_{7j}*(ENGPRO\_2_{ij}) + r_{ij}$$

Level-2 Model

$$\beta_{0j} = \gamma_{00} + \gamma_{01}*(STATE_j) + \gamma_{02}*(STATESUB_j) + \gamma_{03}*(MYP\_AUTHYEAR_j) + \gamma_{04}*(DP\_AUTHYEAR_j) + \gamma_{05}*(StudentsPerProgramme_j)\ u_{0j}$$

f. Equations of Hierarchical Linear Modeling on analytical sample of *United States Personal Project students who took Extended Essay* (Final model)

Level-1 Model

$$EE\_ZSCORE_{ij} = \beta_{0j} + \beta_{1j}*(PP\_ZSCORE_{ij}) + \beta_{2j}*(RIGOUR\_HL_{ij}) + \beta_{3j}*(FEMALE_{ij}) + \beta_{4j}*(MYP\_LANGUAGEMATCH_{ij}) + \beta_{5j}*(FREELUNCH_{ij}) + \beta_{6j}*(ENGPRO\_1_{ij}) + \beta_{7j}*(ENGPRO\_2_{ij}) + r_{ij}$$

Level-2 Model

$$\beta_{0j} = \gamma_{00} + \gamma_{01}*(STATE_j) + \gamma_{02}*(STATESUB_j) + \gamma_{03}*(MYP\_AUTHYEAR_j) + \gamma_{04}*(DPCP\_AUTHYEAR_j) + \gamma_{05}*(StudentsPerProgramme_j)\ u_{0j}$$

g. Equations of multivariate multilevel model on DP outcomes (Final model)

$$\mathbf{Score}_{yijk} = \beta_y + e_{yijk} + f_{yjk} + g_k$$

$$\mathbf{Score}_{yijk} = \beta_y + e_{yijk} + f_{yjk} + g_k + \beta_{ywjk}Project_{yijk} + \beta_{yxjk}\mathbf{Year}_{yijk} + \beta_{yzjk}\mathbf{Interactions}_{yijk}$$

In the vector $\mathbf{Score}_{yij}$, outcome *y* (*DP exams and Extended Essay scores*) of student *i* in school *j* in country *k* has grand mean intercept β_y, with unexplained components (*residuals*) at the student-, school-, and country-levels (e_{yij}, f_{yj}, g_k).

Appendix VI

Table 1. *The Proportion of School and Student Variance on Analytical Samples*

Analytical sample	Proportion of school variance	Proportion of student variance
Full DP students who took DP exams	43.77%	56.23%
Full DP students who took Extended Essay	21.04%	78.96%
CP students who took DP exams	48.12%	51.88%
Course candidates who took DP exams	32.90%	67.10%
US Personal Project students who took DP exams	44.82%	55.18%
US Personal Project students who took Extended Essay	19.58%	80.42%

Note: The figures might not sum to 100% due to rounding

Table 2. *The Proportion of Country, School, and Student Variance on Analytical Samples*

Analytical sample	Proportion of country variance	Proportion of school variance	Proportion of student variance
Full DP students who took DP exams	16.46%	11.83%	71.71%
Full DP students who took Extended Essay	7.30%	4.42%	88.28%
CP students who took DP exams	30.07%	12.27%	57.65%
Course candidates who took DP exams	10.00%	18.72%	71.28%

Note: The figures might not sum to 100% due to rounding

Appendix VII

Example Interview Guide for DP Students

Introduction

- Could you please introduce yourself and share a bit about your background?
- How would you describe your school to someone who had never visited?

Reflections on the Personal Project

- What did you do for your Personal Project?
- How did your school and teachers support you with the Personal Project?
- What were the main things you learned through working on the Personal Project?
- Did you face any challenges with the Personal Project?
    - What were the biggest challenges AND did you seek to overcome them?
- From your experience, what was the best thing about the Personal Project?
- From your experience, what was the worst thing about the Personal Project?
    - What could be done to change this?
- How do you think your school or country context impacted your Personal Project?

The Personal Project and the DP

- How did the MYP in general prepare you for the DP?
- How did the Personal Project prepare you for the DP?
- How did the Personal Project prepare you for the Extended Essay?
- How do you think the Personal Project will impact you over the longer term beyond the DP?

Personal Project and the community

- Did you engage with the communities outside school for your Personal Project?
    - If so, how did you make the initial connection?
- Were you able to contribute to the community through your personal project?
- Did you have any challenges working with community while doing the Personal Project?
    - What were the biggest challenges and how did you seek to overcome them?

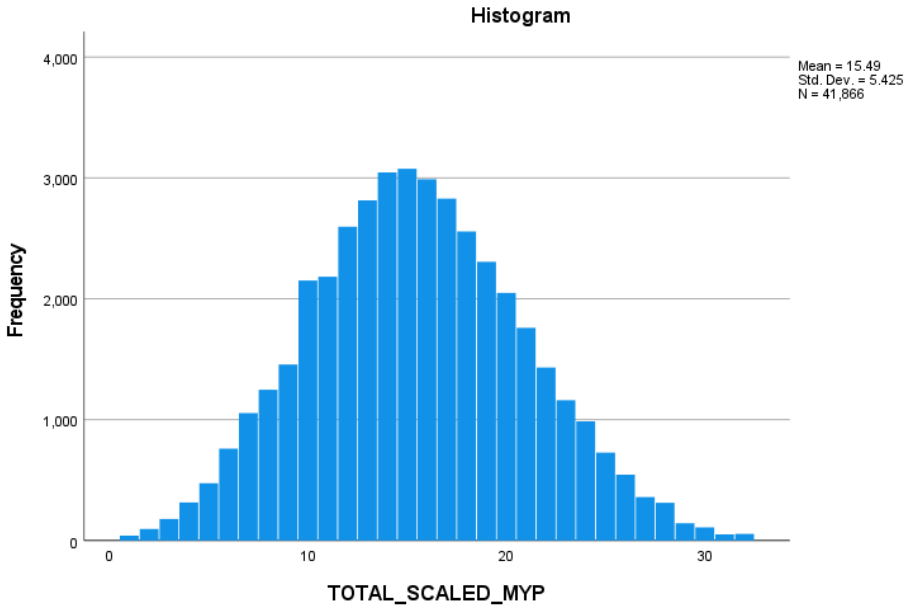
Final reflections

- Overall, what did you gain most from the Personal Project?
- If you could give one suggestion to the IB to improve the Personal Project, what would it be?

