IB Graduates in Australian Universities: Entry and Outcomes

A case study of two institutions

Project Report

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Executive Summary

This report details the findings of a study conducted for International Baccalaureate. The study explores the progression of graduates from the International Baccalaureate Diploma into and through university in Australia. The findings focus on four key areas – transition to university, university progression and completion, academic performance, and post-university pathways.

The research detailed here is based on data collected from two Australian universities. Data was specified by the project team and complied and provided by each of the participating universities. Both institutions provided detailed longitudinal data for the IB Diploma graduates who commenced study in 2007, following their progression through to 2011. University A was also able to supply this longitudinal data for a control population of non-IB graduates. Both universities provided 'snapshot' data of their IB cohort and a control population of non-IB graduates for the 2007 and 2011 university years. While institutions generally provided data as specified, the longitudinal collection was limited due to a small IB commencing cohort in University C in 2007.

The findings from this research offer insight into the IB cohort in the universities involved in this study. Key findings highlighted in the report include:

- The number of IB graduates applying for study at the two universities included in this study notably increased between 2007 and 2011. These increases follow the general trend of the growth of the IB Diploma in Australia during this period.
- IB graduates are notably more likely than non-IB graduate applicants to be successful in applying for university. This is highlighted in the case of University A, a highly selective university, as well as through state-level data. However, figures also show that IB graduates are less likely than other applicants to accept their offer and enrol.
- IB graduates enrolled at University A were more likely to come from high SES areas than non-IB graduates. On other comparisons, IB graduates have similar characteristics to the comparable national figures.
- Based on the analysis from University A, when compared with non-IB groups, IB graduates have higher progression rates through the early years of university and are more likely to complete their degree within five years of commencement.
- For the IB graduates enrolled at University A, there are high correlations between IB score (as converted to ATAR) and achievement at university. These correlations are notably larger than those found in the control (non-IB) population and are consistently higher when examined by field of education.
- Data from University A suggest that when student characteristics and secondary school achievement are taken into account, IB students perform at the same levels as non-IB students in terms of GPA over their university course.
- University graduate destination data show that among a small sample of respondents, the IB graduate cohort was slightly less likely to be in work on completion of university than other university graduates. IB graduates had similar rates of entry into further study as other graduates.

This project has offered some valuable insights into the entrance and progression of IB graduates in the Australian higher education context. The procedures involved in this project of recruiting and engaging universities, and specifying and collecting data were particularly challenging. However, valuable processes have been developed and the findings of this initial phase of this project provide the team with optimism for the success of expanding this research to encompass a greater number of universities in the future.

Introduction

This report explores the entry into and progression through university of graduates from the International Baccalaureate (IB) Diploma. It focuses on two Australian universities, used as case studies for exploring the higher education pathways of IB Diploma graduates. The study has been conducted for International Baccalaureate, the organisation which oversees the IB Diploma.

This project responds to one key element of the IB research agenda, which focuses on establishing and expanding empirical evidence related to the postsecondary transitions, academic outcomes and experiences of IB Diploma graduates in the tertiary education sector. This report is intended to provide evidence for the IB and deepen insights around the value of the IB Diploma programme in preparing young people for success in tertiary life and beyond.

Following the progression of an entrant cohort from two different Australian universities, this report examines:

- Entry rates to higher education for IB Diploma graduates;
- Progression of IB Diploma graduates through university;
- Academic performance of IB Diploma graduates at university; and
- Post-university pathways of IB Diploma graduates.

Throughout the report, the outcomes of IB Diploma cohort are benchmarked with those from a comparative 'non-IB' student population.

The report begins with a brief background to the study, it then details the methods used in recruitment of case study institutions, collection and analysis of data. The results of the study are then detailed in four sections corresponding with the points listed above. A conclusion draws on the main findings in relation to the key research questions of the study.

Background

About the International Baccalaureate

The International Baccalaureate IB Diploma programme is increasingly gaining a foothold around the world as an entry pathway to university. It comprises a two-year curriculum which is taken by students in the final two years of secondary school and is a qualification recognised by a large and growing number of universities. Currently the two year Diploma is offered in 61 Australian schools.

According to the organisation that oversees it, the IB Diploma programme focuses on skills demanded of students in a globalised world, including critical thinking and international awareness. Students take six subjects in the IB across a broad curriculum, ensuring that all students study subjects encompassing languages, social studies, natural sciences and mathematics. Students also complete a research essay (the Extended Essay), learn about the critical examination of different kinds of knowledge (Theory of Knowledge) and undertake an out-of-classroom experience (Creativity, Action and Service).

Students are assessed through a combination of written examinations and assessment tasks. The highest overall mark a student can be awarded is 45 points, with a minimum of 24 points required for a pass grade.

The International Baccalaureate in Australia

A 2007 study[1] found that Australian universities perceive the IB Diploma positively and felt that it was a valuable programme which enhanced university students' academic competence and capability, gave them experience of greater breadth and depth, provided an internationalised educational experience with a greater emphasis on community engagement.

Since that time, there has been an increased uptake of the IB Diploma programme in the Asia-Pacific region. In the region the number of schools offering the IB Diploma programme has increased from 209 in 2007 to 373 in 2012, an increase of 78 per cent in this six year period. In Australia, the number of schools offering the IB Diploma has increased from 42 in 2007 to 61 in 2012, an increase of 45 per cent. In terms of the number of schools offering the IB Diploma, Australia is the fifth largest country in the world in IB provision at this level.[2]

As a result, it is important that research is undertaken into the ways in which students who graduate from an IB Diploma experience and succeed in their university studies, particularly in comparison to students who have entered university through other pathways.

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[1] Coates, H., Rosicka, C. and MacMahon-Ball, M. (2007). *Perceptions of the International Baccalaureate Diploma Programme among Australian and New Zealand Universities*. Camberwell: Australian Council for Educational Research.

[2] Data sourced from the IB Facts website: Hhttp://ibo.org/facts/H . Retrieved 10 September, 2012.

Exploring enrolment and achievement in higher education

The IB Diploma is specifically promoted as "preparation for university in the 21st century" and emphasis is placed on its ability to give students the knowledge, skills and attitude they will need to succeed once at university. Therefore, given these aims, the expansion of the programme and the need for additional research into the pathways of graduates, this study aims to provide an initial insight into the pathways and outcomes of IB Diploma graduates in two Australian universities.

It is anticipated that the development of this research project will provide impetus for further research involving a wider range of Australian universities to be examined in a future research project.

Research questions

The data collection and analysis in this study has been guided by a number of research questions. These questions cover four main issues of transition throughout higher education. The main areas are outlined in the headings below, with the research questions underpinning each area listed.

Transition to university

- Are IB students who apply to these two institutions offered a place? What is the success rate in this regard?
- Which fields of study do IB students enrol? How do these trends compare with other non-IB students?
- What are the key characteristics of the IB cohort (i.e. gender, age, country of birth, and socio-economic status)?

University progression

- What proportion of IB students progress from first to second year (i.e. complete first year and continue study in second year)? Second to third year, etc?
- What proportion of IB student successfully complete their degree on time?
- How do IB students compare in terms of progression and graduation rates when compared with other similar non-IB students?

Academic performance

- What are the correlations between IB scores and achievement at university?
- Do correlations between university achievement scores and IB scores differ by university and by field of education?
- How do IB students compare in terms of university achievement when compared with other similar non-IB students?

Post-university pathways

- What proportion of IB students move on to graduate studies?
- What are the post-graduation employment outcomes for IB students?

The data in this study addresses these research questions within the context of the individual universities and student populations involved in the analysis. As such this

report provides indicative findings relating to these questions that represent the outcomes for students enrolled at the two universities in the study. However, the findings are not representative of all IB Diploma graduates in the Australian higher education system.

Method

This research has been conducted based on a proposal/research plan submitted to IB before commencement of the project. The study has involved four main parts:

1. Planning
2. University recruitment
3. Data collection
4. Analysis and reporting

This methodology section provides an overview of each of these parts of the study.

Project planning

The project was conceived of by IB and planned by ACER in conjunction with IB. The broad aim of the research project is to collect data from a range of institutions to build a profile of the pathways of IB students across Australia. During the planning stage it was decided that the project should be split into two phases. The first phase would collect and analyse data from two institutions and serve as a proof of concept and feasibility study. The second phase would expand on the first, gathering data from an additional five institutions. This report details findings of the first phase of the project.

The ACER project team formulated a range of research questions and built specifications for collecting data that would allow for these questions to be examined. IB was closely involved in this process, providing advice and resources to guide this development.

