

A study of the post-secondary outcomes of International Baccalaureate Diploma Programme alumni in leading universities in Asia-Pacific

Summary developed by the IB Research department based on a report prepared by:
Moosung Lee, John Spinks, Ewan Wright, Jenny Dean and Ji Hoon Ryoo
University of Canberra, University of Hong Kong and University of Virginia





Background

This study explored the post-secondary experiences and outcomes of International Baccalaureate (IB) Diploma Programme (DP) alumni at three leading universities in the Asia-Pacific region. In particular, the study examined the academic performance, 21st-century skills, university preparation and engagement in extra-curricular activities of DP and non-DP graduates.

Research design

The study involved two universities in East Asia (University A and University B) and one university in Australia (University C). Researchers implemented a three-phase, mixed-method study based on university grade point average (GPA) data, online survey data ($n = 845$ from the three universities) and interview data ($n = 54$ from the three universities). The survey instrument—used to measure DP alumni's perceived capacity for 21st-century skills—was piloted with IB alumni at University A and further validated with DP and non-DP graduates at University B. Interview data was used to triangulate and complement findings from the survey data.

Findings

Academic performance and GPA

At University B,¹ findings revealed that an individual's DP score was a significant predictor of GPA. Researchers also observed a significant role of the DP score in the growth of GPA over time. This suggests that the DP score is an important predictor of DP alumni's academic performance at university, although there was some variation across faculties.

At University C,² the only significant predictor in all cross-sectional and longitudinal analyses was the student entrance exam score (either DP or national), which was positively associated with university GPA. This suggests that both DP scores and non-IB measures for university

entrance were valid and reliable in predicting students' academic performance in university studies.

Overall, there was no significant difference in academic performance between the DP alumni and their non-DP counterparts in either University B in East Asia or University C in Australia. At University C, however, despite there being no significant difference in the change of GPA between the two student groups, it appears that the trajectory of GPA among DP alumni was more dynamic (in some instances improving over time) compared to their non-DP counterparts.

¹ University B was only able to offer enrollment and GPA information for DP graduates (2013–2015), so no comparison to non-IB students was possible.

² University C provided richer, longitudinal data—showing changes in GPA over time—for both DP and non-IB alumni (2012–2014).

Capacity for 21st-century skills

The skills demanded in modern societies increasingly go beyond the knowledge of core academic content in traditional disciplines. A growing body of literature has placed emphasis on a broader set of “**21st-century skills**”, which encompass a wide range of foundational, cognitive and non-cognitive skills. For example, Kyllonen (2012) defines 21st-century skills using three

components: “cognitive skills” (including critical thinking, problem-solving and creativity), “inter-personal competencies” (including communication skills, social skills, teamwork, cultural sensitivity and dealing with adversity) and “intra-personal competencies” (including self-management, self-regulation, time management, lifelong learning and adaptability).

In the survey component of the study, students were asked to rate their abilities in a variety of skills and competences using a five-point Likert scale. The survey included nine domains of 21st-century skills, specifically: critical thinking, creativity, communication, cultural sensitivity, time management, adaptability, leadership, persistence and global-mindedness.

Figure 1 illustrates the perceived capacity for 21st-century skills of students at University C (Australia). In total, 89 students responded to the survey. Of these, 62 students were DP alumni. As shown in figure 1, DP alumni indicated slightly higher ratings of their capacity for 21st-century skills than their non-IB counterparts in most of the domains, especially in cultural sensitivity and global-mindedness. Indeed, there were statistically significant differences in the dimensions of cultural sensitivity (4.4 compared to 4.0; $t(87) = 2.36, p = .02$) and global-mindedness (4.0 compared to 3.4; $t(86) = 3.54, p = .001$). The widest gap between the two groups was found in global-mindedness (by 0.6 points). Results, however,

should be interpreted with caution, given the small sample size of participating students ($n = 89$) and the over-representation of IB students in the sample ($n = 62$).