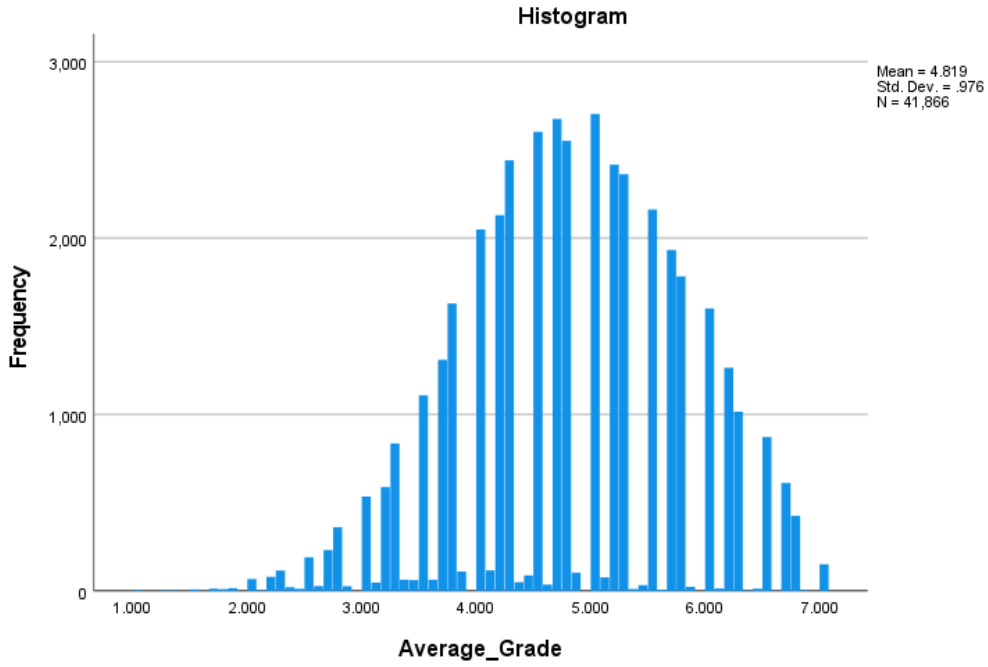
Appendix VIII

a. Results of normality test on analytical sample of full DP students who took DP exams (N = 41,866)

Personal Project score	Statistic	*SE*	*Z*-score
Skewness	0.148	0.012	12.333
Kurtosis	-0.254	0.024	-10.583

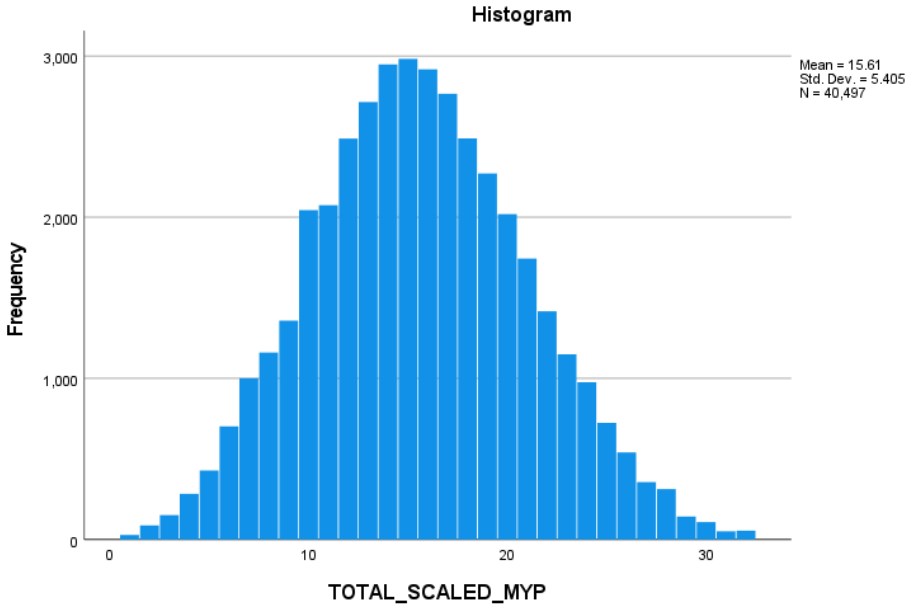


DP exam score	Statistic	*SE*	*Z*-score
Skewness	-0.158	0.012	-13.167
Kurtosis	-0.312	0.024	-13.000

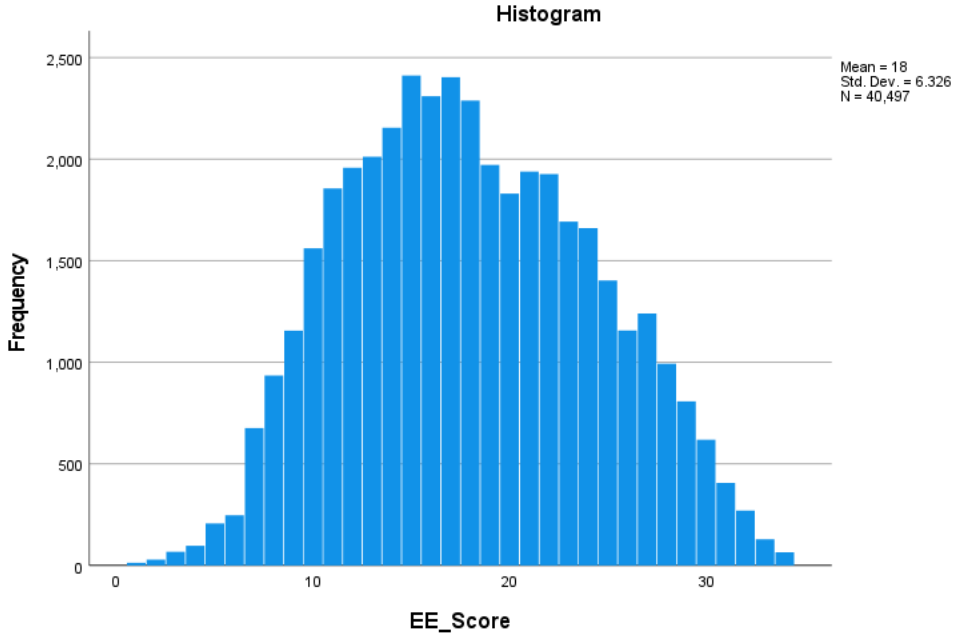


b. Results of normality test on analytical sample of full DP students who took Extended Essay (N = 40,497)

Personal Project score	Statistic	*SE*	*Z*-score
Skewness	0.146	0.012	12.167
Kurtosis	-0.256	0.024	-10.667

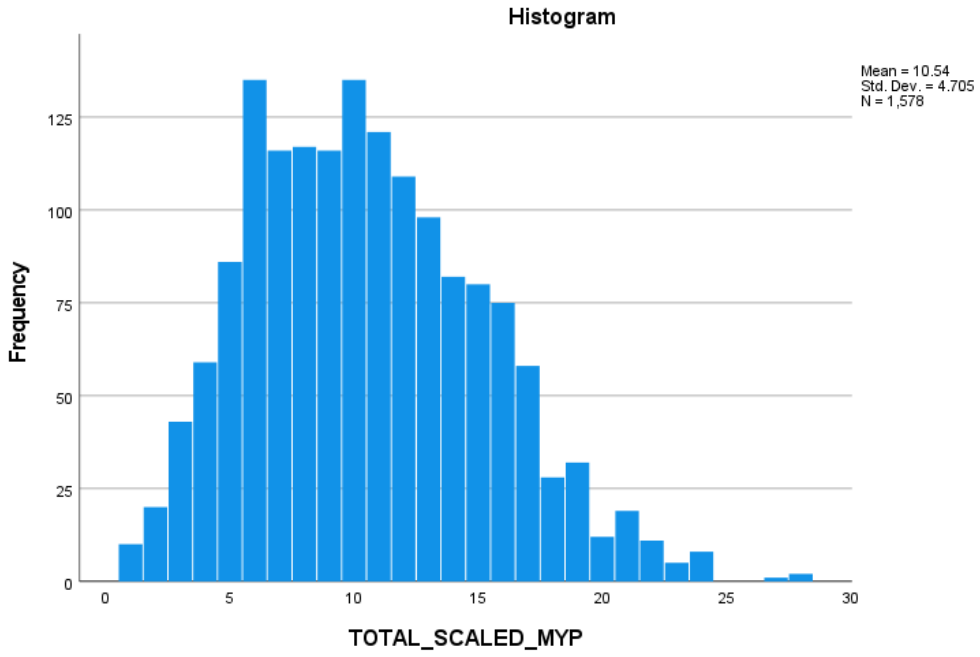


Extended Essay score	Statistic	*SE*	*Z*-score
Skewness	0.160	0.012	13.333
Kurtosis	-0.673	0.024	-28.042