The final project proposal/research plan was used to inform the costing, timelines and execution of this study.

University recruitment

A document based on the project plan was produced for sending to institutions as part of a recruitment process for the project. The ACER and IB teams targeted two particular universities initially for inclusion in the study. These institutions were chosen due to the relatively large cohorts of IB Diploma graduates that they attracted. Representatives from the ACER team visited both institutions to inform them of the project aims, the extent of data collection required and the roles that institutions would play in the study.

Both institutions contacted were initially interested in the study. However, subsequently one of the institutions withdrew due to administrative difficulties related to an incompatibility of their university records system to export the data required for the study. A third institution was invited to participate in the study (chosen due to its specific interest in the IB Diploma) and subsequently agreed to be involved.

The two universities that are part of the study are referred to in the report as University A and University C. University A is a large university based in the south east of Australia. It is a member of the 'Group of Eight'[3] research intensive universities in Australia.

[3] The Group of Eight, is a grouping of eight research-intensive universities in Australia. These are typically the more prestigious institutions in the country, consistently ranking highly on international rankings of

University C is a relatively large university situated on the eastern seaboard of Australia. It is a member of the 'Innovative Research Universities'[4] group of institutions.

Data collection

Data collection took two forms. Two sets of data requested and supplied by universities comprised a longitudinal data set and a snapshot set of data tables. Universities involved in the study were provided with a detailed list of data specifications to assist preparation and collation of data (see Appendix).

The longitudinal data specified for this study was intended to track a cohort of university entrants through five years each institution. The cohort focussed on was those students who entered the university in 2007 and enrolled full-time in bachelor degree programmes. Student characteristics, prior educational background, enrolment details, progression data, university achievement (GPA) and graduation outcomes data was requested from institutions for the longitudinal part of the study. Information was collected from first semester 2007 to the end of 2011, providing five years of data. Given a bachelor degree in an Australian university is of three or four years duration (with a possible additional year of Honours)[5], and the commencing cohort of students in the longitudinal data for this study were enrolled full-time it was considered that in a five year period most of this cohort would ordinarily have been expected to complete their degree.

The snapshot data was intended to provide an indication of the relative size of the IB cohort and the entry patterns of students to each University at two different points in time; students commencing in 2007 and students commencing in 2011. Participating institutions completed template tables (see Appendix) created by the ACER research team detailing the number of applications made for study, the number of offers and enrolments resulting from these applications and also some detail of the characteristics of the IB graduates who enrolled in the institution in each of these years.

Collation of the requested data for this project was problematic and time consuming in the participating institutions. For both universities, the extraction of student data to the specifications was difficult in their existing student management systems and with the limitations on staff time dedicated to the project. As a result, the data collection process for the study was significantly longer than had been initially anticipated. To the credit of the institutions, most of the core data required for the project was eventually collated and delivered to the ACER research team.

The longitudinal data collected allows the tracking of 135 IB Diploma graduates at University A and 19 at University C over a five year period following enrolment at

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universities such as the Shanghai Jiao Tong Academic Ranking of World Universities, The Times Higher Education World University Ranking and the QS World University Ranking. See

[4] The Innovative Research Universities group of seven Australian universities. They form a network of universities 'sharing common origins'. See Hwww.iru.edu.auH for further information.

[5] See the *Australian Qualifications Framework*, July 2011, Hhttp://www.aqf.edu.au/Portals/0/Documents/Handbook/AustQuals%20FrmwrkFirstEditionJuly2011_FINAL.pdf

university. The snapshot data collected details the characteristics of 138 commencing IB Diploma graduates in University A for 2011, and 82 commencing IB graduates at University C for 2011. For University A, a control population (consisting of graduates from the state-based high school certificate) of 4151 was also provided to allow comparative analyses with the IB Diploma cohort. For University C a control group population is given for some snapshot statistics. The discussion in this report explores characteristics and outcomes of IB graduates at both University A and University C. Due to the small longitudinal sample at University C, some analysis based on GPA and post university pathways were not possible.

Due to the fact that the IB Diploma is a school-based qualification and most of the cohort for which this collection has been taken make the transition straight from school to university, the main focus of this study is on the school-completion aged population. As such the control population utilised in the data have been filtered to match the IB population. Specifically, only those in the control population who were recent school leavers have been included in the comparative analyses. While the findings presented here are directly relevant to the aims of this project, it is acknowledged that the university student population in Australia does consist of other groups of the population – in particular, mature aged students and people who make the transition to university from other tertiary, non-school qualifications.

National-level data is also used in some of the analyses below in order to provide a wider context to the findings of this research. Where appropriate, the Australian Government's Higher Education Statistics Collection (HESC) has been utilised.[6] In addition, some state-level data from the Tertiary Admissions Centre in one state has been used for building context and informing analysis of entry rates to university.

The data employed in this report provide some interesting and useful insights into the IB Diploma graduate cohort at the two universities involved in the study. This provides indicative evidence relating to entry, progression, completion, achievement and outcomes. However, given the size of the sample and the fact that data from only two of forty universities in the country are used here, the outcomes of this study should not be interpreted as representative of all Australian universities or of all IB Diploma graduates in Australia.

[6] See details at the following website, maintained by the Australian Department of Innovation, Industry, Science, Research and Tertiary Education:
Hhttp://www.deewr.gov.au/HigherEducation/Publications/HEStatistics/Publications/Pages/Home.aspxH

Findings

The four areas covered by the research questions outlined earlier are used in this section to inform the analysis and development of findings for this report. These sections cover transition to university, university progression, university completion, academic performance and post-university pathways. The bulk of the analysis in this report utilises data relating to the 2007 cohort, tracking these students as they progress through university. However, certain parts of the analysis draw on data from the 2011 entrant cohort to provide indication of changes in the IB Diploma population in these two institutions over time.

Transition to university

The pathways taken following completion of high school are important in influencing the future career directions of young people. This section is focused on examining the transitions into university by IB students and exploring if these pathways differ to non-IB students.

Entry rates

Data based on the application and offer process for universities in 2006/07[7] and 2010/11 has been provided by the institutions involved in this study. Table 1 provides a summary of IB graduates' applications, offers and enrolments at both universities in the study for the two years of analysis. The outcomes in relation to entry rates are further explored in the figures below. However, it is worth noting that in both these institutions, the number of IB graduate applications for study increased between 2006 and 2010. For University C in particular, there has been a substantial rise, from 94 IB graduate applicants in 2006 to 414 in 2010. In terms of enrolments at University C of IB graduates, the figures show an increase from a small cohort of 19 students beginning in 2007, to 82 commencing in 2011. IB graduates represent only a small proportion of all enrolments in each of these institutions. For University A, in 2010/11 they made up 2.1 per cent of all commencing undergraduates. In University C, IB graduates accounted for just over 1 per cent of commencing undergraduates.

Table 1: Number of IB graduates involved in application process, by institution, 2006/07 and 2010/11

	University A			University C		
	Number of applicants	Number of offers	Number of enrolments	Number of applicants	Number of offers	Number of enrolments
2006/07	644	222	135	94	32	19
2010/11	817	288	138	414	148	82

Figure 1 shows the applicant to offer rate for IB Diploma graduates for the two universities in this study. As can be seen, at both institutions, the likelihood of IB graduates gaining an offer increased slightly between 2006/07 and 2010/11. In general,

[7] Applications are completed in 2006 for commencement of university in 2007. Likewise, for 2010/11, applications in 2010 are for commencing study in 2011.

the figures here suggest that both of these institutions are relatively selective, with just over one third of the IB graduates who applied to study at them receiving an offer of a place. By comparison the average rate at which a school completer applicant received an offer to study at university across the whole of Australia in 2011 was 82 per cent.[8]