In total, at University B (East Asia), 734 students responded to the survey. Of these, 63 students were DP alumni, which is reflective of the proportion of DP alumni within the university. Figure 2 illustrates that DP alumni had consistently higher ratings than their non-IB peers on every dimension of 21st-century skills (by up to 0.3 points). Similar to University C, DP alumni seemed to be most confident in their capacity for cultural sensitivity (4.1 from University B, 4.4 from University C). Additionally, one of the widest gaps between DP and non-DP alumni in University B was found in global-mindedness (by 0.3 points). Further statistical analysis found that DP alumni perceived that they have much stronger capacity for critical thinking, global-mindedness and cultural sensitivity in particular.

Taking a more critical perspective on the findings, however, the self-perceived strength of DP alumni for 21st-century skills could stem from students internalizing IB messages

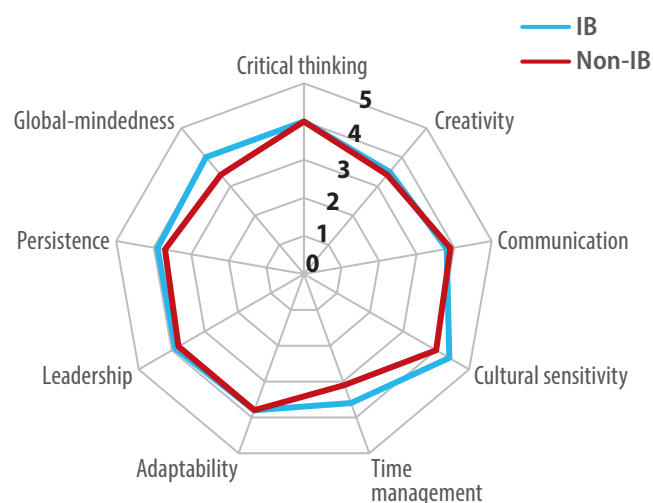


Figure 1. Perceived capacity for 21st-century skills (DP vs. non-DP)
Note: $n = 89$ (University C in Australia)

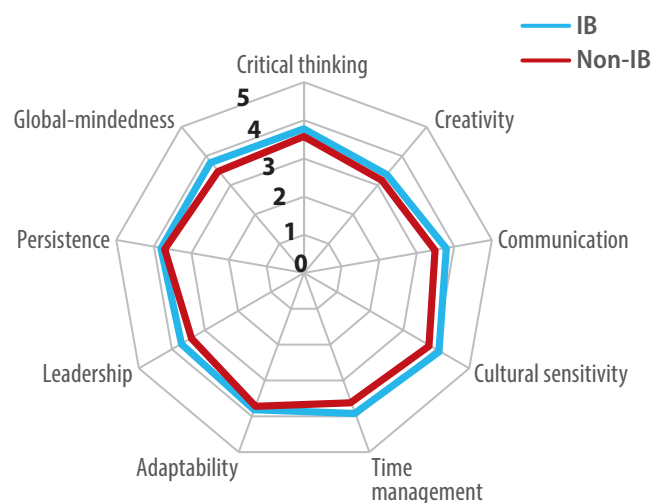


Figure 2. Perceived capacity for 21st-century skills (DP vs. non-DP)
Note: $n = 734$ (University B in East Asia)

	DP alumni University B (mean)	Non-DP alumni University B (mean)	DP alumni University C (mean)	Non-DP alumni University C (mean)
I am confident that [my senior secondary education programme] prepared me well for my university studies.	4.4	3.4	4.5	3.9
I am confident that [my senior secondary education programme] prepared me well for my university exams and assessments.	3.9	3.3	4.4	3.9
I think [my senior secondary education programme] graduates are better prepared for university compared to other secondary school graduates.	4.2	3.2	4.5	3.0
I think [my senior secondary education programme] graduates have better knowledge of academic content compared to other secondary school graduates.	3.8	3.2	4.2	2.8
I think [my senior secondary education programme] graduates are better at university assessments compared to other secondary school graduates.	3.8	3.2	4.0	2.9

Table 1. Perceived preparation for university studies at University B (n = 734) and University C (n = 89)

about progressive and holistic educational approaches, which may have influenced their reflections on the programme (see Doherty 2009). Nonetheless, this psychological self-confidence should not be downplayed, given that academic self-efficacy is an important factor that can shape learning outcomes (Marsh 1993; Bong and Skaalvik 2003).