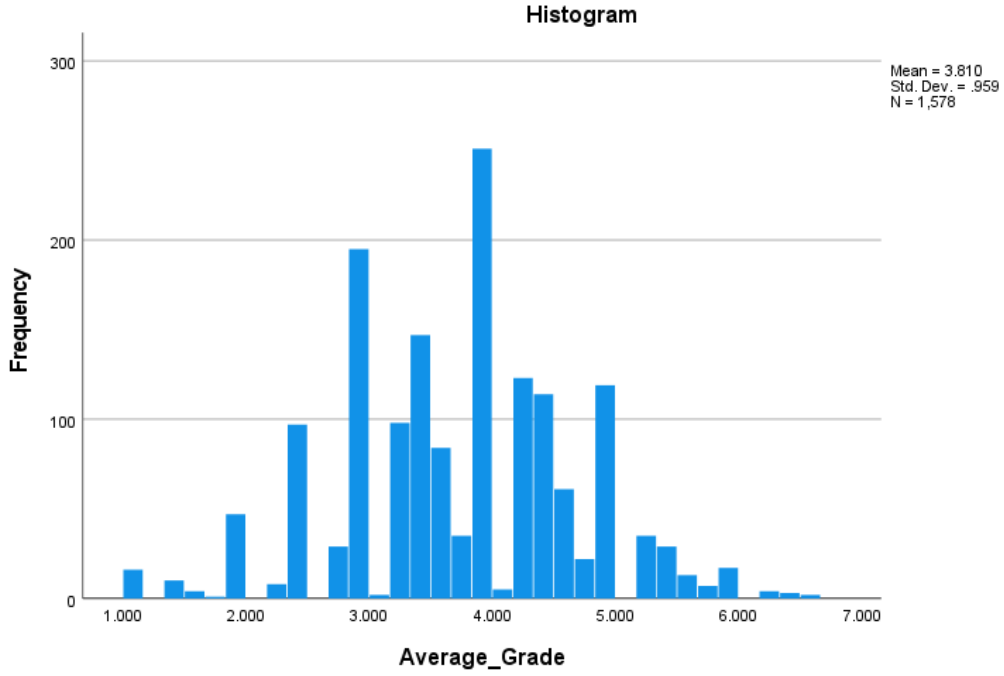


c. Results of normality test on analytical sample of CP students who took DP exams (N = 1,578)

Personal Project score	Statistic	*SE*	*Z*-score
Skewness	0.447	0.062	7.210
Kurtosis	-0.122	0.123	-0.999

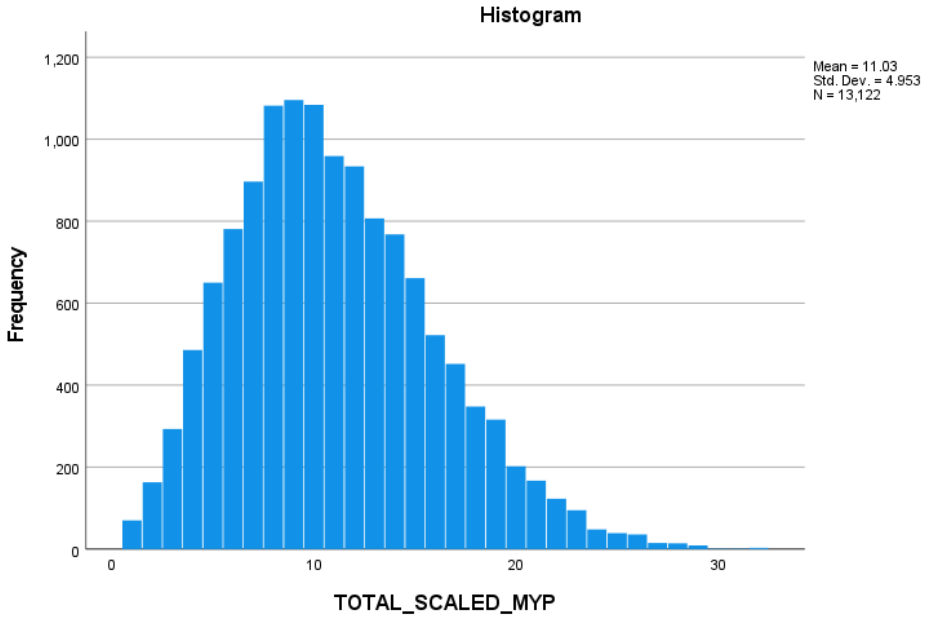


DP exam score	Statistic	*SE*	*Z*-score
Skewness	-0.117	0.062	-1.887
Kurtosis	0.141	0.123	1.146

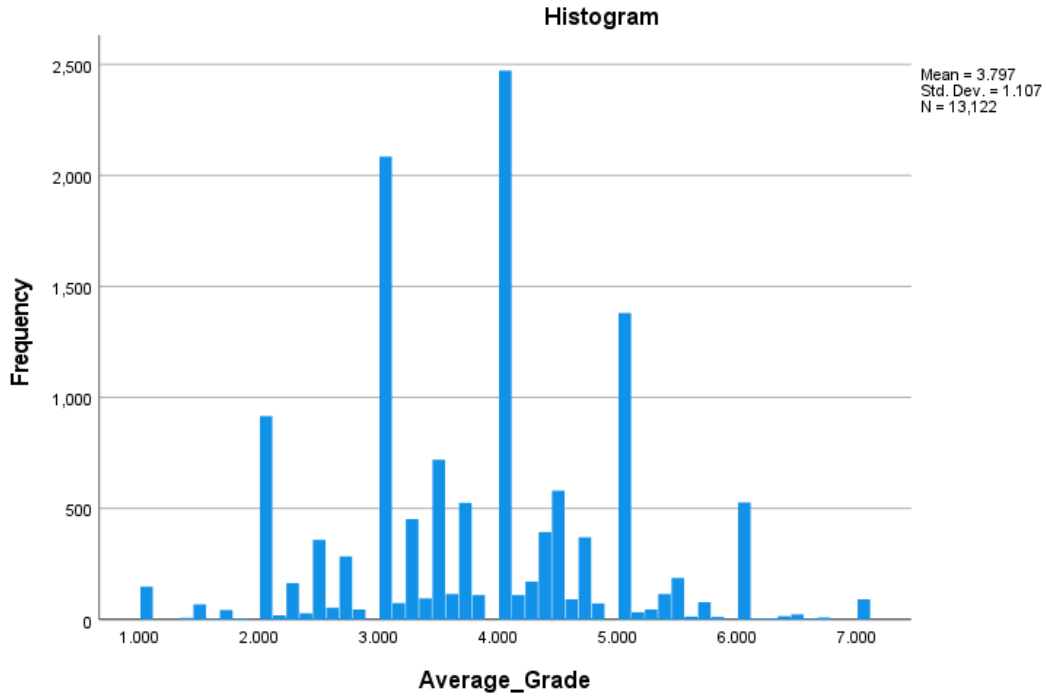


d. Results of normality test on analytical sample of course candidates who took DP exams (N = 13,122)

Personal Project score	Statistic	*SE*	*Z*-score
Skewness	0.532	0.021	25.333
Kurtosis	0.093	0.043	2.163