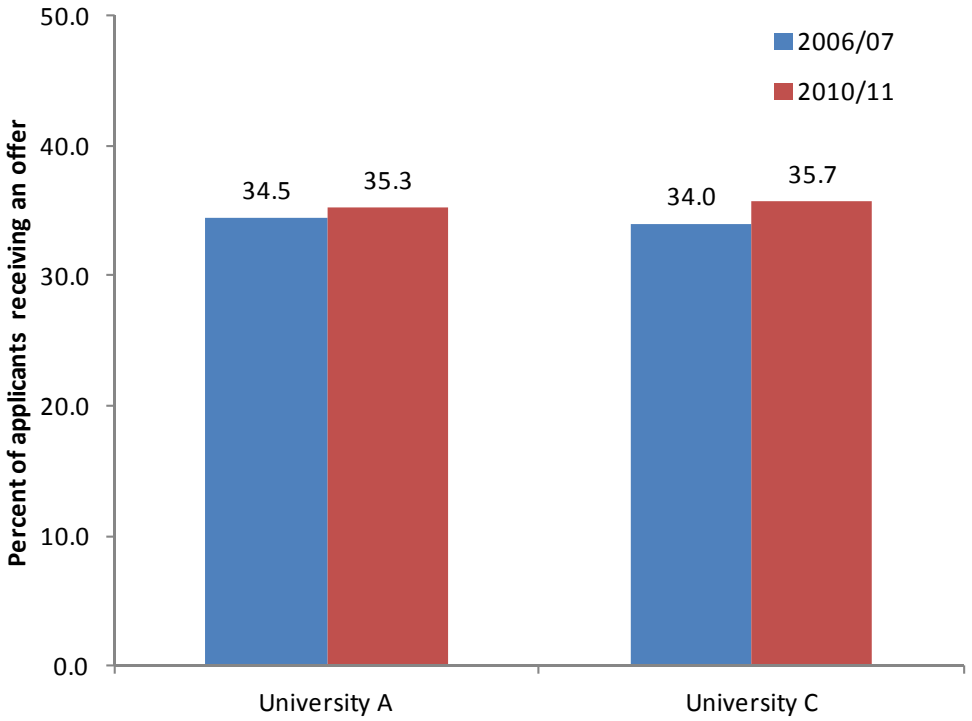

Figure 1: Rate of offers made to applicants for university by institution, 2006/07 and 2010/11

[8] DEEWR, (2011). *Undergraduate Applications, Offers and Acceptances, 2011*, Department of Education Employment and Workplace Relations, Canberra, p. 56.

Figure 2 offers an opportunity for a comparative perspective, exploring the relative success rates of applicants with IB and non-IB backgrounds. Data provided for University A shows that IB Diploma graduates were more likely to be offered a place at this institution than other applicants. In the 2006/07 offer round, 34.5 per cent of IB graduates who applied for study at this university were offered a place compared with 25.6 per cent of all those who applied for this university. Likewise, in 2010/11 the IB graduates were more successful in gaining offers at this institution. The gap between the IB graduates and other applicants in percentage point terms was similar in both the years recorded here.

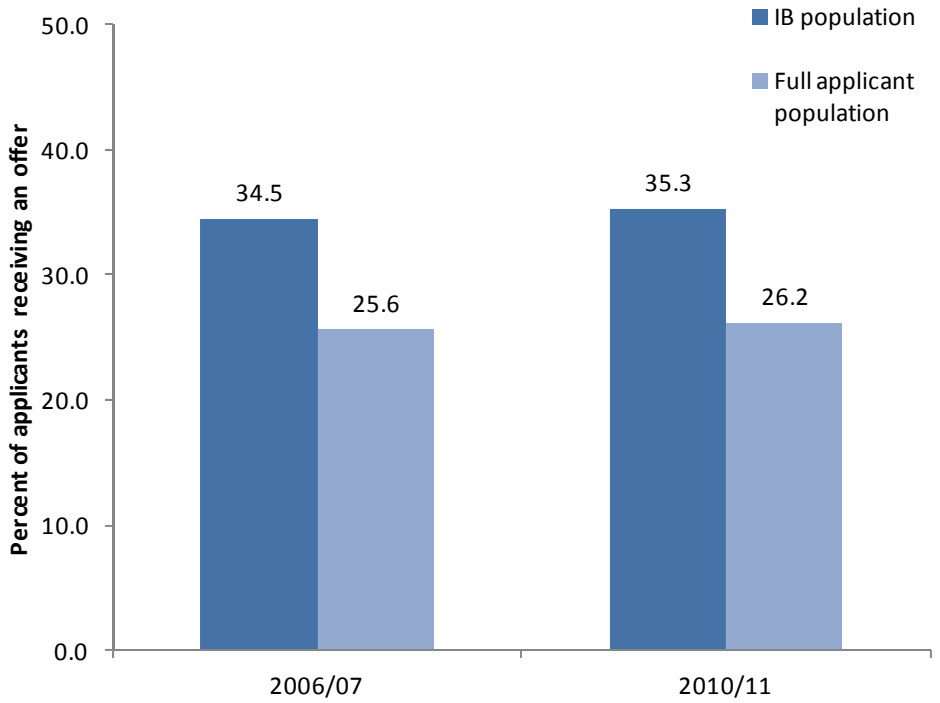

Figure 2: Rate of offers made to applicants for University A, 2006/07 and 2010/11

Further comparison between the IB graduate population and other applicants has been undertaken at the state level, based on data provided by University A. The state for which data has been made available is a relatively populated Australian state which had in total about 76,000 applicants for tertiary study (university and technical education institutions) in 2006/07 and 80,000 in 2010/11. In terms of IB graduate applicant numbers, there were nearly 800 in 2006/07 and almost 1,000 in 2010/11.

Figure 3 provides an indication at this broader state level of the overall success rates of IB Diploma graduates in comparison with the whole applicant population in this state. The state-level data provided here includes application and offers to all universities located in the state. It shows that in both the 2006/07 and the 2010/11 application periods, IB graduates who applied for university places in this state were more likely to receive an offer to study than non- IB applicants.

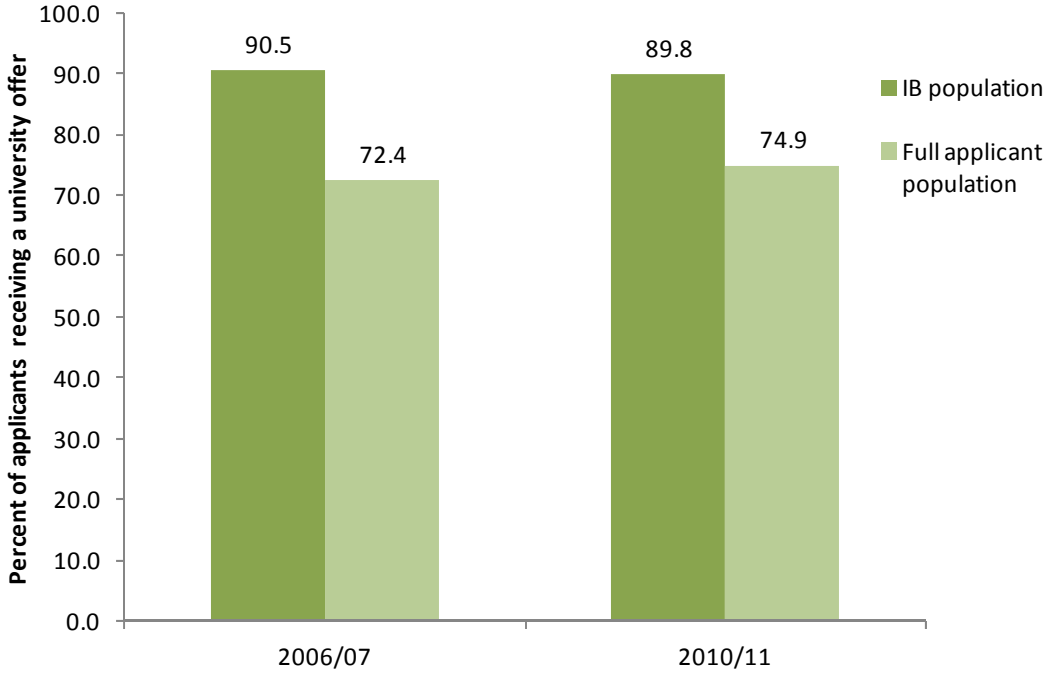

Figure 3: Rate of offers made to applicants for university, State A, 2006/07 and 2010/11

While the success of IB graduates in gaining an offer to university is highlighted above, it is interesting to note that based on the data for University A, IB graduates are less likely than other applicants to accept their offer and enrol at the institution. As shown in Figure 4, 60.8 per cent of IB graduates who were offered a place at University A in 2006/07 actually enrolled at the university, compared with an enrolment rate of 68 per cent among all applicants who received an offer from University A. By 2010/11, the difference between these two groups was even greater, with fewer than 50 per cent of the IB graduates offered a place converting this into enrolment, compared with a rate of more than 70 per cent among all applicants.

At the state level, this pattern is also seen across university applicants (Figure 5), although not with the same level of difference as is apparent in 2010/11 from the University A data.