Perceptions of senior secondary schooling

Using a five-point Likert scale, the survey asked respondents to give their views on how well their senior secondary schooling had equipped them for higher education, and how effective it was in developing 21st-century skills (termed “soft skills” in the survey).

Preparation for university studies

Compared to their non-DP peers, DP alumni in both University B and University C reported consistently higher ratings on all five questions about university preparation (table 1). The survey showed a perception that the DP prepared students well for their transition to university, both in terms of assessments and the development of academic knowledge. Further quantitative analysis indicated that the differences between perception of university-preparedness between DP and non-DP alumni were statistically significant $t(217.9) = 10.69, p = .000$.

Development of “soft skills”

As with responses about university preparation, DP alumni in both universities (B and C) indicated consistently higher

	DP alumni University B (mean)	Non-DP alumni University B (mean)	DP alumni University C (mean)	Non-DP alumni University C (mean)
I think [my senior secondary education programme] graduates have better “soft skills” compared to other secondary school graduates.	4.3	3.1	4.2	3.2
I have learned “soft skills” alongside subject matter when undertaking [my secondary education programme] at my school.	4.5	3.4	4.4	3.8

Table 2. Development of “soft skills” during senior secondary school: University B (n = 734) and University C (n = 89)

levels of ratings compared to their non-DP peers on the two questions about soft skills (table 2). Again these differences in perceptions of soft skills were statistically significant $t(262.1) = 11.25, p = .000$.

Perceived advantages and disadvantages of the DP

To expand and deepen the findings of the quantitative analysis, the researchers conducted in-depth interviews with DP alumni at three leading universities in Asia-Pacific ($n = 54$). This multi-site case study included a pilot study at University A (East Asia), followed by a main study at University B (East Asia) and University C (Australia).

Advantages

In the interviews, DP alumni at all three universities were highly positive about their DP learning experiences, particularly regarding the breadth of the curriculum. The breadth of learning opportunities allowed students to keep their options open about what to study at university and to develop a wider variety of skills. Participants at all universities highlighted the “skills-based” nature of the DP and the “well-roundedness” this developed in students. As one student put it, “How the IB is taught is very skills-based. So, in classes they do not just give you the content, they teach you how to learn” (4th year law student).

Respondents at University C in Australia were particularly enthusiastic about how the DP prepared them to succeed in higher education, recognizing the DP as supporting both university admission and academic preparation. Students at University C also reported close alignment between teaching and learning strategies in the DP and their university, including an emphasis on student discussions and group work.

There was a perception that the DP was unique in supporting the development of 21st-century skills. In particular, students highlighted the extended essay, theory of knowledge (TOK) and creativity, activity, service (CAS) as providing opportunities to develop communication, creativity, critical thinking, global-mindedness, research and leadership skills, as illustrated in the following quotes.

“Even from the first year, I could clearly see that having [the] experience of an extended research project really helped with assignments at university. Judging by what I have seen of written work from my classmates, they didn’t have this experience of a longer piece of academic writing in high school”. (3rd year economics and finance student)

“I really liked TOK and I think this is a very unique component of the IB programme. My teacher really showed us how we can evaluate knowledge using different theories, perspectives and methodologies. That helped me a lot in my writing, especially with more argumentative essays”. (3rd year global China studies student)

“CAS helped me with going beyond studying to see if there is anything I can get involved in. It also instills this kind of idea in your mind to search for new opportunities, like in student societies or volunteering. The IB helps you get out of the cycle of studying and to go out into the world to do something else”. (3rd year economics and finance student)

The skills developed through the DP were perceived to translate into university studies through greater engagement in classroom discussions, an ability to generate innovative ideas, a capacity for global-mindedness, and taking leadership roles in group projects. Additionally, participants in Australia believed the development of “soft skills” during the DP, such as creativity and persistence, would prepare them for their future careers.

Disadvantages

Perceived weaknesses and disadvantages reported by DP alumni in the interviews were more often described in terms of knowledge of academic content rather than 21st-century skills. It was reported that the standard of mathematical knowledge was often higher among students schooled in local education systems and other East Asian contexts. Similarly, some students from University C perceived a disadvantage in foundational knowledge compared to their non-IB peers in the STEM fields of study.