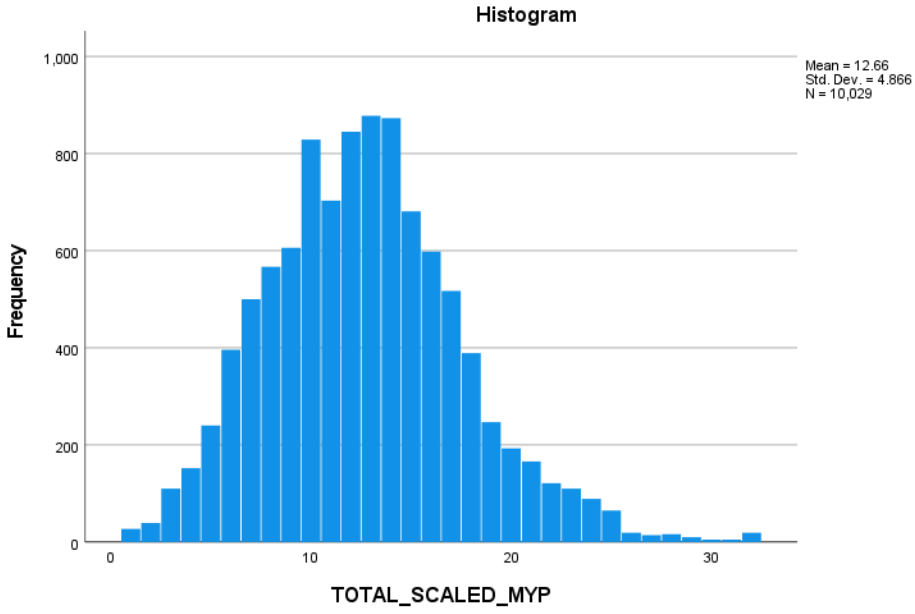


DP exam score	Statistic	*SE*	*Z*-score
Skewness	0.112	0.021	5.333
Kurtosis	-0.076	0.043	-1.767

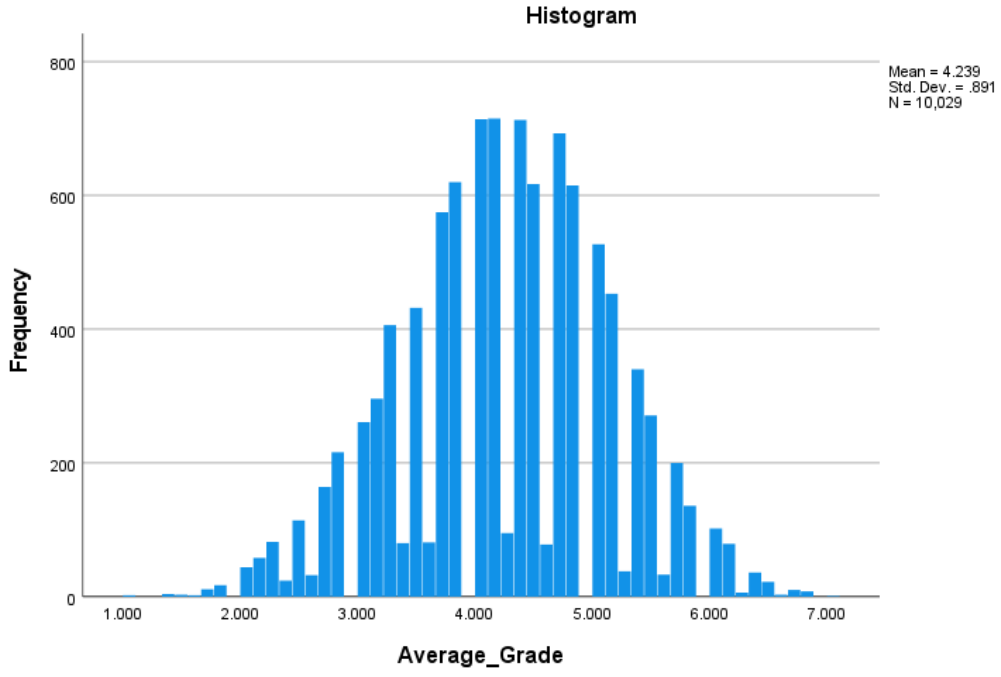


e. Results of normality test on analytical sample of United States Personal Project students who took DP exams (N = 10,029)

Personal Project score	Statistic	*SE*	*Z*-score
Skewness	0.444	0.024	18.5
Kurtosis	0.440	0.049	8.980

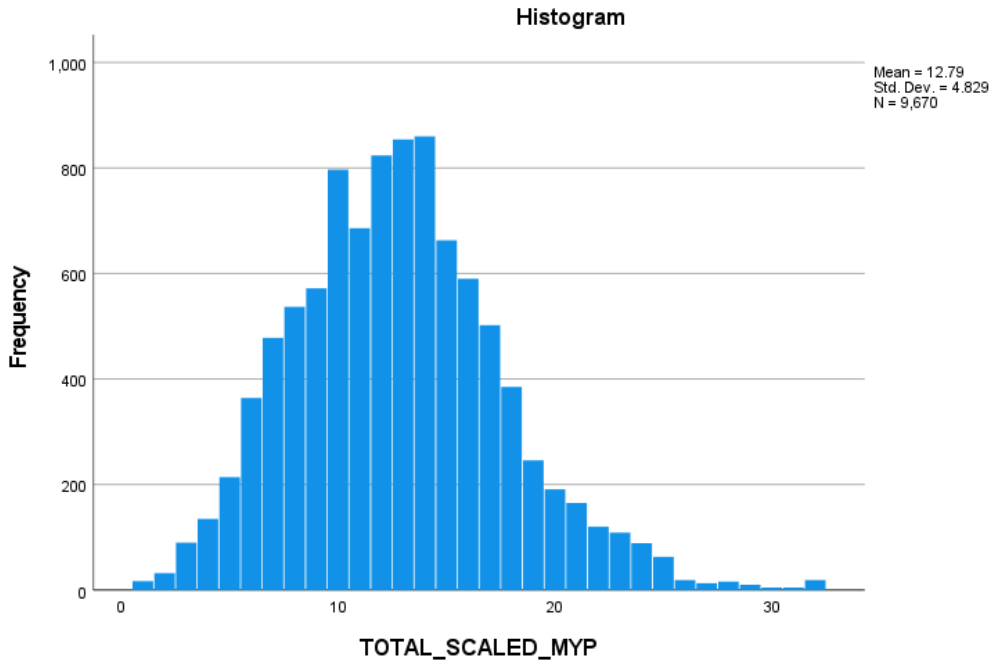


DP exam score	Statistic	*SE*	*Z*-score
Skewness	-0.113	0.024	-4.708
Kurtosis	-0.143	0.049	-2.918