These figures highlight that although the success rate of IB graduates in gaining offers to university is higher than for other applicants, the rate at which these applicants actually accept these offers and enrol is lower – especially in the case of University A, but also at the broader state-level. The reason for this finding is not clear, especially in terms of University A, which is a highly prestigious institution. It may be due to the fact that the IB graduates who were offered a place at University A may have received an offer from another institution which they saw as preferable, although the data does not allow for this theory to be tested.

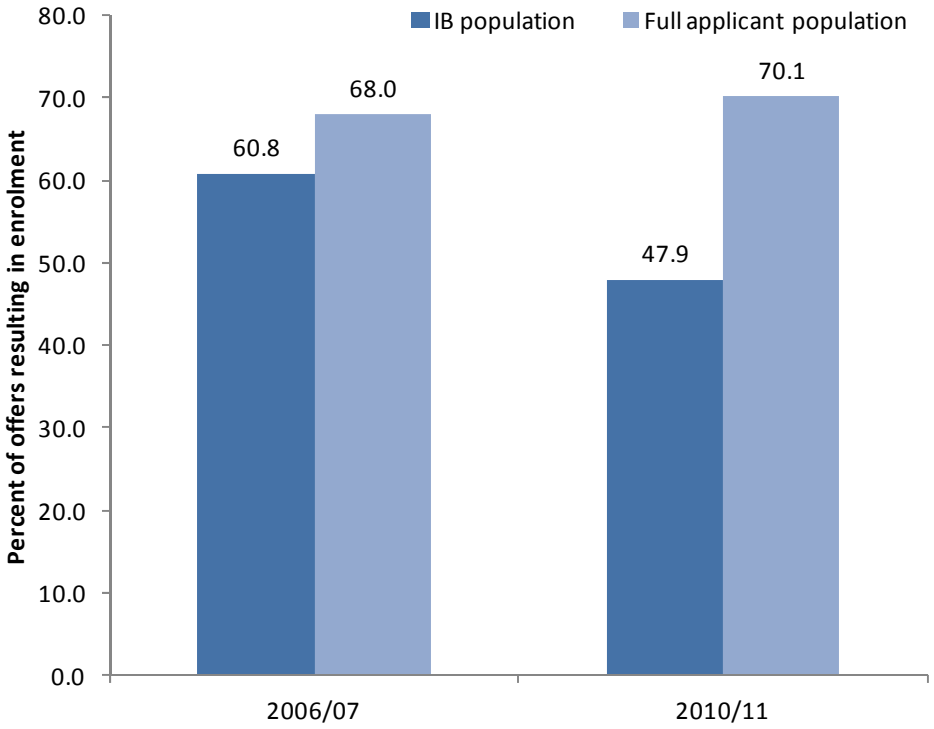

Figure 4: Percentage of university offers that result in an enrolment, University A, 2006/07 and 2010/11

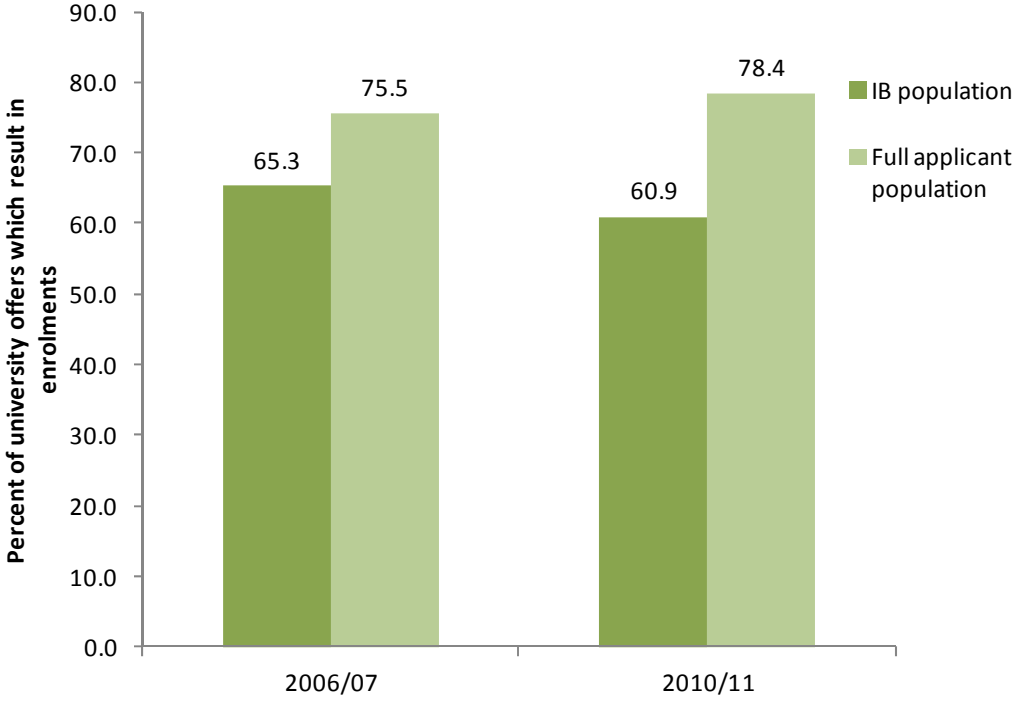

Figure 5: Percentage of university offers that result in an enrolment, full data for State A, 2006/07 and 2010/11

Finding: The number of IB graduates applying for study at the two institutions included in this study notably increased between 2007 and 2011. The number of IB graduates enrolling also increased during this time, particularly for University C. These increases follow the general trend of the growth of the IB Diploma in Australia during this period.

Finding: Based on data collected in this study, IB graduates are notably more likely than other applicants to be successful in applying for university. This is highlighted in the case of University A, a highly selective university and also at the state-level. However, figures also show that IB graduates are less likely than other applicants to accept their offer and enrol.

Characteristics of IB graduate university enrolees

The following section explores the characteristics of the IB graduate group who enrolled in University A and University C in 2007 and where data was collected in 2011. Data based on a control population (the non-IB graduate population) has been included here for each institution also. In order to provide closely comparable control group, this non-IB population is comprised exclusively of enrolees who had finished secondary school in the year before commencement (see Appendix). Overall, University A had 135 IB graduates commencing study in 2007, while University C had a much smaller 19 IB graduate commencers. In 2011 the figures for University A were larger at 82, while for University A the IB graduate numbers were relatively unchanged at 138.

IB graduates enrolled in the two institutions in this study in 2007 were much more likely to be female than male (Table 2), with nearly two thirds of the IB cohort in University C and almost three quarters of all IB graduates enrolling at University A being female. However, for the 2011 IB graduate cohorts, the gender balance is not so stark, with males more highly represented. In 2011 the proportion of males among the IB graduate cohort was 45.7 per cent, making it higher than the figure for the control population and nearly 20 percentage points higher than was apparent in 2007.

For University C (Table 3), a similar pattern is present, with males in the IB group underrepresented in the small 2007 cohort, but comprising more than half all IB graduate commencers at this institution in 2011. While the female-to-male distribution among the IB group in University C in 2007 was relatively close to that among the control population, by 2011 it reflected a notably larger proportion of males.

Overall for the Asia Pacific region, in both 2007 and 2011 IB figures show that the balance between male and female IB Diploma candidates was relatively even. In 2007, 48.3 per cent of IB Diploma candidates were female and in 2011 the figure was 50.1 per cent.[9] Given these overall figures, the institutional-specific numbers presented in these

[9] IB Diploma Programme Statistics Bulletin, November 2007 and November 2011 Hhttp://ibo.org/facts/statbulletin/dpstats/index.cfmH. Accessed 3 September, 2012.

tables show that for University A in 2007 and 2011 and for University C in 2007 there was an over representation of female IB enrolees.

Table 2: IB and non-IB graduates commencing at University A by gender, 2007 and 2011

Gender	2007 IB graduates	2011 IB graduates	2007 Non-IB graduates	2011 Non-IB graduates
		n.		
Male	36	63	1887	1885
Female	99	75	2264	2602
Total	*135*	*138*	*4151*	*4487*
		Per cent (%)		
Male	26.7	45.7	45.5	42.0
Female	73.3	54.3	54.5	58.0
Total	*100.0*	*100.0*	*100.0*	*100.0*

Table 3: IB and non-IB graduates commencing at University C by gender, 2007 and 2011

Gender	2007 IB graduates	2011 IB graduates	2007 Non-IB graduates	2011 Non-IB graduates
		n.		
Male	7	44	1247	1255
Female	12	38	1962	1686
Total	*19*	*82*	*3209*	*2941*
		Per cent (%)		
Male	36.8	53.7	38.9	42.7
Female	63.2	46.3	61.1	57.3
Total	*100.0*	*100.0*	*100.0*	*100.0*

Table 4 displays the age distribution of IB graduate commencers at the two universities of focus in this study. Comparing the two reveals that there are notable differences in the ages of these groups, with the IB graduate cohort from University C comprising more than half of students aged 20 or above, while University A's IB group were more likely to be 18 years or younger. The data in Table 4 for University C serves only to provide a descriptive indication of the ages of this particular cohort. While comparable data for IB graduates in 2011 and a control population for University C was not available, national datasets analysed by age suggest that overall the age profile of students at this institution was slightly older than that for University A in 2007.