Some participants at University B noted that an emphasis on global-mindedness in the DP can lead to a lack of knowledge of local current affairs, culture and language. Others at University C explained how the heavy workload and diverse components of the DP can result in high levels of stress among students.

There was somewhat of a divide in terms of reported difficulties and barriers in adapting to university. Most participants at University C in Australia reported that the DP had prepared them well for a “skills-based” and “student-centred” approach to instruction and learning at university, and that DP assessments were well-aligned

with university assessments, particularly essay-based assessments. Conversely, some DP alumni at Universities A and B noted that the pedagogical approaches and assessment styles of these universities were more aligned with local education systems in East Asia. As such, a “teacher-centred” approach limited opportunities for interaction with instructors and classmates, while assessments at university were characterized as “examination-heavy” and more often based on multiple-choice questions and short answers. In describing the assessment style of the DP compared to the student’s university in East Asia, one of those interviewed explained:

“What tends to happen is that the local students are able to cram a lot more information into finals up here so they’re able to get all the revision done in the one week of study break, memorize everything, and they do really well in the finals. But then IB doesn’t teach you to memorize as much”. (3rd year electronic engineering student)

DP assessment styles tend to emphasize the capacity of students to employ 21st-century skills such as critical and creative thinking. For assessments at Universities A and B, there was concern that such skills gained during the IB “help with your learning, but [do] not always translate into the grades you want” (4th year law student) in university

examinations. Similarly, another commented on differences in teaching styles.

“The IB focuses more on interactive learning, like with TOK. The classes here are sort of one-way communication, what the professor says is like objective knowledge. There’s not much scope for questioning. It’s one-way communication as compared to the IB classrooms. That’s a major discrepancy, so it was kind of a shock to the system”. (3rd year electronic and computer engineering student)

Extra-curricular activities

Survey findings on participation in extra-curricular activities between DP and non-DP alumni in University B and University C were quite similar. At University B, DP alumni were slightly more likely to be involved in sports as well as activities where their language proficiency and skill (for example, in English) could be maximized. Both DP and non-DP graduates at University B were less likely to participate in career-related activities and/or international activities in comparison with local activities. In contrast, DP alumni at University C were somewhat more likely than their peers to be involved in internships and international activities.



Summary

With regard to academic performance, overall there was no significant difference in GPA between DP and non-DP alumni at either University B or University C. On average, however, DP alumni reported higher capacities for a variety of 21st-century skills compared to their non-DP counterparts. DP graduates were particularly confident in their capacity for cultural sensitivity, global-mindedness, critical thinking, leadership and time management. IB graduates were also highly positive across the three

universities about their DP learning experiences as preparation for higher education and the development of key skills. Specifically, they felt the DP had prepared them to engage in classroom discussions and group work, understand global perspectives and communicate effectively in writing and presentations. Some students, however, reported that they could have benefited from stronger content knowledge before entering higher education, particularly in mathematics or other STEM-related fields.

References

- Bong, M and Skaalvik, E. 2003. "Academic self-concept and self-efficacy: How different are they really?" *Educational Psychology Review*. Vol 15, number 1. Pp 1–40.
- Doherty, CA. 2009. "The appeal of the International Baccalaureate in Australia's educational market: A curriculum of choice for mobile futures". *Discourse: Studies in the Cultural Politics of Education*. Vol 30, number 1. Pp 73–89.
- Kyllonen, PC. 2012. "Measurement of 21st-century skills within the common core state standards". *Invitational Research Symposium on Technology Enhanced Assessments*. 7–8 May 2012.
- Marsh, HW. 1993. "Academic self-concept: Theory, measurement, and research". In J Suls (Ed.), *Psychological Perspectives on the Self*. Hillsdale, NJ, USA. Erlbaum. Pp 59–98.

This summary was developed by the IB Research department. A copy of the full report is available here: ibo.org/en/research/. For more information on this study or other IB research, please email research@ibo.org.

To cite the full report, please use the following:

Lee, M, Spinks, JA, Wright, E, Dean, J and Ryoo, JH. 2017. *A study of the post-secondary outcomes of International Baccalaureate Diploma Programme alumni in leading universities in Asia-Pacific*. Bethesda, MD, USA. International Baccalaureate Organization.