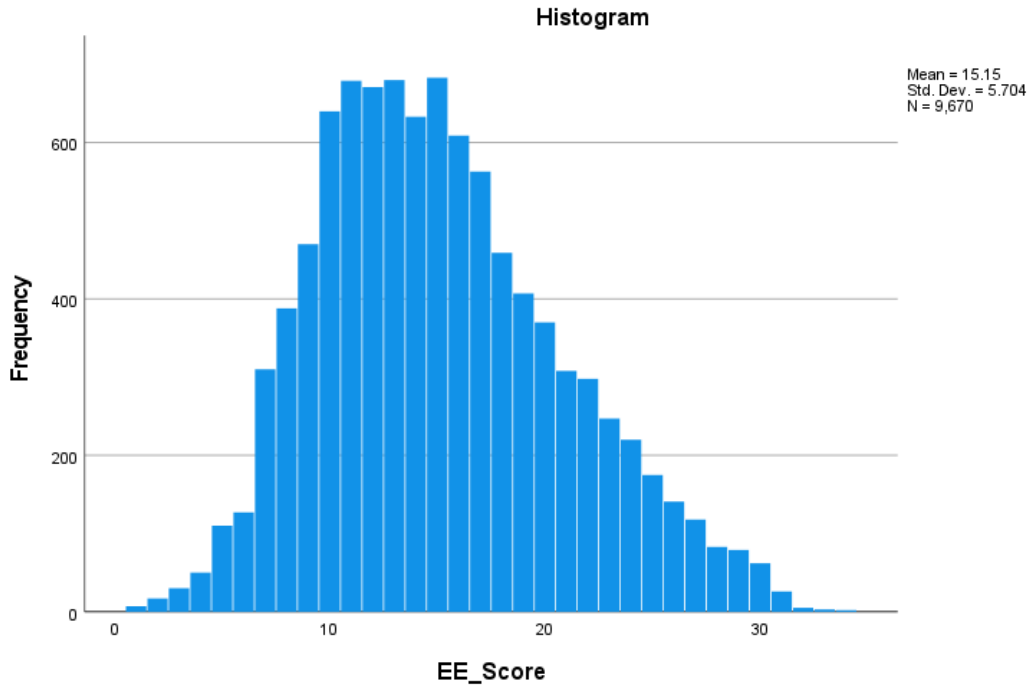


f. Results of normality test on analytical sample of United States Personal Project students who took Extended Essay (N = 9,670)

Personal Project score	Statistic	*SE*	*Z*-score
Skewness	0.460	0.025	18.4
Kurtosis	0.463	0.050	9.26



Extended Essay score	Statistic	*SE*	*Z*-score
Skewness	0.456	0.025	18.24
Kurtosis	-0.225	0.050	-4.5



The critical values of Z-score upper and lower limits could be defined by sample sizes (Shiffler, 1988). In a small sample, the value of a Z-score greater or lesser than 1.96 could be assumed as normally distributed. This criterion could be revised to ± 2.58 for large samples. However, no criteria on the critical values of Z-score could be applied in very large samples (i.e., significance tests of skewness and kurtosis), as the sample means tend to follow a normal distribution based on the Central Limit Theorem. In terms of skewness and kurtosis, results showed that the threshold are between -0.5 and 0.5, indicating the distribution is approximately symmetric. Referring to the visual graphs in this Appendix, Personal Project, Extended Essay, and DP exams scores on each analytical sample have bell-shaped distribution curves. Therefore, the assessment scores could be assumed to have normal distributions.

Appendix IX

Table 1. *Descriptive Statistics of Analytical Sample on Full DP Students Who Took DP Exams and the Extended Essay*

	Full DP students who took DP exams (Student n = 41,866; School n = 590)		**Full DP students who took Extended Essay** (Student n = 40,497; School n = 590)	
	M	*SD*	*M*	*SD*
Level 2 (School-level characteristics)				
Legal status (1= Private, focal group)	0.63	0.48	0.63	0.48
Number of years since MYP authorisation year (2021-MYP authorisation year)	11.83	5.88	11.83	5.88
Number of years since DP authorisation year (2021-DP authorisation year)	17.15	10.50	17.15	10.50
Number of registered students in DP	76.53	90.73	76.53	90.73
Level 1 (student-level characteristics)				
Personal Project score	15.49	5.43	15.61	5.41
Extended Essay score	NA	NA	18.00	6.33
DP exams score	4.82	0.98	NA	NA
Female	0.56	0.50	0.56	0.50
Self-reported language matched with MYP school's language of instruction (1= Matched, focal group)	0.82	0.38	0.82	0.38
Self-reported language matched with DP school's language of instruction (1= Matched, focal group)	0.82	0.39	0.81	0.39
Additional rigour of DP coursework (1= More than 3 HL courses taken, focal group)	0.08	0.27	0.08	0.27
Cohort year 1 (1= Year taken Personal Project in 2016 and DP exams by 2018, focal group)	0.30	0.46	0.31	0.46
Cohort year 2 (1= Years taken Personal Project in 2017 and DP exams by 2019, focal group)	0.32	0.47	0.33	0.47
Cohort year 3 (1= Years taken Personal Project in 2018 and DP exams by 2020, reference group)	0.37	0.48	0.37	0.48

Note: NA = Not applicable.

Table 2. *Descriptive Statistics of Analytical Sample on CP Students Who Took DP exams and Course Candidates Who Took DP exams*

	CP students who took DP exams (Student n = 1,578; School n = 68)		**Course candidates who took DP exams** (Student n = 13,122; School n = 421)	
	M	*SD*	*M*	*SD*
Level 2 (School-level characteristics)				
Legal status (1= Private, focal group)	0.32	0.47	0.56	0.50
Number of years since MYP authorisation year (2021-MYP authorisation year)	11.28	4.73	12.33	5.76
Number of years since DP/CP authorisation year (2021-DP/CP authorisation year)	5.93	2.15	18.57	10.65
Number of registered students in DP/CP	33.47	40.14	43.10	82.08
Level 1 (student-level characteristics)				
Personal Project score	10.54	4.71	11.03	4.95
DP exams score	3.81	0.96	3.80	1.11
Female	0.55	0.50	0.55	0.50
Self-reported language matched with MYP school's language of instruction (1= Matched, focal group)	0.91	0.29	0.88	0.33
Self-reported language matched with DP/CP school's language of instruction (1= Matched, focal group)	0.89	0.32	0.87	0.34
Cohort year 1 (1= Years taken Personal Project in 2016 and DP exams by 2018, focal group)	0.22	0.41	0.29	0.45
Cohort year 2 (1= Years taken Personal Project in 2017 and DP exams by 2019, focal group)	0.31	0.46	0.32	0.47
Cohort year 3 (1= Years taken Personal Project in 2018 and DP exams by 2020, reference group)	0.47	0.50	0.39	0.49

Appendix X

Table 1. *Personal Project Score Predicts DP Exam Score on Analytical Sample of Full DP Students Who Took DP Exams (Student n = 41,866; School n = 590)*

Fixed-effects parameter	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value
Intercept	-0.153	***	-0.156	***	-0.156	***	-0.156	***	-0.156	***	-0.156	***
	(0.031)		(0.031)		(0.031)		(0.031)		(0.031)		(0.031)	
Level 2 (School-level characteristics)												
Legal status (1= Private, focal group)	0.136	*	0.134	*	0.134	*	0.134	*	0.134	*	0.134	*
	(0.065)		(0.065)		(0.065)		(0.065)		(0.065)		(0.065)	
Number of years since MYP authorization	0.013	*	0.014	*	0.014	*	0.014	*	0.014	*	0.014	*
year (2021-MYP authorization year)	(0.007)		(0.007)		(0.007)		(0.007)		(0.007)		(0.007)	
Number of years since DP authorization	-0.006		-0.006		-0.006		-0.006		-0.006		-0.006	
year (2021-DP authorization year)	(0.004)		(0.004)		(0.004)		(0.004)		(0.004)		(0.004)	
Number of registered students in DP	0.001	*	0.001	*	0.001	*	0.001	*	0.001	*	0.001	*
	(0.000)		(0.000)		(0.00)		(0.000)		(0.000)		(0.000)	
Level 1 (Student-level characteristics)												
Personal Project score			0.432	***	0.421	***	0.418	***	0.418	***	0.418	***
			(0.015)		(0.014)		(0.015)		(0.015)		(0.015)	
Additional rigour DP coursework (1= More					0.371	***	0.372	***	0.373	***	0.373	***
than 3 HL courses taken, focal group)					(0.034)		(0.034)		(0.034)		(0.034)	
Female							0.026		0.026		0.026	
							(0.016)		(0.016)		(0.016)	
Self-reported language matched with MYP									-0.061		-0.061	
school's language of instruction (1=									(0.107)		(0.107)	
Matched, focal group)												
Self-reported language matched with DP									0.068		0.068	
school's language of instruction (1=									(0.105)		(0.105)	
Matched, focal group)												
Cohort year 1 (1= Years taken Personal											0.182	
Project in 2016 and DP exams by 2018, focal											(0.114)	
group)												
Cohort year 2 (1= Years taken Personal											-0.139	
Project in 2017 and DP exams by 2019, focal											(0.263)	
group)												
Total variance explained			0.183		0.198		0.198		0.198		0.198	