Comparison of the IB graduates in University A with the non-IB commencers shows a relatively similar distribution across the ages, with IB graduates slightly older with a greater proportion aged 19 years compared with the control group. Nationally, 58 per cent of undergraduate university commencers were aged below 20 in 2007.

Table 4: IB and non-IB graduates IB and non-IB graduates commencing at university by age, 2007

Age	University C IB graduates		University A IB graduates		University A non-IB graduates	
	No.	%	No.	%	No.	%
16 years	--	--	1	0.7	22	0.5
17 years	--	--	39	28.9	1173	28.3
18 years	5	26.3	78	57.8	2710	65.3
19 years	3	15.8	15	11.1	176	4.2
20+ years	11	57.9	2	1.5	70	1.7
Total students	*19*	*100.0*	*135*	*100.0*	*4152*	*100.0*

Across Australian universities in 2007, 81.3 per cent of undergraduate domestic commencers were born in Australia. Table 5 shows that IB graduate enrolees in 2007 were more likely to be born outside of Australia than the national average. However, the majority (63.2 per cent and 65.9 per cent from University C and A respectively) of these IB graduate groups were born in Australia. The control population for University A shows that while this institution differed from the national average overall, the non-IB graduates were notably more likely to have been born in Australia than the IB group. The higher proportion of IB students born outside of Australia may in part be attributed to there currently being eight International schools across Australia offering the IB program.

Table 5: IB and non-IB graduates commencing at university by country of birth, 2007

Country of Birth	University C IB graduates		University A IB graduates		University A non-IB graduates	
	No.	%	No.	%	No.	%
Australia	12	63.2	89	65.9	3104	74.8
Outside Australia	7	36.8	46	34.1	1047	25.2
Total	*19*	*100.0*	*135*	*100.0*	*4151*	*100.0*

Examining IB and non-IB student distribution by socioeconomic status (SES) reveals notable differences between these two cohorts. For this variable, only data from University A was provided. The data for this institution shown in Table 6 highlights that IB graduates who enrolled at this university were predominantly from areas of high SES (72.6 per cent). Very few of this group (3.5 per cent) came from low SES areas. While the overall enrolment distribution by SES for this institution is skewed towards the high SES end, there is still a large disparity in the share of students in the high SES category when the IB and non-IB graduate groups are compared. This finding is not necessarily unexpected, due to the fact that the IB diploma is more likely to be offered in Independent schools (private schools) in Australia than in government schools (with the former comprising a larger proportion of students from high SES backgrounds).

Nonetheless, in the case of University A, this data helps to highlight one of the differences between the IB and the non-IB graduate cohorts.

Table 6: IB and non-IB graduates by socioeconomic status

Socioeconomic Status	University A IB graduates		University A non-IB graduates	
	No.	%	No.	%
Low	4	3.5	498	12.7
Medium	27	23.9	1534	39.1
High	82	72.6	1895	48.3
*Total**	*113*	*100.0*	*3927*	*100.0*

*note: SES data for 22 IB graduates and 224 non-IB graduates at University A were not available

In terms of enrolments by field of education, more than half of the IB graduate group at both institutions were studying in the broad fields of management and commerce or society and culture. Comparing the University A IB graduates with non-IB graduates at this institution shows relatively similar patterns of enrolment distribution across fields of study.

Table 7: IB and non-IB students by broad field of study

Broad Field of study	Institution C IB graduates		University A IB graduates		University A non-IB graduates	
	No.	%	No.	%	No.	%
Natural and Physical Sciences	3	15.8	19	14.1	619	14.9
Information Technology	--	--	--	--	125	3.0
Engineering and Related Technologies	--	--	6	4.4	308	7.4
Agriculture, Environmental and Related	--	--	--	--	35	0.8
Health	3	15.8	26	19.3	651	15.7
Education	2	10.5	--	--	40	1.0
Management and Commerce	3	15.8	34	25.2	1053	25.4
Society and Culture	8	42.1	39	28.9	1031	24.8
Creative Arts	--	--	11	8.1	289	7.0
Total	*19*	*100.0*	*135*	100.0	*4151*	*100.0*

Finding: Analysis by socioeconomic status (available for University A only) shows that IB graduates are more likely to come from high SES areas than non-IB graduates. On other comparisons, IB graduates have similar characteristics to the comparable national figures.

University progression and completion

Longitudinal data collected from the two institutions involved in this study has been collected in order to follow the progression of the IB graduate cohort over the years following their commencement at university. The 2007 cohort has been tracked over a five year period. As noted in the method section, data was collected for students enrolled full-time only, therefore given the vast majority of undergraduate degrees in Australia are 3, 4 or 5 years in length it is assumed that this dataset has a long enough timeframe to reasonably assume most students had time to complete their degree. The initial discussion here examines University A, which had a larger cohort of students enrolled full-time and also provided a control group for comparison. Institution C progression is examined separately.

Table 8 displays the proportion of students who commenced in 2007 and completed each year of study. Only the first three years of the degree are shown here because all students enrolled were required to complete at least three years. It shows that in first year, just over 85 per cent of IB graduates who had enrolled progressed through to completion, a similar figure to that for the non-IB cohort. By the end of second year in 2008, 70.4 per cent of the 2007 commencing group of IB graduates had successfully completed the year and had progressed to the second year of their course of study. Nearly 60 per cent of IB graduates completed their third year of study. For both the second and third year, the progression rate of the IB graduate group was higher than that for the non-IB cohort.

Table 8: Progression rates of IB and non-IB graduates for the first three years of study commencing in 2007, University A

	University A IB graduates		University A non-IB graduates	
Year completed	**No.**	**%**	**No.**	**%**
1st Year in 2007	115	85.2	3565	85.8
2nd Year in 2008	95	70.4	2640	63.6
3rd Year in 2009	80	59.3	2168	52.2

Table 9 provides further perspective on the two cohorts from University A in terms of their progression. It details the outcome for all students who enrolled in terms of years of study undertaken at the university. For example, it shows that 10.4 per cent of IB graduates and 16.5 per cent of non-IB graduates completed only one year of study between 2007 and 2011. It shows that IB graduates were more likely than other entrants to withdraw or transfer from study before commencing (11.1 per cent compared with 3.4 per cent), but that they were also more likely to have undertaken four years of study (35.6 per cent) than the non-IB group (22.4 per cent).

Table 9: Number of years of study completed for students commencing at University A in 2007

	University A IB graduates		University A non-IB graduates	
Years undertaken	**No.**	**%**	**No.**	**%**
All enrolled	135	100	4151	100
Withdrew before commencing	15	11.1	143	3.4
1 Year of study only	14	10.4	684	16.5
2 Years of study only	12	8.9	635	15.3
3 Years of study only	26	19.3	1262	30.4
4 Years of study only	48	35.6	928	22.4
5 Years of study	20	14.8	499	12.0

In terms of completion of university courses, the University A data provides insight into the IB and non-IB groups. For this analysis, the project team have relied on data provided by the university relating to the 'expected completion year' of students as a proxy for the length of their degree.[10] Exploring the 2007 entrant cohort of IB graduates and the non-IB group, a completion rate has been estimated for those students who were expected to have completed their degree in 2011 or earlier. As shown in Figure 6, 56.9 per cent of IB graduate students in this cohort had completed their degree by 2011. This outcome was higher than the non-IB population, among which 40.9 per cent had completed their degree by 2011.