*p < .05, **p < .01, ***p < .001

Table 2. *Personal Project Score Predicts Extended Essay Score on Analytical Sample of Full DP Students Who Took Extended Essay (Student n = 40,497; School n = 590)*

Fixed-effects parameter	**Model 1**		**Model 2**		**Model 3**		**Model 4**		**Model 5**		**Model 6**	
	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value
Intercept	0.035		0.035		0.035		0.035		0.035		0.035	
	(0.024)		(0.024)		(0.024)		(0.024)		(0.024)		(0.024)	
Level 2 (School-level characteristics)												
Legal status (1= Private, focal group)	0.120	*	0.120	*	0.120	*	0.120	*	0.120	*	0.120	*
	(0.051)		(0.051)		(0.051)		(0.051)		(0.051)		(0.051)	
Number of years since MYP authorization	0.009	*	0.009	*	0.009	*	0.009	*	0.009	*	0.009	*
year (2021-MYP authorization year)	(0.005)		(0.005)		(0.005)		(0.005)		(0.005)		(0.005)	
Number of years since DP authorization	0.004		0.004		0.004		0.004		0.004		0.004	
year (2021-DP authorization year)	(0.003)		(0.003)		(0.003)		(0.003)		(0.003)		(0.003)	
Number of registered students in DP	0.000		0.000		0.000		0.000		0.000		0.000	
	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	
Level 1 (Student-level characteristics)												
Personal Project score			0.270	***	0.264	***	0.249	***	0.251	***	0.250	***
			(0.012)		(0.012)		(0.012)		(0.012)		(0.012)	
Additional rigour DP coursework (1= More						***		***		***		***
than 3 HL courses taken, focal group)					0.204		0.210		0.209		0.209	
					(0.042)		(0.042)		(0.042)		(0.042)	
Female							0.131	***	0.131	***	0.131	***
							(0.020)		(0.020)		(0.020)	
Self-reported language matched with MYP school's language of instruction (1= Matched, focal group)									-0.243	*	-0.243	*
									(0.099)		(0.099)	
Self-reported language matched with DP school's language of instruction (1= Matched, focal group)									0.168		0.168	
									(0.098)		(0.098)	
Cohort year 1 (1= Years taken Personal Project in 2016 and DP exams by 2018, focal group)											0.033	
											(0.152)	
Cohort year 2 (1= Years taken Personal Project in 2017 and DP exams by 2019, focal group)											-0.592	*
											(0.247)	
Total variance explained			0.049		0.052		0.057		0.058		0.058	

*p < .05, **p < .01, ***p < .001

Table 3. *Personal Project Score Predicts DP Exam Score on Analytical Sample of CP Students Who Took DP Exams (Student n = 1,578; School n = 68)*

Fixed-effects parameter	**Model 1**		**Model 2**		**Model 3**		**Model 4**	
	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value
Intercept	-0.031		-0.032		-0.032		-0.032	
	(0.094)		(0.094)		(0.094)		(0.094)	
Level 2 (School-level characteristics)								
Legal status (1= Private, focal group)	-0.233		-0.230		-0.230		-0.230	
	(0.196)		(0.196)		(0.196)		(0.196)	
Number of years since MYP authorisation year	-0.004		-0.004		-0.004		-0.004	
(2021-MYP authorisation year)	(0.019)		(0.019)		(0.019)		(0.019)	
Number of years since DP authorisation year	0.018		0.018		0.018		0.018	
(2021-DP authorisation year)	(0.039)		(0.039)		(0.039)		(0.039)	
Number of registered students in CP	-0.002		-0.002		-0.002		-0.002	
	(0.003)		(0.003)		(0.003)		(0.003)	
Level 1 (Student-level characteristics)								
Personal Project score			0.264	***	0.258	***	0.258	***
			(0.051)		(0.052)		(0.052)	
Female					0.096		0.097	
					(0.061)		(0.061)	
Self-reported language matched with MYP school's							-0.157	
language of instruction (1= Matched, focal group)							(0.145)	
Self-reported language matched with CP school's							0.108	*
language of instruction (1= Matched, focal group)							(0.051)	
Total variance explained			0.065		0.068		0.068	

*p < .05, **p < .01, ***p < .001

Table 4. *Personal Project Score Predicts DP Exam Score on Analytical Sample of Course Candidates Who Took DP Exams (Student n = 13,122; School n = 421)*

Fixed-effects parameter	**Model 1**		**Model 2**		**Model 3**		**Model 4**		**Model 5**	
	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value
Intercept	0.107	**	0.108	**	0.108	**	0.108	**	0.108	**
	(0.035)		(0.035)		(0.035)		(0.035)		(0.035)	
Level 2 (School-level characteristics)										
Legal status (1= Private, focal group)	-0.065		-0.065		-0.065		-0.065		-0.065	
	(0.073)		(0.073)		(0.073)		(0.073)		(0.073)	
Number of years since MYP authorization year	-0.010		-0.010		-0.010		-0.010		-0.010	
(2021-MYP authorization year)	(0.008)		(0.008)		(0.008)		(0.008)		(0.008)	
Number of years since DP authorization year (2021-	-0.001		-0.001		-0.001		-0.001		-0.001	
DP authorization year)	(0.004)		(0.004)		(0.004)		(0.004)		(0.004)	
Number of registered course candidates	0.000		0.000		0.000		0.000		0.000	
	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	
Level 1 (Student-level characteristics)										
Personal Project score			0.215	***	0.203	***	0.204	***	0.202	***
			(0.022)		(0.022)		(0.022)		(0.022)	
Female					0.119	***	0.118	***	0.117	***
					(0.030)		(0.030)		(0.030)	
Self-reported language matched with MYP school's							0.134		0.124	
language of instruction (1= Matched, focal group)							(0.221)		(0.222)	
Self-reported language matched with DP school's							-0.239		-0.237	
language of instruction (1= Matched, focal group)							(0.195)		(0.195)	
Cohort year 1 (1= Years taken Personal Project in									0.272	
2016 and DP exams by 2018, focal group)									(0.236)	
Cohort year 2 (1= Years taken Personal Project in									-1.075	*
2017 and DP exams by 2019, focal group)									(0.496)	
Total variance explained			0.038		0.042		0.043		0.044	

*p < .05, **p < .01, ***p < .001

Appendix XI

Table 1. Results of the Multivariate Multilevel Regression Analyses on DP Exam Score and Essay Scores