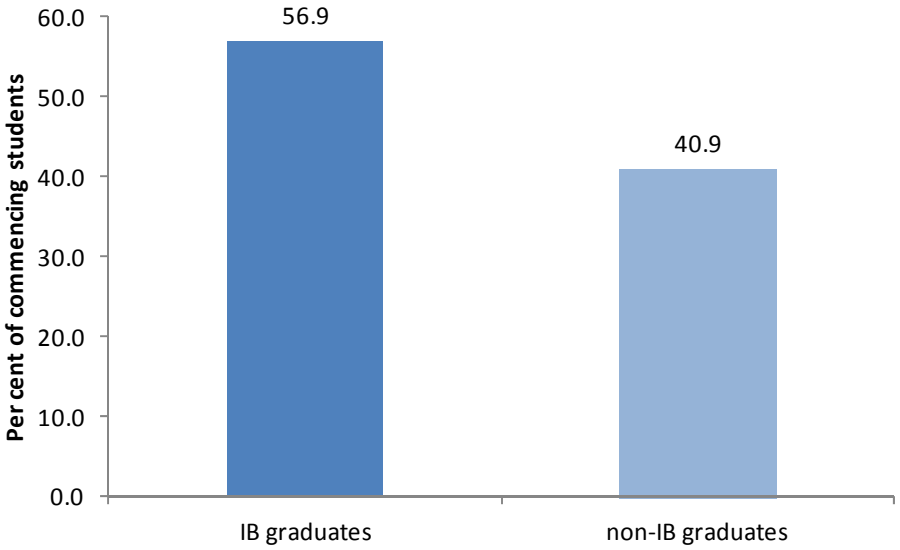

Figure 6: Graduation rates for University A of students commencing in 2007 who were expected complete by 2011

[10] The calculation of degree length for individual students is difficult given the existence of double degrees, the ability to switch between full-time and part-time study and the potential for students to defer one or many years during their course.

Completion figures for IB graduates who commenced at University C in 2007 are shown in Table 10. These figures show that just under half the cohort completed their degree on time, and a further 16 per cent had completed one semester later than anticipated. Just over a quarter of this small group had withdrawn or discontinued from their studies. Comparative data for a control population was not available for University C.

Table 10: Completion rates of IB graduates commencing in 2007 at University C

	IB students	
Year completed	**No.**	**%**
On time completion	9	47.4
Completed with one additional semester	3	15.8
Still enrolled in course	2	10.5
Discontinued course	5	26.3
Total	19	100.0

Finding: Based on the analysis from University A, when compared with non-IB groups, IB graduates have higher progression rates through the early years of university and are more likely to complete their degree within five years of commencement.

Academic performance

While progression through and completion of courses is arguably the most important variable in terms of outcomes from university, it is also worthwhile to explore outcomes of students through academic achievement. In this study, the Grade Point Average (GPA) of students for each year of study has been collected for the cohorts in focus. In the analyses below, the GPAs have been correlated with the entry scores that students gained in secondary school.

In general, the admissions process to university for school completers in Australia involves applying for a course (or a number of courses) and the university assessing applicants and offering places usually based on academic achievement during the final year or two years of schooling. The most common metric used by institutions for selecting into courses is an applicants' Australian Tertiary Admissions Rank (ATAR). This is a score derived from the achievement of students in a range of subjects taken in the final year or two of schooling. The ATAR is essentially a percentile rank. Institutions often publish 'cut-off' scores based on the ATAR for entry to each course that determine whether an applicant is admitted or not. Given that the IB Diploma does not produce a score that is the ATAR, during the admissions process for universities, IB Scores were converted to ATARs in order to provide comparisons with the wider applicant population.

The analysis undertaken here compares university entrance scores with GPAs achieved at university. In Table 11, correlations between entrance scores and GPA for students at University A are shown. GPA is listed for each year of data collection and as an overall score across the full course. The results reveal that for the IB graduates there are high

correlations between IB score (as converted to ATAR) and achievement at university. This is particularly the case in the first three years of study. By comparison, the correlation for non-IB student's tertiary entrance scores and university GPA is notably lower than for the IB graduates across all years. Similar calculations were undertaken for University C. However, these calculations did not provide any statistically significant results and thus, are not reported here, a likely explanation for this is the small number of students in the IB graduate cohort for the longitudinal analysis (n= 19).

Table 11: Correlations between university entrance score and yearly GPA, University A

	IB graduates (IB score converted to ATAR)	non-IB graduates (ATAR)
GPA 2007	0.61**	0.34**
GPA 2008	0.58**	0.41**
GPA 2009	0.53**	0.25**
GPA 2010	0.45**	0.26**
GPA 2011	0.44**	0.23**
Overall final GPA	0.63**	0.47**

Note: ** - sig dif at the 0.01 level, * sig dif at the 0.05 level.
The results of correlation analysis should be interpreted with caution due to the small number of IB graduates.

In Table 12 analysis of the overall GPA and IB score (converted to ATAR) has been extended to explore differences between fields of education. Examining the correlations for the IB graduates enrolled at University A, it is possible to see that correlations range from 0.86 in engineering and related technologies, to as low as 0.40 for those students in health related degrees. Similar variation exists between fields among the non-IB graduate group. However, in all fields except society and culture the correlation between GPA and university entrance score is higher for the IB graduates than for the control population.

Table 12: Correlations between university entrance score and overall final GPA for Broad Field of study, University A

	IB graduates (IB score converted to ATAR)	non-IB graduates (ATAR)
Natural and Physical Sciences		
Overall final GPA	0.66**	0.57**
Engineering and Related Technologies		
Overall final GPA	0.86**	0.53**
Health		
Overall final GPA	0.40*	0.33**
Management and Commerce		
Overall final GPA	0.76**	0.50**
Society and Culture		
Overall final GPA	0.44**	0.44**
Creative Arts		
Overall final GPA	0.77**	0.41**

Note: ** - sig dif at the 0.01 level, * sig dif at the 0.05 level

The results of correlation analysis should be interpreted with caution due to the small number of IB graduates.

In order to examine GPA outcomes in a more nuanced fashion a regression model was built based on the University A data. The model included the following independent variables: IB/non-IB students, gender, age, university entrance score, and language background. The regression was run individually with the dependent variable GPA in each year 2007 to 2011. In general, the models tended to explain only a small variation in the outcomes of students. The strongest model was for 2008, where 19.7 per cent of the variation in GPA was explained by these variables (R^2, 0.197). For other years, the models explained between 7.6 per cent and 14.9 per cent of the variation in GPAs recorded.

For years 2007, 2008 and 2009, the variable indicating whether the student was an IB or non-IB graduate had the smallest effect on the variation in scores (i.e. the lowest Beta coefficient). In 2010 and 2011, the relative impact of the IB student variable was larger than some of the other variables, but the overall strength of the model was weak (i.e. R^2 lower than 0.1). The regression analyses consistently showed that by far the best predictor of results is prior achievement (secondary school scores) regardless of whether this was in the IB or some other state-sanctioned secondary school certificate.

These findings suggest that overall there is no notable difference between the outcomes of IB and non-IB students once enrolled in University A. This is an important finding in

showing that the IB Diploma does not disadvantage students in their studies at university, nor does it seem to offer a significant advantage based on the data analysed here.

Finding: The results reveal that for the IB graduates enrolled at University A, there are high correlations between IB score (as converted to ATAR) and achievement at university. These correlations are notably larger than those found in the control (non-IB) population and are consistently higher when examined by field of education.

Finding: Analysis of data from University A suggest that when other student characteristics and secondary school score are taken into account, IB students perform at the same levels as non-IB students in terms of GPA over their university course.

Post-university pathways

Data relating to the destinations of university graduates in Australia is collected nationally through the Graduate Destinations Survey (GDS). This is a voluntary survey administered to all university graduates from Australian universities. Data from the GDS in relation to the 2007 commencement cohort has been compiled by University A for this project. Given the response rates to the survey, the number of students for which information is available is relatively small. In total, GDS data from 36 IB graduates who commenced university in 2007 is recorded here, alongside a control group of 955 non-IB graduates. The data provides some insight into the pathways of university students from the IB and non-IB group, but given that the sample of respondents to the GDS this data should not be interpreted as representative of the full population for this university. The relative paucity of graduate destinations data has also limited the analysis available here to focus on broad study and employment outcomes, rather than exploring detail such as industry of employment as originally planned.

As shown in Figure 7, one quarter of the IB graduates from this cohort who graduated from University A were enrolled in full-time further study in the year following university completion. This figure was slightly lower than for the non-IB graduate group. But, when part-time and full-time students are combined, IB graduates from this cohort are enrolled at a slightly higher rate (36.1 per cent compared to 35.6 per cent).

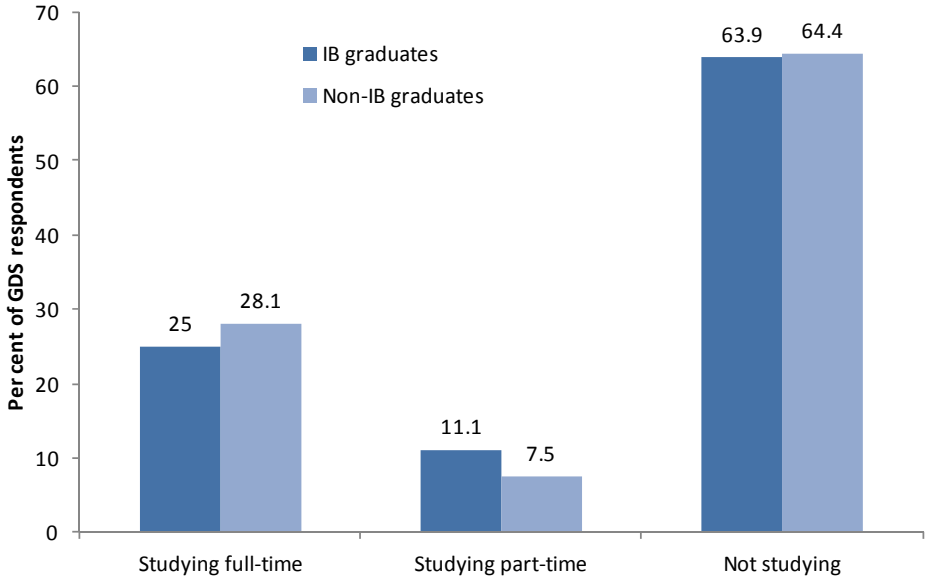

Figure 7: Graduate study status by student type, University A

In terms of employment, nearly 90 per cent of the IB graduate cohort who completed the GDS were in full-time or part-time work in the year following university completion. Just over 40 per cent of the IB graduate respondents were employed full-time, a figure that is lower than for the non-IB graduate group (50.8 per cent). IB graduates who had completed university were more likely than the non-IB group to be working part-time. In addition, a larger proportion of the IB graduate group indicated that although they were available for work, they were not employed (12.9 per cent) compared with 8.4 per cent among the non-IB group.

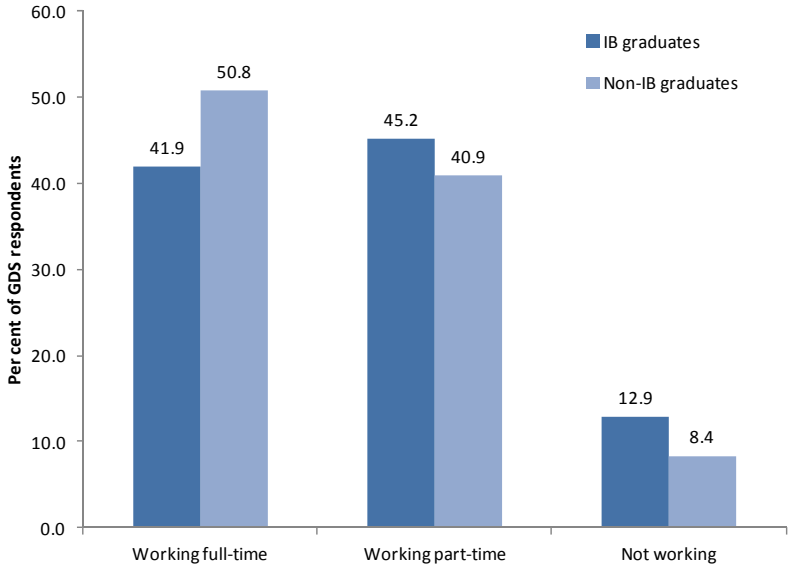

Figure 8: Graduate employment status by student type, University A (graduates who were 'available for work' only

University graduates who respond to the GDS and report they are employed are asked to state how relevant their work is to their degree. Respondents are asked to evaluate the relevance of the field of education in which they completed their degree, the level of qualification and the skills they learned in their degree to the job they are employed in. Figure 9 shows that on each of these measures, more than half of the IB graduate cohort stated that these factors were either 'important' or a 'formal requirement' for their work. These outcomes were similar to those recorded among the non-IB control population.

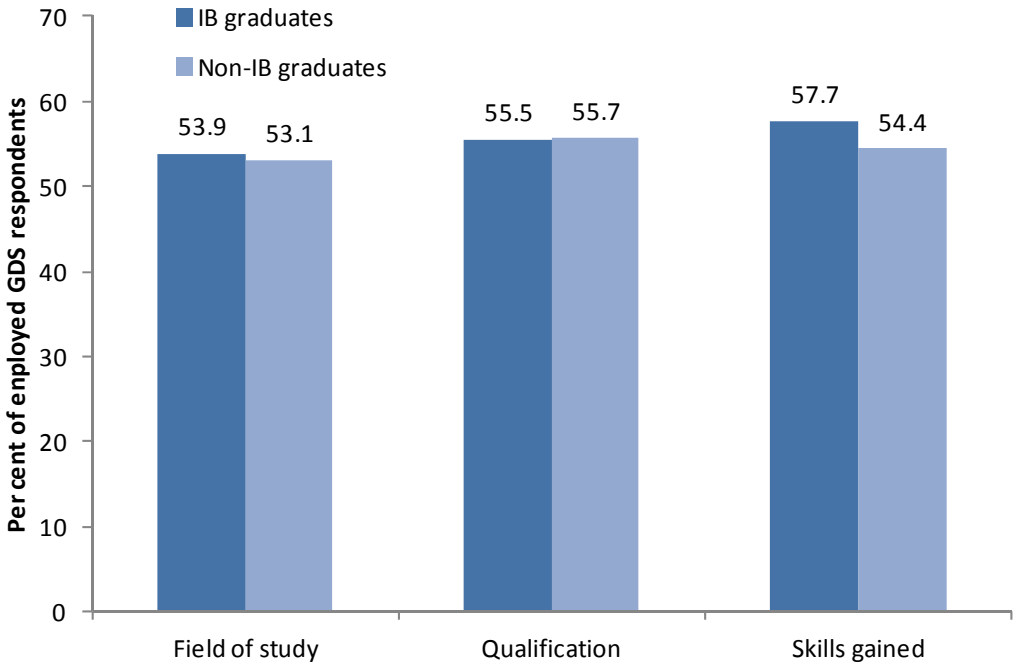

Figure 9: Graduate perception of link between university study and current work, per cent stating each area was a 'formal requirement' or 'important' to their current employment, University A

Finding: University graduate destination data show that among a small sample of respondents, the IB graduate cohort was slightly less likely to be in work on completion of university than other university graduates. IB graduates had similar rates of entry into further study as other graduates.

Conclusion

This report has explored the entry into and progression through university of graduates of the IB Diploma. The findings have focused on four key areas – transition to university, university progression and completion, academic performance, and post-university pathways.

Feasibility

Overall this research has provided an insight into the transition of IB Diploma graduates as they progress through two Australian universities. For one of these universities (University C), the longitudinal data available has been limited. This has meant that the many of the findings in this report relate to only University A. This is clearly a limitation in this study, but the large cohort and detailed longitudinal data that was provided by University A alongside snapshot data from both University A and University C have offered a number of worthwhile findings.

As noted in the background section of this report, this study is considered as phase 1 of a possible two phase research project. This first phase was designed to test feasibility of the project, develop methodology and potentially inform the collection of data from a larger number of universities in Australia. Given the issues encountered by the research team in collecting data from universities, and the fact that for one of the universities, the IB cohort for the longitudinal analysis was so small that drawing any statistically valid conclusions became difficult, a fair conclusion to draw is that the expansion of this study may not necessarily be feasible.

However, the research team believes that now the initial project is completed, the recruitment and engagement of additional universities may be easier than was the case in this initial study. This is because the potential output and benefit of the work is more apparent and in the recruitment of institutions, this report could serve as an example of the outcomes that could be derived from such a project. The research team has also learnt from the data specification, collection, cleaning and analysis processes used in this project and is more aware of the pitfalls of smaller cohorts, and specification of variables most relevant to the study. We believe the process may be more efficient and streamlined in any future iteration of this work.

The potential benefit derived from expanding the findings of this research across a wider variety of institutions and students could be valuable for the IB organisation and for individual universities who attract IB Diploma graduates.

Findings and implications

The key findings stemming from this research have been highlighted throughout the document, this conclusion serves as an opportunity to reflect on some of these findings.