	Modeling DP exam score		
	Model 1	Model 2	Model 3
Personal Project (1= Students did Personal Project, focal group)	0.181 *** (0.018)	0.256 *** (0.020)	0.204 *** (0.021)
Cohort year of mandatory external moderation 1 (1= Cohort year of 2017-2019, focal group)		-0.146 *** (0.025)	-0.129 *** (0.022)
Cohort year of mandatory external moderation 2 (1= Cohort year of 2018-2020, focal group)		0.304 *** (0.021)	0.364 *** (0.029)
Personal Project * Cohort year of mandatory external moderation 1 (1= Students did Personal Project in cohort year of 2017-2019, focal group)			-0.221 *** (0.053)
Personal Project * Cohort year of mandatory external moderation 2 (1= Students did Personal Project in cohort year of 2018-2020, focal group)			-0.105 ** (0.039)
Total variance explained	0.006	0.009	0.010
	Modeling Extended Essay score		
	Model 1	Model 2	Model 3
Personal Project (1= Students did Personal Project, focal group)	2.205 *** (0.147)	1.679 *** (0.156)	1.911 *** (0.149)
Cohort year of mandatory external moderation 1 (1= Cohort year of 2017-2019, focal group)		-2.074 *** (0.194)	-2.193 *** (0.249)
Cohort year of mandatory external moderation 2 (1= Cohort year of 2018-2020, focal group)		-1.076 *** (0.226)	-1.017 *** (0.252)
Personal Project * Cohort year of mandatory external moderation 1 (1= Students did Personal Project in cohort year of 2017-2019, focal group)			-1.192 *** (0.420)
Personal Project * Cohort year of mandatory external moderation 2 (1= Students did Personal Project in cohort year of 2018-2020, focal group)			-0.837 * (0.398)
Total variance explained	0.014	0.025	0.025

*p < .05, **p < .01, ***p < .001

Table 2. *Results of the Multivariate Multilevel Regression Analyses on DP Exam Scores*

	Model 1		Model 2		Model 3	
Personal Project (1= Students did Personal Project, focal group)	0.183 (0.014)	***	0.183 (0.014)	***	0.191 (0.014)	***
Cohort year of mandatory external moderation 1 (1= Cohort year of 2017-2019, focal group)			-0.124 (0.017)	***	-0.088 (0.020)	***
Cohort year of mandatory external moderation 2 (1= Cohort year of 2018-2020, focal group)			0.209 (0.018)	***	0.233 (0.020)	***
Personal Project * Cohort year of mandatory external moderation 1 (1= Students did Personal Project in cohort year of 2017- 2019, focal group)					-0.143 (0.036)	***
Personal Project * Cohort year of mandatory external moderation 2 (1= Students did Personal Project in cohort year of 2018-2020, focal group)					-0.094 (0.036)	**
Total variance explained	0.006		0.009		0.010	

*p < .05, **p < .01, ***p < .001

Table 3. Results of the Multivariate Multilevel Regression Analyses on Extended Essay Scores

	Model 1		Model 2		Model 3	
Personal Project (1= Students did Personal Project, focal group)	1.484 (0.114)	***	1.481 (0.113)	***	1.542 (0.115)	***
Cohort year of mandatory external moderation 1 (1= Cohort year of 2017-2019, focal group)			-1.729 (0.148)	***	-1.450 (0.166)	***
Cohort year of mandatory external moderation 2 (1= Cohort year of 2018-2020, focal group)			-1.086 (0.154)	***	-0.919 (0.171)	***
Personal Project * Cohort year of mandatory external moderation 1 (1= Students did Personal Project in cohort year of 2017- 2019, focal group)					-1.089 (0.287)	***
Personal Project * Cohort year of mandatory external moderation 2 (1= Students did Personal Project in cohort year of 2018-2020, focal group)					-0.658 (0.289)	*
Total variance explained	0.014		0.027		0.025	

*p < .05, **p < .01, ***p < .001

Appendix XII

Table 1. Descriptive statistics of United States Personal Project students who took DP exams and United States Personal Project students who took Extended Essay

	US Personal Project students who took DP exams (Student n = 10,029; School n = 128)		**US Personal Project students who took Extended Essay** (Student n = 9,670; School n = 128)	
	M	SD	M	SD
Level 2 (School-level characteristics)				
Legal status 1 (1= State, focal group)	0.91	0.28	0.91	0.28
Legal status 2 (1= State subsidized, focal group)	0.02	0.15	0.02	0.15
Legal status 3 (1= Charter, reference group)	0.06	0.24	0.06	0.24
Number of years since MYP authorisation year (2021-MYP authorisation year)	11.41	4.92	11.41	4.92
Number of years since DP authorisation year (2021-DP authorisation year)	19.29	10.29	19.29	10.29
Number of registered students in DP	107.62	130.03	107.62	130.03
Level 1 (Student-level characteristics)				
Personal Project score	12.66	4.87	12.79	4.83
Extended Essay score	NA	NA	15.15	5.70
DP exams score	4.24	0.89	NA	NA
Female	0.61	0.49	0.61	0.49
Self-reported language matched with MYP school's language of instruction (1= Matched, focal group)	0.93	0.26	0.93	0.26
Additional rigour of DP coursework (1= More than 3 HL courses taken, focal group)	0.16	0.37	0.17	0.37
Free Lunch Programme (1= Participated, focal group)	0.27	0.44	0.26	0.44
English Proficiency 1 (1= Level 1-3, focal group)	0.72	0.45	0.71	0.45
English Proficiency 2 (1= Unreported, focal group)	0.03	0.18	0.03	0.18
English Proficiency 3 (1= Level 4, reference group)	0.25	0.43	0.26	0.44

Note: NA = Not applicable.

Appendix XIII

Table 1. *Personal Project Score Predicts DP Exams Score on Analytical Sample of United States Personal Project Students Who Took DP Exams (Student n = 10,029; School n = 128)*

Fixed-effects parameter	**Model 1**		**Model 2**		**Model 3**		**Model 4**		**Model 5**		**Model 6**	
	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value
Intercept	-0.130		-0.130		-0.130		-0.130		-0.130		-0.130	
	(0.068)		(0.068)		(0.068)		(0.068)		(0.068)		(0.068)	
Level 2 (School-level characteristics)												
Legal status (1= State, focal group)	-0.340		-0.323		-0.318		-0.318		-0.318		-0.317	
	(0.306)		(0.317)		(0.320)		(0.320)		(0.320)		(0.321)	
Legal status (1= State Subsidised, focal group)	0.140		0.173		0.183		0.183		0.183		0.186	
	(0.428)		(0.436)		(0.438)		(0.438)		(0.438)		(0.439)	
Number of years since MYP authorization year (2021-MYP authorization year)	0.001		0.001		0.001		0.001		0.001		0.001	
	(0.016)		(0.016)		(0.016)		(0.016)		(0.016)		(0.016)	
Number of years since DP authorization year (2021-DP authorization year)	-0.004		-0.004		-0.004		-0.004		-0.004		-0.004	
	(0.007)		(0.007)		(0.007)		(0.007)		(0.007)		(0.007)	
Number of registered students in DP	0.000		0.000		0.000		0.000		0.000		0.000	
	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	
Level 1 (Student-level characteristics)												
Personal Project score			0.369	***	0.351	***	0.350	***	0.348	***	0.336	***
			(0.031)		(0.031)		(0.031)		(0.031)		(0.030)	
Additional rigour DP coursework (1= More than 3 HL courses taken, focal group)					0.392	***	0.392	***	0.395	***	0.389	***
					(0.053)		(0.053)		(0.053)		(0.053)	
Female							0.020		0.020		0.027	
							(0.031)		(0.031)		(0.031)	
Self-reported language matched with MYP school's language of instruction (1= Matched, focal group)									0.133	*	0.090	
									(0.066)		(0.064)	
Free Lunch Programme (1= Participated, focal group)											-0.207	***
											(0.047)	
English Proficiency 1 (1= Level 1-3, focal group)											0.123	
											(0.106)	
English Proficiency 2 (1= Unreported, focal group)											-0.112	
											(0.091)	
Total variance explained			0.105		0.135		0.135		0.136		0.144	