Data from the IB itself and from the two institutions involved in this study clearly show a growth in the IB Diploma in Australia in recent years, with the number of schools offering the IB, the number of students enrolled in the IB and the number of IB Diploma graduates applying to university all expanding between 2007 and 2011. While the overall number of IB Diploma graduates remains in the minority when compared to the state-

sanctioned secondary school certificates in Australia, the growing prominence of the IB and the increasing numbers of IB graduates who are applying to universities means that engagement of universities by the IB organisation and the need to build a greater understanding of the relationship between IB scores and the standard ATAR score for selection and admissions purposes to university is paramount.

As such, this study has offered an initial insight into the relationship between school achievement and university outcomes – showing that the correlations between secondary school grades and GPA at university were higher for IB Diploma graduates when compared to other school completers at University A and that this holds both throughout the years of study at university and across different fields of education.

When built into a regression model, the outcomes have also provided worthwhile findings for University A, showing that overall there is little difference in university achievement between IB and non-IB students when variables such as gender, age, language background and secondary school achievement are controlled for. Essentially, the conclusion from the regression models is that IB students perform as well as other students at university when accounting for demographic characteristics and prior academic achievement.

The analysis of University A outcomes has also revealed that in terms of progression through university, the IB graduate cohort appear to have higher rates of progression and are more likely to complete their degree within five years than is the case for other school leavers.

These outcomes-based measures are useful for developing an understanding of the progression and achievement of IB Diploma graduates in Australian higher education. While this longitudinal detail in the current study only relates to one institution, the potential for replication in other institutions is visible through this work and the possible additional insights gained through this may be worth considering in future work.

The data collection in this study has also enabled insight into the characteristics of the IB population in two Australian institutions. The data have shown that there are some differences in the characteristics of students and non-IB cohort in terms of gender and age, although these particular differences were inconsistent across the years and are no doubt changing as the IB cohort in Australia expands. The main difference found in this work between the IB and non-IB cohort was in the different socioeconomic profile of these students. Based on data from one institution, the findings suggest that IB students were more likely to be from a high SES background when compared with other comparable university students. One clear explanation for this discussed in the report is that schools offering the IB in Australia are more likely to be from the private than the public sector and that students from high SES backgrounds are more prevalent in the private sector. A widening of data collection to other universities would help to shed further light on this finding and offer a more solid foundation for drawing conclusions relating to differences in characteristics of the IB Diploma cohort in Australian universities.

Overall, this research has helped to explore in detail the progression of IB Diploma graduates through their university studies based on a case study of one large Australian institution. The study has also provided insight based on data from two universities into the growth and characteristics of students in university who completed the IB Diploma. The procedures involved in this project of recruiting and engaging universities, and specifying and collecting data were particularly challenging. However, valuable processes have been developed and the findings of this initial phase of this project provide the team with optimism for the success of expanding this research to encompass a greater number of universities in the future.

Appendix: Population and data specifications – ACER-IB Tracking Project

This document provides guidelines for universities participating in the ACER-IB project for collecting data for the project team. All student data supplied will be de-identified.

Data will be collected on application, enrolment, course progression, academic outcomes and graduation. Details of the research questions being examined in this study are provided on the final page of this document.

Data collections

There will be two data collections for this project. The first will be a longitudinal analysis, tracking students through their application, enrolment and progression through university. The second is a snapshot analysis of 2007 and 2010 data on applications and graduations in the student population.

Longitudinal data set

The longitudinal data will follow a specified population, tracking the progression and results of one group of students as they progress through the university. The cohort focussed on will be those students who entered the university in 2007 and enrolled full-time. This data will enable a longitudinal analysis of the progress of IB graduates, in comparison with other students from the control population.

Snapshot data tables

The snapshot tables will outline similar information from two separate years in order to assist in a comparison of change over time. The two years for collection will be 2006/2007 application/enrolment year and 2010/2011 application/enrolment year. This data will provide information about applications, offers and enrolments of IB students and a comparative population.

Data specifications – Longitudinal data set

Populations

There will be ***two specific populations*** collected for the longitudinal data set:

1. *The IB population* will include all students who gained entry into their course on the basis of completing the International Baccalaureate. This population will include both domestic and international entrants.
2. *The control population* will consist of students who have similar characteristics to the IB population, but have not completed the IB. This population will essentially consist of domestic Year 12 completers with state-based high school certificates and international school completers with qualifications other than the IB. Depending on data available, this collection might most efficiently be a 'matched sample' population, mirroring the IB student population.

Data Specifications

Collection to be based on ***full-time commencers to the university in 2007*** that fit the student populations detailed above. Variables desired for each student are detailed below. Ideally this data will be provided in SPSS format.

Student characteristics:

- Student ID (a number specific to this project, de-identified from university ID)
- Gender
- Year of birth
- Language background
- Country of birth
- Student type (international or domestic)
- Measure of socioeconomic status – if available

Prior education outcomes:

- Location of secondary school (Australian states or country if international)
- Year of secondary school completion
- IB score (for IB students, where available)
- ATAR/OPI (actual score for control population, estimated score for IB population)

University enrolment information:

- Name of course/program enrolled
- Level of qualification of course/program (i.e. bachelor, diploma etc)
- Main field of education of course (ASCED)
- Secondary field of education of course (ASCED) – if applicable

Progression and outcomes through university (some of the later years here may not apply to many students):

- 2007 Semester 1 number of subjects satisfactorily completed
- 2007 Semester 1 average GPA for semester
- 2007 Semester 2 number of subjects satisfactorily completed
- 2007 Semester 2 average GPA for semester
- 2008 Semester 1 number of subjects satisfactorily completed
- 2008 Semester 1 average GPA for semester
- 2008 Semester 2 number of subjects satisfactorily completed
- 2008 Semester 2 average GPA for semester
- 2009 Semester 1 number of subjects satisfactorily completed
- 2009 Semester 1 average GPA for semester
- 2009 Semester 2 number of subjects satisfactorily completed
- 2009 Semester 2 average GPA for semester
- 2010 Semester 1 number of subjects satisfactorily completed
- 2010 Semester 1 average GPA for semester
- 2010 Semester 2 number of subjects satisfactorily completed
- 2010 Semester 2 average GPA for semester
- 2011 Semester 1 number of subjects satisfactorily completed

- 2011 Semester 1 average GPA for semester
- 2011 Semester 2 number of subjects satisfactorily completed
- 2011 Semester 2 average GPA for semester
- Completion measure (values to be: OT=On time completion, Plus1=Completed but required additional 1 semester, Plus2 = Completed but required additional 2 semesters, Plus3, Plus4 etc., CONT=still enrolled in course, DISC=Discontinued).

University graduation data, sourced from Graduate Destinations Survey items (where applicable):

- Paid work status (1=working full-time, 2=working part-time, 3=not working)
- Importance of main job to qualification (1=Formal requirement, 2=Important, 3=Somewhat important, 4=Not important, 9=Don't know).
- Gross pre-tax annual salary ($)
- Further study (1=studying full time, 2=studying part-time, 3=not studying)
- Level of further study qualification (if applicable), i.e. masters, doctorate, etc.
- Field of further study qualification (if applicable), ASCED.

Data specifications – Snapshot table

Two snapshot tables will provide basic data relating to applications, offers and enrolments for 2 years – the 2006/2007 applicant/enrolment year and 2010/2011 applicant/enrolment year.

The data for these tables will be based on the two populations specified in the above section – the IB Population and the Control Population. An indicative view of what the tables will look like is provided below.

Table 13: Dummy table for IB snapshot applications data

Year	Variable	IB Population	Control Population
2006/07	Number of applicants	n	n
2006/07	Number of offers	n	n
2006/07	Number of enrolments (2007)	n	n
2006/07	Number of deferrals (2007)	n	n
2010/11	Number of applicants	n	n
2010/11	Number of offers	n	n
2010/11	Number of enrolments (2011)	n	n
2010/11	Number of deferrals (2011)	n	n

Table 2: Dummy table for snapshot IB enrolment characteristics data – Commencing IB graduates only

Variable	Values	2007 IB commencers	2011 IB commencers
Gender	Male		
	Female		
Language background	English		
	Non-English		
Location of secondary school	Australia		
	Outside Australia		
Level of qualification enrolled in	Diploma		
	Advanced Diploma		
	Bachelor		
	Graduate Certificate		
	Postgraduate		
Field of education (ASCED)	Natural and Physical Sciences		
	Information Technology		
	Engineering and Related Technologies		
	Architecture and Building		
	Agriculture, Environmental and Related Studies		
	Health		
	Education		
	Management and Commerce		
	Society and Culture		
	Creative Arts		
	Food, Hospitality and Personal Services		
	Mixed Field Programmes		