*p < .05, **p < .01, ***p < .001

Table 2. Personal Project Score Predicts DP Exams Score on Analytical Sample of United States Personal Project Students Who Took the Extended Essay (Student n = 9,670; School n = 128)

Fixed-effects parameter	**Model 1**		**Model 2**		**Model 3**		**Model 4**		**Model 5**		**Model 6**	
	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value	Coef. (*SE*)	p-value
Intercept	0.019		0.018		0.018		0.018		0.018		0.018	
	(0.050)		(0.050)		(0.050)		(0.050)		(0.050)		(0.050)	
Level 2 (School-level characteristics)												
Legal status (1= State, focal group)	-0.303		-0.302		-0.301		-0.301		-0.301		-0.301	
	(0.157)		(0.160)		(0.160)		(0.160)		(0.160)		(0.160)	
Legal status (1= State Subsidised, focal group)	-0.648		-0.637		-0.636		-0.634		-0.634		-0.634	
	(0.421)		(0.428)		(0.429)		(0.431)		(0.431)		(0.431)	
Number of years since MYP authorization year (2021-MYP authorization year)	0.010		0.010		0.010		0.010		0.010		0.010	
	(0.010)		(0.010)		(0.010)		(0.010)		(0.010)		(0.010)	
Number of years since DP authorization year (2021-DP authorization year)	-0.002		-0.002		-0.002		-0.002		-0.002		-0.002	
	(0.006)		(0.006)		(0.006)		(0.006)		(0.006)		(0.006)	
Number of registered students in DP	0.000		0.000		0.000		0.000		0.000		0.000	
	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	
Level 1 (Student-level characteristics)												
Personal Project score			0.263	***	0.253	***	0.243		0.244	***	0.239	***
			(0.027)		(0.026)		(0.025)	***	(0.025)		(0.025)	
Additional rigour DP coursework (1= More than 3 HL courses taken, focal group)						***				***		
					0.185		0.186		0.185		0.182	**
					(0.185)		(0.058)	***	(0.058)		(0.058)	
Female							0.159	***	0.160	***	0.162	***
							(0.031)		(0.031)		(0.031)	
Self-reported language matched with MYP school's language of instruction (1= Matched, focal group)									-0.058		-0.074	
									(0.067)		(0.065)	
Free Lunch Programme (1= Participated, focal group)											-0.083	*
											(0.041)	
English Proficiency 1 (1= Level 1-3, focal group)											0.074	
											(0.167)	
English Proficiency 2 (1= Unreported, focal group)											-0.047	
											(0.086)	
Total variance explained			0.038		0.042		0.047		0.047		0.047	

*p < .05, **p < .01, ***p < .001

Appendix XIV

Table 1. *Descriptive Statistics of Personal Project Students Who Took DP Exams by Global Data and Non-Global Data*

	Global data (N = 56,578)		Non-global data (N = 50,176)	
	M	*SD*	*M*	*SD*
Female	0.56	0.50	0.56	0.50
Self-reported language matched with MYP school's language of instruction (1= Matched)	0.84	0.37	0.86	0.35
Self-reported language matched with DPCP school's language of instruction (1= Matched)	0.83	0.38	0.85	0.35
Additional rigour of DP coursework (1= More than 3 HL courses taken)	0.06	0.24	0.06	0.25
Personal Project score	14.32	5.63	13.93	5.64
DP exam score	4.55	1.10	4.48	1.11

Table 2. *Results of Path Regressions on Student Characteristics, Personal Project, and DP Exam Scores*

	Global data (N = 56,578)				Non-global data (N = 50,176)			
	Estimate	*SE*	*CR*	P-value	Estimate	*SE*	*CR*	P-value
Female→ Personal Project score	0.172	0.008	20.451	***	0.161	0.009	17.932	***
Self-reported language matched with MYP school's language of instruction → Personal Project score	-0.147	0.011	-12.940	***	-0.094	0.013	-7.329	***
Female→ DP exam score	-0.001	0.007	-0.144	0.886	-0.002	0.008	-0.311	0.756
Self-reported language matched with DPCP school's language of instruction → DP exam score	-0.186	0.009	-20.031	***	-0.170	0.011	-16.053	***
Additional rigour of DP coursework → DP exam score	0.258	0.015	17.772	***	0.269	0.015	17.646	***
Personal Project score → DP exam score	0.547	0.003	156.516	***	0.538	0.004	143.867	***

*p < .05, **p < .01, ***p < .001

Table 3. *Results of Chi-square Difference Between Unconstrained Model and Fully Constrained Model*

	Model Chi-square	*df*	Diff. Chi-square	Diff. *df*	p-value
Unconstrained model	219274.533	10			
Fully constrained model	219290.829	20	16.296	10	0.091

Table 4. *Descriptive Statistics of Personal Project Students Who Took the Extended Essay by Global Data and Non-Global Data*

	Global data (N = 40,834)		Non-global data (N = 34,679)	
	M	*SD*	*M*	*SD*
Female	0.56	0.50	0.57	0.50
Self-reported language matched with MYP school's language of instruction (1= Matched)	0.82	0.38	0.85	0.36
Self-reported language matched with DPCP school's language of instruction (1= Matched)	0.81	0.39	0.84	0.36
Additional rigour of DP coursework (1= More than 3 HL courses taken)	0.08	0.27	0.08	0.28
Personal Project score	15.58	5.41	15.23	5.45
Extended Essay score	17.96	6.34	17.64	6.36

Table 5. *Results of Path Regressions on Student Characteristics, Personal Project, and Extended Essay Scores*

	Global data (N = 40,834)				Non-global data (N = 34,679)			
	Estimate	*SE*	*CR*	P-value	Estimate	*SE*	*CR*	P-value
Female→ Personal Project score	0.176	0.010	17.771	***	0.156	0.011	14.448	***
Self-reported language matched with MYP school's language of instruction → Personal Project score	-0.113	0.013	-8.776	***	-0.085	0.015	-5.657	***
Female→ Extended Essay score	0.051	0.009	5.474	***	0.051	0.010	5.087	***
Self-reported language matched with DPCP school's language of instruction → Extended Essay score	-0.138	0.012	-11.710	***	-0.125	0.014	-9.178	***
Additional rigour of DP coursework → Extended Essay score	0.050	0.017	2.950	0.003	0.054	0.018	3.059	0.002
Personal Project score → Extended Essay score	0.375	0.005	81.874	***	0.382	0.005	76.897	***

*p < .05, **p < .01, ***p < .001

Table 6. *Results of Chi-square Difference Between Unconstrained Model and Fully Constrained Model*

	Model Chi-square	*df*	Diff. Chi-square	Diff. *df*	p-value
Unconstrained model	153782.004	10			
Fully constrained model	153787.970	20	5.966	10	0.818